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Annual Energy Outlook 1996

With Projections to 2015

January 1996

Energy Information Administration
Office of Integrated Analysis and Forecasting
U.S. Department of Energy
Washington, DC 20585

For Further Information . . .

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Electronic Access and Related Reports

The *AEO96* will be available on CD-ROM and the EIA Home Page on the Internet (*http://www.eia.doe.gov*) by February 1996. The *AEO96* displays on the EIA Home Page will include text, forecast tables, and graphics. To download the tables or the entire publication, go to the EIA FTP Site: *ftp://ftp.eia.doe.gov*. Assumptions underlying the projections and tables of regional and other detailed results (formerly published in the *Supplement to the Annual Energy Outlook*) will be available on CD-ROM and on the EIA Home Page by March 1996. Forecast tables for the five scenarios are also available via modem on EIA's Electronic Publication (EPUB) System (202/586-2557) and on diskette. To obtain diskettes, contact the Office of Scientific and Technical Information, by telephone at 615/576-8401 or by mail at P.O. Box 62, Oak Ridge, TN 37831.

Model documentation reports for the National Energy Modeling System (NEMS) are also available on CD-ROM. Quarterly projections of energy supply and demand for 1995 and 1996 are available in the *Short-Term Energy Outlook* (November 1995). For ordering information and questions on other energy statistics available from EIA, please contact EIA's National Energy Information Center. Addresses, telephone numbers, and hours are as follows:

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Preface

The *Annual Energy Outlook 1996 (AEO96)* presents midterm energy forecasts by the Energy Information Administration (EIA). This year's report presents projections and analyses of energy supply, demand, and prices through 2015, based on results from EIA's National Energy Modeling System (NEMS). *AEO96* is the first *Annual Energy Outlook* with forecasts extended to 2015. Quarterly forecasts of energy supply and demand for 1995 and 1996 are published in the November 1995 issue of the *Short-Term Energy Outlook*.

Forecast tables for the five cases examined in *AEO96* are provided in Appendixes A through C. Appendix A gives historical data and forecasts for 1993 through 2015 for the reference case. Appendix B presents two additional cases, which assume higher and lower economic growth than the reference case. Appendix C presents two cases that assume higher and lower world oil prices.

Appendix D presents a summary of the forecasts in units of oil equivalence. Appendix E presents a summary of household energy expenditures. Appendix F provides detailed comparisons of the *AEO96* forecasts with those of other organizations. Appendix G briefly describes NEMS and the major *AEO96* forecast assumptions. Appendix H presents major results from alternative cases that explore the impacts of varying key assumptions in the supply, demand, and conversion sectors of NEMS—generally, assumptions about technology penetration. Appendix I provides a table of energy conversion factors and a table of metric conversion factors.

The *AEO96* projections are based on Federal, State, and local laws and regulations in effect on October 1, 1995, including the fuel taxes in the Omnibus Budget Reconciliation Act of 1993, the Clean Air Act Amendments of 1990, the Energy Policy Act of 1992, and provisions of the Climate Change Action Plan. Pending legislation and sections of existing legislation for which funds have not been appropriated are generally not reflected in the forecasts. The projections include the lifting of the ban on the export of Alaskan crude oil, enacted on November 28, 1995, but not modifications in the same bill of oil and gas royalties in the Gulf of Mexico. Legislative proposals to allow leasing in the Arctic National Wildlife Refuge for oil and gas drilling are not included. Carbon emissions projections in *AEO96* were calculated using carbon coefficients from the report *Emissions of Greenhouse Gases in the United States 1987-1994* (October 1995).

The *AEO96* projections are used by Federal, State, and local governments, trade associations, and other planners and decisionmakers in the public and private sectors. They are published in accordance with Section 205(c) of the Department of Energy Organization Act of 1977 (Public Law 95-91), which requires the Administrator of EIA to prepare an annual report that contains trends and projections of energy consumption and supply.

The projections in *AEO96* are not statements of what will happen, but what might happen given the specific assumptions and methodologies used. These projections provide an objective, policy-neutral reference case that can be used to analyze policy initiatives. As a policy-neutral data and analysis organization, EIA does not propose, advocate, or speculate on future legislative and regulatory changes. The projections assume that laws remain as currently enacted, so that policy initiatives can be analyzed relative to the *AEO* forecasts. Assuming current legislation and regulations, even knowing that changes will occur, will naturally result in projections that differ from the final data.

Models are abstractions of energy production and consumption activities, regulatory activities, and producer and consumer behavior. The forecasts are highly dependent on the data, analytical methodologies, model structures, and specific assumptions used in their development. Trends depicted in the analysis are indicative of tendencies in the real world rather than representations of specific real-world outcomes. Even where trends are stable and well understood, the projections are subject to uncertainty. Many events that shape energy markets are random and cannot be anticipated, and assumptions concerning future technology characteristics, demographics, and resource availability cannot be known with any degree of certainty. Many of the key uncertainties in these projections are addressed through the alternative cases presented in this report.

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The *Annual Energy Outlook 1996* (*AEO96*) projects energy trends to the year 2015—the first *AEO* to look beyond 2010. This extension reflects a belief that 20 years is a reasonable time frame for which detailed midterm projections can meaningfully be made. It is our belief that general trends in the economy, demographics, and technology can be sufficiently anticipated that such projections can be developed credibly.

As a result of its more extended coverage, this year's *AEO* focuses on issues that become more important than in previous *AEO*s that had earlier time horizons. In addition, the more distant target of 2015, of necessity, adds to the uncertainty of the projections contained in *AEO96*.

2010 to 2015

Analysis of an additional 5 years in the *AEO96* projections draws more attention to several issues. One is the retirement of nuclear power plants. A number of existing nuclear plants, accounting for about 40 percent of the Nation's current nuclear generation capacity, will reach the end of their 40-year operating lives by 2015; in the forecast, they are assumed to be retired. Most of the retirements are expected to occur between 2010 and 2015. Generation of electricity from both coal and natural gas is likely to expand significantly to meet growing customer demand and to fill the gap caused by the retirement of nuclear facilities.

Although *AEO96* assumes that these nuclear plants will be retired at the end of their 40-year lives, the retirements are far from certain. Life extensions, regulatory changes, and breakthroughs in advanced materials could increase the useful lifetimes of nuclear plants and delay their retirements by as much as 20 years. If that were to occur and nuclear plants were life-extended, we expect that the demand and price for some fossil fuels, as well as levels of carbon emissions, would be lower than if the retirements occurred as assumed. In order to capture this uncertainty, we have included a case that assumes life extensions for approximately half of the current nuclear capacity beyond 2015.

Another key issue in the period is shifting demographics. After 2010, there will be a notable shift of "baby boomers" into retirement. The resulting reduced size of the work force is expected to slow economic growth and shift patterns of energy use.

Technology developments are another key factor in the extended forecast. Because of the longer time horizon in *AEO96*, the mix of advanced technologies considered has been expanded and now includes, for example, fuel cells and photovoltaics for central station electricity generation.

Anticipating the pace and impact of technology change is difficult under any circumstance, but particularly so in the longer time horizon. In recent years, improvements in drilling and mining technology have expanded the availability of fossil fuel resources at prices lower than those expected in earlier projections. Improvements in motors and in a host of end-use technologies have constrained the growth of energy use and helped enhance the quality of many products. *AEO96* projects that these trends will continue.

The pace of technology changes has a sizable impact on energy markets, as we have tried to display in several alternative cases. It also makes a substantial difference in future energy consumption if the greater efficiencies anticipated for end-use technologies are used to reduce energy use or to create new products and services.

Major trends

AEO96 projects substantially lower fuel prices than *AEO95*, based on recent assessments of improved supply-side technologies and an expanded resource base. In February 1995, the U.S. Geological Survey published a major revision of its 1989 study of domestic oil and gas resources. The revised resource estimates are a major factor underlying the *AEO96* projections that natural gas prices will rise much more slowly than expected in past *AEO*s. In the current projections, in addition, inflation-adjusted electricity prices are expected to remain flat; and coal prices are expected to decline, based on continuing improvements in mining productivity and flat wage rates expected for coal miners.

This year we project that total energy use will rise at about the same rate as expected last year. Industrial energy use is expected to rise more slowly—and residential and commercial energy demand is expected to rise more rapidly—in *AEO96* than they

were in *AEO95*. Since energy use per capita changes little during the 20-year period, much of the increase in domestic energy use can be attributed to population growth. The stability of per capita energy use masks an underlying phenomenon, however. The trend toward greater efficiencies in end-use technologies is likely to continue, constraining pressures for rapid increases in energy consumption. Instead of reducing individual energy consumption, the energy savings from higher efficiencies are expected to be used for new products and services and for new features added to traditional products.

Uses of energy models

The National Energy Modeling System (NEMS), on which the *AEO*s are based, was constructed primarily to assist policymakers and the public in assessing the impacts of various policy initiatives. Those analyzing the benefits and costs of potential policies wanted a scientific, policy-neutral methodology for making their assessments. NEMS has been used, for example, to examine the impacts of proposals for environmental protection, changes in levels of taxation, new import/export regulations, and changes in energy-using and producing technologies.

To perform this function, the model must have three important characteristics. First, it must provide a baseline of where current policies are likely to lead us, which establishes a case against which changes can be compared. Second, the model must cover the entire energy system, allowing for full consideration of impacts in a systematic way. Third, the model must be open for public inspection, so that all participants in the debate have equal access to its inner workings. NEMS meets each of these criteria. In the case of public access, the modules of NEMS are currently available on the Internet at EIA's Home Page and on EIA's CD-ROM for examination and use.

The development of baseline projections can lead to a secondary use of the NEMS model. Since the baselines create a presumption of what will actually happen under current policy, they are sometimes used as predictors of the future. Given the absence of other methods for predicting the future of energy supply and demand, it is easy to understand why the baselines are used in this way.

There are, however, several limitations to the use of baselines as predictors. Most notable is the assumption of no policy change. This operational assumption is necessary to allow for comparison with potential new policies and to avoid any appearance of policy advocacy. In fact, however, periods when energy policy has remained stable are rare; and it is reasonable to believe that policies will continue to change. Policymakers might consider some trends in the projections undesirable. Therefore, the projections themselves can be part of a process that leads to new policies that would move the trend lines in different directions.

We also recognize additional sources of uncertainties in our projections. Some of these are discussed below:

- First, the *AEO*s are published only once a year. During the annual cycle, new information becomes available that could change the baseline. As the year goes on, increasing amounts of information become available that have not been incorporated in the currently published baselines. As a result, analysts should look at a variety of forecasts, especially those that are most recent, in their attempts to ascertain what will actually happen.
- Second, all energy forecasts in past years have overestimated the future prices of fossil fuels. This tendency was most notable in the 1970s and early 1980s: predictions of energy prices made during those years have been proven by history to have been dramatically overstated. The major factors that were underestimated, and which now produce sharply lower price forecasts, include (1) increased competition among suppliers, (2) significant penetration of new exploration and drilling technologies that reduce costs and increase the size of the U.S. petroleum resource base, and (3) decreased energy demand as a market response to high prices and as a result of policy initiatives to constrain energy use.

  In recent years, energy forecasters, including EIA, have continued to project lower estimates of future fuel prices. At present, there is no guarantee that new factors will not cause prices to rise slower or faster then current projections, or even to fall from current levels.

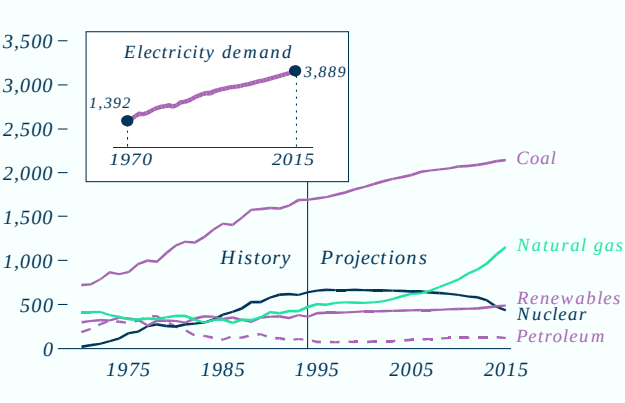
- Third, the projections contained in the *AEO*s do not reflect the volatility contained in the historical numbers. In a model, based largely on smooth economic adjustments and no unexpected disruptions, it is not surprising to find that the projection lines do not have the jagged pattern of historic years. It is possible, however, that change in the future would come in sudden spurts rather than gradual adjustments. The impacts of rapid changes on consumer choice and other economic variables could be much more pronounced. Analysts can explore this pattern using EIA's Short-Term Energy Model, which can also be downloaded off the Internet. Variables in the model can be changed and the model recalculated, demonstrating the anticipated effects of short-term changes in the U.S. economy.

The *AEO*s have displayed portions of the underlying uncertainty in the baseline by publishing high and low cases for economic growth and the world price of oil, and for the penetration of more efficient technologies. While alerting readers to the ranges of uncertainty, these alternative cases do not necessarily solve the problems of those who need to make decisions based on future energy supply, demand, or price. There is merit in using a variety of projections and information, such as those provided by futures markets or long-term contracts, when making such decisions.

Jay E. Hakes
Administrator
Energy Information Administration

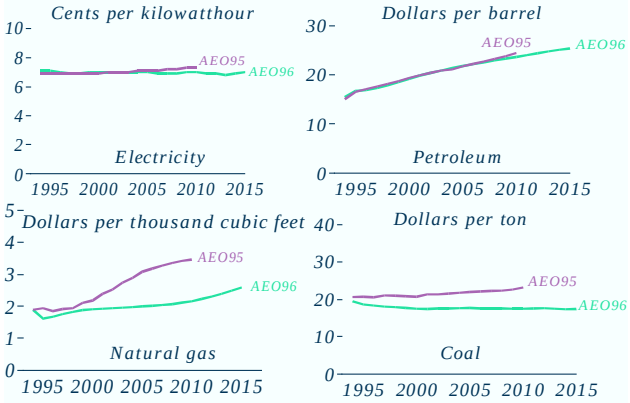
AEO96 Extends Energy Projections to 2015

Figure 1. Electricity generation by fuel, 1970-2015 (billion kilowatthours)



Fuel Price Projections This Year Are Lower Again

Figure 2. Fuel price projections, 1994-2015: AEO95 and AEO96 compared (1994 dollars)



The *Annual Energy Outlook 1996 (AEO96)* is the first *Annual Energy Outlook* with projections to the year 2015. Key areas of analysis include the availability of domestic fossil fuel resources, the penetration of new, more advanced energy technologies, and the projected decline of nuclear generation.

Energy prices in *AEO96* are lower than those in the *Annual Energy Outlook 1995 (AEO95)*; however, total consumption in 2010 is expected to be about the same, at 105 quadrillion British thermal units (Btu). Residential and commercial demand is higher in *AEO96*, due to lower prices and higher projected growth for new electricity uses. With slower growth in energy-intensive industries, industrial demand is lower. Transportation demand is about the same.

Electricity generation from natural gas and coal through 2015 increases significantly, to meet increased electricity demand and to compensate for the decline in nuclear generation (Figure 1). With lower capital requirements, natural gas increases its share of generation. Because fossil fuel prices are lower in the *AEO96* projections, renewable energy sources penetrate more slowly than in *AEO95*.

One nuclear unit, Watts Bar 1, is assumed to be completed in 1996. No other new nuclear units are projected by 2015. Nuclear generation rises slightly early in the projections, with this new unit and increased utilization; however, with about 40 percent of the nuclear capacity scheduled to retire by 2015, nuclear generation declines from 2000 on.

AEO96 reflects higher expectations for oil production from the Organization of Petroleum Exporting Countries (OPEC), and oil prices are projected to be slightly lower than in *AEO95* (Figure 2). In 2010, the average price is $23.70 per barrel (in 1994 dollars), nearly $1 a barrel lower than last year's projection. The 2015 price is $25.43 a barrel.

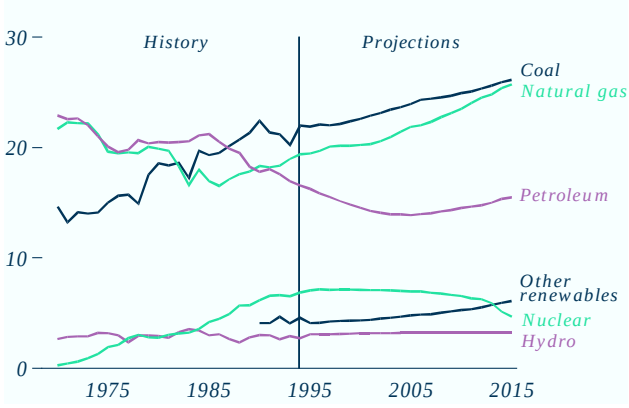
The average wellhead price of natural gas in *AEO96* is significantly lower than in *AEO95*. The *AEO96* average wellhead price in 2010 is $2.15 per thousand cubic feet (compared with almost $3.50 in *AEO95*), rising to $2.57 per thousand cubic feet in 2015. Higher assessments of domestic resources, due in part to technology gains, contribute to reduced price projections (see box on page 9). In addition, industry competition reduces the costs of transmission and distribution, so that delivered prices of gas rise at a slower rate than the wellhead price.

Coal minemouth prices are projected to decline slightly over the forecast horizon, due to increasing productivity, flat real wage increases, and competitive pressures on long-term contracts. In 2010, the minemouth price is $17.43 per ton, compared with $23.30 in *AEO95*. Average electricity prices, which are expected to remain essentially flat through 2015, are slightly lower than in *AEO95*, because the projected fossil fuel prices are lower. Chapter 3 of this report (electricity) addresses some possible implications of the evolving restructuring of the electricity industry; the potential impacts of that process are not included in the *AEO96* forecasts.

Highlights

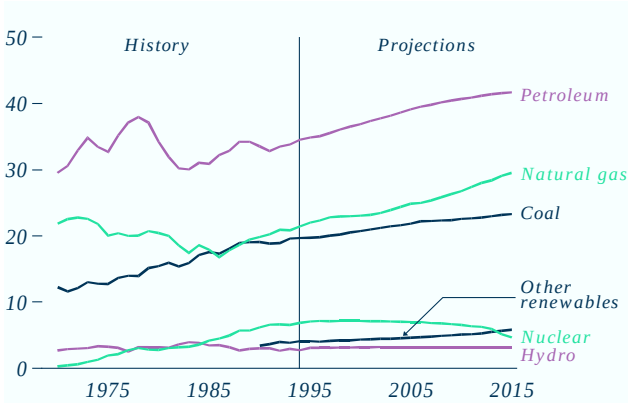
Coal and Natural Gas Lead Energy Production in 2015

Figure 3. Energy production by source, 1970-2015 (quadrillion Btu)



Demand for Energy From Fossil Fuels Continues To Grow

Figure 4. Energy consumption by source, 1970-2015 (quadrillion Btu)



Although projected world oil prices in *AEO96* are almost $1 a barrel lower in 2010 than they were in *AEO95*, the projection for domestic crude oil production is similar to last year's. Production declines by 21 percent from 1994 to 2005, then increases by 11 percent from 2005 to 2015 as a result of technology improvements and rising prices. In 2010, estimated domestic oil production is 5.4 million barrels a day (the same as last year's projection), rising to 5.8 million barrels a day in 2015. Overall, U.S. oil production declines over the projection period, and the share of petroleum consumption met by net imports reaches 57 percent (measured in barrels per day) in 2005 and remains at about that level through 2015—compared with 45 percent in 1994.

Driven primarily by growth in consumption, natural gas production increases at an average annual rate of 1.3 percent between 1994 and 2015 (Figure 3). Imports of gas, mostly from Canada, satisfy the remaining increase in demand. Coal production also increases by 0.8 percent a year through 2015, to meet increasing demands for electricity generation, industrial uses, and exports.

With lower prices projected for fossil fuels, renewable energy production, including hydropower, is 0.8 quadrillion Btu lower in *AEO96* in 2010 than it was in *AEO95*. Lower prices, particularly for natural gas, delay the penetration of some renewable technologies. In the *AEO96* forecast, renewable energy production is 7.8 quadrillion Btu in 2010, rising to 8.5 quadrillion Btu in 2015.

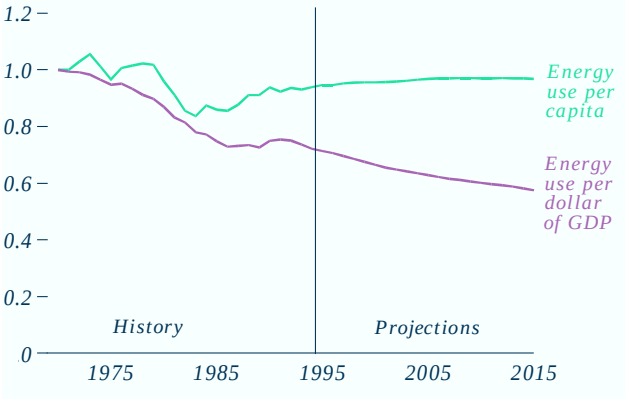
Natural gas consumption increases by an average of 1.6 percent a year (Figure 4), as gas-fired electricity generation more than doubles from 1994 to 2015. Industrial use of natural gas for boiler fuel and chemical feedstocks also grows. Coal remains the primary fuel for electricity generation. Total coal consumption grows at an average annual rate of 0.8 percent, with 90 percent of the coal used for generation. Petroleum consumption grows at an average rate of 0.9 percent a year. About two-thirds of the petroleum is used for transportation, as increases in vehicle-miles traveled offset increases in vehicle efficiency throughout the projection period.

Consumption of renewable fuels increases at an average annual rate of 1.5 percent. Most renewable fuels are used for electricity generation, including cogeneration, with the remainder for dispersed heating and cooling and for blending into vehicle fuels. Hydropower, which is the main renewable source used for generation, increases only slightly through 2015 because of a shortage of new, large sites and because regulatory actions, particularly for fish protection, limit capacity at existing sites (see box on page 31).

Electricity consumption is projected to grow at an average annual rate of 1.4 percent through 2015. With efficiency gains partially offsetting the penetration of new electricity-using equipment, this growth rate is slower than the 2.0-percent average annual growth in gross domestic product (GDP).

Energy Use per Dollar of Output Declines Steadily Through 2015

Figure 5. Energy use per capita and per dollar of gross domestic product, 1970-2015 (index, 1970 = 1)



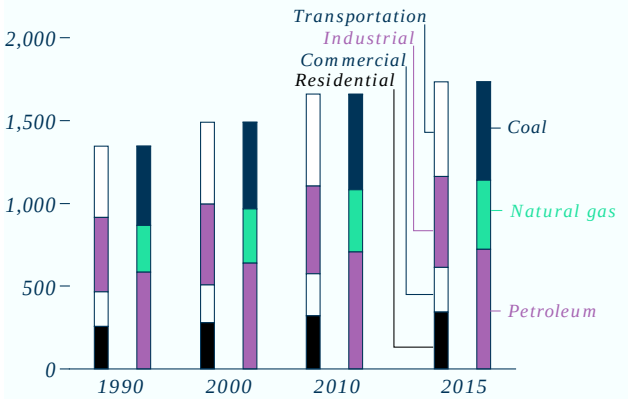
Energy intensity, measured as energy use per dollar of GDP, has generally declined since 1970, particularly during periods of rapid energy price increases (Figure 5). In the 1970s and early 1980s, energy intensity declined at an average rate of nearly 2 percent annually as the economy shifted to less energy-intensive industries and increasingly efficient technologies. In the late 1980s and into the projection period, moderate price increases and the projected growth of more energy-intensive industries lead to a slower projected decline, at an average annual rate of 1.1 percent, from 1994 to 2015.

Energy use per person, which also generally declined from 1970 through the mid-1980s, increased in the mid-1980s as energy prices dropped. Per capita energy use is expected to remain nearly stable through 2015 and well below the record highs of the early 1970s, as increasingly efficient technologies offset growing demand for energy services. Per capita demand for electricity increases at an average annual rate of 0.5 percent through 2015, but per capita demand for other energy sources remains flat.

AEO96 incorporates the additional efficiency standards for new energy-using equipment in buildings and for motors mandated by the Energy Policy Act of 1992 and the National Appliance Energy Conservation Act of 1987. As energy prices increase, additional efficiency improvements beyond the standards are likely. Alternative cases in *AEO96* examine the penetration of more energy-efficient technologies beyond that in the reference case.

Carbon Emissions Continue To Grow Despite Stabilization Efforts

Figure 6. U.S. carbon emissions by sector and fuel, 1990-2015 (million metric tons)



Carbon emissions from energy use are projected to increase by 1.1 percent a year through 2010, reaching 1,660 million metric tons (Figure 6). In comparison, *AEO95* projected 1,621 million metric tons in 2010. The *AEO96* forecast of total energy consumption in 2010 is about the same as in *AEO95*, but emissions are higher because of a shift from renewable energy to fossil fuels, particularly for electricity generation. Beyond 2010, with slower demand growth, emissions grow at a slower rate, reaching 1,735 million metric tons in 2015.

In *AEO96*, lower energy prices result in more consumption which is coupled with higher projected growth for new electricity uses, so that residential and commercial sector emissions are higher than those in *AEO95*. Both industrial and transportation sector emissions are nearly the same as in *AEO95*.

The Climate Change Action Plan (CCAP) was developed to stabilize greenhouse gas emissions in 2000 at 1990 levels. *AEO96* analyzes the impacts of CCAP provisions, including Climate Challenge, which fosters voluntary reductions in emissions by electric utilities. Because emissions grew more rapidly during the early 1990s than expected, current emissions estimates are higher than those in CCAP. Funding reductions for some CCAP programs and revised estimates of their impacts, as well as more moderate energy price increases, are reflected in the *AEO96* emissions forecast.

Table 1. Summary of results for five cases

Sensitivity Factors	1993	1994	2015				
			Reference	Low Economic Growth	High Economic Growth	Low World Oil Price	High World Oil Price
Primary Production (quadrillion Btu)							
Petroleum	16.99	16.57	15.50	14.61	16.25	10.86	19.03
Natural Gas	18.97	19.41	25.72	23.13	27.60	24.52	26.32
Coal	20.23	22.01	26.14	25.25	27.22	26.00	26.13
Nuclear Power	6.52	6.84	4.63	4.63	4.63	4.63	4.63
Renewable Energy	6.40	6.26	8.51	7.96	9.59	8.41	8.66
Other	0.54	0.99	0.58	0.57	0.61	0.56	0.59
Total Primary Production	**69.64**	**72.08**	**81.08**	**76.17**	**85.91**	**74.99**	**85.36**
Net Imports (quadrillion Btu)							
Petroleum (including SPR)	16.37	17.25	25.36	23.39	27.42	32.47	19.99
Natural Gas	2.24	2.44	4.09	4.09	4.09	4.09	4.09
Coal/Other (- indicates export)	-1.46	-1.21	-2.58	-2.59	-2.57	-2.59	-2.55
Total Net Imports	**17.15**	**18.49**	**26.87**	**24.89**	**28.94**	**33.98**	**21.52**
Discrepancy	0.59	-1.43	0.07	0.10	0.10	-0.20	0.31
Consumption (quadrillion Btu)							
Petroleum Products	33.83	34.56	41.69	38.87	44.57	43.87	40.10
Natural Gas	20.80	21.36	29.52	26.94	31.40	28.33	30.12
Coal	19.55	19.65	23.27	22.35	24.35	23.12	23.24
Nuclear Power	6.52	6.84	4.63	4.63	4.63	4.63	4.63
Renewable Energy	6.40	6.27	8.52	7.97	9.60	8.42	8.67
Other	0.29	0.46	0.40	0.39	0.40	0.40	0.42
Total Consumption	**87.38**	**89.14**	**108.02**	**101.15**	**114.96**	**108.77**	**107.20**
Prices (1994 dollars)							
World Oil Price (dollars per barrel)	16.48	15.52	25.43	23.99	27.05	16.07	33.89
Domestic Natural Gas at Wellhead (dollars per thousand cubic feet)	2.09	1.88	2.57	2.07	3.34	2.34	2.79
Domestic Coal at Minemouth (dollars per short ton)	19.85	19.41	17.39	16.91	17.73	16.54	18.79
Average Electricity Price (cents per kilowatthour)	7.1	7.1	7.0	6.6	7.3	6.8	7.1
Economic Indicators							
Real Gross Domestic Product (billion 1987 dollars)	5,134	5,344	8,114	7,316	8,930	8,155	8,083
(annual change, 1994-2015)	--	--	2.0%	1.5%	2.5%	2.0%	2.0%
GDP Implicit Price Deflator (index, 1987=1.00)	1.235	1.261	2.433	3.490	2.055	2.428	2.432
(annual change, 1994-2015)	--	--	3.2%	5.0%	2.4%	3.2%	3.2%
Real Disposable Personal Income (billion 1987 dollars)	3,704	3,836	5,798	5,394	6,227	5,834	5,771
(annual change, 1994-2015)	--	--	2.0%	1.6%	2.3%	2.0%	2.0%
Index of Manufacturing Gross Output (index, 1987=1.00)	1.113	1.193	1.766	1.583	1.958	1.771	1.760
(annual change, 1994-2015)	--	--	1.9%	1.4%	2.4%	1.9%	1.9%
Energy Intensity							
(thousand Btu per 1987 dollar of GDP)	17.02	16.69	13.32	13.84	12.88	13.35	13.27
(annual change, 1994-2015)	--	--	-1.1%	-0.9%	-1.2%	-1.1%	-1.1%

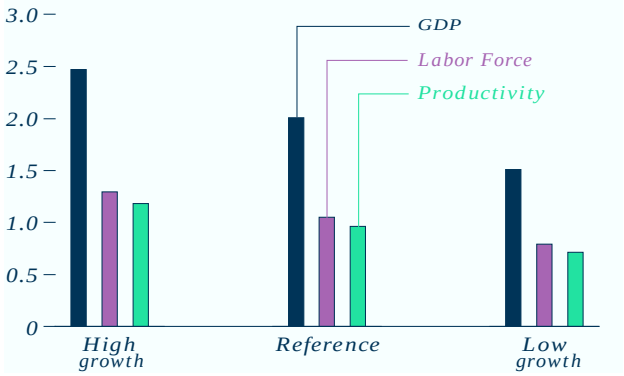
Notes: Specific assumptions underlying the alternative cases are defined in Chapter 1. Quantities are derived from historical volumes and assumed thermal conversion factors. Other production includes liquid hydrogen, methanol, supplemental natural gas, and some inputs to refineries. Net imports of petroleum include crude oil, petroleum products, unfinished oils, alcohols, ethers, and blending components. Other net imports include coal coke and electricity. Some refinery inputs appear as petroleum product consumption. Other consumption includes net electricity imports, liquid hydrogen, and methanol.

Source: Tables A1, A8, A20, B1, B8, B20, C1, C8, and C20.

Trends in economic activity

The output of the Nation's economy, measured by GDP, is expected to increase by 2.0 percent a year between 1994 and 2015 (Figure 7). The projected rate of growth in GDP slows in the latter half of the forecast period due to a slowdown in the expansion of the labor force. The effect of slowing labor force growth is moderated by increases in labor productivity.

Figure 7. Average annual real growth rates of economic determinants in three cases, 1994-2015 (percent)



The growth in the size of the labor force depends on population growth and the labor force participation rate. The Census Bureau's middle series population projection is used for *AEO96* [*1*]. Total population is expected to grow by 0.8 percent a year between 1994 and 2015, with slower rates of growth after 2000. Over the forecast period, the labor force participation rate is expected to rise to a peak in 2005 and then decline as "baby boom" cohorts begin to retire. Combining the population projections with the labor force participation rates gives the largest growth in the size of the labor force early in the forecast and a declining growth rate thereafter. Consequently, the economy grows more slowly after 2000 as these demographic trends dampen economic growth.

Labor productivity is the second major determinant of economic growth. A key to achieving the long-run 2.0-percent growth rate in the reference case forecast is an anticipated recovery in productivity growth, which slowed in the 1970s relative to its growth after World War II. Between 1980 and 1990, the business investment share of GDP declined at the same time that both the Federal budget deficit and the trade deficit increased. Since 1991, the economic recovery has been led by strong gains in business investment as a result of lower interest rates. Productivity has also shown strong gains, with economic output increasing more rapidly than employment. Projected increases in investment and productivity, which are higher during the latter half of the forecast, partially compensate for the expected slowdown in labor force growth.

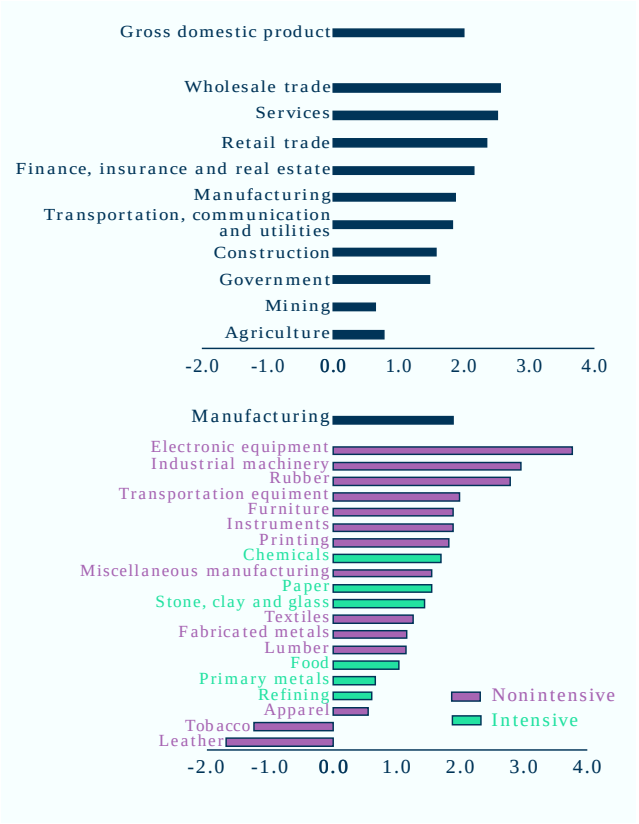
Increasing productivity, combined with a gradually declining Federal deficit, leads to a projected recovery in the business investment share of economic output. Although increases in business fixed investment and in research and development spending are expected, the slowdown in labor force growth eventually dominates, slowing the growth of capital stock and potential output. Consequently, economic output grows at slower rates during the final years of the forecast.

To reflect the uncertainty in forecasts of economic growth, the *AEO96* forecasts include high and low economic growth cases in addition to the reference case. The high and low growth cases show the effects of alternative growth assumptions on energy markets. All three economic growth cases are based on macroeconomic forecasts prepared by Data Resources, Inc. (DRI) [*2*]. The DRI forecasts used in *AEO96* are the February 1995 trend growth scenario and the optimistic and pessimistic growth projections. EIA has adjusted DRI's forecasts to incorporate the world oil price assumptions used in the *AEO96* reference case. With this change incorporated, the DRI projections are used as the starting point for the macroeconomic forecasts within the National Energy Modeling System (NEMS) simulations for *AEO96*. The macroeconomic activity module incorporates energy price feedback impacts on the aggregate economy.

In the reference case, growth in the manufacturing industries is expected to average 1.9 percent a year until 2015, with growth for the energy-intensive industries somewhat slower than total manufacturing growth (Figure 8). Of the energy-intensive industries, chemicals and paper grow faster than do the primary metals; refining; food; and stone, clay and glass industries. Much of the total manufacturing industrial growth of 1.9 percent a year results from the industrial machinery and electronic equipment industries, which grow by 3.0 and 3.8 percent a year, respectively. Total employment is expected to

grow by 1.1 percent a year through 2015, and much of the growth in employment is concentrated in the service sectors.

Figure 8. Sectoral composition of GDP growth, 1994-2015 (percent per year)



The high economic growth case incorporates higher growth rates for population, labor force, and labor productivity. Due to the higher productivity gains, inflation and interest rates are lower than in the reference case. Economic output is projected to increase by 2.5 percent a year between 1994 and 2015 in the high growth case.

The low economic growth case assumes lower rates of growth for population, labor force, and productivity, resulting in higher prices, higher interest rates, and lower industrial output growth. In the low growth case, economic output increases by 1.5 percent a year over the forecast horizon.

Differences in long-run forecasts can be traced primarily to different views of the major supply-side determinants of growth: labor force, productivity change, and technology changes. Other forecasts of growth are presented in Table 2. In creating alternative growth cases, other forecasters include different views of energy prices: lower energy prices are assumed for the optimistic growth cases and higher energy prices for the pessimistic growth cases. For *AEO96*, baseline energy prices were used for both the optimistic (high growth) and pessimistic (low growth) cases.

Table 2. Comparative forecasts of economic growth, 1994-2015

	Average annual percentage growth		
Forecast	**Real GDP**	**Labor force**	**Productivity**
AEO96			
Low	*1.5*	*0.8*	*0.7*
Reference	*2.0*	*1.0*	*0.9*
High	*2.5*	*1.3*	*1.2*
DRI			
Low	*1.5*	*0.8*	*0.7*
Trend	*2.0*	*1.1*	*0.9*
High	*2.5*	*1.3*	*1.2*
WEFA			
Low	*1.9*	*1.1*	*0.8*
Trend	*2.4*	*1.3*	*1.1*
High	*2.8*	*1.4*	*1.4*

The WEFA forecast shows the highest economic growth, including higher growth rates for both labor force participation and productivity. The *AEO96* long-run forecast of economic growth is the same as the *AEO95* forecast, with a projected annual growth rate for GDP of 2.2 percent from 1994 to 2010.

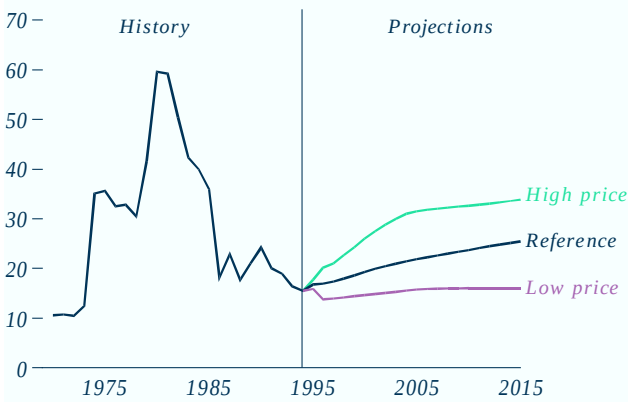
In the 1995 *Economic Report of the President*, real GDP growth of 2.5 percent a year was projected through 2000 [*3*]. *AEO96* also projects 2.5-percent annual growth between 1994 and 2000.

World oil prices

A notable feature of the international oil market in recent years has been the ability of non-OPEC countries to maintain, and even to expand slightly, their levels of oil production [*4*]. Many past forecasts by oil market analysts, including *AEO* projections, have assumed that non-OPEC production would soon peak and then decline. OPEC nations were expected to supply an increasing amount of oil to meet both declining supply from other parts of the world and rising demand. Over the past few years, however, non-OPEC supply has slowly crept upward rather than declining, which has been a major factor contributing to the relative stability of world oil prices. OPEC supply has continued to grow, but at a slower rate than many had expected.

Reflecting these market conditions, the world oil price projections for 2010 in *AEO96* are lower than those in *AEO95*: $23.70 per barrel (in 1994 dollars), compared with $24.63 per barrel. The *AEO96* forecast for the world oil price in 2015 is $25.43 per barrel (Figure 9).

Figure 9. World oil prices in three cases, 1970-2015 (1994 dollars per barrel)



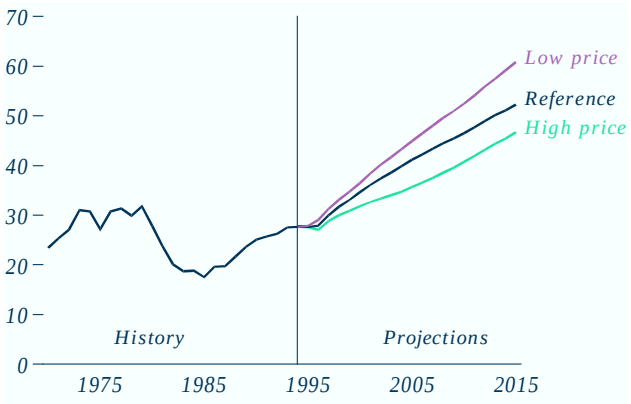
The historical record shows substantial variability in world oil prices, and there is corresponding uncertainty about future prices. Two additional cases with alternative projections of prices are presented to reflect such uncertainty.

In the low world oil price case, oil prices drop below current prices for the next few years and then gradually return to current levels, where they remain throughout the forecast. In the high world oil price case, prices increase to $32.61 per barrel in 2010, continuing to $33.89 in 2015. To provide a better assessment of the effects of higher prices, *AEO96* incorporates higher prices in this case than were used for the corresponding case in *AEO95*. In *AEO95*, the world oil price was projected to be $29.60 in 2010 in the high price case.

The high and low price cases are based on alternative assumptions about oil production levels in OPEC nations and the Former Soviet Union and Eastern Europe (FSU/EE). Each region is assumed to have higher production levels in the low price case and lower production levels in the high price case. To simplify the assumptions for these cases, non-OPEC supply and worldwide demand for oil are not assumed to vary across cases, except for their direct responses to the different price paths.

OPEC, with its vast store of readily accessible oil reserves, is expected to be the source of marginal supply to meet future incremental demand. By 2000, OPEC supply in the reference case approaches 35 million barrels per day, a figure that is consistent with announced plans for capacity expansion by OPEC [5]. By 2015, OPEC production in the reference case is just over 52 million barrels per day, or about twice its level of production in 1990 (Figure 10).

Figure 10. OPEC oil production in three cases, 1970-2015 (million barrels per day)



The low price case is associated with higher production rates from OPEC producers: 61 million barrels per day in 2015, or 9 million more than in the reference case. This case assumes the ready availability of capital, including financing from international capital markets, for the substantial investments necessary to expand production capacity in OPEC nations. Conversely, the high price case is associated with lower OPEC production rates: about 47 million barrels per day in 2015, or 5 million less than in the reference case. This case is consistent with a world view in which OPEC nations rely more upon their own oil revenues than upon international capital markets to finance capacity expansion, and in which OPEC is able to constrain the production of member nations to raise the price sufficiently to generate more oil revenues.

Oil production in non-OPEC nations has received boosts from new discoveries as well as technical innovations that have delayed production declines in mature fields. For example, advances in three-dimensional seismology, innovations in horizontal drilling techniques, and improved underwater techniques have made it possible to tap much smaller

pools in offshore areas than was feasible in the past. Assuming a continuation of this trend, production in non-OPEC nations is projected to continue creeping slowly upward, reaching just over 41 million barrels per day in 2010, then declining slightly to 40.3 million barrels per day (near the 1994 level) in 2015.

The rate of economic growth is the key driver for oil demand. The oil market forecasts underlying the world oil price paths presented in *AEO96* assume a 4.3-percent annual economic growth rate for developing countries, with a corresponding 2.5-percent annual growth rate for oil demand. These rates are slightly higher than the rates in *AEO95* [*6*]. For the developed countries in the Organization for Economic Cooperation and Development (OECD), average GDP growth of 2.5 percent a year is projected.

A substantial increase in world oil consumption is expected over the next 20 years. With rapid gains in energy demand anticipated for the developing countries, world oil consumption will rise to more than 74 million barrels a day by the end of the decade and should reach a range of 89 to 99 million barrels a day by 2015. Much of the growth in demand for oil is concentrated in the developing nations of Asia, where demand growth greater than 5 percent a year is expected. Annual growth in oil demand slightly in excess of 0.8 percent is anticipated for the OECD nations.

Comparisons with other oil price forecasts are shown in Table 3. The range between the *AEO96* low and high price cases spans the range of other published forecasts.

Table 3. Comparative forecasts of world oil prices

	1994 dollars per barrel				
Forecast	**1995**	**2000**	**2005**	**2010**	**2015**
AEO96 reference	*16.81*	*19.27*	*21.86*	*23.70*	*25.43*
AEO96 high price	*17.74*	*25.97*	*31.48*	*32.61*	*33.89*
AEO96 low price	*15.89*	*14.66*	*15.78*	*16.02*	*16.07*
DRI	*16.23*	*16.54*	*20.45*	*21.99*	*23.53*
IEA1	*NA*	*23.48*	*28.59*	*28.59*	*NA*
IEA2	*NA*	*18.38*	*18.38*	*18.38*	*NA*
PEL	*16.66*	*15.53*	*14.64*	*15.40*	*NA*
PIRA	*18.85*	*19.60*	*18.50*	*NA*	*NA*
WEFA	*16.92*	*19.55*	*21.80*	*20.88*	*21.38*
NRC	*20.42*	*20.42*	*22.46*	*22.46*	*22.46*
GRI	*NA*	*16.17*	*16.17*	*16.17*	*16.17*

NA = not available.

New features in *AEO96*

AEO96 is the first *Annual Energy Outlook* with projections extending to 2015. With the expansion of the forecast period, issues associated with the penetration of new or advanced technologies become more important. Therefore, the slate of advanced technologies considered in *AEO96* has been expanded to include, for example, fuel cells and solar photovoltaics. Another key issue in the post-2010 period is declining nuclear generation. With many nuclear plants scheduled for retirement in that period, other generation technologies must fill the gap caused by the loss of the generation facilities, under the assumption that new nuclear capacity will not be constructed.

The analyses of energy demand in *AEO96* have been revised to consider primary energy consumption as well as end-use energy consumption. End-use energy technologies using electricity tend to be efficient; however, the delivery of 1 Btu of electricity at the plug requires about 3 Btu of energy, or energy-equivalent sources, to generate and deliver the electricity. Thus, when considering the energy use or emissions impacts of technologies, it is important to look at *total* energy requirements. The consumption and emissions tables in the appendices of this report display both end-use and total energy consumption.

Legislation

To satisfy the requirement that EIA analyses remain policy-neutral, the *AEO96* forecasts assume that all Federal, State, and local laws and regulations in effect as of October 1, 1995, will remain unchanged through 2015. The impacts of pending or proposed legislation and sections of existing legislation for which funds have not been appropriated are generally not reflected.

One exception is the lifting of the ban on exports of Alaskan crude oil. Ultimately signed on November 28, 1995, this legislation removed the barriers to the export of crude oil from the North Slope, which, with the exception of limited trade agreements, has been prohibited since 1973. With the ban removed, it is anticipated that Alaskan crude oil will be exported to the Pacific Rim—primarily, to Japan. Chapter 4 of this report (Oil and Natural Gas) addresses this subject in more detail.

New natural gas and coal assumptions in *AEO96*

AEO96 incorporates revised data and model assumptions related to the economics of the natural gas and coal industries, which result in lower projections for lower 48 natural gas wellhead prices and coal minemouth prices (see Figure 2 on page 1). For natural gas, the revisions include the incorporation of the recent reassessment by the U.S. Geological Survey (USGS) of ultimate recovery from known fields (primarily inferred reserves), reduced drilling costs, and a revised representation of the domestic oil and natural gas supply industry.

In February 1995, the USGS released its latest assessment of U.S. oil and gas resources, almost tripling the conventional onshore inferred reserves estimate from the 1989 USGS assessment [*7*]. Because EIA had previously increased the inferred reserve estimates to levels higher than the 1989 USGS assessment, incorporating the new USGS estimate roughly doubled the inferred reserve base for onshore nonassociated gas, from 114 trillion cubic feet in *AEO95* to 232 trillion cubic feet in *AEO96*. The level of inferred reserves is of particular importance because gas recovery from known fields often has a significantly lower incremental unit cost than recovery from newly discovered fields that require additional exploration, leasing, and infrastructure development. As a result, the average finding rate for lower 48 gas reserves is increased [*8*], supporting higher levels of production and reducing natural gas wellhead prices.

Drilling costs for natural gas were reduced to reflect current conditions and refined to better portray the economics of a representative project [*9*]. The rates of technological progress applied to drilling and production costs were also reestimated, yielding lower costs throughout the forecast period than previous estimates. The greatest rates of technological change are expected to occur in offshore regions, where new technologies are starting to be used in the Gulf of Mexico, and many large gas prospects are expected to be found. For example, subsea completions with underwater production manifolds will enable production from deep waters at a fraction of the cost of permanently placing a deepwater production platform at the surface.

Finally, a revised representation of the oil and gas supply industry was used in producing the *AEO96* forecast. Historically, most oil and gas drilling was motivated by the search for oil; gas was usually viewed as a byproduct of oil-directed efforts. However, the increasingly prevalent view of gas as an abundant energy source, coupled with its environmental advantage, has tended to place natural gas on a more equal footing with oil, so that levels of drilling activity are now determined by the economics of both fuels. For *AEO95*, expenditures for oil and gas combined were estimated at an aggregate level and then disaggregated on the basis of econometric estimates that simulated their interfuel and regional allocation according to relative profitability. For *AEO96*, expenditures were estimated at regional levels separately for oil and gas.

In the area of coal supply, *AEO96* assumes flat wage rates for miners throughout the forecast, compared with an annual increase of about 1 percent in *AEO95*. Both recent history and the anticipated shift of production to more productive western mines precipitated the more conservative wage assumption. *AEO96* also assumes lower increases in transportation costs for coal originating in western States.

Finally, in *AEO95*, new mines were constructed only when existing production capacity was fully utilized. In *AEO96*, new mine construction is triggered at lower utilization levels. This change was made to reflect the industry practice of developing reserve capacity that would be needed if long-term contract options for higher tonnages were exercised.

Other Federal legislation considered in the forecasts includes the Omnibus Reconciliation Act of 1993, which adds 4.3 cents per gallon (in nominal dollars) to the Federal tax on highway fuels; the Clean Air Act Amendments of 1990 (CAAA90); and the Energy Policy Act of 1992 (EPACT). The provisions of EPACT are focused primarily on reducing energy demand, requiring minimum building efficiency standards for Federal buildings and other new buildings that receive federally backed mortgages. Efficiency standards for electric motors, lights, and other equipment are required, and owners of fleets of automobiles and trucks are required to phase in vehicles that do not rely on petroleum products.

CAAA90 requires a phased reduction in vehicle emissions of regulated pollutants, to be met primarily through the use of reformulated gasoline. Under CAAA90, annual emissions of sulfur dioxide by electric utilities must be reduced to less than 9 million short tons a year in 2000 and thereafter.

During the 1995 appropriations discussions, both the House and Senate passed measures to support the leasing of the 1.5-million-acre coastal plain of the Arctic National Wildlife Refuge for oil and gas drilling; however, no conclusive action had been taken at the time of this analysis, and the ban on oil development in the refuge was retained in the projections. Proposals to modify oil and gas royalties in the Gulf of Mexico, although signed into law on November 28, 1995, are also not included.

Climate Change Action Plan

The *AEO96* projections include analysis of provisions of the Climate Change Action Plan (CCAP), a set of 44 actions developed by the Clinton Administration to achieve the stabilization of greenhouse gas emissions (carbon dioxide, methane, nitrous oxide, and others) in the United States by 2000, relative to 1990. Energy use is the primary source of carbon emissions, and carbon released as a result of fuel combustion is considered here. *AEO96* emissions estimates do not include emissions from activities other than fuel combustion, such as landfills and agriculture, nor do they take into account sinks that absorb carbon, such as forests. Of the 44 CCAP actions, 13 are not related to energy fuels and are not incorporated in the analysis.

Emissions in the early 1990s have grown more rapidly than projected at the time the plan was formulated, in part because energy prices have fallen in relative terms. Forecasts of continued moderate energy prices make it less likely that stabilization will be achieved. Moreover, funding for many of the CCAP programs was curtailed from the initial plans. Thus, the estimated impacts of CCAP in the *AEO96* forecasts are lower than those in earlier projections. Further reductions in the mitigating effects of CCAP programs can be anticipated if additional funding cuts are legislated. In order to achieve emissions levels below those projected here, either increased government funding of carbon mitigation programs, more rapid adoption of voluntary programs, or technology improvements will be needed.

Climate Wise and Climate Challenge are two programs cosponsored by the U.S. Environmental Protection Agency and the U.S. Department of Energy to foster voluntary reductions in emissions on the part of electric utilities and industry. These programs are new and are only beginning to have effects. *AEO96* includes analysis of the impacts of the Climate Challenge program on electric utilities (see Appendix G).

Cases

AEO96 includes five comprehensive, integrated forecasts: the reference case, high and low world oil price cases, and high and low economic growth cases. Results are also presented for a number of alternative cases based on different assumptions affecting the supply, demand, and conversion sectors. Most of the additional cases focus on the impacts of changes in assumptions about technology penetration, a key uncertainty in the projections.

For both the residential and commercial sectors, *fixed technology* cases have been analyzed, assuming that the average efficiencies for equipment sold in the future (through 2015) will be the same as the average efficiencies for equipment sold in 1995. In addition, alternative *high technology* cases are examined, in which the most energy-efficient technologies available in each forecast year are chosen, regardless of cost, to replace relatively less efficient capital stock. For the industrial and

transportation sectors there are similar fixed technology cases as well as high technology cases, which assume that efficiency gains in the future will be equivalent to those achieved since 1970.

For the coal production sector, additional analyses were based on assumptions of productivity improvements and labor wage rates that were higher or lower than those in the reference case. Electricity generation cases are presented that raise and lower the initial capital costs for advanced technologies. Additional cases explore the impacts of earlier and later nuclear plant retirements and higher electricity demand.

Two additional cases examine the impacts of higher and lower efficiency trends in the oil and gas production sectors, and the high efficiency case includes higher efficiency trends in the refining sector. The impact of the ethanol subsidy, scheduled to end in 2000, is examined in a final sensitivity case.

The analyses of the reference case, high and low world oil price cases, and the high and low economic growth cases reflect the full energy market and economic impacts. The additional analyses focus on primary impacts and do not trace secondary effects, which may occur in other sectors of the economy.

Data

For most aspects of energy markets, the *AEO96* forecasts were prepared using the most current data available as of July 31, 1995. At that time, most 1993 and 1994 data were available but only partial 1995 data. Several data items were incorporated on August 31, 1995: specifically, nonutility generation capacity, coal production and minemouth prices, and oil and gas reserves. These are key items for which 1994 data became available in August. Carbon emissions presented in *AEO96* were calculated using carbon coefficients from the EIA report, *Emissions of Greenhouse Gases in the United States 1987-1994*, published in October 1995.

Some definitional adjustments were made to EIA data for the purpose of these forecasts. For example, the transportation demand sector in NEMS includes the electricity consumed for railroads; however, this is included in commercial sector demand in EIA's consumption data publications. Also, the *State Energy Data Report* classifies, in industrial consumption, energy consumed by independent power producers, exempt wholesale generators, and cogenerators. NEMS includes cogeneration in the industrial sector, but other nonutility generators are included in the electricity sector. Thus, there are differences between *AEO96* and EIA data reports. Footnotes in the appendix tables of this report denote the definitional differences.

In addition, the regional structure in NEMS for analytical purposes makes it difficult to reproduce history precisely. Historical numbers are presented for comparative purposes only. Source documents should be consulted for the official values.

Short-term projections

Readers who require short-term projections are referred to EIA's *Short-Term Energy Outlook (STEO)*, Fourth Quarter 1995 (published in November 1995) or later editions. The projections in *STEO* are produced with EIA's short-term model, the Short-Term Integrated Forecasting System (STIFS). STIFS is a quarterly, national model that projects eight quarters into the future, capturing the near-term fluctuations due to weather, stock changes, oil markets, and the business cycle. An econometric model, STIFS is not designed to include policy initiatives, technology improvements not already captured in historical data, or distributional impacts.

The midterm projections in *AEO96* were developed using NEMS. This is a detailed, structural representation of the supply, imports, conversion, and consumption of energy in the United States, including the feedback of the domestic energy industry on the domestic economy and the international oil market. NEMS includes a regional representation of energy production and conversion that is specific to each sector—oil and gas production, oil refining, coal production and distribution, renewable energy production, electricity generation and transmission—with energy consumption represented for the nine Census divisions. The principal design feature of NEMS is its flexibility to incorporate a variety of policy options and initiatives and a wide range of energy-producing and energy-consuming technologies.

Due to the different purposes and designs of NEMS and STIFS, the projections in the overlapping years typically differ to some degree, as NEMS abstracts

from short-term weather and economic fluctuations. In addition, STIFS forecasts are more aggregate than those of NEMS and rely on data series that may differ somewhat in definitions relative to those used in NEMS.

For *AEO96*, a major effort was undertaken to examine the differences between STIFS and NEMS results for the common projection years 1995 and 1996. The objective was to isolate differences in projections not readily attributable to short-term variations in weather, oil price, inventory, or economic activity. The remaining differences were considered discrepancies that warranted analysis and adjustment to reconcile the results derived from the two models. The review identified differences in input data series, which were reconciled. In addition, differences in trends in energy intensities were reviewed.

One of the most difficult issues to reconcile involves projections of the penetration of new energy uses and changes in energy use efficiencies. In STIFS, new uses and changes in energy use efficiency are captured by the trends implicitly embodied in energy data time series. Short-term projections of energy use entail extrapolations of these trends into the near-term future. Alternatively, NEMS must explicitly project the trends themselves, based on forecasts of the pace of new energy use development and market penetration. The careful comparison of the projections of both models led to a reevaluation of the rate of energy use technology development assumed for NEMS in the near term. As a result, NEMS projects higher growth rates for energy demand, especially for electricity, in *AEO96* than in *AEO95*.

As a result of these efforts, many differences between STIFS and NEMS results for common forecast years have been greatly reduced. For major variables, including demand for total energy, petroleum, natural gas, electricity, and coal, remaining differences are on the order of 1 to 2 percent.

The projections in this report are not statements of what will happen but of what might happen, given the assumptions and methodologies used. The projections provide a policy-neutral reference case that can be used to analyze policy initiatives.

By their nature, models are abstractions of energy production and consumption activities, regulatory activities, and producer and consumer behavior. The specific forecasts are highly dependent on the data, analytical methodologies, model structures, and specific assumptions used in their development. Because the entire structure of energy markets is complex, models are simplified representations of real-world circumstances. Thus, behavioral characteristics depicted in analysis are designed to be indicative of tendencies in the real world rather than representations of specific real-world outcomes.

Even where behavioral tendencies are stable and well understood, the energy market projections are subject to much uncertainty. Many of the events which shape energy markets are random and cannot be anticipated. These include severe weather, political disruptions, strikes, and breakthroughs in technological developments. Assumptions concerning future technology characteristics, demographics, and resource availability cannot be known with any degree of certainty.

Many of the key uncertainties in the *AEO96* projections are addressed through alternative cases. In addition to presenting alternative market projections given different macroeconomic and world oil market assumptions, this report examines the impacts of alternative technology and other key assumptions to assist the reader. Although EIA has endeavored to make these forecasts as objective, reliable, and useful as possible, these projections should serve as an adjunct to, not a substitute for, analytical processes that should be addressed to examine specific policy initiatives.

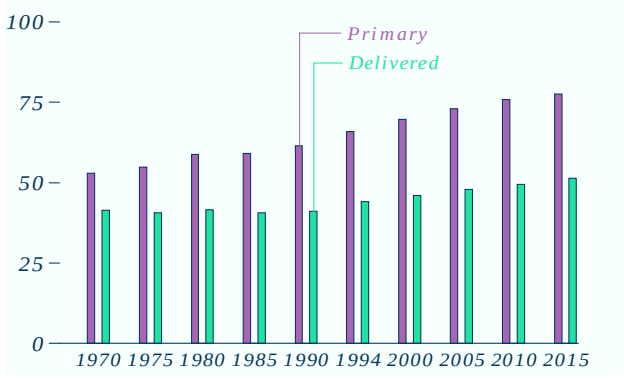
In its role as a policy-neutral data and analysis organization, EIA does not propose, advocate, or speculate on future legislative and regulatory changes. The projections assume that laws remain as currently enacted; however, the impacts of emerging regulatory changes are reflected.

Energy consumption

This chapter examines the elements that affect total primary energy consumption through 2015. Energy delivered (net) to final consumers represents only part of this total. The difference between primary energy consumption and delivered energy consumption is defined as the sum of losses associated with the generation, transmission and distribution of electricity. The losses are allocated to the end-use sectors (residential, commercial, and industrial) in proportion to each sector's share of electricity use.

How energy consumption is measured has become more important over time as reliance on electricity has expanded. In 1970 electricity accounted for only 12 percent of delivered energy to the non-transportation end-use sectors [*10*]. Since then, growth in electricity use in applications such as space conditioning, consumer appliances, telecommunication equipment, and industrial machinery have resulted in a far greater divergence between total and delivered energy consumption estimates (Figure 11).

Figure 11. Primary and delivered energy consumption, excluding transportation use, 1970-2015 (quadrillion Btu)

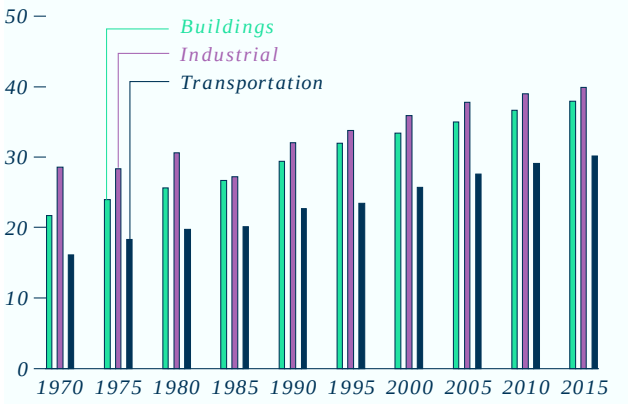


At the end-use sectoral level, tracking primary energy consumption is necessary to link specific policies with overall goals. Since carbon emissions, for example, are closely correlated with total energy consumption, analyzing growth rates by end-use sector may be more important in developing carbon stabilization policies than analyzing growth rates for delivered energy consumption.

In 1994 primary energy consumption was one-third greater than delivered energy. This relationship is expected to be stable through 2015, as more efficient generation technologies offset increased demand for electricity. The greater the share of electricity in the delivered energy basket, the more important efficiency gains in electricity-using equipment and the electricity delivery system become in reducing energy requirements and total carbon emissions. Choices made at the consumer level (for example, with regard to the efficiency of a replacement hot water heater or a new car's fuel economy) remain a key element of these forecasts, but the presentation of primary energy in this chapter assures a better "macro" perspective regarding the energy use associated with individual end-use decisions.

In the reference case, primary energy consumption is projected to reach 108 quadrillion Btu by 2015, 21 percent higher than the 1994 level. Between 1975 and 1985, as energy prices rose, sectoral energy consumption grew relatively little (Figure 12). Between 1985 and 1994, however, stable energy prices contributed to a marked increase in sectoral energy consumption.

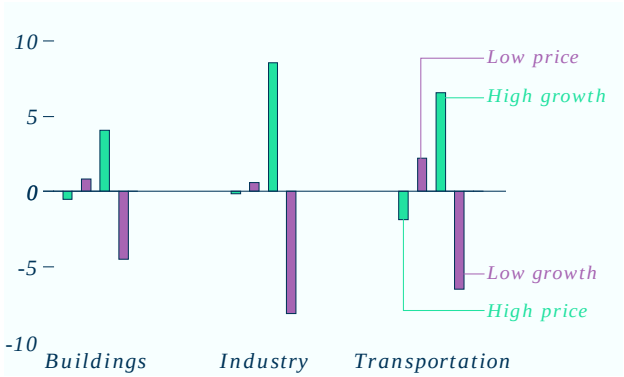
Figure 12. Energy use by sector, 1970-2015 (quadrillion Btu)



Energy prices and economic growth assumptions are key inputs in developing energy consumption forecasts. To help bracket the uncertainty inherent in any long-term forecast, alternative oil price and economic growth assumptions were used to highlight the sensitivity of the *AEO96* forecast to different oil price and economic growth paths. The different oil price cases are particularly important because of past market volatility. The primary effects of alternative oil price paths are on the demand for transportation fuels (Figure 13). Oil use for transportation in the high world oil price case is 4 percent

lower than in the low world oil price case in 2015. Higher oil prices result in consumer choices that favor the purchase of more fuel-efficient vehicles and a slightly reduced demand for travel services. Varying economic growth affects overall energy demand in each of the end-use sectors to a greater extent [*11*]. By 2015, high economic growth assumptions result in a 14-percent increase in total annual energy consumption, as compared with the low growth case.

Figure 13. Changes in sectoral energy consumption growth in four alternative cases, 1994-2015 (percent difference from reference case)



Household energy expenditures

The projection of average expenditures for energy use in households is summarized in Table 4. More detailed estimates by income group and geographic location are presented in Appendix E of this report. In the forecast, average household expenditures for energy increase by 7 percent through 2015. Most of the increase is for motor gasoline through 2000. Higher appliance efficiencies mandated by recent standards, as well as lower growth in motor gasoline prices after 2000, contribute to the slowing of growth rates in energy expenditures for home use.

Table 4. Average household energy expenditures, 1994, 2000, 2010, and 2015 (1994 dollars)

Year	Total	Home	Motor gasoline
1994	2,156	1,227	929
2000	2,327	1,218	1,109
2010	2,341	1,243	1,098
2015	2,313	1,300	1,012

Alternative energy efficiency cases

In the *AEO96* forecast, primary energy consumption *on a per capita basis* remains practically unchanged through 2015, even though the level of energy services demanded per capita increases markedly. For example, the average home in 2015 is expected to be 4 percent larger and rely more heavily on electricity-based technologies. Annual highway and air travel (per capita) in 2015 are expected to be 13 and 57 percent higher, respectively, than their current levels. However, continued reductions in energy intensity in all the end-use sectors make it possible to provide higher levels of service without significant increases in energy use per capita.

The rate at which new, more efficient technologies will be adopted in the marketplace remains a fundamental uncertainty. This chapter includes special cases that provide contrast to the reference case based on a range of assumptions about future energy intensities. These side case analyses assume that existing equipment and building standards will be met [*12*]; however, they do not account for any feedback effects on either energy prices or economic growth. Brief descriptions of the cases follow; more complete descriptions for each end-use sector are provided in Appendix G.

For the residential and commercial sectors, two alternative cases are compared with the reference case: a 1995 technology case, in which equipment efficiencies are held at their average 1995 level; and a high technology case, in which the most energy-efficient technologies available in each forecast year are chosen regardless of cost. For the industrial and transportation sectors, a 1995 technology case parallels the buildings sector methodology, and a high efficiency case assumes that efficiency gains in the future will match those achieved between 1970 and 1990. During that period, the average industrial energy intensity (measured as Btu per dollar of output) declined by 1.9 percent a year and the average on-road car efficiency increased by 2.2 percent a year. In contrast, industrial energy intensity declines in the reference case at an average annual rate of 0.9 percent per year, and on-road fuel efficiency (miles per gallon) for automobiles increases at 0.7 percent per year.

Renewable energy: non-electric uses and industrial cogeneration

AEO96 contains projections for non-electric renewable energy uses, including industrial and residential wood consumption, residential geothermal (ground-source) heat pumps, residential and commercial solar hot water heating, and ethanol used in the transportation sector. Also included is the use of renewable fuels, particularly wood wastes, for industrial cogeneration of electricity.

The *AEO96* differs from earlier years' forecasts in distinguishing marketed from nonmarketed renewable energy consumption [*13*]. EIA publishes U.S. totals for marketed energy but shows only selected nonmarketed consumption—for geothermal heat pumps and for solar thermal hot water heating. Marketed renewable energy is bought and sold in the marketplace and contributes to the calculation of GDP. Nonmarketed energy consumption, such as for geothermal heat pumps, is not included in GDP because it does not pass through the marketplace. Excluding nonmarketed energy avoids distorting measures of energy intensity, which are market-based estimates of energy consumption per dollar of GDP. Most uses of renewable energy outside the marketplace—for example, the direct use of sunlight—are unmeasured.

The marketed non-electric uses of renewable resources—which include ethanol fuel use for transportation, biomass combustion for heat in industrial processes and residential heating, and energy used for electricity generation for industrial cogenerators' own use—are a small share of total U.S. marketed energy consumption. They increase in the forecast from about 2.8 quadrillion Btu in 1994 to 3.7 quadrillion Btu in 2015, or from 3.1 percent to 3.5 percent of total marketed energy consumption. At the same time, they account for about 45 percent of all renewable energy consumption.

Almost all marketed non-electric renewable energy uses are powered by wood, wood wastes, or other biomass-derived sources. Most wood and wood waste consumption occurs in the industrial sector, primarily in the pulp and paper and lumber industries, where growth of wood use is a direct function of growth in demand for wood-based products. Wood energy use in the residential sector (primarily for woodstoves and fireplaces) is expected to increase slightly, although residential heating with wood is projected to decline as a share of energy consumption.

Nonmarketed renewable energy use for heating is projected to increase. Geothermal energy for heating, cooling, and water heating in the residential sector is projected to increase substantially over the forecast period, from 11 trillion Btu in 1994 to 28 trillion in 2015. Solar hot water heating is also expected to increase overall, to 42 trillion Btu in 2015. Despite these increases, however, expected use of nonmarketed geothermal and solar energy in residential and commercial heating systems will equal less than 1 percent of purchased energy use for heating in those sectors.

Corn-based ethanol use in the transportation sector is also projected to increase over the forecast period, both for use in E85 (85 percent ethanol) and in gasoline blends (10 percent ethanol or less). Small increases are projected before 2000. Ethanol is expected to remain a minor component of overall transportation fuel use, at less than 1 percent of transportation sector end-use consumption in 2015.

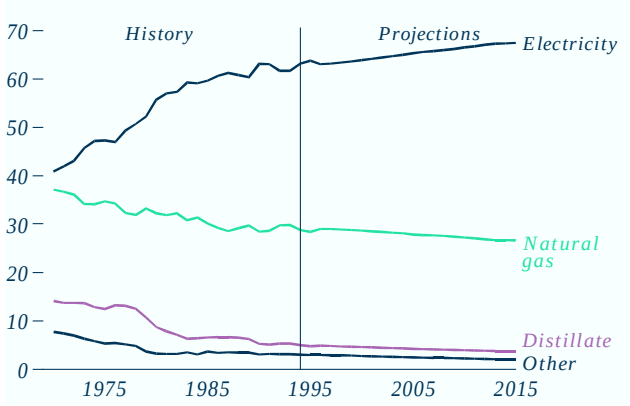
Renewable energy consumption for non-electric uses and industrial cogeneration

	Quadrillion Btu				Growth rate, 1994-2015
Energy source	1994	2000	2010	2015	(percent)
Marketed					
Biomass[a]	2.69	2.90	3.26	3.42	1.2
Ethanol	0.09	0.09	0.25	0.29	5.9
Hydropower[b]	0.03	0.03	0.03	0.03	0.0
Total	**2.80**	**3.03**	**3.54**	**3.75**	**1.4**
Nonmarketed					
Geothermal[c]	0.01	0.02	0.02	0.03	4.8
Solar thermal[d]	0.02	0.03	0.04	0.04	4.4

[a]Biomass includes wood, wood wastes, municipal solid waste, and a substantial amount consumed in the industrial sector for own-use electricity generation. Ethanol is not included.
[b]Includes industrial electricity generation for own use.
[c]Residential geothermal heat pumps for heating, cooling, and water heating.
[d]Residential and commercial hot water heating only.
Note: Totals may not equal sum of components due to independent rounding.
Source: Table A18.

Electricity Claims a Growing Share of Residential Energy Use

Figure 14. Residential primary energy consumption by fuel, 1970-2015 (percent of total)

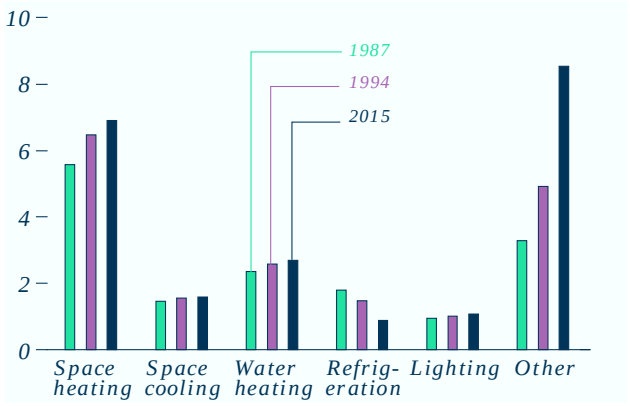


Energy consumption in the residential sector is projected to rise by 3.6 quadrillion Btu or 20 percent between 1994 and 2015. In 2015, out of a total of 22 quadrillion Btu of energy use, 14.2 quadrillion Btu will be consumed to provide electricity for homes. Most (87 percent) of the growth in this sector is associated with increased use of electricity (Figure 14). The trend toward electrification is longstanding. It is expected to continue, based on sustained growth in housing in the South, where almost all new homes use central air conditioning, and on the use of new electrical devices that continue to penetrate the market.

While its share declines slightly, natural gas consumption in the residential sector is projected to grow by more than half a percent a year through 2015. Gas prices in the forecast are stable and relatively low in comparison with other fuels. Natural gas heat pumps capture an increasing share of the home heating market, and the increase of 16.7 million in the number of homes heated by natural gas by 2015 is higher than the increase in the number of homes heated with electricity and oil. Newly constructed homes are, on average, larger than the existing stock, with correspondingly greater needs for heating, cooling, and lighting. On average, however, energy consumption per square foot is lower for new construction than for the existing stock, and further reductions could result from gains in end-use efficiency and more stringent building codes that would require more insulation, better windows, and more efficient building design.

More Energy Will Be Used for Home Computers, Other Small Appliances

Figure 15. Residential primary energy consumption by end use, 1987, 1994, and 2015 (quadrillion Btu)



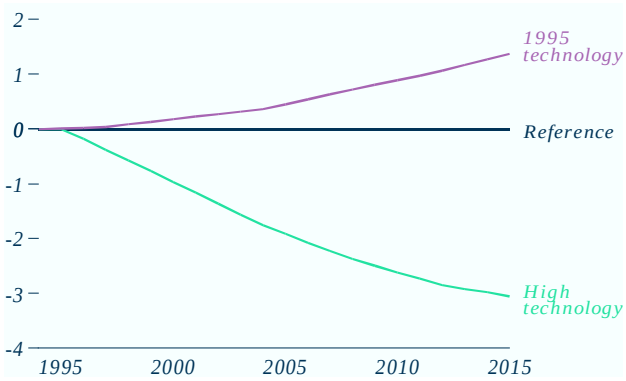
Space heating in the residential sector is by far the most energy-intensive end use (Figure 15). Over the past 7 years (1987-1994), space heating consumption has grown by more than 2 percent a year; however, increases in equipment efficiency and tighter building codes should moderate future growth. Building shell efficiency gains are projected to cut space heating demand in new homes by nearly 25 percent per square foot in 2015 relative to 1994.

Residential energy use for refrigeration, which has had the toughest efficiency standards to date, has declined by more than 2 percent annually over the past 7 years. Energy requirements for this end use are projected to decline at almost the same rate through 2015, as older, less efficient refrigerators are replaced by newer models.

"Other uses," which includes smaller appliances such as personal computers, dishwashers, and clothes dryers, have grown by 6 percent a year over the past 7 years (Figure 15). These uses now account for 27 percent of total residential energy use, and they are projected to account for 39 percent in 2015, as small electric appliances continue to penetrate the market. The promotion of voluntary standards, both within and outside the appliance industry, is expected to forestall even larger increases.

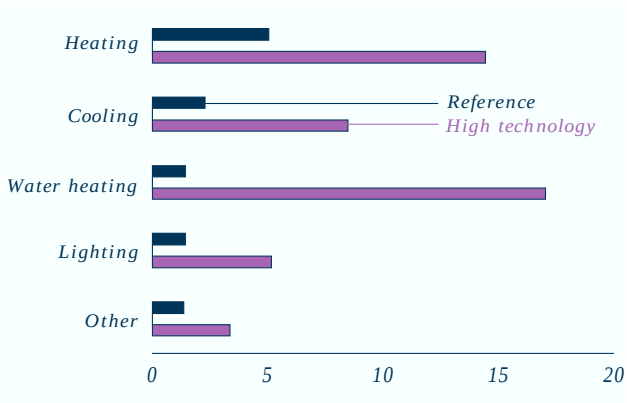
Technology Improvements Could Provide Substantial Energy Savings

Figure 16. Variation from reference case primary residential energy use in two alternative cases, 1994-2015 (quadrillion Btu)



Better Water Heaters Have Potential for Large Residential Savings

Figure 17. Residential energy savings from improved technology, 1995-2015 (quadrillion Btu)



The *AEO96* reference case forecast includes the projected effects of several different policies aimed at increasing residential end-use efficiency. Examples include minimum efficiency standards for equipment, building efficiency standards, and voluntary energy savings programs designed to promote enhanced efficiency through innovations in manufacturing, building, and mortgage financing.

The 1995 technology case projects residential energy consumption by assuming no further increases in the efficiency of equipment or building shells beyond that available in 1995. Compared with the reference case, 6 percent more energy would be required in 2015 (Figure 16).

The high technology case projects residential energy consumption by assuming that the most energy-efficient technology considered is always chosen (regardless of cost). Energy use in this case is 14 percent below the reference case forecast in 2015. Household energy use in 2015 would be 19 percent lower in this case than in the 1995 technology case.

In the reference case, space heating provides the largest energy savings relative to the 1995 technology case (Figure 17), due in part to a projected 21-percent increase in the stock efficiency of natural gas furnaces (Table 5). Building shell integrity is projected to increase by 9 percent over the forecast, as new homes constructed to tighter building codes are added to housing stock. Water heating, which has exhibited slower efficiency gains historically, is projected to continue that trend throughout the forecast, with only a 4-percent projected increase in electric water heater stock efficiency by 2015.

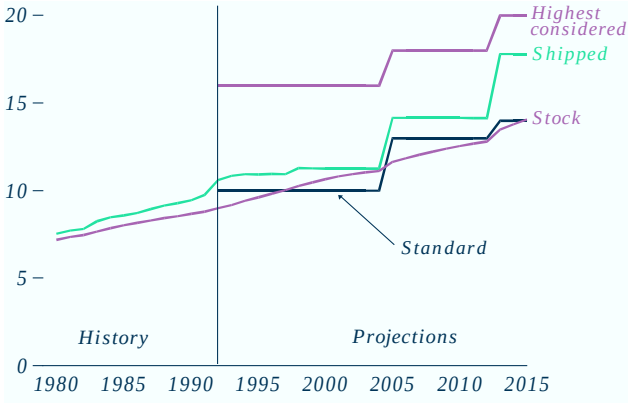
In the high technology case, however, water heating demonstrates the largest potential for energy savings (Figure 17). The use of electric heat pump water heaters in place of conventional resistance technology can substantially cut the amount of energy needed to provide the same amount of hot water. Natural gas water heaters, utilizing condensing technology found in furnaces, can also provide substantial energy savings over 1994 levels.

Table 5. Residential appliance stock average efficiencies, 1994 and 2015
(indices, 1994 stock = 1.00)

Equipment type	1994		2015		
	Stock average	New purchases	Reference case	1995 technology	High technology
Natural gas furnace	1.00	1.17	1.21	1.14	1.29
Air source heat pump	1.00	1.16	1.50	1.17	1.86
Electric water heater	1.00	1.02	1.04	1.01	2.85
Natural gas water heater	1.00	1.05	1.15	1.06	1.67
Refrigerator	1.00	1.39	1.48	1.39	1.52
Building shell integrity	1.00	1.10	1.09	1.03	1.17

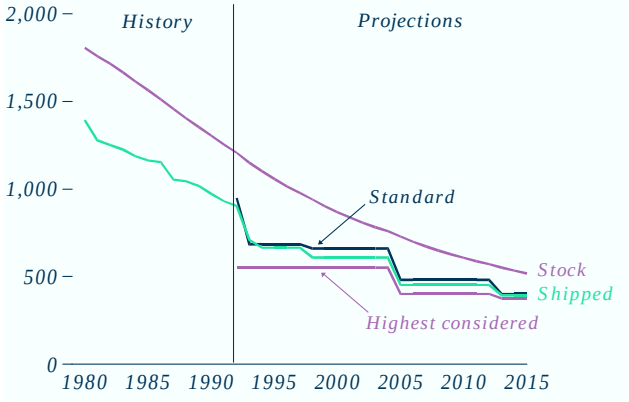
Efficiency Improvements Are Expected for Most Residential Equipment

Figure 18. Efficiencies of residential air-source heat pumps, 1980-2015 (seasonal energy efficiency rating)



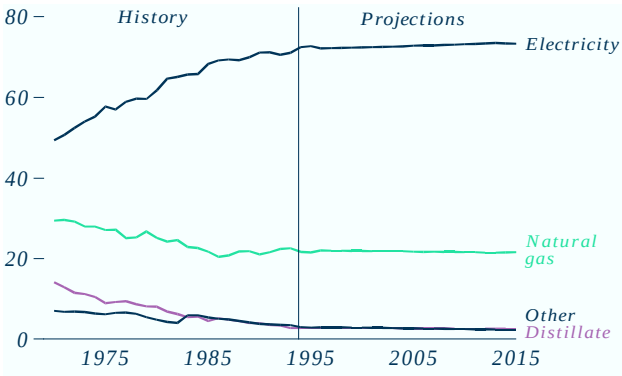
Equipment efficiencies play a large role in determining energy consumption within each household. For each end-use service, consumers value efficiency differently in their purchase decisions. In 1993, 13 percent of consumers who purchased refrigerators considered efficiency unimportant, compared with only 8 percent of those who purchased central air conditioners [*14*]. Historically, the efficiency of equipment shipped within the United States has hovered just above the minimum standards required by law (Figures 18 and 19). For most residential equipment, shipment efficiency has increased as a result of mandated Federal efficiency standards and technological improvements in general. In the *AEO96* reference case, that trend continues throughout the forecast period, with substantial improvement in the stock efficiency of most equipment.

Figure 19. Annual energy consumption of residential refrigerators, 1980-2015 (kilowatthours per year)



Electricity Share of Commercial Energy Use Remains High

Figure 20. Commercial nonrenewable primary energy consumption by fuel, 1970-2015 (percent of total)



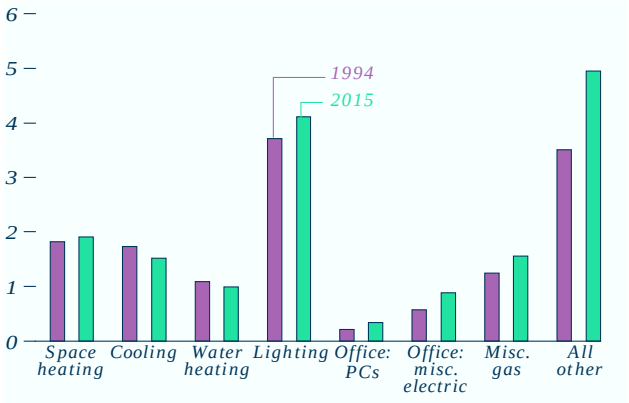
Energy use projections for the commercial sector depict growth slowing overall, with shares for all fuels essentially stable over the forecast horizon (Figure 20). Primary energy use is expected to equal 16 quadrillion Btu in 2015, nearly three-fourths of which is attributed to electricity use.

Slow growth in the commercial sector (0.8 percent a year) is expected for two reasons. Commercial floorspace growth increases by only 1.1 percent a year between 1994 and 2015, compared with an average increase of 1.5 percent a year over the past two decades. Additionally, energy consumption per square foot declines by 0.3 percent a year. Efficiency standards, voluntary government programs aimed at improving efficiency, other technology improvements, and efficiency gains in electricity generation all contribute to a decline in commercial energy intensity.

Electricity, including associated production and distribution losses, is projected to account for about 73 percent of the energy supplied to the commercial sector throughout the forecast. All-electric end uses, such as lighting and office equipment, allow this fuel to keep the share gained over the past 25 years. Natural gas contributes just over 21 percent of commercial energy use from 1994 to 2015. Projected stable fuel prices inhibit any appreciable growth in renewable energy's share of energy consumption in the commercial sector.

Market Penetration by New Equipment Leads Commercial Energy Increases

Figure 21. Commercial primary energy consumption by end use, 1994 and 2015 (quadrillion Btu)

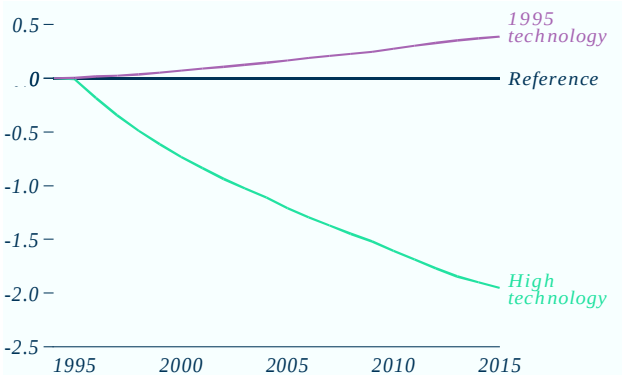


Primary energy consumption for commercial lighting—the single most important end use in the sector—is projected to increase by 0.5 percent a year over the forecast period. The adoption of more energy-efficient equipment is key to slowing growth in commercial sector energy demand for lighting, as well as for space heating, space cooling, and water heating end uses. Increasing building shell efficiency, which affects the energy required for space heating and cooling, is another cause of slow growth (Figure 21).

The highest growth rates are expected for end uses that have not yet saturated the commercial market. Energy use for personal computers and other office equipment grows by slightly over 2.0 percent a year throughout the forecast. New telecommunications technologies and medical imaging equipment increase the demand for electricity in the "all other" end-use category, which also includes ventilation, refrigeration, minor fuel consumption, and such varied uses of energy as service station equipment and vending machines. Moreover, the commercial activities that use more equipment from the "all other" category are projected to grow faster than the average growth rate for commercial floorspace as a whole. One example is the mercantile and service activity, with requirements for cash registers and automatic teller machines, where floorspace is expected to grow at an annual rate of 2.1 percent from 1994 to 2015.

More Efficient Technology Choices Could Lower Energy Use

Figure 22. Variation from reference case primary commercial sector energy use in two alternative cases, 1994-2015 (quadrillion Btu)



The *AEO96* reference case incorporates the selection of improved equipment in the commercial sector, and significant efficiency improvements are expected for building shells, including roofing, insulation, and windows. The projected improvements contribute to a decline in commercial energy intensity of 0.3 percent a year over the forecast. The 1995 technology case assumes that equipment will become no more efficient than what is available in 1995, and that no improvements will be made to the shells of existing buildings. In comparison, the high technology case assumes that only technologies with the highest efficiency considered in *AEO96* will be chosen, regardless of cost, and that existing building shells will be improved so that, by 2015, they will be as efficient as current new construction.

Energy use in the 1995 technology case is expected to be just 2.4 percent higher than in the reference case by the end of the forecast (Figure 22), with energy use per square foot of commercial floorspace declining by 0.2 percent a year. Projections for stable fuel prices slow the penetration of more efficient technologies in the reference case. The exclusion of higher equipment cost considerations in the high technology case provides the opportunity for an additional 2.0 quadrillion Btu (12 percent) of primary energy savings in 2015, with energy intensity falling by 0.9 percent a year from 1994 to 2015.

Electricity Uses Have the Greatest Potential for Efficiency Gains

Figure 23. Cumulative commercial energy savings from improved technology, 1994-2015 (quadrillion Btu)

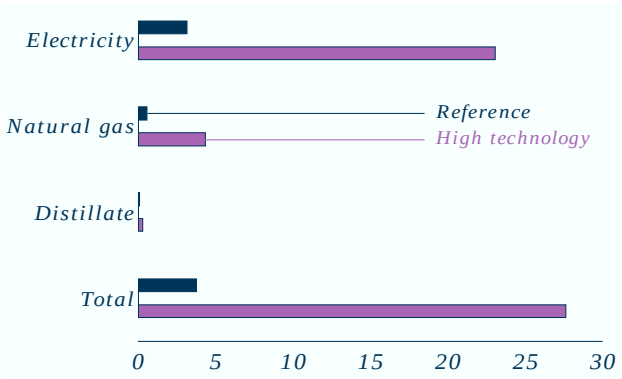


Figure 23 compares cumulative total energy savings expected over the forecast due to the use of improved technologies in the reference and high technology cases relative to the 1995 technology case. Cumulative energy use is projected to be 3.7 quadrillion Btu lower in the reference case and 27.6 quadrillion Btu lower in the high technology case than in the 1995 technology case. Electric technologies afford the greatest opportunity for savings in the high technology case, yielding over 83 percent of the total.

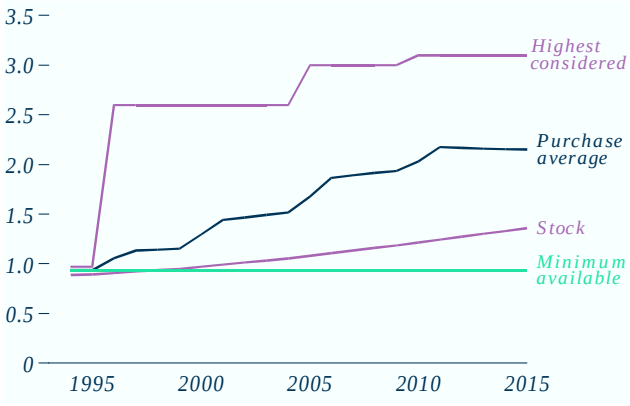
Table 6 shows some of the equipment responsible for the energy savings. Efficiency advances are shown relative to stock average equipment in 1992, the base year for commercial equipment in *AEO96*. Efficiency gains in commercial lighting, space heating, and cooling provide electricity savings. Heating, cooling, and water heating equipment produce energy savings for natural gas.

Table 6. Increase in efficiency of highest efficiency equipment considered, relative to 1992 stock (percent)

	1995	2005	2015
Electric heat pumps	*75.9*	*89.5*	*107.1*
Centrifugal chillers	*73.3*	*75.7*	*78.2*
Fluorescent lighting	*45.5*	*45.5*	*71.8*
Lighting with controls	*61.6*	*61.6*	*90.9*
Gas furnaces	*23.1*	*47.7*	*47.7*
Gas chillers	*89.5*	*100.0*	*131.6*
Gas water heaters	*61.8*	*61.8*	*61.8*
Distillate boilers	*37.5*	*44.6*	*44.6*

Average Efficiency of Equipment in Place Lags Behind Best Available

Figure 24. Efficiencies of commercial water heaters in the reference case, 1994-2015



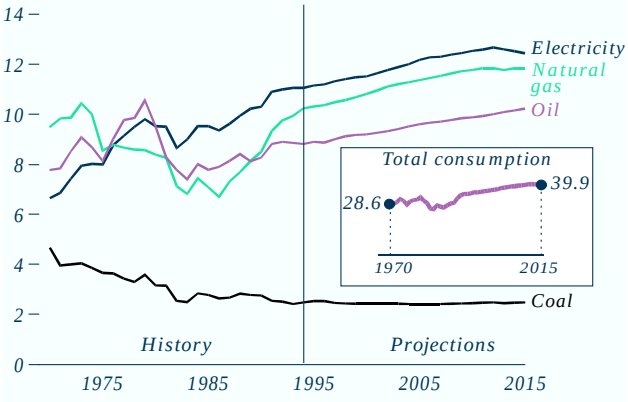
Water heaters provide a good example of the equipment selection process that takes place in the commercial sector in the *AEO96* forecast. Cost, performance, and availability are factors that differentiate the technologies considered for selection. Equipment that was available in 1992 is allocated a portion of the initial water heating market, based on data from EIA's 1992 Commercial Buildings Energy Consumption Survey [*15*].

Equipment selections are based on minimum lifecycle costs, depending on the discount rate assigned to the segment of commercial floorspace served. Within each discount rate, one group of consumers chooses among all technologies, a second group is limited to equipment that uses a specific fuel, and a third group chooses only between versions of a single technology. As equipment is selected, the portion of the water heating market assigned to that equipment is adjusted accordingly.

Figure 24 shows the impacts of equipment choices on the average efficiency of commercial water heating equipment during the forecast. The average efficiency for purchased equipment is expected to rise by 130 percent overall, as the market penetration of heat pump water heaters increases. The stock average efficiency, which rises more slowly as existing equipment is replaced, is 46 percent higher than the minimum efficiency available in 2015.

Electricity, Natural Gas, and Oil Compete in Industrial Energy Markets

Figure 25. Industrial primary energy consumption by fuel, 1970-2015 (quadrillion Btu per year)

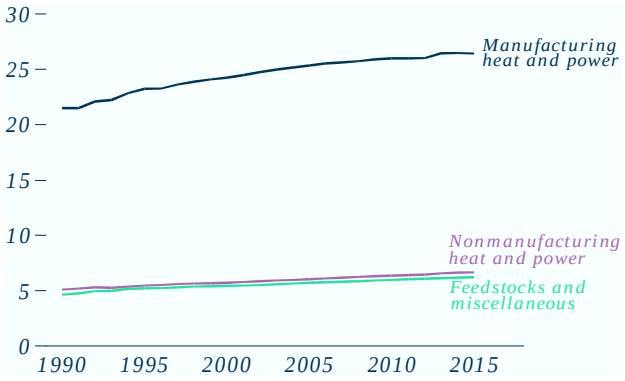


Primary energy use in the industrial sector is projected to increase by 18 percent over the forecast (Figure 25). Electricity and natural gas are the dominant energy sources in the industrial sector, due to large machine drive requirements and ease of fuel handling. Electricity demand is projected to increase by 14 percent by 2015, whereas natural gas consumption is 27 percent higher in 2015, primarily because of the relatively low price projected for natural gas. Industrial petroleum consumption grows by 16 percent over the forecast, mostly due to increasing demand for feedstock. Coal consumption declines by 0.1 percent a year, as new steelmaking technologies reduce the demand for metallurgical coal.

From 1970 to 1986, changes in the fuel shares of industrial energy consumption reflected the developments in energy markets. Electricity's share increased from 23 percent to 35 percent, natural gas fell from 33 percent to 25 percent, and coal fell from 16 percent to 10 percent. During those years, natural gas was widely perceived to be in short supply, and coal was less desirable because of its environmental effects. As a result, industry began to adopt more electricity-intensive processes. After 1986, electricity's share stabilized, and natural gas began to recover its share of the industrial energy market. Natural gas continues to gain some ground in the forecast, as gas supplies are projected to be ample and prices stable.

Petroleum Refining and Chemicals Lead Industrial Energy Consumption

Figure 26. Industrial primary energy consumption by industry category, 1990-2015 (quadrillion Btu per year)



More than two-thirds of all the energy consumed in the industrial sector is used to provide heat and power for manufacturing; 16 percent is consumed for nonmanufacturing heat and power; and 15 percent is consumed as feedstocks (raw materials) and in other miscellaneous uses (Figure 26).

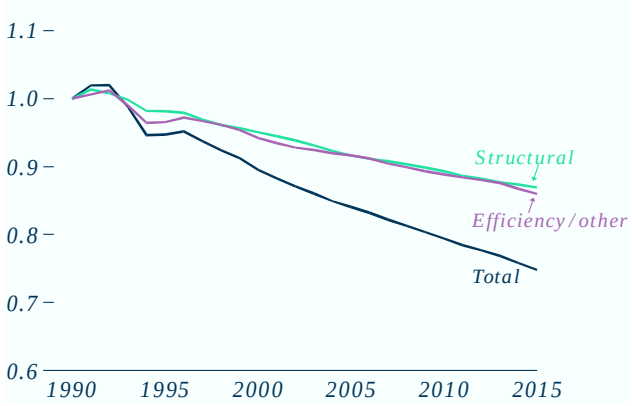
In the manufacturing sector, the three largest end-use consumers of energy for heat and power are petroleum refining, chemicals, and pulp and paper. In 1994 the refining industry consumed 2.9 quadrillion Btu of energy, mostly still gas and petroleum coke. The chemical industry consumed 2.8 quadrillion Btu, of which more than half was natural gas. The pulp and paper industry consumed 2.7 quadrillion Btu, of which half was from renewable sources (wood and spent liquor).

In the nonmanufacturing industries, distillate fuel is a major source of energy. Distillate is used to power off-road equipment, such as mine excavation equipment, farm tractors, and bulldozers. Also, the construction industry uses asphalt and road oil for paving and roofing. In 2015, nonmanufacturing output is expected to be 31 percent and energy consumption 29 percent higher than their 1994 levels.

Between 1994 and 2015 total feedstock use increases by 21 percent. Liquid petroleum gas and petrochemicals are the fastest growing feedstocks, increasing by 25 percent and 19 percent, respectively, between 1994 and 2015. These forecasts reflect strong growth in chemical industry output.

Shifts in Manufacturing Output Speed the Decline in Energy Intensity

Figure 27. Manufacturing energy intensity by component, 1990-2015 (index, 1990 = 1.0)

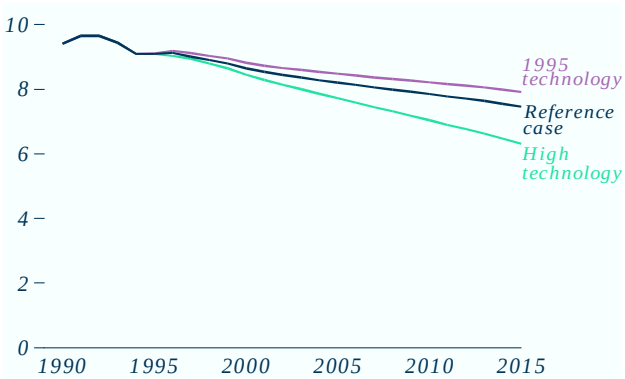


Changes in manufacturing energy intensity (consumption per unit of output) can be separated into two effects. One component reflects underlying increases in equipment efficiency; the other arises from structural changes in the composition of manufacturing output. Since 1970, the use of more energy-efficient technologies, combined with relatively low growth in energy-intensive industries, has contributed to moderate industrial energy consumption. These factors have offset higher industrial output levels; therefore, total energy consumption has been virtually unchanged for the past 20 years. These basic trends are expected to continue.

Between 1994 and 2015, the U.S. manufacturing output mix is expected to shift from more energy-intensive industries, such as primary metals, toward less energy-intensive industries, such as electronics. The share of total manufacturing output attributed to the energy-intensive industries falls from 32 percent to 26 percent in the forecast. Thus, even if no specific industry experienced a decline in intensity, aggregate manufacturing intensity would decline. Figure 27 shows projected changes in energy intensity based on the divisia index [*16*]. Over the forecast period, total intensity drops by 25 percent. Changing composition of manufacturing output alone would result in approximately a 13-percent drop. Thus, about half of the change in primary energy intensity for the manufacturing sector is attributable to structural shifts within the sector away from energy-intensive industries.

Efficiency Gains Could Lead to Greater Declines in Energy Intensity

Figure 28. Industrial energy intensity in two alternative energy efficiency cases, 1990-2015 (thousand Btu per 1987 dollar)



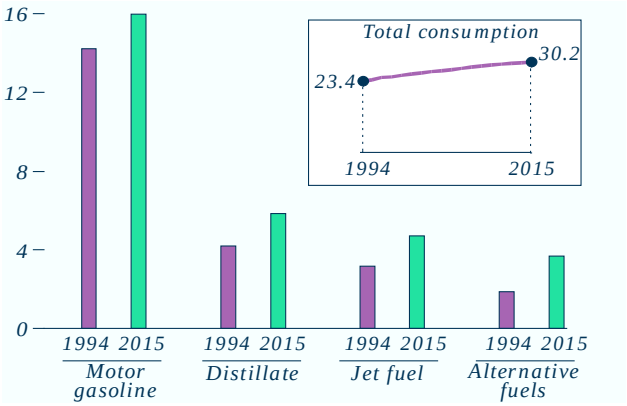
The balance of improvement in energy intensity relates primarily to expected efficiency gains in both energy-intensive and non-energy-intensive industries. The relative growth in machinery and equipment production (SICs 34-38), which is driven primarily by investment and export-related demand, is a key factor: these industries grow almost 50 percent faster than the manufacturing average (2.6 percent versus 1.9 percent annually).

In the high technology case, which assumes that future changes in industrial energy intensity will approximate the decline between 1970 and 1990, almost 7 quadrillion Btu less energy is used in 2015 than for the same level of output in the reference case (Figure 28). Over the forecast period, industrial energy intensity declines at a rate of 1.8 percent a year in the high technology case—almost double the rate of decline in the reference case (0.9 percent).

In the 1995 technology case, industry consumes almost 3 quadrillion Btu more energy in 2015 than in the reference case. The reference case includes cost and market penetration estimates for new technologies, as well as continued improvements in energy efficiency. In the 1995 technology case, energy efficiency remains at the level achieved in 1995 new plants, but average efficiency still improves as old technology is retired and new 1995 technology is brought on line. It is important to note that these efficiency cases are based solely on the industrial sector and do not incorporate any feedback effects on other energy markets.

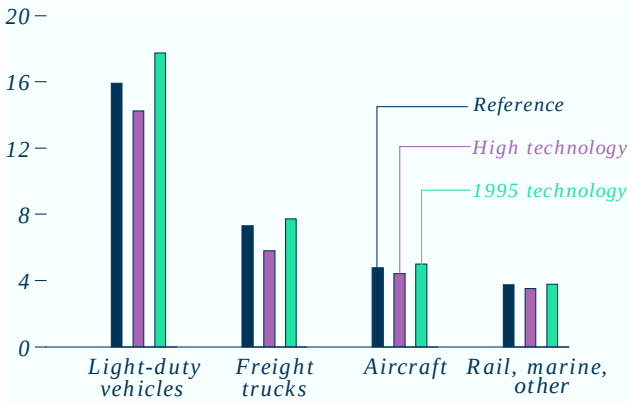
Growth Is Projected for All Transportation Fuels

Figure 29. Transportation energy consumption by fuel, 1994 and 2015 (quadrillion Btu)



Personal Vehicles Use More Than Half of Transportation Energy

Figure 30. Transportation energy consumption by mode in three cases, 2015 (quadrillion Btu)



By 2015, total energy demand for transportation will exceed 30 quadrillion Btu, compared with 23 quadrillion Btu in 1994. Petroleum products continue to dominate energy use in the transportation sector through 2015 (Figure 29). In the reference case, motor gasoline use increases by 0.6 percent annually between 1994 and 2015. With the emphasis of current environmental and energy legislation on reducing oil use, alternative fuels (such as ethanol) are expected to displace 395 thousand barrels of oil equivalent per day by 2015, but gasoline's share of total transportation energy demand, 53 percent in 2015, is not significantly affected. Low projected gasoline prices and reduced fuel efficiency gains in conventional light-duty vehicles will sustain demand for gasoline. In the low oil price case, gasoline consumption increases by 0.7 percent a year, compared with 0.4 percent a year in the high oil price case.

Distillate use for transportation increases by 1.6 percent a year, primarily due to increases in freight traffic and in overall economic activity. Distillate consumption in the low economic growth case is 9.2 percent lower than in the reference case in 2015, whereas in the high economic growth case it is 9.4 percent higher. Jet fuel consumption grows by an average of 1.9 percent a year, with a projected 3.6-percent annual increase in air travel attributable to low projected jet fuel prices and to the 2.0-percent annual economic growth rate assumed for the reference case. In the low and high growth cases, jet fuel demand in 2015 is 9.8 percent lower and 10 percent higher, respectively, than in the reference case.

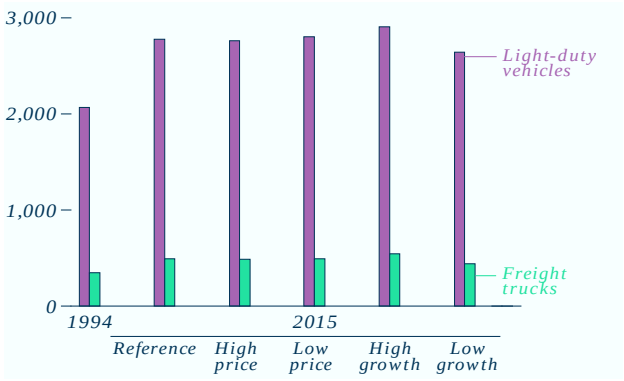
Currently accounting for 57 percent of total transportation energy use, light-duty vehicles (cars and light trucks) are expected to remain the largest users, at 53 percent of all transportation energy demand in 2015 (Figure 30). The increase in light-duty vehicle fuel use is a consequence of 1.4-percent annual growth in vehicle-miles traveled. Low driving costs, rising incomes, and an expansion of the driving-age population sustain the growth in private vehicle use. Within the light-duty vehicle category, fuel consumption by light trucks (which include vans and sport utility vehicles) shows the highest growth rate, 1.9 percent annually, based on increasing consumer preference for vans and sport utility vehicles.

In a 1995 technology case, in which efficiencies are held constant at 1995 levels, fuel demand by light-duty vehicles is 12.4 percent higher than in the reference case in 2015. In a high technology case, in which efficiencies are assumed to grow at a constant 1.9-percent annual rate (as occurred between 1970 and 1990), fuel consumption in 2015 is 9.8 percent lower than in the reference case.

Aircraft fuel consumption grows by 1.9 percent a year, based on growth in travel demand. Fuel efficiency gains in new wide-body aircraft and declining use of military jet fuel ameliorate the effects of increased travel. In 2015, aircraft fuel consumption in the 1995 technology case is 5.3 percent higher than in the reference case, but in the high technology case it is 6.9 percent lower than in the reference case.

Travel Demand Varies With Changes in Economic Activity

Figure 31. Travel demand for light-duty vehicles and freight trucks in five cases, 2015 (million vehicle-miles)



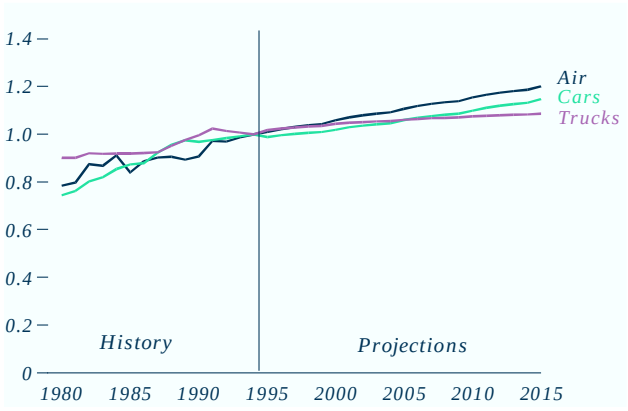
Macroeconomic variables, such as disposable personal income, GDP, and population, are the primary influences on demand for personal travel and freight transport. Vehicle-miles traveled by light-duty vehicles increase by only 1.4 percent a year in the forecast (Figure 31), in contrast to an actual 5.5-percent growth rate between 1980 and 1990.

The demand for freight transport by truck, rail, and ship is driven by industrial output, which grows by 2.4 percent annually from 1994 to 2015. While rail and waterborne freight shipments increase at moderate rates of 1.1 percent and 0.9 percent a year, respectively, truck transport grows by 1.6 percent a year.

In the high economic growth case, the total number of vehicle-miles traveled is 4.8 percent higher than in the reference case in 2015, and in the low growth case it is 5.0 percent lower than in the reference case. This variation is due to different population growth rates in the economic growth cases. The greatest sensitivity to economic growth rates is seen for freight transport: variations of approximately plus and minus 9 to 11 percent from the reference case are projected for truck, rail, and waterborne freight transport demand in 2015 in the high and low economic growth cases, respectively. World oil price assumptions have little effect on vehicle-miles traveled, because fuel costs are a small fraction of the total per-mile cost of driving.

Moderate Oil Prices Slow Fuel Efficiency Improvements

Figure 32. Transportation stock fuel efficiency by mode, 1980-2015 (index, 1994 = 1.0)



Expected gains in average fuel efficiency are less than in the past (Figure 32), because projected fuel prices are relatively low and disposable personal income is projected to increase. As a result, increased sales shares are expected for larger, more powerful vehicles, such as light trucks and sport utility vehicles (Table 7). No additional light-duty vehicle efficiency standards are assumed in the forecast. In the latter part of the forecast, the aging of the population has a mitigating effect on this trend.

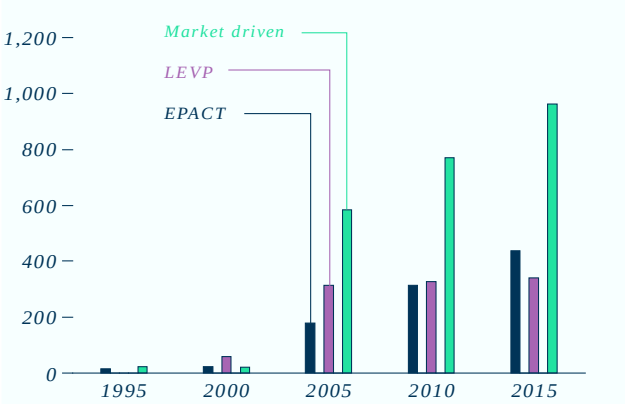
Fuel economy gains for freight trucks will be limited, averaging 0.4 percent a year over the forecast, as fuel prices remain low. Improvements in engine design may have only a limited impact, whereas system efficiency improvements, such as greater coordination between rail and truck freight movement, may play a larger role in the future. In contrast, aircraft fleet efficiency increases substantially, by 0.9 percent a year, because new aircraft, such as the Boeing 777, are far more fuel-efficient than the current fleet average.

Table 7. New car and light truck horsepower ratings and market shares, 1994, 2005, and 2015

	1994		2005		2015	
Vehicle type	Horse-power	Sales share	Horse-power	Sales share	Horse-power	Sales share
Cars						
Small	127	0.60	153	0.56	167	0.56
Medium	158	0.26	199	0.25	218	0.24
Large	199	0.14	281	0.19	307	0.20
Trucks						
Small	156	0.43	194	0.43	209	0.44
Medium	163	0.51	185	0.45	196	0.44
Large	194	0.06	205	0.12	218	0.12

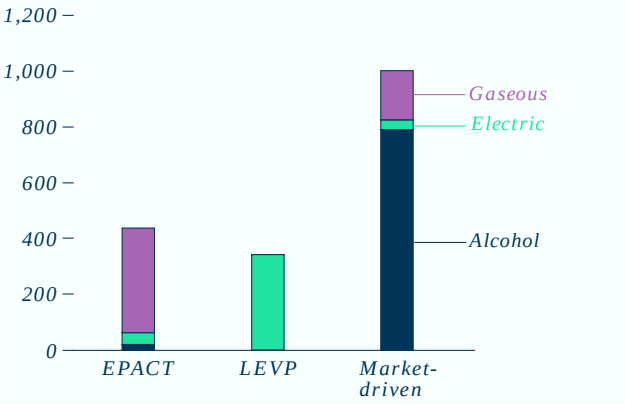
Early Sales of Alternative-Fuel Vehicles Rely on Mandates

Figure 33. Alternative-fuel vehicle sales by type of demand, 1995-2015 (thousands of vehicles sold)



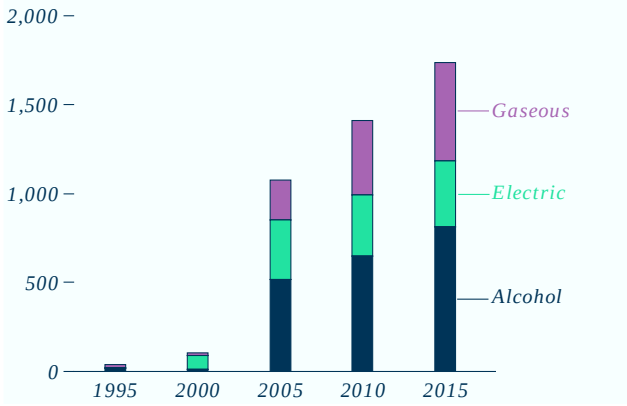
Environmental concerns have led to Federal, and some State, legislative mandates for the use of alternative-fuel vehicles. Sales of alternative-fuel vehicles as a direct result of such legislation—estimated at 15,000 units in 1995—reach 777,000 units in 2015 (Figure 33). Fleet sales required by the Energy Policy Act of 1992 (EPACT) are the only legislated sales in 1995, and most of those use compressed natural gas or liquefied petroleum gas (Figure 34). Low Emission Vehicle Program (LEVP) regulations are assumed to begin in California, New York, and Massachusetts in 1998, and expected sales under this program are approximately 341,000 units in 2015. Sales of zero emission (electric) vehicles are also mandated under the LEVP. Market-driven sales of alternative-fuel vehicles do not appear in large numbers until 2001, after the expected emergence of a functional infrastructure.

Figure 34. Alternative-fuel vehicle sales by type of demand and fuel type, 2015 (thousands)



Alcohol Fuels Gain Market Share in the 21st Century

Figure 35. Alternative-fuel light-duty vehicle sales by fuel type, 1995-2015 (thousands)



In the reference case, total sales of alternative-fuel vehicles are about 1.7 million units, or 9.7 percent of all vehicle sales, in 2015 (Figure 35). Vehicles that use gaseous fuels dominate pre-1998 sales, because of EPACT. The vehicles are presently sold by manufacturers at prices $1,000 to $1,500 above those for gasoline vehicles. Their limited range (about two-thirds that of gasoline vehicles) makes them good candidates for centrally fueled fleet applications but limits their use as personal vehicles. Their large fuel tanks also limit both trunk and passenger space, which restricts their use mainly to light trucks and larger automobiles.

By 2015, market-driven sales of alternative-fuel vehicles outpace mandated sales. "Flex fuel" vehicles, which can use any combination of ethanol, methanol, and gasoline, are expected to make up 47 percent of alternative-fuel vehicle sales in 2015. The range, fuel efficiency, and performance of these vehicles are similar to those of conventional gasoline vehicles, and their incremental production cost is expected to be less than $500 by 2015. They would be suitable for applications in all vehicle size classes, whereas gaseous fuels are limited to light trucks and large automobiles.

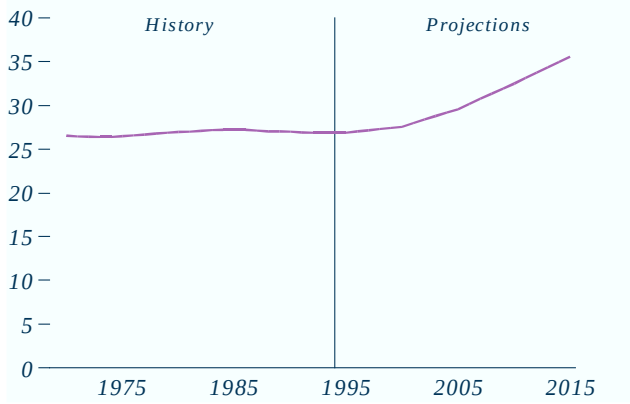
Electric vehicle sales are not expected to appear in large numbers until LEVP mandates begin in 1998. Sales of dedicated and hybrid electric vehicles—almost all (91 percent) of which originate from LEVP mandates—are projected to reach 341,000 units in 2015.

Challenges for the Future

Forecasts are expectations about future events that represent logical conclusions from sets of organized assumptions, technological information, and current legislation. This Nation's current reliance on technologies such as personal computers and jumbo jet aircraft, which did not exist two decades ago, should serve to remind us that technologies not considered within the context of *AEO96* could play an important, currently unforeseen role in energy markets through 2015.

One factor with an enormous potential to affect energy use within the forecast horizon is the aging of the population (Figure 36). After many decades of stability, the proportion of the population over 55 will increase at a striking rate after 2000, and by 2015 it is expected to be one-third higher than it is now.

Figure 36. Percentage of the U.S. population ages 55 years and older, 1970-2015



Will citizens in 2015 who are over 55 be similar in their purchasing and energy-using behavior to people currently in that age category? What are the implications for industrial, residential, and transportation energy consumption as the share of the population that is retired increases? What types of medical services and housing arrangements will be needed, and how will they affect energy consumption patterns? What will happen to sales of minivans and sports utility vehicles? These and other questions reflect uncertainties in the forecast, as well as challenges to future energy markets.

Comparative Forecasts

The *AEO96* forecast of end-use sector energy consumption over the next two decades shows far less volatility than has occurred historically. Between 1974 and 1984, volatile world oil markets dampened domestic oil consumption. Consumers switched to electricity-based technologies in the buildings sector, while in the transportation sector new car fuel efficiency nearly doubled. Natural gas use declined as a result of high prices and limitations on new gas hookups. Between 1984 and 1994, both petroleum and natural gas consumption rebounded, bolstered by plentiful supplies and declining real energy prices. As a consequence, new car fuel efficiency in 1994 was only 2 miles per gallon higher than in 1984, and natural gas use (residential, commercial, and industrial) increased by nearly one-fifth.

Three other organizations—DRI, GRI, and WEFA—develop comprehensive energy projections with time horizons similar to *AEO96*. Given their potentially disparate assumptions about, for example, the effects of government policies and technological developments over the next 20 years, the forecasts have remarkable similarities.

Electricity is expected to remain the fastest growing source of delivered energy (Table 8). The rate of growth is down sharply from historical rates in each of the forecasts, because many traditional uses of electricity (such as air conditioning) approach saturation while efficiency standards rise. Growth in petroleum and natural gas consumption also generally slows as overall population growth declines, the population ages, and economic expansion slows.

Table 8. Alternative forecasts of average annual growth rates in energy consumption (percent)

	History		Projections			
Energy use	1974-1984	1984-1994	AEO96 (1994-2015)	DRI (1994-2015)	GRI (1994-2015)	WEFA (1994-2013)
Petroleum*	-0.1	1.2	0.9	1.0	0.7	0.9
Natural gas*	-1.7	1.7	1.0	1.0	1.1	0.7
Coal*	-3.0	-1.4	-0.1	1.0	-0.8	0.1
Electricity	3.0	2.5	1.4	1.6	1.9	1.7
Delivered energy	-0.4	1.9	1.0	1.1	1.0	0.9
Electricity losses	2.5	1.4	0.7	0.7	1.4	1.2
Primary energy	0.2	1.8	0.9	1.0	1.1	1.0

**Excludes consumption by electric utilities.*

Residential and commercial sectors

Growth rates in energy demand for the residential and commercial sectors are expected to decrease by 50 percent from the rates between 1984 and 1994, largely because of projected lower growth in population, housing starts, and commercial floorspace additions. Other contributing factors include increasing energy efficiency due to technical innovations and legislated standards; voluntary government efficiency programs; and reduced opportunities for additional market penetration of end uses like residential air conditioning and personal computers in the commercial sector, where they are already being used extensively. Differences among forecasts relate importantly to differing views on the growth of new uses for energy, which tends to affect electricity particularly. By fuel, electricity (excluding generation and transmission losses) remains the fastest growing energy source for both sectors across all forecasts (Table 9). Natural gas use also grows but at lower rates, and petroleum use continues to fall but not as rapidly as during the historical period.

Table 9. Forecasts of average annual growth in residential and commercial energy demand (percent)

	History	Projections			
Forecast	1984-1994	AEO96 (1994-2015)	DRI (1994-2015)	GRI (1994-2015)	WEFA (1994-2013)
Residential					
Petroleum	0.1	-0.6	-1.1	-1.1	-0.3
Natural gas	0.7	0.5	0.5	0.5	0.1
Electricity	2.6	1.7	1.2	1.6	1.9
Delivered energy	1.7	0.8	0.5	0.7	0.7
Electricity losses	2.1	1.0	0.9	1.0	1.9
Primary energy	1.9	0.9	0.7	0.9	1.3
Commercial					
Petroleum	-4.8	-0.1	-0.6	-0.6	-0.5
Natural gas	1.5	0.7	1.1	0.7	0.2
Electricity	3.3	1.2	1.9	2.0	1.9
Delivered energy	1.2	0.9	1.3	1.1	0.9
Electricity losses	2.8	0.6	1.6	1.5	1.9
Primary energy	2.0	0.8	1.4	1.3	1.4

Industrial sector

The industrial sector in all the forecasts shows slower growth in primary energy consumption than it did between 1984 and 1994 (Table 10). The decline is attributable to lower growth for GDP and manufacturing output. In addition, there has been a continuing shift in the industrial output mix toward less energy-intensive products. The growth rates in the industrial sector for different fuels between 1984 and 1994 reflect a shift from petroleum products and coal to a greater reliance on natural gas and electricity. Natural gas use grows more slowly than in recent history across the forecasts, because much of the potential for fuel switching was realized during the 1980s. Growth for electricity in *AEO96* is lower than in the other forecasts, because the introduction of new electricity-based processes is assumed to proceed more slowly in the coming decades. Coal forecasts vary according to alternative views of its potential as an environmentally acceptable boiler fuel, as well as expected developments in domestic steel production and processes.

Table 10. Forecasts of average annual growth in industrial energy demand (percent)

	History	Projections			
Forecast	1984-1994	AEO96 (1994-2015)	DRI (1994-2015)	GRI (1994-2015)	WEFA (1994-2013)
Petroleum	1.0	0.7	1.1	1.4	0.7
Natural gas	2.3	1.1	1.0	1.2	1.3
Coal	-1.1	-0.1	1.2	-0.6	0.1
Electricity	1.7	1.1	1.6	2.1	1.4
Delivered energy	2.2	0.9	1.2	1.3	1.3
Electricity losses	1.2	0.4	0.7	1.6	0.9
Primary energy	2.0	0.8	1.1	1.3	1.2

Transportation sector

Fuel consumption in the transportation sector is expected to grow more slowly than in the recent past in each of the alternative forecasts (Table 11). All the forecasts anticipate continued rapid growth in air travel as well as significant increases in aircraft efficiency, while growth in light-duty vehicle travel slows considerably.

Table 11. Forecasts of average annual growth in transportation energy demand (percent)

	History	Projections			
Forecast	1984-1994	AEO96 (1994-2015)	DRI (1994-2015)	GRI (1994-2015)	WEFA (1994-2013)
Consumption					
Motor gasoline	1.2	0.6	0.7	0.1	0.6
Distillate fuel	2.9	1.6	1.4	1.3	2.1
Jet fuel	2.7	1.9	1.7	1.7	1.2
Residual fuel	1.1	2.5	2.2	2.8	2.5
All energy	1.7	1.2	1.2	0.9	1.2
Key indicators					
Car and light truck travel	2.7	1.4	1.5	1.5	NA
Air travel	5.3	3.6	3.8	4.0	NA
Average new car fuel efficiency	0.6	0.8	0.5	1.3	NA
Gasoline prices	-3.4	0.9	0.9	-0.1	1.0

NA = not available.

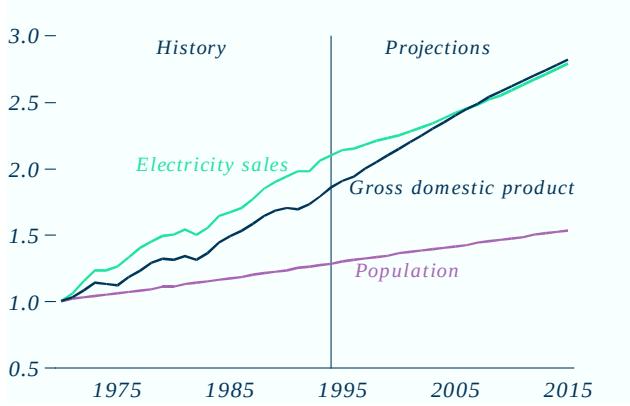
Electricity

For the future, electricity is expected to continue in its role as an economical and convenient energy source for American consumers. The national consumption of electricity has increased nearly twelvefold since 1950, and electrical appliances—including air conditioners, heat pumps, clothes dryers, and garage door openers—have become familiar components of the American household. New appliances, such as personal computers, facsimile machines, and home multimedia centers, are increasing the demand for electricity even further, and new, unforeseen uses for electricity are certain to appear in the future. Nevertheless, although electricity consumption is expected to increase, its rate of growth is expected to decline relative to historic levels.

Historically, electricity demand has been associated with economic growth (Figure 37). Before the 1970s, households and industry embraced electrical appliances and machinery as efficient work-saving devices, and growth in electricity consumption surpassed the economic growth rate by nearly a factor of 2. During the 1970s and early 1980s, however, escalating fossil fuel prices and the costs of new construction increased the price of electricity production; consequently, the growth in demand for electricity decelerated.

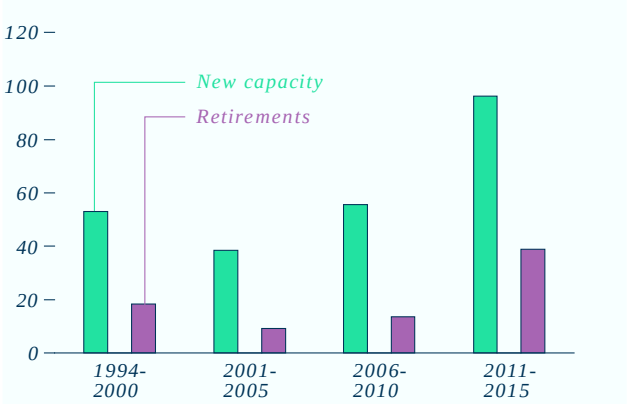
Even though energy prices remained relatively stable in the first half of the 1990s, increases in appliance efficiency and insulation standards, along with industrial awareness of the impacts of energy costs on production costs, dampened the growth of electricity consumption, and demand growth lagged behind economic growth. That trend is expected to continue, with electricity demand growing more slowly than the economy over the next two decades.

Figure 37. Electricity sales, GDP, and population growth, 1970-2015 (index, 1970 = 1.0)



Despite slower demand growth, 252 gigawatts of new generating capacity will be needed between 1994 and 2015 to satisfy electricity demand growth and to replace retiring units. Between 1994 and 2015, 84 gigawatts—or 12 percent of current generating capacity—is expected to retire, including 36 gigawatts of nuclear capacity; 30 gigawatts of this nuclear capacity is assumed to be retired after 2010. Consequently, of the 96 gigawatts of new capacity needed after 2010 (Figure 38), almost one-third will be needed to replace the loss of nuclear capacity.

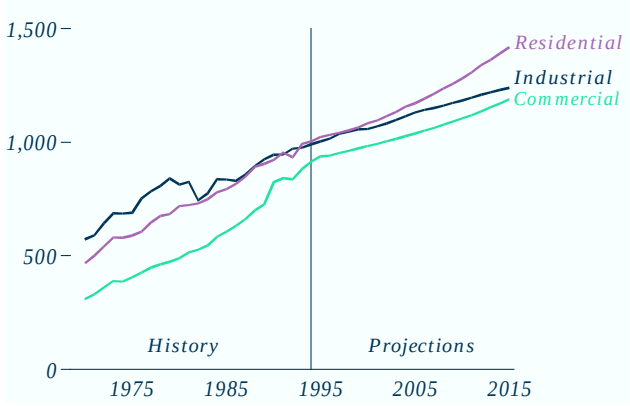
Figure 38. New generating capacity and retirements, 1994-2015 (gigawatts)



The reduction in baseload nuclear capacity has a significant impact on the electricity outlook after 2010. Although 2011 to 2015 represents only 25 percent of the projection period, 49 percent of the new combined-cycle and 26 percent of the new coal capacity projected over the entire forecast are expected to be brought on line during this time frame. The increase in baseload construction is expected to put upward pressure on coal and natural gas prices. Between 1994 and 2010, coal prices to electricity suppliers decline by 0.5 percent a year, and natural gas prices increase by only 0.7 percent a year. After 2010, coal and gas prices rise by 0.3 and 3.9 percent a year, respectively. As a result, electricity prices are projected to remain relatively stable throughout the forecast period. If the operating lives of many nuclear plants were extended beyond their scheduled retirement dates, the need for new capacity and the demand for coal and natural gas would decline. Such extensions would also moderate the price increases that are projected for coal and gas.

Residential Sales Lead the Increase in Electricity Consumption

Figure 39. Annual electricity sales by sector, 1970-2015 (billion kilowatthours)



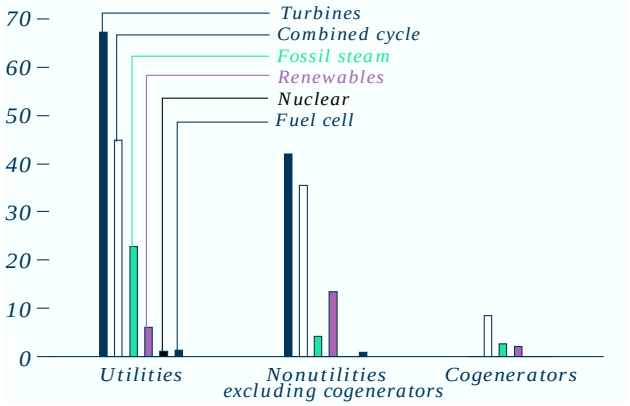
With the number of U.S. households projected to rise by 25 percent between 1994 and 2015, residential demand for electricity grows by 1.7 percent annually (Figure 39). Residential electricity demand changes as a function of the time of day, week, or year. During summer in hot climates, residential demand peaks in the late afternoon and evening, when household cooling and lighting needs are highest. This periodicity increases the peak-to-average load ratio for local utilities, which rely on quick-starting gas turbines or internal combustion engines to satisfy peak demand. Although many regions currently have surplus baseload capacity, strong growth in the residential sector will result in a need for more "peaking" capacity. Between 1994 and 2015, generating capacity from gas turbines and internal combustion engines is expected to more than double.

Between 1994 and 2015, electricity demand in the commercial and industrial sectors grows by 1.2 and 1.1 percent a year, respectively. Annual commercial floorspace growth of 1.1 percent and industrial output growth of 1.7 percent drive the increase.

In addition to sectoral sales, nonutilities and cogenerators in 1994 produced 156 billion kilowatthours for their own use in industrial and commercial processes, such as aluminum smelting and electrochemical processes. By 2015, these producers are expected to maintain about the same share of total generation, increasing their own-use generation to 218 billion kilowatthours as demand for manufactured products increases.

Utilities Continue To Dominate, But Other Generators Claim Larger Shares

Figure 40. New generating capacity by supplier and fuel type, 1994-2015 (gigawatts)



Three broadly defined categories of suppliers satisfy the Nation's electricity requirements: utilities, cogenerators, and nonutilities other than cogenerators. In 1994, utilities accounted for 91.3 percent of total capacity, cogenerators 5.8 percent, and other nonutilities 2.4 percent.

In the forecast, utilities continue to dominate the electric power industry in terms of capacity ownership, increasing from 700 gigawatts in 1994 to 765 gigawatts in 2015 (82 percent of the total). Utilities account for 57 percent of the new capacity constructed during the forecast period (Figure 40). Cogenerators and other nonutilities significantly increase their share of the market, accounting for 43 percent of new capacity construction and capturing 18 percent of total capacity by 2015.

Two pieces of national legislation underlie the projected increase in cogenerator and other nonutility capacity share. The Public Utility Regulatory Policies Act of 1978 (PURPA), which required utilities to purchase electricity at "avoided cost" from qualifying nonutilities, spurred investment in alternative energy suppliers and inaugurated the growth of nonutility capacity. More recently, the Energy Policy Act of 1992 (EPACT) removed constraints (under specific conditions) on utility ownership of significant shares of nonutility producers. Currently, 6 of the 10 largest nonutilities are utility affiliates.

Electricity industry restructuring

Both suppliers and consumers are grappling with ongoing changes in the structure of electricity markets in the United States. In the past, electricity suppliers had secure, franchised service territories and were essentially guaranteed recovery of expenditures made to provide service to customers. Consumers, in turn, had to purchase their electricity from the suppliers that controlled their areas. Today, the situation is changing. Electric utilities, nonutility power producers, and power brokers are positioning themselves to meet the needs of customers; and consumers—especially large industrial consumers—now look beyond the utilities serving their areas to alternative suppliers for their power needs.

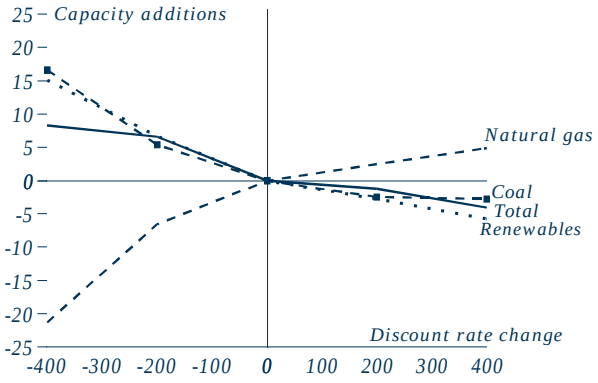
Many questions remain about the evolving market structure. Will all consumers eventually be able to choose their electricity suppliers? How will the major sectors of the electricity supply business—transmission, distribution, and generation—evolve? How long will the transition to the new structure take? Who will bear the transition costs, and how large will they be? How will more competitive electricity prices be set? What will be the impact on new generating capacity construction? What efficiency improvements will be seen in the supply and demand sectors of the market? These questions and many others are being debated by utilities, nonutilities, consumers, and State and Federal policymakers.

The answers to questions about industry restructuring are likely to involve both legislative changes and new market institutions. Such issues have not yet been resolved, and the *AEO96* reference case does not address the impacts of restructuring. Preliminary analyses of the impact of electricity market restructuring on capacity choice decisions by plant type and on the near-term future of electricity prices are discussed here.

New power generators are expected to face greater business risk in a competitive market. There will be simultaneously greater opportunities for profit and greater chances of loss in the absence of regulatory assurances, such as established rates of return on investment and fuel adjustment clauses. In order to raise capital, power generators must compensate shareholders for bearing that greater risk by providing higher returns on equity.

Figure 41 shows the sensitivity of capacity expansion decisions in NEMS to changes in the cost of capital for electric power generators. In a competitive market, generating technologies that require high initial capital costs and relatively low operating costs are less attractive than technologies that require smaller initial capital outlays but have higher downstream operating costs. For example, increasing the cost of capital by 4 percentage points relative to the reference case leads to 4.9 gigawatts more gas-fired combustion turbine and combined-cycle capacity among newly built plants and 2.8 gigawatts less coal-fired capacity. Total capacity additions decline slightly as the cost of capital rises, because fewer plants are built to displace existing plants whose operating costs are rising.

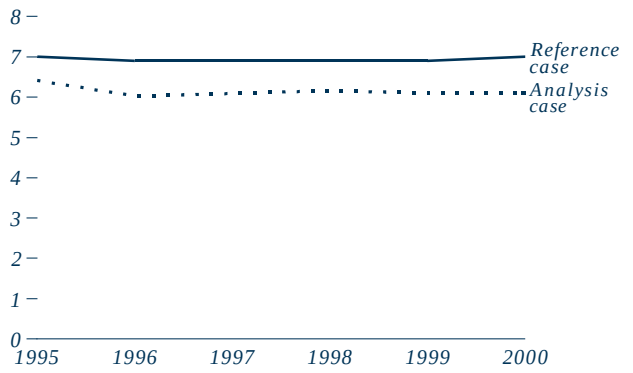
Figure 41. Changes in unplanned capacity additions (gigawatts), 1994-2015, as a function of changes in discount rates (basis points)



In addition to providing an incentive to build plants with lower capital costs, growing competition will put downward pressure on electricity prices. The costs of power plants, power purchase contracts, and fuel supply contracts that are uneconomical will be difficult to recover in a competitive market. The treatment of such unrecoverable—or "stranded"— costs is among the most important issues in the restructuring debate.

Figure 42 shows the potential price impact in the near term. The upper line represents the regulated prices in reference case, where all operating costs and embedded costs are recovered from ratepayers. The lower line represents the price when generation is priced at the marginal operating cost (in other words, during a given time period, generators are paid the operating cost of the most expensive unit running—the marginal unit). The analysis assumes that the transmission and distribution system will continue under cost-of-service regulation. The difference between the two lines is an indication of the change in prices that could occur if the market were free to value generation at its short-run marginal cost. The gap between the two represents the portion of fixed costs that would not be recoverable in a competitive market.

Figure 42. Electricity prices in two cases, 1995-2000 (1995 cents per kilowatthour)



Of course, many factors will affect the actual outcome of the restructuring process. Fuel prices and the energy efficiency and capital costs of various generating technologies will play a major role in determining which types of plants are built to meet the demand for electricity. Similarly, while competition is expected to lead to lower electricity prices, the treatment of stranded costs, efficiency gains producers are able to make, and any additional costs introduced (such as higher metering and billing costs to accommodate real-time pricing) will influence the prices paid by various consumers. In addition, while the results shown depict average national results, consumers in different regions of the country could see dramatically different results.

Hydropower: regulatory issues

Recognizing the lack of available large sites for new hydroelectric dams, reduced public investment, and environmental constraints, *AEO96* projects minimal growth for conventional hydropower; however, recent rulings, especially to protect fish, could result in capacity declines. In June 1994, the U.S. Supreme Court ruled that States may regulate water under the standards of the Clean Water Act (P.L. 95-217), shifting licensing authority from the Federal Energy Regulatory Commission (FERC). In September, the U.S. Court of Appeals directed that more weight be given to State fishery and Indian Tribe recommendations. In March 1995, the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (FWS) proposed increased flows and changes in water priorities on the Northwest's Columbia River.

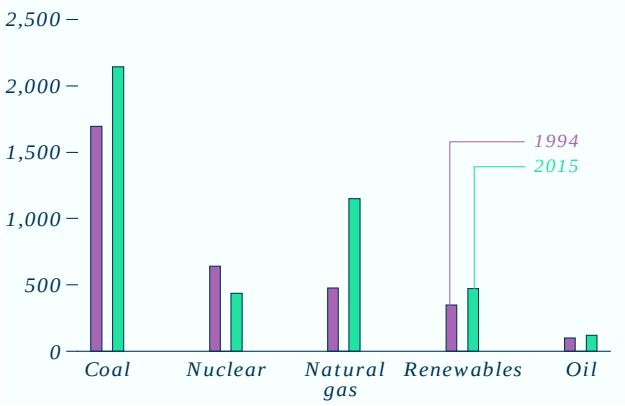
Breaching (removal of part of a dam to reduce or eliminate its impoundment capacity) and removal of dams are also being discussed. In December 1994, the FERC stated its authority to order dam removal. The FWS has proposed removal of Washington's Wanapum and Priest Rapids dams, and the Columbia River Inter-Tribal Fish Commission has urged breaching four lower dams on the Snake River and the John Day Dam on the Columbia.

Hydroelectric dams could be affected nationwide. In July 1995, the NMFS proposed listing coho salmon as a threatened species from the Northwest to central California. In the Southwest, flow restrictions could cut peaking generation at Glen Canyon Dam, with similar changes required in Colorado, Utah, Wyoming, and Montana. In the Midwest, the U.S. Army Corps of Engineers may reduce power generation on the Missouri River for fish protection. Operational changes could also be required at Hudson River dams to protect fish.

Each decision above is generally viewed as reducing hydroelectric power output. The value of hydropower will be reduced if water use is switched to less valuable off-peak, rather than peaking, generation. Operating decisions have not been made, however, and *AEO96* does not incorporate such declines.

Natural Gas Gains a Larger Share of Electricity Generation

Figure 43. Electricity generation by fuel, 1994 and 2015 (billion kilowatthours)

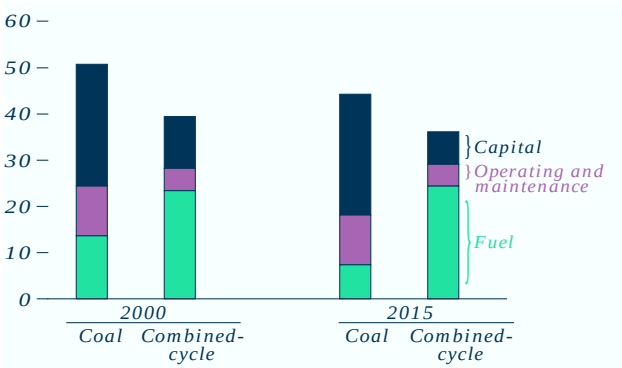


Fossil fuels, which in 1994 accounted for 70 percent of electricity generation, are projected to account for 79 percent in 2015. Much of the increase is in the use of natural gas, which currently fuels 14 percent of total generation but grows to 27 percent by 2015, supplanting nuclear energy as the Nation's second largest electricity source (Figure 43). Three factors explain this trend. First, although the utilization of existing nuclear power plants is increasing, 37 gigawatts of nuclear capacity are assumed to be retired by 2015, with no new nuclear orders on the horizon. Second, combined-cycle technologies are demonstrating efficiencies up to 60 percent, compared with 35 percent for coal-steam technologies. Third, between 1994 and 2015, gas prices to utilities increase by only 1.4 percent annually (as compared with 2.8 percent from 1994 to 2010 in *AEO95*). Combined-cycle units also have short construction times—1 to 3 years—and relatively low capital investment costs, which make them attractive to nonutilities.

The electricity sector currently consumes 80 percent of U.S. coal production, which is used to produce 52 percent of the Nation's electricity. In the *AEO96* forecast, average capacity factors for coal-fired power plants increase from 62 percent to 74 percent; and utilities have already reported plans to construct 16 gigawatts of new coal-fired capacity. Nevertheless, slower growth in demand for electricity, long construction times for coal-fired plants, and 19 gigawatts of coal-fired retirements are expected to decrease coal's share of generation to about 50 percent in 2015.

Advanced Generating Technologies Could Provide Cheaper Electricity

Figure 44. Electricity generation costs for conventional and advanced technologies, 2000 and 2015 (1994 mills per kilowatthour)



Technology types for new electric generating capacity are chosen on the basis of cost while meeting local and Federal emissions constraints. The levelized cost of electricity production includes the time-discounted cost of construction, fixed and variable operating and maintenance costs, and fuel costs (Figure 44). The choice of technologies for capacity additions can be decided by changes in these components of the levelized cost.

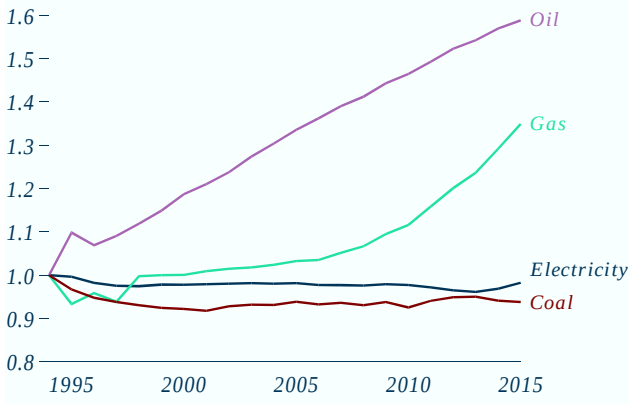
In the *AEO96* forecasts, the capital costs of conventional technologies are assumed to be constant. For advanced technologies, after an initial downward adjustment to account for technological optimism, capital costs decline as a function of market penetration. Heat rates for both advanced and conventional fossil-fired technologies decline annually from 2000 until 2010. In 2015, the last year of the forecast, levelized costs for combined-cycle capacity are 8 percent lower than for coal (Table 12).

Table 12. Costs of producing electricity, 2000 and 2015

Item	2000		2015	
	Conventional pulverized coal	Advanced combined cycle	Conventional pulverized coal	Advanced combined cycle
	1994 mills per kilowatthour			
Capital	26.41	11.24	26.18	7.00
O&M	10.72	4.82	10.72	4.82
Fuel	13.58	23.35	7.42	24.38
Total	50.72	39.41	44.32	36.20
	Btu per kilowatthour			
Heat rate	9,840	7,300	8,142	5,687

Stable Coal Prices, Efficient Gas Technologies Keep Prices in Check

Figure 45. Utility fossil fuel prices and electricity prices, 1994-2015 (index, 1994 = 1.0)



Between 1994 and 2015, the average price of electricity is projected to remain relatively stable—declining by 0.1 percent a year (Figure 45). As a result, average electricity expenditures for residential consumers are expected to be $11 a month (1994 dollars) lower in 2015 than they were in 1994.

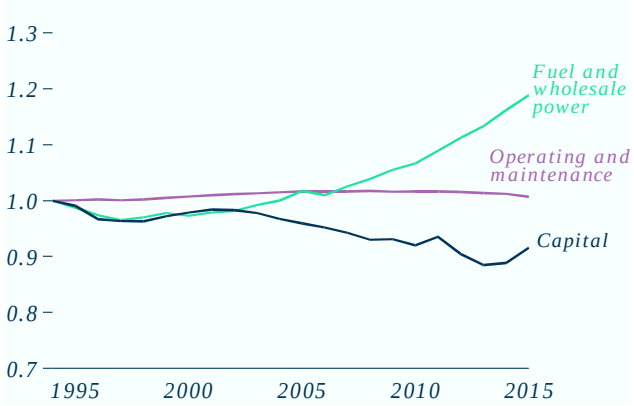
The cost of producing electricity, and ultimately the price paid by consumers, is a function of fuel costs, operating and maintenance costs, and the cost of capital. For existing plants, fuel costs typically represent $23 million annually or 50 percent of the total operational costs (fuel, wholesale power, and operating and maintenance costs) for a 300-megawatt coal-fired plant and $40 million annually or 85 percent of the total operational costs for a gas-fired combined-cycle plant of the same size in 1994.

Natural gas prices to electricity suppliers rise by 1.4 percent a year in the forecast, from $2.24 per thousand cubic feet in 1994 to $3.02 in 2015, and gas-fired electricity generation increases by 143 percent, from 474 to 1,153 billion kilowatthours. Offsetting these increases are stable coal prices, declining revenue requirements for capital expenditures, and improved efficiencies for new plants.

Although oil prices to utilities are expected to increase by 59 percent, greater utilization of plants for which oil is the primary fuel is expected to lead to a 19-percent increase in oil-fired generation by 2015. However, oil currently accounts for only 3.1 percent of total generation, and that share is expected to decline to 2.8 percent by 2015.

Wholesale Power Purchases Are a Growing Factor in Electricity Prices

Figure 46. Utility and nonutility revenue requirements, 1994-2015 (index, 1994 = 1.0)



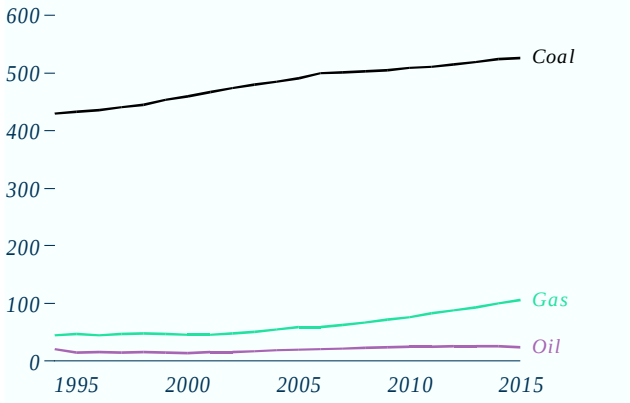
Capital costs—associated with the recovery of investments in power plants and transmission and distribution facilities—are expected to decline by 0.6 percent annually from 1994 to 2015 (Figure 46). The decline is made possible by increased utility reliance on wholesale power purchases, lower construction costs for new combustion turbine and combined-cycle generating technologies, and the availability of adequate capacity for current generation needs.

A yearly 0.2-percent decline in operating and maintenance costs is also expected, as more turbine-based capacity is installed and operated. For a typical 300-megawatt plant, operating and maintenance costs for advanced gas turbines are about half those for conventional coal-fired generators. Typically, turbine-based generators are removed from service an average of 15 days a year for planned maintenance, compared with 30 days for coal-steam generators.

Fuel costs increase only slightly in the forecast, by an average of 0.1 percent annually, as coal prices decline by 0.3 percent and gas prices rise by 1.4 percent between 1994 and 2015. In contrast, wholesale power purchases (electricity sales from nonutilities to utilities) more than triple, increasing from 204 to 637 billion kilowatthours between 1994 and 2015. By purchasing power, utilities avoid capital-intensive construction and financing costs.

Coal-Burning Power Plants Are a Major Source of Carbon Emissions

Figure 47. Carbon emissions from electricity generation by fuel, 1994-2015 (million metric tons)

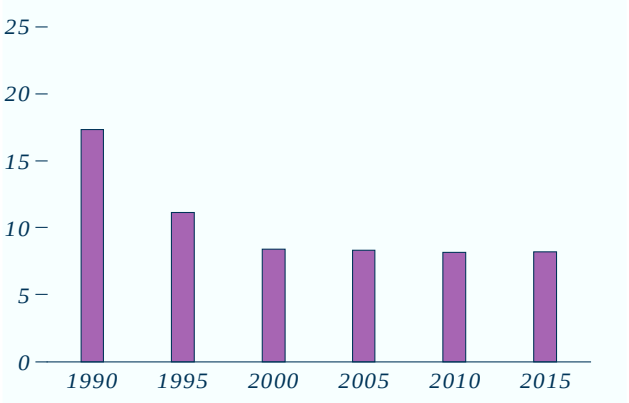


Electricity generators currently produce 36 percent of national carbon emissions from energy production, and their share is expected to increase to 38 percent by 2015. Currently, coal accounts for 52 percent of total electricity generation but produces 87 percent of electricity-related carbon emissions (Figure 47). In contrast, gas-fired generators account for 15 percent of generation and produce only 9 percent of electricity-related carbon emissions. As a fuel, coal releases nearly twice as much carbon per Btu as natural gas does. While oil accounts for 3 percent of electricity generated, carbon emissions from oil-fired generators make up about 4 percent of total electricity emissions.

Between 1994 and 2015, 37 gigawatts of nuclear capacity are expected to be retired, resulting in a decline of 207 billion kilowatthours per year, or 32 percent, from current nuclear generation. To compensate for the loss of baseload capacity and to meet rising demand, 230 gigawatts of new fossil-fueled capacity will be needed. The resulting increase in generation from fossil fuels will increase carbon emissions by 160 million metric tons, or 32 percent, over current levels. Although renewable capacity increases from 94 gigawatts in 1994 to 115 gigawatts in 2015—reducing the impact of nuclear retirements on total carbon emissions—the intermittent nature of renewable technologies prevents them from compensating completely for the losses in nuclear capacity.

Clean Air Act Amendments Limit Sulfur Dioxide Emissions

Figure 48. Sulfur dioxide emissions from utility generation, 1990-2015 (million metric tons)



More than 95 percent of the sulfur dioxide (SO_2) produced by utility boilers comes from the combustion of coal, with sulfur-bearing residual oils contributing the remainder. By 2000, as a result of the Clean Air Act Amendments of 1990, electricity producers are required to reduce SO_2 emissions by 10 million tons from 1990 levels in two phases: Phase 1 in 1995 and Phase 2, which takes effect in 2000.

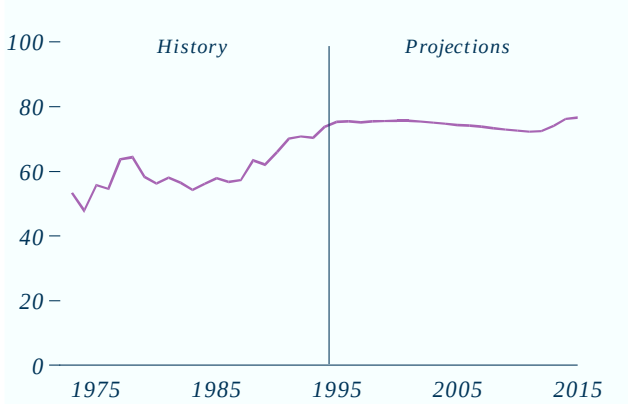
During Phase 1, 261 generating units at 110 utility plants were issued emissions allowances that permit SO_2 emissions up to a fixed amount per year. Because the amount allowed generally is less than a plant's historical emissions, most utilities instituted additional emissions reduction strategies. Switching to lower sulfur, subbituminous coal was the option chosen by more than half of the Phase 1 generators. In Phase 2, emissions constraints on Phase 1 plants will be tightened, and restrictions will be set for the remaining 2,500 boilers at 1,000 plants, reducing SO_2 emissions by another 3 million tons (Figure 48). Because allowance prices are expected to increase significantly after 2000, it is expected that almost 32 gigawatts of capacity will be retrofitted with scrubbers to achieve the Phase 2 goal (Table 13).

Table 13. Scrubber retrofits and allowance costs, 2000-2015

Forecast	2000	2005	2010	2015
Cumulative retrofits from 1994 (gigawatts of capacity)	1.7	1.7	31.5	33.4
Allowance costs (1994 dollars per ton SO_2)	89	148	310	313

Nuclear Electricity Generation Falls, Despite High Performance Marks

Figure 49. Nuclear power plant capacity factors, 1973-2015 (percent)

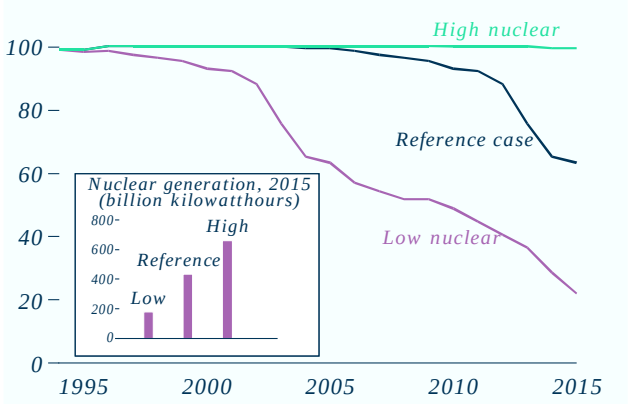


The *AEO96* reference case forecast assumes that all nuclear units will operate to the end of their current license terms, with 49 units (37 gigawatts) retiring through 2015. Just over 80 percent of these retirements occur in the last 5 years of the forecast. One unit under construction, Watts Bar 1, is assumed to begin operation in 1996, and no new orders are assumed. Given these assumptions, 61 nuclear units are projected to provide 10 percent of total electricity generation in 2015, down from a projected high of 20 percent in 1996. Although the forecast does not explicitly project new nuclear units to become operable by 2015, an alternative interpretation could be that new reactors replace existing capacity that is retired ahead of schedule.

Nuclear generation forecasts depend on both operating capacity and assumed capacity factors. The national average capacity factor, which was below 60 percent in the 1970s and 1980s, has surpassed 70 percent since 1991 (Figure 49). Improvements have been gained through longer refueling cycles and a decrease in the mandated shutdowns that were prevalent after the accident at Three Mile Island. *AEO96* assumes that individual reactor performance improves for the first 20 or 25 years of operation, after which it declines as units age. As a result, the national average stays near 74 percent, with a slight decline from 2007 through 2012 due to reactor aging, after which retirements of older reactors bring the average capacity factor back up.

Longer Nuclear Plant Operation Could Reduce Utility Carbon Emissions

Figure 50. Operable nuclear capacity in three cases, 1994-2015 (gigawatts)

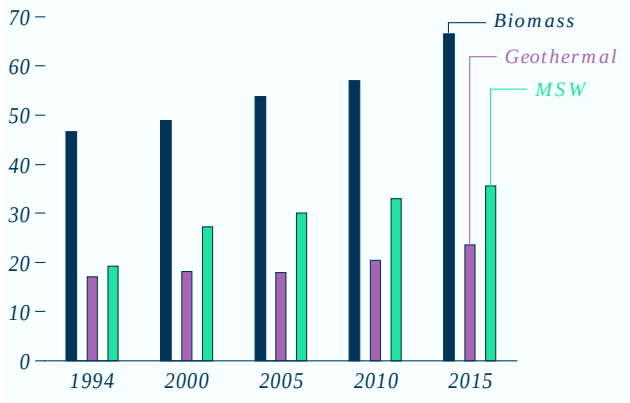


Two alternative *AEO96* analyses—the high and low nuclear cases—show how changing assumptions about the operating lifetimes of nuclear plants affect the reference case forecast of nuclear capacity (Figure 50). The low nuclear case assumes that all units are retired 10 years before their license expiration dates (90 units by 2015). Early shutdowns could be caused by unfavorable economics, waste disposal problems, or physical degradation of the units. The high nuclear case assumes 10 additional years of operation for each unit (only 2 units retired by 2015), suggesting that license renewals would be permitted. Conditions favoring such an outcome could include continued performance improvements, a solution to the waste disposal problem, or stricter limits on emissions from fossil-fired generating facilities.

The low nuclear case forecasts approximately 100 new fossil-fueled units (assuming an average unit size of 300 megawatts) to replace the retiring nuclear units, split between coal-fired (12 percent) and combined-cycle (69 percent) capacity. The additional fossil-fueled capacity produces 23 million metric tons of carbon emissions above the *AEO96* reference case. Also, 8 gigawatts of additional new renewable and fuel cell capacity is built. In the high nuclear case, 35 gigawatts of new capacity additions—mostly fossil-fueled plants—are avoided, as compared with the *AEO96* reference case, and carbon emissions are reduced by 25 million metric tons (4 percent of total emissions by electricity generators).

Municipal Solid Waste, Biomass Lead Generation From Renewables

Figure 51. Electricity generation from grid-connected renewables, 1994-2015 (billion kilowatthours)



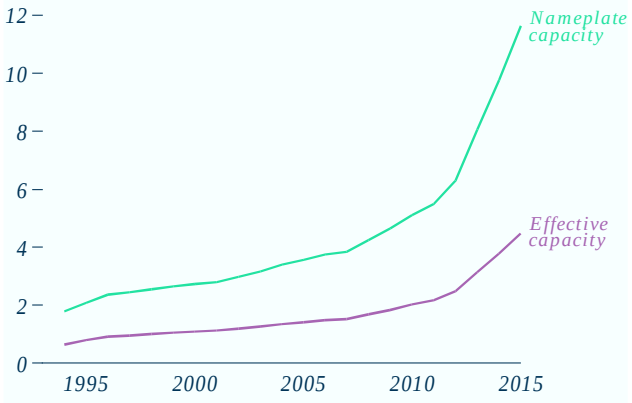
In the *AEO96* projections, geothermal resources are limited to steam and hot water in the western United States. Geothermal electricity generation grows from 17 billion kilowatthours in 1994 to 24 billion in 2015 (Figure 51). Projected expansion of flashed steam and binary cycle units is offset by an expected decline at The Geysers site, where reservoir water is being depleted. Growth in geothermal electricity is expected in international markets.

Generation from biomass (wood, grasses, and residues) grows from 47 billion kilowatthours in 1994 to 67 billion in 2015. Cogeneration, mostly in the paper and wood industries, is about 80 percent of the total. The projections combine current direct-fired units and additions of new integrated gasification combined-cycle units. A portion of the fuel for the new units, first available in 2000, is expected to be produced by dedicated energy crops.

Municipal solid waste (MSW) generation increases from 19 to 36 billion kilowatthours. Because MSW combustion is primarily a waste disposal method, it is limited by the availability of waste streams. Recycling, composting, and landfills provide ample options for disposition of the waste, while environmental concerns keep costs high for MSW units. Moreover, the ability of local jurisdictions to direct waste flows to MSW plants has been restricted by the courts, making use of the technology more uncertain. The share of MSW generation from low-Btu gas extracted from landfills is projected to grow from 14 percent in 1994 to nearly 18 percent in 2015.

Competition, Regulatory Uncertainty Could Delay Wind Power Gains

Figure 52. Electricity generation capacity from wind power, 1994-2015 (gigawatts)



Although wind energy currently is one of the most economical renewable energy technologies, its market penetration is sensitive to cost projections for competing fuels. Current projections of low fuel costs (especially for natural gas) increase the uncertainty of wind power's future.

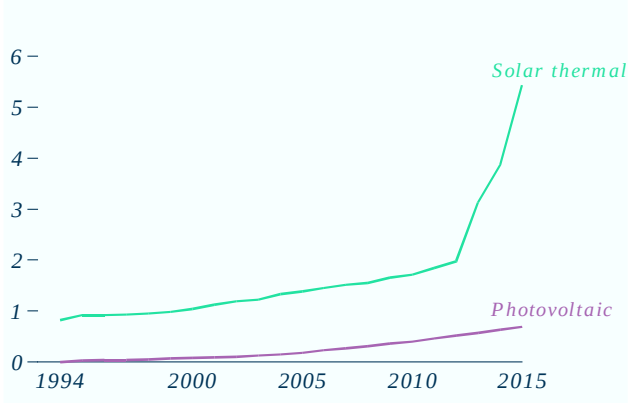
Wind capacity is expected to increase to about 5 gigawatts nationally by 2010 and to about 12 gigawatts by 2015. Penetration is expected primarily in the West, where resources are favorable, with most of the growth coming after 2010, when gas prices rise and the demand for new capacity is greater.

Relative to other technologies, the amount of wind capacity that needs to be in place to deliver a given amount of effective capacity is high (Figure 52), because capacity factors for wind power are relatively low. Nevertheless, the amount of electricity generated from wind turbines is expected to grow from 3 billion kilowatthours in 1994 to 33 billion kilowatthours in 2015—an average increase of more than 11 percent a year.

In 1995, the Federal Energy Regulatory Commission overturned California's Biennial Resource Planning Update, because it set higher prices for electricity from renewables than from traditional sources. That decision eliminates 927 megawatts of wind capacity that was included in previous forecasts from the *AEO96* projection. In addition, some members of Congress have proposed repeal of the tax credit for wind power (1.5 cents per kilowatthour), introducing further uncertainty into the market.

Solar Generation Remains Low, But Rises Late in the Forecast

Figure 53. Solar thermal and photovoltaic electricity generation, 1994-2015 (billion kilowatthours)



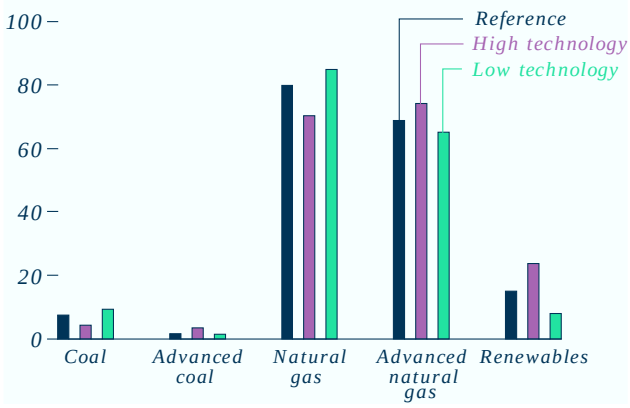
AEO96 projects expansion of grid-connected solar electricity generation—mostly late in the forecast period—from less than 1 billion kilowatthours in 1994 to more than 6 billion in 2015 (Figure 53), primarily for peak load requirements. Still, solar will continue to account for less than 2 percent of all renewable electricity generation, and its share of the overall grid-connected U.S. electric power supply will remain small.

Solar thermal generating capacity, primarily dish stirling or central receiver technologies, is more than 1.7 gigawatts in 2015, assuming that existing parabolic trough capacity remains in place. Grid-connected photovoltaics continue to expand, as does U.S. manufacture of cells and modules. Electric utilities are investing in photovoltaics to create demand and spur improvements, and State incentives make the technology attractive. Nevertheless, most new photovoltaic applications will be on a small scale.

The *AEO96* projections do not include off-grid photovoltaic applications, such as for isolated vacation homes, lights and signals, and consumer devices. Off-grid generation from photovoltaics probably will grow by 5 to 10 megawatts a year through 2000 and increasingly thereafter. World markets for cells and modules produced in the United States are also expected to grow substantially. The economics of off-grid generation are particularly beneficial in developing countries, where new generating technologies are needed to supply electricity to rural areas not served by grid-connected utilities.

Greater Technology Gains Could Increase Renewable Capacity

Figure 54. New electricity generation capacity in three cases, 1994-2015 (gigawatts)



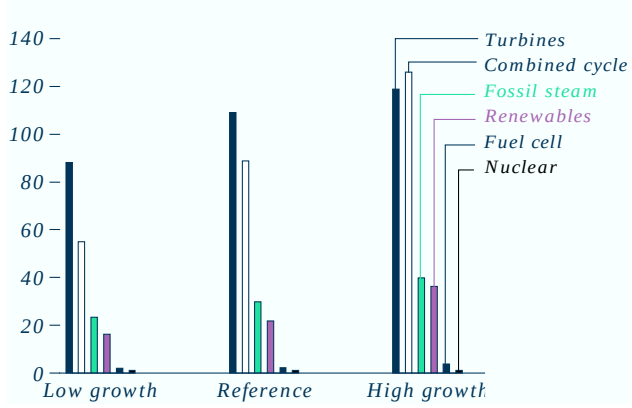
In the *AEO96* reference case, capital costs for construction of new, advanced generating facilities are assumed to decline as a function of market penetration. Higher costs to account for both technological optimism and inexperience in constructing new designs are assumed. These factors account for the difference between costs based on engineering estimates before a plant is built and the actual costs.

To examine the impacts of these assumptions, high and low technology cases were developed. In the high case, learning effects were assumed to *decrease* by 4 percentage points (relative to the reference case value of 10 percent) for each doubling of capacity; an *increase* of 4 percentage points was assumed in the low technology case. In addition, factors that increase the cost of the earliest units constructed were halved and doubled from their reference case values in the high and low cases, respectively.

Between 1994 and 2015, advanced coal-fired capacity additions are 2 gigawatts higher in the high technology case than in the low case, and advanced gas-fired capacity additions are 10 gigawatts higher (Figure 54), due to a 35-percent difference in the capital costs for first-of-a-kind units across the two cases. Conversely, capacity additions for conventional coal- and gas-fired technologies are 5 and 15 gigawatts lower, respectively, in the high than in the low case. The capital costs for first-of-a-kind units using renewable technologies are 42 percent lower in the high case than in the low case, and renewable capacity additions are 16 gigawatts higher.

Turbines, Combined-Cycle Plants Claim Majority of Capacity Additions

Figure 55. New generating capacity by fuel type in three cases, 1994-2015 (gigawatts)



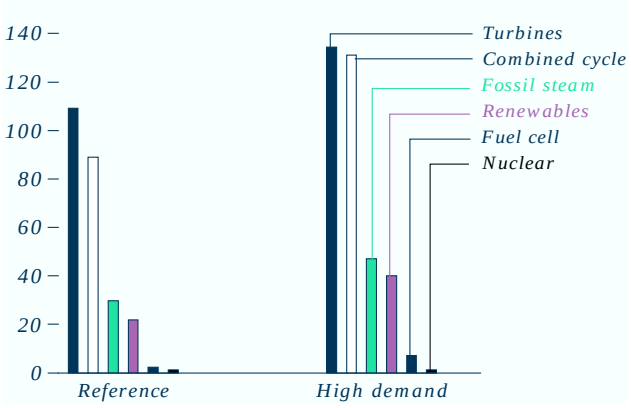
In the reference case, electricity suppliers are expected to add 252 gigawatts of new capacity, equivalent to 840 new 300-megawatt power plants. Of the new capacity, 12 percent is expected to be coal-steam, 78 percent gas-turbine, 9 percent renewable technologies, and 1 percent fuel cells (Figure 55). In addition, between 1994 and 2015, utilities are expected to repower or life-extend 268 gigawatts or 38 percent of current capacity.

Depending on the generating technology chosen, current construction costs for a typical 300-megawatt plant range from $400 per kilowatt for combined-cycle technologies to $1,500 per kilowatt for coal-steam technologies. These costs, combined with the difficulty of obtaining permits and developing new generating sites, make refurbishment of existing power plants at $260 per kilowatt an attractive option for utility resource planners. Between 1994 and 2015, utilities are expected to refurbish 770 coal-, 172 gas-, and 74 oil-fired generators.

From 1994 to 2015, the annual average growth rate for GDP ranges between 2.5 and 1.5 percent in the high and low economic growth cases, respectively. The difference of a percentage point in the economic growth rate leads to a 0.7-percent change in electricity demand, with a corresponding difference of 140 gigawatts of new capacity required across the high and low economic growth cases. Regardless of economic conditions, utilities are expected to retire 12 percent of current capacity, or 1,221 generating plants, by 2015.

Higher Demand Increases Generating Capacity, Carbon Emissions

Figure 56. New generating capacity by fuel type in two cases, 1994-2015 (gigawatts)



Electricity consumption grows in the forecast, but the rate of increase lags behind historical levels as a result of efficiency improvements and demand-side management programs. The following demographic projections for the 1994-2015 period are major determinants of sectoral electricity consumption: (1) the annual growth rate for the population over age 16 is 0.1 percentage point lower than the 1.1-percent growth rate from 1963 through 1993; (2) the annual growth rate for commercial floorspace is 0.8 percentage point lower than the 1.9-percent growth rate from 1989 through 1993; and (3) efficiency improvements in industrial processes and equipment continue at least at recent levels. A significant deviation from these assumptions would result in substantial changes in electricity demand.

To analyze the effects of changes in the assumptions, a high demand case was prepared, assuming that growth in demand for electricity would be 0.4 percentage point higher than in the reference case, or 1.8 percent a year. In this case, 109 gigawatts more new generating capacity is needed than in the reference case between 1994 and 2015—equivalent to 363 new 300-megawatt generating plants (Figure 56). The additional capacity results in a 6-percent increase in coal consumption and a 9-percent increase in natural gas consumption relative to the reference case in 2015, and carbon emissions are 38 million metric tons (2 percent) higher. The additional capacity in the high demand case includes 19 gigawatts, or 18 percent, more renewable capacity—equivalent to 380 new 50-megawatt power plants.

The electric power industry is currently undergoing a metamorphosis from traditional, ratebase/rate-of-return regulation to a market-driven, competitive structure (see box on page 30). Although the ultimate outcome of the transformation is unclear, sufficient pressure from consumer and business organizations increases the likelihood that some sort of change will occur. At a minimum, utilities and regulators need to respond to consumer demands for competitive pricing and flexibility in choosing local suppliers. At a maximum, a complete divestiture of transmission facilities by investor-owned utilities (IOUs), coupled with retail wheeling (which gives customers the ability to select their electricity suppliers) may prevail. The reality will, most probably, fall somewhere between these two extremes. In addition to market-driven uncertainties, recent and future legislation affecting demand-side management (DSM) programs, emissions control strategies, transmission access, and the uncertain future of the nuclear industry could also influence utility decisions.

The stringent efficiency standards for new appliances mandated by EPACT could displace the current market for DSM programs and cause resources to be refocused on policies designed to cut operating costs. In 1993, utilities reduced their overall actual peak load by 23 gigawatts, with energy savings in excess of 44 billion kilowatthours or 1.5 percent of total U.S. generation. Although the future of DSM programs is uncertain, utilities report that, by 1998, they expect to reduce their potential peak load by a total of 33 gigawatts, with energy savings of 90 billion kilowatthours or 3 percent of total U.S. generation. In 1993, utilities spent $2.8 billion on DSM, and they currently plan to increase that amount to $3.9 billion by 1998.

EPACT also created a class of generators called exempt wholesale generators (EWGs), which have the potential to transform the role of new nonutility suppliers and to affect electricity trade. These non-rate-based generators are exempt from traditional utility regulation and can market their power to utilities through access to utility transmission systems as ordered by the FERC. This first step toward restructuring could expand into the formation of regional transmission groups (RTGs)—which are power pools dedicated to the efficient and equitable use of regional transmission facilities—or shared ownership of the transmission facilities, where suppliers share transmission costs on the basis of resource utilization. By severing the current binding of local generation to local distribution, these agreements could significantly affect the amounts and types of new generating capacity and lead to the retirement of uneconomical generating facilities.

Although utilities have responded to the reductions in sulfur dioxide and nitrogen oxide emissions mandated by CAAA90 (see discussion on page 34), new environmental regulations and advances in low-pollution generating sources could also alter the future mix of generating capacity. Voluntary programs such as CCAP could be replaced by emissions reduction mandates similar to the Clean Air Act of 1963—which established the Federal Government's role in regulating air quality—and increase the cost of fossil fuel generation technologies relative to renewable technologies. Conversely, by providing alternates to large-scale, central-site coal-steam units, distributed generation, including fuel cell and solar technologies, could preempt future emissions control mandates and decrease coal's dominant position as a generating fuel. Furthermore, advances in gas turbine technologies could dampen the effect of rising gas prices by providing more output per unit of fuel.

Progress has continued on new nuclear designs. Four advanced designs are being developed jointly by the U.S. Department of Energy and private industry, and two have received Final Design Approval from the Nuclear Regulatory Commission. The last step of the design certification process for the two approved designs was expected to be completed by the end of 1995. Due to high technological optimism and learning factors, the *AEO96* forecast does not project new nuclear units to become operable by 2015. However, a significant decrease in nuclear construction costs or greater experience in the implementation of new nuclear designs could accelerate penetration with new orders possible before 2015.

Electricity: Comparative Forecasts

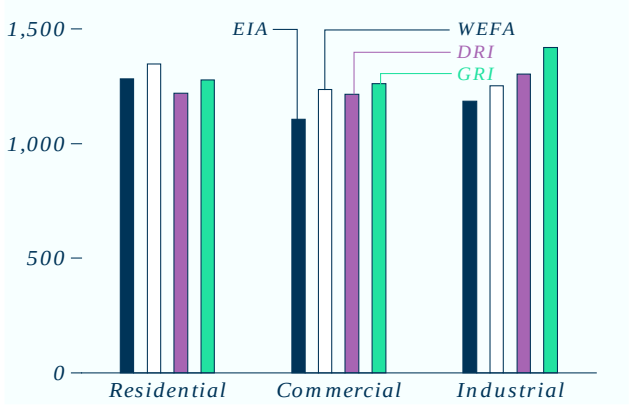
Overview

Of the major electricity forecasts available at the time of this writing, NERC and NERA provide electricity projections to 2005, DRI and GRI to 2015, and WEFA to 2013. Comparisons with *AEO96* are limited here to a forecast horizon of 2010. DRI and WEFA projections are from mid-year 1995 forecasts, and GRI projections are from 1996 baseline forecasts. Projections for 2000 from NERA, NERC, DRI, GRI, and WEFA and for 2010 from DRI, GRI, and WEFA are provided in Appendix F.

Sales

Comparison across forecasts shows considerable variation in the commercial and residential sectors. Electricity sales projections for 2010 range from 1,220 billion kilowatthours (DRI) to 1,346 billion kilowatthours (WEFA) for the residential sector (EIA's projection is 1,282), and from 1,105 (EIA) to 1,262 (GRI) billion kilowatthours for the commercial sector (Figure 57). The forecasts for total electricity sales in 2010 range from 3,958 billion kilowatthours (GRI) to 3,604 billion (EIA). Different assumptions governing the expected economic activity in each sector, coupled with diversity in the estimation of penetration rates of energy-efficient technologies, are the primary reasons for the variation among forecasts. For example, by assuming slow growth in housing stocks but more powerful growth in commercial floorspace, DRI projects weaker residential sales but stronger commercial and industrial sales than the *AEO96*. Similarly, because GRI projects stronger industrial output, its industrial sales projections are higher than the other forecasts.

Figure 57. Electricity sales projections, 2010 (billion kilowatthours)



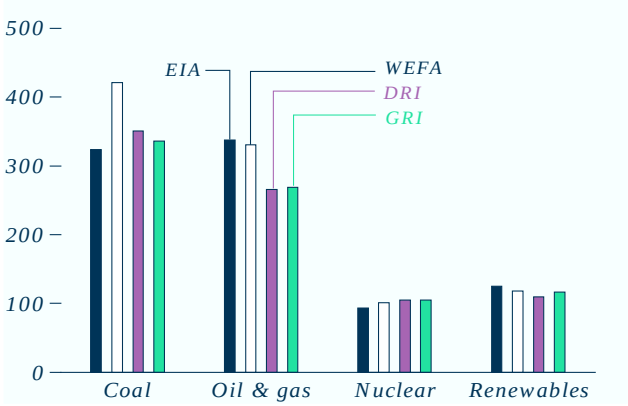
Prices

All the forecasts compared agree that stable coal prices and slow growth in electricity demand relative to GDP will tend to keep the price of electricity stable—or declining in real terms—until 2010.

Capability

Because the other forecasters project higher total electricity sales than EIA, their projections of the total capacity needed by 2010 is also proportionally higher. Although sensitive to the mix of technologies chosen, typically, an increase of 0.1 percentage point in sales results in an average capacity increase of about 20 gigawatts. For example, EIA's projection of capacity in 2010 is 92 gigawatts lower than the WEFA forecast—reflecting the difference between consumption growth rates of 1.3 percent and 1.7 percent a year, respectively.

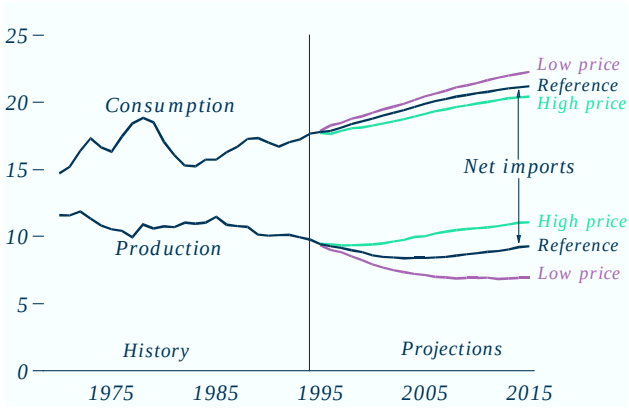
Figure 58. Electricity generating capacity projections, 2010 (gigawatts)



The distribution of sales among sectors affects the mix of capacity types needed to satisfy sectoral demand. Although EIA's mix of capacity among fuels is similar to the other forecasts, small differences in sectoral demands across the forecasts lead to significant changes in capacity mix. For example, growth in the residential sector coupled with an oversupply of baseload capacity results in a need for more peaking and intermediate capacity than baseload. Consequently, utilities would be expected to plan for more combustion turbine and fuel cell technologies than coal, oil, or gas steam capacity for the future. With a higher projection of residential demand growth than the other forecasts, EIA expects more oil and gas capacity in 2010 (Figure 58).

Net imports of both oil and gas grow to fill the difference between domestic production and consumption in the *AEO96* forecast (Figure 59). In the reference case, the growth in net natural gas imports from 12 percent of total gas consumption in 1994 to 14 percent in 2015 is far less than the growth in net oil imports from 45 percent of oil consumption in 1994 to 56 percent in 2015. Although projected oil prices in the *AEO96* forecast are lower than they were in *AEO95*, oil production is projected to be higher and oil consumption lower. Thus, U.S. dependence on oil imports is less than was projected in *AEO95*. The change in the outlook is attributable primarily to a revised assessment of the resource base (specifically, an increase in the level of inferred reserves) and to a reexamination of technological advances that tend to increase finding rates and reduce unit costs.

Figure 59. Oil production, consumption, and imports, 1970-2015 (million barrels per day)



AEO96 incorporates exports of Alaskan North Slope crude oil from the United States starting in 1996. The projections indicate export levels near 200 thousand barrels a day in 1996 and 1997, declining to about 140 thousand barrels a day in 1998. After 1998, no more exports of North Slope oil are expected until the last 4 years of the forecast, when moderating product demand and a slight upturn in North Slope production results in exports of 20 to 70 thousand barrels a day.

Natural gas consumption grows from 20.8 trillion cubic feet per year in 1994 to 28.7 trillion in 2015. The 1972 historic high of 22.1 trillion cubic feet is exceeded in 1997, after which consumption increases steadily through 2015. Growth is seen in all sectors, with the largest increase in the electricity generation sector, where consumption doubles by 2013 and continues to grow through 2015. Gas use in the residential, commercial, and industrial sectors grows more slowly, at 0.5, 0.7, and 1.1 percent a year, respectively, through 2015. Natural gas use as a vehicle fuel remains relatively level through 2003 and then begins a rapid increase, from 0.01 trillion cubic feet in 2003 to 0.21 trillion cubic feet in 2015. Oil consumption grows at a slower pace but exceeds its historic high toward the turn of the century, primarily because of increased transportation demand.

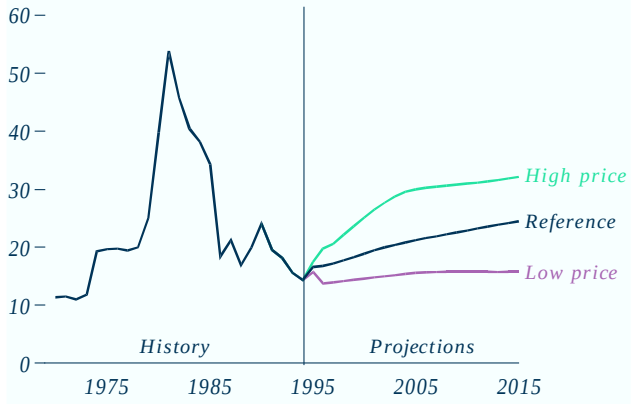
EIA forecasts of oil and gas wellhead prices have varied over the past several years, with differences resulting from changes in assumptions and data based on updated information. Projected lower 48 wellhead oil prices in 2010 are 37 percent lower in *AEO96* than they were in *AEO92*, and projections of lower 48 wellhead prices for natural gas are 58 percent lower (Table 14). The significant drop in natural gas wellhead prices between the *AEO95* and *AEO96* forecasts is based on a variety of factors, including a reassessment of the resource base and a determination that the impact of technology on the economics of offshore drilling will be greater than previously assumed (see box on page 9). Although the undiscovered resource base has not changed significantly, the inferred resource base as assessed by the U.S. Geological Survey has increased substantially. Higher levels of inferred reserves allow for more sustained recovery from known fields, which in turn leads to lower wellhead prices.

Table 14. EIA forecasts of world oil price and domestic oil and gas wellhead prices, 2010

Forecast	AEO92	AEO93	AEO94	AEO95	AEO96
World oil price (1994 dollars per barrel)	*37.17*	*31.42*	*29.37*	*24.63*	*23.70*
Lower 48 oil wellhead price (1994 dollars per barrel)	*36.02*	*30.26*	*28.14*	*23.40*	*22.87*
Lower 48 gas wellhead price (1994 dollars per thousand cubic feet)	*5.18*	*3.95*	*3.62*	*3.46*	*2.15*

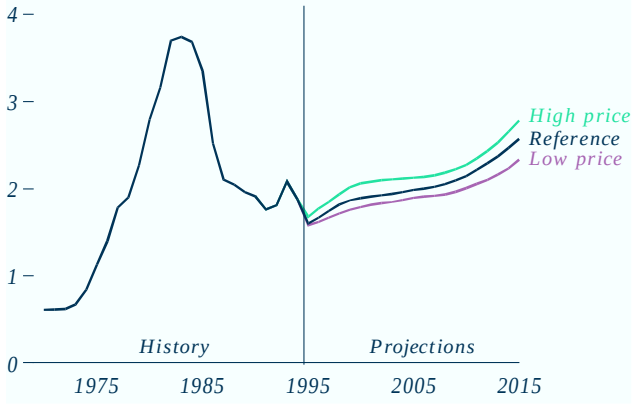
Lower 48 Oil Prices Rise More Rapidly Than Natural Gas Wellhead Prices

Figure 60. Lower 48 crude oil wellhead prices, 1970-2015 (1994 dollars per barrel)



Wellhead prices for lower 48 crude oil grow at an average annual rate of 2.6 percent from 1994 to 2015 in the reference case (Figure 60). Domestic oil prices are determined largely by the international market, and significant variation in world oil price assumptions results in similar variation in the projection of domestic prices.

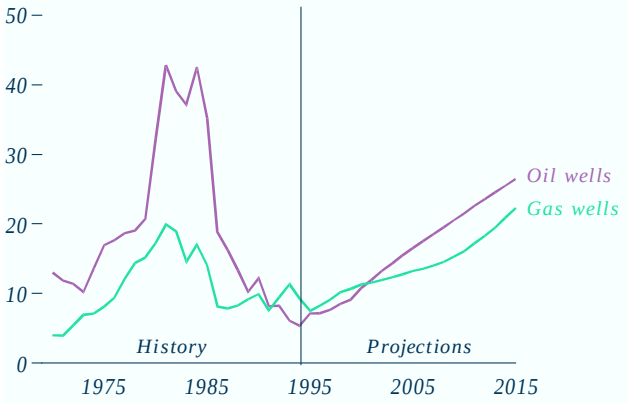
Figure 61. Lower 48 natural gas wellhead prices, 1970-2015 (1994 dollars per thousand cubic feet)



Wellhead prices for lower 48 natural gas increase at an average annual rate of 1.5 percent between 1994 and 2015 in the reference case (Figure 61). The steady increase reflects rising domestic demand for natural gas as well as other effects, including the gradual depletion of domestic natural gas resources. In contrast to oil prices, natural gas prices are less affected by changing world oil prices, largely because oil and natural gas do not compete directly in all domestic markets.

Well Completions Increase in the Forecast

Figure 62. Successful new lower 48 natural gas and oil wells, 1970-2015 (thousand successful wells)



Drilling levels, both exploratory and developmental, increase in the forecast (Figure 62). With rising prices and generally declining drilling costs, crude oil and natural gas well completions grow at average annual rates of 6.7 and 4.5 percent, respectively.

Natural gas drilling is projected to be more productive than oil drilling in terms of total production and production per well, in part because remaining recoverable gas resources are more abundant than oil resources. Over the past two decades, crude oil reserve additions have come primarily from upward revisions and adjustments to the reserves of older fields, whereas gas reserve additions have come from discoveries in new and old fields. The future productivity of both oil and gas drilling is uncertain, however, because the extent of the Nation's oil and gas resources is highly uncertain [*17*].

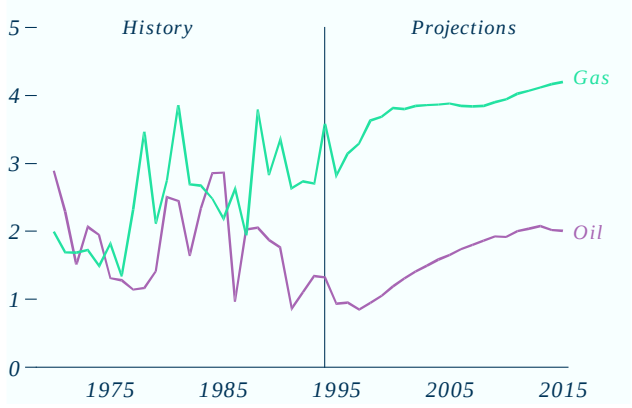
In the high and low oil price cases, oil drilling shows greater variation than gas drilling (Table 15) because the wellhead price of domestic oil responds more strongly to changes in the world oil price.

Table 15. Natural gas and crude oil drilling in three cases (thousands of successful wells)

	1994	2000	2010	2015
Natural gas				
Low oil price case		*10.5*	*15.2*	*20.3*
Reference case	*8.9*	*11.3*	*16.1*	*22.3*
High oil price case		*12.5*	*17.3*	*24.7*
Crude oil				
Low oil price case		*6.8*	*10.9*	*13.4*
Reference case	*6.8*	*10.8*	*21.5*	*26.5*
High oil price case		*19.7*	*30.5*	*33.4*

Reserve Additions Rise for Both Oil and Gas

Figure 63. Lower 48 natural gas and oil reserve additions, 1970-2015 (billion barrels oil equivalent)



Higher drilling levels lead to significant increases in annual reserve additions (Figure 63). Lower 48 natural gas reserve additions generally rise at an average annual rate of 0.8 percent over the 1994-2015 period, continuing the overall trend of the past two decades. Lower 48 oil reserve additions increase by about 2.0 percent a year over the projection period, reversing the generally declining trend of the past two decades.

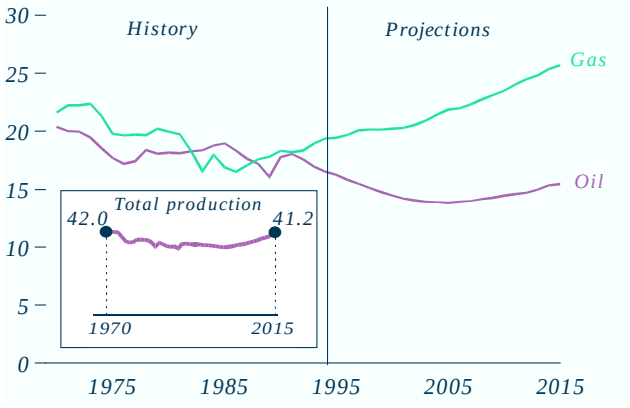
Natural gas reserve additions more than offset production between 1998 and 2007. Lower 48 gas reserves peak at more than 164 trillion cubic feet in 2007, then decline to 162 trillion cubic feet by 2015, driven by the fall in conventional onshore reserves. Despite the projected increase in oil reserve additions, production generally exceeds additions. Oil reserves are depleted at a rate of 1.0 percent a year. In the high and low oil price cases, oil and gas reserve additions also rise throughout the forecast period (Table 16). In fact, the depletion of oil reserves is reversed in the high price case.

Table 16. Lower 48 natural gas and crude oil reserve additions in three cases (billion barrels oil equivalent)

	1994	2000	2010	2015
Natural gas				
Low oil price case		*3.48*	*3.74*	*3.93*
Reference case	*3.58*	*3.81*	*3.94*	*4.19*
High oil price case		*4.24*	*4.05*	*4.28*
Crude oil				
Low oil price case		*0.70*	*1.15*	*1.30*
Reference case	*1.33*	*1.18*	*1.91*	*1.99*
High oil price case		*1.94*	*2.49*	*2.32*

Higher Production Outlook Relies on Resource, Technology Assumptions

Figure 64. Natural gas and crude oil production, 1970-2015 (quadrillion Btu)



Natural gas production increases throughout the forecast (Figure 64) in response to rising demand. Expanded production over time reflects the combined impact of rising prices, relatively abundant natural gas resources, and improvements in technologies, particularly for unconventional gas recovery and offshore projects.

Domestic oil production [*18*] declines from 1994 through 2005 as the depletion of domestic oil resources continues. After 2005, production increases as prices rise, stimulating overall drilling, and the cumulative effects of improved technology extend development efforts to more costly resources.

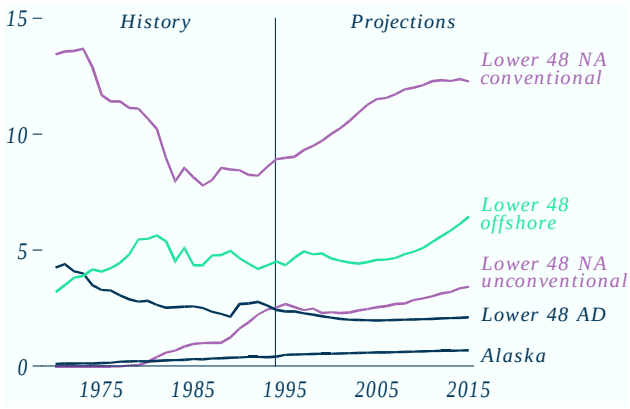
Key assumptions have significant effects on the projections. For example, the resource estimates used in *AEO96* are higher than those in *AEO95* [*19*]. Also, the estimates of economically recoverable oil and gas resources [*20*] vary significantly with different assumptions regarding technological improvement (Table 17).

Table 17. Economically recoverable oil and gas resources in 1990, measured under different technology assumptions

	Crude oil (billion barrels)		Natural gas (trillion cubic feet)	
Lower 48 resources	**1990 technology**	**2015 technology**	**1990 technology**	**2015 technology**
Proved	*26*	*26*	*169*	*169*
Unproved	*106*	*142*	*1,040*	*1,696*
Total	***132***	***168***	***1,209***	***1,865***

Increases Seen for Conventional and Offshore Gas Production

Figure 65. Natural gas production by source, 1970-2015 (trillion cubic feet)



The continuing increase in domestic natural gas production over the forecast comes primarily from lower 48 onshore nonassociated (NA) conventional sources (Figure 65). Gas from offshore wells in the Gulf of Mexico also contributes significantly, particularly after 2005.

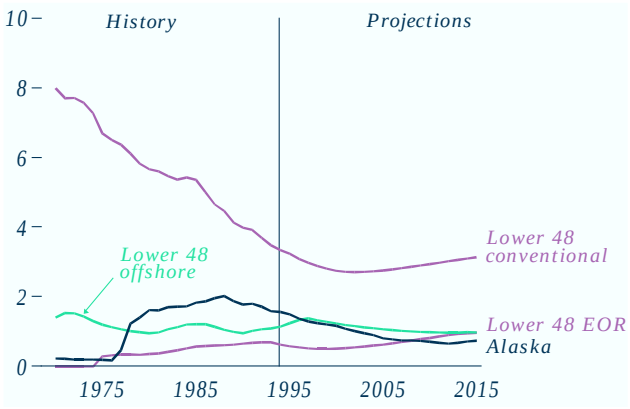
Production of natural gas from lower 48 crude oil reservoirs—either free gas (associated) or gas in solution with crude oil (dissolved)—generally declines, following the expected pattern of domestic crude oil production. Associated/dissolved (AD) gas accounts for less than 9 percent of total lower 48 production in 2015, compared with 13 percent in 1994.

Natural gas production from Alaska rises gradually throughout the forecast. No Alaskan gas is transported to the lower 48 States, because lower 48 prices are not projected to be high enough to support the required transport system within the forecast period. Marketed Alaskan natural gas production does not include gas from the North Slope. North Slope gas is currently reinjected to support oil production. In the future, it may also be marketed as liquefied natural gas to Pacific Rim markets [*21*].

The higher *AEO96* projection for production of natural gas than in *AEO95* is based largely on a revised resource assessment, reduced drilling costs, and a revised representation of the domestic oil and natural gas supply industries (see box on page 9).

Lower 48 Oil Production Offsets Declines in Alaska's Output

Figure 66. Crude oil production by source, 1970-2015 (million barrels per day)



Projected domestic crude oil production continues its historic decline through 2005, but the trend shifts in the latter part of the forecast as accumulating technological advances and rising prices stimulate faster recovery (Figure 66) [*22*]. Conventional onshore production, which accounts for 54 percent of total U.S. crude oil production in 2015, is projected to decrease at an average annual rate of 1.7 percent over the 1994-2005 period, then increase at a rate of 1.3 percent annually over the remainder of the forecast. Offshore production generally declines during the forecast period but at a slow average annual rate of 0.7 percent.

Of all the sources of domestic production, the output from Alaska is expected to decline the fastest, at an average annual rate of 3.5 percent between 1994 and 2015. The overall decrease in Alaska's oil production is driven by the continued decline in production from Prudhoe Bay, the largest producing field, which historically has accounted for more than 60 percent of total Alaskan production. Recent improvements at Kuparuk Field and expanded development of Milne Point Field mitigate the overall decline.

Increased production from enhanced oil recovery (EOR) slows the overall downward trend [*23*]. As oil prices rise, the expected profitability of EOR projects increases, and as a result, EOR production rises at an average annual rate of 2.1 percent over the 1994-2015 period.

Technology effects on oil and gas markets

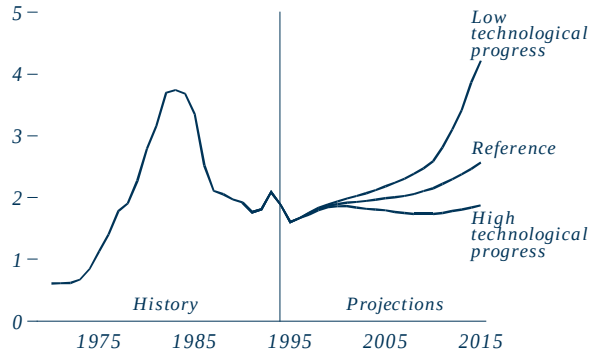
Historically, technological progress has expanded the economically recoverable portion of the U.S. oil and natural gas resource base. Technology improvements have both reduced effective exploration and development costs and increased the technical recoverability of in-place resources. The extent to which such trends are likely to continue is uncertain, depending on both future rates of technology development and deployment.

Two special technology cases were created to assess the sensitivity of the *AEO96* projections to assumed rates of technological progress in the United States: a high technological progress case and a low technological progress case. The two cases both used the reference case natural gas import levels and consumption requirements. The assumed technology improvement rates applied to costs and resources were adjusted upward and downward by approximately 50 percent in the high and low technology cases, respectively. In addition, for the high case, energy efficiency programs in the petroleum refining sector were assumed to increase the efficiency of energy use relative to the reference case by 2.4 percent for steam, 8.2 percent for electricity, and 1.8 percent for natural gas by 2010 [*24*].

The analysis indicated that future wellhead prices for natural gas are extremely sensitive to the rate of technological improvements: the natural gas price in 2015 was 27 percent lower in the high technology case and 64 percent higher in the low technology case than in the reference case (Figure 67). In the high case, the price path for lower 48 natural gas was essentially flat, with the 2015 wellhead price of $1.87 per thousand cubic feet (in 1994 dollars) slightly lower than the 1994 price. In the low case, the 2015 price of $4.22 per thousand cubic feet was more than double the 1994 price.

In contrast, the variation in oil prices was minimal. The 2015 average wellhead price for lower 48 crude oil, determined by the refinery model, varied from the reference case price by less than 0.4 percent in the high and low technology cases.

Figure 67. Lower 48 natural gas wellhead prices with alternative levels of technological progress, 1970-2015 (1994 dollars per thousand cubic feet)



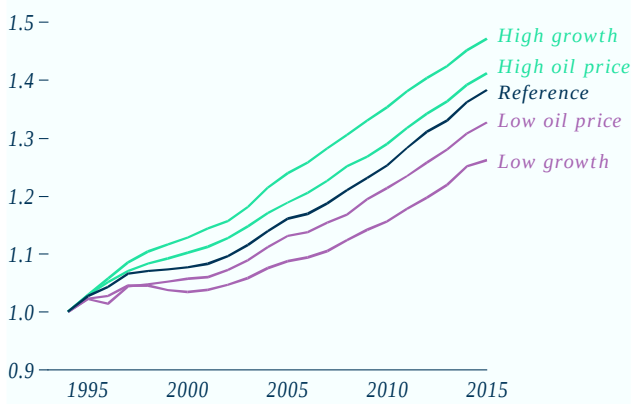
The difference in the price sensitivity for the two fuels reflects the nature of their markets. Domestic oil prices are determined largely by the international market, because changes in U.S. oil production do not constitute a substantial volume relative to the global market. In contrast, domestic natural gas prices are determined largely by competition in North American energy markets. Natural gas, unlike oil, is not easily transported between the United States and countries on other continents, and because the United States produces most of the gas it consumes, changes in U.S. production have a greater impact on the market.

Because domestic natural gas consumption was assumed to be equal to that in the reference case, U.S. gas production was essentially the same in the low and high technology cases; however, in the latter half of the forecast, the *source* of production shifted—to offshore in the high case and to conventional onshore in the low case. Overall, natural gas production shifted by roughly 2 trillion cubic feet between the high and low technology cases.

Domestic crude oil production varied significantly across the cases. In 2015, overall domestic oil production was 6.84 million barrels per day in the high technology case, compared with 5.05 million barrels per day in the low technology case and 5.81 million barrels per day in the reference case. Drilling costs decline more rapidly when technological impacts are greater, resulting in more oil drilling and higher domestic oil production.

Gas Consumption Increases in All Cases by 2015

Figure 68. Natural gas consumption in five cases, 1994-2015 (index, 1994 = 1.0)

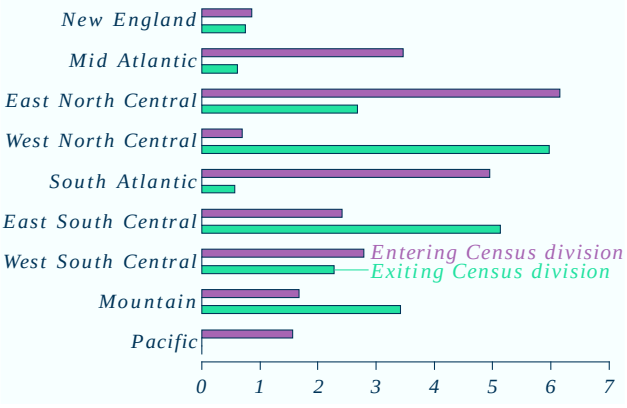


The natural gas market expands from 1994 to 2015 in all the *AEO96* cases (Figure 68). Domestic consumption ranges from 26.2 trillion cubic feet per year in the low economic growth case to 30.5 trillion cubic feet in the high growth case in 2015, as compared with 20.8 trillion cubic feet in 1994. Growth is seen in all end-use sectors, with highest growth as a result of rising demand for electricity, including industrial cogeneration. About half of the variation across cases is attributable to differences in gas consumption for electricity generation.

Total gas consumption in the electricity generation sector more than doubles in the reference case, from 3.3 trillion cubic feet per year in 1994 to 7.3 trillion cubic feet in 2015, with steady growth after 2000. The growth is attributable both to increased utilization of existing gas-fired power plants and to the addition of new combined-cycle facilities, which are less capital-intensive than coal, nuclear, or renewable electricity generation plants. Although projected coal prices to the electricity generation sector are lower than current prices, the natural gas combined-cycle share of new builds is three times that of coal. Lower up-front capital costs and projected improvements in gas turbine heat rates make the overall cost of gas-generated electricity per kilowatthour competitive with the cost of electricity from coal-burning generators. The large increase in gas consumption in the electricity sector after 2010 results from higher demand for electricity and from the addition of combined-cycle plants to replace a portion of the retiring nuclear power stations.

Expansion of Pipeline Capacity Expected in All Regions

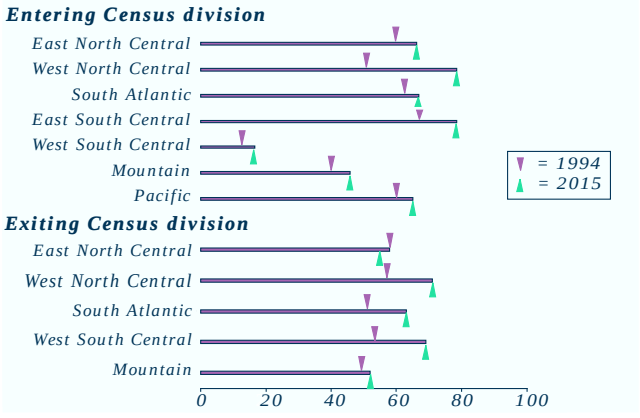
Figure 69. Pipeline capacity expansion by Census division, 1994-2015 (billion cubic feet per day)



Although the boom in pipeline and storage construction seen in the late 1980s and early 1990s has slowed, new capacity will still be required. Pipeline capacity increases are seen both entering and exiting key regions (Figure 69), and storage capacity grows in most regions. The strongest growth is projected for the early years of the forecast, when planned additions to hook up new supplies and service new markets come on line, and in the years beyond 2010, when additional capacity will be needed to meet electricity generation requirements.

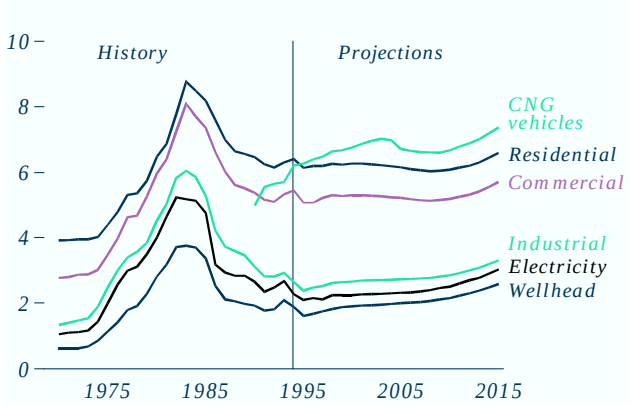
Growth in new pipeline construction is tempered by higher capacity utilization (Figure 70). Electricity generator and industrial customer load fills in the valleys in the demand patterns of residential and commercial customers. This helps to place downward pressure on margins.

Figure 70. Pipeline capacity utilization by Census division, 1994 and 2015 (percent)



End-Use Prices for Natural Gas Show Moderate Growth

Figure 71. Natural gas end-use prices by sector, 1970-2015 (1994 dollars per thousand cubic feet)



Little change in consumer prices is projected through 2008, as declines in margins generally offset moderate increases in wellhead prices (Figure 71). After 2008, rapidly increasing demand for natural gas exerts upward pressure on supply prices and on the need for new downstream infrastructure, and end-use prices for all sectors rise moderately.

Compared with their rise and decline over the 1970-1994 period, transmission and distribution revenues in the natural gas industry are relatively stable in the forecast (Table 18), with declines in margins balanced by higher volumes. Margins for the electricity generation sector decline through 2006, then increase by one-third over 2006 levels by 2015, due in part to changes in regional consumption patterns. Early in the forecast, the majority of gas consumption in the sector is in producing regions, such as the West South Central; in the later years of the forecast, growth is expected in nonproducing regions, such as the East North Central, Mid-Atlantic, and South Atlantic, where greater distances from the wellhead are reflected in higher markups.

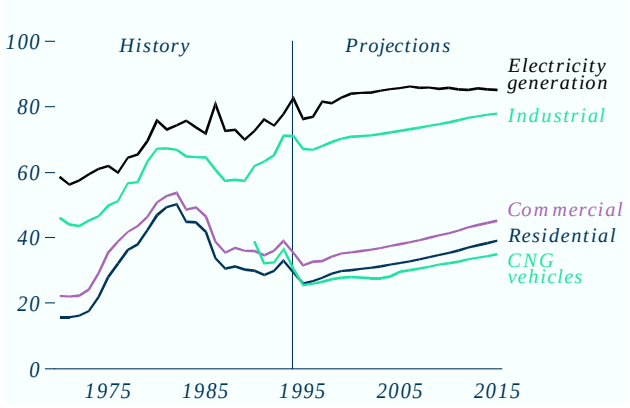
Table 18. Transmission and distribution revenues and margins, 1970, 1984, 1994, and 2015

	1970	1984	1994	2015
T&D revenues (billion 1994 dollars)	28.42	49.73	39.67	44.11
End-use consumption (trillion cubic feet)	19.02	16.34	18.87	26.28
Average margin* (1994 dollars per thousand cubic feet)	1.49	3.04	2.10	1.69

*Revenue divided by end-use consumption.

Wellhead Share of End-Use Price Increases in All Sectors

Figure 72. Wellhead share of natural gas end-use prices by sector, 1970-2015 (percent)



With transmission and distribution margins declining in most sectors, the wellhead share of end-use prices increases over the forecast (Figure 72). The greatest impact is seen in the residential and commercial core markets.

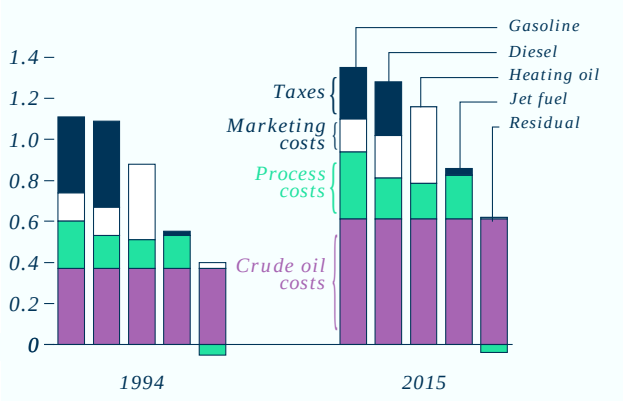
Changes have been seen historically not only in the wellhead price component of end-use prices but also in pipeline and local distribution company (LDC) margins (Table 19). The decline in the pipeline margin results from the treatment of historical costs in cost-of-service ratemaking [25], a decline in the AA utility bond rate, increased utilization of pipeline capacity (which places downward pressure on unit costs), and the effects of a more competitive market resulting from restructuring. Although LDC margins have increased historically, as the impacts of restructuring further affect the transmission segment of the market and begin to affect the distribution segment, decreasing markups are projected for both segments.

Table 19. Components of natural gas end-use prices, 1984, 1994, 2005, and 2015 (1994 dollars per thousand cubic feet)

Price Component	1984	1994	2005	2015
Wellhead price	3.78	1.88	1.99	2.57
Citygate price	5.49	3.07	3.01	3.60
Pipeline margin	1.71	1.20	1.02	1.03
LDC margin				
Residential	2.99	3.33	3.13	2.98
Commercial	2.20	2.37	2.22	2.11
End-use price				
Residential	8.48	6.40	6.15	6.59
Commercial	7.69	5.44	5.21	5.70

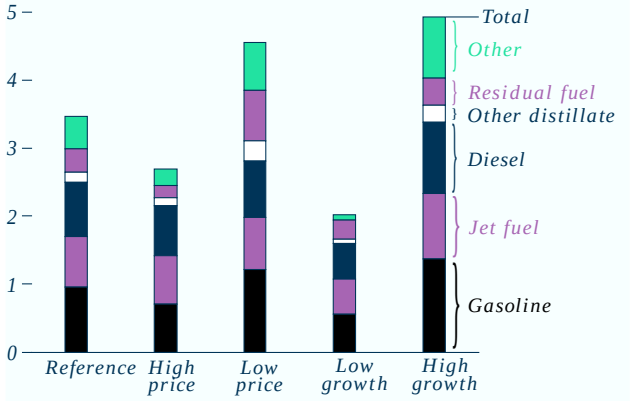
Refined Product Costs Reflect New Environmental Regulations

Figure 73. Components of refined product costs, 1994 and 2015 (1994 dollars per gallon)



Petroleum Fuels Dominate Transportation Energy Use

Figure 74. Change in petroleum products supplied in five cases, 1994 to 2015 (million barrels per day)



Refined product prices in the forecast continue to be dominated by crude oil costs (Figure 73). However, changes are projected in refining process costs, marketing costs, and taxes. State motor fuels taxes are assumed to keep up with inflation, as they have in the past. Federal taxes, which have increased sporadically in the past, are assumed to remain at 1995 nominal levels (a decline in real terms).

AEO96 product prices reflect investments related to compliance with refinery emissions, health, and safety regulations. These investments add 1 to 3 cents to the processing costs of light products (gasoline, distillate, jet fuel, kerosene, and liquefied petroleum gases) relative to 1994 costs.

Further requirements related to reformulated gasoline will also affect processing costs. Cleaner burning reformulated gasoline has been mandated in many areas of the country since the beginning of 1995. A more severe requirement for reformulated gasoline will take effect throughout California in 1996; and beginning in 1998, Federal reformulated gasoline will be required to comply with the EPA's "complex model," which targets reductions in a number of emissions. Further reductions will be required after 2000. At the same time, traditional gasoline will have an "anti-dumping" requirement, meaning that it must be as clean-burning as baseline 1990 gasoline. The complex model and anti-dumping provisions are expected to add 3 to 5 cents a gallon to U.S. average gasoline prices by 2000.

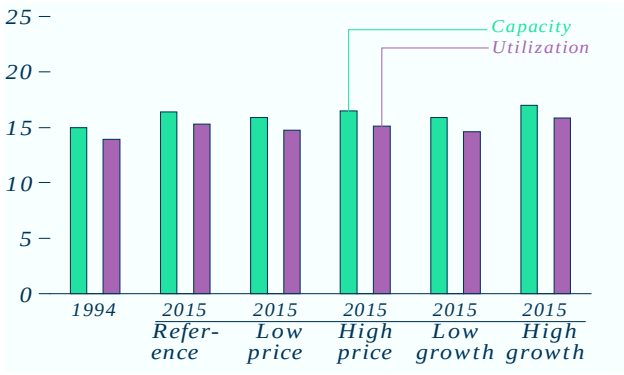
Petroleum products continue in the forecast as the primary source of energy in the United States, representing around 40 percent of U.S. energy consumption throughout the forecast period. Industry will continue to account for about one-fourth of petroleum consumption, and two-thirds will be used for transportation.

Petroleum remains the predominant transportation fuel; however, its share of transportation consumption declines slightly—from 97 percent in 1994 to 94 percent in 2015—as the use of alternative fuels increases. Some shift in petroleum use is projected in the transportation sector, as jet and diesel fuel make up an increasing share of total consumption relative to gasoline (Figure 74). Gasoline consumption, which accounted for 61 percent of motor vehicle consumption in 1994, declines to 53 percent in 2015. From 1994 to 2015, diesel rises from 18 to 19 percent and jet fuel from 13 to 16 percent of total transportation fuel use.

The Clean Air Act Amendments of 1990, requiring the production of cleaner burning gasoline and diesel fuel, has resulted in significant upgrades at U.S. refineries. Further improvements will be needed to meet new restrictions on gasoline scheduled for 1998 and 2000. As a result of these "reformulated fuels investments," many refineries have enhanced their ability to produce a lighter [*26*] and less polluting slate of products, while increasing their flexibility to choose crude oil inputs.

More Refining Capacity, Higher Utilization Rates Expected

Figure 75. Domestic refining capacity and capacity utilization in five cases, 1994 and 2015 (million barrels per day)



AEO96 projects growth in refinery capacity, ranging from 0.9 million barrels per day in the low economic growth case to 2.0 million barrels per day in the high growth case (Figure 75). Differences in the capacity expansion projections are related to the relative levels of petroleum consumption and refined product imports. Most of the expansion is expected at existing sites. Existing refineries will continue to be utilized intensively, at 90 to 94 percent of capacity. In comparison, the 1994 utilization rate was 93 percent, whereas utilization rates were lower in the 1980s and early 1990s.

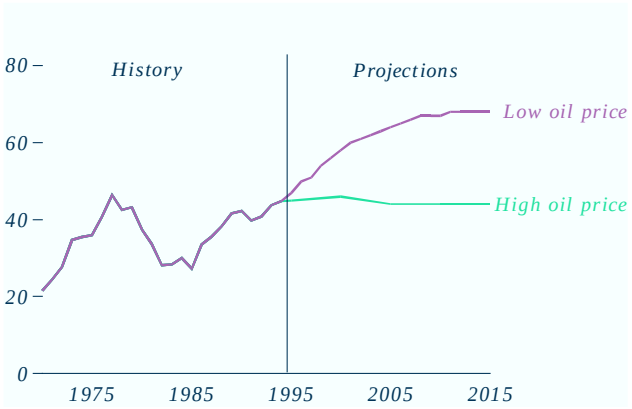
Ongoing investment in equipment for desulfurization, alkylation, isomerization, coking, and other processes will allow U.S. refineries to handle lower quality crude oils, which contain more sulfur (Table 20). The added flexibility will become increasingly valuable as higher quality resources are depleted over time.

Table 20. Crude oil input to refineries by type in the reference case, 1995, 2000, 2010, and 2015 (percent of total)

Input type	1995	2000	2010	2015
Low-sulfur light	31	27	27	26
Medium-sulfur heavy	16	11	10	7
High-sulfur light	22	31	30	35
High-sulfur heavy	19	18	19	15
High-sulfur very heavy	12	12	14	17

Reliance on Petroleum Imports Continues To Rise

Figure 76. Share of U.S. oil consumption supplied by net imports, 1970-2015 (percent)



Net imports of petroleum as a share of domestic petroleum consumption reached 45 percent in 1994, approaching the record level of 46 percent set in 1977. When high world oil prices are assumed, little change is expected from the current balance between domestic and foreign oil supply, and continued low prices could lead to an import share as high as 68 percent in 2015 (Figure 76). An increase in domestic oil production is projected in the high price case (Table 21), but the low price case shows both a sharp decline in domestic production and strong demand growth.

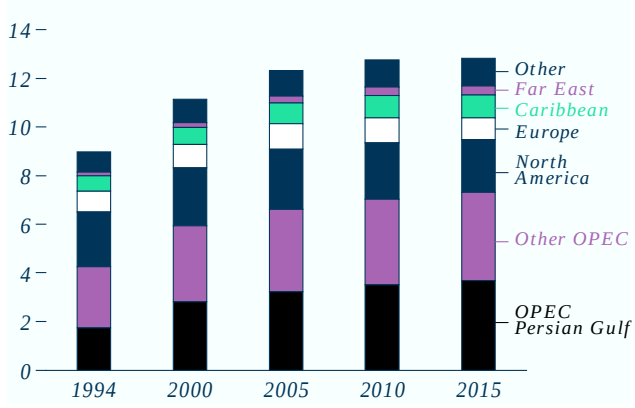
Contributing to the Nation's dependence on imported petroleum is the growth in refined product imports in all the *AEO96* cases. Growth in product imports ranges between 0.6 and 3.0 million barrels per day, as domestic refinery production fails to keep pace with domestic petroleum consumption.

Table 21. Petroleum production and imports, 1994 and 2015 (million barrels per day)

Year and projection	Domestic production	Net crude imports	Other supply	Product supplied	Net product imports
1994	6.7	7.0	2.9	17.7	1.1
2015					
Reference	5.8	9.4	3.6	21.2	2.4
Low oil price	3.7	11.1	3.4	22.3	4.1
High oil price	7.5	7.6	3.6	20.4	1.7
Low growth	5.6	9.1	3.3	19.8	1.8
High growth	6.1	9.7	3.8	22.7	3.1

U.S. Oil Imports From Persian Gulf Grow Steadily

Figure 77. U.S. petroleum imports by source, 1994-2015 (million barrels per day)



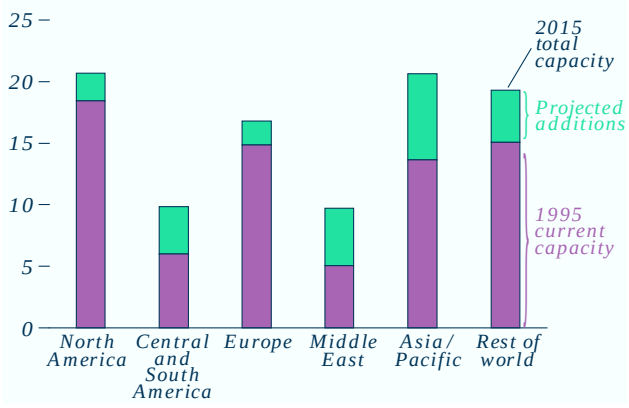
In the *AEO96* reference case, crude oil imports are expected to increase by about 2 million barrels per day by 2000, peak at about 10 million barrels a day in 2006, and then decline slowly through 2015. Imports of refined products show sluggish growth through 2000 but increase by more than a million barrels a day between 2000 and 2015.

By 2000, OPEC will account for more than half of all U.S. petroleum imports (Figure 77). After 2000, the OPEC share increases steadily, to about 57 percent in 2015. The Persian Gulf share of U.S. imports from OPEC increases from 41 percent in 1994 to more than 50 percent in 2015. Crude oil imports from the North Sea increase slightly through 2000, then decline as North Sea production ebbs. Significant imports of petroleum will continue from Canada and Mexico, the U.S. partners in the North America Free Trade Agreement (NAFTA). West Coast refiners are expected to import crude oil from the Far East to replace the modest volumes of Alaskan crude oil that can now be exported.

Light product imports are expected to almost double, to nearly 1.6 million barrels a day in 2015. Most of the increase will come from refiners in the Caribbean Basin and the Middle East, where refining capacity is expected to rise significantly. The vigorous growth in demand for lighter petroleum products in developing countries has an impact on the quality of crude oils imported by the United States. With extensive downstream processing capabilities, U.S. refiners are likely to import smaller volumes of light, low-sulfur crude oils.

Middle East, Asia Lead Substantial Growth in World Refinery Capacity

Figure 78. Worldwide refining capacity by region, 1995 and 2015 (million barrels per day)



Worldwide crude oil distillation refining capacity was 73 million barrels per day at the beginning of 1995. To meet the growth in international oil demand in the reference case, worldwide refining capacity would have to increase by nearly a third—to almost 97 million barrels per day—by 2015. Substantial growth in distillation capacity is expected in the Middle East, Central and South America, and the Asia/Pacific region (Figure 78).

The Asia/Pacific region has been the fastest growing refining center in the early 1990s. It is expected to pass Western Europe as the world's second largest refining center by the end of 1996 and, in terms of distillation capacity, to surpass the United States by 2010. While not adding significantly to their distillation capacity, refiners in the United States and Europe have tended to improve product quality and enhance the usefulness of the bottom or heavier portion of the barrel through investment in downstream capacity.

Future investments in the refinery operations of developing countries must include more advanced configurations than are currently in operation. Their refineries will be called upon to meet increased worldwide demand for lighter products, to upgrade residual fuel, and to supply transportation fuels with reduced lead and distillate, as well as residual fuels with decreased sulfur levels. An additional burden on new refineries will be the need to supply lighter products from crude oils whose quality is expected to deteriorate over the forecast period.

Ethanol tax credit case

In recent years the composition and production of gasoline have changed dramatically in response to the requirements of the Clean Air Act Amendments of 1990 (CAAA90), and they will continue to change through the year 2000 as additional requirements are phased in. The CAAA90 gasoline requirements are aimed at providing cleaner burning gasoline to areas with pollution problems, but they have also served to create a market for gasoline blending agents, or "oxygenates."

Both oxygenated gasoline, which was mandated during the winter months in many U.S. cities beginning in 1992, and reformulated gasoline, which became mandated year-round in many areas in 1995, require blending with oxygenates. Oxygenated gasoline is required to have a minimum oxygen content of 2.7 percent. Reformulated gasoline requires a minimum 2.0 percent oxygen content and has limitations on other fuel characteristics such as Reid vapor pressure (Rvp), sulfur, olefins, and aromatics content.

The selection of an oxygenate is not made on the basis of price and oxygen contribution alone. To a large extent, oxygenates compete on the basis of the net impact that their other blending characteristics (Rvp, sulfur, olefins, aromatics, etc.) will have on the gasoline.

Methyl tertiary butyl ether (MTBE) and ethanol are the oxygenates in widest use at present, and they are expected to continue in that role throughout the forecast. Although these oxygenates currently represent less than 4 percent of the entire gasoline pool, the economics of that small portion have a substantial effect on the refining, petrochemical, and ethanol industries. The choice between ethanol, a renewable fuel, and MTBE, a methanol-based ether, has important implications for refinery investments and operations.

Impact of the ethanol tax credit

Ethanol currently receives an effective tax credit of up to 54 cents a gallon, which also applies to the ethanol portion of the ether, ethyl tertiary butyl ether (ETBE) [*27*]. The tax exemption, which has been granted since 1986, is set to expire in 2000. *AEO96* projections assume that the credit will be renewed and continue at current levels through 2015. Ethanol represents 21 to 33 percent (70,000 to 120,000 barrels a day) of the oxygenate content of U.S. gasolines throughout the *AEO96* forecast. In addition, up to 15,000 barrels of ethanol a day are blended into ETBE. The rest of the oxygenate requirements, between 57 and 79 percent, are met by MTBE and other ethers.

The possible impact of a decision not to renew the ethanol subsidy was analyzed in an alternative case with the credit eliminated after 2000. The results are compared with *AEO96* reference case projections in the table below.

Oxygenate selection in the AEO96 reference case and assuming expiration of the ethanol tax credit, 2001 and 2015 (thousand barrels per day)

		AEO96		*No ethanol credit*	
Oxygenate type	*1994*	*2001*	*2015*	*2001*	*2015*
Ethanol	*74*	*80*	*116*	*0*	*9*
Ethyl ethers	*[a]5*	*20*	*35*	*0*	*9*
Methyl ethers	*[b]145*	*290*	*198*	*463*	*459*
Total	***224***	***390***	***349***	***463***	***477***

[a]Includes ETBE and other oxygenates.
[b]MTBE only.

When the ethanol subsidy is removed after 2000, ethanol blending essentially discontinues for several years, then makes a slight comeback late in the forecast. Thus, the economics of blending with ethanol or ETBE versus nonrenewable ethers (as reflected in the refining model) do not appear to be favorable without the tax credit. The slight return of ethanol blending occurs because the prices of other blending components rise more rapidly than ethanol's throughout the forecast.

Although ethanol represents a small portion of total transportation fuel use, the expiration of the ethanol tax credit and the resulting drop in ethanol blending has an impact on reformulated gasoline prices. While the post-2000 price differential of reformulated gasoline versus conventional gasoline is around 4 cents a gallon in the reference case, the differential increases by about 1 cent per gallon when the tax credit is excluded.

Oil and Gas: Challenges for the Future

Oil and gas supply

During the forecast period, producers face the challenge of slowing or even reversing falling oil and gas production rates from old fields. One method of boosting production is "recompleting" old wells, which entails entering the wells and applying appropriate technology to stimulate production. Well recompletions are often a cost-effective alternative to new drilling. "Horizontal drilling" represents another technological approach that is increasingly used to raise falling production rates. While recompletions and horizontal drilling completions are not explicitly modeled in *AEO96*, their impact is captured in the projected finding and flow rates.

Another challenge for producers is to use new technology and geologic concepts to find new reserves to replace those depleted by production. During the forecast period, major advances in data acquisition, data processing, and the technology of displaying and integrating seismic data with other geologic data—combined with lower cost computer power and experience gained using the new techniques—should continue to exert strong downward pressure on costs, while significantly improving finding and success rates. Effective use of improved exploration and deepwater production technologies to aid in the discovery and development of offshore fields is another important challenge facing the industry.

Natural gas markets

While the transmission side of the natural gas industry has realized many of the effects of increased competition, change on the distribution side has been limited. To position themselves in the new marketplace, local distribution companies will increasingly price their services to correspond with customer perceptions of the value of services rendered. Unbundling of services, with its implications for how LDC customers choose among them, and performance-based ratemaking have begun to make inroads, but it is unclear how far and how fast they will spread.

Another area of uncertainty regards the effects of the evolution of services and other market changes, encompassing rebundling, the secondary or "capacity release" market, and the potential deregulation of transmission and distribution services. The changes will likely increase the utilization of existing facilities and place downward pressure on transportation prices. Increased utilization of existing facilities and increased use of storage is reflected in the *AEO96* forecasts, but the effects could be more pronounced, depending on the direction this evolving segment of the market takes.

While the greatest growth potential for natural gas is in its use for electricity generation, improved operational coordination and increased reliability of gas deliveries to electricity generators will be crucial if the growth is to be realized.

Oil markets

The uncertainties of unfolding environmental legislation and proposed regulations affect every aspect of the petroleum industry, from crude oil production and distribution to refining, product distribution, and petroleum consumption. The uncertainty of environmental legislation extends even beyond establishing the details of new programs, to the possibility that entire programs may be eliminated.

For example, uncertainty surrounds the Air Toxics title of CAAA90, which would require many refineries to install "maximum achievable control technology" (MACT) to reduce emissions of hazardous air pollutants. The standards were promulgated by the EPA in the summer of 1995, but they may not be enforced if proposed revisions to the Clean Air Act are passed. If the Federal MACT requirement is dropped, States may individually initiate similar requirements as a part of their State Implementation Plans for improving air quality.

Another challenge to refining and distribution relates to the implementation of Title II of CAAA90. As a result of this title, reformulated gasoline has been used in the nine U.S. metropolitan areas with the worst ground-level ozone pollution since January 1995, and in other areas that voluntarily "opted-in" to the program. Of the 14 States and the District of Columbia that initially opted into the program, Maine, New York, and Pennsylvania have already dropped certain areas from the program. The ability of areas to opt-in or opt-out creates significant uncertainty in regional demand for reformulated gasoline and complicates the planning and investment decisions of refiners and marketers.

Natural gas forecasts

The diversity among published natural gas forecasts (Table 22) highlights the uncertainty of future market directions. Total natural gas consumption in 2015 varies from a high of 28.70 trillion cubic feet in the EIA forecast to 22.55 trillion cubic feet in the WEFA forecast. GRI's high consumption forecast is linked to its low price forecast.

Table 22. Comparative forecasts for natural gas, 2010 and 2015

2010 Forecast	AEO96	DRI	GRI	AGA	WEFA
Average wellhead price, lower 48 states (1994 dollars per thousand cubic feet)	2.15	2.70	2.31	2.67	2.43
U.S. natural gas production (trillion cubic feet)	22.83	22.89	22.71	21.32	22.88
U.S. natural gas consumption (trillion cubic feet)	26.00	25.96	26.60	25.11	22.95
2015 Forecast	**AEO96**	**DRI**	**GRI**	**AGA**	**WEFA**
Average wellhead price, lower 48 states (1994 dollars per thousand cubic feet)	2.57	2.98	2.29	NA	2.69
U.S. natural gas production (trillion cubic feet)	24.97	25.38	24.27	NA	22.21
U.S. natural gas consumption (trillion cubic feet)	28.70	28.62	28.44	NA	22.55

NA = not available.

While the *AEO96* wellhead price forecast of $2.15 in 2010 falls below all the other forecasts, its projected 2015 wellhead price of $2.57 per thousand cubic feet falls above the GRI forecast of $2.29 but below all the others. GRI assumes a constant world oil price path throughout the forecast, which contributes to the low gas price.

The underlying assumptions that shape the forecasts should be considered when different projections are being compared. For example, in the *AEO96* low world oil price case, the assumed level of world oil prices ($16.07 per barrel in 2015) is closer to the GRI world oil price assumption ($16.17 per barrel) than in the *AEO96* reference case ($25.43 per barrel). As a result, the projected wellhead price of natural gas in the low oil price case—$2.34 per thousand cubic feet in 2015—is closer to the GRI projection.

Oil forecasts

The *AEO96* reference case is characterized by higher oil prices and lower consumption and import levels in 2015 than are seen in other forecasts (Table 23). The 2015 world oil price projections vary widely, from $25.43 per barrel in *AEO96* to $16.17 in the GRI forecast. GRI assumes the same oil price (in constant dollars) throughout the 20-year period. The *AEO96* projections for crude oil and natural gas liquids production in 2010 and 2015 are bracketed by the other forecasts.

Table 23. Comparative forecasts of petroleum prices, production, imports, and consumption, 2010 and 2015

2010 Forecast	AEO96	DRI*	GRI	WEFA	IPAA
World oil price (1994 dollars per barrel)	23.70	22.03	16.17	22.11	NA
Crude oil and natural gas liquids production (million barrels per day)	7.55	7.38	8.24	6.50	6.62
Net imports (million barrels per day)	11.84	12.73	11.78	12.59	13.50
Petroleum consumption (million barrels per day)	20.67	21.18	21.19	20.49	21.18
2015 Forecast	**AEO96**	**DRI***	**GRI**	**WEFA**	**IPAA**
World oil price (1994 dollars per barrel)	25.43	23.58	16.17	NA	NA
Crude oil and natural gas liquids production (million barrels per day)	8.08	7.21	8.89	NA	NA
Net imports (million barrels per day)	11.79	13.74	11.92	NA	NA
Petroleum consumption (million barrels per day)	21.18	22.06	21.95	NA	NA

**The DRI production forecasts include other supply.*
NA = not available.

The projections for petroleum consumption in *AEO96* fall on the lower side of other consumption forecasts for both 2010 and 2015. The relatively low *AEO96* consumption forecasts are explained in part by higher prices for crude oil. The combination of relatively low consumption and middle-of-the-road production projections results in the relatively low requirements for petroleum imports.

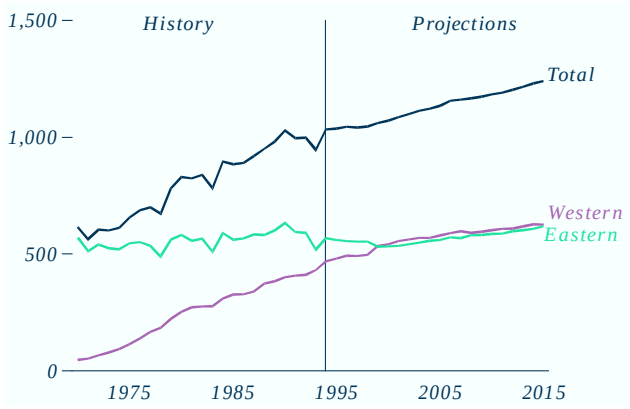
Major trends in this year's coal forecast can be contrasted with changes since 1970 [*28*]. For instance, real minemouth coal prices declined by $3.30 per ton (1994 dollars) between 1970 and 1994, and they are projected to decline by an additional $2.02 per ton between 1994 and 2015. The real price of coal delivered to electricity generators declined by $2.48 per ton between 1970 and 1994, to $28.03 per ton. The price is projected to decline by 0.33 percent a year, to $26.17 per ton in 2015.

Average domestic coal transportation costs, which declined by approximately 1.5 percent a year between 1970 and 1994, are projected to increase by only 0.2 percent a year through 2015. Historically, the change in coal transportation costs has largely been due to railroad mergers, intermodal competition from truck and barge transport, and technological improvements, such as the increasing use of shipper-financed unit trains. The projected growth in coal transportation costs is reduced by the expected continuation of those trends, but with less dramatic effect, as most of the processes that have produced past efficiency improvements attain full penetration of available markets during the forecast.

Eastern coal production has changed little, from 568 million tons in 1970 to 566 million tons in 1994, a decrease of 2 million tons. Eastern production is projected to increase by 0.4 percent a year, or 51 million tons, between 1994 and 2015, reaching 617 million tons in 2015 (Figure 79).

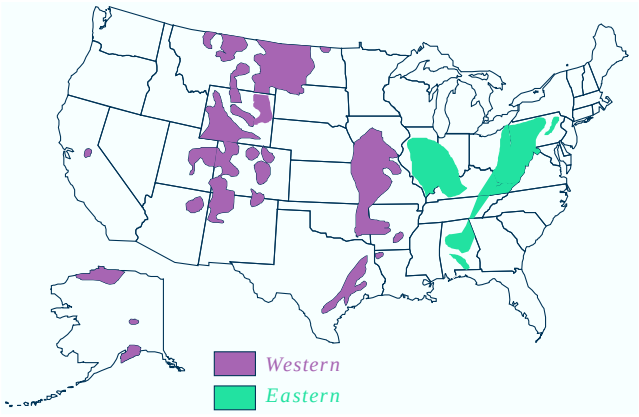
Other statistics show dramatic changes. Total production in 1970 was 613 million tons, or 14.6 quadrillion Btu. Production reached 1,034 million tons in 1994, or 22 quadrillion Btu. In 2015, production is forecast to reach 1,240 million tons (26.1 quadrillion Btu). Most of the growth in production, historically and in the forecast, stems from the growing market share of western mines. Production in the West (Figure 80) grew from 45 to 467 million tons between 1970 and 1994, and it is projected to reach 623 million tons in 2015. In terms of annual percentage rates, western production grows at 1.4 percent while total production grows by 0.9 percent a year.

Figure 79. Coal production by region, 1970-2015 (million short tons)



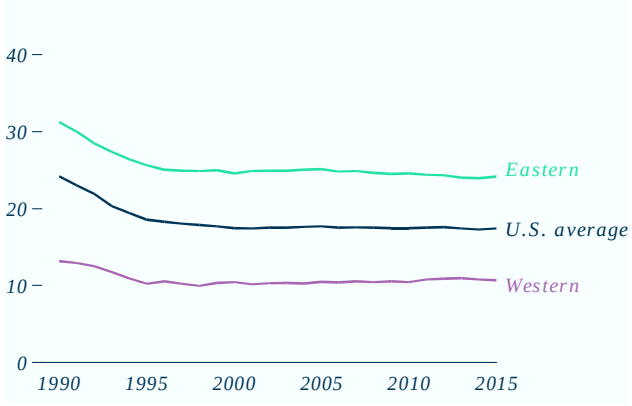
Total production (in tons) increases more rapidly than coal's energy content in both the historical and forecast periods, and the Btu content of an average ton declines. The decline in coal's Btu content was 0.5 percent a year between 1970 and 1994, but it is only 0.05 percent a year between 1994 and 2015. Historically, the decline was due to increased production of western lower rank coals. This trend continues in the forecast, but its influence is largely offset by increasing Btu content in eastern coal, as eastern consumers shift to lower sulfur coals in response to the Clean Air Act Amendments of 1990. The tendency of eastern lower sulfur bituminous coals to have higher Btu content is due in part to more extensive coal preparation to meet the requirements of non-electricity markets.

Figure 80. U.S. coal-producing regions



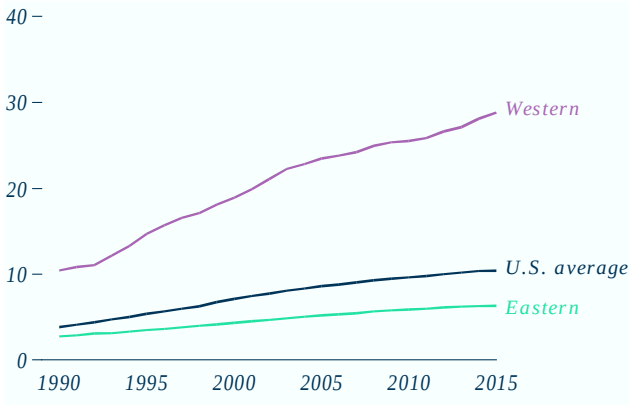
Coal Prices Are Stable Throughout the Forecast

Figure 81. Average minemouth price of coal by region, 1990-2015 (1994 dollars per short ton)



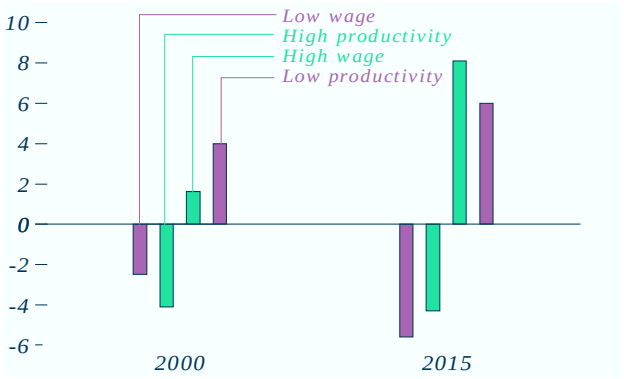
Eastern minemouth prices decline by 1.2 percent a year between 1994 and 2000 and by 0.1 percent a year between 2000 and 2015 (Figure 81). The decline results from falling unit labor costs due to improving productivity and stable real wage rates. Western minemouth prices decline by 0.8 percent a year through 2000, then increase by 0.2 percent a year through 2015. Productivity improvements first outpace, then lag behind cost growth as thicker, shallower low-sulfur coal reserves are depleted. Higher sulfur western coals show no significant price change during the forecast. Improvements in labor productivity (Figure 82) have a smaller impact on western than eastern prices, because labor is a much smaller portion of total cost in western mines [*29*]. As a result of productivity gains, the number of coal miners declines by 43 percent between 1994 and 2015.

Figure 82. Coal mining labor productivity by region, 1990-2015 (short tons per miner per hour)



Coal Price Paths Reflect Changes in Labor Productivity and Wage Rates

Figure 83. Variations from reference case projections of average minemouth coal prices in four alternative cases, 2000 and 2015 (percent)

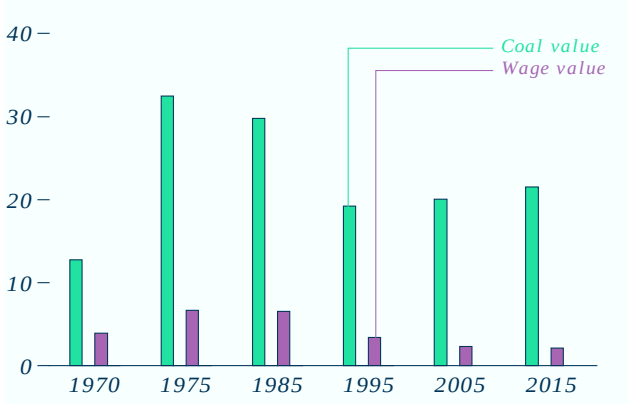


Labor productivity is influenced as much by changing regional production as by technical improvements, responding to the growing market share of more productive western mines. After 2005, however, increased demand for low-sulfur coal will require mining of thinner seams, and labor productivity improvements slow. In the reference case, eastern labor productivity is projected to increase by 3.2 percent a year through 2015, western productivity by 3.8 percent a year, and the national average by 3.6 percent a year. Two alternative cases show how different productivity growth rates affect minemouth coal prices (Figure 83). In a high productivity case, assuming 5.1-percent annual growth, the 2015 price is $16.64 per ton, 4.3 percent below the reference case; and in a low productivity case, assuming 2.2-percent growth, the 2015 price is $18.44 per ton, 6.0 percent higher than in the reference case.

Two other cases show how miners' wages can affect prices. The reference case assumes constant wages in 1994 dollars. In a high wage case, assuming real wage increases of 0.5 percent a year, the 2015 minemouth price of coal is $18.80 per ton, 8.1 percent higher than the reference case; in a low wage case, assuming wage decreases of 0.5 percent a year, the average price is $16.42 per ton, 5.6 percent lower than the reference case. The average delivered price of coal varies by similar amounts, but distribution patterns are not significantly altered. Domestic demand was held constant in these alternative cases, but coal exports varied (by less than 1 million tons) in response to the change in prices.

Wages and Transportation Costs Are Key Components of Coal Prices

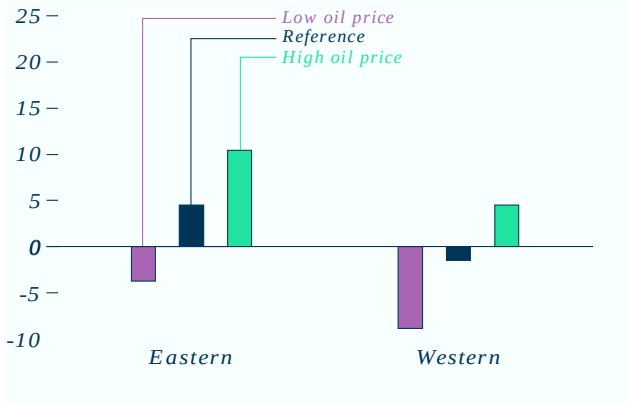
Figure 84. Labor cost component of minemouth coal prices, 1970-2015 (billion 1994 dollars)



Advances in labor productivity cause a continuing decline in the contribution of wages to the minemouth value of coal. Between 1970 and 1994, wages as a percent of minemouth value fell from 32 to 18 percent. By 2015, they are projected to decline to 10 percent (Figure 84).

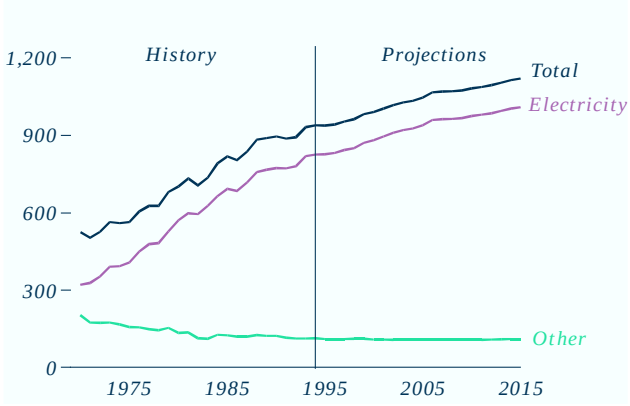
As the improvements in labor productivity slow, the relative competitiveness of regional mining is more strongly influenced by variation in transportation costs. Historically, coal originating in western regions has benefited from lower railroad rates (in dollars per ton-mile). That trend continues in the forecast. Changes in the world oil price cause changes in transportation costs, of which fuel costs are an important component (Figure 85).

Figure 85. Change in coal transportation costs in three cases, 1994-2015 (percent)



Electricity Generation Dominates Overall Coal Use

Figure 86. Electricity and other coal consumption, 1970-2015 (million short tons per year)



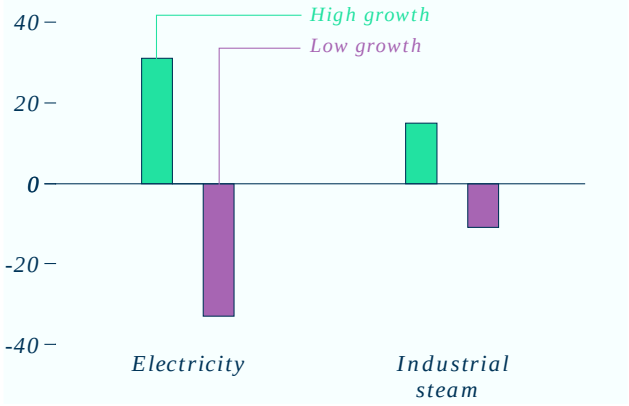
Domestic coal demand rises by 182 million tons in the forecast, from 938 million tons in 1994 to 1,120 million tons in 2015 (Figure 86) because of growth in coal use for electricity generation. Coal demand in all other domestic end-use sectors combined, including industrial cogeneration, decreases by 3 million tons.

Coal consumption for electricity generation (excluding industrial cogeneration but including independent power producers) rises from 826 million tons in 1994 to 1,009 million tons in 2015 due to increased utilization of existing generation capacity and, in later years, additions of new capacity. The average utilization rate for coal-fired plants increases from 62 to 74 percent between 1994 and 2015. Coal consumption (in tons) per kilowatthour of generation is higher for subbituminous and lignite coals than for bituminous coal. Thus, the shift to western coal increases the tonnage required per kilowatthour of generation in midwestern regions. The reverse is seen in eastern regions, where generators shift from higher to lower sulfur Appalachian bituminous coals, which provide slightly more Btu per ton.

Although coal maintains its fuel cost advantage over both oil and natural gas, gas-fired generation is the most economical choice for new power generation through 2010 when capital, operating, and fuel costs are considered. Between 2010 and 2015, rising natural gas prices and retirements of nuclear power plants are projected to cause increasing demand for coal-fired baseload capacity.

Electricity Coal Use Is Tied to Economic Growth

Figure 87. Variation from reference case projections of coal demand, 2015 (million short tons)



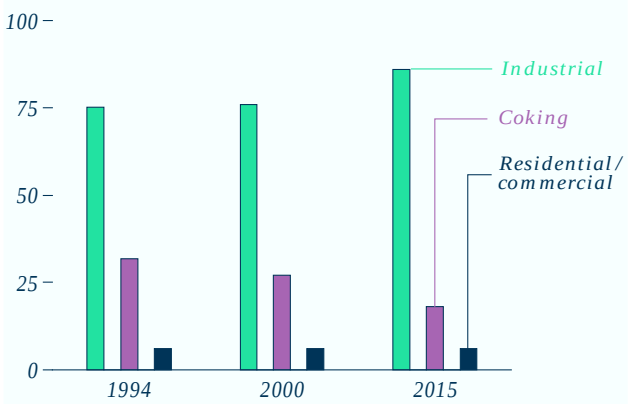
The *AEO96* coal forecasts vary with different assumptions about economic growth and world oil prices. A strong positive correlation between economic growth and electricity demand accounts for the variation in electricity coal demand across the economic growth cases (Figure 87). Most of the variation in electricity coal demand in the economic growth cases is accounted for by changes in coal- and gas-fired generation.

Changes in world oil prices affect petroleum fuel costs associated with the extraction and transportation of coal, and thus affect delivered coal prices. In the high world oil price case, the average mine-mouth price of coal is 8.1 percent higher in 2015 than in the reference case, and in the low price case it is 4.9 percent lower. Interfuel price competition leads to a slightly lower coal demand forecast in the low price case, as oil-fired steam generation displaces some coal use.

Coal transportation costs are also affected by changes in fuel costs. In the world oil price cases, transportation costs vary with fuel costs, contributing to higher or lower coal prices that, in turn, contribute to changes in total coal demand. The combined effects of oil price variation on coal mining and transport costs produce delivered coal costs to utilities that, with higher oil prices, are 7.6 percent higher than in the reference case and with lower oil prices are 7.1 percent lower.

Industrial Coal Use Rises, Other Non-electricity Uses Fall

Figure 88. Non-electricity coal consumption by sector, 1994, 2000, and 2015 (million short tons)



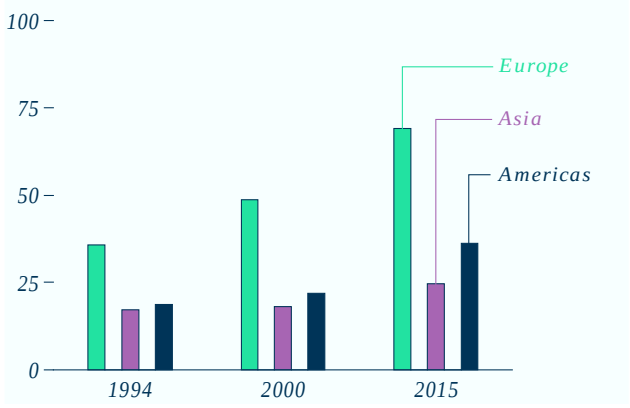
In the non-electricity sectors, an increase of 11 million tons in industrial steam coal consumption between 1994 and 2015 (0.6 percent annual growth) is offset by a drop of 14 million tons in coking coal consumption (Figure 88). Increasing consumption of industrial steam coal results primarily from increased use of coal in the chemical and food-processing industries and for cogeneration (the production of both electricity and usable heat for industrial processes).

The projected decline in domestic consumption of coking coal is caused by the displacement of raw steel production from integrated steel mills (which use coal coke both for energy and as a raw material input) by increased production from minimills (which use electric arc furnaces that require no coal coke) and by increased imports of semi-finished steels. The amount of coke required per ton of pig iron produced also continues declining, with improved energy efficiency and, increasingly, the injection of pulverized steam coal in blast furnaces. Domestic consumption of coking coal falls by 2.7 percent a year through 2015.

While total energy consumption in the residential and commercial sectors grows by 0.2 percent a year, most of the growth is captured by electricity and natural gas. Coal consumption in these sectors remains constant, accounting for less than 1 percent of total U.S. coal demand.

U.S. Coal Exports to Europe, Asia, and the Americas Increase

Figure 89. U.S. coal exports by destination, 1994, 2000, and 2015 (million short tons)



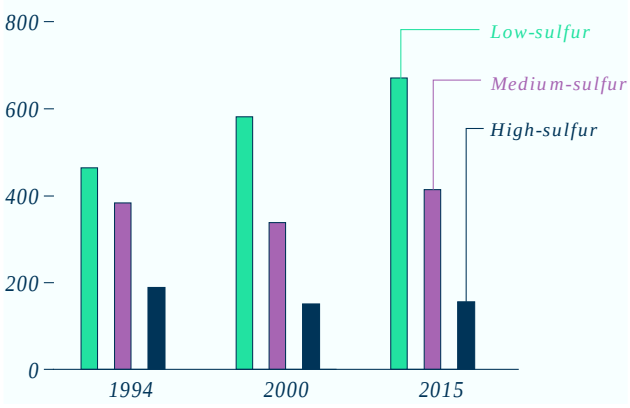
U.S. coal exports rise in the forecast from 71 million tons in 1994 to 130 million tons in 2015 (Figure 89), due to higher demand for steam coal imports for electricity generation in Europe. Exports of metallurgical coal rise from 47 million tons to 62 million tons in 2015 as a result of further declines in metallurgical coal production in Europe and some increases in imports by relatively new steel-producing countries. Metallurgical coal trade worldwide declines by 0.2 percent a year over the forecast.

U.S. steam coal exports to Europe increase from 12 million tons in 1994 to 37 million tons in 2015 (5.5 percent annual growth). European imports of steam coal from all sources rise by 2.6 percent a year, from 117 million tons in 1994 to 202 million tons in 2015. Reductions in subsidies for European coal production foster import growth, but increased use of natural gas in response to environmental considerations restrains growth in electricity sector coal demand and, consequently, steam coal imports.

U.S. coal exports to Asia increase by 1.8 percent a year, from 17 million tons in 1994 to 25 million tons in 2015, with metallurgical exports increasing by 1.3 percent and steam coal exports by 2.6 percent annually. Asian coal imports from all sources rise in the forecast by 2.6 percent a year, from 231 million tons in 1994 to 394 million tons in 2015. The increase is mostly in steam coal imports, which increase by 4.2 percent a year as Pacific Rim nations that lack indigenous fossil fuel resources base electricity generation on imported coal.

Demand Increases for Low- and Medium-Sulfur Coals

Figure 90. Coal distribution by sulfur content, 1994, 2000, and 2015 (million short tons)



Phase 1 of CAAA90, which began on January 1, 1995, requires that 261 coal-fired generators reduce emissions of sulfur dioxide to about 2.5 pounds per million Btu of fuel input. Beginning on January 1, 2000, Phase 2 imposes a permanent cap on sulfur dioxide emissions, at an average level of 1.2 pounds per million Btu for all generating units built before 1990. CAAA90 gives generators five options for bringing coal-fired units into compliance: (1) retrofitting with flue gas desulfurization equipment, (2) boiler repowering with new technologies that emit less sulfur dioxide, (3) transfer or purchase of emissions allowances; (4) reduction of plant utilization, and (5) full or partial switching to lower sulfur fuel.

New coal-fired plants will not receive emissions allowances but must obtain allowances initially allocated to other units. From 1994 to 2015, compliance strategies for Phases 1 and 2 are projected to reduce the average sulfur content of all coal produced by 15 percent, from 1.01 to 0.86 pounds per million Btu (Figure 90). While low-sulfur coal displaces high-sulfur coal throughout the forecast, production of medium-sulfur coal declines through 2000 and then recovers as compliance strategies shift from fuel switching to flue gas desulfurization in Phase 2.

The sulfur content of coal need not decline as much as that of emissions, since generators may use post-combustion stack gas desulfurization and emissions allowances to offset the inherent sulfur content of coal that, when burned, would produce emissions in excess of regulatory limits.

Carbon Emissions From Coal Use Continue To Increase

Figure 91. Carbon emissions from coal use, 1994, 2000, 2010, and 2015 (million metric tons)

In the reference case, carbon emissions from coal combustion rise by 0.8 percent annually, from 498 million metric tons in 1994 to 591 million in 2015. The rate of increase slows over the forecast period, as emissions rise by 0.9 percent a year through 2000 to 525 million tons, then by 0.9 percent a year through 2010, when they reach 573 million tons, and finally by 0.6 percent a year to 2015 (Figure 91).

Most of the increase is from electricity coal consumption. In the other sectors, a slight increase in carbon emissions from industrial steam coal consumption is outweighed by a decline in emissions from coking coal consumption. Carbon emissions from coal consumed by electricity generators rise by 1.0 percent a year, from 430 million metric tons in 1994 to 460 million in 2000 and 526 million in 2015.

The share of total U.S. carbon emissions originating from coal declines from 36 percent in 1994 to 34 percent in 2015. Over the forecast, coal consumption increases at a slower rate than consumption of petroleum products and natural gas, which are the sources of virtually all other carbon emissions. Thus, even as coal consumption increases, its share of total carbon emissions declines.

When it is burned, coal produces almost twice the carbon emissions per unit of energy input that natural gas does, and average carbon emissions from combustion of petroleum products are between those for coal and gas.

Challenges for the Future

Two key uncertainties that affect the coal outlook are environmental issues and State initiatives to restructure the electricity industry.

A decision to regulate air toxic emissions could require utilities to install equipment for removing them from combustion gases. On the supply side, such regulation might result in interregional switching to coals with lower levels of toxic trace elements. Either approach is likely to encourage more intensive coal preparation to reduce the content of several air toxic elements associated with sulfide minerals in coal ash.

In addition to the emission allowances specified by CAAA90, electricity producers face permitting requirements under the Prevention of Significant Deterioration (PSD) program, and for nonattainment areas [*30*]. Proposed new plants in PSD areas face minimum acceptable technological requirements for pollution control and a maximum allowable increment test for key air-quality-related values in nearby areas. Similar but generally stricter requirements apply to plants in nonattainment areas. The extent to which the requirements will limit additions of new coal-fired capacity will depend on such factors as growth in electricity demand, costs and dependability of pollution control technologies, the ability to model environmental impacts accurately, remaining emissions increments in PSD areas, and the cost of environmental assessment activities.

CCAP provides environmental agencies, regulatory bodies, and electric utilities with guidelines to increase the use of low-carbon fuels, such as natural gas and renewables, and for reducing growth in electricity demand. Success in meeting the objectives would reduce demand for both coal and oil in the electricity sector. For stabilizing greenhouse gas emissions in the long term, the CCAP states that measures must be taken to "ensure that a constant stream of improved technologies is available and that market conditions are favorable to their adoption." This language suggests that the prospects for increased reliance on coal in the Nation's energy mix rest with DOE's Clean Coal Technology Demonstration Program and other Federal and State initiatives.

Forthcoming regulations governing nitrogen oxide (NO_X) emissions add uncertainty to the outlook for regional coal market shares. Since most NO_X emitted by coal combustion comes from the air used in burning coal rather than the coal itself, lower rank western coals that require less air for combustion promise an inexpensive strategy for moderate reduction of NO_X emissions. As a result of a 1994 court decision, low NO_X burners are likely to be the technological choice for NO_X compliance, but generators can group units to meet an average standard. The mix of coal sources and low NO_X burners chosen by consumers may further enhance the market potential for western coal.

To date, the major competitive emphasis in the coal industry has been on price competition between regional coals with different sulfur levels and production costs. Forthcoming regulation of air toxics and NO_X may complicate this pattern. Meanwhile, competitive pressure from declining gas prices will be intensified by new State initiatives aimed at deregulating electricity generation.

Coal consumers seeking the least-cost combination of eastern and western high-, medium-, and low-sulfur coals with minimal NO_X and air toxic emission potential may pressure coal carriers to provide more flexible transportation contracts. Such contracts would enhance the ability of consumers to shift purchases from mine to mine and region to region while maintaining levelized long-term transportation costs, helping them to adapt more quickly to changing regulations and regional differences in coal prices. The contracts that provided those advantages to consumers, however, would also magnify current stresses in the coal mining industry.

The impacts of State deregulatory initiatives may fall more unevenly in time and location than would Federal ones, increasing the instability of regional coal demands and adding uncertainty to the long-term investment required for large, low-cost mines. In combination with new environmental limits on coal use and strong competition from natural gas, these pressures will force further consolidation of the coal industry into fewer, larger, financially more robust firms with multiregional mining capability. Many of today's smaller firms will not survive.

Comparative Forecasts

Table 24. Comparative forecasts for coal, 2010

Forecast	AEO96	DRI	GRI	WEFA
Consumption by sector	**Million short tons**			
Utility	NA	993	NA	1,036
Independent power producers	NA	4	NA	NA
Total electricity	975	998	1,114	NA
Industrial cogeneration	NA	21	NA	NA
Industrial steam and other	NA	89	NA	83
Total industrial/other	86	111	81	NA
Total Steam	**1,062**	**1,108**	**1,195**	**1,213**
Domestic coking	20	27	22	36
Total consumption	**1,082**	**1,135**	**1,217**	**1,249**
Net coal exports	100	85	91	99
Prices	**1994 dollars per ton**			
Minemouth price	17.43	NA	NA	23.19
Delivered price, electricity	25.88	22.90	25.99	29.79
	1994 dollars per million Btu			
Delivered price, electricity	1.26	1.11	NA	1.43

NA = not available.

Most of the larger differences between forecasts lie within the electricity and industrial coal demand sectors. However, it is difficult to compare forecasts due to differences in the reporting of coal consumption by electric utilities, independent power producers, industrial cogenerators, and non-cogenerating industrial, residential, and commercial consumers. For steam coal consumption as a whole, *AEO96* shows the lowest coal consumption in 2010 (Table 24). Among the three forecasts that provide total demand for electricity generation, *AEO96* is also the lowest. *AEO96* shows a larger impact on coal due to direct competition between natural gas and coal.

AEO96 show relatively low minemouth and delivered coal prices compared to all other forecasts except DRI. However, although coal has a delivered price advantage, the higher costs for new coal-fired capacity favor natural gas. DRI's lower delivered coal cost to electricity generators reflects greater labor productivity improvements and more rapid retirement of high-priced contracts than in *AEO96*.

The U.S. steel industry is privately owned and must respond to market pressures, while much of Europe's older steel capacity is governmentally owned and protected by national employment policies. *AEO96* shows the lowest domestic coking coal consumption, reflecting rapid retirement for domestic coke-based steel production.

List of Acronyms

AEO	*Annual Energy Outlook*
AEO96	*Annual Energy Outlook 1996*
AGA	American Gas Association
Btu	British thermal unit
CAAA90	Clean Air Act Amendments of 1990
CCAP	Climate Change Action Plan
CEC	California Energy Commission
DRI	Data Resources, Inc./McGraw Hill
DSM	Demand-side management
E85	An 85-percent ethanol fuel
EEI	Edison Electric Institute
EIA	Energy Information Administration
EOR	Enhanced oil recovery
EPACT	Energy Policy Act of 1992
ETBE	Ethyl tertiary butyl ether
EWG	Exempt wholesale generator
FERC	Federal Energy Regulatory Commission
FSU/EE	Former Soviet Union/Eastern Europe
FWS	Fish and Wildlife Service
GDP	Gross domestic product
GRI	Gas Research Institute
IEA	International Energy Agency
IPAA	Independent Petroleum Association of America
LDC	Local distribution company
LEVP	Low Emissions Vehicle Program
MACT	Maximum achievable control technology
MSW	Municipal solid waste
MTBE	Methyl tertiary butyl ether
NEMS	National Energy Modeling System
NERC	National Electric Reliability Council
NMFS	National Marine Fisheries Service
NRC	Natural Resources Canada
OECD	Organization for Economic Cooperation and Development
PEL	Petroleum Economics Limited
PIRA	Petroleum Industry Research Associates, Inc.
PSD	Prevention of Significant Deterioration
PURPA	Public Utility Regulatory Policies Act of 1978
Rvp	Reid vapor pressure
SIC	Standard Industrial Classification
SPR	Strategic Petroleum Reserve
STEO	*Short-Term Energy Outlook*
STIFS	Short-Term Integrated Forecasting System
WEFA	The WEFA Group (formerly the Wharton Econometric Forecasting Associates)

Notes and Sources

Text notes

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1. U.S. Department of Commerce, Census Bureau.
2. The underlying macroeconomic growth cases use DRI/McGraw-Hill's February 1995 Trend, Optimistic, and Pessimistic Growth Cases. See DRI/McGraw-Hill, *Review of the U.S. Economy: Long-Range Focus*, Winter 1994-95 (Lexington, MA, 1995).

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3. Council of Economic Advisors, *Economic Report of the President* (Washington, DC, February 1995), p. 91.
4. H.T. Franssen, "Scenarios for Non-OPEC Oil Production Through the Year 2000," presented to the 5th Center for Global Energy Studies Annual Conference (London, United Kingdom, April 1995).

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5. I. Ismail, "Future Growth in OPEC Oil Production Capacity and the Impact of Environmental Measures," presented to the Sixth Meeting of the International Energy Workshop (Vienna, Austria, June 1993).

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6. The WEFA Group, *World Economic Outlook: 20-Year Extension (Bala Cynwyd, PA, March 1995).*

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7. U.S. Geological Survey, National Oil and Gas Resource Assessment Team, *1995 National Assessment of United States Oil and Gas Resources*, U.S. Geological Survey Circular 1118 (Washington, DC, 1995).
8. The realized finding rate per well is calculated by dividing gas reserve additions by gas well completions.
9. Based on data published in the *Joint Association Survey on Drilling Costs* sponsored by the American Petroleum Institute, the Independent Petroleum Association of America, and the Mid-Continent Oil and Gas Association.

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10. The transportation sector has been left out of these calculations because levels of transportation sector electricity use have historically been far less than 1 percent of delivered electricity. In the transportation sector, the difference between total and delivered energy consumption is also far less than 1 percent.

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11. The high and low macroeconomic growth cases are linked to higher and lower population growth, respectively, which affects energy use in all sectors.
12. For example, Corporate Average Fuel Economy (CAFE) standards for new vehicles are always met.

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13. In fact, some categories of nonmarketed use are included in the market totals, either because the energy use is an unknown mix of marketed and nonmarketed applications, such as renewable energy inputs for self-use cogeneration, or for historical consistency with statistical series.

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14. Energy Information Administration, *Housing Characteristics 1993*, DOE/EIA-0314(93) (Washington, DC, June 1995).

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15. Energy Information Administration, Form EIA-871A, "Commercial Buildings Energy Consumption Survey" (1992).

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16. The divisia index is a weighted sum of growth rates and is separated into a sectoral shift or "output" effect and an energy efficiency or "substitution" effect. It has at least two properties that make it superior to other indexes. First, it is not sensitive to where in the time period or in which direction the index is computed. Second, when the effects are separated, the individual components have the same magnitude, regardless of which is calculated first. See Energy Information Administration, *Structural Shift and Aggregate Energy Efficiency in Manufacturing* (unpublished working paper in support of the National Energy Strategy, May 1990); and Boyd et al., "Separating the Changing Effects of U.S. Manufacturing Production from Energy Efficiency Improvements," *Energy Journal*, Vol. 8, No. 2 (1987).

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17. For example, according to the latest USGS estimates, the size of the Nation's technically recoverable undiscovered conventional crude oil resources (in onshore areas and State waters) is most likely to be 30.3 billion barrels—with a 19 in 20 chance of being at least 23.5 billion barrels and a 1 in 20 chance of being at least 39.6 billion barrels. The corresponding USGS estimate for the Nation's natural gas resources is 258.7 trillion cubic feet—with a 19 in 20 chance of being at least 207.1 trillion cubic feet and a 1 in 20 chance of being at least 329.1 trillion cubic feet. *AEO96* does not examine the implications of geological resource uncertainty. The figures cited above are taken from U.S. Geological Survey, National Oil and Gas Resource Assessment Team, *1995 National Assessment of United States Oil and Gas Resources*, U.S. Geological Survey Circular 1118 (Washington, DC, 1995), p. 2. The cited numbers exclude natural gas liquids resources, for which the corresponding USGS estimates are 7.2, 5.8, and 8.9 billion barrels.

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18. Oil production includes lease condensate but excludes natural gas plant liquids.
19. The assumed undiscovered resource base has not changed substantially, but the crude oil and natural gas inferred reserve estimates are 98 and 93 percent

higher, respectively. The inferred reserve estimates are derived from the recent USGS national assessment.

20. Economically recoverable resources are those volumes considered to be of sufficient size and quality for their production to be commercially profitable by current conventional or nonconventional technologies, under specified economic conditions. Proved reserves are the estimated quantities that analysis of geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions. Unproved resources comprise inferred reserves and undiscovered resources. Inferred reserves are the difference between proved reserves in known fields and the remaining recoverable resources in known fields. Undiscovered resources are located outside oil and gas fields in which the presence of resources has been confirmed by exploratory drilling; they include resources from undiscovered pools within confirmed fields, when they occur as unrelated accumulations controlled by distinctly separate structural features or stratigraphic conditions.

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21. Substantial uncertainty surrounds the ultimate use of North Slope gas. However, projected low gas prices in the lower 48 markets justify the *AEO96* perspective that does not consider it a significant factor affecting domestic energy, especially natural gas, markets.

22. Greater technological advances can markedly increase the quantity of economically recoverable resources by driving down costs, increasing success rates, and increasing recovery from producing wells. Expected production rate declines could be slowed or even reversed within the forecast period if faster implementation of advanced technologies is realized.

23. Enhanced oil recovery (EOR) is the extraction of the oil that can be economically produced from a petroleum reservoir greater than that which can be economically recovered by conventional primary and secondary methods. EOR methods usually involve injecting heated fluids, pressurized gases, or special chemicals into an oil reservoir in order to produce additional oil.

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24. Based on estimates by the U.S. Department of Energy, Office of Energy Efficiency, of the potential impact of its programs on the refining industry.

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25. The value of any capital investment is taken as the value at the time the investment was made with no adjustment for inflation. As this value is depreciated, a return is earned on a prior rather than a current value of the initial investment, which is reflected in lower costs and thus lower markups.

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26. "Light products" refer to lighter oils distilled off during the refinery process. Such products are used in internal combustion and gas turbine engines.

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27. E85 was not included in this analysis. The tax on E85 would rise by 5.45 cents per gallon if the subsidy were eliminated. This is a much smaller proportion of the overall price, and the impact is expected to be much smaller.

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28. Historical data from Energy Information Administration, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995).

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29. The U.S. average productivity shown in Figure 82 is a weighted average of eastern and western productivities, with regional miner hours used as the weights. Because eastern production is more labor-intensive than western, the U.S. average is closer to the eastern projections.

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30. Nonattainment areas are those specific regions that have not met the emissions reduction requirements of the Clean Air Act Amendments of 1977.

Table notes

Table 1. Summary of results for five cases (page 4): Tables A1, A8, A20, B1, B8, B20, C1, C8, and C20.

Table 2. Comparative forecasts of economic growth, 1994-2015 (page 6): **DRI:** DRI/McGraw-Hill, *Review of the U.S. Economy: Long-Range Focus*, Winter 1994-96 (Lexington, MA, 1995). **WEFA:** The WEFA Group, *U.S. Long-Term Economic Outlook*, Vol. 1 (Third Quarter 1995).

Table 3. Comparative forecasts of world oil prices (page 8): **AEO96:** Tables A1, B1, and C1. **DRI:** DRI/McGraw-Hill, *Oil Market Outlook* (October 1995). **IEA1:** International Energy Agency, *World Energy Outlook, 1995: Capacity Constraints Case*. **IEA2:** International Energy Agency, *World Energy Outlook, 1995: Energy Savings Case*. **PEL:** Petroleum Economics Limited, *Oil and Energy Outlook to 2010* (November 1994). (Price is for Brent crude.) **PIRA:** Petroleum Industry Research Associates, Inc., *Worldwide Energy* (October 1994). (Price is for West Texas Intermediate [WTI] at Cushing.) **WEFA:** The WEFA Group, *U.S. Long-Term Economic Outlook*, Vol. 1 (Third Quarter 1995). (The last price quoted in the table is for 2013, not 2015.) **NRC:** Natural Resources Canada, *Canada's Energy Outlook 1992-2020* (October 1994). (Price for WTI at Cushing and last price quoted is for 2020, not

2015.) **GRI:** Gas Research Institute, *Baseline Projection of U.S. Energy Supply and Demand* (1996 Edition).

Table 4. Average household energy expenditures, 1994, 2000, 2010, and 2015 (page 14): Tables E1, E2, E4, and E5.

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Figure 89. U.S. coal exports by destination, 1994, 2000, and 2015 (page 58): **History:** U.S. Department of Commerce, Bureau of the Census, "Monthly Report EM 545." **Projections:** AEO96 National Energy Modeling System, run AEO96B.D101995C.

Figure 90. Coal distribution by sulfur content, 1994, 2000, and 2015 (page 58): AEO96 National Energy Modeling System, run AEO96B.D101995C.

Figure 91. Carbon emissions from coal use, 1994, 2000, 2010, and 2015 (page 59): Table A19.

Reference Case Forecast

Table A1. Total Energy Supply and Disposition Summary

(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Production								
Crude Oil and Lease Condensate	14.50	14.10	13.84	13.39	13.04	12.60	12.25	11.96
Natural Gas Plant Liquids	2.49	2.47	2.43	2.46	2.48	2.55	2.54	2.54
Dry Natural Gas	18.97	19.41	19.47	19.73	20.11	20.18	20.18	20.24
Coal	20.23	22.01	21.89	22.11	22.03	22.14	22.39	22.59
Nuclear Power	6.52	6.84	7.02	7.12	7.09	7.09	7.10	7.09
Renewable Energy[1]	6.40	6.26	6.68	6.71	6.78	6.85	6.90	7.01
Other[2]	0.54	0.99	0.45	0.45	0.50	0.49	0.50	0.44
Total	**69.64**	**72.08**	**71.79**	**71.97**	**72.02**	**71.89**	**71.86**	**71.87**
Imports								
Crude Oil[3]	14.76	15.33	16.33	17.17	18.42	18.18	18.76	19.67
Petroleum Products[4]	3.73	3.92	3.53	3.71	3.47	4.18	4.16	4.03
Natural Gas	2.39	2.60	2.78	3.00	3.12	3.17	3.24	3.30
Other Imports[5]	0.50	0.67	0.62	0.52	0.62	0.64	0.62	0.69
Total	**21.38**	**22.53**	**23.25**	**24.40**	**25.62**	**26.17**	**26.78**	**27.70**
Exports								
Petroleum[6]	2.12	2.00	2.28	2.69	2.95	2.41	2.21	2.12
Natural Gas	0.15	0.16	0.17	0.19	0.22	0.24	0.26	0.27
Coal	1.96	1.88	1.88	2.04	2.08	2.11	2.13	2.16
Total	**4.23**	**4.04**	**4.33**	**4.92**	**5.24**	**4.76**	**4.60**	**4.56**
Discrepancy[7]	**0.59**	**-1.43**	**-0.12**	**-0.19**	**0.15**	**0.15**	**0.24**	**0.06**
Consumption								
Petroleum Products[8]	33.83	34.56	34.88	35.08	35.54	36.09	36.50	36.88
Natural Gas	20.80	21.36	21.95	22.28	22.76	22.87	22.92	23.00
Coal	19.55	19.65	19.66	19.69	19.97	20.16	20.50	20.67
Nuclear Power	6.52	6.84	7.02	7.12	7.09	7.09	7.10	7.09
Renewable Energy[1]	6.40	6.27	6.68	6.71	6.78	6.85	6.90	7.01
Other[9]	0.29	0.46	0.40	0.38	0.41	0.40	0.36	0.42
Total	**87.38**	**89.14**	**90.60**	**91.26**	**92.54**	**93.46**	**94.27**	**95.07**
Net Imports - Petroleum	**16.37**	**17.25**	**17.58**	**18.19**	**18.94**	**19.94**	**20.71**	**21.58**
Prices (1994 dollars per unit)								
World Oil Price (dollars per barrel)[10]	16.48	15.52	16.81	16.98	17.37	17.98	18.61	19.27
Gas Wellhead Price (dollars per Mcf)[11]	2.09	1.88	1.60	1.67	1.74	1.82	1.87	1.89
Coal Minemouth Price (dollars per ton)	19.85	19.41	18.54	18.26	18.03	17.85	17.67	17.44

Table A1. Total Energy Supply and Disposition Summary (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
11.65	11.47	11.32	11.25	11.10	11.15	11.19	11.31	11.43	11.51	12.30	-0.6%
2.56	2.60	2.60	2.66	2.74	2.78	2.82	2.87	2.88	2.97	3.20	1.2%
20.32	20.57	20.97	21.45	21.89	22.01	22.34	22.77	23.15	23.52	25.72	1.3%
22.88	23.14	23.44	23.67	23.95	24.33	24.43	24.56	24.69	24.94	26.14	0.8%
7.07	7.05	7.02	6.98	6.93	6.93	6.80	6.74	6.62	6.52	4.63	-1.8%
7.08	7.15	7.21	7.29	7.38	7.44	7.46	7.58	7.66	7.78	8.51	1.5%
0.43	0.46	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.55	0.58	-2.5%
72.00	**72.42**	**73.03**	**73.78**	**74.50**	**75.15**	**75.56**	**76.36**	**76.97**	**77.79**	**81.08**	**0.6%**
19.99	20.25	20.84	21.04	21.13	21.73	21.42	21.28	21.44	21.05	20.87	1.5%
4.41	4.60	4.58	4.84	5.23	5.06	5.50	5.75	5.74	6.16	6.40	2.4%
3.37	3.42	3.44	3.46	3.48	3.53	3.59	3.66	3.75	3.84	4.42	2.5%
0.67	0.67	0.60	0.59	0.59	0.61	0.67	0.66	0.64	0.61	0.56	-0.9%
28.43	**28.93**	**29.46**	**29.94**	**30.43**	**30.93**	**31.17**	**31.35**	**31.57**	**31.65**	**32.25**	**1.7%**
2.04	1.98	2.02	1.98	1.88	1.97	1.86	1.80	1.85	1.77	1.91	-0.2%
0.29	0.31	0.31	0.31	0.31	0.31	0.30	0.31	0.31	0.32	0.33	3.5%
2.19	2.22	2.27	2.32	2.37	2.42	2.48	2.53	2.59	2.66	3.14	2.5%
4.52	**4.51**	**4.60**	**4.61**	**4.56**	**4.70**	**4.64**	**4.64**	**4.76**	**4.74**	**5.38**	**1.4%**
0.04	**0.07**	**0.08**	**0.05**	**0.01**	**0.00**	**0.00**	**-0.01**	**0.03**	**-0.01**	**0.07**	**N/A**
37.36	37.74	38.17	38.65	39.12	39.51	39.81	40.16	40.44	40.68	41.69	0.9%
23.13	23.41	23.83	24.33	24.79	24.97	25.35	25.84	26.31	26.76	29.52	1.6%
20.92	21.17	21.41	21.58	21.83	22.17	22.24	22.30	22.36	22.55	23.27	0.8%
7.07	7.05	7.02	6.98	6.93	6.93	6.80	6.74	6.62	6.52	4.63	-1.8%
7.08	7.15	7.21	7.29	7.38	7.44	7.46	7.58	7.67	7.78	8.52	1.5%
0.39	0.40	0.34	0.33	0.33	0.36	0.43	0.43	0.43	0.40	0.40	-0.7%
95.94	**96.92**	**97.98**	**99.16**	**100.38**	**101.38**	**102.10**	**103.05**	**103.82**	**104.69**	**108.02**	**0.9%**
22.36	**22.87**	**23.40**	**23.90**	**24.48**	**24.82**	**25.06**	**25.23**	**25.33**	**25.44**	**25.36**	**1.9%**
19.92	20.47	20.97	21.41	21.86	22.25	22.61	22.97	23.34	23.70	25.43	2.4%
1.91	1.93	1.94	1.96	1.99	2.00	2.02	2.06	2.10	2.15	2.57	1.5%
17.39	17.49	17.51	17.60	17.68	17.50	17.54	17.50	17.45	17.43	17.39	-0.5%

[1]Includes utility and nonutility electricity from hydroelectric, wood and wood waste, municipal solid waste, other biomass, wind, photovoltaic and solar thermal sources; non-electric energy from renewable sources, such as active and passive solar systems, and wood; and both the ethanol and gasoline components of E85, but not the ethanol components of blends less than 85 percent. Excludes nonmarketed renewable energy. See Table 18 for selected nonmarketed residential and commercial renewable energy.
[2]Includes liquid hydrogen, methanol, supplemental natural gas, and some domestic inputs to refineries.
[3]Includes imports of crude oil for the Strategic Petroleum Reserve.
[4]Includes imports of finished petroleum products, imports of unfinished oils, alcohols, ethers, and blending components.
[5]Includes coal, coal coke (net), and electricity (net).
[6]Includes crude oil and petroleum products.
[7]Balancing item. Includes unaccounted for supply, losses, gains, and net storage withdraws.
[8]Includes natural gas plant liquids, crude oil consumed as a fuel, and nonpetroleum based liquids for blending, such as ethanol.
[9]Includes net electricity imports, methanol, and liquid hydrogen.
[10]Average refiner acquisition cost for imported crude oil.
[11]Represents lower 48 onshore and offshore supplies.
Btu = British thermal unit.
Mcf = Thousand cubic feet.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding. Figures for 1993 and 1994 may differ from published data due to internal conversion factors.
Sources: 1993 natural gas values: Energy Information Administration (EIA), *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). 1993 coal minemouth prices: EIA, *Coal Industry Annual 1993*, DOE/EIA-0584(93) (Washington, DC, December 1994). Other 1993 values: EIA, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995). 1994 natural gas supply and price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). 1994 coal minemouth prices: EIA, *Coal Industry Annual 1994*, DOE/EIA-0584(94) (Washington, DC, December 1995). 1994 coal production and exports: EIA, *Monthly Energy Review*, DOE/EIA-0035(95/08) (Washington, DC, August 1995). Other 1994 values: EIA, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995). **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A2. Energy Consumption by Sector and Source
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Energy Consumption								
Residential								
Distillate Fuel	0.91	0.87	0.84	0.87	0.86	0.85	0.85	0.84
Kerosene	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Liquefied Petroleum Gas	0.40	0.41	0.40	0.41	0.40	0.40	0.39	0.39
Petroleum Subtotal	1.39	1.35	1.31	1.35	1.33	1.32	1.31	1.30
Natural Gas	5.10	5.03	5.00	5.17	5.18	5.18	5.20	5.22
Coal	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05
Renewable Energy[1]	0.57	0.55	0.55	0.56	0.56	0.57	0.57	0.57
Electricity	3.39	3.43	3.49	3.53	3.56	3.60	3.64	3.70
Delivered Energy	**10.51**	**10.41**	**10.40**	**10.66**	**10.69**	**10.71**	**10.76**	**10.84**
Electricity Related Losses	7.57	7.63	7.73	7.73	7.75	7.80	7.86	7.96
Total	**18.08**	**18.04**	**18.13**	**18.39**	**18.44**	**18.51**	**18.62**	**18.80**
Commercial								
Distillate Fuel	0.46	0.42	0.42	0.43	0.43	0.43	0.42	0.42
Residual Fuel	0.17	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Kerosene	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Liquefied Petroleum Gas	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Motor Gasoline[2]	0.03	0.07	0.07	0.08	0.08	0.08	0.07	0.07
Petroleum Subtotal	0.75	0.73	0.73	0.74	0.75	0.75	0.75	0.74
Natural Gas	2.98	3.01	3.04	3.13	3.14	3.16	3.18	3.20
Coal	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09
Renewable Energy[3]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	3.01	3.13	3.20	3.21	3.25	3.29	3.32	3.36
Delivered Energy	**6.83**	**6.96**	**7.06**	**7.17**	**7.23**	**7.28**	**7.34**	**7.39**
Electricity Related Losses	6.72	6.95	7.08	7.05	7.09	7.14	7.18	7.23
Total	**13.55**	**13.91**	**14.14**	**14.22**	**14.32**	**14.42**	**14.51**	**14.62**
Industrial[4]								
Distillate Fuel	1.10	1.15	1.16	1.15	1.17	1.19	1.20	1.21
Liquefied Petroleum Gas	1.79	1.87	1.92	1.89	1.92	1.95	1.95	1.97
Petrochemical Feedstocks	1.19	1.25	1.25	1.24	1.25	1.27	1.27	1.27
Residual Fuel	0.45	0.47	0.47	0.47	0.48	0.48	0.48	0.48
Motor Gasoline[2]	0.18	0.19	0.19	0.19	0.19	0.20	0.20	0.20
Other Petroleum[5]	3.69	3.90	3.92	3.95	4.00	4.06	4.10	4.07
Petroleum Subtotal	8.41	8.83	8.92	8.88	9.02	9.14	9.19	9.21
Natural Gas[6]	9.07	9.34	9.76	9.95	10.25	10.33	10.37	10.49
Metallurgical Coal	0.84	0.84	0.81	0.79	0.77	0.75	0.73	0.71
Steam Coal	1.66	1.69	1.67	1.69	1.71	1.76	1.78	1.73
Net Coal Coke Imports	0.02	0.02	0.02	-0.06	0.00	0.02	0.03	0.03
Coal Subtotal	2.52	2.55	2.51	2.42	2.49	2.53	2.53	2.47
Renewable Energy[7]	2.08	2.16	2.19	2.20	2.25	2.29	2.32	2.36
Electricity	3.33	3.39	3.43	3.47	3.54	3.58	3.61	3.61
Delivered Energy	**25.42**	**26.27**	**26.80**	**26.91**	**27.55**	**27.86**	**28.03**	**28.15**
Electricity Related Losses	7.43	7.53	7.58	7.60	7.72	7.77	7.79	7.78
Total	**32.85**	**33.80**	**34.38**	**34.52**	**35.26**	**35.63**	**35.82**	**35.93**

Table A2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
0.83	0.83	0.83	0.82	0.82	0.81	0.81	0.81	0.80	0.80	0.80	-0.4%
0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	-0.6%
0.38	0.37	0.37	0.37	0.36	0.36	0.35	0.35	0.35	0.34	0.33	-1.0%
1.28	1.27	1.26	1.25	1.24	1.23	1.22	1.22	1.21	1.20	1.19	-0.6%
5.23	5.25	5.28	5.33	5.33	5.37	5.40	5.45	5.47	5.50	5.61	0.5%
0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	-1.2%
0.57	0.57	0.57	0.58	0.58	0.58	0.58	0.58	0.58	0.59	0.59	0.3%
3.74	3.80	3.87	3.95	4.00	4.07	4.14	4.22	4.29	4.37	4.84	1.7%
10.87	**10.94**	**11.03**	**11.15**	**11.20**	**11.29**	**11.39**	**11.53**	**11.60**	**11.71**	**12.28**	**0.8%**
8.04	8.14	8.25	8.39	8.52	8.64	8.71	8.85	8.93	9.07	9.40	1.0%
18.91	**19.09**	**19.28**	**19.54**	**19.73**	**19.93**	**20.10**	**20.38**	**20.53**	**20.78**	**21.68**	**0.9%**
0.42	0.42	0.42	0.42	0.41	0.41	0.41	0.41	0.40	0.40	0.39	-0.4%
0.18	0.18	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.19	0.3%
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.7%
0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	1.0%
0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	-0.3%
0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.73	0.73	0.73	0.72	-0.1%
3.22	3.24	3.26	3.29	3.31	3.33	3.35	3.38	3.40	3.42	3.51	0.7%
0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.9%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.7%
3.39	3.43	3.47	3.51	3.55	3.59	3.63	3.68	3.72	3.77	4.06	1.2%
7.44	**7.50**	**7.56**	**7.62**	**7.68**	**7.75**	**7.82**	**7.88**	**7.95**	**8.02**	**8.40**	**0.9%**
7.28	7.34	7.40	7.45	7.55	7.62	7.64	7.70	7.75	7.82	7.88	0.6%
14.73	**14.84**	**14.96**	**15.07**	**15.24**	**15.37**	**15.46**	**15.59**	**15.70**	**15.84**	**16.28**	**0.8%**
1.23	1.24	1.25	1.27	1.28	1.30	1.31	1.32	1.33	1.34	1.40	0.9%
1.99	2.01	2.04	2.08	2.11	2.12	2.14	2.15	2.17	2.19	2.30	1.0%
1.28	1.30	1.31	1.34	1.36	1.37	1.38	1.39	1.41	1.42	1.48	0.8%
0.48	0.47	0.48	0.49	0.49	0.48	0.49	0.49	0.49	0.49	0.52	0.4%
0.20	0.21	0.21	0.21	0.21	0.22	0.22	0.22	0.22	0.22	0.23	1.0%
4.10	4.12	4.13	4.15	4.16	4.19	4.19	4.21	4.23	4.22	4.32	0.5%
9.28	9.34	9.43	9.53	9.61	9.68	9.72	9.78	9.85	9.89	10.24	0.7%
10.58	10.70	10.83	10.96	11.12	11.22	11.29	11.38	11.46	11.55	11.86	1.1%
0.69	0.67	0.66	0.64	0.62	0.61	0.59	0.58	0.56	0.55	0.48	-2.6%
1.72	1.73	1.74	1.75	1.76	1.79	1.79	1.80	1.82	1.83	1.96	0.7%
0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	2.5%
2.44	2.43	2.43	2.43	2.42	2.43	2.42	2.41	2.42	2.42	2.48	-0.1%
2.40	2.44	2.48	2.52	2.56	2.59	2.62	2.65	2.67	2.71	2.86	1.3%
3.65	3.70	3.75	3.81	3.86	3.90	3.93	3.96	4.00	4.04	4.23	1.1%
28.35	**28.60**	**28.91**	**29.26**	**29.58**	**29.82**	**29.97**	**30.19**	**30.41**	**30.60**	**31.68**	**0.9%**
7.84	7.91	8.00	8.09	8.22	8.28	8.27	8.30	8.33	8.38	8.22	0.4%
36.19	**36.51**	**36.91**	**37.35**	**37.81**	**38.11**	**38.24**	**38.49**	**38.74**	**38.98**	**39.89**	**0.8%**

Table A2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Transportation								
Distillate Fuel	3.91	4.17	4.21	4.24	4.36	4.42	4.50	4.58
Jet Fuel[8]	3.03	3.15	3.27	3.33	3.43	3.53	3.62	3.72
Motor Gasoline[2]	14.13	14.21	14.54	14.59	14.74	14.94	15.15	15.35
Residual Fuel	0.91	0.90	0.94	0.97	0.99	1.02	1.04	1.07
Liquefied Petroleum Gas	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02
Other Petroleum[9]	0.20	0.20	0.21	0.21	0.21	0.21	0.21	0.22
Petroleum Subtotal	22.20	22.66	23.19	23.37	23.76	24.15	24.54	24.94
Pipeline Fuel Natural Gas	0.64	0.66	0.68	0.68	0.69	0.67	0.68	0.67
Compressed Natural Gas	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Renewable Energy (E85)[10]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Methanol[11]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03
Delivered Energy	**22.87**	**23.34**	**23.90**	**24.09**	**24.48**	**24.85**	**25.26**	**25.66**
Electricity Related Losses	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.07
Total	**22.91**	**23.39**	**23.94**	**24.13**	**24.52**	**24.90**	**25.32**	**25.72**
Delivered Energy Consumption for All Sectors								
Distillate Fuel	6.39	6.61	6.63	6.68	6.82	6.89	6.97	7.05
Kerosene	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Jet Fuel[8]	3.03	3.15	3.27	3.33	3.43	3.53	3.62	3.72
Liquefied Petroleum Gas	2.28	2.35	2.39	2.37	2.40	2.43	2.42	2.43
Motor Gasoline[2]	14.33	14.47	14.80	14.86	15.01	15.21	15.42	15.62
Petrochemical Feedstocks	1.19	1.25	1.25	1.24	1.25	1.27	1.27	1.27
Residual Fuel	1.54	1.55	1.59	1.62	1.65	1.67	1.70	1.73
Other Petroleum[12]	3.88	4.09	4.12	4.14	4.20	4.26	4.30	4.28
Natural Gas[6]	17.80	18.05	18.48	18.94	19.27	19.34	19.44	19.59
Metallurgical Coal	0.84	0.84	0.81	0.79	0.77	0.75	0.73	0.71
Steam Coal	1.80	1.82	1.81	1.83	1.85	1.89	1.92	1.86
Net Coal Coke Imports	0.02	0.02	0.02	-0.06	0.00	0.02	0.03	0.03
Renewable Energy[13]	2.65	2.72	2.74	2.76	2.82	2.86	2.90	2.94
Methanol[11]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	9.76	9.97	10.15	10.23	10.37	10.49	10.60	10.70
Delivered Energy	**65.62**	**66.99**	**68.16**	**68.84**	**69.94**	**70.71**	**71.39**	**72.03**
Electricity Related Losses	21.76	22.15	22.44	22.42	22.60	22.75	22.89	23.03
Total	**87.38**	**89.14**	**90.60**	**91.26**	**92.54**	**93.46**	**94.27**	**95.07**
Electric Generators[14]								
Distillate Fuel	0.13	0.10	0.12	0.08	0.08	0.08	0.08	0.08
Residual Fuel	0.95	0.89	0.61	0.66	0.61	0.67	0.65	0.60
Natural Gas	3.00	3.32	3.47	3.34	3.49	3.53	3.47	3.41
Steam Coal	16.89	16.97	17.02	17.13	17.34	17.49	17.83	18.07
Nuclear Power	6.52	6.84	7.02	7.12	7.09	7.09	7.10	7.09
Renewable Energy[15]	3.74	3.55	3.94	3.95	3.96	3.98	4.00	4.07
Electricity Imports	0.29	0.46	0.40	0.38	0.41	0.40	0.35	0.42
Total	**31.52**	**32.12**	**32.59**	**32.65**	**32.97**	**33.24**	**33.49**	**33.74**

Table A2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
4.66	4.74	4.82	4.91	5.01	5.09	5.17	5.24	5.31	5.39	5.84	1.6%
3.81	3.89	3.96	4.04	4.13	4.21	4.27	4.33	4.38	4.43	4.69	1.9%
15.51	15.63	15.75	15.86	15.97	16.05	16.12	16.18	16.17	16.16	15.98	0.6%
1.09	1.12	1.15	1.18	1.22	1.25	1.28	1.31	1.34	1.37	1.51	2.5%
0.02	0.02	0.02	0.02	0.03	0.04	0.04	0.05	0.07	0.08	0.14	8.5%
0.22	0.22	0.22	0.22	0.23	0.23	0.23	0.23	0.23	0.23	0.24	0.9%
25.30	25.62	25.93	26.23	26.57	26.87	27.11	27.34	27.50	27.67	28.40	1.1%
0.67	0.68	0.68	0.70	0.71	0.71	0.73	0.74	0.75	0.76	0.86	1.3%
0.01	0.01	0.01	0.02	0.03	0.04	0.05	0.07	0.10	0.12	0.22	18.1%
0.01	0.02	0.03	0.04	0.05	0.07	0.08	0.09	0.10	0.11	0.16	25.4%
0.01	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.13	23.7%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.8%
0.04	0.04	0.05	0.06	0.07	0.08	0.09	0.09	0.10	0.11	0.14	9.5%
26.04	**26.39**	**26.73**	**27.07**	**27.47**	**27.81**	**28.12**	**28.40**	**28.63**	**28.86**	**29.90**	**1.2%**
0.08	0.09	0.11	0.12	0.14	0.16	0.18	0.20	0.21	0.23	0.26	8.8%
26.12	**26.48**	**26.83**	**27.20**	**27.62**	**27.97**	**28.30**	**28.60**	**28.84**	**29.09**	**30.17**	**1.2%**
7.14	7.23	7.32	7.41	7.52	7.61	7.69	7.77	7.84	7.93	8.42	1.2%
0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	-0.3%
3.81	3.89	3.96	4.04	4.13	4.21	4.27	4.33	4.38	4.43	4.69	1.9%
2.44	2.46	2.49	2.53	2.56	2.57	2.59	2.62	2.65	2.68	2.83	0.9%
15.78	15.90	16.03	16.14	16.25	16.34	16.41	16.47	16.46	16.46	16.28	0.6%
1.28	1.30	1.31	1.34	1.36	1.37	1.38	1.39	1.41	1.42	1.48	0.8%
1.75	1.77	1.82	1.85	1.89	1.92	1.95	1.99	2.02	2.05	2.21	1.7%
4.31	4.32	4.34	4.36	4.37	4.40	4.41	4.42	4.45	4.44	4.55	0.5%
19.70	19.88	20.06	20.29	20.50	20.67	20.83	21.02	21.18	21.35	22.06	1.0%
0.69	0.67	0.66	0.64	0.62	0.61	0.59	0.58	0.56	0.55	0.48	-2.6%
1.86	1.86	1.88	1.89	1.90	1.93	1.93	1.94	1.96	1.97	2.10	0.7%
0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	2.5%
2.98	3.03	3.08	3.15	3.20	3.24	3.28	3.32	3.36	3.41	3.62	1.4%
0.01	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.13	23.7%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.8%
10.83	10.97	11.13	11.32	11.47	11.63	11.78	11.96	12.12	12.30	13.27	1.4%
72.70	**73.43**	**74.23**	**75.11**	**75.94**	**76.67**	**77.30**	**78.00**	**78.59**	**79.19**	**82.25**	**1.0%**
23.24	23.48	23.75	24.05	24.44	24.70	24.80	25.06	25.23	25.50	25.77	0.7%
95.94	**96.92**	**97.98**	**99.16**	**100.38**	**101.38**	**102.10**	**103.05**	**103.82**	**104.69**	**108.02**	**0.9%**
0.08	0.08	0.09	0.11	0.13	0.14	0.15	0.17	0.18	0.19	0.24	4.2%
0.68	0.70	0.72	0.78	0.83	0.86	0.87	0.92	0.97	1.00	0.90	0.0%
3.42	3.53	3.76	4.04	4.29	4.30	4.52	4.83	5.13	5.41	7.46	3.9%
18.34	18.60	18.84	19.01	19.27	19.60	19.68	19.75	19.80	19.99	20.64	0.9%
7.07	7.05	7.02	6.98	6.93	6.93	6.80	6.74	6.62	6.52	4.63	-1.8%
4.10	4.12	4.13	4.14	4.19	4.20	4.18	4.26	4.31	4.38	4.90	1.6%
0.38	0.38	0.32	0.30	0.29	0.31	0.37	0.36	0.35	0.32	0.26	-2.7%
34.06	**34.45**	**34.88**	**35.37**	**35.92**	**36.34**	**36.58**	**37.02**	**37.36**	**37.80**	**39.04**	**0.9%**

Table A2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Total Energy Consumption								
Distillate Fuel	6.52	6.71	6.75	6.76	6.90	6.97	7.05	7.14
Kerosene	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Jet Fuel[8]	3.03	3.15	3.27	3.33	3.43	3.53	3.62	3.72
Liquefied Petroleum Gas	2.28	2.35	2.39	2.37	2.40	2.43	2.42	2.43
Motor Gasoline[2]	14.33	14.47	14.80	14.86	15.01	15.21	15.42	15.62
Petrochemical Feedstocks	1.19	1.25	1.25	1.24	1.25	1.27	1.27	1.27
Residual Fuel	2.49	2.44	2.20	2.28	2.26	2.34	2.35	2.33
Other Petroleum[12]	3.88	4.09	4.12	4.14	4.20	4.26	4.30	4.28
Natural Gas	20.80	21.36	21.95	22.28	22.76	22.87	22.92	23.00
Metallurgical Coal	0.84	0.84	0.81	0.79	0.77	0.75	0.73	0.71
Steam Coal	18.69	18.79	18.83	18.96	19.20	19.39	19.74	19.93
Net Coal Coke Imports	0.02	0.02	0.02	-0.06	0.00	0.02	0.03	0.03
Nuclear Power	6.52	6.84	7.02	7.12	7.09	7.09	7.10	7.09
Renewable Energy[16]	6.40	6.27	6.68	6.71	6.78	6.85	6.90	7.01
Methanol	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Imports	0.29	0.46	0.40	0.38	0.41	0.40	0.35	0.42
Total	**87.38**	**89.14**	**90.60**	**91.26**	**92.54**	**93.46**	**94.27**	**95.07**
Energy Use and Related Statistics								
Delivered Energy Use	65.62	66.99	68.16	68.84	69.94	70.71	71.39	72.03
Total Energy Use	87.39	89.14	90.60	91.26	92.55	93.47	94.28	95.07
Population (millions)	258.43	261.03	263.58	266.07	268.51	270.91	273.28	275.62
Gross Domestic Product (billion 1987 dollars)	5134.47	5343.91	5483.13	5581.45	5747.54	5894.15	6033.67	6181.31

Table A2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
7.22	7.31	7.41	7.52	7.65	7.74	7.84	7.94	8.02	8.11	8.66	1.2%
0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	-0.3%
3.81	3.89	3.96	4.04	4.13	4.21	4.27	4.33	4.38	4.43	4.69	1.9%
2.44	2.46	2.49	2.53	2.56	2.57	2.59	2.62	2.65	2.68	2.83	0.9%
15.78	15.90	16.03	16.14	16.25	16.34	16.41	16.47	16.46	16.46	16.28	0.6%
1.28	1.30	1.31	1.34	1.36	1.37	1.38	1.39	1.41	1.42	1.48	0.8%
2.43	2.47	2.54	2.64	2.72	2.77	2.82	2.91	2.99	3.05	3.11	1.2%
4.31	4.32	4.34	4.36	4.37	4.40	4.41	4.42	4.45	4.44	4.55	0.5%
23.13	23.41	23.83	24.33	24.79	24.97	25.35	25.84	26.31	26.76	29.52	1.6%
0.69	0.67	0.66	0.64	0.62	0.61	0.59	0.58	0.56	0.55	0.48	-2.6%
20.19	20.46	20.72	20.90	21.17	21.53	21.61	21.69	21.76	21.96	22.75	0.9%
0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	2.5%
7.07	7.05	7.02	6.98	6.93	6.93	6.80	6.74	6.62	6.52	4.63	-1.8%
7.08	7.15	7.21	7.29	7.38	7.44	7.46	7.58	7.67	7.78	8.52	1.5%
0.01	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.13	23.7%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.8%
0.38	0.38	0.32	0.30	0.29	0.31	0.37	0.36	0.35	0.32	0.26	-2.7%
95.94	**96.92**	**97.98**	**99.16**	**100.38**	**101.38**	**102.10**	**103.05**	**103.82**	**104.69**	**108.02**	**0.9%**
72.70	73.43	74.23	75.11	75.94	76.67	77.30	78.00	78.59	79.19	82.25	1.0%
95.95	96.92	97.99	99.17	100.39	101.39	102.10	103.06	103.83	104.70	108.03	0.9%
277.93	280.23	282.53	284.82	287.12	289.44	291.78	294.13	296.52	298.92	311.19	0.8%
6330.14	6466.77	6600.65	6745.62	6901.27	7045.27	7168.12	7287.10	7404.44	7523.32	8113.88	2.0%

[1]Includes wood use for residential heating and cooking. See Table 18 for estimates of nonmarketed renewable energy consumption for geothermal heat pumps and solar thermal hot water heating.
[2]Includes ethanol (blends of 10 percent or less) and ethers blended into gasoline.
[3]Includes commercial sector electricity cogenerated using wood and wood waste, municipal solid waste, and other biomass. See Table 18 for estimates of nonmarketed renewable energy consumption for solar thermal hot water heating.
[4]Fuel consumption includes consumption for cogeneration.
[5]Includes petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.
[6]Includes lease and plant fuel.
[7]Includes consumption of renewable energy from water, wood and wood waste, municipal solid waste, and other biomass.
[8]Includes naphtha and kerosene type.
[9]Includes aviation gas and lubricants.
[10]E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline(nonrenewable).
[11]Only M85 (85 percent methanol).
[12]Includes unfinished oils, natural gasoline, motor gasoline blending compounds, aviation gasoline, lubricants, still gas, asphalt, road oil, petroleum coke, and miscellaneous petroleum products.
[13]Includes electricity generated for sale to electric utilities and for self use from renewable sources, and non-electric energy from renewable sources. Excludes nonmarketed renewable energy consumption from geothermal heat pumps and solar thermal hot water heaters.
[14]Includes consumption of energy by all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[15]Includes hydroelectric, geothermal, wood and wood waste, municipal solid waste, other biomass, wind, photovoltaic and solar thermal sources.
[16]Includes hydroelectric, geothermal, wood and wood waste, municipal solid waste, other biomass, wind, photovoltaic and solar thermal sources. Excludes nonmarketed renewable energy consumption from ground source heat pumps and solar thermal hot water heaters.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding. Figures for 1993 and 1994 may differ from published data due to internal conversion factors. Consumption values of 0.00 are values that round to 0.00, because they are less than 0.005.
Sources: 1993 natural gas lease, plant, and pipeline fuel values: Energy Information Administration (EIA), *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). 1994 natural gas lease, plant, and pipeline fuel values: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). 1994 transportation sector compressed natural gas consumption: EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C. 1993 and 1994 electric utility fuel consumption: EIA, *Electric Power Annual, Volume I*, DOE/EIA-0348(94)/1 (Washington, DC, July 1995). 1993 and 1994 nonutility consumption estimates: EIA Form 867, "Annual Nonutility Power Producer Report." Other 1993 values: EIA, *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, July 1995) and Office of Coal, Nuclear, Electric, and Alternative Fuels estimates. Other 1994 values: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A3. Energy Prices by Sector and Source
(1994 Dollars per Million Btu)

Sector and Source	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Residential	**12.73**	**12.80**	**12.88**	**12.81**	**12.78**	**12.87**	**12.95**	**13.04**
Primary Energy	6.42	6.46	6.36	6.41	6.44	6.53	6.53	6.58
Petroleum Products	7.92	7.62	8.15	8.15	8.33	8.52	8.65	8.84
Distillate Fuel	6.69	6.33	6.82	6.86	7.02	7.20	7.31	7.48
Liquefied Petroleum Gas	10.76	10.44	10.99	10.95	11.15	11.41	11.59	11.87
Natural Gas	6.07	6.21	5.95	6.00	6.00	6.07	6.04	6.08
Electricity	24.87	24.67	24.74	24.76	24.51	24.44	24.52	24.49
Commercial	**13.05**	**13.29**	**13.15**	**12.73**	**12.82**	**12.90**	**12.96**	**13.00**
Primary Energy	4.99	5.10	4.83	4.84	4.98	5.08	5.08	5.13
Petroleum Products	4.90	4.80	4.90	4.93	5.06	5.25	5.36	5.54
Distillate Fuel	4.71	4.44	4.65	4.68	4.85	5.02	5.13	5.30
Residual Fuel	2.88	2.85	2.65	2.69	2.74	2.85	2.94	3.04
Natural Gas[1]	5.11	5.28	4.91	4.91	5.06	5.14	5.11	5.14
Electricity	23.24	23.30	23.15	22.46	22.40	22.40	22.47	22.43
Industrial[2]	**5.02**	**5.01**	**4.70**	**4.71**	**4.76**	**4.88**	**4.95**	**5.02**
Primary Energy	3.29	3.31	3.01	3.04	3.11	3.24	3.32	3.41
Petroleum Products	4.24	4.50	4.10	4.12	4.24	4.44	4.59	4.77
Distillate Fuel	4.87	4.59	4.64	4.67	4.86	5.04	5.15	5.33
Liquefied Petroleum Gas	4.87	6.11	5.84	5.70	5.89	6.21	6.34	6.66
Residual Fuel	2.44	2.50	2.54	2.57	2.63	2.73	2.82	2.92
Natural Gas[3]	2.82	2.56	2.30	2.39	2.44	2.53	2.56	2.57
Metallurgical Coal	1.77	1.76	1.77	1.74	1.72	1.71	1.67	1.63
Steam Coal	1.45	1.45	1.38	1.34	1.33	1.32	1.31	1.30
Electricity	14.76	14.75	14.55	14.33	14.30	14.30	14.35	14.33
Transportation	**7.97**	**7.74**	**8.30**	**8.37**	**8.44**	**8.74**	**8.82**	**9.04**
Primary Energy	7.96	7.74	8.30	8.37	8.43	8.73	8.81	9.03
Petroleum Products	7.96	7.74	8.30	8.37	8.43	8.73	8.81	9.03
Distillate Fuel[4]	8.21	8.04	8.27	8.29	8.44	8.61	8.69	8.79
Jet Fuel[5]	4.38	3.95	4.29	4.68	4.88	5.07	5.21	5.35
Motor Gasoline[6]	9.11	8.92	9.66	9.70	9.73	10.13	10.20	10.51
Residual Fuel	2.10	2.02	2.30	2.33	2.39	2.49	2.59	2.69
Natural Gas[7]	5.52	6.01	6.07	6.20	6.28	6.44	6.47	6.55
Electricity	14.64	14.80	14.81	14.80	14.86	14.96	15.11	15.24
Total End-Use Energy	**8.24**	**8.16**	**8.23**	**8.22**	**8.25**	**8.42**	**8.49**	**8.62**
Primary Energy	7.87	7.76	7.86	7.87	7.91	8.09	8.16	8.30
Electricity	20.89	20.85	20.77	20.48	20.34	20.32	20.39	20.39
Electric Generators[8]								
Fossil Fuel Average	1.62	1.56	1.50	1.48	1.46	1.48	1.47	1.46
Petroleum Products	2.83	2.76	3.03	2.95	3.01	3.08	3.17	3.27
Distillate Fuel	4.23	3.96	4.21	4.27	4.47	4.63	4.76	4.95
Residual Fuel	2.64	2.62	2.79	2.78	2.82	2.90	2.97	3.04
Natural Gas	2.55	2.19	2.04	2.10	2.05	2.18	2.19	2.19
Steam Coal	1.38	1.36	1.32	1.29	1.28	1.27	1.26	1.26

Table A3. Energy Prices by Sector and Source (Continued)
(1994 Dollars per Million Btu)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
13.08	**13.16**	**13.24**	**13.29**	**13.35**	**13.38**	**13.43**	**13.47**	**13.59**	**13.65**	**14.31**	**0.5%**
6.61	6.61	6.59	6.57	6.55	6.54	6.50	6.47	6.51	6.53	6.95	0.3%
9.02	9.13	9.14	9.23	9.28	9.45	9.47	9.44	9.62	9.63	9.77	1.2%
7.62	7.72	7.74	7.84	7.89	8.01	8.04	8.05	8.19	8.19	8.35	1.3%
12.14	12.31	12.34	12.40	12.46	12.77	12.80	12.68	12.95	13.03	13.26	1.1%
6.07	6.05	6.03	5.99	5.96	5.91	5.88	5.85	5.87	5.89	6.39	0.1%
24.42	24.46	24.58	24.58	24.62	24.57	24.61	24.59	24.67	24.63	24.72	0.0%
13.08	**13.11**	**13.12**	**13.12**	**13.15**	**13.10**	**13.10**	**13.10**	**13.19**	**13.21**	**13.66**	**0.1%**
5.16	5.16	5.16	5.15	5.14	5.13	5.11	5.10	5.14	5.17	5.59	0.4%
5.68	5.78	5.82	5.91	5.96	6.09	6.12	6.13	6.26	6.29	6.45	1.4%
5.43	5.53	5.55	5.64	5.69	5.82	5.83	5.84	5.99	5.99	6.13	1.5%
3.15	3.24	3.32	3.40	3.48	3.54	3.60	3.66	3.73	3.80	4.05	1.7%
5.14	5.13	5.11	5.08	5.06	5.02	4.99	4.97	5.00	5.03	5.53	0.2%
22.53	22.55	22.52	22.47	22.49	22.34	22.30	22.26	22.31	22.27	22.29	-0.2%
5.12	**5.17**	**5.18**	**5.21**	**5.25**	**5.31**	**5.31**	**5.31**	**5.39**	**5.42**	**5.64**	**0.6%**
3.50	3.56	3.56	3.59	3.63	3.71	3.72	3.72	3.80	3.84	4.08	1.0%
4.95	5.06	5.06	5.11	5.18	5.36	5.37	5.33	5.48	5.52	5.61	1.1%
5.46	5.55	5.57	5.67	5.72	5.85	5.87	5.87	6.03	6.04	6.18	1.4%
6.91	7.06	7.06	7.10	7.13	7.43	7.42	7.24	7.49	7.50	7.59	1.0%
3.03	3.12	3.20	3.28	3.35	3.42	3.48	3.54	3.60	3.66	3.92	2.2%
2.60	2.61	2.61	2.63	2.64	2.64	2.66	2.68	2.72	2.76	3.20	1.1%
1.67	1.67	1.67	1.69	1.66	1.66	1.68	1.67	1.66	1.66	1.64	-0.3%
1.30	1.31	1.30	1.31	1.33	1.30	1.30	1.32	1.32	1.33	1.31	-0.5%
14.38	14.39	14.37	14.34	14.37	14.26	14.21	14.16	14.19	14.14	14.07	-0.2%
9.18	**9.27**	**9.27**	**9.37**	**9.35**	**9.46**	**9.46**	**9.44**	**9.51**	**9.47**	**9.37**	**0.9%**
9.17	9.26	9.25	9.36	9.33	9.44	9.44	9.42	9.49	9.45	9.34	0.9%
9.17	9.26	9.25	9.36	9.33	9.45	9.44	9.43	9.50	9.46	9.36	0.9%
8.88	8.94	8.95	9.02	9.00	9.11	9.09	9.06	9.20	9.12	9.21	0.6%
5.51	5.66	5.72	5.84	5.88	6.02	6.05	6.04	6.20	6.17	6.36	2.3%
10.68	10.78	10.77	10.90	10.87	11.01	11.01	11.01	11.06	11.04	10.86	0.9%
2.80	2.89	2.97	3.05	3.12	3.19	3.25	3.31	3.37	3.44	3.72	3.0%
6.66	6.74	6.80	6.77	6.51	6.45	6.42	6.40	6.40	6.47	7.15	0.8%
15.36	15.42	15.46	15.47	15.56	15.53	15.53	15.48	15.53	15.51	15.43	0.2%
8.73	**8.79**	**8.81**	**8.86**	**8.88**	**8.94**	**8.96**	**8.96**	**9.05**	**9.06**	**9.27**	**0.6%**
8.41	8.48	8.49	8.55	8.56	8.63	8.64	8.63	8.71	8.71	8.84	0.6%
20.41	20.44	20.46	20.44	20.46	20.37	20.37	20.35	20.41	20.38	20.48	-0.1%
1.47	1.49	1.50	1.52	1.54	1.54	1.56	1.58	1.62	1.63	1.83	0.8%
3.34	3.41	3.51	3.60	3.68	3.75	3.83	3.89	3.98	4.04	4.38	2.2%
5.10	5.19	5.24	5.28	5.32	5.42	5.41	5.41	5.55	5.57	5.70	1.8%
3.13	3.20	3.29	3.36	3.43	3.49	3.55	3.61	3.69	3.75	4.03	2.1%
2.21	2.22	2.23	2.24	2.26	2.26	2.30	2.33	2.40	2.44	2.95	1.4%
1.25	1.27	1.27	1.27	1.28	1.27	1.28	1.27	1.28	1.26	1.28	-0.3%

Table A3. Energy Prices by Sector and Source (Continued)
(1994 Dollars per Million Btu)

Sector and Source	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Average Price to All Users[9]								
Petroleum Products	6.88	6.77	7.11	7.17	7.27	7.53	7.64	7.86
Distillate Fuel[4]	7.11	6.94	7.17	7.22	7.39	7.57	7.66	7.79
Jet Fuel	4.38	3.95	4.29	4.68	4.88	5.07	5.21	5.35
Liquefied Petroleum Gas	6.06	6.94	6.84	6.75	6.92	7.20	7.33	7.62
Motor Gasoline[6]	9.11	8.92	9.64	9.68	9.71	10.11	10.18	10.49
Residual Fuel	2.42	2.39	2.51	2.54	2.59	2.68	2.77	2.86
Natural Gas	4.01	3.86	3.56	3.65	3.66	3.75	3.75	3.77
Coal	1.41	1.39	1.33	1.30	1.28	1.27	1.27	1.26
Electricity	20.89	20.85	20.77	20.48	20.34	20.32	20.39	20.39

Table A3. Energy Prices by Sector and Source (Continued)
(1994 Dollars per Million Btu)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
8.01	8.10	8.10	8.18	8.18	8.31	8.31	8.29	8.38	8.36	8.33	1.0%
7.91	7.98	8.00	8.08	8.09	8.21	8.20	8.19	8.33	8.28	8.41	0.9%
5.51	5.66	5.72	5.84	5.88	6.02	6.05	6.04	6.20	6.17	6.36	2.3%
7.85	7.99	7.98	8.01	8.04	8.34	8.34	8.18	8.45	8.48	8.65	1.1%
10.66	10.76	10.75	10.88	10.86	10.99	11.00	10.99	11.04	11.02	10.84	0.9%
2.96	3.05	3.13	3.21	3.28	3.34	3.40	3.47	3.54	3.60	3.86	2.3%
3.78	3.77	3.75	3.73	3.71	3.69	3.69	3.68	3.70	3.73	4.13	0.3%
1.26	1.27	1.27	1.27	1.28	1.27	1.28	1.27	1.28	1.27	1.28	-0.4%
20.41	20.44	20.46	20.44	20.46	20.37	20.37	20.35	20.41	20.38	20.48	-0.1%

[1]Excludes independent power producers.
[2]Includes cogenerators.
[3]Excludes uses for lease and plant fuel.
[4]Includes Federal and State taxes on diesel fuel and excludes county and local taxes.
[5]Kerosene-type jet fuel.
[6]Sales weighted average price for all grades. Includes Federal and State taxes and excludes county and local taxes.
[7]Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.
[8]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[9]Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.
Btu = British thermal unit.
Note: 1993 and 1994 figures may differ from published data due to internal rounding.

Sources: 1993 prices for gasoline, distillate, and jet fuel are based on prices in the Energy Information Administration (EIA), *Petroleum Marketing Annual 1993*, DOE/EIA-0487(93) (Washington, DC, July 1994). 1994 prices for gasoline, distillate, and jet fuel are based on prices in various 1994 issues of EIA, *Petroleum Marketing Monthly*, DOE/EIA-0380(94/1-12) (Washington, DC, 1994). 1993 and 1994 prices for all other petroleum products are derived from the EIA, *State Energy Price and Expenditure Report 1991*, DOE/EIA-0376(91) (Washington, DC, September 1993). 1993 residential, commercial, and transportation natural gas delivered prices: EIA, *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). 1993 electric generators natural gas delivered prices: Form FERC-423, "Monthly Report of Cost and Quality of Fuels for Electric Plants." 1993 and 1994 industrial gas delivered prices are based on EIA, *Manufacturing Energy Consumption Survey 1991*. 1994 residential and commercial natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). Other 1994 natural gas delivered prices: EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C. Values for 1993 coal prices have been estimated from EIA, *State Price and Expenditure Report 1992*, DOE/EIA-0376(92) (Washington, DC, December 1994) using consumption quantities aggregated from EIA, *State Energy Data Report 1992, Consumption Estimates*, DOE/EIA-0214(92) (Washington, DC, May 1994). Values for 1994 coal prices have been estimated from EIA, *State Price and Expenditure Report 1993*, DOE/EIA-0376(93) (Washington, DC, December 1995) using consumption quantities aggregated from EIA, *State Energy Data Report 1993, Consumption Estimates*, DOE/EIA-0214(93) (Washington, DC, May 1995). 1993 residential electricity prices derived from EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). 1993 and 1994 electricity prices for commercial, industrial, and transportation: EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C. **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A4. Residential Sector Key Indicators and Consumption
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Household Characteristics								
Households (millions)								
Single-Family	66.81	67.80	68.60	69.39	70.18	70.96	71.76	72.57
Multifamily	24.25	24.40	24.56	24.72	24.90	25.10	25.33	25.58
Mobile Homes	5.57	5.71	5.84	5.91	5.98	6.04	6.09	6.14
Total	**96.63**	**97.92**	**99.00**	**100.02**	**101.06**	**102.10**	**103.18**	**104.29**
Housing Starts (millions)								
Single-Family	1.13	1.19	1.00	1.00	1.00	0.99	1.01	1.03
Multifamily	0.16	0.25	0.26	0.25	0.28	0.30	0.33	0.36
Mobile Homes	0.26	0.31	0.30	0.24	0.24	0.24	0.24	0.23
Total	**1.55**	**1.75**	**1.56**	**1.50**	**1.53**	**1.52**	**1.58**	**1.61**
Average House Square Footage	**1630**	**1637**	**1643**	**1648**	**1653**	**1657**	**1661**	**1666**
Energy Intensity								
Million Btu Consumed per Household								
Delivered Energy Consumption	108.76	106.34	105.05	106.59	105.76	104.93	104.32	103.94
Electricity Related Losses	78.29	77.91	78.08	77.28	76.70	76.40	76.18	76.34
Total Energy Consumption	187.06	184.26	183.13	183.87	182.46	181.33	180.49	180.28
Thousand Btu Consumed per Square Foot								
Delivered Energy Consumption	66.71	64.95	63.95	64.68	63.98	63.32	62.79	62.40
Electricity Related Losses	48.02	47.59	47.53	46.89	46.40	46.10	45.85	45.83
Total Energy Consumption	114.74	112.54	111.48	111.56	110.38	109.42	108.63	108.24
Delivered Energy Consumption by Fuel								
Distillate								
Space Heating	0.81	0.77	0.74	0.77	0.76	0.75	0.75	0.74
Water Heating	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Other Uses[1]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Delivered Energy	**0.91**	**0.87**	**0.84**	**0.87**	**0.86**	**0.85**	**0.85**	**0.84**
Liquefied Petroleum Gas								
Space Heating	0.27	0.27	0.26	0.27	0.27	0.26	0.25	0.25
Water Heating	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Cooking[2]	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Other Uses[3]	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07
Delivered Energy	**0.40**	**0.41**	**0.40**	**0.41**	**0.40**	**0.40**	**0.39**	**0.39**
Natural Gas								
Space Heating	3.55	3.46	3.42	3.58	3.59	3.59	3.60	3.62
Space Cooling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Heating	1.27	1.28	1.29	1.30	1.30	1.30	1.30	1.31
Cooking[2]	0.17	0.18	0.18	0.18	0.18	0.19	0.19	0.19
Clothes Dryers	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Other Uses[3]	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06
Delivered Energy	**5.10**	**5.03**	**5.00**	**5.17**	**5.18**	**5.18**	**5.20**	**5.22**
Electricity								
Space Heating	0.42	0.41	0.40	0.43	0.43	0.43	0.44	0.44
Space Cooling	0.48	0.48	0.52	0.49	0.50	0.50	0.50	0.50
Water Heating	0.35	0.36	0.36	0.36	0.36	0.36	0.36	0.37
Refrigeration	0.47	0.46	0.44	0.43	0.42	0.41	0.40	0.39
Cooking	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Clothes Dryers	0.17	0.17	0.17	0.18	0.18	0.18	0.18	0.18
Freezers	0.14	0.14	0.13	0.12	0.11	0.11	0.10	0.10
Lighting	0.31	0.31	0.32	0.32	0.32	0.32	0.33	0.33
Other Uses[4]	0.95	1.01	1.05	1.09	1.14	1.18	1.23	1.29
Delivered Energy	**3.39**	**3.43**	**3.49**	**3.53**	**3.56**	**3.60**	**3.64**	**3.70**

Table A4. Residential Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
73.40	74.24	75.08	75.93	76.80	77.67	78.53	79.37	80.19	81.00	85.27	1.1%
25.85	26.14	26.43	26.73	27.05	27.37	27.71	28.05	28.41	28.77	30.67	1.1%
6.19	6.23	6.27	6.32	6.37	6.41	6.45	6.50	6.54	6.58	6.80	0.8%
105.44	**106.61**	**107.78**	**108.99**	**110.21**	**111.45**	**112.69**	**113.92**	**115.13**	**116.36**	**122.73**	**1.1%**
1.05	1.06	1.06	1.08	1.09	1.10	1.09	1.07	1.05	1.06	1.10	N/A
0.37	0.39	0.40	0.41	0.42	0.43	0.45	0.46	0.47	0.48	0.49	N/A
0.23	0.23	0.23	0.23	0.24	0.24	0.24	0.24	0.24	0.24	0.25	N/A
1.65	**1.67**	**1.69**	**1.72**	**1.75**	**1.77**	**1.78**	**1.77**	**1.76**	**1.78**	**1.84**	**N/A**
1670	**1673**	**1677**	**1681**	**1684**	**1687**	**1690**	**1693**	**1696**	**1698**	**1710**	**0.2%**
103.10	102.66	102.33	102.32	101.65	101.33	101.09	101.20	100.75	100.64	100.05	-0.3%
76.22	76.37	76.55	76.96	77.33	77.51	77.28	77.69	77.59	77.98	76.62	-0.1%
179.32	179.02	178.88	179.28	178.98	178.84	178.37	178.89	178.34	178.62	176.67	-0.2%
61.75	61.35	61.02	60.88	60.36	60.05	59.80	59.76	59.41	59.26	58.49	-0.5%
45.66	45.63	45.65	45.79	45.92	45.93	45.71	45.88	45.75	45.91	44.79	-0.3%
107.41	106.98	106.66	106.68	106.28	105.99	105.51	105.64	105.16	105.17	103.28	-0.4%
0.74	0.73	0.73	0.72	0.72	0.72	0.71	0.71	0.70	0.70	0.70	-0.5%
0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	-0.3%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.4%
0.83	**0.83**	**0.83**	**0.82**	**0.82**	**0.81**	**0.81**	**0.81**	**0.80**	**0.80**	**0.80**	**-0.4%**
0.24	0.24	0.23	0.23	0.23	0.22	0.22	0.21	0.21	0.21	0.19	-1.6%
0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	-1.0%
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	-0.8%
0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	1.2%
0.38	**0.37**	**0.37**	**0.37**	**0.36**	**0.36**	**0.35**	**0.35**	**0.35**	**0.34**	**0.33**	**-1.0%**
3.62	3.64	3.66	3.69	3.70	3.73	3.76	3.79	3.81	3.82	3.88	0.6%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.2%
1.31	1.31	1.31	1.33	1.32	1.32	1.33	1.34	1.34	1.35	1.39	0.4%
0.19	0.19	0.19	0.19	0.20	0.20	0.20	0.20	0.20	0.20	0.21	0.9%
0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2%
0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	1.0%
5.23	**5.25**	**5.28**	**5.33**	**5.33**	**5.37**	**5.40**	**5.45**	**5.47**	**5.50**	**5.61**	**0.5%**
0.45	0.45	0.45	0.46	0.46	0.47	0.47	0.47	0.47	0.48	0.49	0.9%
0.51	0.51	0.51	0.52	0.52	0.52	0.52	0.53	0.53	0.53	0.54	0.5%
0.37	0.37	0.37	0.37	0.37	0.38	0.38	0.38	0.38	0.39	0.40	0.5%
0.38	0.37	0.36	0.36	0.35	0.34	0.33	0.33	0.32	0.32	0.30	-2.0%
0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.12	0.9%
0.18	0.18	0.19	0.19	0.19	0.19	0.19	0.20	0.20	0.20	0.21	0.9%
0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	-3.1%
0.33	0.34	0.34	0.34	0.34	0.35	0.35	0.35	0.35	0.35	0.36	0.7%
1.34	1.39	1.45	1.51	1.57	1.64	1.71	1.78	1.85	1.93	2.36	4.1%
3.74	**3.80**	**3.87**	**3.95**	**4.00**	**4.07**	**4.14**	**4.22**	**4.29**	**4.37**	**4.84**	**1.7%**

Table A4. Residential Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Marketed Renewables								
Wood[5]	0.57	0.55	0.55	0.56	0.56	0.57	0.57	0.57
Delivered Energy	**0.57**	**0.55**	**0.55**	**0.56**	**0.56**	**0.57**	**0.57**	**0.57**
Other Fuels[6]	**0.13**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**
Delivered Energy Consumption by End-Use								
Space Heating	5.76	5.58	5.49	5.74	5.73	5.72	5.73	5.74
Space Cooling	0.48	0.48	0.52	0.49	0.50	0.50	0.50	0.51
Water Heating	1.77	1.79	1.80	1.81	1.81	1.81	1.81	1.82
Refrigeration	0.47	0.46	0.44	0.43	0.42	0.41	0.40	0.39
Cooking	0.29	0.30	0.30	0.31	0.31	0.31	0.31	0.32
Clothes Dryers	0.22	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Freezers	0.14	0.14	0.13	0.12	0.11	0.11	0.10	0.10
Lighting	0.31	0.31	0.32	0.32	0.32	0.32	0.33	0.33
Other Uses[7]	1.07	1.13	1.17	1.22	1.26	1.31	1.36	1.41
Delivered Energy	**10.51**	**10.41**	**10.40**	**10.66**	**10.69**	**10.71**	**10.76**	**10.84**
Electricity Related Losses by End-Use								
Space Heating	0.95	0.90	0.89	0.94	0.94	0.94	0.95	0.95
Space Cooling	1.07	1.08	1.16	1.08	1.08	1.08	1.08	1.08
Water Heating	0.78	0.79	0.79	0.79	0.78	0.78	0.78	0.79
Refrigeration	1.05	1.02	0.98	0.95	0.91	0.88	0.86	0.83
Cooking	0.21	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Clothes Dryers	0.38	0.39	0.39	0.39	0.39	0.39	0.39	0.39
Freezers	0.31	0.30	0.28	0.27	0.25	0.23	0.22	0.21
Lighting	0.70	0.70	0.70	0.70	0.70	0.70	0.71	0.71
Other Uses[7]	2.13	2.24	2.32	2.40	2.48	2.57	2.66	2.77
Total Electricity Related Losses	**7.57**	**7.63**	**7.73**	**7.73**	**7.75**	**7.80**	**7.86**	**7.96**
Total Energy Consumption by End-Use								
Space Heating	6.70	6.48	6.38	6.67	6.67	6.66	6.67	6.69
Space Cooling	1.54	1.56	1.68	1.57	1.58	1.58	1.58	1.59
Water Heating	2.55	2.58	2.58	2.59	2.59	2.59	2.59	2.60
Refrigeration	1.52	1.48	1.43	1.38	1.33	1.29	1.25	1.22
Cooking	0.51	0.52	0.52	0.53	0.53	0.53	0.54	0.54
Clothes Dryers	0.60	0.61	0.61	0.62	0.62	0.62	0.62	0.63
Freezers	0.46	0.44	0.41	0.39	0.36	0.34	0.32	0.30
Lighting	1.01	1.01	1.02	1.02	1.02	1.03	1.03	1.04
Other Uses[7]	3.19	3.36	3.49	3.62	3.74	3.87	4.02	4.18
Total	**18.08**	**18.04**	**18.13**	**18.39**	**18.44**	**18.51**	**18.62**	**18.80**
Non-Marketed Renewables								
Geothermal[8]	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Solar[9]	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Total	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**

Table A4. Residential Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
0.57	0.57	0.57	0.58	0.58	0.58	0.58	0.58	0.58	0.59	0.59	0.3%
0.57	**0.57**	**0.57**	**0.58**	**0.58**	**0.58**	**0.58**	**0.58**	**0.58**	**0.59**	**0.59**	**0.3%**
0.12	**0.12**	**0.11**	**0.11**	**0.11**	**0.11**	**0.11**	**0.11**	**0.11**	**0.11**	**0.10**	**-0.8%**
5.73	5.74	5.76	5.80	5.80	5.82	5.84	5.88	5.88	5.90	5.96	0.3%
0.51	0.51	0.52	0.52	0.52	0.52	0.53	0.53	0.53	0.53	0.54	0.5%
1.81	1.82	1.82	1.84	1.83	1.84	1.84	1.86	1.86	1.87	1.93	0.3%
0.38	0.37	0.36	0.36	0.35	0.34	0.33	0.33	0.32	0.32	0.30	-2.0%
0.32	0.32	0.32	0.32	0.33	0.33	0.33	0.33	0.34	0.34	0.35	0.7%
0.24	0.24	0.24	0.24	0.24	0.24	0.25	0.25	0.25	0.25	0.26	0.8%
0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	-3.1%
0.33	0.34	0.34	0.34	0.34	0.35	0.35	0.35	0.35	0.35	0.36	0.7%
1.46	1.52	1.58	1.65	1.71	1.77	1.84	1.92	1.99	2.07	2.51	3.9%
10.87	**10.94**	**11.03**	**11.15**	**11.20**	**11.29**	**11.39**	**11.53**	**11.60**	**11.71**	**12.28**	**0.8%**
0.96	0.96	0.97	0.98	0.98	0.99	0.99	0.99	0.99	0.99	0.95	0.3%
1.09	1.09	1.10	1.11	1.11	1.11	1.10	1.10	1.10	1.10	1.04	-0.1%
0.79	0.79	0.79	0.79	0.80	0.80	0.80	0.80	0.80	0.80	0.77	-0.1%
0.81	0.79	0.77	0.76	0.74	0.72	0.70	0.68	0.67	0.65	0.58	-2.6%
0.22	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.2%
0.39	0.40	0.40	0.40	0.40	0.41	0.41	0.41	0.41	0.41	0.41	0.3%
0.20	0.19	0.18	0.18	0.17	0.17	0.16	0.16	0.15	0.15	0.13	-3.7%
0.72	0.72	0.72	0.73	0.73	0.74	0.73	0.74	0.73	0.73	0.71	0.0%
2.87	2.98	3.09	3.22	3.35	3.48	3.59	3.73	3.85	3.99	4.58	3.5%
8.04	**8.14**	**8.25**	**8.39**	**8.52**	**8.64**	**8.71**	**8.85**	**8.93**	**9.07**	**9.40**	**1.0%**
6.69	6.71	6.73	6.77	6.78	6.81	6.83	6.87	6.87	6.90	6.91	0.3%
1.59	1.60	1.61	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.58	0.1%
2.60	2.61	2.61	2.63	2.63	2.64	2.64	2.66	2.66	2.67	2.70	0.2%
1.19	1.16	1.14	1.12	1.09	1.06	1.03	1.01	0.99	0.97	0.89	-2.4%
0.54	0.55	0.55	0.55	0.56	0.56	0.56	0.57	0.57	0.57	0.58	0.5%
0.63	0.63	0.64	0.64	0.65	0.65	0.65	0.66	0.66	0.67	0.67	0.5%
0.29	0.28	0.27	0.26	0.25	0.24	0.24	0.23	0.23	0.22	0.20	-3.5%
1.05	1.06	1.06	1.07	1.08	1.08	1.08	1.09	1.09	1.09	1.07	0.3%
4.33	4.50	4.67	4.86	5.06	5.25	5.44	5.65	5.84	6.06	7.09	3.6%
18.91	**19.09**	**19.28**	**19.54**	**19.73**	**19.93**	**20.10**	**20.38**	**20.53**	**20.78**	**21.68**	**0.9%**
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	4.8%
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-0.3%
0.02	**0.02**	**0.02**	**0.02**	**0.02**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**3.5%**

[1]Includes such appliances as swimming-pool and hot-tub heaters.
[2]Does not include outdoor grills.
[3]Includes such appliances as swimming-pool heaters, outdoor grills, and outdoor lighting (natural gas).
[4]Includes such appliances as microwave ovens, television sets, and dishwashers.
[5]Includes wood used for primary and secondary heating in wood stoves or fireplaces as reported by the *Residential Energy Consumption Survey 1993*.
[6]Includes kerosene and coal.
[7]Includes such appliances as swimming-pool heaters, hot-tub heaters, outdoor grills, outdoor lighting (natural gas), microwave ovens, television sets, and dishwashers.
[8]Includes primary energy displaced by ground-source heat pumps in space heating and cooling applications.
[9]Includes primary energy displaced by solar thermal water heaters.
Btu = British thermal unit.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993: Energy Information Administration (EIA), *State Energy Data Report*, DOE/EIA-0214(93) (Washington, DC, July 1995). 1994: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A5. Commercial Sector Key Indicators and Consumption
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Key Indicators								
Total Floor Space (billion square feet)								
Surviving	67.2	68.2	69.2	70.2	71.1	72.0	72.9	73.7
New Additions	1.8	1.8	1.9	1.8	1.8	1.7	1.7	1.7
Total	**69.1**	**70.0**	**71.0**	**72.0**	**72.9**	**73.8**	**74.6**	**75.4**
Energy Consumption Intensity (thousand Btu per square foot)								
Delivered Energy Consumption	98.9	99.3	99.4	99.7	99.2	98.7	98.4	98.0
Electricity Related Losses	97.3	99.3	99.8	97.9	97.3	96.7	96.2	95.9
Total Energy Consumption	196.2	198.6	199.2	197.6	196.5	195.5	194.6	193.9
Delivered Energy Consumption by Fuel								
Electricity								
Space Heating	0.12	0.11	0.11	0.12	0.12	0.12	0.12	0.12
Space Cooling	0.54	0.53	0.56	0.52	0.52	0.52	0.52	0.51
Water Heating	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.16
Ventilation	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.18
Cooking	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Lighting	1.16	1.15	1.16	1.17	1.18	1.19	1.20	1.20
Refrigeration	0.14	0.14	0.14	0.14	0.14	0.14	0.15	0.15
Office Equipment (PC)	0.06	0.07	0.07	0.08	0.08	0.08	0.09	0.09
Office Equipment (non-PC)	0.17	0.18	0.18	0.19	0.20	0.20	0.21	0.21
Other Uses[1]	0.46	0.57	0.59	0.61	0.64	0.66	0.68	0.70
Delivered Energy	**3.01**	**3.13**	**3.20**	**3.21**	**3.25**	**3.29**	**3.32**	**3.36**
Natural Gas[2]								
Space Heating	1.34	1.26	1.26	1.33	1.32	1.32	1.32	1.32
Space Cooling	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Water Heating	0.48	0.48	0.49	0.49	0.49	0.49	0.49	0.50
Cooking	0.18	0.18	0.19	0.19	0.19	0.20	0.20	0.21
Other Uses[3]	0.96	1.07	1.08	1.10	1.11	1.12	1.14	1.15
Delivered Energy	**2.98**	**3.01**	**3.04**	**3.13**	**3.14**	**3.16**	**3.18**	**3.20**
Distillate								
Space Heating	0.20	0.20	0.19	0.20	0.20	0.20	0.20	0.19
Water Heating	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05
Other Uses[4]	0.21	0.17	0.17	0.17	0.17	0.18	0.18	0.18
Delivered Energy	**0.46**	**0.42**	**0.42**	**0.43**	**0.43**	**0.43**	**0.42**	**0.42**
Other Fuels[5]	**0.37**	**0.39**	**0.40**	**0.40**	**0.40**	**0.40**	**0.41**	**0.41**
Marketed Renewable Fuels								
Biomass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Delivered Energy	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Delivered Energy Consumption by End-Use								
Space Heating	1.66	1.57	1.56	1.64	1.64	1.64	1.64	1.64
Space Cooling	0.56	0.55	0.59	0.55	0.55	0.54	0.54	0.54
Water Heating	0.71	0.71	0.72	0.72	0.71	0.71	0.71	0.71
Ventilation	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.18
Cooking	0.21	0.21	0.22	0.22	0.23	0.23	0.23	0.24
Lighting	1.16	1.15	1.16	1.17	1.18	1.19	1.20	1.20
Refrigeration	0.14	0.14	0.14	0.14	0.14	0.14	0.15	0.15
Office Equipment (PC)	0.06	0.07	0.07	0.08	0.08	0.08	0.09	0.09
Office Equipment (non-PC)	0.17	0.18	0.18	0.19	0.20	0.20	0.21	0.21
Other Uses[6]	2.00	2.20	2.25	2.29	2.33	2.36	2.40	2.43
Delivered Energy	**6.83**	**6.96**	**7.06**	**7.17**	**7.23**	**7.28**	**7.34**	**7.39**

Table A5. Commercial Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
74.5	75.3	76.1	76.8	77.6	78.4	79.2	80.0	80.8	81.6	86.0	1.1%
1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	2.0	0.5%
76.2	**77.0**	**77.7**	**78.5**	**79.3**	**80.1**	**80.9**	**81.7**	**82.5**	**83.3**	**88.1**	**1.1%**
97.7	97.5	97.3	97.1	96.9	96.7	96.6	96.5	96.3	96.2	95.4	-0.2%
95.6	95.4	95.2	94.9	95.2	95.1	94.5	94.3	93.9	93.8	89.5	-0.5%
193.3	192.9	192.4	192.0	192.2	191.9	191.1	190.8	190.3	190.0	184.9	-0.3%
0.12	0.12	0.12	0.12	0.12	0.13	0.13	0.13	0.13	0.13	0.14	1.0%
0.51	0.51	0.51	0.51	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-0.2%
0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.14	0.14	0.14	0.13	-1.4%
0.18	0.18	0.19	0.19	0.19	0.19	0.19	0.20	0.20	0.20	0.21	1.1%
0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	-0.5%
1.21	1.22	1.23	1.24	1.25	1.26	1.28	1.29	1.30	1.32	1.40	0.9%
0.15	0.15	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.16	0.18	1.0%
0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.12	2.6%
0.22	0.22	0.23	0.23	0.24	0.24	0.25	0.25	0.26	0.27	0.30	2.5%
0.72	0.74	0.76	0.78	0.80	0.82	0.84	0.87	0.89	0.91	1.05	3.0%
3.39	**3.43**	**3.47**	**3.51**	**3.55**	**3.59**	**3.63**	**3.68**	**3.72**	**3.77**	**4.06**	**1.2%**
1.32	1.33	1.33	1.34	1.34	1.34	1.35	1.35	1.35	1.35	1.35	0.3%
0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	2.3%
0.50	0.50	0.51	0.51	0.52	0.52	0.53	0.53	0.54	0.54	0.57	0.8%
0.21	0.21	0.22	0.22	0.22	0.23	0.23	0.24	0.24	0.24	0.26	1.8%
1.16	1.17	1.18	1.19	1.20	1.21	1.22	1.23	1.24	1.24	1.30	0.9%
3.22	**3.24**	**3.26**	**3.29**	**3.31**	**3.33**	**3.35**	**3.38**	**3.40**	**3.42**	**3.51**	**0.7%**
0.19	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.17	0.17	0.16	-1.0%
0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	-1.1%
0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.19	0.4%
0.42	**0.42**	**0.42**	**0.42**	**0.41**	**0.41**	**0.41**	**0.41**	**0.40**	**0.40**	**0.39**	**-0.4%**
0.41	**0.41**	**0.41**	**0.42**	**0.42**	**0.42**	**0.42**	**0.42**	**0.42**	**0.42**	**0.43**	**0.5%**
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.7%
0.00	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.7%**
1.64	1.64	1.64	1.65	1.65	1.65	1.65	1.66	1.66	1.66	1.64	0.2%
0.54	0.54	0.54	0.54	0.54	0.53	0.53	0.53	0.53	0.53	0.54	-0.1%
0.71	0.71	0.71	0.72	0.72	0.72	0.72	0.72	0.73	0.73	0.74	0.2%
0.18	0.18	0.19	0.19	0.19	0.19	0.19	0.20	0.20	0.20	0.21	1.1%
0.24	0.24	0.25	0.25	0.26	0.26	0.26	0.27	0.27	0.27	0.29	1.5%
1.21	1.22	1.23	1.24	1.25	1.26	1.28	1.29	1.30	1.32	1.40	0.9%
0.15	0.15	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.16	0.18	1.0%
0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.12	2.6%
0.22	0.22	0.23	0.23	0.24	0.24	0.25	0.25	0.26	0.27	0.30	2.5%
2.46	2.50	2.53	2.56	2.59	2.63	2.66	2.70	2.73	2.77	2.97	1.4%
7.44	**7.50**	**7.56**	**7.62**	**7.68**	**7.75**	**7.82**	**7.88**	**7.95**	**8.02**	**8.40**	**0.9%**

Table A5. Commercial Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Electricity Related Losses by End-Use								
Space Heating	0.26	0.25	0.24	0.26	0.26	0.26	0.26	0.26
Space Cooling	1.19	1.18	1.24	1.14	1.13	1.13	1.11	1.11
Water Heating	0.39	0.38	0.38	0.38	0.37	0.37	0.36	0.35
Ventilation	0.38	0.38	0.38	0.38	0.38	0.39	0.39	0.39
Cooking	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Lighting	2.58	2.56	2.57	2.57	2.58	2.58	2.58	2.59
Refrigeration	0.31	0.31	0.31	0.31	0.31	0.31	0.32	0.32
Office Equipment (PC)	0.12	0.15	0.16	0.17	0.17	0.18	0.18	0.19
Office Equipment (non-PC)	0.39	0.40	0.41	0.42	0.43	0.43	0.44	0.45
Other Uses[6]	1.02	1.27	1.31	1.35	1.39	1.42	1.46	1.50
Total Electricity Related Losses	**6.72**	**6.95**	**7.08**	**7.05**	**7.09**	**7.14**	**7.18**	**7.23**
Total Energy Consumption by End-Use								
Space Heating	1.92	1.82	1.80	1.90	1.90	1.90	1.90	1.89
Space Cooling	1.75	1.73	1.83	1.69	1.68	1.67	1.66	1.65
Water Heating	1.10	1.09	1.10	1.09	1.09	1.08	1.07	1.07
Ventilation	0.54	0.55	0.55	0.56	0.56	0.56	0.57	0.57
Cooking	0.29	0.29	0.29	0.30	0.30	0.30	0.30	0.31
Lighting	3.74	3.72	3.73	3.75	3.76	3.77	3.78	3.80
Refrigeration	0.45	0.45	0.46	0.46	0.46	0.46	0.46	0.46
Office Equipment (PC)	0.18	0.22	0.23	0.25	0.25	0.26	0.27	0.28
Office Equipment (non-PC)	0.56	0.58	0.59	0.61	0.62	0.64	0.65	0.66
Other Uses[6]	3.02	3.47	3.56	3.64	3.71	3.78	3.86	3.93
Total	**13.55**	**13.91**	**14.14**	**14.22**	**14.32**	**14.42**	**14.51**	**14.62**
Non-Marketed Renewable Fuels								
Solar[7]	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
Total	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.02**	**0.02**

Table A5. Commercial Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
0.26	0.26	0.26	0.26	0.27	0.27	0.27	0.27	0.27	0.27	0.26	0.3%
1.10	1.09	1.08	1.08	1.08	1.07	1.06	1.05	1.04	1.04	0.98	-0.9%
0.35	0.34	0.34	0.33	0.32	0.32	0.31	0.30	0.30	0.29	0.25	-2.0%
0.39	0.40	0.40	0.40	0.41	0.41	0.41	0.41	0.41	0.42	0.42	0.5%
0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	-1.1%
2.60	2.61	2.62	2.64	2.67	2.69	2.69	2.70	2.72	2.73	2.72	0.3%
0.32	0.32	0.32	0.32	0.33	0.33	0.33	0.33	0.33	0.34	0.34	0.4%
0.20	0.20	0.21	0.21	0.21	0.22	0.22	0.22	0.22	0.22	0.22	2.0%
0.46	0.47	0.48	0.49	0.51	0.52	0.52	0.53	0.54	0.55	0.59	1.9%
1.54	1.57	1.61	1.65	1.70	1.74	1.77	1.81	1.85	1.89	2.05	2.3%
7.28	**7.34**	**7.40**	**7.45**	**7.55**	**7.62**	**7.64**	**7.70**	**7.75**	**7.82**	**7.88**	**0.6%**
1.90	1.90	1.91	1.91	1.91	1.92	1.92	1.93	1.93	1.93	1.91	0.2%
1.64	1.63	1.62	1.61	1.61	1.60	1.59	1.58	1.58	1.57	1.52	-0.6%
1.06	1.05	1.05	1.05	1.04	1.04	1.03	1.03	1.02	1.02	0.99	-0.4%
0.58	0.58	0.58	0.59	0.60	0.60	0.60	0.61	0.61	0.62	0.63	0.7%
0.31	0.31	0.32	0.32	0.32	0.33	0.33	0.33	0.33	0.34	0.35	0.9%
3.81	3.83	3.86	3.88	3.92	3.95	3.97	4.00	4.02	4.05	4.12	0.5%
0.47	0.47	0.47	0.48	0.48	0.49	0.49	0.49	0.50	0.50	0.52	0.6%
0.29	0.30	0.30	0.31	0.31	0.32	0.32	0.33	0.33	0.33	0.34	2.2%
0.68	0.69	0.71	0.72	0.74	0.76	0.77	0.79	0.80	0.82	0.89	2.1%
4.00	4.07	4.14	4.21	4.30	4.37	4.44	4.51	4.58	4.66	5.02	1.8%
14.73	**14.84**	**14.96**	**15.07**	**15.24**	**15.37**	**15.46**	**15.59**	**15.70**	**15.84**	**16.28**	**0.8%**
0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	5.7%
0.02	**0.02**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.04**	**5.7%**

[1]Includes miscellaneous uses such as service station equipment, district services, automated teller machines, telecommunications equipment, and medical equipment.
[2]Excludes estimated consumption from independent power producers.
[3]Includes miscellaneous uses such as district services, pumps, lighting, emergency electric generators, and manufacturing performed in commercial buildings.
[4]Includes miscellaneous uses such as cooking, district services, and emergency electric generators.
[5]Includes residual fuel oil, liquefied petroleum gas, coal, motor gasoline, and kerosene.
[6]Includes miscellaneous uses such as service station equipment, district services, automated teller machines, telecommunications equipment, medical equipment, pumps, lighting, emergency electric generators, manufacturing performed in commercial buildings, and cooking (distillate) plus residual fuel oil, liquefied petroleum gas, coal, motor gasoline, and kerosene.
[7]Includes primary energy displaced by solar thermal water heaters.
Btu = British thermal unit.
PC = Personal computer.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993: Energy Information Administration (EIA), *State Energy Data Report*, DOE/EIA-0214(93) (Washington, DC, July 1995). 1994: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A6. Industrial Sector Key Indicators and Consumption
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Key Indicators								
Value of Gross Output (billion 1987 dollars)								
Manufacturing	2596	2784	2829	2823	2930	3005	3062	3127
Nonmanufacturing	888	934	952	962	985	998	1010	1030
Total	**3484**	**3718**	**3782**	**3784**	**3916**	**4003**	**4072**	**4157**
Energy Prices (1994 dollars per million Btu)								
Electricity	14.76	14.75	14.55	14.33	14.30	14.30	14.35	14.33
Natural Gas	2.82	2.56	2.30	2.39	2.44	2.53	2.56	2.57
Steam Coal	1.45	1.45	1.38	1.34	1.33	1.32	1.31	1.30
Residual Oil	2.44	2.50	2.54	2.57	2.63	2.73	2.82	2.92
Distillate Oil	4.87	4.59	4.64	4.67	4.86	5.04	5.15	5.33
Liquefied Petroleum Gas	4.87	6.11	5.84	5.70	5.89	6.21	6.34	6.66
Motor Gasoline	9.09	8.91	8.24	8.31	8.36	8.80	8.91	9.26
Metallurgical Coal	1.77	1.76	1.77	1.74	1.72	1.71	1.67	1.63
Energy Consumption								
Consumption[1] (quadrillion Btu per year)								
Purchased Electricity	3.33	3.39	3.43	3.47	3.54	3.58	3.61	3.61
Natural Gas[2]	9.07	9.34	9.76	9.95	10.25	10.33	10.37	10.49
Steam Coal	1.66	1.69	1.67	1.69	1.71	1.76	1.78	1.73
Metallurgical Coal and Coke[3]	0.86	0.86	0.84	0.73	0.77	0.77	0.76	0.74
Residual Fuel	0.45	0.47	0.47	0.47	0.48	0.48	0.48	0.48
Distillate	1.10	1.15	1.16	1.15	1.17	1.19	1.20	1.21
Liquefied Petroleum Gas	1.79	1.87	1.92	1.89	1.92	1.95	1.95	1.97
Petrochemical Feedstocks	1.19	1.25	1.25	1.24	1.25	1.27	1.27	1.27
Other Petroleum[4]	3.87	4.09	4.11	4.14	4.19	4.25	4.29	4.27
Renewables[5]	2.08	2.16	2.19	2.20	2.25	2.29	2.32	2.36
Delivered Energy	**25.42**	**26.27**	**26.80**	**26.91**	**27.55**	**27.86**	**28.03**	**28.15**
Electricity Related Losses	7.43	7.53	7.58	7.60	7.72	7.77	7.79	7.78
Total	**32.85**	**33.80**	**34.38**	**34.52**	**35.26**	**35.63**	**35.82**	**35.93**
Consumption per Unit of Output[1] (thousand Btu per 1987 dollars)								
Purchased Electricity	0.96	0.91	0.91	0.92	0.90	0.89	0.89	0.87
Natural Gas[2]	2.60	2.51	2.58	2.63	2.62	2.58	2.55	2.52
Steam Coal	0.48	0.45	0.44	0.45	0.44	0.44	0.44	0.42
Metallurgical Coal and Coke[3]	0.25	0.23	0.22	0.19	0.20	0.19	0.19	0.18
Residual Fuel	0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.11
Distillate	0.32	0.31	0.31	0.30	0.30	0.30	0.29	0.29
Liquefied Petroleum Gas	0.52	0.50	0.51	0.50	0.49	0.49	0.48	0.47
Petrochemical Feedstocks	0.34	0.34	0.33	0.33	0.32	0.32	0.31	0.31
Other Petroleum[4]	1.11	1.10	1.09	1.09	1.07	1.06	1.05	1.03
Renewables[5]	0.60	0.58	0.58	0.58	0.58	0.57	0.57	0.57
Delivered Energy	**7.30**	**7.07**	**7.09**	**7.11**	**7.04**	**6.96**	**6.88**	**6.77**
Electricity Related Losses	2.13	2.02	2.00	2.01	1.97	1.94	1.91	1.87
Total	**9.43**	**9.09**	**9.09**	**9.12**	**9.01**	**8.90**	**8.80**	**8.64**

Table A6. Industrial Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
3194	3267	3343	3429	3508	3571	3621	3682	3747	3811	4120	1.9%
1048	1059	1070	1084	1099	1115	1127	1137	1145	1155	1226	1.3%
4242	**4327**	**4414**	**4513**	**4607**	**4687**	**4748**	**4819**	**4892**	**4966**	**5346**	**1.7%**
14.38	14.39	14.37	14.34	14.37	14.26	14.21	14.16	14.19	14.14	14.07	-0.2%
2.60	2.61	2.61	2.63	2.64	2.64	2.66	2.68	2.72	2.76	3.20	1.1%
1.30	1.31	1.30	1.31	1.33	1.30	1.30	1.32	1.32	1.33	1.31	-0.5%
3.03	3.12	3.20	3.28	3.35	3.42	3.48	3.54	3.60	3.66	3.92	2.2%
5.46	5.55	5.57	5.67	5.72	5.85	5.87	5.87	6.03	6.04	6.18	1.4%
6.91	7.06	7.06	7.10	7.13	7.43	7.42	7.24	7.49	7.50	7.59	1.0%
9.46	9.59	9.61	9.78	9.79	9.97	10.00	10.04	10.11	10.12	10.09	0.6%
1.67	1.67	1.67	1.69	1.66	1.66	1.68	1.67	1.66	1.66	1.64	-0.3%
3.65	3.70	3.75	3.81	3.86	3.90	3.93	3.96	4.00	4.04	4.23	1.1%
10.58	10.70	10.83	10.96	11.12	11.22	11.29	11.38	11.46	11.55	11.86	1.1%
1.72	1.73	1.74	1.75	1.76	1.79	1.79	1.80	1.82	1.83	1.96	0.7%
0.72	0.71	0.69	0.67	0.66	0.64	0.63	0.61	0.60	0.59	0.52	-2.4%
0.48	0.47	0.48	0.49	0.49	0.48	0.49	0.49	0.49	0.49	0.52	0.4%
1.23	1.24	1.25	1.27	1.28	1.30	1.31	1.32	1.33	1.34	1.40	0.9%
1.99	2.01	2.04	2.08	2.11	2.12	2.14	2.15	2.17	2.19	2.30	1.0%
1.28	1.30	1.31	1.34	1.36	1.37	1.38	1.39	1.41	1.42	1.48	0.8%
4.31	4.33	4.34	4.36	4.38	4.40	4.41	4.43	4.45	4.44	4.55	0.5%
2.40	2.44	2.48	2.52	2.56	2.59	2.62	2.65	2.67	2.71	2.86	1.3%
28.35	**28.60**	**28.91**	**29.26**	**29.58**	**29.82**	**29.97**	**30.19**	**30.41**	**30.60**	**31.68**	**0.9%**
7.84	7.91	8.00	8.09	8.22	8.28	8.27	8.30	8.33	8.38	8.22	0.4%
36.19	**36.51**	**36.91**	**37.35**	**37.81**	**38.11**	**38.24**	**38.49**	**38.74**	**38.98**	**39.89**	**0.8%**
0.86	0.85	0.85	0.84	0.84	0.83	0.83	0.82	0.82	0.81	0.79	-0.7%
2.49	2.47	2.45	2.43	2.41	2.39	2.38	2.36	2.34	2.33	2.22	-0.6%
0.41	0.40	0.39	0.39	0.38	0.38	0.38	0.37	0.37	0.37	0.37	-1.0%
0.17	0.16	0.16	0.15	0.14	0.14	0.13	0.13	0.12	0.12	0.10	-4.1%
0.11	0.11	0.11	0.11	0.11	0.10	0.10	0.10	0.10	0.10	0.10	-1.3%
0.29	0.29	0.28	0.28	0.28	0.28	0.28	0.27	0.27	0.27	0.26	-0.8%
0.47	0.46	0.46	0.46	0.46	0.45	0.45	0.45	0.44	0.44	0.43	-0.8%
0.30	0.30	0.30	0.30	0.29	0.29	0.29	0.29	0.29	0.29	0.28	-0.9%
1.02	1.00	0.98	0.97	0.95	0.94	0.93	0.92	0.91	0.89	0.85	-1.2%
0.57	0.56	0.56	0.56	0.56	0.55	0.55	0.55	0.55	0.55	0.54	-0.4%
6.68	**6.61**	**6.55**	**6.48**	**6.42**	**6.36**	**6.31**	**6.26**	**6.22**	**6.16**	**5.93**	**-0.8%**
1.85	1.83	1.81	1.79	1.79	1.77	1.74	1.72	1.70	1.69	1.54	-1.3%
8.53	**8.44**	**8.36**	**8.28**	**8.21**	**8.13**	**8.05**	**7.99**	**7.92**	**7.85**	**7.46**	**-0.9%**

[1]Fuel consumption includes consumption for cogeneration.
[2]Includes lease and plant fuel.
[3]Includes net coke coal imports.
[4]Includes petroleum coke, asphalt, road oil, lubricants, motor gasoline, still gas, and miscellaneous petroleum products.
[5]Includes solar, geothermal, and biomass energy.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993 prices for gasoline and distillate are based on prices in the Energy Information Administration (EIA), *Petroleum Marketing Annual 1993*, DOE/EIA-0487(93) (Washington, DC, July 1994). 1994 prices for gasoline and distillate are based on prices in various issues of EIA, *Petroleum Marketing Monthly*, DOE/EIA-0380(94/1-12) (Washington, DC, 1994). 1993 and 1994 coal prices: EIA, *Monthly Energy Review*, DOE/EIA-0035(95/08) (Washington, DC, August 1995). 1993 and 1994 natural gas and electricity prices: EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C. Other 1993 values and 1994 prices derived from EIA, *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, July 1995). Other 1994 values: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A7. Transportation Sector Key Indicators and Delivered Energy Consumption

Key Indicators and Consumption	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Key Indicators								
Level of Travel (billions)								
Light-Duty Vehicles (vehicle miles traveled)	2054	2068	2099	2120	2150	2188	2228	2263
Freight Trucks (vehicle miles traveled)	330	347	355	358	369	377	384	392
Air (seat miles available)	794	875	1013	1057	1107	1156	1198	1246
Rail (ton miles traveled)	1086	1137	1148	1142	1165	1177	1185	1196
Marine (ton miles traveled)	799	817	823	819	832	836	839	844
Energy Efficiency Indicators								
New Car (miles per gallon)[1]	28.2	28.0	27.5	27.5	27.5	27.5	27.6	28.1
New Light Truck (miles per gallon)[1]	20.8	20.6	20.2	20.2	20.2	20.3	20.5	20.7
Light-Duty Fleet (miles per gallon)[2]	19.3	19.4	19.2	19.3	19.5	19.5	19.6	19.6
Aircraft Efficiency (seat miles per gallon)	49.7	50.3	50.8	51.3	51.8	52.3	52.8	53.3
Freight Truck Efficiency (miles per gallon)	8.5	8.5	8.7	8.7	8.7	8.8	8.8	8.9
Rail Efficiency (ton miles per thousand Btu)	2.9	2.9	2.9	2.9	2.9	2.9	3.0	3.0
Domestic Shipping Efficiency (ton miles per thousand Btu)	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Energy Use by Mode (quadrillion Btu per year)								
Light-Duty Vehicles[3]	13.27	13.34	13.68	13.73	13.86	14.07	14.27	14.47
Freight Trucks[3]	5.32	5.60	5.63	5.67	5.83	5.89	5.98	6.06
Air	3.07	3.20	3.31	3.38	3.47	3.57	3.66	3.76
Rail	0.40	0.42	0.42	0.42	0.42	0.43	0.43	0.43
Marine	1.43	1.44	1.49	1.52	1.55	1.58	1.61	1.64
Pipeline Fuel	0.64	0.66	0.68	0.68	0.69	0.67	0.68	0.67
Other[4]	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.18
Total[5]	**22.87**	**23.34**	**23.90**	**24.09**	**24.48**	**24.85**	**25.26**	**25.66**

Table A7. Transportation Sector Key Indicators and Delivered Energy Consumption (Continued)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
2301	2338	2377	2415	2457	2495	2530	2567	2598	2629	2774	1.4%
400	407	413	421	428	436	442	447	452	458	489	1.6%
1289	1333	1373	1416	1463	1510	1547	1583	1616	1652	1833	3.6%
1208	1222	1239	1258	1276	1289	1300	1315	1330	1345	1425	1.1%
849	856	866	878	889	896	904	914	923	933	989	0.9%
28.8	29.3	29.9	30.3	30.5	30.8	31.0	31.3	31.6	31.9	33.1	0.8%
21.0	21.2	21.6	21.8	21.9	22.1	22.4	22.8	23.3	23.8	25.1	1.0%
19.7	19.8	19.9	20.1	20.2	20.3	20.4	20.6	20.7	20.8	21.8	0.6%
53.8	54.3	54.7	55.2	55.7	56.2	56.7	57.2	57.6	58.1	60.5	0.9%
8.9	9.0	9.0	9.0	9.0	9.1	9.1	9.1	9.1	9.2	9.3	0.4%
3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.1	0.3%
2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	0.0%
14.65	14.80	14.95	15.09	15.26	15.39	15.52	15.64	15.71	15.78	15.92	0.8%
6.16	6.24	6.33	6.41	6.52	6.60	6.68	6.75	6.81	6.88	7.29	1.3%
3.85	3.94	4.01	4.09	4.17	4.26	4.32	4.38	4.43	4.48	4.75	1.9%
0.44	0.44	0.44	0.45	0.45	0.46	0.46	0.46	0.47	0.47	0.49	0.8%
1.67	1.71	1.74	1.78	1.82	1.86	1.90	1.93	1.97	2.00	2.18	2.0%
0.67	0.68	0.68	0.70	0.71	0.71	0.73	0.74	0.75	0.76	0.86	1.3%
0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.19	0.19	0.20	1.2%
26.04	**26.39**	**26.73**	**27.07**	**27.47**	**27.81**	**28.12**	**28.40**	**28.63**	**28.86**	**29.90**	**1.2%**

[1]Environmental Protection Agency rated miles per gallon.
[2]Combined car and light truck "on-the-road" estimate.
[3]Includes light-duty trucks used for freight.
[4]Includes lubricants and aviation gasoline.
[5]Total will not equal sum of components due to light-duty freight trucks included in both light-duty vehicle and freight truck consumption.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding.

Sources: 1993 pipeline fuel consumption: Energy Information Administration (EIA), *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). Other 1993 values: Federal Highway Administration, *Highway Statistics 1993* (Washington, DC, 1993); Oak Ridge National Laboratory, *Transportation Energy Data Book: 12, 13, 14, and 15*, (Oak Ridge, TN, May 1995); Federal Aviation Administration (FAA), *FAA Aviation Forecasts Fiscal Years 1993-2004*; National Highway Traffic and Safety Administration, *Summary of Fuel Economy Performance*, (Washington, DC, February 1994); EIA, *Residential Transportation Energy Consumption Survey 1991*, DOE/EIA-0464(91) (Washington, DC, December 1993); Argonne National Laboratory, FRATE Model 1990; and EIA, *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, July 1995). 1994 pipeline fuel consumption: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). Other 1994 values: FAA, *FAA Aviation Forecasts Fiscal Years 1993-2004*, (Washington, DC, February 1994); EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995); EIA, *Fuel Oil and Kerosene Sales 1993*, DOE/EIA-0535(92) (Washington, DC, September 1994); and United States Department of Defense, Defense Fuel Supply Center. **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A8. Electricity Supply, Disposition, and Prices
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Generation by Fuel Type								
Electric Utilities								
Coal	1639	1635	1654	1668	1694	1715	1752	1778
Petroleum	100	91	66	68	63	69	67	63
Natural Gas	259	291	312	296	305	310	306	299
Nuclear Power	610	640	658	666	664	664	665	664
Pumped Storage	-2	-3	-3	-3	-3	-3	-3	-3
Renewable Sources[1]	277	256	290	291	292	292	293	294
Total	**2883**	**2911**	**2977**	**2986**	**3014**	**3048**	**3079**	**3095**
Nonutilities (excluding cogenerators)[2]								
Coal	10	12	13	14	15	15	15	15
Petroleum	1	2	3	3	3	3	3	3
Natural Gas	13	12	15	22	28	28	28	28
Renewable Sources[1]	49	52	56	58	59	60	64	67
Total	**73**	**78**	**86**	**96**	**105**	**106**	**110**	**114**
Sales to Utilities	47	51	59	69	77	79	83	86
Generation for Own Use	26	27	27	28	28	28	28	28
Cogenerators[3]								
Coal	43	47	43	44	45	46	47	48
Petroleum	7	7	5	5	5	5	5	5
Natural Gas	154	171	176	180	185	186	188	191
Other Gaseous Fuels[4]	15	14	17	17	17	17	17	17
Renewable Sources[1]	38	40	40	41	41	41	42	43
Other[5]	3	3	3	3	3	3	3	3
Total	**259**	**282**	**284**	**290**	**296**	**298**	**302**	**307**
Sales to Utilities	137	153	148	153	159	160	161	163
Generation for Own Use	123	129	136	136	137	138	140	144
Net Imports	**28**	**45**	**39**	**37**	**39**	**39**	**34**	**40**
Electricity Sales by Sector								
Residential	995	1006	1024	1033	1042	1054	1067	1084
Commercial	884	917	939	942	953	964	974	984
Industrial	977	992	1004	1017	1037	1049	1057	1059
Transportation	6	6	6	6	6	7	8	9
Total	**2861**	**2921**	**2973**	**2998**	**3039**	**3074**	**3106**	**3137**
End-Use Prices (1994 cents per kilowatthour)[6]								
Residential	8.5	8.4	8.4	8.4	8.4	8.3	8.4	8.4
Commercial	7.9	7.9	7.9	7.7	7.6	7.6	7.7	7.7
Industrial	5.0	5.0	5.0	4.9	4.9	4.9	4.9	4.9
Transportation	5.0	5.0	5.1	5.0	5.1	5.1	5.2	5.2
All Sectors Average	**7.1**	**7.1**	**7.1**	**7.0**	**6.9**	**6.9**	**7.0**	**7.0**
Price Components (1994 cents per kwh)								
Capital Component	2.7	2.8	2.7	2.7	2.6	2.6	2.6	2.6
Fuel Component	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1
Operation and Maintenance Component	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Wholesale Power Cost	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Total	**7.1**	**7.1**	**7.1**	**7.0**	**6.9**	**6.9**	**7.0**	**7.0**

[1]Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, other biomass, solar and wind power.
[2]Includes generation at all nonutilities except for cogenerators. Includes small power producers, exempt wholesale generators, and generators at industrial and commercial facilities which provide electricity for on-site use and for sales to utilities.
[3]Includes cogeneration at facilities whose primary function is not electricity production. Includes sales to utilities and generation for own use.
[4]Other gaseous fuels include refinery and still gas.
[5]Other includes hydrogen, sulfur, batteries, chemicals, fish oil, and spent sulfite liquor.
[6]Prices represent average revenue per kilowatthour.

Table A8. Electricity Supply, Disposition, and Prices (Continued)
(Billion Kilowatthours, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
1808	1836	1865	1885	1909	1942	1957	1967	1976	1995	2054	1.1%
71	74	77	85	89	94	96	101	107	111	104	0.6%
302	313	333	356	363	365	378	398	421	446	590	3.4%
662	660	658	654	649	649	637	631	620	610	434	-1.8%
-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	0.3%
295	295	295	296	297	297	297	298	299	299	308	0.9%
3134	**3175**	**3225**	**3272**	**3304**	**3343**	**3362**	**3392**	**3420**	**3458**	**3487**	**0.9%**
17	17	17	17	17	19	19	21	22	23	37	5.5%
3	3	3	3	5	4	5	6	7	7	9	8.5%
28	28	30	35	51	53	69	85	105	117	332	17.1%
68	70	71	72	73	74	75	77	79	82	110	3.7%
116	**118**	**121**	**127**	**145**	**150**	**169**	**189**	**213**	**229**	**489**	**9.2%**
88	90	93	99	117	122	141	161	184	200	461	11.1%
28	28	28	28	28	28	28	28	28	28	28	0.2%
48	49	50	50	51	51	51	52	52	53	55	0.7%
5	5	5	6	6	6	6	6	6	6	6	-0.9%
193	196	199	203	206	209	211	214	218	220	231	1.5%
17	17	17	17	17	17	17	17	17	17	17	0.8%
43	44	45	46	47	48	48	49	50	50	54	1.4%
3	3	3	3	3	4	4	4	4	4	4	1.0%
311	**315**	**320**	**325**	**329**	**333**	**337**	**341**	**345**	**349**	**366**	**1.2%**
164	165	166	167	168	169	170	171	171	172	176	0.7%
147	150	154	158	161	164	168	171	174	177	190	1.8%
37	**37**	**31**	**29**	**28**	**30**	**36**	**35**	**33**	**30**	**25**	**-2.7%**
1097	1115	1133	1157	1172	1192	1213	1238	1258	1282	1419	1.7%
994	1005	1016	1027	1039	1051	1064	1078	1091	1105	1189	1.2%
1070	1083	1098	1116	1131	1143	1151	1162	1173	1184	1240	1.1%
11	12	15	17	20	22	25	28	30	32	40	9.5%
3173	**3215**	**3262**	**3317**	**3363**	**3409**	**3454**	**3505**	**3553**	**3604**	**3889**	**1.4%**
8.3	8.3	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	0.0%
7.7	7.7	7.7	7.7	7.7	7.6	7.6	7.6	7.6	7.6	7.6	-0.2%
4.9	4.9	4.9	4.9	4.9	4.9	4.8	4.8	4.8	4.8	4.8	-0.2%
5.2	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	0.2%
7.0	**7.0**	**7.0**	**7.0**	**7.0**	**6.9**	**6.9**	**6.9**	**7.0**	**7.0**	**7.0**	**-0.1%**
2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.4	2.4	-0.6%
1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.1%
2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.7	-0.2%
0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	2.5%
7.0	**7.0**	**7.0**	**7.0**	**7.0**	**6.9**	**6.9**	**6.9**	**7.0**	**7.0**	**7.0**	**-0.1%**

kwh = kilowatthour.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993 and 1994 commercial and transportation sales: Total transportation plus commercial sales come from Energy Information Administration (EIA), *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, August 1995), but individual sectors do not match because sales taken from commercial and placed in transportation, according to Oak Ridge National Laboratories, *Transportation Energy Data Book 15* (May 1995) which indicates the transportation value should be higher. 1993 and 1994 generation by electric utilities, nonutilities, and cogenerators, net electricity imports, residential sales, and industrial sales: EIA, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995). 1993 residential electric prices derived from EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **1993 and 1994 electricity prices for commercial, industrial, and transportation; price components; and projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A9. Electricity Generating Capability
(Thousand Megawatts)

Net Summer Capability[1]	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Electric Utilities								
Capability								
Coal Steam	302.4	301.9	303.0	302.9	301.2	297.5	298.1	298.0
Other Fossil Steam[2]	141.0	140.0	138.3	137.1	135.4	131.2	129.4	128.0
Combined Cycle	11.4	11.5	12.7	12.7	13.2	14.4	16.9	19.2
Combustion Turbine/Diesel	50.8	51.0	54.3	60.2	62.5	68.3	72.0	75.9
Nuclear Power	99.1	99.1	99.2	100.4	100.4	100.4	100.4	100.3
Pumped Storage	19.0	19.0	19.9	19.9	19.9	19.9	19.9	19.9
Fuel Cells	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Renewable Sources[3]	77.2	77.2	77.5	77.6	77.7	78.0	78.2	78.5
Total	**700.9**	**699.8**	**704.8**	**710.6**	**710.2**	**709.6**	**714.8**	**720.1**
Cumulative Planned Additions[4]								
Coal Steam	0.0	0.1	1.2	2.5	2.6	2.6	3.3	4.1
Other Fossil Steam[2]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Combined Cycle	0.0	0.1	1.4	1.4	1.9	2.9	4.1	6.1
Combustion Turbine/Diesel	0.0	0.3	3.5	5.7	6.9	9.2	12.6	15.9
Nuclear Power	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2
Pumped Storage	0.3	0.3	1.1	1.1	1.1	1.1	1.1	1.1
Fuel Cells	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Renewable Sources[3]	0.0	0.0	0.2	0.3	0.3	0.4	0.6	0.8
Total	**0.3**	**0.8**	**7.5**	**12.2**	**14.1**	**17.5**	**23.0**	**29.6**
Cumulative Unplanned Additions[4]								
Coal Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Other Fossil Steam[2]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.6
Combustion Turbine/Diesel	0.0	0.0	0.0	3.7	4.8	8.4	8.7	9.4
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Renewable Sources[3]	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Total	**0.0**	**0.0**	**0.0**	**3.7**	**4.8**	**8.4**	**10.1**	**11.7**
Cumulative Total Additions	**0.3**	**0.8**	**7.5**	**15.9**	**18.9**	**25.9**	**33.1**	**41.3**
Cumulative Retirements[5]	**8.5**	**10.1**	**11.9**	**14.6**	**18.0**	**25.9**	**28.0**	**30.9**
Nonutilities (excludes cogenerators)[6,7]								
Capability								
Coal Steam	2.4	2.4	2.6	3.2	3.2	3.2	3.2	3.2
Other Fossil Steam[2]	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1
Combined Cycle	2.0	2.0	2.0	2.7	2.8	2.8	4.2	4.2
Combustion Turbine/Diesel	1.9	1.9	1.9	4.6	6.9	9.7	10.5	11.6
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Renewable Sources[3]	10.8	10.9	11.7	12.2	12.5	12.8	14.1	14.3
Total	**18.1**	**18.2**	**19.4**	**23.8**	**26.5**	**29.7**	**33.2**	**34.5**

Table A9. Electricity Generating Capability (Continued)
(Thousand Megawatts)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
298.1	299.0	298.4	299.4	302.1	305.2	306.4	306.4	306.5	308.8	312.6	0.2%
127.4	126.2	125.3	123.5	121.8	121.2	120.3	119.9	119.2	118.2	113.5	-1.0%
21.5	23.3	24.7	27.0	27.1	27.4	28.1	29.0	31.6	33.4	56.4	7.9%
79.0	82.8	85.2	88.2	90.4	93.6	97.1	100.5	102.0	103.4	115.8	4.0%
100.3	100.3	100.3	99.7	99.7	98.9	97.6	96.7	95.6	93.3	63.6	-2.1%
19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	0.2%
0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	1.4	47.3%
78.6	78.6	78.7	78.9	79.0	79.1	79.2	79.3	79.5	79.6	82.0	0.3%
725.2	**730.5**	**732.9**	**736.9**	**740.5**	**745.8**	**749.2**	**752.1**	**755.0**	**757.2**	**765.0**	**0.4%**
4.1	4.7	4.7	6.1	9.1	12.3	13.5	13.8	13.8	14.8	16.5	29.7%
0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	N/A
8.3	10.1	11.2	13.4	13.4	13.4	13.4	13.4	13.6	13.6	13.6	24.5%
18.7	22.3	24.7	26.9	27.6	28.0	28.2	28.4	28.5	28.5	28.5	24.5%
1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	N/A
1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	6.6%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
0.8	0.9	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	36.2%
34.7	**40.6**	**44.3**	**50.1**	**53.8**	**57.4**	**58.9**	**59.3**	**59.6**	**60.6**	**62.4**	**23.1%**
0.8	0.8	0.8	0.9	0.9	1.4	1.4	1.5	1.6	1.7	5.9	N/A
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
1.8	1.8	2.0	2.1	2.2	2.5	3.2	4.1	6.5	8.3	31.3	N/A
9.8	10.3	10.4	11.2	12.8	15.6	18.9	22.1	23.5	25.3	38.7	N/A
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	1.4	N/A
0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.8	1.0	1.1	3.9	N/A
12.9	**13.6**	**13.9**	**15.0**	**16.8**	**20.6**	**24.8**	**29.1**	**33.3**	**37.0**	**81.1**	**N/A**
47.6	**54.1**	**58.2**	**65.1**	**70.7**	**78.0**	**83.6**	**88.4**	**92.9**	**97.6**	**143.5**	**28.1%**
32.2	**33.6**	**35.3**	**38.2**	**40.3**	**42.4**	**45.3**	**47.0**	**49.2**	**53.9**	**93.9**	**11.2%**
3.5	3.5	3.5	3.5	3.5	3.9	3.9	4.1	4.3	4.4	6.5	4.9%
1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.3%
4.3	4.4	4.4	4.7	4.8	5.2	6.2	7.6	10.1	11.8	37.6	15.0%
12.4	12.8	12.9	13.7	15.5	19.2	24.2	28.8	30.6	31.5	43.9	16.2%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	1.0	N/A
14.5	15.0	15.2	15.3	15.5	15.7	15.9	16.3	16.9	17.5	24.4	3.9%
35.8	**36.9**	**37.2**	**38.3**	**40.5**	**45.2**	**51.5**	**58.2**	**63.2**	**66.5**	**114.5**	**9.2%**

Table A9. Electricity Generating Capability (Continued)
(Thousand Megawatts)

Net Summer Capability[1]	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Cogenerators[7]								
Capacity								
Coal	8.0	7.7	8.2	8.2	8.7	8.8	9.0	9.2
Petroleum	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9
Natural Gas	27.4	28.7	29.5	30.9	31.2	31.3	31.5	31.9
Other Gaseous Fuels	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0
Renewable Sources[3]	5.9	6.1	6.2	6.2	6.2	6.2	6.4	6.6
Other	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**43.1**	**44.3**	**45.6**	**47.3**	**48.0**	**48.2**	**48.9**	**49.5**
Cumulative Additions[4]	**8.4**	**9.7**	**12.1**	**18.2**	**21.6**	**25.0**	**29.2**	**31.2**

Table A9. Electricity Generating Capability (Continued)
(Thousand Megawatts)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
9.3	9.3	9.4	9.5	9.6	9.7	9.7	9.8	9.8	9.9	10.2	1.4%
0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0%
32.2	32.6	33.0	33.5	33.9	34.2	34.6	35.0	35.4	35.8	37.2	1.2%
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.1%
6.7	6.8	6.9	7.1	7.2	7.3	7.4	7.5	7.6	7.7	8.2	1.4%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3%
50.1	**50.7**	**51.3**	**52.0**	**52.6**	**53.2**	**53.7**	**54.3**	**54.8**	**55.3**	**57.7**	**1.3%**
33.1	**34.7**	**35.6**	**37.5**	**40.3**	**45.6**	**52.3**	**59.6**	**65.1**	**69.0**	**119.3**	**12.7%**

[1]Net summer capability is the steady hourly output that generating equipment is expected to supply to system load (exclusive of auxiliary power), as demonstrated by tests during summer peak demand.
[2]Includes oil-, gas-, and dual-fired capability.
[3]Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, other biomass, solar and wind power.
[4]Cumulative additions after December 31, 1993. Non-zero utility planned additions in 1993 indicate units operational in 1993, but not supplying power to the grid.
[5]Cumulative total retirements from 1993.
[6]Includes nonutilities except for cogenerators. These facilities include small power producers, exempt wholesale generators and generators at industrial and commercial facilities which provide electricity for on-site use and for sale to utilities.
[7]Nameplate capacity is reported for nonutilities on Form EIA-867, "Annual Power Producer Report." Nameplate capacity is designated by the manufacturer. The nameplate capacity has been converted to the net summer capacity based on historic relationships.
N/A = Not applicable.
Notes: Totals may not equal sum of components due to independent rounding. Net summer capacity has been estimated for nonutility generators for AEO96. Net summer capacity is used to be consistent with electric utility capacity estimates. Electric utility capacity is the most recent data available as of August 15, 1994. Therefore, capacity estimates may differ from other Energy Information Administration sources.
Sources: 1993 and 1994 net summer capacity at electric utilities and planned additions: Energy Information Administration (EIA), Form EIA-860, "Annual Electric Generator Report." Net summer capacity for nonutilities and cogeneration in 1993 and 1994 and planned additions estimated based on EIA, Form EIA-867, "Annual Nonutility Power Producer Report." **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A10. Electricity Trade

(Billion Kilowatthours, Unless Otherwise Noted)

Electricity Trade	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Interregional Electricity Trade								
Gross Domestic Firm Power Sales	153.4	160.4	155.0	154.9	153.9	150.8	142.4	133.4
Gross Domestic Economy Sales	64.5	74.6	75.0	74.2	78.5	80.6	83.0	87.9
Gross Domestic Trade	**217.8**	**234.9**	**230.0**	**229.2**	**232.4**	**231.4**	**225.4**	**221.3**
Gross Domestic Firm Power Sales (million 1994 dollars)	6766.9	7075.7	6838.6	6837.2	6792.9	6653.3	6282.8	5886.1
Gross Domestic Economy Sales (million 1994 dollars)	1435.6	1630.1	1605.7	1511.6	1556.7	1583.5	1635.1	1676.1
Gross Domestic Sales (million 1994 dollars)	**8202.5**	**8705.9**	**8444.4**	**8348.9**	**8349.6**	**8236.8**	**7917.9**	**7562.2**
International Electricity Trade								
Firm Power Imports From Canada and Mexico	14.1	24.8	24.9	36.1	33.5	33.0	33.0	33.0
Economy Imports From Canada and Mexico	20.7	27.3	22.8	9.6	14.4	14.8	15.9	21.7
Gross Imports From Canada and Mexico	**34.8**	**52.1**	**47.7**	**45.7**	**47.8**	**47.8**	**48.9**	**54.8**
Firm Power Exports To Canada and Mexico	2.3	1.9	2.8	2.9	2.4	3.1	8.3	8.1
Economy Exports To Canada and Mexico	4.0	5.6	5.9	6.0	6.1	6.2	6.3	6.4
Gross Exports To Canada and Mexico	**6.4**	**7.5**	**8.8**	**9.0**	**8.5**	**9.3**	**14.6**	**14.5**

Table A10. Electricity Trade (Continued)
(Billion Kilowatthours, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
129.0	125.7	124.8	124.8	124.8	124.8	124.8	124.8	124.8	124.8	124.8	-1.2%
91.9	89.2	89.0	90.4	89.4	82.7	76.4	67.8	66.3	67.0	48.5	-2.0%
221.0	**214.9**	**213.9**	**215.3**	**214.2**	**207.5**	**201.3**	**192.7**	**191.1**	**191.8**	**173.3**	**-1.4%**
5694.0	5546.0	5507.9	5507.9	5507.9	5507.9	5507.9	5507.9	5507.9	5507.9	5507.9	-1.2%
1777.3	1801.7	1830.8	1897.9	1938.2	1767.2	1675.5	1501.8	1484.2	1516.3	1251.8	-1.2%
7471.3	**7347.7**	**7338.7**	**7405.8**	**7446.1**	**7275.1**	**7183.4**	**7009.8**	**6992.1**	**7024.2**	**6759.8**	**-1.2%**
25.0	24.8	24.8	24.8	24.8	25.6	25.6	25.6	25.6	25.6	25.6	0.2%
26.8	27.0	25.7	24.4	23.5	25.0	30.7	29.7	28.5	25.6	20.5	-1.3%
51.8	**51.8**	**50.5**	**49.2**	**48.3**	**50.7**	**56.4**	**55.3**	**54.1**	**51.3**	**46.2**	**-0.6%**
8.1	8.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	9.7%
6.5	6.6	6.7	6.9	7.0	7.1	7.2	7.4	7.5	7.7	7.7	1.5%
14.6	**14.7**	**19.9**	**20.0**	**20.1**	**20.3**	**20.4**	**20.5**	**20.7**	**20.8**	**20.8**	**5.0%**

Note: Totals may not equal sum of components due to independent rounding. Firm Power Sales are capacity sales, meaning the delivery of the power is scheduled as part of the normal operating conditions of the affected electric systems. Economy Sales are subject to curtailment or cessation of delivery by the supplier in accordance with prior agreements or under specified conditions.

Sources: 1993 and 1994 interregional electricity trade data: Energy Information Administration (EIA), Bulk Power Data System. 1993 and 1994 international electricity trade data: DOE Form FE-718R, "Annual Report of International Electrical Export/Import Data." Firm/economy share: National Energy Board, *Annual Report 1993*. Planned interregional and international firm power sales: DOE Form IE-411, "Coordinated Bulk Power Supply Program Report," April 1995. **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A11. Petroleum Supply and Disposition Balance
(Million Barrels per Day, Unless Otherwise Noted)

Supply and Disposition	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Crude Oil								
Domestic Crude Production[1]	6.85	6.66	6.54	6.33	6.16	5.95	5.79	5.65
Alaska	1.58	1.56	1.49	1.37	1.29	1.24	1.20	1.16
Lower 48 States	5.26	5.10	5.05	4.96	4.87	4.71	4.59	4.49
Net Imports	6.67	6.95	7.40	7.60	8.17	8.13	8.52	8.95
Other Crude Supply[2]	0.08	0.24	0.00	0.00	0.00	0.00	0.00	0.00
Total Crude Supply	**13.60**	**13.85**	**13.94**	**13.92**	**14.33**	**14.08**	**14.31**	**14.60**
Natural Gas Plant Liquids	**1.74**	**1.73**	**1.80**	**1.82**	**1.82**	**1.85**	**1.84**	**1.85**
Other Inputs[3]	**0.19**	**0.27**	**0.23**	**0.24**	**0.29**	**0.28**	**0.29**	**0.27**
Refinery Processing Gain[4]	**0.77**	**0.77**	**0.81**	**0.85**	**0.86**	**0.86**	**0.89**	**0.82**
Net Product Imports[5]	**0.93**	**1.09**	**0.85**	**0.91**	**0.65**	**1.18**	**1.12**	**1.13**
Total Primary Supply[6]	**17.22**	**17.70**	**17.64**	**17.75**	**17.95**	**18.25**	**18.45**	**18.66**
Refined Petroleum Products Supplied								
Motor Gasoline[7]	7.48	7.60	7.77	7.80	7.87	7.98	8.09	8.21
Jet Fuel[8]	1.47	1.53	1.58	1.61	1.66	1.71	1.75	1.80
Distillate Fuel[9]	3.04	3.16	3.22	3.23	3.29	3.32	3.36	3.40
Residual Fuel	1.08	1.02	0.96	0.99	0.98	1.02	1.02	1.02
Other[10]	4.17	4.41	4.25	4.24	4.30	4.35	4.36	4.36
Total	**17.24**	**17.72**	**17.78**	**17.88**	**18.10**	**18.38**	**18.58**	**18.78**
Refined Petroleum Products Supplied								
Residential and Commercial	1.14	1.17	1.08	1.11	1.10	1.10	1.09	1.08
Industrial[11]	4.45	4.58	4.66	4.63	4.70	4.76	4.79	4.81
Transportation	11.18	11.50	11.72	11.81	11.99	12.19	12.38	12.59
Electric Generators[12]	0.46	0.47	0.33	0.33	0.30	0.33	0.32	0.30
Total	**17.24**	**17.72**	**17.78**	**17.88**	**18.10**	**18.38**	**18.58**	**18.78**
Discrepancy[13]	**-0.02**	**-0.01**	**-0.14**	**-0.13**	**-0.15**	**-0.13**	**-0.12**	**-0.12**
World Oil Price (1994 dollars per barrel)[14]	**16.48**	**15.52**	**16.81**	**16.98**	**17.37**	**17.98**	**18.61**	**19.27**
Import Share of Product Supplied	**0.44**	**0.45**	**0.46**	**0.48**	**0.49**	**0.51**	**0.52**	**0.54**
Domestic Refinery Distillation Capacity	**15.1**	**15.0**	**15.4**	**15.4**	**15.4**	**15.4**	**15.6**	**15.6**
Capacity Utilization Rate (percent)	**92.0**	**93.0**	**90.7**	**90.4**	**92.9**	**91.2**	**91.9**	**93.4**

Table A11. Petroleum Supply and Disposition Balance (Continued)
(Million Barrels per Day, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
5.51	5.42	5.35	5.31	5.25	5.26	5.28	5.34	5.40	5.44	5.81	-0.6%
1.08	1.01	0.95	0.90	0.80	0.78	0.74	0.74	0.73	0.71	0.73	-3.5%
4.43	4.41	4.40	4.42	4.44	4.49	4.54	4.60	4.67	4.73	5.08	0.0%
9.09	9.21	9.48	9.58	9.62	9.89	9.75	9.69	9.76	9.58	9.42	1.5%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
14.60	**14.63**	**14.83**	**14.89**	**14.86**	**15.16**	**15.03**	**15.03**	**15.16**	**15.02**	**15.23**	**0.5%**
1.85	**1.87**	**1.87**	**1.91**	**1.97**	**1.98**	**2.01**	**2.05**	**2.08**	**2.11**	**2.27**	**1.3%**
0.27	**0.29**	**0.30**	**0.30**	**0.31**	**0.31**	**0.31**	**0.31**	**0.31**	**0.31**	**0.31**	**0.7%**
0.83	**0.84**	**0.84**	**0.84**	**0.85**	**0.86**	**0.86**	**0.86**	**0.86**	**0.87**	**0.86**	**0.5%**
1.34	**1.45**	**1.42**	**1.57**	**1.79**	**1.65**	**1.92**	**2.06**	**2.03**	**2.26**	**2.37**	**3.8%**
18.89	**19.08**	**19.26**	**19.50**	**19.78**	**19.96**	**20.13**	**20.30**	**20.44**	**20.56**	**21.04**	**0.8%**
8.29	8.35	8.41	8.47	8.53	8.58	8.62	8.65	8.65	8.64	8.56	0.6%
1.84	1.88	1.91	1.95	1.99	2.04	2.06	2.09	2.11	2.14	2.27	1.9%
3.44	3.48	3.53	3.58	3.64	3.69	3.73	3.78	3.81	3.86	4.11	1.3%
1.06	1.08	1.10	1.15	1.18	1.21	1.23	1.27	1.30	1.33	1.36	1.4%
4.39	4.41	4.45	4.50	4.54	4.57	4.59	4.63	4.67	4.69	4.89	0.5%
19.02	**19.20**	**19.41**	**19.66**	**19.89**	**20.08**	**20.23**	**20.41**	**20.55**	**20.67**	**21.18**	**0.9%**
1.07	1.07	1.06	1.06	1.05	1.04	1.04	1.04	1.03	1.02	1.01	-0.7%
4.84	4.87	4.93	4.99	5.03	5.07	5.09	5.12	5.16	5.18	5.38	0.8%
12.77	12.92	13.07	13.22	13.39	13.54	13.66	13.77	13.85	13.93	14.29	1.0%
0.33	0.34	0.36	0.39	0.42	0.44	0.45	0.48	0.51	0.52	0.50	0.3%
19.02	**19.20**	**19.41**	**19.66**	**19.89**	**20.08**	**20.23**	**20.41**	**20.55**	**20.67**	**21.18**	**0.9%**
-0.13	**-0.12**	**-0.15**	**-0.15**	**-0.11**	**-0.12**	**-0.11**	**-0.11**	**-0.11**	**-0.10**	**-0.14**	**N/A**
19.92	**20.47**	**20.97**	**21.41**	**21.86**	**22.25**	**22.61**	**22.97**	**23.34**	**23.70**	**25.43**	**2.4%**
0.55	**0.56**	**0.56**	**0.57**	**0.57**	**0.57**	**0.58**	**0.58**	**0.57**	**0.57**	**0.56**	**1.0%**
15.7	**15.9**	**15.9**	**16.0**	**16.1**	**16.2**	**16.2**	**16.2**	**16.2**	**16.2**	**16.4**	**0.4%**
93.0	**92.4**	**93.4**	**93.4**	**92.5**	**94.1**	**92.9**	**92.9**	**93.7**	**92.9**	**93.5**	**0.0%**

[1]Includes lease condensate.
[2]Strategic petroleum supply stock additions plus unaccounted for crude oil plus crude stock withdrawals minus crude products supplied.
[3]Includes alcohols, ethers, petroleum product stock withdrawals, domestic sources of blending components, and other hydrocarbons.
[4]Represents volumetric gain in refinery distillation and cracking processes.
[5]Includes net imports of finished petroleum products, unfinished oils, other hydrocarbons, alcohols, ethers, and blending components.
[6]Total crude supply plus natural gas plant liquids plus other inputs plus refinery processing gain plus net petroleum imports.
[7]Includes ethanol and ethers blended into gasoline.
[8]Includes naphtha and kerosene type.
[9]Includes distillate and kerosene.
[10]Includes aviation gasoline, liquefied petroleum gas, petrochemical feedstocks, lubricants, waxes, asphalt, road oil, still gas, special naphthas, petroleum coke, crude oil product supplied, and miscellaneous petroleum products.
[11]Includes consumption by cogenerators.
[12]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[13]Balancing item. Includes unaccounted for supply, losses and gains.
[14]Average refiner acquisition cost for imported crude oil.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993: Energy Information Administration (EIA), *Petroleum Supply Annual 1993*, DOE/EIA-0340(93) (Washington, DC, June 1994). 1994: EIA, *Petroleum Supply Annual 1994*, DOE/EIA-0340(94) (Washington, DC, May 1995). **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A12. Petroleum Product Prices
(1994 Cents per Gallon, Unless Otherwise Noted)

Sector and Fuel	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
World Oil Price (dollars per barrel)	**16.48**	**15.52**	**16.81**	**16.98**	**17.37**	**17.98**	**18.61**	**19.27**
Delivered Sector Product Prices								
Residential								
Distillate Fuel	92.7	87.8	94.6	95.1	97.4	99.8	101.4	103.7
Liquefied Petroleum Gas	92.9	90.1	94.9	94.5	96.3	98.5	100.0	102.4
Commercial								
Distillate Fuel	65.3	61.6	64.5	65.0	67.3	69.7	71.2	73.5
Residual Fuel	43.1	42.6	39.7	40.2	41.0	42.7	44.1	45.4
Residual Fuel (dollars per barrel)	18.11	17.89	16.67	16.89	17.22	17.92	18.51	19.08
Industrial[1]								
Distillate Fuel	67.5	63.6	64.3	64.8	67.4	69.9	71.4	73.9
Liquefied Petroleum Gas	42.0	52.8	50.4	49.2	50.8	53.6	54.7	57.4
Residual Fuel	36.5	37.5	38.0	38.4	39.3	40.8	42.2	43.7
Residual Fuel (dollars per barrel)	15.33	15.74	15.96	16.14	16.50	17.14	17.74	18.35
Transportation								
Distillate Fuel[2]	113.9	111.5	114.7	115.0	117.1	119.5	120.5	121.9
Jet Fuel[3]	59.2	53.3	57.9	63.2	65.9	68.4	70.4	72.2
Motor Gasoline[4]	113.9	111.6	120.1	120.5	121.1	125.9	126.9	130.5
Residual Fuel	31.5	30.2	34.4	34.9	35.8	37.3	38.8	40.3
Residual Fuel (dollars per barrel)	13.22	12.68	14.45	14.66	15.05	15.67	16.29	16.94
Electric Generators[5]								
Distillate Fuel	58.7	54.9	58.3	59.3	62.0	64.3	66.0	68.7
Residual Fuel	39.6	39.3	41.8	41.6	42.2	43.4	44.5	45.6
Residual Fuel (dollars per barrel)	16.62	16.49	17.54	17.48	17.72	18.21	18.70	19.14
Refined Petroleum Product Prices[6]								
Distillate Fuel	98.6	96.3	99.4	100.1	102.5	104.9	106.3	108.1
Jet Fuel	59.2	53.3	57.9	63.2	65.9	68.4	70.4	72.2
Liquefied Petroleum Gas	52.3	59.9	59.0	58.3	59.7	62.2	63.3	65.7
Motor Gasoline	113.9	111.6	119.8	120.2	120.8	125.6	126.6	130.3
Residual Fuel	36.3	35.8	37.6	38.0	38.7	40.2	41.5	42.8
Residual Fuel (dollars per barrel)	15.24	15.04	15.81	15.96	16.25	16.87	17.42	17.96
Average	**91.2**	**89.7**	**94.7**	**95.5**	**96.8**	**100.2**	**101.5**	**104.3**

Table A12. Petroleum Product Prices (Continued)
(1994 Cents per Gallon, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
19.92	**20.47**	**20.97**	**21.41**	**21.86**	**22.25**	**22.61**	**22.97**	**23.34**	**23.70**	**25.43**	**2.4%**
105.7	107.0	107.3	108.7	109.4	111.2	111.4	111.6	113.6	113.6	115.8	1.3%
104.8	106.3	106.5	107.0	107.5	110.3	110.5	109.5	111.8	112.4	114.5	1.1%
75.4	76.7	77.0	78.2	78.9	80.7	80.9	81.0	83.0	83.1	85.0	1.5%
47.1	48.5	49.7	50.9	52.0	53.0	53.8	54.7	55.8	56.8	60.7	1.7%
19.80	20.35	20.86	21.38	21.86	22.26	22.61	22.99	23.44	23.88	25.47	1.7%
75.7	77.0	77.3	78.6	79.3	81.1	81.4	81.5	83.6	83.7	85.8	1.4%
59.6	60.9	61.0	61.3	61.6	64.1	64.0	62.5	64.6	64.7	65.5	1.0%
45.4	46.6	47.9	49.0	50.2	51.1	52.0	52.9	53.9	54.8	58.7	2.2%
19.07	19.59	20.13	20.60	21.07	21.48	21.86	22.23	22.64	23.01	24.64	2.2%
123.1	123.9	124.1	125.1	124.8	126.4	126.1	125.7	127.6	126.5	127.7	0.6%
74.4	76.4	77.2	78.9	79.3	81.3	81.7	81.6	83.7	83.2	85.9	2.3%
132.6	134.0	133.9	135.6	135.2	136.9	137.0	137.0	137.5	137.3	135.1	0.9%
41.9	43.3	44.5	45.6	46.8	47.7	48.6	49.5	50.5	51.4	55.6	3.0%
17.61	18.17	18.69	19.17	19.64	20.05	20.42	20.81	21.20	21.60	23.36	3.0%
70.7	71.9	72.6	73.3	73.8	75.1	75.0	75.0	77.0	77.2	79.0	1.8%
46.9	47.9	49.2	50.3	51.3	52.2	53.2	54.1	55.2	56.1	60.3	2.1%
19.69	20.12	20.68	21.14	21.56	21.92	22.34	22.72	23.20	23.58	25.34	2.1%
109.7	110.7	111.0	112.1	112.2	113.9	113.8	113.6	115.6	114.9	116.6	0.9%
74.4	76.4	77.2	78.9	79.3	81.3	81.7	81.6	83.7	83.2	85.9	2.3%
67.8	69.0	68.9	69.1	69.4	72.0	72.0	70.6	72.9	73.2	74.6	1.1%
132.4	133.7	133.7	135.4	135.0	136.7	136.8	136.8	137.3	137.1	134.9	0.9%
44.4	45.6	46.9	48.0	49.1	50.1	51.0	51.9	52.9	53.9	57.8	2.3%
18.64	19.15	19.68	20.17	20.63	21.02	21.40	21.79	22.23	22.62	24.27	2.3%
106.2	**107.4**	**107.5**	**108.6**	**108.5**	**110.2**	**110.2**	**109.9**	**111.0**	**110.6**	**110.2**	**1.0%**

[1]Includes cogenerators.
[2]Includes Federal and State taxes on diesel fuel and excludes county and local taxes.
[3]Kerosene-type jet fuel.
[4]Sales weighted average price for all grades. Includes Federal and State taxes and excludes county and local taxes.
[5]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[6]Weighted averages of end-use fuel prices are derived from the prices in each sector and the corresponding sectoral consumption.

Sources: 1993 prices for gasoline, distillate, and jet fuel are based on prices in the Energy Information Administration (EIA), *Petroleum Marketing Annual 1993*, DOE/EIA-0487(93) (Washington, DC, July 1994). 1994 prices for gasoline, distillate, and jet fuel are based on prices in various 1994 issues of EIA, *Petroleum Marketing Monthly*, DOE/EIA-0380(94/1-12) (Washington, DC, 1994). 1993 and 1994 prices for all other petroleum products are derived from EIA, *State Energy Price and Expenditures Report: 1992*, DOE/EIA-0376(92) (Washington, DC, September 1994). **Projections**: EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A13. Natural Gas Supply and Disposition
(Trillion Cubic Feet per Year)

Supply and Disposition	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Production								
Dry Gas Production[1]	18.42	18.84	18.90	19.15	19.52	19.59	19.59	19.65
Supplemental Natural Gas[2]	0.12	0.12	0.13	0.12	0.11	0.11	0.11	0.09
Net Imports	**2.21**	**2.40**	**2.56**	**2.75**	**2.85**	**2.88**	**2.93**	**2.98**
Canada	2.22	2.45	2.65	2.82	2.89	2.87	2.87	2.87
Mexico	-0.04	-0.04	-0.03	-0.04	-0.05	-0.06	-0.06	-0.05
Liquefied Natural Gas	0.03	-0.01	-0.05	-0.02	0.02	0.07	0.12	0.16
Total Supply	**20.74**	**21.36**	**21.60**	**22.02**	**22.48**	**22.59**	**22.63**	**22.71**
Consumption by Sector								
Residential	4.94	4.87	4.84	5.02	5.03	5.03	5.04	5.07
Commercial	2.89	2.92	2.95	3.04	3.05	3.07	3.09	3.10
Industrial[3]	7.62	7.83	8.23	8.42	8.67	8.74	8.79	8.90
Electric Generators[4]	2.94	3.25	3.39	3.26	3.41	3.45	3.40	3.33
Lease and Plant Fuel[5]	1.18	1.24	1.24	1.24	1.27	1.28	1.28	1.28
Pipeline Fuel	0.62	0.64	0.66	0.66	0.67	0.65	0.66	0.65
Transportation[6]	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Total	**20.20**	**20.75**	**21.32**	**21.64**	**22.11**	**22.21**	**22.26**	**22.34**
Discrepancy[7]	**0.54**	**0.61**	**0.28**	**0.38**	**0.37**	**0.37**	**0.37**	**0.37**

Table A13. Natural Gas Supply and Disposition (Continued)
(Trillion Cubic Feet per Year)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
19.73	19.97	20.36	20.82	21.25	21.37	21.68	22.11	22.47	22.83	24.97	1.3%
0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	-3.1%
3.02	**3.06**	**3.07**	**3.09**	**3.12**	**3.17**	**3.23**	**3.29**	**3.37**	**3.46**	**4.02**	**2.5%**
2.87	2.86	2.88	2.89	2.90	2.94	2.98	3.02	3.06	3.11	3.42	1.6%
-0.06	-0.05	-0.05	-0.04	-0.03	-0.02	0.00	0.02	0.06	0.10	0.35	N/A
0.21	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	N/A
22.81	**23.08**	**23.49**	**23.98**	**24.43**	**24.60**	**24.98**	**25.46**	**25.91**	**26.35**	**29.04**	**1.5%**
5.07	5.09	5.12	5.17	5.17	5.21	5.24	5.29	5.31	5.33	5.44	0.5%
3.12	3.14	3.16	3.19	3.21	3.23	3.25	3.28	3.30	3.32	3.41	0.7%
8.97	9.07	9.17	9.28	9.40	9.49	9.54	9.60	9.65	9.72	9.91	1.1%
3.35	3.45	3.68	3.95	4.20	4.20	4.43	4.72	5.02	5.29	7.30	3.9%
1.29	1.31	1.33	1.35	1.38	1.39	1.41	1.44	1.46	1.48	1.59	1.2%
0.65	0.66	0.66	0.68	0.69	0.69	0.71	0.72	0.73	0.74	0.83	1.3%
0.01	0.01	0.01	0.02	0.03	0.04	0.05	0.07	0.09	0.11	0.21	18.1%
22.46	**22.74**	**23.14**	**23.63**	**24.08**	**24.25**	**24.63**	**25.11**	**25.56**	**26.00**	**28.70**	**1.6%**
0.35	**0.35**	**0.35**	**0.35**	**0.35**	**0.35**	**0.35**	**0.35**	**0.35**	**0.35**	**0.35**	**N/A**

[1]Market production (wet) minus extraction losses.
[2]Synthetic natural gas, propane air, coke oven gas, refinery gas, biomass gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.
[3]Includes consumption by cogenerators.
[4]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[5]Represents natural gas used in the field gathering and processing plant machinery.
[6]Compressed natural gas used as vehicle fuel.
[7]Balancing item. 1993 and 1994 values reflect net storage injections plus natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type.
Btu = British thermal unit.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding. Figures for 1993 and 1994 may differ from published data due to internal conversion factors.
Sources: 1993 supply values and consumption as lease, plant, and pipeline fuel: Energy Information Administration (EIA), *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994) with adjustments to end-use sector consumption levels based on Form EIA-867, "Annual Nonutility Power Producer Report." Other 1993 consumption: EIA, *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, July 1995) with adjustments to end-use sector consumption levels based on Form EIA-867, "Annual Nonutility Power Producer Report." 1994 supply values and consumption as lease, plant, and pipeline fuel: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). 1994 transportation sector consumption: EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C. Other 1994 consumption: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995) with adjustments to end-use sector consumption levels for consumption of natural gas by electric wholesale generators based on EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C. **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A14. Natural Gas Prices, Margins, and Revenues
(1994 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Prices, Margins, and Revenue	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Source Price								
Average Lower 48 Wellhead Price[1]	2.09	1.88	1.60	1.67	1.74	1.82	1.87	1.89
Average Import Price	2.06	1.85	1.55	1.54	1.51	1.75	1.75	1.79
Average[2]	**2.08**	**1.87**	**1.59**	**1.65**	**1.71**	**1.81**	**1.85**	**1.88**
Delivered Prices								
Residential	6.26	6.40	6.13	6.19	6.19	6.26	6.23	6.26
Commercial	5.26	5.44	5.06	5.06	5.22	5.30	5.27	5.30
Industrial[3]	2.91	2.64	2.37	2.47	2.51	2.61	2.63	2.65
Electric Generators[4]	2.61	2.24	2.09	2.14	2.10	2.23	2.24	2.24
Transportation[5]	5.69	6.19	6.26	6.39	6.47	6.64	6.67	6.75
Average[6]	**4.14**	**3.98**	**3.67**	**3.76**	**3.77**	**3.86**	**3.86**	**3.89**
Transmission and Distribution Margins[7]								
Residential	4.18	4.52	4.54	4.54	4.48	4.45	4.38	4.38
Commercial	3.18	3.56	3.47	3.41	3.51	3.49	3.42	3.42
Industrial[3]	0.83	0.77	0.78	0.82	0.80	0.80	0.78	0.77
Electric Generators[4]	0.52	0.36	0.50	0.50	0.39	0.42	0.39	0.36
Transportation[5]	3.61	4.32	4.67	4.74	4.76	4.83	4.82	4.87
Average[6]	**2.05**	**2.10**	**2.08**	**2.11**	**2.06**	**2.05**	**2.01**	**2.01**
Transmission and Distribution Revenue (billion 1994 dollars)								
Residential	20.66	22.05	22.00	22.78	22.53	22.39	22.09	22.22
Commercial	9.19	10.41	10.25	10.37	10.70	10.70	10.56	10.61
Industrial[3]	6.32	6.01	6.42	6.88	6.97	7.03	6.89	6.88
Electric Generators[4]	1.54	1.17	1.68	1.62	1.33	1.46	1.31	1.20
Transportation[5]	0.02	0.03	0.03	0.04	0.04	0.04	0.04	0.04
Total	**37.73**	**39.67**	**40.39**	**41.68**	**41.56**	**41.61**	**40.90**	**40.94**

Table A14. Natural Gas Prices, Margins, and Revenues (Continued)
(1994 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
1.91	1.93	1.94	1.96	1.99	2.00	2.02	2.06	2.10	2.15	2.57	1.5%
1.81	1.82	1.85	1.89	1.90	1.92	1.96	1.98	2.03	2.08	2.53	1.5%
1.90	**1.91**	**1.93**	**1.95**	**1.98**	**1.99**	**2.02**	**2.05**	**2.09**	**2.14**	**2.57**	**1.5%**
6.26	6.24	6.22	6.18	6.15	6.10	6.06	6.03	6.05	6.08	6.59	0.1%
5.30	5.29	5.27	5.23	5.21	5.17	5.15	5.13	5.15	5.19	5.70	0.2%
2.68	2.69	2.69	2.71	2.72	2.73	2.74	2.76	2.80	2.84	3.30	1.1%
2.26	2.27	2.27	2.29	2.31	2.31	2.35	2.38	2.45	2.49	3.02	1.4%
6.86	6.95	7.01	6.98	6.71	6.65	6.61	6.60	6.60	6.67	7.37	0.8%
3.90	**3.89**	**3.86**	**3.84**	**3.82**	**3.81**	**3.80**	**3.79**	**3.81**	**3.84**	**4.25**	**0.3%**
4.36	4.33	4.29	4.22	4.17	4.10	4.04	3.99	3.96	3.94	4.02	-0.6%
3.40	3.37	3.34	3.28	3.24	3.18	3.13	3.08	3.06	3.05	3.14	-0.6%
0.78	0.77	0.76	0.75	0.75	0.73	0.72	0.71	0.71	0.70	0.73	-0.2%
0.36	0.36	0.34	0.34	0.33	0.32	0.33	0.34	0.36	0.36	0.45	1.1%
4.96	5.04	5.08	5.02	4.73	4.66	4.60	4.55	4.51	4.53	4.80	0.5%
2.00	**1.97**	**1.93**	**1.89**	**1.84**	**1.81**	**1.78**	**1.74**	**1.72**	**1.70**	**1.69**	**-1.1%**
22.11	22.03	21.94	21.83	21.57	21.37	21.18	21.08	20.99	21.01	21.90	0.0%
10.62	10.60	10.56	10.46	10.38	10.28	10.19	10.10	10.09	10.11	10.69	0.1%
6.97	7.02	7.01	7.00	7.01	6.97	6.91	6.85	6.87	6.85	7.23	0.9%
1.20	1.23	1.27	1.33	1.39	1.35	1.48	1.60	1.80	1.89	3.28	5.0%
0.05	0.05	0.06	0.08	0.14	0.18	0.24	0.31	0.42	0.51	1.00	18.7%
40.94	**40.93**	**40.84**	**40.69**	**40.49**	**40.14**	**40.01**	**39.94**	**40.17**	**40.36**	**44.11**	**0.5%**

[1]Represents lower 48 onshore and offshore supplies.
[2]Quantity-weighted average of the average lower 48 wellhead price and the average price of imports at the United States border.
[3]Includes consumption by cogenerators.
[4]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[5]Compressed natural gas used as a vehicle fuel.
[6]Weighted average prices and margins. Weights used are the sectoral consumption values excluding lease, plant, and pipeline fuel.
[7]Within the table, "transmission and distribution" margins equal the difference between the delivered price and the source price (average of the wellhead price and the price of imports at the United States border) of natural gas, and thus, reflect the total cost of bringing natural gas to market. When the term "transmission and distribution" margins is used in today's natural gas market, it generally does not include the cost of independent natural gas marketers or costs associated with aggregation of supplies, provisions of storage, and other services. As used here, the term includes the cost of all services and the cost of pipeline fuel used in compressor stations.

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

Sources: 1993 residential, commercial, and transportation delivered prices; average lower 48 wellhead price; and average import price: Energy Information Administration (EIA), *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). 1993 electric generators delivered price: Form FERC-423, "Monthly Report of Cost and Quality of Fuels for Electric Plants." 1993 and 1994 industrial delivered prices based on EIA, *Manufacturing Energy Consumption Survey, 1991*. 1994 residential and commercial delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). **Other 1993 values, other 1994 values, and projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A15. Oil and Gas Supply

Production and Supply	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Crude Oil								
Lower 48 Average Wellhead Price[1] (1994 dollars per barrel)	**15.59**	**14.35**	**16.59**	**16.79**	**17.18**	**17.74**	**18.31**	**18.90**
Production (million barrels per day)[2]								
U.S. Total	**6.85**	**6.66**	**6.54**	**6.33**	**6.16**	**5.95**	**5.79**	**5.65**
Lower 48 Onshore	4.18	3.96	3.80	3.62	3.49	3.38	3.31	3.26
Conventional	3.48	3.34	3.23	3.08	2.97	2.88	2.80	2.74
Enhanced Oil Recovery	0.69	0.62	0.58	0.54	0.52	0.50	0.50	0.51
Lower 48 Offshore	1.09	1.14	1.24	1.34	1.38	1.33	1.28	1.23
Alaska	1.58	1.56	1.49	1.37	1.29	1.24	1.20	1.16
Lower 48 End of Year Reserves (billion barrels)	**18.37**	**17.84**	**16.93**	**16.07**	**15.14**	**14.36**	**13.74**	**13.28**
Natural Gas								
Lower 48 Average Wellhead Price[1] (1994 dollars per thousand cubic feet)	**2.09**	**1.88**	**1.60**	**1.67**	**1.74**	**1.82**	**1.87**	**1.89**
Production (trillion cubic feet)[3]								
U.S. Total	**18.42**	**18.84**	**18.90**	**19.15**	**19.52**	**19.59**	**19.59**	**19.65**
Lower 48 Onshore	12.99	13.26	13.38	13.27	13.33	13.51	13.48	13.75
Associated-Dissolved[4]	1.93	1.78	1.70	1.68	1.58	1.51	1.45	1.40
Non-Associated	11.06	11.47	11.68	11.59	11.75	12.01	12.03	12.35
Conventional	8.61	8.94	9.00	9.05	9.33	9.52	9.73	10.02
Unconventional	2.44	2.53	2.68	2.55	2.42	2.49	2.30	2.33
Lower 48 Offshore	5.03	5.17	5.02	5.37	5.67	5.55	5.57	5.35
Associated-Dissolved[4]	0.69	0.65	0.66	0.69	0.71	0.72	0.71	0.70
Non-Associated	4.34	4.52	4.35	4.68	4.96	4.83	4.86	4.65
Alaska	0.40	0.42	0.50	0.51	0.52	0.53	0.54	0.55
U.S. End of Year Reserves (trillion cubic feet)	**152.51**	**154.10**	**151.49**	**150.41**	**149.83**	**151.07**	**152.65**	**154.89**
Supplemental Gas Supplies (trillion cubic feet)[5]	**0.12**	**0.12**	**0.13**	**0.12**	**0.11**	**0.11**	**0.11**	**0.09**
Total Lower 48 Wells Completed (thousands)	**25.27**	**20.99**	**20.71**	**22.33**	**24.24**	**27.01**	**28.67**	**31.92**

Table A15. Oil and Gas Supply (Continued)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
19.49	**19.99**	**20.43**	**20.82**	**21.22**	**21.57**	**21.89**	**22.21**	**22.54**	**22.87**	**24.46**	**2.6%**
5.51	**5.42**	**5.35**	**5.31**	**5.25**	**5.26**	**5.28**	**5.34**	**5.40**	**5.44**	**5.81**	**-0.6%**
3.24	3.25	3.28	3.32	3.38	3.45	3.52	3.60	3.68	3.75	4.10	0.2%
2.72	2.70	2.71	2.73	2.75	2.79	2.82	2.86	2.90	2.94	3.13	-0.3%
0.52	0.54	0.57	0.60	0.62	0.66	0.70	0.74	0.78	0.82	0.97	2.1%
1.19	1.16	1.12	1.09	1.06	1.04	1.02	1.00	0.99	0.98	0.98	-0.7%
1.08	1.01	0.95	0.90	0.80	0.78	0.74	0.74	0.73	0.71	0.73	-3.5%
12.97	**12.77**	**12.66**	**12.63**	**12.65**	**12.74**	**12.87**	**13.05**	**13.26**	**13.44**	**14.52**	**-1.0%**
1.91	**1.93**	**1.94**	**1.96**	**1.99**	**2.00**	**2.02**	**2.06**	**2.10**	**2.15**	**2.57**	**1.5%**
19.73	**19.97**	**20.36**	**20.82**	**21.25**	**21.37**	**21.68**	**22.11**	**22.47**	**22.83**	**24.97**	**1.3%**
13.93	14.25	14.68	15.08	15.41	15.51	15.75	16.01	16.26	16.45	17.19	1.2%
1.36	1.34	1.32	1.32	1.32	1.33	1.35	1.36	1.38	1.40	1.47	-0.9%
12.57	12.91	13.35	13.76	14.08	14.18	14.41	14.65	14.88	15.05	15.71	1.5%
10.28	10.59	10.94	11.29	11.54	11.58	11.73	11.94	12.02	12.13	12.29	1.5%
2.30	2.32	2.41	2.46	2.55	2.60	2.68	2.71	2.85	2.92	3.43	1.5%
5.24	5.15	5.10	5.16	5.25	5.25	5.31	5.46	5.58	5.74	7.09	1.5%
0.69	0.68	0.67	0.66	0.66	0.65	0.65	0.64	0.64	0.64	0.64	-0.1%
4.55	4.47	4.43	4.49	4.59	4.60	4.66	4.82	4.94	5.10	6.45	1.7%
0.56	0.57	0.58	0.59	0.60	0.61	0.62	0.63	0.64	0.65	0.69	2.5%
156.99	**159.12**	**160.93**	**162.32**	**163.38**	**164.12**	**164.53**	**164.58**	**164.56**	**164.42**	**162.00**	**0.2%**
0.06	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**-3.1%**
33.97	**36.38**	**38.53**	**40.77**	**43.10**	**45.04**	**47.23**	**49.50**	**52.21**	**54.83**	**71.67**	**6.0%**

[1]Represents lower 48 onshore and offshore supplies.
[2]Includes lease condensate.
[3]Market production (wet) minus extraction losses.
[4]Gas which occurs in crude oil reserves either as free gas (associated) or as gas in solution with crude oil (dissolved).
[5]Synthetic natural gas, propane air, coke oven gas, refinery gas, biomass gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.

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

Sources: 1993 lower 48 onshore, lower 48 offshore, Alaska crude oil production: Energy Information Administration (EIA), *Petroleum Supply Annual 1993*, DOE/EIA-0340(93)/1 (Washington, DC, June 1993). 1993 U.S. crude oil and natural gas reserves: EIA, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves*, DOE/EIA-0216(93) (Washington, DC, October 1994). 1993 natural gas lower 48 average wellhead price, Alaska, total natural gas production, and supplemental gas supplies: EIA, *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). 1993 and 1994 crude oil lower 48 average wellhead price: EIA, Office of Integrated Analysis and Forecasting. 1993 and 1994 total wells completed: EIA, Office of Integrated Analysis and Forecasting. 1994 lower 48 onshore, lower 48 offshore, Alaska crude oil production: EIA, *Petroleum Supply Annual 1994*, DOE/EIA-0340(94) (Washington, DC, May 1995). 1994 U.S. crude oil reserves and U.S. natural gas reserves: EIA, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, Advanced Summary*, DOE/EIA-0216(94) (Washington, DC, August 1995). 1994 natural gas lower 48 average wellhead price, total natural gas production: *Natural Gas Monthly*, DOE/EIA-0130(95/06) (Washington, DC, June 1995). Other 1993 and 1994 values: EIA, Office of Integrated Analysis and Forecasting. Figures for 1993 and 1994 may differ from published data due to internal conversion factors. **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A16. Coal Supply, Disposition, and Prices
(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Production[1]								
East of the Mississippi	516	566	558	554	551	551	529	530
West of the Mississippi	429	467	479	490	489	494	532	540
Total	**945**	**1034**	**1037**	**1044**	**1041**	**1045**	**1061**	**1070**
Net Imports								
Imports	7	8	8	8	8	9	9	10
Exports	75	71	79	84	86	86	87	89
Total	**-67**	**-64**	**-71**	**-76**	**-77**	**-77**	**-78**	**-79**
Total Supply[2]	**877**	**971**	**965**	**968**	**964**	**968**	**983**	**992**
Consumption by Sector								
Residential and Commercial	6	6	6	6	6	6	6	6
Industrial[3]	75	75	74	74	75	77	78	76
Coke Plants	31	32	30	30	29	28	27	27
Electric Generators[4]	813	826	827	833	844	851	871	882
Total	**926**	**938**	**937**	**942**	**954**	**962**	**983**	**990**
Discrepancy and Stock Change[5]	**-48**	**32**	**28**	**26**	**10**	**6**	**1**	**1**
Average Minemouth Price (1994 dollars per short ton)	**19.85**	**19.41**	**18.54**	**18.26**	**18.03**	**17.85**	**17.67**	**17.44**
Delivered Prices (1994 dollars per short ton)[6]								
Industrial	32.23	32.54	31.34	30.49	30.28	30.21	29.87	29.68
Coke Plants	47.44	46.56	47.39	46.76	46.16	45.87	44.81	43.74
Electric Utilities	28.60	28.03	27.13	26.60	26.31	26.08	25.80	25.77
Average[6]	**29.54**	**29.02**	**28.13**	**27.54**	**27.23**	**26.99**	**26.66**	**26.56**
Average Price to All Users (1994 dollars per million Btu)	1.41	1.39	1.33	1.30	1.28	1.27	1.27	1.26
Exports[7]	41.41	39.93	38.61	38.42	38.22	38.60	38.65	38.01

Table A16. Coal Supply, Disposition, and Prices (Continued)
(Million Short Tons per Year, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
533	540	546	555	557	569	565	578	580	584	617	0.4%
553	560	566	567	577	588	596	588	593	599	623	1.4%
1086	**1100**	**1112**	**1121**	**1135**	**1156**	**1161**	**1167**	**1173**	**1184**	**1240**	**0.9%**
10	10	10	10	10	10	10	10	10	10	10	1.5%
90	92	94	96	97	99	101	105	108	111	130	2.9%
-80	**-81**	**-83**	**-85**	**-87**	**-89**	**-91**	**-95**	**-98**	**-100**	**-119**	**3.0%**
1006	**1018**	**1029**	**1036**	**1048**	**1068**	**1070**	**1071**	**1075**	**1083**	**1120**	**0.7%**
6	6	6	6	6	6	6	6	6	6	6	0.2%
76	76	77	77	78	78	79	79	80	80	86	0.6%
26	25	25	24	23	23	22	22	21	20	18	-2.7%
896	910	920	926	939	959	963	964	967	975	1009	1.0%
1004	**1017**	**1027**	**1033**	**1046**	**1067**	**1070**	**1071**	**1074**	**1082**	**1120**	**0.8%**
2	**1**	**2**	**3**	**2**	**1**	**0**	**1**	**1**	**1**	**1**	**N/A**
17.39	**17.49**	**17.51**	**17.60**	**17.68**	**17.50**	**17.54**	**17.50**	**17.45**	**17.43**	**17.39**	**-0.5%**
29.57	29.71	29.55	29.87	30.06	29.52	29.57	29.90	29.99	30.13	29.81	-0.4%
44.77	44.87	44.83	45.17	44.57	44.37	44.95	44.88	44.61	44.60	44.00	-0.3%
25.62	25.88	26.04	26.07	26.28	25.99	26.09	26.01	26.21	25.88	26.17	-0.3%
26.42	**26.64**	**26.75**	**26.80**	**26.97**	**26.64**	**26.74**	**26.68**	**26.85**	**26.55**	**26.74**	**-0.4%**
1.26	1.27	1.27	1.27	1.28	1.27	1.28	1.27	1.28	1.27	1.28	-0.4%
38.01	38.00	37.98	38.26	38.30	38.36	38.47	38.02	37.55	37.64	37.22	-0.3%

[1]Includes anthracite, bituminous coal, and lignite.
[2]Production plus net imports plus net storage withdrawals.
[3]Includes consumption by cogenerators.
[4]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[5]Balancing item: the sum of production, net imports, and net storage minus total consumption.
[6]Sectoral prices weighted by consumption tonnage; weighted average excludes residential/ commercial prices and export f.a.s. prices.
[7]Free-alongside-ship (f.a.s.) price at United States port-of-exit.
N/A = Not applicable.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993 production, imports, exports, consumption, minemouth price, and delivered prices: Energy Information Administration (EIA), *Coal Industry Annual*, DOE/EIA-0584(93) (Washington, DC, December 1994). 1994 production, imports, exports, consumption, minemouth price, and delivered prices: EIA, *Coal Industry Annual*, DOE/EIA-0584(94) (Washington, DC, 1995). **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A17. Renewable Energy Generating Capacity and Generation
(Thousand Megawatts, Unless Otherwise Noted)

Capacity and Generation	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Electric Utilities and Nonutilities[1] (excluding cogenerators)								
Capability								
Conventional Hydropower	78.21	78.20	78.50	78.65	78.77	79.01	80.35	80.60
Geothermal[2]	2.97	2.97	3.01	3.02	3.08	3.18	3.21	3.21
Municipal Solid Waste	3.00	3.04	3.45	3.60	3.74	3.83	3.93	4.03
Wood and Other Biomass[3]	1.71	1.71	1.75	1.75	1.80	1.80	1.80	1.80
Solar Thermal	0.35	0.35	0.36	0.36	0.37	0.38	0.38	0.40
Solar Photovoltaic	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
Wind	1.78	1.79	2.09	2.37	2.45	2.55	2.65	2.73
Total	**88.04**	**88.07**	**89.17**	**89.77**	**90.22**	**90.76**	**92.34**	**92.79**
Generation (billion kilowatthours)								
Conventional Hydropower	279.10	259.86	293.80	295.14	295.67	296.26	299.39	303.10
Geothermal[2]	17.32	17.06	17.10	17.20	17.40	17.98	18.17	18.18
Municipal Solid Waste	17.38	17.29	21.49	22.53	23.45	24.07	24.76	25.41
Wood and Other Biomass[3]	8.64	8.90	8.00	8.13	8.23	8.32	8.32	8.32
Solar Thermal	0.90	0.82	0.92	0.92	0.93	0.95	0.98	1.04
Solar Photovoltaic	0.00	0.00	0.03	0.04	0.04	0.05	0.07	0.08
Wind	3.04	3.45	3.93	4.77	4.93	5.12	5.12	5.32
Total	**326.38**	**307.39**	**345.28**	**348.73**	**350.64**	**352.76**	**356.80**	**361.44**
Cogenerators[4]								
Capability								
Municipal Solid Waste	0.40	0.37	0.37	0.37	0.37	0.37	0.37	0.38
Biomass	5.54	5.72	5.81	5.87	5.87	5.88	5.98	6.10
Total	**5.94**	**6.09**	**6.18**	**6.24**	**6.24**	**6.25**	**6.35**	**6.48**
Generation (billion kilowatthours)								
Municipal Solid Waste	1.88	1.93	1.75	1.76	1.76	1.76	1.77	1.79
Biomass	36.21	37.69	38.49	38.93	39.03	39.06	39.73	40.57
Total	**38.10**	**39.62**	**40.24**	**40.69**	**40.79**	**40.82**	**41.50**	**42.36**

Table A17. Renewable Energy Generating Capacity and Generation (Continued)
(Thousand Megawatts, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
80.60	80.70	80.81	80.86	80.92	80.97	80.97	80.97	80.97	80.97	80.97	0.2%
3.26	3.17	3.11	3.02	3.08	3.03	3.10	3.10	3.27	3.36	3.72	1.1%
4.12	4.21	4.29	4.36	4.43	4.52	4.61	4.70	4.78	4.85	5.23	2.6%
1.85	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.93	2.84	2.4%
0.42	0.45	0.46	0.50	0.52	0.54	0.56	0.57	0.61	0.63	1.73	7.9%
0.03	0.03	0.04	0.06	0.07	0.09	0.11	0.14	0.16	0.18	0.32	17.6%
2.73	3.18	3.28	3.40	3.57	3.75	3.84	4.25	4.64	5.10	11.64	9.3%
93.01	**93.65**	**93.90**	**94.12**	**94.51**	**94.83**	**95.11**	**95.65**	**96.35**	**97.02**	**106.45**	**0.9%**
303.13	303.87	304.72	305.16	305.60	306.04	306.07	306.10	306.13	306.16	306.35	0.8%
18.54	18.09	17.89	17.51	17.94	17.80	18.30	18.30	19.53	20.36	23.55	1.5%
26.04	26.67	27.22	27.72	28.18	28.81	29.41	30.06	30.58	31.08	33.74	3.2%
8.54	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.89	15.26	2.6%
1.12	1.19	1.22	1.33	1.38	1.45	1.51	1.55	1.65	1.71	5.43	9.4%
0.09	0.10	0.13	0.15	0.18	0.23	0.27	0.31	0.36	0.40	0.69	29.6%
5.33	6.52	6.52	6.60	7.19	7.81	8.12	9.45	10.73	12.33	33.37	11.4%
362.78	**365.30**	**366.56**	**367.34**	**369.33**	**371.01**	**372.55**	**374.64**	**377.85**	**380.94**	**418.39**	**1.5%**
0.38	0.38	0.39	0.39	0.39	0.39	0.40	0.40	0.40	0.40	0.41	0.5%
6.22	6.34	6.47	6.63	6.76	6.86	6.94	7.03	7.12	7.22	7.70	1.4%
6.60	**6.73**	**6.86**	**7.01**	**7.15**	**7.25**	**7.34**	**7.43**	**7.52**	**7.62**	**8.11**	**1.4%**
1.80	1.81	1.82	1.83	1.85	1.86	1.87	1.88	1.89	1.89	1.93	0.0%
41.34	42.19	43.05	44.09	44.96	45.64	46.20	46.82	47.43	48.09	51.28	1.5%
43.13	**44.00**	**44.87**	**45.92**	**46.81**	**47.50**	**48.07**	**48.69**	**49.32**	**49.98**	**53.21**	**1.4%**

[1]Includes traditional utilities and nonutilities other than cogenerators. These nonutility facilities include small power producers, exempt wholesale generators and generators at industrial and commercial facilities who do not produce steam for other uses.
[2]Includes hydrothermal resources only (hot water and steam).
[3]Includes projections for energy crops after 2010.
[4]Includes cogenerators at facilities whose primary function is not electricity production. In general, biomass and other waste facilities are cogenerators while the remaining renewables produce only electricity.

Notes: Totals may not equal sum of components due to independent rounding. Net summer capability has been estimated for nonutility generators for AEO96. Net summer capability is used to be consistent with electric utility capacity estimates. Electric utility capacity data are the most recent available as of August 30, 1995. Additional retirements are also determined based on the size and age of the units. Therefore, capacity estimates may differ from other Energy Information Administration sources.

Sources: 1993 and 1994 electric utility capability: Energy Information Administration (EIA), Form EIA-860 "Annual Electric Utility Report." 1993 and 1994 nonutility and cogenerator capability: Form EIA-867, "Annual Nonutility Power Producer Report." 1993 and 1994 generation: EIA, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995). **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A18. Renewable Energy, Consumption by Sector and Source[1]
(Quadrillion Btu per Year)

Sector and Source	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Marketed Renewable Energy[2]								
Residential	**0.575**	**0.553**	**0.550**	**0.564**	**0.564**	**0.566**	**0.567**	**0.570**
Wood	0.575	0.553	0.550	0.564	0.564	0.566	0.567	0.570
Commercial	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**
Biomass	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
Industrial	**2.077**	**2.163**	**2.189**	**2.196**	**2.255**	**2.294**	**2.324**	**2.364**
Conventional Hydroelectric	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033
Municipal Solid Waste	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Biomass	2.039	2.126	2.152	2.159	2.218	2.257	2.287	2.326
Transportation	**0.077**	**0.086**	**0.090**	**0.083**	**0.131**	**0.113**	**0.119**	**0.092**
Ethanol used in E85[3]	0.001	0.001	0.002	0.002	0.002	0.002	0.003	0.003
Ethanol used in Gasoline Blending	0.076	0.085	0.089	0.081	0.129	0.111	0.116	0.089
Electric Generators[4]	**3.625**	**3.430**	**3.823**	**3.879**	**3.903**	**3.938**	**3.986**	**4.036**
Conventional Hydroelectric	2.869	2.671	3.020	3.034	3.039	3.046	3.078	3.116
Geothermal	0.448	0.445	0.450	0.470	0.478	0.497	0.504	0.507
Municipal Solid Waste	0.179	0.178	0.221	0.232	0.241	0.247	0.255	0.261
Biomass	0.089	0.091	0.082	0.084	0.085	0.086	0.086	0.086
Solar Thermal	0.009	0.008	0.009	0.009	0.010	0.010	0.010	0.011
Solar Photovoltaic	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001
Wind	0.031	0.035	0.040	0.049	0.051	0.053	0.053	0.055
Total Marketed Renewable Energy	**6.356**	**6.234**	**6.654**	**6.724**	**6.855**	**6.913**	**6.998**	**7.064**
Non-Marketed Renewable Energy[5]								
Selected Consumption								
Residential	**0.016**	**0.016**	**0.017**	**0.018**	**0.018**	**0.019**	**0.020**	**0.020**
Solar Hot Water Heating	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
Geothermal Heat Pumps	0.010	0.011	0.011	0.012	0.013	0.013	0.014	0.015
Commercial	**0.011**	**0.011**	**0.012**	**0.014**	**0.016**	**0.018**	**0.021**	**0.024**
Solar Thermal	0.011	0.011	0.012	0.014	0.016	0.018	0.021	0.024

Table A18. Renewable Energy, Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
0.570	**0.572**	**0.574**	**0.577**	**0.577**	**0.579**	**0.581**	**0.584**	**0.583**	**0.585**	**0.592**	**0.3%**
0.570	0.572	0.574	0.577	0.577	0.579	0.581	0.584	0.583	0.585	0.592	0.3%
0.002	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.7%**
0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.7%
2.400	**2.440**	**2.478**	**2.525**	**2.564**	**2.595**	**2.619**	**2.647**	**2.675**	**2.707**	**2.862**	**1.3%**
0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.0%
0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.006	0.9%
2.362	2.402	2.440	2.487	2.527	2.557	2.581	2.609	2.637	2.669	2.824	1.4%
0.113	**0.146**	**0.169**	**0.178**	**0.190**	**0.201**	**0.213**	**0.223**	**0.233**	**0.248**	**0.290**	**5.9%**
0.010	0.018	0.027	0.036	0.046	0.056	0.066	0.076	0.086	0.096	0.137	25.4%
0.103	0.128	0.142	0.142	0.145	0.146	0.147	0.147	0.147	0.152	0.152	2.8%
4.060	**4.080**	**4.094**	**4.099**	**4.129**	**4.146**	**4.174**	**4.198**	**4.260**	**4.310**	**4.787**	**1.6%**
3.116	3.124	3.133	3.137	3.142	3.146	3.146	3.147	3.147	3.147	3.149	0.8%
0.521	0.510	0.510	0.503	0.516	0.515	0.533	0.535	0.577	0.604	0.728	2.4%
0.268	0.274	0.280	0.285	0.290	0.296	0.302	0.309	0.314	0.319	0.347	3.2%
0.088	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.157	2.6%
0.011	0.012	0.013	0.014	0.014	0.015	0.016	0.016	0.017	0.018	0.056	9.4%
0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.004	0.007	29.6%
0.055	0.067	0.067	0.068	0.074	0.080	0.083	0.097	0.110	0.127	0.343	11.4%
7.145	**7.239**	**7.316**	**7.381**	**7.463**	**7.523**	**7.589**	**7.654**	**7.754**	**7.852**	**8.533**	**1.5%**
0.021	**0.022**	**0.023**	**0.023**	**0.025**	**0.026**	**0.027**	**0.027**	**0.028**	**0.029**	**0.034**	**3.5%**
0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.005	-0.3%
0.016	0.016	0.017	0.018	0.019	0.020	0.021	0.022	0.023	0.024	0.028	4.8%
0.024	**0.025**	**0.026**	**0.026**	**0.027**	**0.027**	**0.028**	**0.029**	**0.029**	**0.030**	**0.037**	**5.7%**
0.024	0.025	0.026	0.026	0.027	0.027	0.028	0.029	0.029	0.030	0.037	5.7%

[1]Actual heat rates used to determine fuel consumption for all renewable fuels except hydropower, solar, and wind. Consumption at hydroelectric, solar, and wind facilities determined using the fossil fuel equivalent of 10,280 Btu per kilowatthour.

[2]Includes nonelectric renewable energy groups for which the energy source is bought and sold in the marketplace, although individual instances may not necessarily be marketed, and marketed renewable energy inputs for electricity entering the marketplace on the electric power grid.

[3]Excludes motor gasoline component of E85.

[4]Includes renewable energy delivered to the grid from electric utilities, nonutilities, and that part of industrial and other cogeneration delivered to the grid. Renewable energy used in generating electricity for own use is included in the individual sectoral electricity energy consumption values.

[5]Includes selected renewable energy consumption for which the energy is not bought or sold, either directly or indirectly as an input to marketed energy. The Energy Information Administration does not estimate or project total consumption of nonmarketed renewable energy.

N/A = Not available.

Btu = British thermal unit.

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

Sources: 1993 ethanol: Energy Information Administration (EIA), *Annual Energy Review*, DOE/EIA-0384(94) (Washington, DC, July 1995). 1993 and 1994 electric generator: EIA, Form EIA-860, "Annual Electric Utility Report" and EIA, Form EIA-867, "Annual Nonutility Power Producer Report." Other 1993: EIA, Office of Integrated Analysis and Forecasting. 1994 ethanol: EIA, *Petroleum Supply Annual*, 1994, DOE/EIA-0340(94/1) (Washington, DC, June 1995). Other 1994: EIA, Office of Integrated Analysis and Forecasting. **Projections:** EIA, AEO96 National Energy Modeling System, runs AEO96B.D101995C.

Table A19. Carbon Emissions by End-Use Sector and Source
(Million Metric Tons per Year)

Sector and Source	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Residential								
Petroleum	26.2	25.4	24.6	25.4	25.1	24.9	24.7	24.5
Natural Gas	73.4	72.4	71.9	74.5	74.7	74.6	74.9	75.2
Coal	1.5	1.4	1.4	1.4	1.4	1.4	1.3	1.3
Electricity	170.6	170.9	170.8	171.2	172.6	174.4	177.3	179.9
Total	**271.6**	**270.1**	**268.8**	**272.5**	**273.7**	**275.3**	**278.1**	**280.9**
Commercial								
Petroleum	14.9	14.6	14.5	14.8	14.8	14.8	14.8	14.8
Natural Gas	43.1	43.4	43.8	45.1	45.3	45.5	45.8	46.0
Coal	2.2	2.1	2.1	2.1	2.2	2.2	2.2	2.2
Electricity	151.8	155.7	156.5	156.1	157.9	159.6	161.8	163.3
Total	**212.1**	**215.8**	**217.0**	**218.1**	**220.1**	**222.1**	**224.7**	**226.4**
Industrial[1]								
Petroleum	92.5	98.7	100.6	99.6	101.2	102.8	103.5	103.4
Natural Gas[2]	131.6	133.5	139.2	142.2	146.6	147.6	148.4	150.1
Coal	62.3	63.9	63.0	62.7	62.9	63.4	63.5	61.7
Electricity	167.5	168.6	167.5	168.4	171.7	173.7	175.7	175.7
Total	**454.0**	**464.7**	**470.2**	**473.0**	**482.5**	**487.5**	**491.1**	**491.0**
Transportation								
Petroleum	426.8	436.2	446.4	450.1	456.7	464.6	472.1	480.5
Natural Gas[3]	9.3	9.6	9.8	9.9	10.0	9.7	9.9	9.7
Other[4]	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	0.0	1.0	1.0	1.0	1.0	1.2	1.4	1.5
Total	**436.7**	**446.8**	**457.3**	**461.1**	**467.7**	**475.5**	**483.4**	**491.8**
Total Carbon Emissions[5]								
Petroleum	560.4	574.9	586.1	589.9	597.8	607.0	615.1	623.2
Natural Gas	257.4	258.8	264.8	271.7	276.5	277.5	278.9	281.1
Coal	66.0	67.4	66.5	66.3	66.5	67.0	67.1	65.3
Other[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	490.6	496.2	495.8	496.7	503.2	508.8	516.2	520.5
Total	**1374.4**	**1397.3**	**1413.2**	**1424.6**	**1444.0**	**1460.4**	**1477.3**	**1490.1**
Electric Generators[6]								
Petroleum	22.5	20.9	15.5	15.7	14.6	15.8	15.3	14.5
Natural Gas	39.5	44.9	47.3	45.0	47.1	47.7	46.9	45.8
Coal	428.6	430.4	433.0	436.0	441.5	445.4	454.0	460.2
Total	**490.6**	**496.2**	**495.8**	**496.7**	**503.2**	**508.8**	**516.2**	**520.5**
Total Carbon Emissions[7]								
Petroleum	582.9	595.8	601.6	605.6	612.5	622.8	630.4	637.7
Natural Gas	296.9	303.7	312.1	316.7	323.6	325.1	325.8	326.9
Coal	494.6	497.8	499.4	502.3	508.0	512.4	521.1	525.4
Other[4]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**1374.4**	**1397.3**	**1413.2**	**1424.6**	**1444.0**	**1460.4**	**1477.3**	**1490.1**

Table A19. Carbon Emissions by End-Use Sector and Source (Continued)
(Million Metric Tons per Year)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
24.2	24.0	23.9	23.7	23.5	23.3	23.2	23.1	22.9	22.8	22.5	-0.6%
75.3	75.6	76.0	76.7	76.8	77.3	77.8	78.5	78.8	79.2	80.8	0.5%
1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.1	-1.2%
183.0	186.6	190.6	195.0	198.8	202.7	205.5	209.5	212.5	217.1	239.3	1.6%
283.7	**287.4**	**291.7**	**296.6**	**300.4**	**304.5**	**307.7**	**312.3**	**315.4**	**320.3**	**343.8**	**1.2%**
14.8	14.7	14.7	14.7	14.7	14.6	14.6	14.6	14.5	14.5	14.4	-0.1%
46.3	46.7	47.0	47.3	47.6	48.0	48.3	48.6	48.9	49.2	50.6	0.7%
2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.5	0.9%
165.8	168.2	170.8	173.1	176.2	178.8	180.3	182.3	184.4	187.1	200.6	1.2%
229.1	**231.9**	**234.8**	**237.5**	**240.8**	**243.8**	**245.6**	**247.9**	**250.3**	**253.3**	**268.1**	**1.0%**
104.2	104.6	105.7	106.7	107.3	107.8	108.2	108.8	109.5	109.5	113.0	0.6%
151.3	152.9	154.6	156.3	158.3	159.8	160.6	161.7	162.7	163.9	167.6	1.1%
61.0	60.8	60.6	60.6	60.4	60.6	60.4	60.2	60.2	60.2	61.8	-0.2%
178.5	181.4	184.7	188.1	191.9	194.4	195.1	196.6	198.3	200.5	209.1	1.0%
495.0	**499.6**	**505.6**	**511.6**	**518.0**	**522.6**	**524.2**	**527.2**	**530.7**	**534.1**	**551.6**	**0.8%**
487.3	492.9	498.7	504.7	511.3	517.0	521.8	526.3	529.4	532.7	547.2	1.1%
9.8	9.9	10.0	10.2	10.6	10.8	11.3	11.6	12.2	12.7	15.5	2.3%
0.1	0.3	0.4	0.5	0.7	0.9	1.0	1.2	1.4	1.6	2.3	23.7%
1.8	2.1	2.5	2.9	3.4	3.8	4.3	4.7	5.1	5.5	6.7	9.4%
499.0	**505.2**	**511.6**	**518.4**	**526.0**	**532.5**	**538.4**	**543.8**	**548.1**	**552.4**	**571.7**	**1.2%**
630.4	636.2	643.0	649.7	656.8	662.8	667.7	672.8	676.3	679.6	697.1	0.9%
282.7	285.1	287.6	290.5	293.4	295.8	297.9	300.5	302.7	305.0	314.5	0.9%
64.6	64.3	64.2	64.2	64.0	64.2	64.0	63.8	63.8	63.8	65.5	-0.1%
0.1	0.3	0.4	0.5	0.7	0.9	1.0	1.2	1.4	1.6	2.3	23.7%
529.1	538.2	548.5	559.0	570.3	579.8	585.2	593.0	600.3	610.2	655.7	1.3%
1506.9	**1524.1**	**1543.7**	**1564.1**	**1585.2**	**1603.5**	**1615.9**	**1631.3**	**1644.4**	**1660.0**	**1735.1**	**1.0%**
16.0	16.4	17.1	18.8	20.1	21.0	21.5	22.8	24.1	24.9	23.8	0.6%
46.1	47.7	51.2	55.5	59.2	59.3	62.7	67.2	71.7	75.9	105.9	4.2%
467.0	474.0	480.2	484.8	491.0	499.5	500.9	503.0	504.5	509.4	526.0	1.0%
529.1	**538.2**	**548.5**	**559.0**	**570.3**	**579.8**	**585.2**	**593.0**	**600.3**	**610.2**	**655.7**	**1.3%**
646.4	652.7	660.1	668.6	676.8	683.8	689.2	695.6	700.4	704.5	720.9	0.9%
328.8	332.8	338.8	346.0	352.6	355.1	360.7	367.7	374.4	380.9	420.5	1.6%
531.6	538.4	544.4	549.0	555.0	563.7	564.9	566.7	568.3	573.1	591.4	0.8%
0.1	0.3	0.4	0.5	0.7	0.9	1.0	1.2	1.4	1.6	2.3	23.7%
1506.9	**1524.1**	**1543.7**	**1564.1**	**1585.2**	**1603.5**	**1615.9**	**1631.3**	**1644.4**	**1660.0**	**1735.1**	**1.0%**

[1]Includes consumption by cogenerators.
[2]Includes lease and plant fuel.
[3]Includes pipeline fuel natural gas and compressed natural gas used as vehicle fuel.
[4]Other includes methanol and liquid hydrogen.
[5]Measured for delivered energy consumption.
[6]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[7]Measured for total energy consumption, with emissions for electric power generators distributed to the primary fuels.
Note: Totals may not equal sum of components due to independent rounding.

Sources: Utility coal carbon emissions coefficients from Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States, 1987-1992*, DOE/EIA-0573 (Washington, DC, November 1994). Carbon coefficients from EIA, *Emissions of Greenhouse Gases in the United States, 1987-1994*, DOE/EIA-0573(95) (Washington, DC, October 1995). 1993 consumption estimates based on: EIA, *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, July 1995). 1994 consumption estimates based on: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Consumption projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A20. Macroeconomic Indicators
(Billion 1987 Dollars, Unless Otherwise Noted)

Indicators	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
GDP Implicit Price Deflator (index 1987=1.000)	**1.235**	**1.261**	**1.287**	**1.318**	**1.349**	**1.383**	**1.421**	**1.462**
Real Gross Domestic Product	**5134**	**5344**	**5483**	**5581**	**5748**	**5894**	**6034**	**6181**
Real Consumption	3459	3580	3671	3756	3870	3973	4068	4158
Real Investment	820	952	1008	1000	1051	1104	1148	1200
Real Government Spending	930	923	924	917	928	944	961	976
Real Exports	602	657	723	790	828	866	907	954
Real Imports	676	767	844	881	929	993	1050	1107
Real Disposable Personal Income	**3704**	**3836**	**3955**	**4019**	**4139**	**4253**	**4358**	**4463**
Index of Manufacturing Gross Output (index 1987=1.000)	**1.113**	**1.193**	**1.213**	**1.210**	**1.256**	**1.288**	**1.312**	**1.340**
AA Utility Bond Rate (percent)	7.43	8.21	7.76	7.33	7.46	7.79	8.05	8.27
90-Day U.S. Government Treasury Bill Rate (percent)	3.00	4.25	5.44	4.38	4.33	4.51	4.63	4.75
Real Yield on Government 10 Year Bonds (percent)	3.22	5.44	5.22	4.22	3.86	4.08	4.30	4.27
Real 90-Day U.S. Government Treasury Bill Rate (percent)	0.83	2.18	3.35	2.00	1.95	2.00	1.85	1.86
Real Utility Bond Rate (percent)	5.26	6.14	5.68	4.95	5.08	5.28	5.27	5.39
Delivered Energy Intensity (thousand Btu per 1987 dollar of GDP)								
Delivered Energy	12.79	12.54	12.44	12.34	12.17	12.00	11.84	11.66
Total Energy	17.02	16.69	16.53	16.36	16.11	15.86	15.63	15.39
Consumer Price Index (1982=1.00)	1.45	1.48	1.53	1.58	1.63	1.68	1.73	1.79
Employment Cost Index (1987=1.00)	1.15	1.19	1.22	1.26	1.30	1.34	1.38	1.43
Unemployment Rate (percent)	6.81	6.08	5.74	6.21	6.23	6.07	6.01	5.92
Million Units								
Truck Deliveries, Light-Duty	5.19	5.86	5.68	5.62	5.73	5.88	6.07	6.26
Unit Sales of Automobiles	8.72	9.24	8.66	8.85	9.07	9.12	9.14	9.19
Millions of People								
Population with Armed Forces Overseas	258.4	261.0	263.6	266.1	268.5	270.9	273.3	275.6
Population (aged 16 and over)	198.2	200.1	202.1	204.2	206.4	208.5	210.7	212.8
Employment, Non-Agriculture	112.6	115.9	118.2	119.4	121.2	123.2	125.1	127.0
Employment, Manufacturing	18.1	18.3	18.5	18.2	18.3	18.4	18.4	18.4
Labor Force	128.0	131.0	132.8	134.9	136.7	138.7	140.8	142.9

Table A20. Macroeconomic Indicators (Continued)
(Billion 1987 Dollars, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
1.507	**1.555**	**1.607**	**1.662**	**1.723**	**1.786**	**1.848**	**1.912**	**1.978**	**2.047**	**2.433**	**3.2%**
6330	**6467**	**6601**	**6746**	**6901**	**7045**	**7168**	**7287**	**7404**	**7523**	**8114**	**2.0%**
4248	4333	4417	4507	4603	4697	4777	4851	4924	4999	5401	2.0%
1251	1290	1323	1366	1419	1469	1505	1534	1564	1595	1744	2.9%
991	1000	1010	1019	1031	1045	1056	1068	1078	1089	1143	1.0%
1004	1067	1132	1200	1273	1344	1416	1490	1566	1643	2022	5.5%
1164	1223	1281	1347	1426	1511	1585	1656	1729	1803	2197	5.1%
4565	**4659**	**4752**	**4852**	**4958**	**5059**	**5147**	**5226**	**5302**	**5383**	**5798**	**2.0%**
1.369	**1.400**	**1.433**	**1.470**	**1.504**	**1.531**	**1.552**	**1.578**	**1.606**	**1.634**	**1.766**	**1.9%**
8.47	8.49	8.54	8.57	8.57	8.51	8.47	8.40	8.32	8.24	7.96	N/A
4.87	4.86	4.85	4.85	4.84	4.82	4.78	4.74	4.70	4.66	4.49	N/A
4.23	4.09	3.99	3.88	3.72	3.47	3.31	3.27	3.29	3.28	3.32	N/A
1.78	1.68	1.55	1.39	1.18	1.19	1.29	1.28	1.23	1.17	0.97	N/A
5.38	5.31	5.24	5.11	4.91	4.89	4.98	4.94	4.86	4.76	4.44	N/A
11.49	11.36	11.25	11.14	11.01	10.89	10.79	10.71	10.62	10.53	10.15	-1.0%
15.16	14.99	14.85	14.71	14.55	14.40	14.25	14.15	14.03	13.92	13.32	-1.1%
1.86	1.92	2.00	2.08	2.16	2.25	2.34	2.44	2.53	2.63	3.19	3.7%
1.48	1.54	1.60	1.66	1.73	1.80	1.87	1.94	2.02	2.11	2.57	3.7%
5.81	5.85	5.91	5.89	5.79	5.74	5.85	5.97	6.07	6.15	6.05	N/A
6.43	6.58	6.73	6.92	7.12	7.27	7.34	7.46	7.62	7.76	8.40	1.7%
9.21	9.21	9.21	9.26	9.33	9.36	9.29	9.24	9.23	9.22	9.15	0.0%
277.9	280.2	282.5	284.8	287.1	289.4	291.8	294.1	296.5	298.9	311.2	0.8%
214.9	217.1	219.2	221.5	223.8	226.2	228.6	230.9	233.2	235.4	245.8	1.0%
129.1	130.9	132.8	134.7	136.6	138.3	139.6	140.7	141.7	142.7	147.4	1.2%
18.4	18.5	18.5	18.6	18.7	18.7	18.6	18.5	18.5	18.4	18.0	-0.1%
145.0	146.7	148.5	150.3	152.2	154.1	155.7	156.9	158.2	159.4	163.3	1.1%

GDP = Gross domestic product.
Btu = British thermal unit.
N/A = Not available.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993 and 1994: Data Resources Incorporated (DRI), DRI Trend0295. **Projections:** Energy Information Administration, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table A21. International Petroleum Supply and Disposition Summary
(Million Barrels per Day, Unless Otherwise Noted)

Supply and Disposition	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
World Oil Price (1994 dollars per barrel)[1]	**16.48**	**15.52**	**16.82**	**16.98**	**17.38**	**17.98**	**18.61**	**19.27**
Production[2]								
OECD								
U.S. (50 states)	9.54	9.34	9.35	9.20	9.09	8.90	8.77	8.54
Canada	2.24	2.33	2.42	2.43	2.44	2.45	2.46	2.48
Mexico	3.16	3.18	3.18	3.22	3.22	3.23	3.22	3.21
OECD Europe[3]	5.29	6.13	6.46	6.85	6.88	6.92	6.96	6.82
Other OECD	0.68	0.73	0.75	0.75	0.75	0.75	0.75	0.76
Total OECD	**20.90**	**21.70**	**22.16**	**22.45**	**22.39**	**22.25**	**22.16**	**21.80**
Developing Countries								
Other South & Central America	2.26	2.82	2.91	3.00	2.99	2.99	2.96	2.94
Pacific Rim	1.81	1.89	1.95	2.00	2.03	2.06	2.09	2.12
OPEC	27.57	27.63	27.63	27.89	29.94	31.68	33.14	34.67
Other Developing Countries	3.84	3.82	3.93	4.06	4.05	4.03	4.03	4.02
Total Developing Countries	**35.48**	**36.16**	**36.43**	**36.95**	**39.01**	**40.77**	**42.22**	**43.76**
Eurasia								
Former Soviet Union	8.10	7.01	6.60	6.23	6.48	6.73	7.01	7.29
Eastern Europe	0.27	0.30	0.29	0.28	0.28	0.28	0.28	0.27
China	2.91	2.94	2.97	3.00	3.00	3.01	3.02	3.02
Total Eurasia	**11.28**	**10.25**	**9.86**	**9.52**	**9.76**	**10.02**	**10.30**	**10.58**
Total Production	**67.66**	**68.11**	**68.45**	**68.92**	**71.16**	**73.04**	**74.68**	**76.14**
Consumption								
OECD								
U.S. (50 states)	17.24	17.72	17.79	17.88	18.10	18.38	18.58	18.79
U.S. Territories	0.24	0.26	0.26	0.27	0.28	0.29	0.29	0.30
Canada	1.69	1.73	1.76	1.78	1.80	1.82	1.84	1.86
Mexico	1.87	1.91	1.94	1.96	1.98	2.02	2.04	2.06
Japan	5.41	5.68	5.79	5.87	6.06	6.18	6.28	6.36
Australia and New Zealand.	0.88	0.94	0.94	0.95	0.97	0.99	1.00	1.02
OECD Europe[3]	13.50	13.59	13.78	13.95	14.09	14.14	14.20	14.24
Total OECD	**40.82**	**41.82**	**42.26**	**42.65**	**43.27**	**43.82**	**44.23**	**44.63**
Developing Countries								
Other South and Central America	3.20	3.26	3.34	3.44	3.60	3.74	3.84	3.93
Pacific Rim	3.87	4.12	4.39	4.67	5.36	6.03	6.63	7.17
OPEC	4.58	4.74	4.94	5.14	5.24	5.34	5.45	5.56
Other Developing Countries	4.10	4.21	4.30	4.42	4.52	4.61	4.70	4.78
Total Developing Countries	**15.76**	**16.33**	**16.98**	**17.66**	**18.72**	**19.72**	**20.63**	**21.45**

Table A21. International Petroleum Supply and Disposition Summary (Continued)
(Million Barrels per Day, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
19.92	**20.48**	**20.97**	**21.41**	**21.87**	**22.25**	**22.61**	**22.97**	**23.34**	**23.71**	**25.43**	**2.4%**
8.43	8.40	8.35	8.36	8.38	8.44	8.49	8.59	8.69	8.79	9.38	0.0%
2.49	2.51	2.52	2.50	2.47	2.45	2.43	2.41	2.39	2.37	2.26	-0.1%
3.20	3.19	3.18	3.17	3.16	3.15	3.14	3.13	3.12	3.11	3.06	-0.2%
6.69	6.56	6.44	6.25	6.07	5.89	5.72	5.56	5.39	5.24	4.29	-1.7%
0.76	0.75	0.74	0.72	0.71	0.70	0.69	0.68	0.67	0.66	0.61	-0.8%
21.57	**21.40**	**21.22**	**21.00**	**20.80**	**20.63**	**20.47**	**20.36**	**20.26**	**20.16**	**19.60**	**-0.5%**
2.91	2.89	2.82	2.76	2.69	2.63	2.57	2.51	2.45	2.36	1.94	-1.8%
2.16	2.20	2.23	2.27	2.28	2.28	2.29	2.26	2.22	2.20	2.05	0.4%
36.14	37.44	38.67	39.90	41.16	42.30	43.41	44.50	45.50	46.55	52.37	3.1%
3.99	3.97	3.94	3.92	3.87	3.82	3.76	3.72	3.67	3.59	3.22	-0.8%
45.21	**46.49**	**47.66**	**48.85**	**50.00**	**51.02**	**52.03**	**52.98**	**53.84**	**54.70**	**59.58**	**2.4%**
7.56	7.76	7.97	8.19	8.41	8.63	8.85	9.08	9.31	9.55	10.27	1.8%
0.26	0.25	0.25	0.24	0.23	0.23	0.23	0.22	0.22	0.21	0.18	-2.3%
3.04	3.04	3.06	3.07	3.07	3.09	3.08	3.07	3.06	3.04	3.00	0.1%
10.86	**11.06**	**11.28**	**11.50**	**11.71**	**11.94**	**12.16**	**12.37**	**12.59**	**12.81**	**13.46**	**1.3%**
77.63	**78.95**	**80.16**	**81.35**	**82.51**	**83.60**	**84.65**	**85.71**	**86.70**	**87.67**	**92.63**	**1.5%**
19.02	19.21	19.41	19.65	19.89	20.09	20.25	20.41	20.55	20.67	21.18	0.9%
0.30	0.31	0.32	0.32	0.33	0.34	0.34	0.35	0.36	0.36	0.39	2.0%
1.88	1.90	1.92	1.93	1.95	1.97	1.99	2.01	2.02	2.04	2.13	1.0%
2.10	2.13	2.16	2.20	2.24	2.27	2.31	2.35	2.38	2.41	2.57	1.4%
6.43	6.50	6.55	6.60	6.64	6.69	6.74	6.77	6.81	6.85	7.08	1.1%
1.03	1.05	1.06	1.07	1.08	1.10	1.11	1.12	1.13	1.15	1.21	1.2%
14.34	14.42	14.48	14.52	14.57	14.60	14.64	14.68	14.71	14.75	14.92	0.4%
45.11	**45.51**	**45.89**	**46.30**	**46.71**	**47.05**	**47.37**	**47.68**	**47.96**	**48.22**	**49.49**	**0.8%**
4.01	4.08	4.15	4.21	4.27	4.33	4.39	4.45	4.51	4.56	4.84	1.9%
7.64	8.02	8.30	8.56	8.77	8.98	9.17	9.35	9.52	9.69	10.57	4.6%
5.67	5.78	5.90	6.02	6.14	6.26	6.39	6.51	6.64	6.78	7.48	2.2%
4.85	4.93	5.00	5.06	5.13	5.20	5.27	5.33	5.41	5.48	5.87	1.6%
22.17	**22.81**	**23.35**	**23.85**	**24.31**	**24.77**	**25.21**	**25.65**	**26.08**	**26.51**	**28.75**	**2.7%**

Table A21. International Petroleum Supply and Disposition Summary (Continued)
(Million Barrels per Day, Unless Otherwise Noted)

Supply and Disposition	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Eurasia								
Former Soviet Union	5.78	4.89	4.53	4.17	4.38	4.56	4.74	4.87
Eastern Europe	1.21	1.21	1.24	1.27	1.29	1.31	1.33	1.35
China	3.11	3.30	3.49	3.67	3.80	3.93	4.05	4.15
Total Eurasia	**10.09**	**9.40**	**9.26**	**9.10**	**9.47**	**9.80**	**10.12**	**10.37**
Total Consumption	**66.67**	**67.56**	**68.50**	**69.41**	**71.46**	**73.35**	**74.98**	**76.44**
Non-OPEC Production	40.09	40.48	40.82	41.03	41.22	41.36	41.54	41.47
Net Eurasia Exports	1.19	0.85	0.60	0.42	0.29	0.22	0.18	0.22
OPEC Market Share	0.41	0.41	0.40	0.40	0.42	0.43	0.44	0.46

Table A21. International Petroleum Supply and Disposition Summary (Continued)
(Million Barrels per Day, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
5.03	5.20	5.38	5.55	5.73	5.90	6.08	6.26	6.43	6.60	7.46	2.0%
1.37	1.39	1.40	1.42	1.44	1.46	1.47	1.49	1.51	1.52	1.59	1.3%
4.25	4.34	4.44	4.53	4.62	4.72	4.82	4.92	5.02	5.11	5.64	2.6%
10.65	**10.93**	**11.22**	**11.50**	**11.79**	**12.08**	**12.37**	**12.67**	**12.95**	**13.24**	**14.69**	**2.1%**
77.93	**79.25**	**80.46**	**81.65**	**82.81**	**83.90**	**84.95**	**86.01**	**87.00**	**87.97**	**92.93**	**1.5%**
41.49	41.51	41.49	41.45	41.34	41.30	41.25	41.21	41.20	41.11	40.26	0.0%
0.21	0.13	0.06	0.00	-0.08	-0.13	-0.21	-0.30	-0.36	-0.43	-1.23	N/A
0.47	0.47	0.48	0.49	0.50	0.51	0.51	0.52	0.52	0.53	0.57	1.6%

[1]Average refiner acquisition cost of imported crude oil.
[2]Includes production of crude oil (including lease condensates), natural gas plant liquids, other hydrogen and hydrocarbons for refinery feedstocks, alcohol, liquids produced from coal and other sources, and refinery gains.
[3]OECD Europe includes the unified Germany.
OECD = Organization for Economic Cooperation and Development - Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States (including territories).
Pacific Rim = Hong Kong, Malaysia, Philippines, Singapore, South Korea, Taiwan, and Thailand.
OPEC = Organization of Petroleum Exporting Countries - Algeria, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.
Eurasia = Albania, Bulgaria, China, Czech Republic, Hungary, Poland, Romania, Slovak Republic, the Former Soviet Union, and the Former Yugoslavia.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993 to 1996: Energy Information Administration (EIA), *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Appendix B

Economic Growth Case Comparisons

Table B1. Total Energy Supply and Disposition Summary

(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1993	1994	1995	Projections		
				2000		
				Low Economic Growth	Reference	High Economic Growth
Production						
Crude Oil and Lease Condensate	14.50	14.10	13.84	11.89	11.96	12.06
Natural Gas Plant Liquids	2.49	2.47	2.43	2.42	2.54	2.69
Dry Natural Gas	18.97	19.41	19.47	19.33	20.24	21.33
Coal	20.23	22.01	21.89	22.37	22.59	22.94
Nuclear Power	6.52	6.84	7.02	7.09	7.09	7.09
Renewable Energy[1]	6.40	6.26	6.68	6.92	7.01	7.08
Other[2]	0.54	0.99	0.45	0.44	0.44	0.44
Total	**69.64**	**72.08**	**71.79**	**70.46**	**71.87**	**73.64**
Imports						
Crude Oil[3]	14.76	15.33	16.33	19.48	19.67	19.84
Petroleum Products[4]	3.73	3.92	3.53	3.59	4.03	4.47
Natural Gas	2.39	2.60	2.78	3.30	3.30	3.30
Other Imports[5]	0.50	0.67	0.62	0.69	0.69	0.70
Total	**21.38**	**22.53**	**23.25**	**27.07**	**27.70**	**28.31**
Exports						
Petroleum[6]	2.12	2.00	2.28	2.20	2.12	2.08
Natural Gas	0.15	0.16	0.17	0.27	0.27	0.27
Coal	1.96	1.88	1.88	2.16	2.16	2.16
Total	**4.23**	**4.04**	**4.33**	**4.64**	**4.56**	**4.52**
Discrepancy[7]	**0.59**	**-1.43**	**-0.12**	**-0.04**	**0.06**	**0.00**
Consumption						
Petroleum Products[8]	33.83	34.56	34.88	35.98	36.88	37.77
Natural Gas	20.80	21.36	21.95	22.10	23.00	24.08
Coal	19.55	19.65	19.66	20.35	20.67	20.97
Nuclear Power	6.52	6.84	7.02	7.09	7.09	7.09
Renewable Energy[1]	6.40	6.27	6.68	6.92	7.01	7.09
Other[9]	0.29	0.46	0.40	0.42	0.42	0.42
Total	**87.38**	**89.14**	**90.60**	**92.86**	**95.07**	**97.42**
Net Imports - Petroleum	**16.37**	**17.25**	**17.58**	**20.87**	**21.58**	**22.22**
Prices (1994 dollars per unit)						
World Oil Price (dollars per barrel)[10]	16.48	15.52	16.81	18.70	19.27	19.86
Gas Wellhead Price (dollars per Mcf)[11]	2.09	1.88	1.60	1.79	1.89	1.91
Coal Minemouth Price (dollars per ton)	19.85	19.41	18.54	17.05	17.44	17.35

[1]Includes utility and nonutility electricity from hydroelectric, wood and wood waste, municipal solid waste, other biomass, wind, photovoltaic and solar thermal sources; non-electric energy from renewable sources, such as active and passive solar systems, and wood; and both the ethanol and gasoline components of E85, but not the ethanol components of blends less than 85 percent. Excludes nonmarketed renewable energy. See Table 18 for selected nonmarketed residential and commercial renewable energy.
[2]Includes liquid hydrogen, methanol, supplemental natural gas, and some domestic inputs to refineries.
[3]Includes imports of crude oil for the Strategic Petroleum Reserve.
[4]Includes imports of finished petroleum products, imports of unfinished oils, alcohols, ethers, and blending components.
[5]Includes coal, coal coke (net), and electricity (net).
[6]Includes crude oil and petroleum products.
[7]Balancing item. Includes unaccounted for supply, losses, gains, and net storage withdraws.
[8]Includes natural gas plant liquids, crude oil consumed as a fuel, and nonpetroleum based liquids for blending, such as ethanol.
[9]Includes net electricity imports, methanol, and liquid hydrogen.
[10]Average refiner acquisition cost for imported crude oil.
[11]Represents lower 48 onshore and offshore supplies.

Table B1. Total Energy Supply and Disposition Summary (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
10.78	11.10	11.43	11.05	11.51	11.97	11.75	12.30	12.84	-0.9%	-0.6%	-0.4%
2.56	2.74	2.93	2.69	2.97	3.23	2.86	3.20	3.41	0.7%	1.2%	1.6%
20.31	21.89	23.58	21.44	23.52	25.66	23.13	25.72	27.60	0.8%	1.3%	1.7%
23.38	23.95	24.42	24.14	24.94	25.59	25.25	26.14	27.22	0.7%	0.8%	1.0%
6.93	6.93	6.93	6.52	6.52	6.52	4.63	4.63	4.63	-1.8%	-1.8%	-1.8%
7.15	7.38	7.57	7.43	7.78	8.32	7.96	8.51	9.59	1.2%	1.5%	2.1%
0.49	0.50	0.50	0.54	0.55	0.56	0.57	0.58	0.61	-2.6%	-2.5%	-2.3%
71.62	**74.50**	**77.36**	**73.80**	**77.79**	**81.85**	**76.17**	**81.08**	**85.91**	**0.3%**	**0.6%**	**0.8%**
20.68	21.13	21.74	20.63	21.05	21.93	20.10	20.87	21.50	1.3%	1.5%	1.6%
4.66	5.23	5.64	5.09	6.16	6.69	5.23	6.40	7.78	1.4%	2.4%	3.3%
3.48	3.48	3.48	3.84	3.84	3.84	4.42	4.42	4.42	2.5%	2.5%	2.5%
0.58	0.59	0.60	0.60	0.61	0.62	0.55	0.56	0.57	-0.9%	-0.9%	-0.8%
29.40	**30.43**	**31.47**	**30.17**	**31.65**	**33.08**	**30.31**	**32.25**	**34.27**	**1.4%**	**1.7%**	**2.0%**
1.88	1.88	1.88	1.83	1.77	1.75	1.94	1.91	1.86	-0.1%	-0.2%	-0.3%
0.31	0.31	0.31	0.32	0.32	0.32	0.33	0.33	0.33	3.5%	3.5%	3.5%
2.37	2.37	2.37	2.66	2.66	2.66	3.14	3.14	3.14	2.5%	2.5%	2.5%
4.56	**4.56**	**4.56**	**4.81**	**4.74**	**4.72**	**5.42**	**5.38**	**5.33**	**1.4%**	**1.4%**	**1.3%**
-0.01	**0.01**	**0.04**	**-0.01**	**-0.01**	**-0.03**	**0.10**	**0.07**	**0.10**	**N/A**	**N/A**	**N/A**
37.55	39.12	40.67	38.38	40.68	42.83	38.87	41.69	44.57	0.6%	0.9%	1.2%
23.22	24.79	26.47	24.69	26.76	28.89	26.94	29.52	31.40	1.1%	1.6%	1.9%
21.25	21.83	22.33	21.73	22.55	23.20	22.35	23.27	24.35	0.6%	0.8%	1.0%
6.93	6.93	6.93	6.52	6.52	6.52	4.63	4.63	4.63	-1.8%	-1.8%	-1.8%
7.16	7.38	7.58	7.43	7.78	8.33	7.97	8.52	9.60	1.2%	1.5%	2.1%
0.33	0.33	0.33	0.40	0.40	0.41	0.39	0.40	0.40	-0.8%	-0.7%	-0.7%
96.45	**100.38**	**104.30**	**99.15**	**104.69**	**110.18**	**101.15**	**108.02**	**114.96**	**0.6%**	**0.9%**	**1.2%**
23.46	**24.48**	**25.51**	**23.89**	**25.44**	**26.87**	**23.39**	**25.36**	**27.42**	**1.5%**	**1.9%**	**2.2%**
21.03	21.86	22.69	22.60	23.70	24.77	23.99	25.43	27.05	2.1%	2.4%	2.7%
1.77	1.99	2.07	1.82	2.15	2.51	2.07	2.57	3.34	0.5%	1.5%	2.8%
17.22	17.68	17.56	16.96	17.43	17.79	16.91	17.39	17.73	-0.7%	-0.5%	-0.4%

Btu = British thermal unit.
Mcf = Thousand cubic feet.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding. Figures for 1993 and 1994 may differ from published data due to internal conversion factors.
Sources: 1993 natural gas values: Energy Information Administration (EIA), *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). 1993 coal minemouth prices: EIA, *Coal Industry Annual 1993*, DOE/EIA-0584(93) (Washington, DC, December 1994). Other 1993 values: EIA, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995). 1994 natural gas supply and price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). 1994 coal minemouth prices: EIA, *Coal Industry Annual 1994*, DOE/EIA-0584(94) (Washington, DC, December 1995). 1994 coal production and exports: EIA, *Monthly Energy Review*, DOE/EIA-0035(95/08) (Washington, DC, August 1995). Other 1994 values: EIA, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B2. Energy Consumption by Sector and Source

(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Energy Consumption						
Residential						
Distillate Fuel	0.91	0.87	0.84	0.84	0.84	0.84
Kerosene	0.08	0.07	0.07	0.07	0.07	0.07
Liquefied Petroleum Gas	0.40	0.41	0.40	0.38	0.39	0.39
Petroleum Subtotal	1.39	1.35	1.31	1.29	1.30	1.30
Natural Gas	5.10	5.03	5.00	5.16	5.22	5.34
Coal	0.06	0.06	0.05	0.05	0.05	0.05
Renewable Energy[1]	0.57	0.55	0.55	0.56	0.57	0.58
Electricity	3.39	3.43	3.49	3.63	3.70	3.78
Delivered Energy	**10.51**	**10.41**	**10.40**	**10.69**	**10.84**	**11.05**
Electricity Related Losses	7.57	7.63	7.73	7.80	7.96	8.14
Total	**18.08**	**18.04**	**18.13**	**18.49**	**18.80**	**19.19**
Commercial						
Distillate Fuel	0.46	0.42	0.42	0.42	0.42	0.43
Residual Fuel	0.17	0.18	0.18	0.18	0.18	0.18
Kerosene	0.01	0.01	0.01	0.01	0.01	0.01
Liquefied Petroleum Gas	0.07	0.05	0.05	0.05	0.05	0.05
Motor Gasoline[2]	0.03	0.07	0.07	0.07	0.07	0.07
Petroleum Subtotal	0.75	0.73	0.73	0.73	0.74	0.75
Natural Gas	2.98	3.01	3.04	3.16	3.20	3.25
Coal	0.08	0.08	0.08	0.09	0.09	0.09
Renewable Energy[3]	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	3.01	3.13	3.20	3.30	3.36	3.41
Delivered Energy	**6.83**	**6.96**	**7.06**	**7.29**	**7.39**	**7.50**
Electricity Related Losses	6.72	6.95	7.08	7.10	7.23	7.36
Total	**13.55**	**13.91**	**14.14**	**14.39**	**14.62**	**14.86**
Industrial[4]						
Distillate Fuel	1.10	1.15	1.16	1.16	1.21	1.27
Liquefied Petroleum Gas	1.79	1.87	1.92	1.91	1.97	2.02
Petrochemical Feedstocks	1.19	1.25	1.25	1.24	1.27	1.31
Residual Fuel	0.45	0.47	0.47	0.46	0.48	0.49
Motor Gasoline[2]	0.18	0.19	0.19	0.19	0.20	0.21
Other Petroleum[5]	3.69	3.90	3.92	4.00	4.07	4.17
Petroleum Subtotal	8.41	8.83	8.92	8.96	9.21	9.47
Natural Gas[6]	9.07	9.34	9.76	10.24	10.49	10.78
Metallurgical Coal	0.84	0.84	0.81	0.71	0.71	0.71
Steam Coal	1.66	1.69	1.67	1.67	1.73	1.80
Net Coal Coke Imports	0.02	0.02	0.02	0.02	0.03	0.03
Coal Subtotal	2.52	2.55	2.51	2.40	2.47	2.55
Renewable Energy[7]	2.08	2.16	2.19	2.28	2.36	2.45
Electricity	3.33	3.39	3.43	3.47	3.61	3.75
Delivered Energy	**25.42**	**26.27**	**26.80**	**27.35**	**28.15**	**29.00**
Electricity Related Losses	7.43	7.53	7.58	7.46	7.78	8.09
Total	**32.85**	**33.80**	**34.38**	**34.80**	**35.93**	**37.09**

Table B2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
0.80	0.82	0.82	0.78	0.80	0.81	0.77	0.80	0.81	-0.6%	-0.4%	-0.3%
0.06	0.06	0.07	0.06	0.06	0.06	0.06	0.06	0.06	-0.7%	-0.6%	-0.4%
0.36	0.36	0.37	0.34	0.34	0.35	0.32	0.33	0.34	-1.1%	-1.0%	-0.9%
1.22	1.24	1.25	1.18	1.20	1.22	1.15	1.19	1.21	-0.8%	-0.6%	-0.5%
5.19	5.33	5.53	5.29	5.50	5.72	5.36	5.61	5.80	0.3%	0.5%	0.7%
0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04	-1.2%	-1.2%	-1.3%
0.56	0.58	0.59	0.57	0.59	0.60	0.57	0.59	0.62	0.1%	0.3%	0.5%
3.86	4.00	4.15	4.16	4.37	4.59	4.53	4.84	5.15	1.3%	1.7%	2.0%
10.88	**11.20**	**11.57**	**11.24**	**11.71**	**12.18**	**11.65**	**12.28**	**12.83**	**0.5%**	**0.8%**	**1.0%**
8.20	8.52	8.80	8.69	9.07	9.38	9.06	9.40	9.71	0.8%	1.0%	1.2%
19.08	**19.73**	**20.36**	**19.92**	**20.78**	**21.56**	**20.71**	**21.68**	**22.54**	**0.7%**	**0.9%**	**1.1%**
0.40	0.41	0.42	0.39	0.40	0.41	0.37	0.39	0.41	-0.6%	-0.4%	-0.2%
0.18	0.18	0.19	0.18	0.19	0.19	0.18	0.19	0.20	0.1%	0.3%	0.6%
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.5%	0.7%	1.0%
0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.7%	1.0%	1.2%
0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	-0.3%	-0.3%	-0.3%
0.72	0.74	0.75	0.71	0.73	0.75	0.69	0.72	0.75	-0.3%	-0.1%	0.1%
3.22	3.31	3.41	3.29	3.42	3.54	3.35	3.51	3.65	0.5%	0.7%	0.9%
0.09	0.09	0.09	0.09	0.09	0.10	0.09	0.10	0.10	0.7%	0.9%	1.2%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.6%	0.7%	0.8%
3.43	3.55	3.66	3.59	3.77	3.96	3.80	4.06	4.32	0.9%	1.2%	1.5%
7.46	**7.68**	**7.92**	**7.68**	**8.02**	**8.35**	**7.94**	**8.40**	**8.83**	**0.6%**	**0.9%**	**1.1%**
7.29	7.55	7.78	7.49	7.82	8.08	7.60	7.88	8.14	0.4%	0.6%	0.8%
14.75	**15.24**	**15.69**	**15.17**	**15.84**	**16.43**	**15.55**	**16.28**	**16.97**	**0.5%**	**0.8%**	**1.0%**
1.20	1.28	1.37	1.22	1.34	1.46	1.24	1.40	1.56	0.4%	0.9%	1.5%
2.00	2.11	2.21	2.04	2.19	2.37	2.07	2.30	2.55	0.5%	1.0%	1.5%
1.29	1.36	1.43	1.32	1.42	1.53	1.34	1.48	1.64	0.3%	0.8%	1.3%
0.46	0.49	0.51	0.43	0.49	0.54	0.46	0.52	0.57	-0.1%	0.4%	0.9%
0.20	0.21	0.23	0.20	0.22	0.24	0.21	0.23	0.26	0.4%	1.0%	1.6%
4.02	4.16	4.31	3.98	4.22	4.44	4.03	4.32	4.63	0.2%	0.5%	0.8%
9.18	9.61	10.06	9.19	9.89	10.58	9.35	10.24	11.20	0.3%	0.7%	1.1%
10.71	11.12	11.55	11.03	11.55	12.12	11.14	11.86	12.51	0.8%	1.1%	1.4%
0.62	0.62	0.63	0.54	0.55	0.55	0.48	0.48	0.49	-2.7%	-2.6%	-2.5%
1.65	1.76	1.89	1.65	1.83	2.05	1.71	1.96	2.31	0.1%	0.7%	1.5%
0.03	0.04	0.04	0.03	0.04	0.05	0.03	0.04	0.05	1.0%	2.5%	3.7%
2.30	2.42	2.56	2.23	2.42	2.65	2.21	2.48	2.84	-0.7%	-0.1%	0.5%
2.43	2.56	2.70	2.51	2.71	2.92	2.60	2.86	3.15	0.9%	1.3%	1.8%
3.63	3.86	4.10	3.71	4.04	4.39	3.79	4.23	4.71	0.5%	1.1%	1.6%
28.25	**29.58**	**30.97**	**28.66**	**30.60**	**32.66**	**29.09**	**31.68**	**34.42**	**0.5%**	**0.9%**	**1.3%**
7.71	8.22	8.70	7.75	8.38	8.97	7.58	8.22	8.88	0.0%	0.4%	0.8%
35.96	**37.81**	**39.67**	**36.41**	**38.98**	**41.64**	**36.67**	**39.89**	**43.30**	**0.4%**	**0.8%**	**1.2%**

Table B2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1993	1994	1995	Projections		
				2000		
				Low Economic Growth	Reference	High Economic Growth
Transportation						
Distillate Fuel	3.91	4.17	4.21	4.40	4.58	4.75
Jet Fuel[8]	3.03	3.15	3.27	3.61	3.72	3.83
Motor Gasoline[2]	14.13	14.21	14.54	15.12	15.35	15.57
Residual Fuel	0.91	0.90	0.94	1.05	1.07	1.09
Liquefied Petroleum Gas	0.02	0.03	0.02	0.02	0.02	0.02
Other Petroleum[9]	0.20	0.20	0.21	0.21	0.22	0.22
Petroleum Subtotal	22.20	22.66	23.19	24.41	24.94	25.48
Pipeline Fuel Natural Gas	0.64	0.66	0.68	0.66	0.67	0.69
Compressed Natural Gas	0.01	0.01	0.01	0.01	0.01	0.01
Renewable Energy (E85)[10]	0.00	0.00	0.00	0.00	0.00	0.00
Methanol[11]	0.00	0.00	0.00	0.00	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.02	0.02	0.02	0.03	0.03	0.03
Delivered Energy	**22.87**	**23.34**	**23.90**	**25.11**	**25.66**	**26.22**
Electricity Related Losses	0.04	0.05	0.05	0.07	0.07	0.07
Total	**22.91**	**23.39**	**23.94**	**25.18**	**25.72**	**26.29**
Delivered Energy Consumption for All Sectors						
Distillate Fuel	6.39	6.61	6.63	6.81	7.05	7.29
Kerosene	0.10	0.09	0.09	0.09	0.09	0.09
Jet Fuel[8]	3.03	3.15	3.27	3.61	3.72	3.83
Liquefied Petroleum Gas	2.28	2.35	2.39	2.37	2.43	2.48
Motor Gasoline[2]	14.33	14.47	14.80	15.38	15.62	15.86
Petrochemical Feedstocks	1.19	1.25	1.25	1.24	1.27	1.31
Residual Fuel	1.54	1.55	1.59	1.69	1.73	1.76
Other Petroleum[12]	3.88	4.09	4.12	4.20	4.28	4.37
Natural Gas[6]	17.80	18.05	18.48	19.22	19.59	20.07
Metallurgical Coal	0.84	0.84	0.81	0.71	0.71	0.71
Steam Coal	1.80	1.82	1.81	1.81	1.86	1.94
Net Coal Coke Imports	0.02	0.02	0.02	0.02	0.03	0.03
Renewable Energy[13]	2.65	2.72	2.74	2.85	2.94	3.03
Methanol[11]	0.00	0.00	0.00	0.00	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	9.76	9.97	10.15	10.43	10.70	10.98
Delivered Energy	**65.62**	**66.99**	**68.16**	**70.44**	**72.03**	**73.76**
Electricity Related Losses	21.76	22.15	22.44	22.42	23.03	23.66
Total	**87.38**	**89.14**	**90.60**	**92.86**	**95.07**	**97.42**
Electric Generators[14]						
Distillate Fuel	0.13	0.10	0.12	0.06	0.08	0.11
Residual Fuel	0.95	0.89	0.61	0.53	0.60	0.67
Natural Gas	3.00	3.32	3.47	2.87	3.41	4.01
Steam Coal	16.89	16.97	17.02	17.82	18.07	18.29
Nuclear Power	6.52	6.84	7.02	7.09	7.09	7.09
Renewable Energy[15]	3.74	3.55	3.94	4.07	4.07	4.06
Electricity Imports	0.29	0.46	0.40	0.42	0.42	0.41
Total	**31.52**	**32.12**	**32.59**	**32.86**	**33.74**	**34.64**

Table B2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
4.75	5.01	5.27	5.01	5.39	5.79	5.30	5.84	6.39	1.2%	1.6%	2.1%
3.92	4.13	4.34	4.09	4.43	4.77	4.23	4.69	5.16	1.4%	1.9%	2.4%
15.58	15.97	16.36	15.60	16.16	16.73	15.24	15.98	16.74	0.3%	0.6%	0.8%
1.17	1.22	1.26	1.30	1.37	1.44	1.40	1.51	1.61	2.1%	2.5%	2.8%
0.03	0.03	0.03	0.08	0.08	0.08	0.14	0.14	0.15	8.4%	8.5%	8.7%
0.22	0.23	0.23	0.22	0.23	0.25	0.22	0.24	0.26	0.4%	0.9%	1.3%
25.66	26.57	27.49	26.29	27.67	29.06	26.54	28.40	30.30	0.8%	1.1%	1.4%
0.67	0.71	0.74	0.72	0.76	0.82	0.80	0.86	0.91	0.9%	1.3%	1.6%
0.03	0.03	0.03	0.12	0.12	0.12	0.21	0.22	0.22	18.1%	18.1%	18.1%
0.05	0.05	0.06	0.11	0.11	0.12	0.15	0.16	0.17	25.0%	25.4%	25.8%
0.04	0.04	0.04	0.09	0.09	0.09	0.13	0.13	0.14	23.4%	23.7%	23.9%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.9%	56.8%	57.6%
0.07	0.07	0.07	0.11	0.11	0.11	0.13	0.14	0.14	9.3%	9.5%	9.7%
26.52	**27.47**	**28.43**	**27.43**	**28.86**	**30.32**	**27.96**	**29.90**	**31.88**	**0.9%**	**1.2%**	**1.5%**
0.14	0.14	0.15	0.22	0.23	0.23	0.26	0.26	0.27	8.7%	8.8%	8.8%
26.66	**27.62**	**28.57**	**27.65**	**29.09**	**30.55**	**28.22**	**30.17**	**32.15**	**0.9%**	**1.2%**	**1.5%**
7.15	7.52	7.88	7.39	7.93	8.46	7.68	8.42	9.17	0.7%	1.2%	1.6%
0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	-0.4%	-0.3%	-0.2%
3.92	4.13	4.34	4.09	4.43	4.77	4.23	4.69	5.16	1.4%	1.9%	2.4%
2.45	2.56	2.67	2.51	2.68	2.86	2.59	2.83	3.10	0.4%	0.9%	1.3%
15.85	16.25	16.66	15.87	16.46	17.04	15.52	16.28	17.07	0.3%	0.6%	0.8%
1.29	1.36	1.43	1.32	1.42	1.53	1.34	1.48	1.64	0.3%	0.8%	1.3%
1.82	1.89	1.96	1.90	2.05	2.17	2.05	2.21	2.37	1.3%	1.7%	2.0%
4.22	4.37	4.53	4.19	4.44	4.68	4.24	4.55	4.88	0.2%	0.5%	0.8%
19.81	20.50	21.25	20.44	21.35	22.31	20.87	22.06	23.10	0.7%	1.0%	1.2%
0.62	0.62	0.63	0.54	0.55	0.55	0.48	0.48	0.49	-2.7%	-2.6%	-2.5%
1.79	1.90	2.03	1.79	1.97	2.19	1.84	2.10	2.45	0.1%	0.7%	1.4%
0.03	0.04	0.04	0.03	0.04	0.05	0.03	0.04	0.05	1.0%	2.5%	3.7%
3.05	3.20	3.35	3.19	3.41	3.64	3.32	3.62	3.94	1.0%	1.4%	1.8%
0.04	0.04	0.04	0.09	0.09	0.09	0.13	0.13	0.14	23.4%	23.7%	23.9%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.9%	56.8%	57.6%
10.99	11.47	11.98	11.56	12.30	13.06	12.26	13.27	14.31	1.0%	1.4%	1.7%
73.11	**75.94**	**78.88**	**75.00**	**79.19**	**83.51**	**76.65**	**82.25**	**87.96**	**0.6%**	**1.0%**	**1.3%**
23.33	24.44	25.42	24.15	25.50	26.67	24.51	25.77	27.00	0.5%	0.7%	0.9%
96.45	**100.38**	**104.30**	**99.15**	**104.69**	**110.18**	**101.15**	**108.02**	**114.96**	**0.6%**	**0.9%**	**1.2%**
0.09	0.13	0.17	0.15	0.19	0.21	0.21	0.24	0.22	4.0%	4.2%	3.9%
0.68	0.83	0.94	0.88	1.00	1.01	0.94	0.90	0.88	0.2%	0.0%	-0.1%
3.41	4.29	5.22	4.24	5.41	6.58	6.08	7.46	8.30	2.9%	3.9%	4.5%
18.81	19.27	19.62	19.36	19.99	20.41	20.00	20.64	21.36	0.8%	0.9%	1.1%
6.93	6.93	6.93	6.52	6.52	6.52	4.63	4.63	4.63	-1.8%	-1.8%	-1.8%
4.11	4.19	4.22	4.25	4.38	4.69	4.65	4.90	5.66	1.3%	1.6%	2.3%
0.29	0.29	0.29	0.32	0.32	0.32	0.26	0.26	0.26	-2.6%	-2.7%	-2.7%
34.32	**35.92**	**37.40**	**35.71**	**37.80**	**39.73**	**36.76**	**39.04**	**41.31**	**0.6%**	**0.9%**	**1.2%**

Table B2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Total Energy Consumption						
Distillate Fuel	6.52	6.71	6.75	6.88	7.14	7.40
Kerosene	0.10	0.09	0.09	0.09	0.09	0.09
Jet Fuel[8]	3.03	3.15	3.27	3.61	3.72	3.83
Liquefied Petroleum Gas	2.28	2.35	2.39	2.37	2.43	2.48
Motor Gasoline[2]	14.33	14.47	14.80	15.38	15.62	15.86
Petrochemical Feedstocks	1.19	1.25	1.25	1.24	1.27	1.31
Residual Fuel	2.49	2.44	2.20	2.21	2.33	2.43
Other Petroleum[12]	3.88	4.09	4.12	4.20	4.28	4.37
Natural Gas	20.80	21.36	21.95	22.10	23.00	24.08
Metallurgical Coal	0.84	0.84	0.81	0.71	0.71	0.71
Steam Coal	18.69	18.79	18.83	19.62	19.93	20.22
Net Coal Coke Imports	0.02	0.02	0.02	0.02	0.03	0.03
Nuclear Power	6.52	6.84	7.02	7.09	7.09	7.09
Renewable Energy[16]	6.40	6.27	6.68	6.92	7.01	7.09
Methanol	0.00	0.00	0.00	0.00	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Imports	0.29	0.46	0.40	0.42	0.42	0.41
Total	**87.38**	**89.14**	**90.60**	**92.86**	**95.07**	**97.42**
Energy Use and Related Statistics						
Delivered Energy Use	65.62	66.99	68.16	70.44	72.03	73.76
Total Energy Use	87.39	89.14	90.60	92.87	95.07	97.43
Population (millions)	258.43	261.03	263.58	271.61	275.62	279.28
Gross Domestic Product (billion 1987 dollars)	5134.47	5343.91	5483.13	5978.24	6181.31	6382.00

Table B2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
7.24	7.65	8.05	7.54	8.11	8.67	7.89	8.66	9.38	0.8%	1.2%	1.6%
0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	-0.4%	-0.3%	-0.2%
3.92	4.13	4.34	4.09	4.43	4.77	4.23	4.69	5.16	1.4%	1.9%	2.4%
2.45	2.56	2.67	2.51	2.68	2.86	2.59	2.83	3.10	0.4%	0.9%	1.3%
15.85	16.25	16.66	15.87	16.46	17.04	15.52	16.28	17.07	0.3%	0.6%	0.8%
1.29	1.36	1.43	1.32	1.42	1.53	1.34	1.48	1.64	0.3%	0.8%	1.3%
2.50	2.72	2.90	2.78	3.05	3.18	2.98	3.11	3.25	0.9%	1.2%	1.4%
4.22	4.37	4.53	4.19	4.44	4.68	4.24	4.55	4.88	0.2%	0.5%	0.8%
23.22	24.79	26.47	24.69	26.76	28.89	26.94	29.52	31.40	1.1%	1.6%	1.9%
0.62	0.62	0.63	0.54	0.55	0.55	0.48	0.48	0.49	-2.7%	-2.6%	-2.5%
20.61	21.17	21.65	21.16	21.96	22.60	21.84	22.75	23.81	0.7%	0.9%	1.1%
0.03	0.04	0.04	0.03	0.04	0.05	0.03	0.04	0.05	1.0%	2.5%	3.7%
6.93	6.93	6.93	6.52	6.52	6.52	4.63	4.63	4.63	-1.8%	-1.8%	-1.8%
7.16	7.38	7.58	7.43	7.78	8.33	7.97	8.52	9.60	1.2%	1.5%	2.1%
0.04	0.04	0.04	0.09	0.09	0.09	0.13	0.13	0.14	23.4%	23.7%	23.9%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.9%	56.8%	57.6%
0.29	0.29	0.29	0.32	0.32	0.32	0.26	0.26	0.26	-2.6%	-2.7%	-2.7%
96.45	**100.38**	**104.30**	**99.15**	**104.69**	**110.18**	**101.15**	**108.02**	**114.96**	**0.6%**	**0.9%**	**1.2%**
73.11	75.94	78.88	75.00	79.19	83.51	76.65	82.25	87.96	0.6%	1.0%	1.3%
96.46	100.39	104.31	99.16	104.70	110.18	101.17	108.03	114.96	0.6%	0.9%	1.2%
279.92	287.12	293.76	288.32	298.92	308.72	297.04	311.19	324.31	0.6%	0.8%	1.0%
6528.61	6901.27	7271.18	6946.49	7523.32	8102.04	7315.83	8113.88	8929.67	1.5%	2.0%	2.5%

[1]Includes wood use for residential heating and cooking. See Table 18 for estimates of nonmarketed renewable energy consumption for geothermal heat pumps and solar thermal hot water heating.
[2]Includes ethanol (blends of 10 percent or less) and ethers blended into gasoline.
[3]Includes commercial sector electricity cogenerated using wood and wood waste, municipal solid waste, and other biomass. See Table 18 for estimates of nonmarketed renewable energy consumption for solar thermal hot water heating.
[4]Fuel consumption includes consumption for cogeneration.
[5]Includes petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.
[6]Includes lease and plant fuel.
[7]Includes consumption of renewable energy from water, wood and wood waste, municipal solid waste, and other biomass.
[8]Includes naphtha and kerosene type.
[9]Includes aviation gas and lubricants.
[10]E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline(nonrenewable).
[11]Only M85 (85 percent methanol).
[12]Includes unfinished oils, natural gasoline, motor gasoline blending compounds, aviation gasoline, lubricants, still gas, asphalt, road oil, petroleum coke, and miscellaneous petroleum products.
[13]Includes electricity generated for sale to electric utilities and for self use from renewable sources, and non-electric energy from renewable sources. Excludes nonmarketed renewable energy consumption from geothermal heat pumps and solar thermal hot water heaters.
[14]Includes consumption of energy by all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[15]Includes hydroelectric, geothermal, wood and wood waste, municipal solid waste, other biomass, wind, photovoltaic and solar thermal sources.
[16]Includes hydroelectric, geothermal, wood and wood waste, municipal solid waste, other biomass, wind, photovoltaic and solar thermal sources. Excludes nonmarketed renewable energy consumption from ground source heat pumps and solar thermal hot water heaters.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding. Figures for 1993 and 1994 may differ from published data due to internal conversion factors. Consumption values of 0.00 are values that round to 0.00, because they are less than 0.005.
Sources: 1993 natural gas lease, plant, and pipeline fuel values: Energy Information Administration (EIA), *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). 1994 natural gas lease, plant, and pipeline fuel values: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). 1994 transportation sector compressed natural gas consumption: EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D. 1993 and 1994 electric utility fuel consumption: EIA, *Electric Power Annual, Volume I*, DOE/EIA-0348(94)/1 (Washington, DC, July 1995). 1993 and 1994 nonutility consumption estimates: EIA Form 867, "Annual Nonutility Power Producer Report." Other 1993 values: EIA, *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, July 1995) and Office of Coal, Nuclear, Electric, and Alternative Fuels estimates. Other 1994 values: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B3. Energy Prices by Sector and Source
(1994 Dollars per Million Btu)

Sector and Source	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Residential	**12.73**	**12.80**	**12.88**	**12.70**	**13.04**	**13.07**
Primary Energy	6.42	6.46	6.36	6.40	6.58	6.59
Petroleum Products	7.92	7.62	8.15	8.72	8.84	9.00
Distillate Fuel	6.69	6.33	6.82	7.33	7.48	7.67
Liquefied Petroleum Gas	10.76	10.44	10.99	11.79	11.87	11.96
Natural Gas	6.07	6.21	5.95	5.87	6.08	6.05
Electricity	24.87	24.67	24.74	23.99	24.49	24.56
Commercial	**13.05**	**13.29**	**13.15**	**12.68**	**13.00**	**13.04**
Primary Energy	4.99	5.10	4.83	4.95	5.13	5.15
Petroleum Products	4.90	4.80	4.90	5.40	5.54	5.70
Distillate Fuel	4.71	4.44	4.65	5.15	5.30	5.49
Residual Fuel	2.88	2.85	2.65	2.94	3.04	3.14
Natural Gas[1]	5.11	5.28	4.91	4.94	5.14	5.12
Electricity	23.24	23.30	23.15	22.00	22.43	22.49
Industrial[2]	**5.02**	**5.01**	**4.70**	**4.84**	**5.02**	**5.10**
Primary Energy	3.29	3.31	3.01	3.26	3.41	3.47
Petroleum Products	4.24	4.50	4.10	4.63	4.77	4.89
Distillate Fuel	4.87	4.59	4.64	5.17	5.33	5.51
Liquefied Petroleum Gas	4.87	6.11	5.84	6.55	6.66	6.70
Residual Fuel	2.44	2.50	2.54	2.82	2.92	3.01
Natural Gas[3]	2.82	2.56	2.30	2.40	2.57	2.60
Metallurgical Coal	1.77	1.76	1.77	1.64	1.63	1.65
Steam Coal	1.45	1.45	1.38	1.27	1.30	1.30
Electricity	14.76	14.75	14.55	14.04	14.33	14.38
Transportation	**7.97**	**7.74**	**8.30**	**8.75**	**9.04**	**9.33**
Primary Energy	7.96	7.74	8.30	8.74	9.03	9.32
Petroleum Products	7.96	7.74	8.30	8.74	9.03	9.32
Distillate Fuel[4]	8.21	8.04	8.27	8.49	8.79	9.03
Jet Fuel[5]	4.38	3.95	4.29	5.13	5.35	5.61
Motor Gasoline[6]	9.11	8.92	9.66	10.17	10.51	10.86
Residual Fuel	2.10	2.02	2.30	2.60	2.69	2.79
Natural Gas[7]	5.52	6.01	6.07	6.34	6.55	6.58
Electricity	14.64	14.80	14.81	15.07	15.24	15.14
Total End-Use Energy	**8.24**	**8.16**	**8.23**	**8.38**	**8.62**	**8.76**
Primary Energy	7.87	7.76	7.86	8.06	8.30	8.46
Electricity	20.89	20.85	20.77	20.02	20.39	20.41
Electric Generators[8]						
Fossil Fuel Average	1.62	1.56	1.50	1.38	1.46	1.49
Petroleum Products	2.83	2.76	3.03	3.15	3.27	3.42
Distillate Fuel	4.23	3.96	4.21	4.82	4.95	5.09
Residual Fuel	2.64	2.62	2.79	2.95	3.04	3.14
Natural Gas	2.55	2.19	2.04	2.02	2.19	2.25
Steam Coal	1.38	1.36	1.32	1.22	1.26	1.24

Table B3. Energy Prices by Sector and Source (Continued)
(1994 Dollars per Million Btu)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
12.85	**13.35**	**13.52**	**12.93**	**13.65**	**14.21**	**13.32**	**14.31**	**15.35**	**0.2%**	**0.5%**	**0.9%**
6.30	6.55	6.63	6.16	6.53	6.94	6.35	6.95	7.75	-0.1%	0.3%	0.9%
9.10	9.28	9.41	9.44	9.63	9.88	9.43	9.77	10.18	1.0%	1.2%	1.4%
7.70	7.89	8.04	8.00	8.19	8.42	8.06	8.35	8.68	1.2%	1.3%	1.5%
12.27	12.46	12.53	12.86	13.03	13.35	12.78	13.26	13.91	1.0%	1.1%	1.4%
5.69	5.96	6.05	5.47	5.89	6.36	5.73	6.39	7.29	-0.4%	0.1%	0.8%
23.82	24.62	24.88	23.54	24.63	25.26	23.38	24.72	25.78	-0.3%	0.0%	0.2%
12.61	**13.15**	**13.34**	**12.49**	**13.21**	**13.82**	**12.64**	**13.66**	**14.73**	**-0.2%**	**0.1%**	**0.5%**
4.89	5.14	5.23	4.79	5.17	5.57	5.01	5.59	6.36	-0.1%	0.4%	1.1%
5.78	5.96	6.11	6.08	6.29	6.51	6.15	6.45	6.78	1.2%	1.4%	1.7%
5.49	5.69	5.84	5.78	5.99	6.22	5.83	6.13	6.46	1.3%	1.5%	1.8%
3.32	3.48	3.62	3.61	3.80	3.96	3.85	4.05	4.30	1.4%	1.7%	2.0%
4.79	5.06	5.14	4.61	5.03	5.48	4.88	5.53	6.41	-0.4%	0.2%	0.9%
21.69	22.49	22.74	21.27	22.27	22.99	20.94	22.29	23.49	-0.5%	-0.2%	0.0%
4.99	**5.25**	**5.38**	**5.07**	**5.42**	**5.77**	**5.11**	**5.64**	**6.25**	**0.1%**	**0.6%**	**1.1%**
3.44	3.63	3.72	3.58	3.84	4.13	3.66	4.08	4.62	0.5%	1.0%	1.6%
5.04	5.18	5.28	5.37	5.52	5.75	5.27	5.61	6.01	0.8%	1.1%	1.4%
5.52	5.72	5.87	5.83	6.04	6.26	5.89	6.18	6.52	1.2%	1.4%	1.7%
7.04	7.13	7.13	7.43	7.50	7.79	7.13	7.59	8.17	0.7%	1.0%	1.4%
3.21	3.35	3.49	3.49	3.66	3.82	3.70	3.92	4.16	1.9%	2.2%	2.5%
2.38	2.64	2.74	2.38	2.76	3.16	2.62	3.20	4.02	0.1%	1.1%	2.2%
1.62	1.66	1.66	1.64	1.66	1.68	1.61	1.64	1.67	-0.4%	-0.3%	-0.3%
1.29	1.33	1.32	1.28	1.33	1.34	1.26	1.31	1.33	-0.7%	-0.5%	-0.4%
13.86	14.37	14.55	13.52	14.14	14.61	13.20	14.07	14.82	-0.5%	-0.2%	0.0%
8.91	**9.35**	**9.68**	**8.95**	**9.47**	**9.92**	**8.74**	**9.37**	**9.93**	**0.6%**	**0.9%**	**1.2%**
8.89	9.33	9.66	8.93	9.45	9.90	8.71	9.34	9.90	0.6%	0.9%	1.2%
8.90	9.33	9.66	8.94	9.46	9.91	8.73	9.36	9.92	0.6%	0.9%	1.2%
8.57	9.00	9.29	8.63	9.12	9.53	8.53	9.21	9.72	0.3%	0.6%	0.9%
5.55	5.88	6.09	5.87	6.17	6.49	5.91	6.36	6.87	1.9%	2.3%	2.7%
10.34	10.87	11.30	10.37	11.04	11.62	10.09	10.86	11.54	0.6%	0.9%	1.2%
2.99	3.12	3.26	3.26	3.44	3.60	3.50	3.72	3.97	2.7%	3.0%	3.3%
6.18	6.51	6.67	5.99	6.47	6.94	6.47	7.15	8.02	0.4%	0.8%	1.4%
15.24	15.56	15.54	15.09	15.51	15.61	14.85	15.43	15.67	0.0%	0.2%	0.3%
8.51	**8.88**	**9.08**	**8.58**	**9.06**	**9.48**	**8.62**	**9.27**	**9.93**	**0.3%**	**0.6%**	**0.9%**
8.19	8.56	8.77	8.25	8.71	9.12	8.22	8.84	9.46	0.3%	0.6%	1.0%
19.81	20.46	20.64	19.54	20.38	20.90	19.38	20.48	21.38	-0.3%	-0.1%	0.1%
1.43	1.54	1.61	1.48	1.63	1.80	1.60	1.83	2.09	0.1%	0.8%	1.4%
3.50	3.68	3.86	3.83	4.04	4.24	4.10	4.38	4.63	1.9%	2.2%	2.5%
5.16	5.32	5.41	5.37	5.57	5.76	5.41	5.70	6.05	1.5%	1.8%	2.0%
3.28	3.43	3.57	3.57	3.75	3.93	3.82	4.03	4.28	1.8%	2.1%	2.4%
1.99	2.26	2.39	2.02	2.44	2.87	2.32	2.95	3.80	0.3%	1.4%	2.7%
1.24	1.28	1.28	1.24	1.26	1.31	1.23	1.28	1.30	-0.5%	-0.3%	-0.2%

Table B3. Energy Prices by Sector and Source (Continued)
(1994 Dollars per Million Btu)

Sector and Source	1993	1994	1995	Projections		
				2000		
				Low Economic Growth	Reference	High Economic Growth
Average Price to All Users[9]						
Petroleum Products	6.88	6.77	7.11	7.63	7.86	8.08
Distillate Fuel[4]	7.11	6.94	7.17	7.55	7.79	8.01
Jet Fuel	4.38	3.95	4.29	5.13	5.35	5.61
Liquefied Petroleum Gas	6.06	6.94	6.84	7.53	7.62	7.65
Motor Gasoline[5]	9.11	8.92	9.64	10.15	10.49	10.83
Residual Fuel	2.42	2.39	2.51	2.76	2.86	2.96
Natural Gas	4.01	3.86	3.56	3.63	3.77	3.75
Coal	1.41	1.39	1.33	1.23	1.26	1.25
Electricity	20.89	20.85	20.77	20.02	20.39	20.41

Table B3. Energy Prices by Sector and Source (Continued)
(1994 Dollars per Million Btu)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
7.86	8.18	8.42	7.98	8.36	8.73	7.80	8.33	8.82	0.7%	1.0%	1.3%
7.76	8.09	8.32	7.91	8.28	8.63	7.86	8.41	8.87	0.6%	0.9%	1.2%
5.55	5.88	6.09	5.87	6.17	6.49	5.91	6.36	6.87	1.9%	2.3%	2.7%
7.96	8.04	8.02	8.42	8.48	8.73	8.24	8.65	9.18	0.8%	1.1%	1.3%
10.33	10.86	11.28	10.36	11.02	11.60	10.08	10.84	11.53	0.6%	0.9%	1.2%
3.13	3.28	3.43	3.41	3.60	3.77	3.65	3.86	4.11	2.0%	2.3%	2.6%
3.50	3.71	3.76	3.38	3.73	4.11	3.56	4.13	4.95	-0.4%	0.3%	1.2%
1.25	1.28	1.28	1.24	1.27	1.31	1.24	1.28	1.31	-0.5%	-0.4%	-0.3%
19.81	20.46	20.64	19.54	20.38	20.90	19.38	20.48	21.38	-0.3%	-0.1%	0.1%

[1]Excludes independent power producers.
[2]Includes cogenerators.
[3]Excludes uses for lease and plant fuel.
[4]Includes Federal and State taxes on diesel fuel and excludes county and local taxes.
[5]Kerosene-type jet fuel.
[6]Sales weighted average price for all grades. Includes Federal and State taxes and excludes county and local taxes.
[7]Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.
[8]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[9]Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.
Btu = British thermal unit.
Note: 1993 and 1994 figures may differ from published data due to internal rounding.

Sources: 1993 prices for gasoline, distillate, and jet fuel are based on prices in the Energy Information Administration (EIA), *Petroleum Marketing Annual 1993*, DOE/EIA-0487(93) (Washington, DC, July 1994). 1994 prices for gasoline, distillate, and jet fuel are based on prices in various 1994 issues of EIA, *Petroleum Marketing Monthly*, DOE/EIA-0380(94/1-12) (Washington, DC, 1994). 1993 and 1994 prices for all other petroleum products are derived from the EIA, *State Energy Price and Expenditure Report 1991*, DOE/EIA-0376(91) (Washington, DC, September 1993). 1993 residential, commercial, and transportation natural gas delivered prices: EIA, *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). 1993 electric generators natural gas delivered prices: Form FERC-423, "Monthly Report of Cost and Quality of Fuels for Electric Plants." 1993 and 1994 industrial gas delivered prices are based on EIA, *Manufacturing Energy Consumption Survey 1991*. 1994 residential and commercial natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). Other 1994 natural gas delivered prices: EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D. Values for 1993 coal prices have been estimated from EIA, *State Price and Expenditure Report 1992*, DOE/EIA-0376(92) (Washington, DC, December 1994) using consumption quantities aggregated from EIA, *State Energy Data Report 1992, Consumption Estimates*, DOE/EIA-0214(92) (Washington, DC, May 1994). Values for 1994 coal prices have been estimated from EIA, *State Price and Expenditure Report 1993*, DOE/EIA-0376(93) (Washington, DC, December 1995) using consumption quantities aggregated from EIA, *State Energy Data Report 1993, Consumption Estimates*, DOE/EIA-0214(93) (Washington, DC, May 1995). 1993 residential electricity prices derived from EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). 1993 and 1994 electricity prices for commercial, industrial, and transportation: EIA, AEO96 National Energy Modeling System, run LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.**Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B4. Residential Sector Key Indicators and Consumption
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Household Characteristics						
Households (millions)						
Single-Family	66.81	67.80	68.60	71.16	72.57	74.06
Multifamily	24.25	24.40	24.56	25.04	25.58	26.16
Mobile Homes	5.57	5.71	5.84	6.03	6.14	6.25
Total	**96.63**	**97.92**	**99.00**	**102.24**	**104.29**	**106.47**
Housing Starts (millions)						
Single-Family	1.13	1.19	1.00	0.74	1.03	1.31
Multifamily	0.16	0.25	0.26	0.23	0.36	0.48
Mobile Homes	0.26	0.31	0.30	0.21	0.23	0.25
Total	**1.55**	**1.75**	**1.56**	**1.18**	**1.61**	**2.04**
Average House Square Footage	**1630**	**1637**	**1643**	**1661**	**1666**	**1670**
Energy Intensity						
Million Btu Consumed per Household						
Delivered Energy Consumption	108.76	106.34	105.05	104.55	103.94	103.74
Electricity Related Losses	78.29	77.91	78.08	76.26	76.34	76.45
Total Energy Consumption	187.06	184.26	183.13	180.81	180.28	180.19
Thousand Btu Consumed per Square Foot						
Delivered Energy Consumption	66.71	64.95	63.95	62.95	62.40	62.11
Electricity Related Losses	48.02	47.59	47.53	45.92	45.83	45.77
Total Energy Consumption	114.74	112.54	111.48	108.87	108.24	107.87
Delivered Energy Consumption by Fuel						
Distillate						
Space Heating	0.81	0.77	0.74	0.74	0.74	0.74
Water Heating	0.10	0.10	0.10	0.09	0.10	0.10
Other Uses[1]	0.00	0.00	0.00	0.00	0.00	0.00
Delivered Energy	**0.91**	**0.87**	**0.84**	**0.84**	**0.84**	**0.84**
Liquefied Petroleum Gas						
Space Heating	0.27	0.27	0.26	0.25	0.25	0.25
Water Heating	0.05	0.05	0.05	0.05	0.05	0.05
Cooking[2]	0.02	0.02	0.02	0.02	0.02	0.02
Other Uses[3]	0.06	0.06	0.06	0.06	0.07	0.07
Delivered Energy	**0.40**	**0.41**	**0.40**	**0.38**	**0.39**	**0.39**
Natural Gas						
Space Heating	3.55	3.46	3.42	3.58	3.62	3.70
Space Cooling	0.00	0.00	0.00	0.00	0.00	0.00
Water Heating	1.27	1.28	1.29	1.28	1.31	1.33
Cooking[2]	0.17	0.18	0.18	0.18	0.19	0.19
Clothes Dryers	0.05	0.05	0.05	0.05	0.05	0.05
Other Uses[3]	0.05	0.05	0.06	0.06	0.06	0.06
Delivered Energy	**5.10**	**5.03**	**5.00**	**5.16**	**5.22**	**5.34**
Electricity						
Space Heating	0.42	0.41	0.40	0.43	0.44	0.45
Space Cooling	0.48	0.48	0.52	0.49	0.50	0.52
Water Heating	0.35	0.36	0.36	0.36	0.37	0.37
Refrigeration	0.47	0.46	0.44	0.38	0.39	0.39
Cooking	0.10	0.10	0.10	0.10	0.10	0.11
Clothes Dryers	0.17	0.17	0.17	0.18	0.18	0.19
Freezers	0.14	0.14	0.13	0.10	0.10	0.10
Lighting	0.31	0.31	0.32	0.32	0.33	0.34
Other Uses[4]	0.95	1.01	1.05	1.26	1.29	1.31
Delivered Energy	**3.39**	**3.43**	**3.49**	**3.63**	**3.70**	3.78

Table B4. Residential Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
74.13	76.80	79.46	77.08	81.00	84.90	79.93	85.27	90.55	0.8%	1.1%	1.4%
25.93	27.05	28.17	27.09	28.77	30.43	28.36	30.67	32.91	0.7%	1.1%	1.4%
6.16	6.37	6.57	6.27	6.58	6.87	6.39	6.80	7.20	0.5%	0.8%	1.1%
106.22	**110.21**	**114.19**	**110.44**	**116.36**	**122.20**	**114.68**	**122.73**	**130.66**	**0.8%**	**1.1%**	**1.4%**
0.84	1.09	1.33	0.79	1.06	1.32	0.79	1.10	1.40	N/A	N/A	N/A
0.30	0.42	0.53	0.36	0.48	0.60	0.36	0.49	0.62	N/A	N/A	N/A
0.21	0.24	0.26	0.21	0.24	0.27	0.21	0.25	0.28	N/A	N/A	N/A
1.36	**1.75**	**2.12**	**1.35**	**1.78**	**2.19**	**1.36**	**1.84**	**2.30**	**N/A**	**N/A**	**N/A**
1676	**1684**	**1691**	**1689**	**1698**	**1707**	**1699**	**1710**	**1721**	**0.2%**	**0.2%**	**0.2%**
102.45	101.65	101.28	101.74	100.64	99.67	101.59	100.05	98.17	-0.2%	-0.3%	-0.4%
77.16	77.33	77.04	78.64	77.98	76.78	79.04	76.62	74.33	0.1%	-0.1%	-0.2%
179.62	178.98	178.32	180.38	178.62	176.45	180.64	176.67	172.50	-0.1%	-0.2%	-0.3%
61.12	60.36	59.88	60.26	59.26	58.38	59.81	58.49	57.04	-0.4%	-0.5%	-0.6%
46.03	45.92	45.55	46.57	45.91	44.97	46.54	44.79	43.19	-0.1%	-0.3%	-0.5%
107.15	106.28	105.44	106.83	105.17	103.34	106.35	103.28	100.22	-0.3%	-0.4%	-0.6%
0.71	0.72	0.72	0.69	0.70	0.71	0.67	0.70	0.71	-0.6%	-0.5%	-0.4%
0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.10	-0.5%	-0.3%	-0.1%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.0%	1.4%	1.7%
0.80	**0.82**	**0.82**	**0.78**	**0.80**	**0.81**	**0.77**	**0.80**	**0.81**	**-0.6%**	**-0.4%**	**-0.3%**
0.22	0.23	0.23	0.20	0.21	0.20	0.19	0.19	0.19	-1.7%	-1.6%	-1.6%
0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.04	-1.0%	-1.0%	-0.9%
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	-0.9%	-0.8%	-0.8%
0.07	0.07	0.07	0.07	0.07	0.08	0.07	0.08	0.08	0.9%	1.2%	1.5%
0.36	**0.36**	**0.37**	**0.34**	**0.34**	**0.35**	**0.32**	**0.33**	**0.34**	**-1.1%**	**-1.0%**	**-0.9%**
3.61	3.70	3.84	3.69	3.82	3.97	3.73	3.88	3.97	0.4%	0.6%	0.7%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	12.9%	14.2%	15.2%
1.28	1.32	1.36	1.29	1.35	1.41	1.31	1.39	1.47	0.1%	0.4%	0.7%
0.19	0.20	0.20	0.19	0.20	0.21	0.20	0.21	0.23	0.5%	0.9%	1.2%
0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.06	-0.1%	0.2%	0.5%
0.06	0.06	0.06	0.06	0.06	0.07	0.06	0.07	0.07	0.7%	1.0%	1.3%
5.19	**5.33**	**5.53**	**5.29**	**5.50**	**5.72**	**5.36**	**5.61**	**5.80**	**0.3%**	**0.5%**	**0.7%**
0.45	0.46	0.48	0.46	0.48	0.50	0.46	0.49	0.52	0.6%	0.9%	1.2%
0.50	0.52	0.54	0.50	0.53	0.56	0.50	0.54	0.57	0.2%	0.5%	0.8%
0.37	0.37	0.38	0.37	0.39	0.40	0.38	0.40	0.42	0.3%	0.5%	0.7%
0.34	0.35	0.36	0.30	0.32	0.33	0.28	0.30	0.32	-2.3%	-2.0%	-1.7%
0.10	0.11	0.11	0.11	0.11	0.12	0.11	0.12	0.13	0.6%	0.9%	1.2%
0.18	0.19	0.20	0.19	0.20	0.21	0.20	0.21	0.22	0.6%	0.9%	1.2%
0.08	0.08	0.08	0.07	0.07	0.08	0.06	0.07	0.07	-3.4%	-3.1%	-2.8%
0.33	0.34	0.36	0.33	0.35	0.37	0.34	0.36	0.39	0.3%	0.7%	1.0%
1.52	1.57	1.63	1.83	1.93	2.02	2.20	2.36	2.51	3.8%	4.1%	4.4%
3.86	**4.00**	**4.15**	**4.16**	**4.37**	**4.59**	**4.53**	**4.84**	**5.15**	**1.3%**	**1.7%**	**2.0%**

Table B4. Residential Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Marketed Renewables						
Wood[5]	0.57	0.55	0.55	0.56	0.57	0.58
Delivered Energy	**0.57**	**0.55**	**0.55**	**0.56**	**0.57**	**0.58**
Other Fuels[6]	**0.13**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**
Delivered Energy Consumption by End-Use						
Space Heating	5.76	5.58	5.49	5.68	5.74	5.85
Space Cooling	0.48	0.48	0.52	0.49	0.51	0.52
Water Heating	1.77	1.79	1.80	1.79	1.82	1.84
Refrigeration	0.47	0.46	0.44	0.38	0.39	0.39
Cooking	0.29	0.30	0.30	0.31	0.32	0.32
Clothes Dryers	0.22	0.23	0.23	0.23	0.23	0.24
Freezers	0.14	0.14	0.13	0.10	0.10	0.10
Lighting	0.31	0.31	0.32	0.32	0.33	0.34
Other Uses[7]	1.07	1.13	1.17	1.39	1.41	1.44
Delivered Energy	**10.51**	**10.41**	**10.40**	**10.69**	**10.84**	**11.05**
Electricity Related Losses by End-Use						
Space Heating	0.95	0.90	0.89	0.93	0.95	0.98
Space Cooling	1.07	1.08	1.16	1.06	1.08	1.11
Water Heating	0.78	0.79	0.79	0.77	0.79	0.80
Refrigeration	1.05	1.02	0.98	0.82	0.83	0.85
Cooking	0.21	0.22	0.22	0.22	0.22	0.23
Clothes Dryers	0.38	0.39	0.39	0.38	0.39	0.40
Freezers	0.31	0.30	0.28	0.20	0.21	0.21
Lighting	0.70	0.70	0.70	0.70	0.71	0.73
Other Uses[7]	2.13	2.24	2.32	2.71	2.77	2.83
Total Electricity Related Losses	**7.57**	**7.63**	**7.73**	**7.80**	**7.96**	**8.14**
Total Energy Consumption by End-Use						
Space Heating	6.70	6.48	6.38	6.62	6.69	6.82
Space Cooling	1.54	1.56	1.68	1.55	1.59	1.63
Water Heating	2.55	2.58	2.58	2.56	2.60	2.64
Refrigeration	1.52	1.48	1.43	1.20	1.22	1.24
Cooking	0.51	0.52	0.52	0.53	0.54	0.55
Clothes Dryers	0.60	0.61	0.61	0.61	0.63	0.64
Freezers	0.46	0.44	0.41	0.30	0.30	0.31
Lighting	1.01	1.01	1.02	1.02	1.04	1.07
Other Uses[7]	3.19	3.36	3.49	4.09	4.18	4.27
Total	**18.08**	**18.04**	**18.13**	**18.49**	**18.80**	**19.19**
Non-Marketed Renewables						
Geothermal[8]	0.01	0.01	0.01	0.01	0.01	0.02
Solar[9]	0.01	0.01	0.01	0.01	0.01	0.01
Total	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**

Table B4. Residential Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
0.56	0.58	0.59	0.57	0.59	0.60	0.57	0.59	0.62	0.1%	0.3%	0.5%
0.56	**0.58**	**0.59**	**0.57**	**0.59**	**0.60**	**0.57**	**0.59**	**0.62**	**0.1%**	**0.3%**	**0.5%**
0.11	**0.11**	**0.11**	**0.11**	**0.11**	**0.11**	**0.10**	**0.10**	**0.11**	**-0.9%**	**-0.8%**	**-0.8%**
5.67	5.80	5.97	5.71	5.90	6.09	5.73	5.96	6.12	0.1%	0.3%	0.4%
0.50	0.52	0.55	0.51	0.53	0.56	0.51	0.54	0.58	0.2%	0.5%	0.8%
1.78	1.83	1.89	1.79	1.87	1.95	1.82	1.93	2.03	0.1%	0.3%	0.6%
0.34	0.35	0.36	0.30	0.32	0.33	0.28	0.30	0.32	-2.3%	-2.0%	-1.7%
0.31	0.33	0.34	0.32	0.34	0.36	0.33	0.35	0.37	0.4%	0.7%	1.0%
0.23	0.24	0.25	0.24	0.25	0.27	0.25	0.26	0.28	0.4%	0.8%	1.1%
0.08	0.08	0.08	0.07	0.07	0.08	0.06	0.07	0.07	-3.4%	-3.1%	-2.8%
0.33	0.34	0.36	0.33	0.35	0.37	0.34	0.36	0.39	0.3%	0.7%	1.0%
1.65	1.71	1.77	1.96	2.07	2.17	2.34	2.51	2.67	3.6%	3.9%	4.2%
10.88	**11.20**	**11.57**	**11.24**	**11.71**	**12.18**	**11.65**	**12.28**	**12.83**	**0.5%**	**0.8%**	**1.0%**
0.95	0.98	1.02	0.96	0.99	1.02	0.93	0.95	0.98	0.1%	0.3%	0.4%
1.06	1.11	1.15	1.05	1.10	1.14	1.00	1.04	1.08	-0.3%	-0.1%	0.0%
0.78	0.80	0.82	0.78	0.80	0.82	0.76	0.77	0.78	-0.2%	-0.1%	0.0%
0.72	0.74	0.76	0.63	0.65	0.68	0.56	0.58	0.60	-2.8%	-2.6%	-2.5%
0.22	0.23	0.24	0.22	0.23	0.24	0.22	0.23	0.24	0.1%	0.2%	0.4%
0.39	0.40	0.42	0.39	0.41	0.43	0.39	0.41	0.42	0.1%	0.3%	0.4%
0.17	0.17	0.18	0.14	0.15	0.15	0.13	0.13	0.14	-3.9%	-3.7%	-3.6%
0.70	0.73	0.76	0.70	0.73	0.76	0.67	0.71	0.73	-0.2%	0.0%	0.2%
3.22	3.35	3.46	3.82	3.99	4.13	4.40	4.58	4.73	3.3%	3.5%	3.6%
8.20	**8.52**	**8.80**	**8.69**	**9.07**	**9.38**	**9.06**	**9.40**	**9.71**	**0.8%**	**1.0%**	**1.2%**
6.62	6.78	6.99	6.67	6.90	7.12	6.65	6.91	7.09	0.1%	0.3%	0.4%
1.56	1.63	1.70	1.55	1.63	1.71	1.51	1.58	1.65	-0.2%	0.1%	0.3%
2.55	2.63	2.70	2.57	2.67	2.77	2.57	2.70	2.81	0.0%	0.2%	0.4%
1.05	1.09	1.12	0.93	0.97	1.01	0.84	0.89	0.92	-2.6%	-2.4%	-2.2%
0.54	0.56	0.58	0.55	0.57	0.60	0.55	0.58	0.61	0.3%	0.5%	0.8%
0.62	0.65	0.67	0.63	0.67	0.69	0.64	0.67	0.71	0.2%	0.5%	0.7%
0.24	0.25	0.26	0.21	0.22	0.23	0.19	0.20	0.21	-3.8%	-3.5%	-3.3%
1.03	1.08	1.12	1.03	1.09	1.14	1.01	1.07	1.12	0.0%	0.3%	0.5%
4.86	5.06	5.23	5.78	6.06	6.31	6.74	7.09	7.40	3.4%	3.6%	3.8%
19.08	**19.73**	**20.36**	**19.92**	**20.78**	**21.56**	**20.71**	**21.68**	**22.54**	**0.7%**	**0.9%**	**1.1%**
0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.03	4.1%	4.8%	5.4%
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-0.3%	-0.3%	-0.3%
0.02	**0.02**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.04**	**2.9%**	**3.5%**	**4.0%**

Btu = British thermal unit.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993: Energy Information Administration (EIA), *State Energy Data Report*, DOE/EIA-0214(93) (Washington, DC, July 1995). 1994: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B5. Commercial Sector Key Indicators and Consumption
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Key Indicators						
Total Floor Space (billion square feet)						
Surviving	67.2	68.2	69.2	72.9	73.7	74.5
New Additions	1.8	1.8	1.9	1.4	1.7	1.9
Total	**69.1**	**70.0**	**71.0**	**74.3**	**75.4**	**76.4**
Energy Consumption Intensity (thousand Btu per square foot)						
Delivered Energy Consumption	98.9	99.3	99.4	98.1	98.0	98.2
Electricity Related Losses	97.3	99.3	99.8	95.6	95.9	96.3
Total Energy Consumption	196.2	198.6	199.2	193.6	193.9	194.5
Delivered Energy Consumption by Fuel						
Electricity						
Space Heating	0.12	0.11	0.11	0.12	0.12	0.12
Space Cooling	0.54	0.53	0.56	0.51	0.51	0.52
Water Heating	0.17	0.17	0.17	0.16	0.16	0.17
Ventilation	0.17	0.17	0.17	0.18	0.18	0.18
Cooking	0.03	0.03	0.03	0.03	0.03	0.03
Lighting	1.16	1.15	1.16	1.19	1.20	1.22
Refrigeration	0.14	0.14	0.14	0.14	0.15	0.15
Office Equipment (PC)	0.06	0.07	0.07	0.09	0.09	0.09
Office Equipment (non-PC)	0.17	0.18	0.18	0.21	0.21	0.21
Other Uses[1]	0.46	0.57	0.59	0.68	0.70	0.71
Delivered Energy	**3.01**	**3.13**	**3.20**	**3.30**	**3.36**	**3.41**
Natural Gas[2]						
Space Heating	1.34	1.26	1.26	1.31	1.32	1.34
Space Cooling	0.02	0.02	0.03	0.03	0.03	0.03
Water Heating	0.48	0.48	0.49	0.49	0.50	0.50
Cooking	0.18	0.18	0.19	0.20	0.21	0.21
Other Uses[3]	0.96	1.07	1.08	1.13	1.15	1.16
Delivered Energy	**2.98**	**3.01**	**3.04**	**3.16**	**3.20**	**3.25**
Distillate						
Space Heating	0.20	0.20	0.19	0.19	0.19	0.20
Water Heating	0.06	0.06	0.05	0.05	0.05	0.05
Other Uses[4]	0.21	0.17	0.17	0.18	0.18	0.18
Delivered Energy	**0.46**	**0.42**	**0.42**	**0.42**	**0.42**	**0.43**
Other Fuels[5]	**0.37**	**0.39**	**0.40**	**0.40**	**0.41**	**0.41**
Marketed Renewable Fuels						
Biomass	0.00	0.00	0.00	0.00	0.00	0.00
Delivered Energy	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Delivered Energy Consumption by End-Use						
Space Heating	1.66	1.57	1.56	1.62	1.64	1.66
Space Cooling	0.56	0.55	0.59	0.53	0.54	0.55
Water Heating	0.71	0.71	0.72	0.70	0.71	0.72
Ventilation	0.17	0.17	0.17	0.18	0.18	0.18
Cooking	0.21	0.21	0.22	0.24	0.24	0.24
Lighting	1.16	1.15	1.16	1.19	1.20	1.22
Refrigeration	0.14	0.14	0.14	0.14	0.15	0.15
Office Equipment (PC)	0.06	0.07	0.07	0.09	0.09	0.09
Office Equipment (non-PC)	0.17	0.18	0.18	0.21	0.21	0.21
Other Uses[6]	2.00	2.20	2.25	2.39	2.43	2.47
Delivered Energy	**6.83**	**6.96**	**7.06**	**7.29**	**7.39**	**7.50**

Table B5. Commercial Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
75.6	77.6	79.5	78.3	81.6	84.7	81.5	86.0	90.5	0.9%	1.1%	1.4%
1.5	1.7	1.9	1.5	1.8	2.0	1.8	2.0	2.3	-0.2%	0.5%	1.2%
77.1	**79.3**	**81.4**	**79.9**	**83.3**	**86.7**	**83.2**	**88.1**	**92.8**	**0.8%**	**1.1%**	**1.4%**
96.9	96.9	97.2	96.1	96.2	96.3	95.5	95.4	95.1	-0.2%	-0.2%	-0.2%
94.5	95.2	95.5	93.8	93.8	93.2	91.4	89.5	87.7	-0.4%	-0.5%	-0.6%
191.4	192.2	192.8	189.9	190.0	189.6	186.8	184.9	182.9	-0.3%	-0.3%	-0.4%
0.12	0.12	0.13	0.12	0.13	0.14	0.13	0.14	0.15	0.7%	1.0%	1.3%
0.49	0.50	0.52	0.48	0.50	0.52	0.47	0.50	0.53	-0.5%	-0.2%	0.0%
0.15	0.15	0.16	0.14	0.14	0.14	0.13	0.13	0.13	-1.5%	-1.4%	-1.2%
0.18	0.19	0.20	0.19	0.20	0.21	0.20	0.21	0.23	0.8%	1.1%	1.4%
0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	-0.7%	-0.5%	-0.3%
1.22	1.25	1.29	1.27	1.32	1.37	1.33	1.40	1.47	0.7%	0.9%	1.2%
0.15	0.15	0.16	0.15	0.16	0.17	0.16	0.18	0.19	0.7%	1.0%	1.3%
0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.12	0.12	2.2%	2.6%	3.0%
0.23	0.24	0.25	0.25	0.27	0.28	0.28	0.30	0.33	2.1%	2.5%	2.9%
0.76	0.80	0.83	0.85	0.91	0.97	0.97	1.05	1.14	2.5%	3.0%	3.3%
3.43	**3.55**	**3.66**	**3.59**	**3.77**	**3.96**	**3.80**	**4.06**	**4.32**	**0.9%**	**1.2%**	**1.5%**
1.31	1.34	1.37	1.32	1.35	1.39	1.30	1.35	1.38	0.2%	0.3%	0.4%
0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.04	1.8%	2.3%	2.8%
0.50	0.52	0.53	0.52	0.54	0.56	0.54	0.57	0.59	0.6%	0.8%	1.0%
0.22	0.22	0.23	0.23	0.24	0.25	0.25	0.26	0.27	1.6%	1.8%	1.9%
1.16	1.20	1.23	1.19	1.24	1.30	1.22	1.30	1.38	0.7%	0.9%	1.2%
3.22	**3.31**	**3.41**	**3.29**	**3.42**	**3.54**	**3.35**	**3.51**	**3.65**	**0.5%**	**0.7%**	**0.9%**
0.18	0.18	0.19	0.16	0.17	0.17	0.15	0.16	0.16	-1.2%	-1.0%	-0.8%
0.05	0.05	0.05	0.04	0.05	0.05	0.04	0.04	0.05	-1.3%	-1.1%	-0.9%
0.18	0.18	0.18	0.18	0.18	0.19	0.18	0.19	0.19	0.2%	0.4%	0.6%
0.40	**0.41**	**0.42**	**0.39**	**0.40**	**0.41**	**0.37**	**0.39**	**0.41**	**-0.6%**	**-0.4%**	**-0.2%**
0.41	**0.42**	**0.43**	**0.41**	**0.42**	**0.44**	**0.41**	**0.43**	**0.45**	**0.2%**	**0.5%**	**0.7%**
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.6%	0.7%	0.8%
0.00	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.6%**	**0.7%**	**0.8%**
1.61	1.65	1.69	1.61	1.66	1.70	1.58	1.64	1.69	0.0%	0.2%	0.3%
0.52	0.54	0.55	0.51	0.53	0.56	0.51	0.54	0.57	-0.4%	-0.1%	0.2%
0.70	0.72	0.74	0.70	0.73	0.75	0.71	0.74	0.77	0.0%	0.2%	0.4%
0.18	0.19	0.20	0.19	0.20	0.21	0.20	0.21	0.23	0.8%	1.1%	1.4%
0.25	0.26	0.26	0.26	0.27	0.28	0.28	0.29	0.30	1.3%	1.5%	1.6%
1.22	1.25	1.29	1.27	1.32	1.37	1.33	1.40	1.47	0.7%	0.9%	1.2%
0.15	0.15	0.16	0.15	0.16	0.17	0.16	0.18	0.19	0.7%	1.0%	1.3%
0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.12	0.12	2.2%	2.6%	3.0%
0.23	0.24	0.25	0.25	0.27	0.28	0.28	0.30	0.33	2.1%	2.5%	2.9%
2.51	2.59	2.68	2.63	2.77	2.90	2.79	2.97	3.16	1.1%	1.4%	1.7%
7.46	**7.68**	**7.92**	**7.68**	**8.02**	**8.35**	**7.94**	**8.40**	**8.83**	**0.6%**	**0.9%**	**1.1%**

Table B5. Commercial Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Electricity Related Losses by End-Use						
Space Heating	0.26	0.25	0.24	0.25	0.26	0.26
Space Cooling	1.19	1.18	1.24	1.09	1.11	1.12
Water Heating	0.39	0.38	0.38	0.35	0.35	0.36
Ventilation	0.38	0.38	0.38	0.38	0.39	0.40
Cooking	0.08	0.07	0.07	0.07	0.07	0.07
Lighting	2.58	2.56	2.57	2.55	2.59	2.64
Refrigeration	0.31	0.31	0.31	0.31	0.32	0.32
Office Equipment (PC)	0.12	0.15	0.16	0.19	0.19	0.19
Office Equipment (non-PC)	0.39	0.40	0.41	0.44	0.45	0.46
Other Uses[6]	1.02	1.27	1.31	1.46	1.50	1.53
Total Electricity Related Losses	**6.72**	**6.95**	**7.08**	**7.10**	**7.23**	**7.36**
Total Energy Consumption by End-Use						
Space Heating	1.92	1.82	1.80	1.88	1.89	1.92
Space Cooling	1.75	1.73	1.83	1.62	1.65	1.67
Water Heating	1.10	1.09	1.10	1.06	1.07	1.08
Ventilation	0.54	0.55	0.55	0.56	0.57	0.58
Cooking	0.29	0.29	0.29	0.30	0.31	0.31
Lighting	3.74	3.72	3.73	3.74	3.80	3.86
Refrigeration	0.45	0.45	0.46	0.46	0.46	0.47
Office Equipment (PC)	0.18	0.22	0.23	0.27	0.28	0.28
Office Equipment (non-PC)	0.56	0.58	0.59	0.65	0.66	0.68
Other Uses[6]	3.02	3.47	3.56	3.85	3.93	4.00
Total	**13.55**	**13.91**	**14.14**	**14.39**	**14.62**	**14.86**
Non-Marketed Renewable Fuels						
Solar[7]	0.01	0.01	0.01	0.02	0.02	0.02
Total	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.02**

Table B5. Commercial Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
0.26	0.27	0.27	0.26	0.27	0.28	0.26	0.26	0.27	0.2%	0.3%	0.5%
1.04	1.08	1.10	1.00	1.04	1.07	0.94	0.98	1.01	-1.1%	-0.9%	-0.7%
0.32	0.32	0.33	0.29	0.29	0.29	0.25	0.25	0.25	-2.0%	-2.0%	-1.9%
0.39	0.41	0.42	0.40	0.42	0.43	0.40	0.42	0.43	0.3%	0.5%	0.6%
0.06	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06	-1.2%	-1.1%	-1.0%
2.59	2.67	2.74	2.64	2.73	2.80	2.66	2.72	2.77	0.2%	0.3%	0.4%
0.32	0.33	0.34	0.32	0.34	0.35	0.33	0.34	0.35	0.2%	0.4%	0.5%
0.21	0.21	0.22	0.21	0.22	0.23	0.21	0.22	0.23	1.7%	2.0%	2.2%
0.48	0.51	0.52	0.53	0.55	0.58	0.56	0.59	0.61	1.6%	1.9%	2.1%
1.62	1.70	1.77	1.79	1.89	1.98	1.94	2.05	2.15	2.0%	2.3%	2.5%
7.29	**7.55**	**7.78**	**7.49**	**7.82**	**8.08**	**7.60**	**7.88**	**8.14**	**0.4%**	**0.6%**	**0.8%**
1.87	1.91	1.96	1.87	1.93	1.98	1.84	1.91	1.96	0.1%	0.2%	0.4%
1.56	1.61	1.66	1.50	1.57	1.63	1.45	1.52	1.58	-0.8%	-0.6%	-0.4%
1.02	1.04	1.07	0.99	1.02	1.05	0.96	0.99	1.02	-0.6%	-0.4%	-0.3%
0.58	0.60	0.61	0.59	0.62	0.64	0.60	0.63	0.66	0.5%	0.7%	0.9%
0.31	0.32	0.33	0.33	0.34	0.35	0.34	0.35	0.36	0.7%	0.9%	1.1%
3.81	3.92	4.03	3.91	4.05	4.18	3.99	4.12	4.24	0.3%	0.5%	0.6%
0.46	0.48	0.49	0.48	0.50	0.52	0.49	0.52	0.54	0.4%	0.6%	0.8%
0.30	0.31	0.33	0.31	0.33	0.35	0.32	0.34	0.36	1.9%	2.2%	2.5%
0.71	0.74	0.77	0.78	0.82	0.86	0.84	0.89	0.94	1.8%	2.1%	2.3%
4.13	4.30	4.45	4.42	4.66	4.88	4.72	5.02	5.31	1.5%	1.8%	2.0%
14.75	**15.24**	**15.69**	**15.17**	**15.84**	**16.43**	**15.55**	**16.28**	**16.97**	**0.5%**	**0.8%**	**1.0%**
0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	5.7%	5.7%	5.7%
0.03	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.04**	**0.04**	**0.04**	**5.7%**	**5.7%**	**5.7%**

[1]Includes miscellaneous uses such as service station equipment, district services, automated teller machines, telecommunications equipment, and medical equipment.
[2]Excludes estimated consumption from independent power producers.
[3]Includes miscellaneous uses such as district services, pumps, lighting, emergency electric generators, and manufacturing performed in commercial buildings.
[4]Includes miscellaneous uses such as cooking, district services, and emergency electric generators.
[5]Includes residual fuel oil, liquefied petroleum gas, coal, motor gasoline, and kerosene.
[6]Includes miscellaneous uses such as service station equipment, district services, automated teller machines, telecommunications equipment, medical equipment, pumps, lighting, emergency electric generators, manufacturing performed in commercial buildings, and cooking (distillate) plus residual fuel oil, liquefied petroleum gas, coal, motor gasoline, and kerosene.
[7]Includes primary energy displaced by solar thermal water heaters.
Btu = British thermal unit.
PC = Personal computer.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993: Energy Information Administration (EIA), *State Energy Data Report*, DOE/EIA-0214(93) (Washington, DC, July 1995). 1994: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B6. Industrial Sector Key Indicators and Consumption
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Key Indicators						
Value of Gross Output (billion 1987 dollars)						
Manufacturing	2596	2784	2829	3014	3127	3233
Nonmanufacturing	888	934	952	962	1030	1098
Total	**3484**	**3718**	**3782**	**3976**	**4157**	**4331**
Energy Prices (1994 dollars per million Btu)						
Electricity	14.76	14.75	14.55	14.04	14.33	14.38
Natural Gas	2.82	2.56	2.30	2.40	2.57	2.60
Steam Coal	1.45	1.45	1.38	1.27	1.30	1.30
Residual Oil	2.44	2.50	2.54	2.82	2.92	3.01
Distillate Oil	4.87	4.59	4.64	5.17	5.33	5.51
Liquefied Petroleum Gas	4.87	6.11	5.84	6.55	6.66	6.70
Motor Gasoline	9.09	8.91	8.24	9.02	9.26	9.55
Metallurgical Coal	1.77	1.76	1.77	1.64	1.63	1.65
Energy Consumption						
Consumption[1] (quadrillion Btu per year)						
Purchased Electricity	3.33	3.39	3.43	3.47	3.61	3.75
Natural Gas[2]	9.07	9.34	9.76	10.24	10.49	10.78
Steam Coal	1.66	1.69	1.67	1.67	1.73	1.80
Metallurgical Coal and Coke[3]	0.86	0.86	0.84	0.73	0.74	0.75
Residual Fuel	0.45	0.47	0.47	0.46	0.48	0.49
Distillate	1.10	1.15	1.16	1.16	1.21	1.27
Liquefied Petroleum Gas	1.79	1.87	1.92	1.91	1.97	2.02
Petrochemical Feedstocks	1.19	1.25	1.25	1.24	1.27	1.31
Other Petroleum[4]	3.87	4.09	4.11	4.19	4.27	4.38
Renewables[5]	2.08	2.16	2.19	2.28	2.36	2.45
Delivered Energy	**25.42**	**26.27**	**26.80**	**27.35**	**28.15**	**29.00**
Electricity Related Losses	7.43	7.53	7.58	7.46	7.78	8.09
Total	**32.85**	**33.80**	**34.38**	**34.80**	**35.93**	**37.09**
Consumption per Unit of Output[1] (thousand Btu per 1987 dollars)						
Purchased Electricity	0.96	0.91	0.91	0.87	0.87	0.87
Natural Gas[2]	2.60	2.51	2.58	2.57	2.52	2.49
Steam Coal	0.48	0.45	0.44	0.42	0.42	0.42
Metallurgical Coal and Coke[3]	0.25	0.23	0.22	0.18	0.18	0.17
Residual Fuel	0.13	0.13	0.12	0.12	0.11	0.11
Distillate	0.32	0.31	0.31	0.29	0.29	0.29
Liquefied Petroleum Gas	0.52	0.50	0.51	0.48	0.47	0.47
Petrochemical Feedstocks	0.34	0.34	0.33	0.31	0.31	0.30
Other Petroleum[4]	1.11	1.10	1.09	1.05	1.03	1.01
Renewables[5]	0.60	0.58	0.58	0.57	0.57	0.56
Delivered Energy	**7.30**	**7.07**	**7.09**	**6.88**	**6.77**	**6.70**
Electricity Related Losses	2.13	2.02	2.00	1.88	1.87	1.87
Total	**9.43**	**9.09**	**9.09**	**8.75**	**8.64**	**8.56**

Table B6. Industrial Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
3308	3508	3710	3502	3811	4129	3694	4120	4568	1.4%	1.9%	2.4%
1012	1099	1186	1037	1155	1276	1072	1226	1385	0.7%	1.3%	1.9%
4320	**4607**	**4896**	**4539**	**4966**	**5405**	**4766**	**5346**	**5953**	**1.2%**	**1.7%**	**2.3%**
13.86	14.37	14.55	13.52	14.14	14.61	13.20	14.07	14.82	-0.5%	-0.2%	0.0%
2.38	2.64	2.74	2.38	2.76	3.16	2.62	3.20	4.02	0.1%	1.1%	2.2%
1.29	1.33	1.32	1.28	1.33	1.34	1.26	1.31	1.33	-0.7%	-0.5%	-0.4%
3.21	3.35	3.49	3.49	3.66	3.82	3.70	3.92	4.16	1.9%	2.2%	2.5%
5.52	5.72	5.87	5.83	6.04	6.26	5.89	6.18	6.52	1.2%	1.4%	1.7%
7.04	7.13	7.13	7.43	7.50	7.79	7.13	7.59	8.17	0.7%	1.0%	1.4%
9.44	9.79	10.14	9.66	10.12	10.59	9.55	10.09	10.62	0.3%	0.6%	0.8%
1.62	1.66	1.66	1.64	1.66	1.68	1.61	1.64	1.67	-0.4%	-0.3%	-0.3%
3.63	3.86	4.10	3.71	4.04	4.39	3.79	4.23	4.71	0.5%	1.1%	1.6%
10.71	11.12	11.55	11.03	11.55	12.12	11.14	11.86	12.51	0.8%	1.1%	1.4%
1.65	1.76	1.89	1.65	1.83	2.05	1.71	1.96	2.31	0.1%	0.7%	1.5%
0.65	0.66	0.67	0.57	0.59	0.60	0.50	0.52	0.54	-2.5%	-2.4%	-2.2%
0.46	0.49	0.51	0.43	0.49	0.54	0.46	0.52	0.57	-0.1%	0.4%	0.9%
1.20	1.28	1.37	1.22	1.34	1.46	1.24	1.40	1.56	0.4%	0.9%	1.5%
2.00	2.11	2.21	2.04	2.19	2.37	2.07	2.30	2.55	0.5%	1.0%	1.5%
1.29	1.36	1.43	1.32	1.42	1.53	1.34	1.48	1.64	0.3%	0.8%	1.3%
4.22	4.38	4.54	4.18	4.44	4.68	4.24	4.55	4.89	0.2%	0.5%	0.9%
2.43	2.56	2.70	2.51	2.71	2.92	2.60	2.86	3.15	0.9%	1.3%	1.8%
28.25	**29.58**	**30.97**	**28.66**	**30.60**	**32.66**	**29.09**	**31.68**	**34.42**	**0.5%**	**0.9%**	**1.3%**
7.71	8.22	8.70	7.75	8.38	8.97	7.58	8.22	8.88	0.0%	0.4%	0.8%
35.96	**37.81**	**39.67**	**36.41**	**38.98**	**41.64**	**36.67**	**39.89**	**43.30**	**0.4%**	**0.8%**	**1.2%**
0.84	0.84	0.84	0.82	0.81	0.81	0.80	0.79	0.79	-0.6%	-0.7%	-0.7%
2.48	2.41	2.36	2.43	2.33	2.24	2.34	2.22	2.10	-0.3%	-0.6%	-0.8%
0.38	0.38	0.39	0.36	0.37	0.38	0.36	0.37	0.39	-1.1%	-1.0%	-0.7%
0.15	0.14	0.14	0.13	0.12	0.11	0.11	0.10	0.09	-3.7%	-4.1%	-4.4%
0.11	0.11	0.11	0.09	0.10	0.10	0.10	0.10	0.10	-1.3%	-1.3%	-1.4%
0.28	0.28	0.28	0.27	0.27	0.27	0.26	0.26	0.26	-0.8%	-0.8%	-0.8%
0.46	0.46	0.45	0.45	0.44	0.44	0.43	0.43	0.43	-0.7%	-0.8%	-0.8%
0.30	0.29	0.29	0.29	0.29	0.28	0.28	0.28	0.28	-0.8%	-0.9%	-0.9%
0.98	0.95	0.93	0.92	0.89	0.87	0.89	0.85	0.82	-1.0%	-1.2%	-1.4%
0.56	0.56	0.55	0.55	0.55	0.54	0.55	0.54	0.53	-0.3%	-0.4%	-0.4%
6.54	**6.42**	**6.33**	**6.31**	**6.16**	**6.04**	**6.10**	**5.93**	**5.78**	**-0.7%**	**-0.8%**	**-1.0%**
1.79	1.79	1.78	1.71	1.69	1.66	1.59	1.54	1.49	-1.1%	-1.3%	-1.4%
8.32	**8.21**	**8.10**	**8.02**	**7.85**	**7.70**	**7.69**	**7.46**	**7.27**	**-0.8%**	**-0.9%**	**-1.1%**

Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993 prices for gasoline and distillate are based on prices in the Energy Information Administration (EIA), *Petroleum Marketing Annual 1993*, DOE/EIA-0487(93) (Washington, DC, July 1994). 1994 prices for gasoline and distillate are based on prices in various issues of EIA, *Petroleum Marketing Monthly*, DOE/EIA-0380(94/1-12) (Washington, DC, 1994). 1993 and 1994 coal prices: EIA, *Monthly Energy Review*, DOE/EIA-0035(95/08) (Washington, DC, August 1995). 1993 and 1994 natural gas and electricity prices: EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D. Other 1993 values and 1994 prices derived from EIA, *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, July 1995). Other 1994 values: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B7. Transportation Sector Key Indicators and Delivered Energy Consumption

Key Indicators and Consumption	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Key Indicators						
Level of Travel (billions)						
Light-Duty Vehicles (vehicle miles traveled)	2054	2068	2099	2232	2263	2294
Freight Trucks (vehicle miles traveled)	330	347	355	374	392	411
Air (seat miles available)	794	875	1013	1205	1246	1289
Rail (ton miles traveled)	1086	1137	1148	1155	1196	1238
Marine (ton miles traveled)	799	817	823	813	844	875
Energy Efficiency Indicators						
New Car (miles per gallon)[1]	28.2	28.0	27.5	28.1	28.1	28.1
New Light Truck (miles per gallon)[1]	20.8	20.6	20.2	20.7	20.7	20.7
Light-Duty Fleet (miles per gallon)[2]	19.3	19.4	19.2	19.6	19.6	19.7
Aircraft Efficiency (seat miles per gallon)	49.7	50.3	50.8	53.2	53.3	53.4
Freight Truck Efficiency (miles per gallon)	8.5	8.5	8.7	8.8	8.9	8.9
Rail Efficiency (ton miles per thousand Btu)	2.9	2.9	2.9	3.0	3.0	3.0
Domestic Shipping Efficiency (ton miles per thousand Btu)	2.6	2.6	2.6	2.6	2.6	2.6
Energy Use by Mode (quadrillion Btu per year)						
Light-Duty Vehicles[3]	13.27	13.34	13.68	14.27	14.47	14.67
Freight Trucks[3]	5.32	5.60	5.63	5.82	6.06	6.31
Air	3.07	3.20	3.31	3.65	3.76	3.87
Rail	0.40	0.42	0.42	0.42	0.43	0.45
Marine	1.43	1.44	1.49	1.61	1.64	1.67
Pipeline Fuel	0.64	0.66	0.68	0.66	0.67	0.69
Other[4]	0.16	0.16	0.16	0.17	0.18	0.18
Total[5]	**22.87**	**23.34**	**23.90**	**25.11**	**25.66**	**26.22**

Table B7. Transportation Sector Key Indicators and Delivered Energy Consumption (Continued)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
2396	2457	2517	2533	2629	2722	2641	2774	2906	1.2%	1.4%	1.6%
402	428	455	419	458	497	437	489	544	1.1%	1.6%	2.2%
1379	1463	1549	1512	1652	1795	1634	1833	2040	3.0%	3.6%	4.1%
1204	1276	1349	1242	1345	1453	1291	1425	1565	0.6%	1.1%	1.5%
837	889	940	861	933	1008	899	989	1082	0.5%	0.9%	1.4%
30.4	30.5	30.5	31.7	31.9	31.9	32.9	33.1	33.0	0.8%	0.8%	0.8%
21.8	21.9	21.9	23.7	23.8	23.8	25.0	25.1	25.1	0.9%	1.0%	1.0%
20.1	20.2	20.2	20.8	20.8	20.9	21.7	21.8	21.9	0.5%	0.6%	0.6%
55.5	55.7	55.9	57.8	58.1	58.4	60.1	60.5	60.9	0.8%	0.9%	0.9%
9.0	9.0	9.1	9.1	9.2	9.2	9.1	9.3	9.4	0.3%	0.4%	0.4%
3.0	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.1	0.3%	0.3%	0.3%
2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	0.0%	0.0%	0.0%
14.90	15.26	15.61	15.25	15.78	16.31	15.22	15.92	16.65	0.6%	0.8%	1.1%
6.18	6.52	6.88	6.38	6.88	7.40	6.61	7.29	8.00	0.8%	1.3%	1.7%
3.96	4.17	4.39	4.15	4.48	4.83	4.29	4.75	5.22	1.4%	1.9%	2.4%
0.43	0.45	0.48	0.44	0.47	0.51	0.45	0.49	0.53	0.3%	0.8%	1.2%
1.76	1.82	1.88	1.90	2.00	2.10	2.04	2.18	2.31	1.7%	2.0%	2.3%
0.67	0.71	0.74	0.72	0.76	0.82	0.80	0.86	0.91	0.9%	1.3%	1.6%
0.18	0.19	0.19	0.18	0.19	0.21	0.18	0.20	0.22	0.6%	1.2%	1.6%
26.52	**27.47**	**28.43**	**27.43**	**28.86**	**30.32**	**27.96**	**29.90**	**31.88**	**0.9%**	**1.2%**	**1.5%**

[1]Environmental Protection Agency rated miles per gallon.
[2]Combined car and light truck "on-the-road" estimate.
[3]Includes light-duty trucks used for freight.
[4]Includes lubricants and aviation gasoline.
[5]Total will not equal sum of components due to light-duty freight trucks included in both light-duty vehicle and freight truck consumption.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding.

Sources: 1993 pipeline fuel consumption: Energy Information Administration (EIA), *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). Other 1993 values: Federal Highway Administration, *Highway Statistics 1993* (Washington, DC, 1993); Oak Ridge National Laboratory, *Transportation Energy Data Book: 12, 13, 14, and 15*, (Oak Ridge, TN, May 1995); Federal Aviation Administration (FAA), *FAA Aviation Forecasts Fiscal Years 1993-2004*; National Highway Traffic and Safety Administration, *Summary of Fuel Economy Performance*, (Washington, DC, February 1994); EIA, *Residential Transportation Energy Consumption Survey 1991*, DOE/EIA-0464(91) (Washington, DC, December 1993); Argonne National Laboratory, FRATE Model 1990; and EIA, *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, July 1995). 1994 pipeline fuel consumption: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). Other 1994 values: FAA, *FAA Aviation Forecasts Fiscal Years 1993-2004*, (Washington, DC, February 1994); EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995); EIA, *Fuel Oil and Kerosene Sales 1993*, DOE/EIA-0535(92) (Washington, DC, September 1994); and United States Department of Defense, Defense Fuel Supply Center. **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B8. Electricity Supply, Disposition, and Prices
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Generation by Fuel Type						
Electric Utilities						
Coal	1639	1635	1654	1753	1778	1797
Petroleum	100	91	66	55	63	71
Natural Gas	259	291	312	251	299	339
Nuclear Power	610	640	658	664	664	664
Pumped Storage	-2	-3	-3	-3	-3	-3
Renewable Sources[1]	277	256	290	294	294	294
Total	**2883**	**2911**	**2977**	**3013**	**3095**	**3162**
Nonutilities (excluding cogenerators)[2]						
Coal	10	12	13	17	15	**17**
Petroleum	1	2	3	3	3	4
Natural Gas	13	12	15	26	28	45
Renewable Sources[1]	49	52	56	67	67	68
Total	**73**	**78**	**86**	**112**	**114**	**133**
Sales to Utilities	47	51	59	84	86	105
Generation for Own Use	26	27	27	28	28	28
Cogenerators[3]						
Coal	43	47	43	48	48	48
Petroleum	7	7	5	5	5	5
Natural Gas	154	171	176	189	191	192
Other Gaseous Fuels[4]	15	14	17	17	17	17
Renewable Sources[1]	38	40	40	42	43	43
Other[5]	3	3	3	3	3	3
Total	**259**	**282**	**284**	**304**	**307**	**309**
Sales to Utilities	137	153	148	163	163	164
Generation for Own Use	123	129	136	142	144	145
Net Imports	**28**	**45**	**39**	**40**	**40**	**40**
Electricity Sales by Sector						
Residential	995	1006	1024	1063	1084	1107
Commercial	884	917	939	968	984	1001
Industrial	977	992	1004	1017	1059	1100
Transportation	6	6	6	9	9	9
Total	**2861**	**2921**	**2973**	**3058**	**3137**	**3217**
End-Use Prices (1994 cents per kilowatthour)[6]						
Residential	8.5	8.4	8.4	8.2	8.4	8.4
Commercial	7.9	7.9	7.9	7.5	7.7	7.7
Industrial	5.0	5.0	5.0	4.8	4.9	4.9
Transportation	5.0	5.0	5.1	5.1	5.2	5.2
All Sectors Average	**7.1**	**7.1**	**7.1**	**6.8**	**7.0**	**7.0**
Price Components (1994 cents per kwh)						
Capital Component	2.7	2.8	2.7	2.6	2.6	2.6
Fuel Component	1.2	1.2	1.2	1.0	1.1	1.1
Operation and Maintenance Component	2.8	2.8	2.8	2.8	2.8	2.8
Wholesale Power Cost	0.4	0.4	0.4	0.4	0.4	0.4
Total	**7.1**	**7.1**	**7.1**	**6.8**	**7.0**	**7.0**

[1]Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, other biomass, solar and wind power.
[2]Includes generation at all nonutilities except for cogenerators. Includes small power producers, exempt wholesale generators, and generators at industrial and commercial facilities which provide electricity for on-site use and for sales to utilities.
[3]Includes cogeneration at facilities whose primary function is not electricity production. Includes sales to utilities and generation for own use.
[4]Other gaseous fuels include refinery and still gas.
[5]Other includes hydrogen, sulfur, batteries, chemicals, fish oil, and spent sulfite liquor.
[6]Prices represent average revenue per kilowatthour.

Table B8. Electricity Supply, Disposition, and Prices (Continued)
(Billion Kilowatthours, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
1867	1909	1943	1938	1995	2031	1995	2054	2102	1.0%	1.1%	1.2%
72	89	101	96	111	110	104	104	99	0.6%	0.6%	0.4%
293	363	412	356	446	483	511	590	582	2.7%	3.4%	3.4%
649	649	649	610	610	610	434	434	434	-1.8%	-1.8%	-1.8%
-3	-3	-3	-3	-3	-3	-3	-3	-3	0.3%	0.3%	0.3%
296	297	297	298	299	303	307	308	319	0.9%	0.9%	1.1%
3174	**3304**	**3400**	**3296**	**3458**	**3535**	**3348**	**3487**	**3532**	**0.7%**	**0.9%**	**0.9%**
17	17	19	24	23	27	30	37	71	4.5%	5.5%	8.8%
3	5	9	5	7	11	10	9	12	9.2%	8.5%	10.1%
34	51	103	59	117	247	187	332	520	13.9%	17.1%	19.6%
71	73	74	76	82	100	91	110	163	2.7%	3.7%	5.6%
124	**145**	**205**	**164**	**229**	**386**	**318**	**489**	**765**	**6.9%**	**9.2%**	**11.5%**
96	117	177	136	200	358	290	461	737	8.6%	11.1%	13.6%
28	28	28	28	28	28	28	28	28	0.2%	0.2%	0.2%
50	51	52	51	53	54	52	55	57	0.5%	0.7%	0.9%
5	6	6	6	6	6	6	6	6	-1.1%	-0.9%	-0.7%
201	206	210	212	220	227	221	231	241	1.2%	1.5%	1.7%
17	17	17	17	17	17	17	17	17	0.8%	0.8%	0.8%
46	47	49	48	50	53	50	54	58	1.1%	1.4%	1.8%
3	3	4	4	4	4	4	4	4	0.5%	1.0%	1.4%
322	**329**	**336**	**337**	**349**	**361**	**349**	**366**	**383**	**1.0%**	**1.2%**	**1.5%**
166	168	170	169	172	175	172	176	181	0.6%	0.7%	0.8%
156	161	166	168	177	186	177	190	203	1.5%	1.8%	2.2%
28	**28**	**28**	**31**	**30**	**30**	**25**	**25**	**25**	**-2.6%**	**-2.7%**	**-2.7%**
1131	1172	1215	1219	1282	1346	1329	1419	1509	1.3%	1.7%	2.0%
1005	1039	1074	1052	1105	1160	1115	1189	1265	0.9%	1.2%	1.5%
1064	1131	1201	1087	1184	1288	1111	1240	1379	0.5%	1.1%	1.6%
19	20	20	31	32	33	38	40	41	9.3%	9.5%	9.7%
3220	**3363**	**3510**	**3389**	**3604**	**3827**	**3593**	**3889**	**4195**	**1.0%**	**1.4%**	**1.7%**
8.1	8.4	8.5	8.0	8.4	8.6	8.0	8.4	8.8	-0.3%	0.0%	0.2%
7.4	7.7	7.8	7.3	7.6	7.8	7.1	7.6	8.0	-0.5%	-0.2%	0.0%
4.7	4.9	5.0	4.6	4.8	5.0	4.5	4.8	5.1	-0.5%	-0.2%	0.0%
5.2	5.3	5.3	5.1	5.3	5.3	5.1	5.3	5.3	0.0%	0.2%	0.3%
6.8	**7.0**	**7.0**	**6.7**	**7.0**	**7.1**	**6.6**	**7.0**	**7.3**	**-0.3%**	**-0.1%**	**0.1%**
2.4	2.5	2.5	2.3	2.4	2.5	2.3	2.4	2.5	-0.9%	-0.6%	-0.5%
1.1	1.2	1.2	1.1	1.2	1.2	1.2	1.2	1.2	-0.1%	0.1%	0.1%
2.9	2.8	2.8	2.9	2.8	2.8	2.7	2.7	2.7	-0.2%	-0.2%	-0.2%
0.4	0.4	0.5	0.4	0.5	0.6	0.5	0.6	0.9	1.1%	2.5%	4.2%
6.8	**7.0**	**7.0**	**6.7**	**7.0**	**7.1**	**6.6**	**7.0**	**7.3**	**-0.3%**	**-0.1%**	**0.1%**

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

Sources: 1993 and 1994 commercial and transportation sales: Total transportation plus commercial sales come from Energy Information Administration (EIA), *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, August 1995), but individual sectors do not match because sales taken from commercial and placed in transportation, according to Oak Ridge National Laboratories, *Transportation Energy Data Book 15* (May 1995) which indicates the transportation value should be higher. 1993 and 1994 generation by electric utilities, nonutilities, and cogenerators, net electricity imports, residential sales, and industrial sales: EIA, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995). 1993 residential electric prices derived from EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **1993 and 1994 electricity prices for commercial, industrial, and transportation; price components; and projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B9. Electricity Generating Capability
(Thousand Megawatts)

Net Summer Capability[1]	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Electric Utilities						
Capability						
Coal Steam	302.4	301.9	303.0	297.9	298.0	298.1
Other Fossil Steam[2]	141.0	140.0	138.3	128.0	128.0	128.0
Combined Cycle	11.4	11.5	12.7	18.4	19.2	19.0
Combustion Turbine/Diesel	50.8	51.0	54.3	75.0	75.9	79.7
Nuclear Power	99.1	99.1	99.2	100.3	100.3	100.3
Pumped Storage	19.0	19.0	19.9	19.9	19.9	19.9
Fuel Cells	0.0	0.0	0.0	0.0	0.3	0.8
Renewable Sources[3]	77.2	77.2	77.5	78.5	78.5	78.5
Total	**700.9**	**699.8**	**704.8**	**718.0**	**720.1**	**724.3**
Cumulative Planned Additions[4]						
Coal Steam	0.0	0.1	1.2	4.1	4.1	4.1
Other Fossil Steam[2]	0.0	0.0	0.0	0.4	0.4	0.4
Combined Cycle	0.0	0.1	1.4	6.1	6.1	6.1
Combustion Turbine/Diesel	0.0	0.3	3.5	15.9	15.9	15.9
Nuclear Power	0.0	0.0	0.0	1.2	1.2	1.2
Pumped Storage	0.3	0.3	1.1	1.1	1.1	1.1
Fuel Cells	0.0	0.0	0.0	0.0	0.0	0.0
Renewable Sources[3]	0.0	0.0	0.2	0.8	0.8	0.8
Total	**0.3**	**0.8**	**7.5**	**29.6**	**29.6**	**29.6**
Cumulative Unplanned Additions[4]						
Coal Steam	0.0	0.0	0.0	0.2	0.3	0.5
Other Fossil Steam[2]	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	0.0	0.0	0.8	1.6	1.5
Combustion Turbine/Diesel	0.0	0.0	0.0	8.5	9.4	13.2
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.0	0.0	0.3	0.8
Renewable Sources[3]	0.0	0.0	0.0	0.1	0.1	0.1
Total	**0.0**	**0.0**	**0.0**	**9.6**	**11.7**	**15.9**
Cumulative Total Additions	**0.3**	**0.8**	**7.5**	**39.2**	**41.3**	**45.5**
Cumulative Retirements[5]	**8.5**	**10.1**	**11.9**	**30.9**	**30.9**	**30.9**
Nonutilities (excludes cogenerators)[6,7]						
Capability						
Coal Steam	2.4	2.4	2.6	3.4	3.2	3.5
Other Fossil Steam[2]	1.0	1.0	1.1	1.1	1.1	1.1
Combined Cycle	2.0	2.0	2.0	3.0	4.2	4.1
Combustion Turbine/Diesel	1.9	1.9	1.9	10.7	11.6	14.6
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.0	0.2	0.1	0.1
Renewable Sources[3]	10.8	10.9	11.7	14.2	14.3	14.4
Total	**18.1**	**18.2**	**19.4**	**32.6**	**34.5**	37.8

Table B9. Electricity Generating Capability (Continued)
(Thousand Megawatts)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
301.7	302.1	304.2	307.8	308.8	310.9	308.9	312.6	319.0	0.1%	0.2%	0.3%
121.8	121.8	121.8	118.2	118.2	118.2	113.5	113.5	113.5	-1.0%	-1.0%	-1.0%
25.8	27.1	28.6	28.1	33.4	41.9	46.2	56.4	68.1	6.9%	7.9%	8.8%
86.8	90.4	98.0	95.8	103.4	109.6	106.0	115.8	118.6	3.5%	4.0%	4.1%
99.7	99.7	99.7	93.3	93.3	93.3	63.6	63.6	63.6	-2.1%	-2.1%	-2.1%
19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	0.2%	0.2%	0.2%
0.1	0.5	0.9	0.4	0.6	1.7	0.9	1.4	2.5	44.7%	47.3%	51.5%
78.9	79.0	79.2	79.5	79.6	80.7	81.8	82.0	84.5	0.3%	0.3%	0.4%
734.6	**740.5**	**752.2**	**742.9**	**757.2**	**776.2**	**740.8**	**765.0**	**789.6**	**0.3%**	**0.4%**	**0.6%**
9.1	9.1	9.1	14.8	14.8	14.8	16.5	16.5	16.5	29.7%	29.7%	29.7%
0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	N/A	N/A	N/A
13.4	13.4	13.4	13.6	13.6	13.6	13.6	13.6	13.6	24.5%	24.5%	24.5%
27.6	27.6	27.6	28.5	28.5	28.5	28.5	28.5	28.5	24.5%	24.5%	24.5%
1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	N/A	N/A	N/A
1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	6.6%	6.6%	6.6%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	N/A
1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	36.2%	36.2%	36.2%
53.8	**53.8**	**53.8**	**60.6**	**60.6**	**60.6**	**62.4**	**62.4**	**62.4**	**23.1%**	**23.1%**	**23.1%**
0.5	0.9	1.7	1.3	1.7	3.1	2.2	5.9	11.7	N/A	N/A	N/A
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	N/A
0.9	2.2	3.7	3.0	8.3	16.8	21.2	31.3	43.0	N/A	N/A	N/A
9.2	12.8	20.4	17.6	25.3	31.4	28.9	38.7	41.5	N/A	N/A	N/A
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	N/A
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	N/A
0.1	0.5	0.9	0.4	0.6	1.7	0.9	1.4	2.5	N/A	N/A	N/A
0.3	0.4	0.6	1.1	1.1	2.3	3.7	3.9	6.4	N/A	N/A	N/A
11.0	**16.8**	**27.3**	**23.4**	**37.0**	**55.4**	**56.9**	**81.1**	**105.1**	**N/A**	**N/A**	**N/A**
64.8	**70.7**	**81.1**	**84.1**	**97.6**	**116.0**	**119.3**	**143.5**	**167.4**	**26.9%**	**28.1%**	**29.0%**
40.3	**40.3**	**40.3**	**53.9**	**53.9**	**53.9**	**93.9**	**93.9**	**93.9**	**11.2%**	**11.2%**	**11.2%**
3.5	3.5	3.8	4.6	4.4	5.0	5.5	6.5	11.5	4.0%	4.9%	7.8%
1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.3%	0.3%	0.3%
3.1	4.8	6.8	4.4	11.8	23.8	15.0	37.6	61.4	10.1%	15.0%	17.7%
11.5	15.5	24.8	18.9	31.5	40.9	32.6	43.9	50.7	14.6%	16.2%	17.0%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	N/A
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	N/A
0.2	0.1	0.1	0.4	0.2	0.6	1.1	1.0	1.3	N/A	N/A	N/A
15.0	15.5	15.8	16.1	17.5	21.8	19.7	24.4	35.8	2.9%	3.9%	5.8%
34.4	**40.5**	**52.5**	**45.5**	**66.5**	**93.2**	**75.1**	**114.5**	**161.8**	**7.0%**	**9.2%**	**11.0%**

Table B9. Electricity Generating Capability (Continued)
(Thousand Megawatts)

Net Summer Capability[1]	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Cogenerators[7]						
Capacity						
Coal	8.0	7.7	8.2	9.2	9.2	9.3
Petroleum	0.8	0.8	0.9	0.9	0.9	0.9
Natural Gas	27.4	28.7	29.5	31.7	31.9	32.0
Other Gaseous Fuels	0.9	0.9	0.9	1.0	1.0	1.0
Renewable Sources[3]	5.9	6.1	6.2	6.5	6.6	6.6
Other	0.1	0.0	0.0	0.0	0.0	0.0
Total	**43.1**	**44.3**	**45.6**	**49.2**	**49.5**	**49.8**
Cumulative Additions[4]	**8.4**	**9.7**	**12.1**	**29.0**	**31.2**	**34.8**

Table B9. Electricity Generating Capability (Continued)
(Thousand Megawatts)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
9.5	9.6	9.8	9.7	9.9	10.2	9.8	10.2	10.7	1.2%	1.4%	1.6%
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	0.8%	1.0%	1.1%
33.2	33.9	34.5	34.7	35.8	36.8	35.8	37.2	38.7	1.1%	1.2%	1.4%
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0%	0.1%	0.1%
7.0	7.2	7.4	7.3	7.7	8.1	7.6	8.2	8.8	1.1%	1.4%	1.8%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.4%	-0.3%	-0.1%
51.6	**52.6**	**53.7**	**53.6**	**55.3**	**57.1**	**55.2**	**57.7**	**60.3**	**1.1%**	**1.3%**	**1.5%**
33.2	**40.3**	**53.3**	**46.3**	**69.0**	**97.5**	**77.5**	**119.3**	**169.2**	**10.4%**	**12.7%**	**14.6%**

[1]Net summer capability is the steady hourly output that generating equipment is expected to supply to system load (exclusive of auxiliary power), as demonstrated by tests during summer peak demand.
[2]Includes oil-, gas-, and dual-fired capability.
[3]Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, other biomass, solar and wind power.
[4]Cumulative additions after December 31, 1993. Non-zero utility planned additions in 1993 indicate units operational in 1993, but not supplying power to the grid.
[5]Cumulative total retirements from 1993.
[6]Includes nonutilities except for cogenerators. These facilities include small power producers, exempt wholesale generators and generators at industrial and commercial facilities which provide electricity for on-site use and for sale to utilities.
[7]Nameplate capacity is reported for nonutilities on Form EIA-867, "Annual Power Producer Report." Nameplate capacity is designated by the manufacturer. The nameplate capacity has been converted to the net summer capacity based on historic relationships.
N/A = Not applicable.
Notes: Totals may not equal sum of components due to independent rounding. Net summer capacity has been estimated for nonutility generators for AEO96. Net summer capacity is used to be consistent with electric utility capacity estimates. Electric utility capacity is the most recent data available as of August 15, 1994. Therefore, capacity estimates may differ from other Energy Information Administration sources.
Sources: 1993 and 1994 net summer capacity at electric utilities and planned additions: Energy Information Administration (EIA), Form EIA-860, "Annual Electric Generator Report." Net summer capacity for nonutilities and cogeneration in 1993 and 1994 and planned additions estimated based on EIA, Form EIA-867, "Annual Nonutility Power Producer Report." **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B10. Electricity Trade

(Billion Kilowatthours, Unless Otherwise Noted)

Electricity Trade	1993	1994	1995	Projections		
				2000		
				Low Economic Growth	Reference	High Economic Growth
Interregional Electricity Trade						
Gross Domestic Firm Power Sales	153.4	160.4	155.0	133.4	133.4	133.4
Gross Domestic Economy Sales	64.5	74.6	75.0	102.1	87.9	76.6
Gross Domestic Trade	**217.8**	**234.9**	**230.0**	**235.5**	**221.3**	**210.0**
Gross Domestic Firm Power Sales (million 1994 dollars)	6766.9	7075.7	6838.6	5886.1	5886.1	5886.1
Gross Domestic Economy Sales (million 1994 dollars)	1435.6	1630.1	1605.7	1820.9	1676.1	1511.0
Gross Domestic Sales (million 1994 dollars)	**8202.5**	**8705.9**	**8444.4**	**7707.0**	**7562.2**	**7397.1**
International Electricity Trade						
Firm Power Imports From Canada and Mexico	14.1	24.8	24.9	33.0	33.0	33.0
Economy Imports From Canada and Mexico	20.7	27.3	22.8	21.7	21.7	21.6
Gross Imports From Canada and Mexico	**34.8**	**52.1**	**47.7**	**54.8**	**54.8**	**54.7**
Firm Power Exports To Canada and Mexico	2.3	1.9	2.8	8.1	8.1	8.1
Economy Exports To Canada and Mexico	4.0	5.6	5.9	6.4	6.4	6.4
Gross Exports To Canada and Mexico	**6.4**	**7.5**	**8.8**	**14.5**	**14.5**	**14.5**

Table B10. Electricity Trade (Continued)
(Billion Kilowatthours, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
124.8	124.8	124.8	124.8	124.8	124.8	124.8	124.8	124.8	-1.2%	-1.2%	-1.2%
101.1	89.4	71.9	80.9	67.0	58.8	60.8	48.5	56.8	-0.9%	-2.0%	-1.3%
225.9	**214.2**	**196.8**	**205.7**	**191.8**	**183.6**	**185.7**	**173.3**	**181.6**	**-1.1%**	**-1.4%**	**-1.2%**
5507.9	5507.9	5507.9	5507.9	5507.9	5507.9	5507.9	5507.9	5507.9	-1.2%	-1.2%	-1.2%
1924.8	1938.2	1651.5	1654.9	1516.3	1476.7	1336.7	1251.8	1776.6	-0.9%	-1.2%	0.4%
7432.7	**7446.1**	**7159.4**	**7162.8**	**7024.2**	**6984.6**	**6844.7**	**6759.8**	**7284.5**	**-1.1%**	**-1.2%**	**-0.8%**
24.8	24.8	24.8	25.6	25.6	25.6	25.6	25.6	25.6	0.1%	0.2%	0.2%
23.5	23.5	23.5	25.7	25.6	25.6	20.6	20.5	20.5	-1.3%	-1.3%	-1.4%
48.3	**48.3**	**48.3**	**51.4**	**51.3**	**51.3**	**46.2**	**46.2**	**46.1**	**-0.6%**	**-0.6%**	**-0.6%**
13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	9.7%	9.7%	9.7%
7.0	7.0	7.0	7.7	7.7	7.7	7.7	7.7	7.7	1.5%	1.5%	1.5%
20.1	**20.1**	**20.1**	**20.8**	**20.8**	**20.8**	**20.8**	**20.8**	**20.8**	**5.0%**	**5.0%**	**5.0%**

Note: Totals may not equal sum of components due to independent rounding. Firm Power Sales are capacity sales, meaning the delivery of the power is scheduled as part of the normal operating conditions of the affected electric systems. Economy Sales are subject to curtailment or cessation of delivery by the supplier in accordance with prior agreements or under specified conditions.

Sources: 1993 and 1994 interregional electricity trade data: Energy Information Administration (EIA), Bulk Power Data System. 1993 and 1994 international electricity trade data: DOE Form FE-718R, "Annual Report of International Electrical Export/Import Data." Firm/economy share: National Energy Board, *Annual Report 1993*. Planned interregional and international firm power sales: DOE Form IE-411, "Coordinated Bulk Power Supply Program Report," April 1995. **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B11. Petroleum Supply and Disposition Balance
(Million Barrels per Day, Unless Otherwise Noted)

Supply and Disposition	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Crude Oil						
Domestic Crude Production[1]	6.85	6.66	6.54	5.62	5.65	5.70
Alaska	1.58	1.56	1.49	1.16	1.16	1.16
Lower 48 States	5.26	5.10	5.05	4.45	4.49	4.53
Net Imports	6.67	6.95	7.40	8.86	8.95	9.02
Other Crude Supply[2]	0.08	0.24	0.00	0.00	0.00	0.00
Total Crude Supply	**13.60**	**13.85**	**13.94**	**14.47**	**14.60**	**14.71**
Natural Gas Plant Liquids	**1.74**	**1.73**	**1.80**	**1.76**	**1.85**	**1.94**
Other Inputs[3]	**0.19**	**0.27**	**0.23**	**0.26**	**0.27**	**0.27**
Refinery Processing Gain[4]	**0.77**	**0.77**	**0.81**	**0.80**	**0.82**	**0.83**
Net Product Imports[5]	**0.93**	**1.09**	**0.85**	**0.90**	**1.13**	**1.35**
Total Primary Supply[6]	**17.22**	**17.70**	**17.64**	**18.21**	**18.66**	**19.10**
Refined Petroleum Products Supplied						
Motor Gasoline[7]	7.48	7.60	7.77	8.08	8.21	8.33
Jet Fuel[8]	1.47	1.53	1.58	1.74	1.80	1.85
Distillate Fuel[9]	3.04	3.16	3.22	3.28	3.40	3.52
Residual Fuel	1.08	1.02	0.96	0.96	1.02	1.06
Other[10]	4.17	4.41	4.25	4.26	4.36	4.46
Total	**17.24**	**17.72**	**17.78**	**18.33**	**18.78**	**19.23**
Refined Petroleum Products Supplied						
Residential and Commercial	1.14	1.17	1.08	1.08	1.08	1.09
Industrial[11]	4.45	4.58	4.66	4.67	4.81	4.94
Transportation	11.18	11.50	11.72	12.33	12.59	12.86
Electric Generators[12]	0.46	0.47	0.33	0.26	0.30	0.34
Total	**17.24**	**17.72**	**17.78**	**18.33**	**18.78**	**19.23**
Discrepancy[13]	**-0.02**	**-0.01**	**-0.14**	**-0.13**	**-0.12**	**-0.12**
World Oil Price (1994 dollars per barrel)[14]	**16.48**	**15.52**	**16.81**	**18.70**	**19.27**	**19.86**
Import Share of Product Supplied	**0.44**	**0.45**	**0.46**	**0.53**	**0.54**	**0.54**
Domestic Refinery Distillation Capacity	**15.1**	**15.0**	**15.4**	**15.6**	**15.6**	**15.7**
Capacity Utilization Rate (percent)	**92.0**	**93.0**	**90.7**	**93.1**	**93.4**	**94.1**

Table B11. Petroleum Supply and Disposition Balance (Continued)
(Million Barrels per Day, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
5.09	5.25	5.40	5.22	5.44	5.66	5.55	5.81	6.07	-0.9%	-0.6%	-0.4%
0.80	0.80	0.81	0.69	0.71	0.72	0.72	0.73	0.75	-3.6%	-3.5%	-3.4%
4.30	4.44	4.59	4.52	4.73	4.94	4.83	5.08	5.32	-0.3%	0.0%	0.2%
9.41	9.62	9.90	9.39	9.58	9.99	9.09	9.42	9.72	1.3%	1.5%	1.6%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	N/A
14.50	**14.86**	**15.30**	**14.61**	**15.02**	**15.64**	**14.64**	**15.23**	**15.78**	**0.3%**	**0.5%**	**0.6%**
1.83	**1.97**	**2.09**	**1.92**	**2.11**	**2.30**	**2.03**	**2.27**	**2.44**	**0.8%**	**1.3%**	**1.7%**
0.30	**0.31**	**0.31**	**0.31**	**0.31**	**0.31**	**0.30**	**0.31**	**0.32**	**0.6%**	**0.7%**	**0.8%**
0.83	**0.85**	**0.85**	**0.84**	**0.87**	**0.88**	**0.85**	**0.86**	**0.89**	**0.5%**	**0.5%**	**0.7%**
1.52	**1.79**	**1.97**	**1.73**	**2.26**	**2.52**	**1.78**	**2.37**	**3.08**	**2.4%**	**3.8%**	**5.1%**
18.99	**19.78**	**20.52**	**19.41**	**20.56**	**21.65**	**19.60**	**21.04**	**22.51**	**0.5%**	**0.8%**	**1.1%**
8.32	8.53	8.74	8.33	8.64	8.95	8.16	8.56	8.97	0.3%	0.6%	0.8%
1.89	1.99	2.10	1.98	2.14	2.31	2.04	2.27	2.49	1.4%	1.9%	2.4%
3.45	3.64	3.83	3.59	3.86	4.12	3.75	4.11	4.46	0.8%	1.3%	1.6%
1.09	1.18	1.27	1.21	1.33	1.39	1.30	1.36	1.42	1.2%	1.4%	1.6%
4.36	4.54	4.73	4.40	4.69	4.99	4.49	4.89	5.31	0.1%	0.5%	0.9%
19.11	**19.89**	**20.67**	**19.51**	**20.67**	**21.76**	**19.75**	**21.18**	**22.65**	**0.5%**	**0.9%**	**1.2%**
1.03	1.05	1.06	1.00	1.02	1.04	0.97	1.01	1.04	-0.9%	-0.7%	-0.6%
4.80	5.03	5.27	4.81	5.18	5.56	4.90	5.38	5.90	0.3%	0.8%	1.2%
12.94	13.39	13.84	13.25	13.93	14.62	13.37	14.29	15.23	0.7%	1.0%	1.3%
0.34	0.42	0.49	0.45	0.52	0.54	0.51	0.50	0.49	0.3%	0.3%	0.1%
19.11	**19.89**	**20.67**	**19.51**	**20.67**	**21.76**	**19.75**	**21.18**	**22.65**	**0.5%**	**0.9%**	**1.2%**
-0.12	**-0.11**	**-0.15**	**-0.11**	**-0.10**	**-0.11**	**-0.14**	**-0.14**	**-0.15**	**N/A**	**N/A**	**N/A**
21.03	**21.86**	**22.69**	**22.60**	**23.70**	**24.77**	**23.99**	**25.43**	**27.05**	**2.1%**	**2.4%**	**2.7%**
0.57	**0.57**	**0.57**	**0.57**	**0.57**	**0.57**	**0.55**	**0.56**	**0.56**	**0.9%**	**1.0%**	**1.0%**
15.8	**16.1**	**16.6**	**15.9**	**16.2**	**16.8**	**15.9**	**16.4**	**17.0**	**0.3%**	**0.4%**	**0.6%**
92.0	**92.5**	**92.8**	**92.1**	**92.9**	**93.8**	**92.1**	**93.5**	**93.4**	**0.0%**	**0.0%**	**0.0%**

[1]Includes lease condensate.
[2]Strategic petroleum supply stock additions plus unaccounted for crude oil plus crude stock withdrawals minus crude products supplied.
[3]Includes alcohols, ethers, petroleum product stock withdrawals, domestic sources of blending components, and other hydrocarbons.
[4]Represents volumetric gain in refinery distillation and cracking processes.
[5]Includes net imports of finished petroleum products, unfinished oils, other hydrocarbons, alcohols, ethers, and blending components.
[6]Total crude supply plus natural gas plant liquids plus other inputs plus refinery processing gain plus net petroleum imports.
[7]Includes ethanol and ethers blended into gasoline.
[8]Includes naphtha and kerosene type.
[9]Includes distillate and kerosene.
[10]Includes aviation gasoline, liquefied petroleum gas, petrochemical feedstocks, lubricants, waxes, asphalt, road oil, still gas, special naphthas, petroleum coke, crude oil product supplied, and miscellaneous petroleum products.
[11]Includes consumption by cogenerators.
[12]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[13]Balancing item. Includes unaccounted for supply, losses and gains.
[14]Average refiner acquisition cost for imported crude oil.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993: Energy Information Administration (EIA), *Petroleum Supply Annual 1993*, DOE/EIA-0340(93) (Washington, DC, June 1994). 1994: EIA, *Petroleum Supply Annual 1994*, DOE/EIA-0340(94) (Washington, DC, May 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B12. Petroleum Product Prices
(1994 Cents per Gallon, Unless Otherwise Noted)

Sector and Fuel	1993	1994	1995	Projections		
				2000		
				Low Economic Growth	Reference	High Economic Growth
World Oil Price (dollars per barrel)	**16.48**	**15.52**	**16.81**	**18.70**	**19.27**	**19.86**
Delivered Sector Product Prices						
Residential						
Distillate Fuel	92.7	87.8	94.6	101.7	103.7	106.3
Liquefied Petroleum Gas	92.9	90.1	94.9	101.7	102.4	103.2
Commercial						
Distillate Fuel	65.3	61.6	64.5	71.5	73.5	76.1
Residual Fuel	43.1	42.6	39.7	44.0	45.4	47.0
Residual Fuel (dollars per barrel)	18.11	17.89	16.67	18.46	19.08	19.72
Industrial[1]						
Distillate Fuel	67.5	63.6	64.3	71.7	73.9	76.4
Liquefied Petroleum Gas	42.0	52.8	50.4	56.6	57.4	57.8
Residual Fuel	36.5	37.5	38.0	42.2	43.7	45.1
Residual Fuel (dollars per barrel)	15.33	15.74	15.96	17.74	18.35	18.95
Transportation						
Distillate Fuel[2]	113.9	111.5	114.7	117.7	121.9	125.3
Jet Fuel[3]	59.2	53.3	57.9	69.3	72.2	75.8
Motor Gasoline[4]	113.9	111.6	120.1	126.3	130.5	134.8
Residual Fuel	31.5	30.2	34.4	38.9	40.3	41.8
Residual Fuel (dollars per barrel)	13.22	12.68	14.45	16.35	16.94	17.54
Electric Generators[5]						
Distillate Fuel	58.7	54.9	58.3	66.9	68.7	70.6
Residual Fuel	39.6	39.3	41.8	44.1	45.6	47.0
Residual Fuel (dollars per barrel)	16.62	16.49	17.54	18.53	19.14	19.75
Refined Petroleum Product Prices[6]						
Distillate Fuel	98.6	96.3	99.4	104.8	108.1	111.1
Jet Fuel	59.2	53.3	57.9	69.3	72.2	75.8
Liquefied Petroleum Gas	52.3	59.9	59.0	65.0	65.7	66.1
Motor Gasoline	113.9	111.6	119.8	126.1	130.3	134.5
Residual Fuel	36.3	35.8	37.6	41.3	42.8	44.3
Residual Fuel (dollars per barrel)	15.24	15.04	15.81	17.33	17.96	18.60
Average	**91.2**	**89.7**	**94.7**	**101.3**	**104.3**	**107.4**

Table B12. Petroleum Product Prices (Continued)
(1994 Cents per Gallon, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
21.03	**21.86**	**22.69**	**22.60**	**23.70**	**24.77**	**23.99**	**25.43**	**27.05**	**2.1%**	**2.4%**	**2.7%**
106.8	109.4	111.5	110.9	113.6	116.8	111.7	115.8	120.4	1.2%	1.3%	1.5%
105.9	107.5	108.1	111.0	112.4	115.2	110.3	114.5	120.1	1.0%	1.1%	1.4%
76.2	78.9	81.0	80.2	83.1	86.2	80.9	85.0	89.6	1.3%	1.5%	1.8%
49.8	52.0	54.2	54.0	56.8	59.3	57.6	60.7	64.3	1.4%	1.7%	2.0%
20.90	21.86	22.77	22.69	23.88	24.90	24.19	25.47	27.01	1.4%	1.7%	2.0%
76.6	79.3	81.4	80.8	83.7	86.8	81.7	85.8	90.4	1.2%	1.4%	1.7%
60.7	61.6	61.5	64.1	64.7	67.2	61.5	65.5	70.5	0.7%	1.0%	1.4%
48.1	50.2	52.2	52.3	54.8	57.2	55.4	58.7	62.3	1.9%	2.2%	2.5%
20.18	21.07	21.93	21.96	23.01	24.02	23.27	24.64	26.17	1.9%	2.2%	2.5%
118.9	124.8	128.8	119.8	126.5	132.2	118.3	127.7	134.8	0.3%	0.6%	0.9%
74.9	79.3	82.2	79.2	83.2	87.7	79.7	85.9	92.8	1.9%	2.3%	2.7%
128.6	135.2	140.6	129.0	137.3	144.6	125.6	135.1	143.7	0.6%	0.9%	1.2%
44.7	46.8	48.8	48.7	51.4	53.9	52.3	55.6	59.4	2.7%	3.0%	3.3%
18.77	19.64	20.50	20.47	21.60	22.65	21.98	23.36	24.95	2.7%	3.0%	3.3%
71.6	73.8	75.0	74.5	77.2	79.9	75.0	79.0	83.9	1.5%	1.8%	2.0%
49.2	51.3	53.5	53.5	56.1	58.9	57.1	60.3	64.0	1.8%	2.1%	2.4%
20.65	21.56	22.47	22.46	23.58	24.73	23.99	25.34	26.89	1.8%	2.1%	2.4%
107.6	112.2	115.3	109.7	114.9	119.7	109.0	116.6	123.0	0.6%	0.9%	1.2%
74.9	79.3	82.2	79.2	83.2	87.7	79.7	85.9	92.8	1.9%	2.3%	2.7%
68.7	69.4	69.2	72.7	73.2	75.4	71.1	74.6	79.2	0.8%	1.1%	1.3%
128.5	135.0	140.3	128.9	137.1	144.4	125.5	134.9	143.4	0.6%	0.9%	1.2%
46.9	49.1	51.3	51.1	53.9	56.4	54.6	57.8	61.5	2.0%	2.3%	2.6%
19.70	20.63	21.54	21.47	22.62	23.68	22.95	24.27	25.81	2.0%	2.3%	2.6%
104.0	**108.5**	**111.7**	**105.4**	**110.6**	**115.6**	**103.1**	**110.2**	**116.7**	**0.7%**	**1.0%**	**1.3%**

[1]Includes cogenerators.
[2]Includes Federal and State taxes on diesel fuel and excludes county and local taxes.
[3]Kerosene-type jet fuel.
[4]Sales weighted average price for all grades. Includes Federal and State taxes and excludes county and local taxes.
[5]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[6]Weighted averages of end-use fuel prices are derived from the prices in each sector and the corresponding sectoral consumption.

Sources: 1993 prices for gasoline, distillate, and jet fuel are based on prices in the Energy Information Administration (EIA), *Petroleum Marketing Annual 1993*, DOE/EIA-0487(93) (Washington, DC, July 1994). 1994 prices for gasoline, distillate, and jet fuel are based on prices in various 1994 issues of EIA, *Petroleum Marketing Monthly*, DOE/EIA-0380(94/1-12) (Washington, DC, 1994). 1993 and 1994 prices for all other petroleum products are derived from EIA, *State Energy Price and Expenditures Report: 1992*, DOE/EIA-0376(92) (Washington, DC, September 1994). **Projections**: EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B13. Natural Gas Supply and Disposition
(Trillion Cubic Feet per Year)

Supply and Disposition	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Production						
Dry Gas Production[1]	18.42	18.84	18.90	18.77	19.65	20.71
Supplemental Natural Gas[2]	0.12	0.12	0.13	0.09	0.09	0.09
Net Imports	**2.21**	**2.40**	**2.56**	**2.98**	**2.98**	**2.98**
Canada	2.22	2.45	2.65	2.87	2.87	2.87
Mexico	-0.04	-0.04	-0.03	-0.05	-0.05	-0.05
Liquefied Natural Gas	0.03	-0.01	-0.05	0.16	0.16	0.16
Total Supply	**20.74**	**21.36**	**21.60**	**21.83**	**22.71**	**23.77**
Consumption by Sector						
Residential	4.94	4.87	4.84	5.00	5.07	5.18
Commercial	2.89	2.92	2.95	3.07	3.10	3.15
Industrial[3]	7.62	7.83	8.23	8.67	8.90	9.14
Electric Generators[4]	2.94	3.25	3.39	2.81	3.33	3.93
Lease and Plant Fuel[5]	1.18	1.24	1.24	1.26	1.28	1.31
Pipeline Fuel	0.62	0.64	0.66	0.64	0.65	0.67
Transportation[6]	0.01	0.01	0.01	0.01	0.01	0.01
Total	**20.20**	**20.75**	**21.32**	**21.46**	**22.34**	**23.40**
Discrepancy[7]	**0.54**	**0.61**	**0.28**	**0.37**	**0.37**	**0.37**

Table B13. Natural Gas Supply and Disposition (Continued)
(Trillion Cubic Feet per Year)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
19.72	21.25	22.89	20.81	22.83	24.92	22.46	24.97	26.79	0.8%	1.3%	1.7%
0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	-3.1%	-3.1%	-2.6%
3.12	**3.12**	**3.12**	**3.46**	**3.46**	**3.46**	**4.02**	**4.02**	**4.02**	**2.5%**	**2.5%**	**2.5%**
2.90	2.90	2.90	3.11	3.11	3.11	3.42	3.42	3.42	1.6%	1.6%	1.6%
-0.03	-0.03	-0.03	0.10	0.10	0.10	0.35	0.35	0.35	N/A	N/A	N/A
0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	N/A	N/A	N/A
22.90	**24.43**	**26.07**	**24.33**	**26.35**	**28.43**	**26.53**	**29.04**	**30.88**	**1.0%**	**1.5%**	**1.8%**
5.03	5.17	5.36	5.13	5.33	5.55	5.20	5.44	5.63	0.3%	0.5%	0.7%
3.12	3.21	3.30	3.19	3.32	3.44	3.25	3.41	3.54	0.5%	0.7%	0.9%
9.07	9.40	9.76	9.31	9.72	10.19	9.33	9.91	10.46	0.8%	1.1%	1.4%
3.34	4.20	5.10	4.15	5.29	6.44	5.95	7.30	8.12	2.9%	3.9%	4.5%
1.32	1.38	1.44	1.39	1.48	1.57	1.48	1.59	1.68	0.9%	1.2%	1.5%
0.65	0.69	0.72	0.70	0.74	0.79	0.78	0.83	0.89	0.9%	1.3%	1.6%
0.03	0.03	0.03	0.11	0.11	0.11	0.21	0.21	0.21	18.1%	18.1%	18.1%
22.56	**24.08**	**25.72**	**23.98**	**26.00**	**28.08**	**26.19**	**28.70**	**30.53**	**1.1%**	**1.6%**	**1.9%**
0.35	**0.35**	**0.35**	**0.35**	**0.35**	**0.35**	**0.35**	**0.35**	**0.35**	**N/A**	**N/A**	**N/A**

[1]Market production (wet) minus extraction losses.
[2]Synthetic natural gas, propane air, coke oven gas, refinery gas, biomass gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.
[3]Includes consumption by cogenerators.
[4]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[5]Represents natural gas used in the field gathering and processing plant machinery.
[6]Compressed natural gas used as vehicle fuel.
[7]Balancing item. 1993 and 1994 values reflect net storage injections plus natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type.
Btu = British thermal unit.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding. Figures for 1993 and 1994 may differ from published data due to internal conversion factors.
Sources: 1993 supply values and consumption as lease, plant, and pipeline fuel: Energy Information Administration (EIA), *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994) with adjustments to end-use sector consumption levels based on Form EIA-867, "Annual Nonutility Power Producer Report." Other 1993 consumption: EIA, *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, July 1995) with adjustments to end-use sector consumption levels based on Form EIA-867, "Annual Nonutility Power Producer Report." 1994 supply values and consumption as lease, plant, and pipeline fuel: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). 1994 transportation sector consumption: EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D. Other 1994 consumption: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995) with adjustments to end-use sector consumption levels for consumption of natural gas by electric wholesale generators based on EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D. **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B14. Natural Gas Prices, Margins, and Revenues

(1994 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Prices, Margins, and Revenue	1993	1994	1995	Projections		
				2000		
				Low Economic Growth	Reference	High Economic Growth
Source Price						
Average Lower 48 Wellhead Price[1]	2.09	1.88	1.60	1.79	1.89	1.91
Average Import Price	2.06	1.85	1.55	1.63	1.79	1.83
Average[2]	**2.08**	**1.87**	**1.59**	**1.76**	**1.88**	**1.89**
Delivered Prices						
Residential	6.26	6.40	6.13	6.06	6.26	6.24
Commercial	5.26	5.44	5.06	5.10	5.30	5.28
Industrial[3]	2.91	2.64	2.37	2.47	2.65	2.68
Electric Generators[4]	2.61	2.24	2.09	2.06	2.24	2.30
Transportation[5]	5.69	6.19	6.26	6.54	6.75	6.78
Average[6]	**4.14**	**3.98**	**3.67**	**3.74**	**3.89**	**3.86**
Transmission and Distribution Margins[7]						
Residential	4.18	4.52	4.54	4.29	4.38	4.34
Commercial	3.18	3.56	3.47	3.33	3.42	3.39
Industrial[3]	0.83	0.77	0.78	0.71	0.77	0.79
Electric Generators[4]	0.52	0.36	0.50	0.30	0.36	0.40
Transportation[5]	3.61	4.32	4.67	4.78	4.87	4.89
Average[6]	**2.05**	**2.10**	**2.08**	**1.98**	**2.01**	**1.96**
Transmission and Distribution Revenue (billion 1994 dollars)						
Residential	20.66	22.05	22.00	21.46	22.22	22.50
Commercial	9.19	10.41	10.25	10.22	10.61	10.67
Industrial[3]	6.32	6.01	6.42	6.14	6.88	7.19
Electric Generators[4]	1.54	1.17	1.68	0.83	1.20	1.58
Transportation[5]	0.02	0.03	0.03	0.04	0.04	0.04
Total	**37.73**	**39.67**	**40.39**	**38.70**	**40.94**	**41.98**

Table B14. Natural Gas Prices, Margins, and Revenues (Continued)
(1994 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
1.77	1.99	2.07	1.82	2.15	2.51	2.07	2.57	3.34	0.5%	1.5%	2.8%
1.74	1.90	2.05	1.75	2.08	2.51	2.03	2.53	3.30	0.5%	1.5%	2.8%
1.77	**1.98**	**2.07**	**1.81**	**2.14**	**2.51**	**2.07**	**2.57**	**3.34**	**0.5%**	**1.5%**	**2.8%**
5.86	6.15	6.23	5.64	6.08	6.56	5.91	6.59	7.51	-0.4%	0.1%	0.8%
4.94	5.21	5.30	4.75	5.19	5.65	5.03	5.70	6.61	-0.4%	0.2%	0.9%
2.45	2.72	2.82	2.45	2.84	3.26	2.70	3.30	4.14	0.1%	1.1%	2.2%
2.03	2.31	2.44	2.07	2.49	2.93	2.37	3.02	3.88	0.3%	1.4%	2.7%
6.38	6.71	6.87	6.17	6.67	7.16	6.67	7.37	8.27	0.4%	0.8%	1.4%
3.60	**3.82**	**3.87**	**3.48**	**3.84**	**4.23**	**3.67**	**4.25**	**5.10**	**-0.4%**	**0.3%**	**1.2%**
4.09	4.17	4.16	3.83	3.94	4.04	3.85	4.02	4.17	-0.8%	-0.6%	-0.4%
3.17	3.24	3.23	2.95	3.05	3.13	2.97	3.14	3.27	-0.9%	-0.6%	-0.4%
0.68	0.75	0.75	0.64	0.70	0.74	0.64	0.73	0.81	-0.9%	-0.2%	0.2%
0.26	0.33	0.37	0.26	0.36	0.42	0.30	0.45	0.54	-0.8%	1.1%	2.0%
4.61	4.73	4.80	4.37	4.53	4.64	4.60	4.80	4.93	0.3%	0.5%	0.6%
1.83	**1.84**	**1.80**	**1.67**	**1.70**	**1.72**	**1.61**	**1.69**	**1.76**	**-1.3%**	**-1.1%**	**-0.8%**
20.60	21.57	22.32	19.64	21.01	22.42	19.98	21.90	23.50	-0.5%	0.0%	0.3%
9.90	10.38	10.67	9.40	10.11	10.77	9.64	10.69	11.60	-0.4%	0.1%	0.5%
6.19	7.01	7.35	5.99	6.85	7.57	5.95	7.23	8.44	0.0%	0.9%	1.6%
0.87	1.39	1.90	1.08	1.89	2.70	1.80	3.28	4.42	2.1%	5.0%	6.5%
0.13	0.14	0.14	0.49	0.51	0.53	0.96	1.00	1.04	18.4%	18.7%	18.9%
37.70	**40.49**	**42.38**	**36.61**	**40.36**	**44.00**	**38.33**	**44.11**	**48.99**	**-0.2%**	**0.5%**	**1.0%**

[1]Represents lower 48 onshore and offshore supplies.
[2]Quantity-weighted average of the average lower 48 wellhead price and the average price of imports at the United States border.
[3]Includes consumption by cogenerators.
[4]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[5]Compressed natural gas used as a vehicle fuel.
[6]Weighted average prices and margins. Weights used are the sectoral consumption values excluding lease, plant, and pipeline fuel.
[7]Within the table, "transmission and distribution" margins equal the difference between the delivered price and the source price (average of the wellhead price and the price of imports at the United States border) of natural gas, and thus, reflect the total cost of bringing natural gas to market. When the term "transmission and distribution" margins is used in today's natural gas market, it generally does not include the cost of independent natural gas marketers or costs associated with aggregation of supplies, provisions of storage, and other services. As used here, the term includes the cost of all services and the cost of pipeline fuel used in compressor stations.

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

Sources: 1993 residential, commercial, and transportation delivered prices; average lower 48 wellhead price; and average import price: Energy Information Administration (EIA), *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). 1993 electric generators delivered price: Form FERC-423, "Monthly Report of Cost and Quality of Fuels for Electric Plants." 1993 and 1994 industrial delivered prices based on EIA, *Manufacturing Energy Consumption Survey, 1991*. 1994 residential and commercial delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). **Other 1993 values, other 1994 values, and projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B15. Oil and Gas Supply

Production and Supply	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Crude Oil						
Lower 48 Average Wellhead Price[1] (1994 dollars per barrel)	**15.59**	**14.35**	**16.59**	**18.37**	**18.90**	**19.45**
Production (million barrels per day)[2]						
U.S. Total	**6.85**	**6.66**	**6.54**	**5.62**	**5.65**	**5.70**
Lower 48 Onshore	4.18	3.96	3.80	3.23	3.26	3.30
Conventional	3.48	3.34	3.23	2.73	2.74	2.77
Enhanced Oil Recovery	0.69	0.62	0.58	0.50	0.51	0.52
Lower 48 Offshore	1.09	1.14	1.24	1.23	1.23	1.23
Alaska	1.58	1.56	1.49	1.16	1.16	1.16
Lower 48 End of Year Reserves (billion barrels)	**18.37**	**17.84**	**16.93**	**13.12**	**13.28**	**13.46**
Natural Gas						
Lower 48 Average Wellhead Price[1] (1994 dollars per thousand cubic feet)	**2.09**	**1.88**	**1.60**	**1.79**	**1.89**	**1.91**
Production (trillion cubic feet)[3]						
U.S. Total	**18.42**	**18.84**	**18.90**	**18.77**	**19.65**	**20.71**
Lower 48 Onshore	12.99	13.26	13.38	13.04	13.75	14.27
Associated-Dissolved[4]	1.93	1.78	1.70	1.39	1.40	1.40
Non-Associated	11.06	11.47	11.68	11.65	12.35	12.86
Conventional	8.61	8.94	9.00	9.50	10.02	10.46
Unconventional	2.44	2.53	2.68	2.14	2.33	2.41
Lower 48 Offshore	5.03	5.17	5.02	5.18	5.35	5.89
Associated-Dissolved[4]	0.69	0.65	0.66	0.70	0.70	0.70
Non-Associated	4.34	4.52	4.35	4.48	4.65	5.19
Alaska	0.40	0.42	0.50	0.55	0.55	0.55
U.S. End of Year Reserves (trillion cubic feet)	**152.51**	**154.10**	**151.49**	**151.57**	**154.89**	**153.21**
Supplemental Gas Supplies (trillion cubic feet)[5]	**0.12**	**0.12**	**0.13**	**0.09**	**0.09**	**0.09**
Total Lower 48 Wells Completed (thousands)	**25.27**	**20.99**	**20.71**	**28.79**	**31.92**	**32.99**

Table B15. Oil and Gas Supply (Continued)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
20.46	**21.22**	**21.99**	**21.86**	**22.87**	**23.86**	**23.13**	**24.46**	**25.97**	**2.3%**	**2.6%**	**2.9%**
5.09	**5.25**	**5.40**	**5.22**	**5.44**	**5.66**	**5.55**	**5.81**	**6.07**	**-0.9%**	**-0.6%**	**-0.4%**
3.24	3.38	3.51	3.56	3.75	3.94	3.88	4.10	4.31	-0.1%	0.2%	0.4%
2.66	2.75	2.84	2.81	2.94	3.06	2.99	3.13	3.27	-0.5%	-0.3%	-0.1%
0.58	0.62	0.67	0.75	0.82	0.88	0.89	0.97	1.04	1.7%	2.1%	2.5%
1.06	1.06	1.07	0.97	0.98	0.99	0.95	0.98	1.00	-0.8%	-0.7%	-0.6%
0.80	0.80	0.81	0.69	0.71	0.72	0.72	0.73	0.75	-3.6%	-3.5%	-3.4%
12.15	**12.65**	**13.15**	**12.73**	**13.44**	**14.16**	**13.70**	**14.52**	**15.34**	**-1.2%**	**-1.0%**	**-0.7%**
1.77	**1.99**	**2.07**	**1.82**	**2.15**	**2.51**	**2.07**	**2.57**	**3.34**	**0.5%**	**1.5%**	**2.8%**
19.72	**21.25**	**22.89**	**20.81**	**22.83**	**24.92**	**22.46**	**24.97**	**26.79**	**0.8%**	**1.3%**	**1.7%**
14.16	15.41	16.38	14.69	16.45	17.75	15.18	17.19	18.87	0.6%	1.2%	1.7%
1.28	1.32	1.36	1.33	1.40	1.45	1.40	1.47	1.54	-1.1%	-0.9%	-0.7%
12.87	14.08	15.02	13.36	15.05	16.30	13.78	15.71	17.33	0.9%	1.5%	2.0%
10.57	11.54	12.20	10.79	12.13	13.06	10.84	12.29	13.36	0.9%	1.5%	1.9%
2.30	2.55	2.82	2.57	2.92	3.24	2.94	3.43	3.97	0.7%	1.5%	2.2%
4.97	5.25	5.90	5.48	5.74	6.51	6.59	7.09	7.23	1.2%	1.5%	1.6%
0.66	0.66	0.66	0.64	0.64	0.64	0.63	0.64	0.64	-0.1%	-0.1%	-0.1%
4.31	4.59	5.24	4.85	5.10	5.87	5.95	6.45	6.58	1.3%	1.7%	1.8%
0.60	0.60	0.60	0.64	0.65	0.65	0.69	0.69	0.70	2.4%	2.5%	2.5%
155.58	**163.38**	**157.50**	**154.35**	**164.42**	**159.31**	**152.36**	**162.00**	**165.04**	**-0.1%**	**0.2%**	**0.3%**
0.06	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.07**	**-3.1%**	**-3.1%**	**-2.6%**
38.63	**43.10**	**46.04**	**47.76**	**54.83**	**62.77**	**61.12**	**71.67**	**86.88**	**5.2%**	**6.0%**	**7.0%**

[1]Represents lower 48 onshore and offshore supplies.
[2]Includes lease condensate.
[3]Market production (wet) minus extraction losses.
[4]Gas which occurs in crude oil reserves either as free gas (associated) or as gas in solution with crude oil (dissolved).
[5]Synthetic natural gas, propane air, coke oven gas, refinery gas, biomass gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.

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

Sources: 1993 lower 48 onshore, lower 48 offshore, Alaska crude oil production: Energy Information Administration (EIA), *Petroleum Supply Annual 1993*, DOE/EIA-0340(93)/1 (Washington, DC, June 1993). 1993 U.S. crude oil and natural gas reserves: EIA, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves*, DOE/EIA-0216(93) (Washington, DC, October 1994). 1993 natural gas lower 48 average wellhead price, Alaska, total natural gas production, and supplemental gas supplies: EIA, *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). 1993 and 1994 crude oil lower 48 average wellhead price: EIA, Office of Integrated Analysis and Forecasting. 1993 and 1994 total wells completed: EIA, Office of Integrated Analysis and Forecasting. 1994 lower 48 onshore, lower 48 offshore, Alaska crude oil production: EIA, *Petroleum Supply Annual 1994*, DOE/EIA-0340(94) (Washington, DC, May 1995). 1994 U.S. crude oil reserves and U.S. natural gas reserves: EIA, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, Advanced Summary*, DOE/EIA-0216(94) (Washington, DC, August 1995). 1994 natural gas lower 48 average wellhead price, total natural gas production: *Natural Gas Monthly*, DOE/EIA-0130(95/06) (Washington, DC, June 1995). Other 1993 and 1994 values: EIA, Office of Integrated Analysis and Forecasting. Figures for 1993 and 1994 may differ from published data due to internal conversion factors. **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B16. Coal Supply, Disposition, and Prices

(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1993	1994	1995	Projections		
				2000		
				Low Economic Growth	Reference	High Economic Growth
Production[1]						
East of the Mississippi	516	566	558	539	530	543
West of the Mississippi	429	467	479	519	540	544
Total	**945**	**1034**	**1037**	**1058**	**1070**	**1087**
Net Imports						
Imports	7	8	8	10	10	10
Exports	75	71	79	89	89	89
Total	**-67**	**-64**	**-71**	**-79**	**-79**	**-79**
Total Supply[2]	**877**	**971**	**965**	**980**	**992**	**1008**
Consumption by Sector						
Residential and Commercial	6	6	6	6	6	6
Industrial[3]	75	75	74	73	76	79
Coke Plants	31	32	30	26	27	27
Electric Generators[4]	813	826	827	868	882	892
Total	**926**	**938**	**937**	**974**	**990**	**1004**
Discrepancy and Stock Change[5]	**-48**	**32**	**28**	**6**	**1**	**4**
Average Minemouth Price (1994 dollars per short ton)	**19.85**	**19.41**	**18.54**	**17.05**	**17.44**	**17.35**
Delivered Prices (1994 dollars per short ton)[6]						
Industrial	**32.23**	**32.54**	**31.34**	**28.88**	**29.68**	**29.60**
Coke Plants	**47.44**	**46.56**	**47.39**	**43.93**	**43.74**	**44.09**
Electric Utilities	**28.60**	**28.03**	**27.13**	**25.11**	**25.77**	**25.40**
Average[6]	**29.54**	**29.02**	**28.13**	**25.91**	**26.56**	**26.23**
Average Price to All Users (1994 dollars per million Btu)	1.41	1.39	1.33	1.23	1.26	1.25
Exports[7]	41.41	39.93	38.61	37.09	38.01	37.78

Table B16. Coal Supply, Disposition, and Prices (Continued)
(Million Short Tons per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
549	557	571	570	584	603	601	617	645	0.3%	0.4%	0.6%
557	577	585	575	599	609	595	623	640	1.2%	1.4%	1.5%
1107	**1135**	**1156**	**1145**	**1184**	**1212**	**1196**	**1240**	**1285**	**0.7%**	**0.9%**	**1.0%**
10	10	10	10	10	10	10	10	10	1.5%	1.5%	1.5%
97	97	97	110	111	111	130	130	129	2.9%	2.9%	2.9%
-87	**-87**	**-87**	**-100**	**-100**	**-100**	**-120**	**-119**	**-119**	**3.0%**	**3.0%**	**3.0%**
1020	**1048**	**1069**	**1045**	**1083**	**1112**	**1077**	**1120**	**1166**	**0.5%**	**0.7%**	**0.9%**
6	6	6	6	6	6	6	6	6	0.1%	0.2%	0.3%
73	78	83	73	80	90	75	86	101	0.0%	0.6%	1.4%
23	23	23	20	20	21	18	18	18	-2.7%	-2.7%	-2.6%
916	939	956	944	975	994	976	1009	1040	0.8%	1.0%	1.1%
1018	**1046**	**1068**	**1044**	**1082**	**1110**	**1075**	**1120**	**1165**	**0.6%**	**0.8%**	**1.0%**
1	**2**	**1**	**1**	**1**	**1**	**2**	**1**	**1**	**N/A**	**N/A**	**N/A**
17.22	**17.68**	**17.56**	**16.96**	**17.43**	**17.79**	**16.91**	**17.39**	**17.73**	**-0.7%**	**-0.5%**	**-0.4%**
29.20	30.06	30.02	28.99	30.13	30.61	28.76	29.81	30.35	-0.6%	-0.4%	-0.3%
43.42	44.57	44.48	43.96	44.60	45.15	43.22	44.00	44.70	-0.4%	-0.3%	-0.2%
25.55	26.28	26.27	25.44	25.88	26.82	25.27	26.17	26.77	-0.5%	-0.3%	-0.2%
26.23	**26.97**	**26.96**	**26.05**	**26.55**	**27.47**	**25.81**	**26.74**	**27.36**	**-0.6%**	**-0.4%**	**-0.3%**
1.25	1.28	1.28	1.24	1.27	1.31	1.24	1.28	1.31	-0.5%	-0.4%	-0.3%
37.82	38.30	38.03	37.02	37.64	38.05	36.28	37.22	37.89	-0.5%	-0.3%	-0.2%

[1]Includes anthracite, bituminous coal, and lignite.
[2]Production plus net imports plus net storage withdrawals.
[3]Includes consumption by cogenerators.
[4]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[5]Balancing item: the sum of production, net imports, and net storage minus total consumption.
[6]Sectoral prices weighted by consumption tonnage; weighted average excludes residential/ commercial prices and export f.a.s. prices.
[7]Free-alongside-ship (f.a.s.) price at United States port-of-exit.
N/A = Not applicable.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993 production, imports, exports, consumption, minemouth price, and delivered prices: Energy Information Administration (EIA), *Coal Industry Annual*, DOE/EIA-0584(93) (Washington, DC, December 1994). 1994 production, imports, exports, consumption, minemouth price, and delivered prices: EIA, *Coal Industry Annual*, DOE/EIA-0584(94) (Washington, DC, 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B17. Renewable Energy Generating Capacity and Generation
(Thousand Megawatts, Unless Otherwise Noted)

Capacity and Generation	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Electric Utilities and Nonutilities[1] (excluding cogenerators)						
Capability						
Conventional Hydropower	78.21	78.20	78.50	80.60	80.60	80.60
Geothermal[2]	2.97	2.97	3.01	3.19	3.21	3.23
Municipal Solid Waste	3.00	3.04	3.45	3.97	4.03	4.08
Wood and Other Biomass[3]	1.71	1.71	1.75	1.80	1.80	1.80
Solar Thermal	0.35	0.35	0.36	0.40	0.40	0.40
Solar Photovoltaic	0.01	0.01	0.01	0.02	0.02	0.02
Wind	1.78	1.79	2.09	2.67	2.73	2.80
Total	**88.04**	**88.07**	**89.17**	**92.66**	**92.79**	**92.93**
Generation (billion kilowatthours)						
Conventional Hydropower	279.10	259.86	293.80	303.07	303.10	303.12
Geothermal[2]	17.32	17.06	17.10	18.06	18.18	18.32
Municipal Solid Waste	17.38	17.29	21.49	25.04	25.41	25.79
Wood and Other Biomass[3]	8.64	8.90	8.00	8.32	8.32	8.32
Solar Thermal	0.90	0.82	0.92	1.04	1.04	1.04
Solar Photovoltaic	0.00	0.00	0.03	0.08	0.08	0.08
Wind	3.04	3.45	3.93	5.13	5.32	5.55
Total	**326.38**	**307.39**	**345.28**	**360.72**	**361.44**	**362.22**
Cogenerators[4]						
Capability						
Municipal Solid Waste	0.40	0.37	0.37	0.37	0.38	0.38
Biomass	5.54	5.72	5.81	6.05	6.10	6.15
Total	**5.94**	**6.09**	**6.18**	**6.42**	**6.48**	**6.53**
Generation (billion kilowatthours)						
Municipal Solid Waste	1.88	1.93	1.75	1.78	1.79	1.79
Biomass	36.21	37.69	38.49	40.20	40.57	40.89
Total	**38.10**	**39.62**	**40.24**	**41.98**	**42.36**	**42.69**

Table B17. Renewable Energy Generating Capacity and Generation (Continued)
(Thousand Megawatts, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
80.92	80.92	80.92	80.97	80.97	80.97	80.97	80.97	80.97	0.2%	0.2%	0.2%
2.98	3.08	3.19	3.02	3.36	3.58	3.29	3.72	4.44	0.5%	1.1%	1.9%
4.31	4.43	4.55	4.65	4.85	5.07	4.90	5.23	5.59	2.3%	2.6%	2.9%
1.92	1.92	1.92	1.96	1.93	2.78	2.24	2.84	6.75	1.3%	2.4%	6.8%
0.52	0.52	0.52	0.63	0.63	0.87	1.65	1.73	2.77	7.6%	7.9%	10.3%
0.07	0.07	0.07	0.18	0.18	0.18	0.32	0.32	0.32	17.6%	17.6%	17.6%
3.19	3.57	3.81	4.23	5.10	9.09	8.15	11.64	19.49	7.5%	9.3%	12.1%
93.91	**94.51**	**94.97**	**95.63**	**97.02**	**102.54**	**101.52**	**106.45**	**120.34**	**0.7%**	**0.9%**	**1.5%**
305.55	305.60	305.66	306.08	306.16	306.26	306.22	306.35	306.49	0.8%	0.8%	0.8%
17.22	17.94	18.70	17.94	20.36	21.89	20.48	23.55	28.59	0.9%	1.5%	2.5%
27.35	28.18	28.99	29.67	31.08	32.58	31.47	33.74	36.18	2.9%	3.2%	3.6%
8.86	8.86	8.87	9.12	8.89	14.86	11.10	15.26	42.68	1.1%	2.6%	7.8%
1.38	1.38	1.38	1.71	1.71	2.54	5.14	5.43	8.98	9.1%	9.4%	12.0%
0.18	0.18	0.18	0.40	0.40	0.40	0.69	0.69	0.69	29.6%	29.6%	29.6%
5.90	7.19	7.99	9.50	12.33	25.30	22.41	33.37	58.35	9.3%	11.4%	14.4%
366.45	**369.33**	**371.78**	**374.41**	**380.94**	**403.83**	**397.52**	**418.39**	**481.96**	**1.2%**	**1.5%**	**2.2%**
0.38	0.39	0.40	0.39	0.40	0.41	0.40	0.41	0.43	0.3%	0.5%	0.7%
6.56	6.76	6.96	6.84	7.22	7.62	7.12	7.70	8.32	1.0%	1.4%	1.8%
6.94	**7.15**	**7.35**	**7.23**	**7.62**	**8.03**	**7.51**	**8.11**	**8.75**	**1.0%**	**1.4%**	**1.7%**
1.82	1.85	1.87	1.85	1.89	1.94	1.87	1.93	2.00	-0.2%	0.0%	0.2%
43.63	44.96	46.31	45.53	48.09	50.73	47.35	51.28	55.46	1.1%	1.5%	1.9%
45.45	**46.81**	**48.18**	**47.38**	**49.98**	**52.67**	**49.22**	**53.21**	**57.46**	**1.0%**	**1.4%**	**1.8%**

[1]Includes traditional utilities and nonutilities other than cogenerators. These nonutility facilities include small power producers, exempt wholesale generators and generators at industrial and commercial facilities who do not produce steam for other uses.
[2]Includes hydrothermal resources only (hot water and steam).
[3]Includes projections for energy crops after 2010.
[4]Includes cogenerators at facilities whose primary function is not electricity production. In general, biomass and other waste facilities are cogenerators while the remaining renewables produce only electricity.

Notes: Totals may not equal sum of components due to independent rounding. Net summer capability has been estimated for nonutility generators for AEO96. Net summer capability is used to be consistent with electric utility capacity estimates. Electric utility capacity data are the most recent available as of August 30, 1995. Additional retirements are also determined based on the size and age of the units. Therefore, capacity estimates may differ from other Energy Information Administration sources.

Sources: 1993 and 1994 electric utility capability: Energy Information Administration (EIA), Form EIA-860 "Annual Electric Utility Report." 1993 and 1994 nonutility and cogenerator capability: Form EIA-867, "Annual Nonutility Power Producer Report." 1993 and 1994 generation: EIA, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B18. Renewable Energy, Consumption by Sector and Source[1]
(Quadrillion Btu per Year)

Sector and Source	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Marketed Renewable Energy[2]						
Residential	**0.575**	**0.553**	**0.550**	**0.564**	**0.570**	**0.579**
Wood	0.575	0.553	0.550	0.564	0.570	0.579
Commercial	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**
Biomass	0.002	0.002	0.002	0.002	0.002	0.002
Industrial	**2.077**	**2.163**	**2.189**	**2.282**	**2.364**	**2.445**
Conventional Hydroelectric	0.033	0.033	0.033	0.033	0.033	0.033
Municipal Solid Waste	0.006	0.005	0.005	0.005	0.005	0.005
Biomass	2.039	2.126	2.152	2.244	2.326	2.408
Transportation	**0.077**	**0.086**	**0.090**	**0.090**	**0.092**	**0.103**
Ethanol used in E85[3]	0.001	0.001	0.002	0.003	0.003	0.003
Ethanol used in Gasoline Blending	0.076	0.085	0.089	0.087	0.089	0.100
Electric Generators[4]	**3.625**	**3.430**	**3.823**	**4.027**	**4.036**	**4.047**
Conventional Hydroelectric	2.869	2.671	3.020	3.116	3.116	3.116
Geothermal	0.448	0.445	0.450	0.504	0.507	0.512
Municipal Solid Waste	0.179	0.178	0.221	0.257	0.261	0.265
Biomass	0.089	0.091	0.082	0.086	0.086	0.086
Solar Thermal	0.009	0.008	0.009	0.011	0.011	0.011
Solar Photovoltaic	0.000	0.000	0.000	0.001	0.001	0.001
Wind	0.031	0.035	0.040	0.053	0.055	0.057
Total Marketed Renewable Energy	**6.356**	**6.234**	**6.654**	**6.964**	**7.064**	**7.176**
Non-Marketed Renewable Energy[5] Selected Consumption						
Residential	**0.016**	**0.016**	**0.017**	**0.020**	**0.020**	**0.021**
Solar Hot Water Heating	0.006	0.006	0.006	0.006	0.006	0.006
Geothermal Heat Pumps	0.010	0.011	0.011	0.014	0.015	0.016
Commercial	**0.011**	**0.011**	**0.012**	**0.024**	**0.024**	**0.024**
Solar Thermal	0.011	0.011	0.012	0.024	0.024	0.024

Table B18. Renewable Energy, Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
0.565	**0.577**	**0.592**	**0.567**	**0.585**	**0.605**	**0.569**	**0.592**	**0.618**	**0.1%**	**0.3%**	**0.5%**
0.565	0.577	0.592	0.567	0.585	0.605	0.569	0.592	0.618	0.1%	0.3%	0.5%
0.002	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.6%**	**0.7%**	**0.8%**
0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.6%	0.7%	0.8%
2.433	**2.564**	**2.703**	**2.511**	**2.707**	**2.916**	**2.598**	**2.862**	**3.151**	**0.9%**	**1.3%**	**1.8%**
0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.0%	0.0%	0.0%
0.005	0.005	0.005	0.005	0.005	0.006	0.005	0.006	0.006	0.6%	0.9%	1.2%
2.395	2.527	2.665	2.474	2.669	2.878	2.560	2.824	3.113	0.9%	1.4%	1.8%
0.185	**0.190**	**0.196**	**0.243**	**0.248**	**0.257**	**0.277**	**0.290**	**0.308**	**5.7%**	**5.9%**	**6.3%**
0.044	0.046	0.048	0.090	0.096	0.101	0.128	0.137	0.147	25.0%	25.4%	25.8%
0.142	0.145	0.149	0.153	0.152	0.157	0.149	0.152	0.161	2.7%	2.8%	3.1%
4.083	**4.129**	**4.169**	**4.191**	**4.310**	**4.580**	**4.499**	**4.787**	**5.563**	**1.3%**	**1.6%**	**2.3%**
3.141	3.142	3.142	3.146	3.147	3.148	3.148	3.149	3.151	0.8%	0.8%	0.8%
0.493	0.516	0.540	0.527	0.604	0.653	0.623	0.728	0.902	1.6%	2.4%	3.4%
0.281	0.290	0.298	0.305	0.319	0.335	0.323	0.347	0.372	2.9%	3.2%	3.6%
0.091	0.091	0.091	0.094	0.091	0.153	0.114	0.157	0.439	1.1%	2.6%	7.8%
0.014	0.014	0.014	0.018	0.018	0.026	0.053	0.056	0.092	9.1%	9.4%	12.0%
0.002	0.002	0.002	0.004	0.004	0.004	0.007	0.007	0.007	29.6%	29.6%	29.6%
0.061	0.074	0.082	0.098	0.127	0.260	0.230	0.343	0.600	9.3%	11.4%	14.4%
7.268	**7.463**	**7.662**	**7.514**	**7.852**	**8.360**	**7.944**	**8.533**	**9.642**	**1.2%**	**1.5%**	**2.1%**
0.023	**0.025**	**0.026**	**0.027**	**0.029**	**0.032**	**0.030**	**0.034**	**0.038**	**2.9%**	**3.5%**	**4.0%**
0.006	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	-0.3%	-0.3%	-0.3%
0.017	0.019	0.021	0.021	0.024	0.026	0.024	0.028	0.032	4.1%	4.8%	5.4%
0.027	**0.027**	**0.027**	**0.030**	**0.030**	**0.030**	**0.037**	**0.037**	**0.037**	**5.7%**	**5.7%**	**5.7%**
0.027	0.027	0.027	0.030	0.030	0.030	0.037	0.037	0.037	5.7%	5.7%	5.7%

[1]Actual heat rates used to determine fuel consumption for all renewable fuels except hydropower, solar, and wind. Consumption at hydroelectric, solar, and wind facilities determined using the fossil fuel equivalent of 10,280 Btu per kilowatthour.

[2]Includes nonelectric renewable energy groups for which the energy source is bought and sold in the marketplace, although individual instances may not necessarily be marketed, and marketed renewable energy inputs for electricity entering the marketplace on the electric power grid.

[3]Excludes motor gasoline component of E85.

[4]Includes renewable energy delivered to the grid from electric utilities, nonutilities, and that part of industrial and other cogeneration delivered to the grid. Renewable energy used in generating electricity for own use is included in the individual sectoral electricity energy consumption values.

[5]Includes selected renewable energy consumption for which the energy is not bought or sold, either directly or indirectly as an input to marketed energy. The Energy Information Administration does not estimate or project total consumption of nonmarketed renewable energy.

N/A = Not available.

Btu = British thermal unit.

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

Sources: 1993 ethanol: Energy Information Administration (EIA), *Annual Energy Review*, DOE/EIA-0384(94) (Washington, DC, July 1995). 1993 and 1994 electric generator: EIA, Form EIA-860, "Annual Electric Utility Report" and EIA, Form EIA-867, "Annual Nonutility Power Producer Report." Other 1993: EIA, Office of Integrated Analysis and Forecasting. 1994 ethanol: EIA, *Petroleum Supply Annual*, 1994, DOE/EIA-0340(94/1) (Washington, DC, June 1995). Other 1994: EIA, Office of Integrated Analysis and Forecasting. **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B19. Carbon Emissions by End-Use Sector and Source
(Million Metric Tons per Year)

Sector and Source	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
Residential						
Petroleum	26.2	25.4	24.6	24.4	24.5	24.5
Natural Gas	73.4	72.4	71.9	74.3	75.2	76.9
Coal	1.5	1.4	1.4	1.3	1.3	1.3
Electricity	170.6	170.9	170.8	175.1	179.9	184.9
Total	**271.6**	**270.1**	**268.8**	**275.1**	**280.9**	**287.6**
Commercial						
Petroleum	14.9	14.6	14.5	14.6	14.8	14.9
Natural Gas	43.1	43.4	43.8	45.5	46.0	46.8
Coal	2.2	2.1	2.1	2.2	2.2	2.3
Electricity	151.8	155.7	156.5	159.5	163.3	167.1
Total	**212.1**	**215.8**	**217.0**	**221.8**	**226.4**	**231.0**
Industrial[1]						
Petroleum	92.5	98.7	100.6	100.4	103.4	106.5
Natural Gas[2]	131.6	133.5	139.2	147.0	150.1	153.8
Coal	62.3	63.9	63.0	60.2	61.7	63.6
Electricity	167.5	168.6	167.5	167.5	175.7	183.8
Total	**454.0**	**464.7**	**470.2**	**475.2**	**491.0**	**507.7**
Transportation						
Petroleum	426.8	436.2	446.4	470.1	480.5	490.7
Natural Gas[3]	9.3	9.6	9.8	9.6	9.7	10.1
Other[4]	0.7	0.0	0.0	0.0	0.0	0.0
Electricity	0.0	1.0	1.0	1.5	1.5	1.6
Total	**436.7**	**446.8**	**457.3**	**481.3**	**491.8**	**502.4**
Total Carbon Emissions[5]						
Petroleum	560.4	574.9	586.1	609.5	623.2	636.7
Natural Gas	257.4	258.8	264.8	276.4	281.1	287.5
Coal	66.0	67.4	66.5	63.8	65.3	67.2
Other[4]	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	490.6	496.2	495.8	503.7	520.5	537.3
Total	**1374.4**	**1397.3**	**1413.2**	**1453.4**	**1490.1**	**1528.7**
Electric Generators[6]						
Petroleum	22.5	20.9	15.5	12.5	14.5	16.4
Natural Gas	39.5	44.9	47.3	37.6	45.8	55.1
Coal	428.6	430.4	433.0	453.7	460.2	465.9
Total	**490.6**	**496.2**	**495.8**	**503.7**	**520.5**	**537.3**
Total Carbon Emissions[7]						
Petroleum	582.9	595.8	601.6	622.0	637.7	653.0
Natural Gas	296.9	303.7	312.1	314.0	326.9	342.6
Coal	494.6	497.8	499.4	517.4	525.4	533.1
Other[4]	0.0	0.0	0.0	0.0	0.0	0.0
Total	**1374.4**	**1397.3**	**1413.2**	**1453.4**	**1490.1**	**1528.7**

Table B19. Carbon Emissions by End-Use Sector and Source (Continued)
(Million Metric Tons per Year)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
23.1	23.5	23.7	22.3	22.8	23.1	21.8	22.5	23.0	-0.7%	-0.6%	-0.5%
74.7	76.8	79.6	76.1	79.2	82.4	77.1	80.8	83.6	0.3%	0.5%	0.7%
1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	-1.2%	-1.2%	-1.3%
190.2	198.8	206.4	206.2	217.1	224.6	229.1	239.3	246.6	1.4%	1.6%	1.8%
289.2	**300.4**	**310.9**	**305.8**	**320.3**	**331.2**	**329.1**	**343.8**	**354.2**	**0.9%**	**1.2%**	**1.3%**
14.3	14.7	14.9	14.0	14.5	14.9	13.8	14.4	14.9	-0.3%	-0.1%	0.1%
46.4	47.6	49.0	47.4	49.2	51.0	48.3	50.6	52.6	0.5%	0.7%	0.9%
2.3	2.3	2.4	2.3	2.4	2.5	2.4	2.5	2.7	0.7%	0.9%	1.2%
169.0	176.2	182.4	177.9	187.1	193.5	192.1	200.6	206.7	1.0%	1.2%	1.4%
232.0	**240.8**	**248.8**	**241.6**	**253.3**	**262.0**	**256.6**	**268.1**	**276.9**	**0.8%**	**1.0%**	**1.2%**
102.0	107.3	112.6	100.9	109.5	117.8	102.6	113.0	124.2	0.2%	0.6%	1.1%
153.0	158.3	164.0	157.0	163.9	171.6	157.8	167.6	176.8	0.8%	1.1%	1.3%
57.6	60.4	63.7	55.6	60.2	65.9	55.3	61.8	70.7	-0.7%	-0.2%	0.5%
178.9	191.9	204.0	183.9	200.5	214.9	191.5	209.1	225.4	0.6%	1.0%	1.4%
491.6	**518.0**	**544.4**	**497.4**	**534.1**	**570.1**	**507.2**	**551.6**	**597.1**	**0.4%**	**0.8%**	**1.2%**
493.7	511.3	529.0	506.1	532.7	559.5	511.2	547.2	584.0	0.8%	1.1%	1.4%
10.1	10.6	11.1	12.0	12.7	13.4	14.6	15.5	16.3	2.0%	2.3%	2.6%
0.7	0.7	0.7	1.5	1.6	1.6	2.2	2.3	2.4	23.4%	23.7%	23.9%
3.3	3.4	3.5	5.3	5.5	5.6	6.6	6.7	6.8	9.3%	9.4%	9.5%
507.7	**526.0**	**544.3**	**524.9**	**552.4**	**580.2**	**534.6**	**571.7**	**609.4**	**0.9%**	**1.2%**	**1.5%**
633.2	656.8	680.2	643.2	679.6	715.2	649.3	697.1	746.1	0.6%	0.9%	1.2%
284.2	293.4	303.8	292.6	305.0	318.4	297.8	314.5	329.2	0.7%	0.9%	1.2%
61.1	64.0	67.4	59.1	63.8	69.6	58.8	65.5	74.5	-0.6%	-0.1%	0.5%
0.7	0.7	0.7	1.5	1.6	1.6	2.2	2.3	2.4	23.4%	23.7%	23.9%
541.4	570.3	596.3	573.3	610.2	638.6	619.3	655.7	685.4	1.1%	1.3%	1.5%
1520.6	**1585.2**	**1648.4**	**1569.7**	**1660.0**	**1743.5**	**1627.4**	**1735.1**	**1837.6**	**0.7%**	**1.0%**	**1.3%**
16.2	20.1	23.4	21.5	24.9	25.7	24.0	23.8	23.1	0.7%	0.6%	0.5%
45.9	59.2	73.0	58.5	75.9	93.1	85.7	105.9	118.2	3.1%	4.2%	4.7%
479.3	491.0	499.8	493.3	509.4	519.8	509.6	526.0	544.1	0.8%	1.0%	1.1%
541.4	**570.3**	**596.3**	**573.3**	**610.2**	**638.6**	**619.3**	**655.7**	**685.4**	**1.1%**	**1.3%**	**1.5%**
649.4	676.8	703.7	664.7	704.5	740.9	673.3	720.9	769.2	0.6%	0.9%	1.2%
330.1	352.6	376.8	351.1	380.9	411.5	383.5	420.5	447.4	1.1%	1.6%	1.9%
540.4	555.0	567.2	552.4	573.1	589.4	568.4	591.4	618.6	0.6%	0.8%	1.0%
0.7	0.7	0.7	1.5	1.6	1.6	2.2	2.3	2.4	23.4%	23.7%	23.9%
1520.6	**1585.2**	**1648.4**	**1569.7**	**1660.0**	**1743.5**	**1627.4**	**1735.1**	**1837.6**	**0.7%**	**1.0%**	**1.3%**

[1]Includes consumption by cogenerators.
[2]Includes lease and plant fuel.
[3]Includes pipeline fuel natural gas and compressed natural gas used as vehicle fuel.
[4]Other includes methanol and liquid hydrogen.
[5]Measured for delivered energy consumption.
[6]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[7]Measured for total energy consumption, with emissions for electric power generators distributed to the primary fuels.
Note: Totals may not equal sum of components due to independent rounding.

Sources: Utility coal carbon emissions coefficients from Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States, 1987-1992*, DOE/EIA-0573 (Washington, DC, November 1994). Carbon coefficients from Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States, 1987-1994*, DOE/EIA-0573(95) (Washington, DC, October 1995). 1993 consumption estimates based on: EIA, *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, July 1995). 1994 consumption estimate based on: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Consumption projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B20. Macroeconomic Indicators
(Billion 1987 Dollars, Unless Otherwise Noted)

Indicators	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
GDP Implicit Price Deflator (index 1987=1.000)	**1.235**	**1.261**	**1.287**	**1.593**	**1.462**	**1.415**
Real Gross Domestic Product	**5134**	**5344**	**5483**	**5978**	**6181**	**6382**
Real Consumption	3459	3580	3671	4073	4158	4249
Real Investment	820	952	1008	1109	1200	1291
Real Government Spending	930	923	924	959	976	994
Real Exports	602	657	723	917	954	991
Real Imports	676	767	844	1079	1107	1143
Real Disposable Personal Income	**3704**	**3836**	**3955**	**4380**	**4463**	**4556**
Index of Manufacturing Gross Output (index 1987=1.000)	**1.113**	**1.193**	**1.213**	**1.292**	**1.340**	**1.386**
AA Utility Bond Rate (percent)	7.43	8.21	7.76	10.41	8.27	6.81
90-Day U.S. Government Treasury Bill Rate (percent)	3.00	4.25	5.44	6.16	4.75	3.73
Real Yield on Government 10 Year Bonds (percent)	3.22	5.44	5.22	4.42	4.27	3.71
Real 90-Day U.S. Government Treasury Bill Rate (percent)	0.83	2.18	3.35	1.48	1.86	1.63
Real Utility Bond Rate (percent)	5.26	6.14	5.68	5.74	5.39	4.72
Delivered Energy Intensity (thousand Btu per 1987 dollar of GDP)						
Delivered Energy	12.79	12.54	12.44	11.79	11.66	11.57
Total Energy	17.02	16.69	16.53	15.54	15.39	15.27
Consumer Price Index (1982=1.00)	1.45	1.48	1.53	1.95	1.79	1.73
Employment Cost Index (1987=1.00)	1.15	1.19	1.22	1.57	1.43	1.38
Unemployment Rate (percent)	6.81	6.08	5.74	6.31	5.92	5.54
Million Units						
Truck Deliveries, Light-Duty	5.19	5.86	5.68	6.08	6.26	6.40
Unit Sales of Automobiles	8.72	9.24	8.66	8.90	9.19	9.46
Millions of People						
Population with Armed Forces Overseas	258.4	261.0	263.6	271.6	275.6	279.3
Population (aged 16 and over)	198.2	200.1	202.1	209.7	212.8	215.5
Employment, Non-Agriculture	112.6	115.9	118.2	124.2	127.0	129.9
Employment, Manufacturing	18.1	18.3	18.5	17.9	18.4	18.9
Labor Force	128.0	131.0	132.8	140.2	142.9	145.4

Table B20. Macroeconomic Indicators (Continued)
(Billion 1987 Dollars, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
2.047	**1.723**	**1.600**	**2.660**	**2.047**	**1.817**	**3.490**	**2.433**	**2.055**	**5.0%**	**3.2%**	**2.4%**
6529	**6901**	**7271**	**6946**	**7523**	**8102**	**7316**	**8114**	**8930**	**1.5%**	**2.0%**	**2.5%**
4423	4603	4790	4716	4999	5292	5012	5401	5815	1.6%	2.0%	2.3%
1282	1419	1555	1388	1595	1801	1457	1744	2030	2.0%	2.9%	3.7%
997	1031	1066	1036	1089	1142	1070	1143	1216	0.7%	1.0%	1.3%
1180	1273	1365	1467	1643	1818	1734	2022	2305	4.7%	5.5%	6.2%
1354	1426	1505	1661	1803	1951	1957	2197	2435	4.6%	5.1%	5.7%
4783	**4958**	**5137**	**5092**	**5383**	**5678**	**5394**	**5798**	**6227**	**1.6%**	**2.0%**	**2.3%**
1.418	**1.504**	**1.590**	**1.501**	**1.634**	**1.770**	**1.583**	**1.766**	**1.958**	**1.4%**	**1.9%**	**2.4%**
10.77	8.57	7.12	10.60	8.24	6.79	10.89	7.96	6.42	N/A	N/A	N/A
6.22	4.84	3.87	6.11	4.66	3.72	6.47	4.49	3.49	N/A	N/A	N/A
3.99	3.72	3.23	3.68	3.28	2.82	4.07	3.32	2.83	N/A	N/A	N/A
0.75	1.18	1.07	0.70	1.17	1.19	0.75	0.97	1.07	N/A	N/A	N/A
5.31	4.91	4.33	5.19	4.76	4.26	5.17	4.44	4.00	N/A	N/A	N/A
11.21	11.01	10.86	10.81	10.53	10.31	10.49	10.15	9.86	-0.8%	-1.0%	-1.1%
14.78	14.55	14.35	14.28	13.92	13.61	13.84	13.32	12.88	-0.9%	-1.1%	-1.2%
2.57	2.16	2.01	3.42	2.63	2.34	4.55	3.19	2.70	5.5%	3.7%	2.9%
2.05	1.73	1.62	2.69	2.11	1.91	3.57	2.57	2.25	5.4%	3.7%	3.1%
5.92	5.79	5.67	6.10	6.15	6.14	5.74	6.05	6.12	N/A	N/A	N/A
6.69	7.12	7.43	7.06	7.76	8.29	7.40	8.40	9.18	1.1%	1.7%	2.2%
8.70	9.33	9.93	8.21	9.22	10.16	7.75	9.15	10.46	0.8%	0.0%	0.6%
279.9	287.1	293.8	288.3	298.9	308.7	297.0	311.2	324.3	0.6%	0.8%	1.0%
218.4	223.8	228.6	227.7	235.4	242.5	235.4	245.8	255.4	0.8%	1.0%	1.2%
132.4	136.6	140.8	136.7	142.7	148.8	139.5	147.4	155.4	0.9%	1.2%	1.4%
17.9	18.7	19.4	17.3	18.4	19.5	16.6	18.0	19.3	-0.5%	-0.1%	0.3%
147.7	152.2	156.4	152.9	159.4	165.6	154.7	163.3	171.6	0.8%	1.1%	1.3%

GDP = Gross domestic product.
Btu = British thermal unit.
N/A = Not available.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993 and 1994: Data Resources Incorporated (DRI), DRI Trend0295. **Projections:** Energy Information Administration, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table B21. International Petroleum Supply and Disposition Summary
(Million Barrels per Day, Unless Otherwise Noted)

Supply and Disposition	1993	1994	1995	Projections 2000		
				Low Economic Growth	Reference	High Economic Growth
World Oil Price (1994 dollars per barrel)[1]	**16.48**	**15.52**	**16.82**	**18.71**	**19.27**	**19.86**
Production[2]						
OECD						
U.S. (50 states)	9.54	9.34	9.35	8.41	8.54	8.70
Canada	2.24	2.33	2.42	2.48	2.48	2.48
Mexico	3.16	3.18	3.18	3.20	3.21	3.21
OECD Europe[3]	5.29	6.13	6.46	6.82	6.82	6.83
Other OECD	0.68	0.73	0.75	0.76	0.76	0.76
Total OECD	**20.90**	**21.70**	**22.16**	**21.66**	**21.80**	**21.97**
Developing Countries						
Other South & Central America	2.26	2.82	2.91	2.93	2.94	2.94
Pacific Rim	1.81	1.89	1.95	2.12	2.12	2.13
OPEC	27.57	27.63	27.63	34.54	34.67	34.75
Other Developing Countries	3.84	3.82	3.93	4.02	4.02	4.03
Total Developing Countries	**35.48**	**36.16**	**36.43**	**43.61**	**43.76**	**43.85**
Eurasia						
Former Soviet Union	8.10	7.01	6.60	7.28	7.29	7.31
Eastern Europe	0.27	0.30	0.29	0.27	0.27	0.27
China	2.91	2.94	2.97	3.02	3.02	3.03
Total Eurasia	**11.28**	**10.25**	**9.86**	**10.57**	**10.58**	**10.60**
Total Production	**67.66**	**68.11**	**68.45**	**75.84**	**76.14**	**76.42**
Consumption						
OECD						
U.S. (50 states)	17.24	17.72	17.79	18.33	18.79	19.23
U.S. Territories	0.24	0.26	0.26	0.30	0.30	0.29
Canada	1.69	1.73	1.76	1.87	1.86	1.85
Mexico	1.87	1.91	1.94	2.07	2.06	2.05
Japan	5.41	5.68	5.79	6.39	6.36	6.33
Australia and New Zealand.	0.88	0.94	0.94	1.02	1.02	1.02
OECD Europe[3]	13.50	13.59	13.78	14.28	14.24	14.20
Total OECD	**40.82**	**41.82**	**42.26**	**44.27**	**44.63**	**44.97**
Developing Countries						
Other South and Central America	3.20	3.26	3.34	3.94	3.93	3.93
Pacific Rim	3.87	4.12	4.39	7.19	7.17	7.16
OPEC	4.58	4.74	4.94	5.56	5.56	5.56
Other Developing Countries	4.10	4.21	4.30	4.79	4.78	4.76
Total Developing Countries	**15.76**	**16.33**	**16.98**	**21.48**	**21.45**	**21.41**

Table B21. International Petroleum Supply and Disposition Summary (Continued)
(Million Barrels per Day, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
21.04	**21.87**	**22.70**	**22.61**	**23.71**	**24.78**	**24.00**	**25.43**	**27.05**	**2.1%**	**2.4%**	**2.7%**
8.07	8.38	8.66	8.35	8.79	9.22	8.85	9.38	9.85	-0.3%	0.0%	0.3%
2.47	2.47	2.48	2.36	2.37	2.37	2.25	2.26	2.27	-0.2%	-0.1%	-0.1%
3.15	3.16	3.17	3.09	3.11	3.12	3.04	3.06	3.07	-0.2%	-0.2%	-0.2%
6.06	6.07	6.08	5.23	5.24	5.25	4.28	4.29	4.30	-1.7%	-1.7%	-1.7%
0.71	0.71	0.72	0.66	0.66	0.66	0.61	0.61	0.62	-0.8%	-0.8%	-0.8%
20.46	**20.80**	**21.10**	**19.69**	**20.16**	**20.62**	**19.03**	**19.60**	**20.11**	**-0.6%**	**-0.5%**	**-0.4%**
2.68	2.69	2.70	2.35	2.36	2.37	1.93	1.94	1.95	-1.8%	-1.8%	-1.7%
2.27	2.28	2.28	2.19	2.20	2.20	2.04	2.05	2.06	0.4%	0.4%	0.4%
41.14	41.16	41.23	46.48	46.55	46.62	52.33	52.37	52.53	3.1%	3.1%	3.1%
3.86	3.87	3.88	3.57	3.59	3.60	3.20	3.22	3.23	-0.8%	-0.8%	-0.8%
49.95	**50.00**	**50.09**	**54.59**	**54.70**	**54.79**	**59.51**	**59.58**	**59.77**	**2.4%**	**2.4%**	**2.4%**
8.38	8.41	8.43	9.52	9.55	9.59	10.22	10.27	10.33	1.8%	1.8%	1.9%
0.23	0.23	0.23	0.21	0.21	0.21	0.18	0.18	0.19	-2.4%	-2.3%	-2.3%
3.06	3.07	3.08	3.03	3.04	3.05	2.98	3.00	3.01	0.1%	0.1%	0.1%
11.68	**11.71**	**11.75**	**12.76**	**12.81**	**12.86**	**13.39**	**13.46**	**13.52**	**1.3%**	**1.3%**	**1.3%**
82.09	**82.51**	**82.94**	**87.04**	**87.67**	**88.26**	**91.93**	**92.63**	**93.40**	**1.4%**	**1.5%**	**1.5%**
19.11	19.89	20.67	19.52	20.67	21.76	19.75	21.18	22.67	0.5%	0.9%	1.2%
0.34	0.33	0.33	0.36	0.36	0.35	0.39	0.39	0.38	2.1%	2.0%	1.9%
1.97	1.95	1.93	2.07	2.04	2.01	2.17	2.13	2.09	1.1%	1.0%	0.9%
2.26	2.24	2.22	2.44	2.41	2.39	2.61	2.57	2.54	1.5%	1.4%	1.4%
6.73	6.64	6.56	6.99	6.85	6.72	7.28	7.08	6.90	1.2%	1.1%	0.9%
1.09	1.08	1.08	1.15	1.15	1.14	1.22	1.21	1.20	1.3%	1.2%	1.2%
14.65	14.57	14.49	14.85	14.75	14.65	15.05	14.92	14.79	0.5%	0.4%	0.4%
46.14	**46.71**	**47.28**	**47.38**	**48.22**	**49.02**	**48.48**	**49.49**	**50.57**	**0.7%**	**0.8%**	**0.9%**
4.29	4.27	4.26	4.58	4.56	4.54	4.87	4.84	4.82	1.9%	1.9%	1.9%
8.80	8.77	8.74	9.74	9.69	9.65	10.63	10.57	10.50	4.6%	4.6%	4.6%
6.14	6.14	6.14	6.78	6.78	6.78	7.48	7.48	7.48	2.2%	2.2%	2.2%
5.17	5.13	5.10	5.54	5.48	5.42	5.96	5.87	5.78	1.7%	1.6%	1.5%
24.40	**24.31**	**24.23**	**26.63**	**26.51**	**26.39**	**28.93**	**28.75**	**28.57**	**2.8%**	**2.7%**	**2.7%**

Table B21. International Petroleum Supply and Disposition Summary (Continued)
(Million Barrels per Day, Unless Otherwise Noted)

Supply and Disposition	1993	1994	1995	Projections		
				2000		
				Low Economic Growth	Reference	High Economic Growth
Eurasia						
Former Soviet Union	5.78	4.89	4.53	4.88	4.87	4.85
Eastern Europe	1.21	1.21	1.24	1.35	1.35	1.35
China	3.11	3.30	3.49	4.17	4.15	4.13
Total Eurasia	**10.09**	**9.40**	**9.26**	**10.40**	**10.37**	**10.34**
Total Consumption	**66.67**	**67.56**	**68.50**	**76.14**	**76.44**	**76.72**
Non-OPEC Production	40.09	40.48	40.82	41.30	41.47	41.66
Net Eurasia Exports	1.19	0.85	0.60	0.17	0.22	0.26
OPEC Market Share	0.41	0.41	0.40	0.46	0.46	0.45

Table B21. International Petroleum Supply and Disposition Summary (Continued)
(Million Barrels per Day, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
5.75	5.73	5.70	6.64	6.60	6.57	7.51	7.46	7.40	2.1%	2.0%	2.0%
1.44	1.44	1.44	1.53	1.52	1.51	1.59	1.59	1.58	1.3%	1.3%	1.3%
4.65	4.62	4.59	5.16	5.11	5.07	5.71	5.64	5.58	2.6%	2.6%	2.5%
11.85	**11.79**	**11.73**	**13.33**	**13.24**	**13.15**	**14.81**	**14.69**	**14.56**	**2.2%**	**2.1%**	**2.1%**
82.39	**82.81**	**83.24**	**87.34**	**87.97**	**88.56**	**92.23**	**92.93**	**93.70**	**1.5%**	**1.5%**	**1.6%**
40.95	41.34	41.71	40.56	41.11	41.65	39.59	40.26	40.87	-0.1%	0.0%	0.0%
-0.17	-0.08	0.02	-0.56	-0.43	-0.29	-1.42	-1.23	-1.04	N/A	N/A	N/A
0.50	0.50	0.50	0.53	0.53	0.53	0.57	0.57	0.56	1.6%	1.6%	1.6%

[1]Average refiner acquisition cost of imported crude oil.
[2]Includes production of crude oil (including lease condensates), natural gas plant liquids, other hydrogen and hydrocarbons for refinery feedstocks, alcohol, liquids produced from coal and other sources, and refinery gains.
[3]OECD Europe includes the unified Germany.
OECD = Organization for Economic Cooperation and Development - Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States (including territories).
Pacific Rim = Hong Kong, Malaysia, Philippines, Singapore, South Korea, Taiwan, and Thailand.
OPEC = Organization of Petroleum Exporting Countries - Algeria, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.
Eurasia = Albania, Bulgaria, China, Czech Republic, Hungary, Poland, Romania, Slovak Republic, the Former Soviet Union, and the Former Yugoslavia.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993 to 1995: Energy Information Administration (EIA), *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Appendix C

Oil Price Case Comparisons

Table C1. Total Energy Supply and Disposition Summary

(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1993	1994	1995	Projections		
				2000		
				Low World Oil Price	Reference	High World Oil Price
Production						
Crude Oil and Lease Condensate	14.50	14.10	13.84	10.70	11.96	13.45
Natural Gas Plant Liquids	2.49	2.47	2.43	2.50	2.54	2.56
Dry Natural Gas	18.97	19.41	19.47	19.82	20.24	20.78
Coal	20.23	22.01	21.89	22.56	22.59	22.60
Nuclear Power	6.52	6.84	7.02	7.09	7.09	7.09
Renewable Energy[1]	6.40	6.26	6.68	7.03	7.01	7.00
Other[2]	0.54	0.99	0.45	0.42	0.44	0.47
Total	**69.64**	**72.08**	**71.79**	**70.12**	**71.87**	**73.94**
Imports						
Crude Oil[3]	14.76	15.33	16.33	21.08	19.67	18.52
Petroleum Products[4]	3.73	3.92	3.53	4.82	4.03	3.01
Natural Gas	2.39	2.60	2.78	3.30	3.30	3.30
Other Imports[5]	0.50	0.67	0.62	0.69	0.69	0.72
Total	**21.38**	**22.53**	**23.25**	**29.90**	**27.70**	**25.55**
Exports						
Petroleum[6]	2.12	2.00	2.28	2.06	2.12	2.66
Natural Gas	0.15	0.16	0.17	0.27	0.27	0.27
Coal	1.96	1.88	1.88	2.16	2.16	2.16
Total	**4.23**	**4.04**	**4.33**	**4.50**	**4.56**	**5.09**
Discrepancy[7]	**0.59**	**-1.43**	**-0.12**	**-0.04**	**0.06**	**0.18**
Consumption						
Petroleum Products[8]	33.83	34.56	34.88	37.72	36.88	35.82
Natural Gas	20.80	21.36	21.95	22.58	23.00	23.54
Coal	19.55	19.65	19.66	20.65	20.67	20.69
Nuclear Power	6.52	6.84	7.02	7.09	7.09	7.09
Renewable Energy[1]	6.40	6.27	6.68	7.03	7.01	7.00
Other[9]	0.29	0.46	0.40	0.42	0.42	0.44
Total	**87.38**	**89.14**	**90.60**	**95.48**	**95.07**	**94.58**
Net Imports - Petroleum	**16.37**	**17.25**	**17.58**	**23.84**	**21.58**	**18.87**
Prices (1994 dollars per unit)						
World Oil Price (dollars per barrel)[10]	16.48	15.52	16.81	14.66	19.27	25.97
Gas Wellhead Price (dollars per Mcf)[11]	2.09	1.88	1.60	1.79	1.89	2.07
Coal Minemouth Price (dollars per ton)	19.85	19.41	18.54	16.74	17.44	18.12

[1]Includes utility and nonutility electricity from hydroelectric, wood and wood waste, municipal solid waste, other biomass, wind, photovoltaic and solar thermal sources; non-electric energy from renewable sources, such as active and passive solar systems, and wood; and both the ethanol and gasoline components of E85, but not the ethanol components of blends less than 85 percent. Excludes nonmarketed renewable energy. See Table 18 for selected nonmarketed residential and commercial renewable energy.
[2]Includes liquid hydrogen, methanol, supplemental natural gas, and some domestic inputs to refineries.
[3]Includes imports of crude oil for the Strategic Petroleum Reserve.
[4]Includes imports of finished petroleum products, imports of unfinished oils, alcohols, ethers, and blending components.
[5]Includes coal, coal coke (net), and electricity (net).
[6]Includes crude oil and petroleum products.
[7]Balancing item. Includes unaccounted for supply, losses, gains, and net storage withdraws.
[8]Includes natural gas plant liquids, crude oil consumed as a fuel, and nonpetroleum based liquids for blending, such as ethanol.
[9]Includes net electricity imports, methanol, and liquid hydrogen.
[10]Average refiner acquisition cost for imported crude oil.
[11]Represents lower 48 onshore and offshore supplies.

Table C1. Total Energy Supply and Disposition Summary (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
8.76	11.10	14.44	7.98	11.51	15.25	7.76	12.30	15.89	-2.8%	-0.6%	0.6%
2.64	2.74	2.76	2.87	2.97	2.86	3.10	3.20	3.14	1.1%	1.2%	1.1%
21.25	21.89	22.48	22.68	23.52	24.31	24.52	25.72	26.32	1.1%	1.3%	1.5%
23.96	23.95	23.95	24.90	24.94	24.87	26.00	26.14	26.13	0.8%	0.8%	0.8%
6.93	6.93	6.93	6.52	6.52	6.52	4.63	4.63	4.63	-1.8%	-1.8%	-1.8%
7.37	7.38	7.40	7.69	7.78	7.81	8.41	8.51	8.66	1.4%	1.5%	1.6%
0.48	0.50	0.50	0.54	0.55	0.55	0.56	0.58	0.59	-2.7%	-2.5%	-2.4%
71.39	**74.50**	**78.46**	**73.17**	**77.79**	**82.17**	**74.99**	**81.08**	**85.36**	**0.2%**	**0.6%**	**0.8%**
23.09	21.13	17.90	23.82	21.05	17.71	24.33	20.87	17.14	2.2%	1.5%	0.5%
6.65	5.23	3.97	8.45	6.16	4.66	9.55	6.40	5.18	4.3%	2.4%	1.3%
3.48	3.48	3.48	3.84	3.84	3.84	4.42	4.42	4.42	2.5%	2.5%	2.5%
0.58	0.59	0.61	0.61	0.61	0.63	0.56	0.56	0.59	-0.9%	-0.9%	-0.7%
33.81	**30.43**	**25.97**	**36.72**	**31.65**	**26.83**	**38.87**	**32.25**	**27.32**	**2.6%**	**1.7%**	**0.9%**
1.61	1.88	2.46	1.45	1.77	2.46	1.41	1.91	2.33	-1.6%	-0.2%	0.7%
0.31	0.31	0.31	0.32	0.32	0.32	0.33	0.33	0.33	3.5%	3.5%	3.5%
2.37	2.37	2.37	2.66	2.66	2.66	3.15	3.14	3.14	2.5%	2.5%	2.5%
4.29	**4.56**	**5.13**	**4.43**	**4.74**	**5.43**	**4.89**	**5.38**	**5.80**	**0.9%**	**1.4%**	**1.7%**
-0.14	**0.01**	**0.20**	**-0.18**	**-0.01**	**0.42**	**-0.20**	**0.07**	**0.31**	**N/A**	**N/A**	**N/A**
40.20	39.12	37.58	42.23	40.68	39.11	43.87	41.69	40.10	1.1%	0.9%	0.7%
24.15	24.79	25.38	25.92	26.76	27.55	28.33	29.52	30.12	1.4%	1.6%	1.7%
21.78	21.83	21.84	22.50	22.55	22.57	23.12	23.27	23.24	0.8%	0.8%	0.8%
6.93	6.93	6.93	6.52	6.52	6.52	4.63	4.63	4.63	-1.8%	-1.8%	-1.8%
7.38	7.38	7.40	7.70	7.78	7.82	8.42	8.52	8.67	1.4%	1.5%	1.6%
0.33	0.33	0.36	0.41	0.40	0.43	0.40	0.40	0.42	-0.7%	-0.7%	-0.4%
100.77	**100.38**	**99.49**	**105.28**	**104.69**	**103.99**	**108.77**	**108.02**	**107.20**	**1.0%**	**0.9%**	**0.9%**
28.13	**24.48**	**19.41**	**30.82**	**25.44**	**19.90**	**32.48**	**25.36**	**19.99**	**3.1%**	**1.9%**	**0.7%**
15.78	21.86	31.47	16.02	23.70	32.61	16.07	25.43	33.89	0.2%	2.4%	3.8%
1.90	1.99	2.13	2.01	2.15	2.27	2.34	2.57	2.79	1.0%	1.5%	1.9%
17.08	17.68	18.80	16.59	17.43	18.81	16.54	17.39	18.79	-0.8%	-0.5%	-0.2%

Btu = British thermal unit.
Mcf = Thousand cubic feet.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding. Figures for 1993 and 1994 may differ from published data due to internal conversion factors.
Sources: 1993 natural gas values: Energy Information Administration (EIA), *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). 1993 coal minemouth prices: EIA, *Coal Industry Annual 1993*, DOE/EIA-0584(93) (Washington, DC, December 1994). Other 1993 values: EIA, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995). 1994 natural gas supply and price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). 1994 coal minemouth prices: EIA, *Coal Industry Annual 1994*, DOE/EIA-0584(94) (Washington, DC, December 1995). 1994 coal production and exports: EIA, *Monthly Energy Review*, DOE/EIA-0035(95/08) (Washington, DC, August 1995). Other 1994 values: EIA, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C2. Energy Consumption by Sector and Source
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Energy Consumption						
Residential						
Distillate Fuel	0.91	0.87	0.84	0.87	0.84	0.79
Kerosene	0.08	0.07	0.07	0.07	0.07	0.06
Liquefied Petroleum Gas	0.40	0.41	0.40	0.40	0.39	0.37
Petroleum Subtotal	1.39	1.35	1.31	1.33	1.30	1.23
Natural Gas	5.10	5.03	5.00	5.24	5.22	5.23
Coal	0.06	0.06	0.05	0.05	0.05	0.05
Renewable Energy[1]	0.57	0.55	0.55	0.57	0.57	0.57
Electricity	3.39	3.43	3.49	3.70	3.70	3.69
Delivered Energy	**10.51**	**10.41**	**10.40**	**10.90**	**10.84**	**10.77**
Electricity Related Losses	7.57	7.63	7.73	7.97	7.96	7.96
Total	**18.08**	**18.04**	**18.13**	**18.88**	**18.80**	**18.73**
Commercial						
Distillate Fuel	0.46	0.42	0.42	0.45	0.42	0.40
Residual Fuel	0.17	0.18	0.18	0.18	0.18	0.18
Kerosene	0.01	0.01	0.01	0.01	0.01	0.01
Liquefied Petroleum Gas	0.07	0.05	0.05	0.05	0.05	0.05
Motor Gasoline[2]	0.03	0.07	0.07	0.07	0.07	0.07
Petroleum Subtotal	0.75	0.73	0.73	0.77	0.74	0.73
Natural Gas	2.98	3.01	3.04	3.19	3.20	3.20
Coal	0.08	0.08	0.08	0.09	0.09	0.09
Renewable Energy[3]	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	3.01	3.13	3.20	3.36	3.36	3.35
Delivered Energy	**6.83**	**6.96**	**7.06**	**7.40**	**7.39**	**7.37**
Electricity Related Losses	6.72	6.95	7.08	7.24	7.23	7.23
Total	**13.55**	**13.91**	**14.14**	**14.64**	**14.62**	**14.60**
Industrial[4]						
Distillate Fuel	1.10	1.15	1.16	1.22	1.21	1.21
Liquefied Petroleum Gas	1.79	1.87	1.92	2.03	1.97	1.96
Petrochemical Feedstocks	1.19	1.25	1.25	1.28	1.27	1.27
Residual Fuel	0.45	0.47	0.47	0.50	0.48	0.38
Motor Gasoline[2]	0.18	0.19	0.19	0.20	0.20	0.20
Other Petroleum[5]	3.69	3.90	3.92	4.18	4.07	3.74
Petroleum Subtotal	8.41	8.83	8.92	9.41	9.21	8.75
Natural Gas[6]	9.07	9.34	9.76	10.35	10.49	10.91
Metallurgical Coal	0.84	0.84	0.81	0.71	0.71	0.71
Steam Coal	1.66	1.69	1.67	1.71	1.73	1.77
Net Coal Coke Imports	0.02	0.02	0.02	0.03	0.03	0.03
Coal Subtotal	2.52	2.55	2.51	2.45	2.47	2.51
Renewable Energy[7]	2.08	2.16	2.19	2.37	2.36	2.35
Electricity	3.33	3.39	3.43	3.62	3.61	3.61
Delivered Energy	**25.42**	**26.27**	**26.80**	**28.20**	**28.15**	**28.13**
Electricity Related Losses	7.43	7.53	7.58	7.79	7.78	7.78
Total	**32.85**	**33.80**	**34.38**	**35.99**	**35.93**	**35.91**

Table C2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
0.86	0.82	0.72	0.86	0.80	0.71	0.87	0.80	0.71	0.0%	-0.4%	-1.0%
0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	-0.4%	-0.6%	-0.7%
0.38	0.36	0.34	0.37	0.34	0.33	0.36	0.33	0.32	-0.5%	-1.0%	-1.2%
1.31	1.24	1.13	1.29	1.20	1.10	1.30	1.19	1.08	-0.2%	-0.6%	-1.0%
5.34	5.33	5.37	5.49	5.50	5.53	5.62	5.61	5.62	0.5%	0.5%	0.5%
0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04	-1.1%	-1.2%	-1.5%
0.58	0.58	0.58	0.59	0.59	0.58	0.60	0.59	0.59	0.3%	0.3%	0.3%
4.01	4.00	3.99	4.38	4.37	4.36	4.85	4.84	4.83	1.7%	1.7%	1.6%
11.28	**11.20**	**11.11**	**11.80**	**11.71**	**11.62**	**12.41**	**12.28**	**12.17**	**0.8%**	**0.8%**	**0.7%**
8.52	8.52	8.49	9.10	9.07	9.08	9.47	9.40	9.38	1.0%	1.0%	1.0%
19.79	**19.73**	**19.60**	**20.91**	**20.78**	**20.70**	**21.88**	**21.68**	**21.54**	**0.9%**	**0.9%**	**0.8%**
0.46	0.41	0.39	0.46	0.40	0.38	0.47	0.39	0.37	0.5%	-0.4%	-0.6%
0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.19	0.19	0.3%	0.3%	0.3%
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.7%	0.7%	0.7%
0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	1.0%	1.0%	1.0%
0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	-0.3%	-0.3%	-0.3%
0.78	0.74	0.71	0.79	0.73	0.71	0.80	0.72	0.70	0.4%	-0.1%	-0.2%
3.28	3.31	3.32	3.38	3.42	3.43	3.47	3.51	3.51	0.7%	0.7%	0.7%
0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.9%	0.9%	0.9%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.7%	0.7%	0.7%
3.55	3.55	3.54	3.78	3.77	3.76	4.08	4.06	4.05	1.3%	1.2%	1.2%
7.71	**7.68**	**7.66**	**8.05**	**8.02**	**7.99**	**8.45**	**8.40**	**8.36**	**0.9%**	**0.9%**	**0.9%**
7.55	7.55	7.53	7.85	7.82	7.83	7.95	7.88	7.86	0.6%	0.6%	0.6%
15.26	**15.24**	**15.19**	**15.90**	**15.84**	**15.82**	**16.40**	**16.28**	**16.22**	**0.8%**	**0.8%**	**0.7%**
1.29	1.28	1.28	1.37	1.34	1.33	1.44	1.40	1.40	1.1%	0.9%	0.9%
2.17	2.11	2.08	2.27	2.19	2.18	2.45	2.30	2.29	1.3%	1.0%	1.0%
1.36	1.36	1.35	1.42	1.42	1.41	1.49	1.48	1.48	0.8%	0.8%	0.8%
0.53	0.49	0.39	0.54	0.49	0.40	0.61	0.52	0.42	1.2%	0.4%	-0.5%
0.21	0.21	0.21	0.22	0.22	0.22	0.23	0.23	0.23	1.0%	1.0%	1.0%
4.31	4.16	3.72	4.38	4.22	3.79	4.48	4.32	3.87	0.7%	0.5%	0.0%
9.88	9.61	9.03	10.21	9.89	9.35	10.71	10.24	9.69	0.9%	0.7%	0.4%
10.77	11.12	11.58	11.10	11.55	12.04	11.16	11.86	12.35	0.8%	1.1%	1.3%
0.62	0.62	0.62	0.55	0.55	0.55	0.48	0.48	0.48	-2.6%	-2.6%	-2.6%
1.74	1.76	1.80	1.80	1.83	1.84	1.92	1.96	1.98	0.6%	0.7%	0.8%
0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	2.4%	2.5%	2.5%
2.40	2.42	2.46	2.39	2.42	2.43	2.44	2.48	2.50	-0.2%	-0.1%	-0.1%
2.58	2.56	2.54	2.72	2.71	2.69	2.88	2.86	2.85	1.4%	1.3%	1.3%
3.86	3.86	3.85	4.04	4.04	4.04	4.22	4.23	4.23	1.1%	1.1%	1.1%
29.49	**29.58**	**29.47**	**30.45**	**30.60**	**30.54**	**31.41**	**31.68**	**31.61**	**0.9%**	**0.9%**	**0.9%**
8.21	8.22	8.19	8.38	8.38	8.40	8.24	8.22	8.21	0.4%	0.4%	0.4%
37.69	**37.81**	**37.66**	**38.83**	**38.98**	**38.95**	**39.65**	**39.89**	**39.83**	**0.8%**	**0.8%**	**0.8%**

Table C2. Energy Consumption by Sector and Source (Continued)

(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1993	1994	1995	Projections		
				2000		
				Low World Oil Price	Reference	High World Oil Price
Transportation						
Distillate Fuel	3.91	4.17	4.21	4.62	4.58	4.48
Jet Fuel[8]	3.03	3.15	3.27	3.76	3.72	3.66
Motor Gasoline[2]	14.13	14.21	14.54	15.49	15.35	15.10
Residual Fuel	0.91	0.90	0.94	1.07	1.07	1.06
Liquefied Petroleum Gas	0.02	0.03	0.02	0.02	0.02	0.02
Other Petroleum[9]	0.20	0.20	0.21	0.22	0.22	0.21
Petroleum Subtotal	22.20	22.66	23.19	25.18	24.94	24.54
Pipeline Fuel Natural Gas	0.64	0.66	0.68	0.67	0.67	0.67
Compressed Natural Gas	0.01	0.01	0.01	0.01	0.01	0.01
Renewable Energy (E85)[10]	0.00	0.00	0.00	0.00	0.00	0.01
Methanol[11]	0.00	0.00	0.00	0.00	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.02	0.02	0.02	0.03	0.03	0.03
Delivered Energy	**22.87**	**23.34**	**23.90**	**25.89**	**25.66**	**25.27**
Electricity Related Losses	0.04	0.05	0.05	0.07	0.07	0.07
Total	**22.91**	**23.39**	**23.94**	**25.96**	**25.72**	**25.33**
Delivered Energy Consumption for All Sectors						
Distillate Fuel	6.39	6.61	6.63	7.15	7.05	6.88
Kerosene	0.10	0.09	0.09	0.09	0.09	0.09
Jet Fuel[8]	3.03	3.15	3.27	3.76	3.72	3.66
Liquefied Petroleum Gas	2.28	2.35	2.39	2.50	2.43	2.41
Motor Gasoline[2]	14.33	14.47	14.80	15.77	15.62	15.38
Petrochemical Feedstocks	1.19	1.25	1.25	1.28	1.27	1.27
Residual Fuel	1.54	1.55	1.59	1.75	1.73	1.62
Other Petroleum[12]	3.88	4.09	4.12	4.38	4.28	3.94
Natural Gas[6]	17.80	18.05	18.48	19.46	19.59	20.03
Metallurgical Coal	0.84	0.84	0.81	0.71	0.71	0.71
Steam Coal	1.80	1.82	1.81	1.85	1.86	1.90
Net Coal Coke Imports	0.02	0.02	0.02	0.03	0.03	0.03
Renewable Energy[13]	2.65	2.72	2.74	2.95	2.94	2.93
Methanol[11]	0.00	0.00	0.00	0.00	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	9.76	9.97	10.15	10.72	10.70	10.69
Delivered Energy	**65.62**	**66.99**	**68.16**	**72.40**	**72.03**	**71.54**
Electricity Related Losses	21.76	22.15	22.44	23.07	23.03	23.04
Total	**87.38**	**89.14**	**90.60**	**95.48**	**95.07**	**94.58**
Electric Generators[14]						
Distillate Fuel	0.13	0.10	0.12	0.09	0.08	0.09
Residual Fuel	0.95	0.89	0.61	0.94	0.60	0.48
Natural Gas	3.00	3.32	3.47	3.12	3.41	3.50
Steam Coal	16.89	16.97	17.02	18.05	18.07	18.05
Nuclear Power	6.52	6.84	7.02	7.09	7.09	7.09
Renewable Energy[15]	3.74	3.55	3.94	4.08	4.07	4.08
Electricity Imports	0.29	0.46	0.40	0.41	0.42	0.44
Total	**31.52**	**32.12**	**32.59**	**33.79**	**33.74**	**33.72**

Table C2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
5.08	5.01	4.88	5.47	5.39	5.28	5.93	5.84	5.72	1.7%	1.6%	1.5%
4.18	4.13	4.05	4.49	4.43	4.36	4.76	4.69	4.63	2.0%	1.9%	1.8%
16.25	15.97	15.56	16.55	16.16	15.72	16.45	15.98	15.52	0.7%	0.6%	0.4%
1.22	1.22	1.21	1.37	1.37	1.36	1.51	1.51	1.50	2.5%	2.5%	2.5%
0.03	0.03	0.03	0.08	0.08	0.08	0.15	0.14	0.15	8.7%	8.5%	8.7%
0.23	0.23	0.22	0.24	0.23	0.23	0.24	0.24	0.24	0.9%	0.9%	0.9%
26.98	26.57	25.95	28.20	27.67	27.03	29.04	28.40	27.76	1.2%	1.1%	1.0%
0.71	0.71	0.72	0.77	0.76	0.78	0.86	0.86	0.87	1.3%	1.3%	1.4%
0.03	0.03	0.03	0.12	0.12	0.12	0.22	0.22	0.21	18.2%	18.1%	18.1%
0.06	0.05	0.06	0.12	0.11	0.12	0.17	0.16	0.17	25.6%	25.4%	25.8%
0.04	0.04	0.04	0.09	0.09	0.09	0.13	0.13	0.14	23.7%	23.7%	23.9%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.1%	56.8%	58.9%
0.07	0.07	0.07	0.11	0.11	0.12	0.14	0.14	0.16	9.6%	9.5%	10.2%
27.88	**27.47**	**26.88**	**29.40**	**28.86**	**28.26**	**30.56**	**29.90**	**29.31**	**1.3%**	**1.2%**	**1.1%**
0.15	0.14	0.16	0.23	0.23	0.26	0.27	0.26	0.30	8.9%	8.8%	9.5%
28.03	**27.62**	**27.03**	**29.64**	**29.09**	**28.52**	**30.84**	**30.17**	**29.61**	**1.3%**	**1.2%**	**1.1%**
7.68	7.52	7.27	8.15	7.93	7.71	8.71	8.42	8.19	1.3%	1.2%	1.0%
0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	-0.2%	-0.3%	-0.4%
4.18	4.13	4.05	4.49	4.43	4.36	4.76	4.69	4.63	2.0%	1.9%	1.8%
2.64	2.56	2.52	2.78	2.68	2.65	3.02	2.83	2.81	1.2%	0.9%	0.8%
16.53	16.25	15.85	16.84	16.46	16.01	16.75	16.28	15.82	0.7%	0.6%	0.4%
1.36	1.36	1.35	1.42	1.42	1.41	1.49	1.48	1.48	0.8%	0.8%	0.8%
1.93	1.89	1.78	2.10	2.05	1.95	2.31	2.21	2.11	1.9%	1.7%	1.5%
4.53	4.37	3.93	4.60	4.44	4.01	4.71	4.55	4.09	0.7%	0.5%	0.0%
20.12	20.50	21.01	20.86	21.35	21.89	21.33	22.06	22.57	0.8%	1.0%	1.1%
0.62	0.62	0.62	0.55	0.55	0.55	0.48	0.48	0.48	-2.6%	-2.6%	-2.6%
1.88	1.90	1.94	1.94	1.97	1.98	2.06	2.10	2.12	0.6%	0.7%	0.7%
0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	2.4%	2.5%	2.5%
3.21	3.20	3.18	3.43	3.41	3.40	3.64	3.62	3.61	1.4%	1.4%	1.4%
0.04	0.04	0.04	0.09	0.09	0.09	0.13	0.13	0.14	23.7%	23.7%	23.9%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.1%	56.8%	58.9%
11.49	11.47	11.45	12.31	12.30	12.29	13.29	13.27	13.26	1.4%	1.4%	1.4%
76.35	**75.94**	**75.12**	**79.71**	**79.19**	**78.42**	**82.83**	**82.25**	**81.45**	**1.0%**	**1.0%**	**0.9%**
24.42	24.44	24.37	25.57	25.50	25.57	25.94	25.77	25.75	0.8%	0.7%	0.7%
100.77	**100.38**	**99.49**	**105.28**	**104.69**	**103.99**	**108.77**	**108.02**	**107.20**	**1.0%**	**0.9%**	**0.9%**
0.13	0.13	0.13	0.21	0.19	0.21	0.30	0.24	0.24	5.4%	4.2%	4.4%
1.12	0.83	0.62	1.54	1.00	0.71	1.72	0.90	0.63	3.2%	0.0%	-1.6%
4.03	4.29	4.37	5.06	5.41	5.66	7.00	7.46	7.56	3.6%	3.9%	4.0%
19.24	19.27	19.24	19.97	19.99	20.00	20.54	20.64	20.60	0.9%	0.9%	0.9%
6.93	6.93	6.93	6.52	6.52	6.52	4.63	4.63	4.63	-1.8%	-1.8%	-1.8%
4.16	4.19	4.22	4.27	4.38	4.42	4.78	4.90	5.06	1.4%	1.6%	1.7%
0.29	0.29	0.32	0.31	0.32	0.33	0.26	0.26	0.29	-2.6%	-2.7%	-2.2%
35.91	**35.92**	**35.83**	**37.88**	**37.80**	**37.86**	**39.23**	**39.04**	**39.02**	**1.0%**	**0.9%**	**0.9%**

Table C2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Total Energy Consumption						
Distillate Fuel	6.52	6.71	6.75	7.24	7.14	6.97
Kerosene	0.10	0.09	0.09	0.09	0.09	0.09
Jet Fuel[8]	3.03	3.15	3.27	3.76	3.72	3.66
Liquefied Petroleum Gas	2.28	2.35	2.39	2.50	2.43	2.41
Motor Gasoline[2]	14.33	14.47	14.80	15.77	15.62	15.38
Petrochemical Feedstocks	1.19	1.25	1.25	1.28	1.27	1.27
Residual Fuel	2.49	2.44	2.20	2.70	2.33	2.10
Other Petroleum[12]	3.88	4.09	4.12	4.38	4.28	3.94
Natural Gas	20.80	21.36	21.95	22.58	23.00	23.54
Metallurgical Coal	0.84	0.84	0.81	0.71	0.71	0.71
Steam Coal	18.69	18.79	18.83	19.91	19.93	19.95
Net Coal Coke Imports	0.02	0.02	0.02	0.03	0.03	0.03
Nuclear Power	6.52	6.84	7.02	7.09	7.09	7.09
Renewable Energy[16]	6.40	6.27	6.68	7.03	7.01	7.00
Methanol	0.00	0.00	0.00	0.00	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Imports	0.29	0.46	0.40	0.41	0.42	0.44
Total	**87.38**	**89.14**	**90.60**	**95.48**	**95.07**	**94.58**
Energy Use and Related Statistics						
Delivered Energy Use	65.62	66.99	68.16	72.40	72.03	71.54
Total Energy Use	87.39	89.14	90.60	95.49	95.07	94.59
Population (millions)	258.43	261.03	263.58	275.62	275.62	275.62
Gross Domestic Product (billion 1987 dollars)	5134.47	5343.91	5483.13	6205.33	6181.31	6145.92

Table C2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
7.81	7.65	7.41	8.36	8.11	7.91	9.01	8.66	8.44	1.4%	1.2%	1.1%
0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	-0.2%	-0.3%	-0.4%
4.18	4.13	4.05	4.49	4.43	4.36	4.76	4.69	4.63	2.0%	1.9%	1.8%
2.64	2.56	2.52	2.78	2.68	2.65	3.02	2.83	2.81	1.2%	0.9%	0.8%
16.53	16.25	15.85	16.84	16.46	16.01	16.75	16.28	15.82	0.7%	0.6%	0.4%
1.36	1.36	1.35	1.42	1.42	1.41	1.49	1.48	1.48	0.8%	0.8%	0.8%
3.06	2.72	2.40	3.64	3.05	2.66	4.03	3.11	2.75	2.4%	1.2%	0.6%
4.53	4.37	3.93	4.60	4.44	4.01	4.71	4.55	4.09	0.7%	0.5%	0.0%
24.15	24.79	25.38	25.92	26.76	27.55	28.33	29.52	30.12	1.4%	1.6%	1.7%
0.62	0.62	0.62	0.55	0.55	0.55	0.48	0.48	0.48	-2.6%	-2.6%	-2.6%
21.12	21.17	21.18	21.91	21.96	21.98	22.60	22.75	22.72	0.9%	0.9%	0.9%
0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	2.4%	2.5%	2.5%
6.93	6.93	6.93	6.52	6.52	6.52	4.63	4.63	4.63	-1.8%	-1.8%	-1.8%
7.38	7.38	7.40	7.70	7.78	7.82	8.42	8.52	8.67	1.4%	1.5%	1.6%
0.04	0.04	0.04	0.09	0.09	0.09	0.13	0.13	0.14	23.7%	23.7%	23.9%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.1%	56.8%	58.9%
0.29	0.29	0.32	0.31	0.32	0.33	0.26	0.26	0.29	-2.6%	-2.7%	-2.2%
100.77	**100.38**	**99.49**	**105.28**	**104.69**	**103.99**	**108.77**	**108.02**	**107.20**	**1.0%**	**0.9%**	**0.9%**
76.35	75.94	75.12	79.71	79.19	78.42	82.83	82.25	81.45	1.0%	1.0%	0.9%
100.78	100.39	99.50	105.28	104.70	103.99	108.78	108.03	107.21	1.0%	0.9%	0.9%
287.12	287.12	287.12	298.92	298.92	298.92	311.19	311.19	311.19	0.8%	0.8%	0.8%
6931.16	6901.27	6851.64	7557.05	7523.32	7483.87	8155.31	8113.88	8082.99	2.0%	2.0%	2.0%

[1]Includes wood use for residential heating and cooking. See Table 18 for estimates of nonmarketed renewable energy consumption for geothermal heat pumps and solar thermal hot water heating.
[2]Includes ethanol (blends of 10 percent or less) and ethers blended into gasoline.
[3]Includes commercial sector electricity cogenerated using wood and wood waste, municipal solid waste, and other biomass. See Table 18 for estimates of nonmarketed renewable energy consumption for solar thermal hot water heating.
[4]Fuel consumption includes consumption for cogeneration.
[5]Includes petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.
[6]Includes lease and plant fuel.
[7]Includes consumption of renewable energy from water, wood and wood waste, municipal solid waste, and other biomass.
[8]Includes naphtha and kerosene type.
[9]Includes aviation gas and lubricants.
[10]E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline(nonrenewable).
[11]Only M85 (85 percent methanol).
[12]Includes unfinished oils, natural gasoline, motor gasoline blending compounds, aviation gasoline, lubricants, still gas, asphalt, road oil, petroleum coke, and miscellaneous petroleum products.
[13]Includes electricity generated for sale to electric utilities and for self use from renewable sources, and non-electric energy from renewable sources. Excludes nonmarketed renewable energy consumption from geothermal heat pumps and solar thermal hot water heaters.
[14]Includes consumption of energy by all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[15]Includes hydroelectric, geothermal, wood and wood waste, municipal solid waste, other biomass, wind, photovoltaic and solar thermal sources.
[16]Includes hydroelectric, geothermal, wood and wood waste, municipal solid waste, other biomass, wind, photovoltaic and solar thermal sources. Excludes nonmarketed renewable energy consumption from ground source heat pumps and solar thermal hot water heaters.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding. Figures for 1993 and 1994 may differ from published data due to internal conversion factors. Consumption values of 0.00 are values that round to 0.00, because they are less than 0.005.
Sources: 1993 natural gas lease, plant, and pipeline fuel values: Energy Information Administration (EIA), *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). 1994 natural gas lease, plant, and pipeline fuel values: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). 1994 transportation sector compressed natural gas consumption: EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B. 1993 and 1994 electric utility fuel consumption: EIA, *Electric Power Annual, Volume I*, DOE/EIA-0348(94)/1 (Washington, DC, July 1995). 1993 and 1994 nonutility consumption estimates: EIA Form 867, "Annual Nonutility Power Producer Report." Other 1993 values: EIA, *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, July 1995) and Office of Coal, Nuclear, Electric, and Alternative Fuels estimates. Other 1994 values: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C3. Energy Prices by Sector and Source
(1994 Dollars per Million Btu)

Sector and Source	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Residential	**12.73**	**12.80**	**12.88**	**12.78**	**13.04**	**13.33**
Primary Energy	6.42	6.46	6.36	6.34	6.58	6.85
Petroleum Products	7.92	7.62	8.15	7.92	8.84	10.08
Distillate Fuel	6.69	6.33	6.82	6.69	7.48	8.57
Liquefied Petroleum Gas	10.76	10.44	10.99	10.63	11.87	13.37
Natural Gas	6.07	6.21	5.95	5.99	6.08	6.15
Electricity	24.87	24.67	24.74	24.31	24.49	24.75
Commercial	**13.05**	**13.29**	**13.15**	**12.77**	**13.00**	**13.25**
Primary Energy	4.99	5.10	4.83	4.91	5.13	5.39
Petroleum Products	4.90	4.80	4.90	4.71	5.54	6.65
Distillate Fuel	4.71	4.44	4.65	4.50	5.30	6.38
Residual Fuel	2.88	2.85	2.65	2.34	3.04	4.06
Natural Gas[1]	5.11	5.28	4.91	5.05	5.14	5.22
Electricity	23.24	23.30	23.15	22.22	22.43	22.65
Industrial[2]	**5.02**	**5.01**	**4.70**	**4.64**	**5.02**	**5.48**
Primary Energy	3.29	3.31	3.01	2.98	3.41	3.92
Petroleum Products	4.24	4.50	4.10	3.88	4.77	5.97
Distillate Fuel	4.87	4.59	4.64	4.53	5.33	6.40
Liquefied Petroleum Gas	4.87	6.11	5.84	5.53	6.66	8.06
Residual Fuel	2.44	2.50	2.54	2.22	2.92	3.94
Natural Gas[3]	2.82	2.56	2.30	2.46	2.57	2.69
Metallurgical Coal	1.77	1.76	1.77	1.61	1.63	1.72
Steam Coal	1.45	1.45	1.38	1.25	1.30	1.34
Electricity	14.76	14.75	14.55	14.21	14.33	14.46
Transportation	**7.97**	**7.74**	**8.30**	**8.18**	**9.04**	**10.19**
Primary Energy	7.96	7.74	8.30	8.17	9.03	10.18
Petroleum Products	7.96	7.74	8.30	8.17	9.03	10.18
Distillate Fuel[4]	8.21	8.04	8.27	8.02	8.79	9.84
Jet Fuel[5]	4.38	3.95	4.29	4.56	5.35	6.43
Motor Gasoline[6]	9.11	8.92	9.66	9.60	10.51	11.72
Residual Fuel	2.10	2.02	2.30	1.98	2.69	3.75
Natural Gas[7]	5.52	6.01	6.07	6.42	6.55	6.64
Electricity	14.64	14.80	14.81	15.21	15.24	15.24
Total End-Use Energy	**8.24**	**8.16**	**8.23**	**8.10**	**8.62**	**9.28**
Primary Energy	7.87	7.76	7.86	7.74	8.30	9.02
Electricity	20.89	20.85	20.77	20.22	20.39	20.59
Electric Generators[8]						
Fossil Fuel Average	1.62	1.56	1.50	1.39	1.46	1.55
Petroleum Products	2.83	2.76	3.03	2.44	3.27	4.39
Distillate Fuel	4.23	3.96	4.21	4.13	4.95	6.01
Residual Fuel	2.64	2.62	2.79	2.28	3.04	4.08
Natural Gas	2.55	2.19	2.04	2.09	2.19	2.33
Steam Coal	1.38	1.36	1.32	1.21	1.26	1.31

Table C3. Energy Prices by Sector and Source (Continued)
(1994 Dollars per Million Btu)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
13.02	**13.35**	**13.75**	**13.21**	**13.65**	**14.05**	**13.67**	**14.31**	**14.79**	**0.3%**	**0.5%**	**0.7%**
6.27	6.55	6.88	6.17	6.53	6.84	6.44	6.95	7.35	0.0%	0.3%	0.6%
8.06	9.28	11.13	8.18	9.63	11.37	8.05	9.77	11.34	0.3%	1.2%	1.9%
6.82	7.89	9.50	6.91	8.19	9.69	6.80	8.35	9.75	0.3%	1.3%	2.1%
10.87	12.46	14.66	11.18	13.03	15.15	11.09	13.26	15.01	0.3%	1.1%	1.7%
5.87	5.96	6.04	5.74	5.89	5.98	6.11	6.39	6.62	-0.1%	0.1%	0.3%
24.29	24.62	25.01	24.18	24.63	25.07	24.04	24.72	25.18	-0.1%	0.0%	0.1%
12.84	**13.15**	**13.50**	**12.81**	**13.21**	**13.59**	**13.07**	**13.66**	**14.11**	**-0.1%**	**0.1%**	**0.3%**
4.87	5.14	5.47	4.80	5.17	5.47	5.07	5.59	5.98	0.0%	0.4%	0.8%
4.85	5.96	7.59	4.92	6.29	7.79	4.82	6.45	7.85	0.0%	1.4%	2.4%
4.62	5.69	7.28	4.69	5.99	7.46	4.57	6.13	7.53	0.1%	1.5%	2.5%
2.55	3.48	4.94	2.63	3.80	5.15	2.65	4.05	5.34	-0.3%	1.7%	3.0%
4.97	5.06	5.12	4.87	5.03	5.11	5.24	5.53	5.73	0.0%	0.2%	0.4%
22.17	22.49	22.85	21.84	22.27	22.71	21.65	22.29	22.78	-0.3%	-0.2%	-0.1%
4.77	**5.25**	**5.90**	**4.84**	**5.42**	**6.05**	**4.90**	**5.64**	**6.25**	**-0.1%**	**0.6%**	**1.1%**
3.09	3.63	4.36	3.19	3.84	4.53	3.26	4.08	4.75	-0.1%	1.0%	1.7%
4.03	5.18	6.95	4.16	5.52	7.21	3.99	5.61	7.10	-0.6%	1.1%	2.2%
4.66	5.72	7.31	4.76	6.04	7.50	4.64	6.18	7.59	0.1%	1.4%	2.4%
5.66	7.13	9.33	5.82	7.50	9.71	5.70	7.59	9.38	-0.3%	1.0%	2.1%
2.41	3.35	4.82	2.48	3.66	5.01	2.46	3.92	5.20	-0.1%	2.2%	3.5%
2.54	2.64	2.74	2.60	2.76	2.84	2.93	3.20	3.38	0.6%	1.1%	1.3%
1.64	1.66	1.74	1.60	1.66	1.74	1.58	1.64	1.74	-0.5%	-0.3%	-0.1%
1.28	1.33	1.36	1.27	1.33	1.39	1.24	1.31	1.39	-0.8%	-0.5%	-0.2%
14.18	14.37	14.58	13.90	14.14	14.39	13.68	14.07	14.35	-0.4%	-0.2%	-0.1%
8.16	**9.35**	**10.94**	**7.98**	**9.47**	**10.85**	**7.66**	**9.37**	**10.66**	**0.0%**	**0.9%**	**1.5%**
8.14	9.33	10.93	7.95	9.45	10.83	7.63	9.34	10.63	-0.1%	0.9%	1.5%
8.15	9.33	10.94	7.95	9.46	10.85	7.63	9.36	10.66	-0.1%	0.9%	1.5%
7.98	9.00	10.55	7.87	9.12	10.53	7.67	9.21	10.58	-0.2%	0.6%	1.3%
4.80	5.88	7.43	4.89	6.17	7.69	4.88	6.36	7.78	1.0%	2.3%	3.3%
9.57	10.87	12.53	9.34	11.04	12.40	8.95	10.86	12.12	0.0%	0.9%	1.5%
2.17	3.12	4.64	2.24	3.44	4.83	2.27	3.72	5.05	0.6%	3.0%	4.5%
6.41	6.51	6.62	6.31	6.47	6.56	6.73	7.15	7.36	0.5%	0.8%	1.0%
15.51	15.56	15.63	15.43	15.51	15.59	15.28	15.43	15.54	0.2%	0.2%	0.2%
8.19	**8.88**	**9.81**	**8.18**	**9.06**	**9.90**	**8.22**	**9.27**	**10.09**	**0.0%**	**0.6%**	**1.0%**
7.80	8.56	9.57	7.76	8.71	9.63	7.71	8.84	9.73	0.0%	0.6%	1.1%
20.18	20.46	20.78	20.01	20.38	20.74	19.92	20.48	20.88	-0.2%	-0.1%	0.0%
1.45	1.54	1.65	1.52	1.63	1.76	1.64	1.83	1.96	0.3%	0.8%	1.1%
2.64	3.68	5.28	2.73	4.04	5.58	2.78	4.38	5.86	0.1%	2.2%	3.7%
4.23	5.32	6.92	4.24	5.57	7.02	4.12	5.70	7.11	0.2%	1.8%	2.8%
2.45	3.43	4.92	2.52	3.75	5.16	2.55	4.03	5.38	-0.1%	2.1%	3.5%
2.17	2.26	2.37	2.30	2.44	2.54	2.64	2.95	3.15	0.9%	1.4%	1.7%
1.22	1.28	1.35	1.21	1.26	1.37	1.19	1.28	1.37	-0.6%	-0.3%	0.0%

Table C3. Energy Prices by Sector and Source (Continued)
(1994 Dollars per Million Btu)

Sector and Source	1993	1994	1995	Projections		
				2000		
				Low World Oil Price	Reference	High World Oil Price
Average Price to All Users[9]						
Petroleum Products	6.88	6.77	7.11	6.95	7.86	9.05
Distillate Fuel[4]	7.11	6.94	7.17	7.01	7.79	8.85
Jet Fuel	4.38	3.95	4.29	4.56	5.35	6.43
Liquefied Petroleum Gas	6.06	6.94	6.84	6.47	7.62	9.02
Motor Gasoline[5]	9.11	8.92	9.64	9.57	10.49	11.70
Residual Fuel	2.42	2.39	2.51	2.16	2.86	3.89
Natural Gas	4.01	3.86	3.56	3.71	3.77	3.85
Coal	1.41	1.39	1.33	1.22	1.26	1.31
Electricity	20.89	20.85	20.77	20.22	20.39	20.59

Table C3. Energy Prices by Sector and Source (Continued)
(1994 Dollars per Million Btu)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
6.97	8.18	9.86	6.84	8.36	9.87	6.56	8.33	9.72	-0.2%	1.0%	1.7%
7.05	8.09	9.65	7.00	8.28	9.71	6.82	8.41	9.78	-0.1%	0.9%	1.6%
4.80	5.88	7.43	4.89	6.17	7.69	4.88	6.36	7.78	1.0%	2.3%	3.3%
6.56	8.04	10.22	6.80	8.48	10.66	6.72	8.65	10.41	-0.2%	1.1%	2.0%
9.55	10.86	12.51	9.32	11.02	12.38	8.94	10.84	12.10	0.0%	0.9%	1.5%
2.34	3.28	4.76	2.42	3.60	4.97	2.44	3.86	5.17	0.1%	2.3%	3.7%
3.65	3.71	3.78	3.61	3.73	3.79	3.89	4.13	4.31	0.0%	0.3%	0.5%
1.23	1.28	1.35	1.22	1.27	1.37	1.19	1.28	1.37	-0.7%	-0.4%	0.0%
20.18	20.46	20.78	20.01	20.38	20.74	19.92	20.48	20.88	-0.2%	-0.1%	0.0%

[1]Excludes independent power producers.
[2]Includes cogenerators.
[3]Excludes uses for lease and plant fuel.
[4]Includes Federal and State taxes on diesel fuel and excludes county and local taxes.
[5]Kerosene-type jet fuel.
[6]Sales weighted average price for all grades. Includes Federal and State taxes and excludes county and local taxes.
[7]Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.
[8]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[9]Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.
Btu = British thermal unit.
Note: 1993 and 1994 figures may differ from published data due to internal rounding.

Sources: 1993 prices for gasoline, distillate, and jet fuel are based on prices in the Energy Information Administration (EIA), *Petroleum Marketing Annual 1993*, DOE/EIA-0487(93) (Washington, DC, July 1994). 1994 prices for gasoline, distillate, and jet fuel are based on prices in various 1994 issues of EIA, *Petroleum Marketing Monthly*, DOE/EIA-0380(94/1-12) (Washington, DC, 1994). 1993 and 1994 prices for all other petroleum products are derived from the EIA, *State Energy Price and Expenditure Report 1991*, DOE/EIA-0376(91) (Washington, DC, September 1993). 1993 residential, commercial, and transportation natural gas delivered prices: EIA, *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). 1993 electric generators natural gas delivered prices: Form FERC-423, "Monthly Report of Cost and Quality of Fuels for Electric Plants." 1993 and 1994 industrial gas delivered prices are based on EIA, *Manufacturing Energy Consumption Survey 1991*. 1994 residential and commercial natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). Other 1994 natural gas delivered prices: EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B. Values for 1993 coal prices have been estimated from EIA, *State Price and Expenditure Report 1992*, DOE/EIA-0376(92) (Washington, DC, December 1994) using consumption quantities aggregated from EIA, *State Energy Data Report 1992, Consumption Estimates*, DOE/EIA-0214(92) (Washington, DC, May 1994). Values for 1994 coal prices have been estimated from EIA, *State Price and Expenditure Report 1993*, DOE/EIA-0376(93) (Washington, DC, December 1995) using consumption quantities aggregated from EIA, *State Energy Data Report 1993, Consumption Estimates*, DOE/EIA-0214(93) (Washington, DC, May 1995). 1993 residential electricity prices derived from EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). 1993 and 1994 electricity prices for commercial, industrial, and transportation: EIA, AEO96 National Energy Modeling System run LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.**Projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C4. Residential Sector Key Indicators and Consumption
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Household Characteristics						
Households (millions)						
Single-Family	66.81	67.80	68.60	72.61	72.57	72.51
Multifamily	24.25	24.40	24.56	25.61	25.58	25.55
Mobile Homes	5.57	5.71	5.84	6.15	6.14	6.14
Total	**96.63**	**97.92**	**99.00**	**104.36**	**104.29**	**104.20**
Housing Starts (millions)						
Single-Family	1.13	1.19	1.00	1.03	1.03	1.02
Multifamily	0.16	0.25	0.26	0.36	0.36	0.35
Mobile Homes	0.26	0.31	0.30	0.23	0.23	0.23
Total	**1.55**	**1.75**	**1.56**	**1.62**	**1.61**	**1.59**
Average House Square Footage	**1630**	**1637**	**1643**	**1666**	**1666**	**1665**
Energy Intensity						
Million Btu Consumed per Household						
Delivered Energy Consumption	108.76	106.34	105.05	104.46	103.94	103.37
Electricity Related Losses	78.29	77.91	78.08	76.40	76.34	76.42
Total Energy Consumption	187.06	184.26	183.13	180.86	180.28	179.79
Thousand Btu Consumed per Square Foot						
Delivered Energy Consumption	66.71	64.95	63.95	62.72	62.40	62.07
Electricity Related Losses	48.02	47.59	47.53	45.87	45.83	45.89
Total Energy Consumption	114.74	112.54	111.48	108.58	108.24	107.95
Delivered Energy Consumption by Fuel						
Distillate						
Space Heating	0.81	0.77	0.74	0.77	0.74	0.69
Water Heating	0.10	0.10	0.10	0.10	0.10	0.10
Other Uses[1]	0.00	0.00	0.00	0.00	0.00	0.00
Delivered Energy	**0.91**	**0.87**	**0.84**	**0.87**	**0.84**	**0.79**
Liquefied Petroleum Gas						
Space Heating	0.27	0.27	0.26	0.26	0.25	0.24
Water Heating	0.05	0.05	0.05	0.05	0.05	0.05
Cooking[2]	0.02	0.02	0.02	0.02	0.02	0.02
Other Uses[3]	0.06	0.06	0.06	0.07	0.07	0.07
Delivered Energy	**0.40**	**0.41**	**0.40**	**0.40**	**0.39**	**0.37**
Natural Gas						
Space Heating	3.55	3.46	3.42	3.63	3.62	3.62
Space Cooling	0.00	0.00	0.00	0.00	0.00	0.00
Water Heating	1.27	1.28	1.29	1.31	1.31	1.31
Cooking[2]	0.17	0.18	0.18	0.19	0.19	0.19
Clothes Dryers	0.05	0.05	0.05	0.05	0.05	0.05
Other Uses[3]	0.05	0.05	0.06	0.06	0.06	0.06
Delivered Energy	**5.10**	**5.03**	**5.00**	**5.24**	**5.22**	**5.23**
Electricity						
Space Heating	0.42	0.41	0.40	0.44	0.44	0.44
Space Cooling	0.48	0.48	0.52	0.50	0.50	0.50
Water Heating	0.35	0.36	0.36	0.37	0.37	0.36
Refrigeration	0.47	0.46	0.44	0.39	0.39	0.39
Cooking	0.10	0.10	0.10	0.10	0.10	0.10
Clothes Dryers	0.17	0.17	0.17	0.18	0.18	0.18
Freezers	0.14	0.14	0.13	0.10	0.10	0.10
Lighting	0.31	0.31	0.32	0.33	0.33	0.33
Other Uses[4]	0.95	1.01	1.05	1.29	1.29	1.28
Delivered Energy	**3.39**	**3.43**	**3.49**	**3.70**	3.70	3.69

Table C4. Residential Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
76.86	76.80	76.70	81.07	81.00	80.91	85.35	85.27	85.19	1.1%	1.1%	1.1%
27.09	27.05	26.98	28.83	28.77	28.70	30.73	30.67	30.60	1.1%	1.1%	1.1%
6.37	6.37	6.36	6.59	6.58	6.57	6.81	6.80	6.79	0.8%	0.8%	0.8%
110.32	**110.21**	**110.04**	**116.49**	**116.36**	**116.17**	**122.89**	**122.73**	**122.58**	**1.1%**	**1.1%**	**1.1%**
1.10	1.09	1.09	1.06	1.06	1.06	1.10	1.10	1.10	N/A	N/A	N/A
0.42	0.42	0.41	0.48	0.48	0.48	0.49	0.49	0.49	N/A	N/A	N/A
0.24	0.24	0.24	0.24	0.24	0.24	0.25	0.25	0.25	N/A	N/A	N/A
1.75	**1.75**	**1.74**	**1.78**	**1.78**	**1.78**	**1.84**	**1.84**	**1.84**	**N/A**	**N/A**	**N/A**
1684	**1684**	**1684**	**1698**	**1698**	**1698**	**1710**	**1710**	**1711**	**0.2%**	**0.2%**	**0.2%**
102.21	101.65	100.96	101.34	100.64	100.01	100.97	100.05	99.24	-0.2%	-0.3%	-0.3%
77.22	77.33	77.20	78.16	77.98	78.16	77.08	76.62	76.51	-0.1%	-0.1%	-0.1%
179.43	178.98	178.16	179.50	178.62	178.17	178.05	176.67	175.75	-0.2%	-0.2%	-0.2%
60.69	60.36	59.95	59.67	59.26	58.88	59.03	58.49	58.02	-0.5%	-0.5%	-0.5%
45.85	45.92	45.84	46.02	45.91	46.02	45.07	44.79	44.72	-0.3%	-0.3%	-0.3%
106.54	106.28	105.79	105.69	105.17	104.90	104.10	103.28	102.74	-0.4%	-0.4%	-0.4%
0.76	0.72	0.63	0.76	0.70	0.62	0.77	0.70	0.61	0.0%	-0.5%	-1.1%
0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	-0.3%	-0.3%	-0.3%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.4%	1.4%	1.4%
0.86	**0.82**	**0.72**	**0.86**	**0.80**	**0.71**	**0.87**	**0.80**	**0.71**	**0.0%**	**-0.4%**	**-1.0%**
0.25	0.23	0.21	0.23	0.21	0.19	0.22	0.19	0.17	-0.9%	-1.6%	-2.0%
0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	-1.0%	-1.0%	-1.0%
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	-0.8%	-0.8%	-0.8%
0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08	1.2%	1.2%	1.2%
0.38	**0.36**	**0.34**	**0.37**	**0.34**	**0.33**	**0.36**	**0.33**	**0.32**	**-0.5%**	**-1.0%**	**-1.2%**
3.70	3.70	3.74	3.82	3.82	3.85	3.89	3.88	3.89	0.6%	0.6%	0.6%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.3%	14.2%	14.2%
1.32	1.32	1.32	1.35	1.35	1.35	1.40	1.39	1.39	0.4%	0.4%	0.4%
0.20	0.20	0.20	0.20	0.20	0.20	0.21	0.21	0.21	0.9%	0.9%	0.8%
0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2%	0.2%	0.2%
0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	1.0%	1.0%	1.0%
5.34	**5.33**	**5.37**	**5.49**	**5.50**	**5.53**	**5.62**	**5.61**	**5.62**	**0.5%**	**0.5%**	**0.5%**
0.46	0.46	0.46	0.48	0.48	0.48	0.49	0.49	0.49	0.9%	0.9%	0.9%
0.52	0.52	0.52	0.53	0.53	0.53	0.54	0.54	0.53	0.5%	0.5%	0.5%
0.38	0.37	0.37	0.39	0.39	0.39	0.40	0.40	0.40	0.5%	0.5%	0.5%
0.35	0.35	0.35	0.32	0.32	0.31	0.30	0.30	0.30	-2.0%	-2.0%	-2.0%
0.11	0.11	0.11	0.11	0.11	0.11	0.12	0.12	0.12	0.9%	0.9%	0.9%
0.19	0.19	0.19	0.20	0.20	0.20	0.21	0.21	0.21	0.9%	0.9%	0.9%
0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07	-3.1%	-3.1%	-3.1%
0.34	0.34	0.34	0.35	0.35	0.35	0.36	0.36	0.36	0.7%	0.7%	0.7%
1.57	1.57	1.57	1.93	1.93	1.92	2.36	2.36	2.35	4.1%	4.1%	4.1%
4.01	**4.00**	**3.99**	**4.38**	**4.37**	**4.36**	**4.85**	**4.84**	**4.83**	**1.7%**	**1.7%**	**1.6%**

Table C4. Residential Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	1993	1994	1995	Projections		
				2000		
				Low World Oil Price	Reference	High World Oil Price
Marketed Renewables						
Wood[5]	0.57	0.55	0.55	0.57	0.57	0.57
Delivered Energy	**0.57**	**0.55**	**0.55**	**0.57**	**0.57**	**0.57**
Other Fuels[6]	**0.13**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**
Delivered Energy Consumption by End-Use						
Space Heating	5.76	5.58	5.49	5.80	5.74	5.68
Space Cooling	0.48	0.48	0.52	0.51	0.51	0.50
Water Heating	1.77	1.79	1.80	1.82	1.82	1.81
Refrigeration	0.47	0.46	0.44	0.39	0.39	0.39
Cooking	0.29	0.30	0.30	0.32	0.32	0.32
Clothes Dryers	0.22	0.23	0.23	0.23	0.23	0.23
Freezers	0.14	0.14	0.13	0.10	0.10	0.10
Lighting	0.31	0.31	0.32	0.33	0.33	0.33
Other Uses[7]	1.07	1.13	1.17	1.41	1.41	1.41
Delivered Energy	**10.51**	**10.41**	**10.40**	**10.90**	**10.84**	**10.77**
Electricity Related Losses by End-Use						
Space Heating	0.95	0.90	0.89	0.96	0.95	0.95
Space Cooling	1.07	1.08	1.16	1.09	1.08	1.08
Water Heating	0.78	0.79	0.79	0.79	0.79	0.79
Refrigeration	1.05	1.02	0.98	0.84	0.83	0.84
Cooking	0.21	0.22	0.22	0.22	0.22	0.22
Clothes Dryers	0.38	0.39	0.39	0.39	0.39	0.39
Freezers	0.31	0.30	0.28	0.21	0.21	0.21
Lighting	0.70	0.70	0.70	0.71	0.71	0.71
Other Uses[7]	2.13	2.24	2.32	2.77	2.77	2.77
Total Electricity Related Losses	**7.57**	**7.63**	**7.73**	**7.97**	**7.96**	**7.96**
Total Energy Consumption by End-Use						
Space Heating	6.70	6.48	6.38	6.75	6.69	6.63
Space Cooling	1.54	1.56	1.68	1.59	1.59	1.59
Water Heating	2.55	2.58	2.58	2.60	2.60	2.60
Refrigeration	1.52	1.48	1.43	1.22	1.22	1.22
Cooking	0.51	0.52	0.52	0.54	0.54	0.54
Clothes Dryers	0.60	0.61	0.61	0.63	0.63	0.63
Freezers	0.46	0.44	0.41	0.30	0.30	0.30
Lighting	1.01	1.01	1.02	1.05	1.04	1.04
Other Uses[7]	3.19	3.36	3.49	4.19	4.18	4.18
Total	**18.08**	**18.04**	**18.13**	**18.88**	**18.80**	**18.73**
Non-Marketed Renewables						
Geothermal[8]	0.01	0.01	0.01	0.01	0.01	0.01
Solar[9]	0.01	0.01	0.01	0.01	0.01	0.01
Total	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**

Table C4. Residential Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
0.58	0.58	0.58	0.59	0.59	0.58	0.60	0.59	0.59	0.3%	0.3%	0.3%
0.58	**0.58**	**0.58**	**0.59**	**0.59**	**0.58**	**0.60**	**0.59**	**0.59**	**0.3%**	**0.3%**	**0.3%**
0.11	**0.11**	**0.11**	**0.11**	**0.11**	**0.10**	**0.11**	**0.10**	**0.10**	**-0.7%**	**-0.8%**	**-1.0%**
5.87	5.80	5.72	5.99	5.90	5.82	6.07	5.96	5.85	0.4%	0.3%	0.2%
0.53	0.52	0.52	0.54	0.53	0.53	0.55	0.54	0.54	0.6%	0.5%	0.5%
1.83	1.83	1.83	1.87	1.87	1.87	1.93	1.93	1.92	0.4%	0.3%	0.3%
0.35	0.35	0.35	0.32	0.32	0.31	0.30	0.30	0.30	-2.0%	-2.0%	-2.0%
0.33	0.33	0.33	0.34	0.34	0.34	0.35	0.35	0.35	0.7%	0.7%	0.7%
0.24	0.24	0.24	0.25	0.25	0.25	0.27	0.26	0.26	0.8%	0.8%	0.8%
0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07	-3.1%	-3.1%	-3.1%
0.34	0.34	0.34	0.35	0.35	0.35	0.36	0.36	0.36	0.7%	0.7%	0.7%
1.71	1.71	1.71	2.07	2.07	2.07	2.51	2.51	2.50	3.9%	3.9%	3.9%
11.28	**11.20**	**11.11**	**11.80**	**11.71**	**11.62**	**12.41**	**12.28**	**12.17**	**0.8%**	**0.8%**	**0.7%**
0.99	0.98	0.98	1.00	0.99	0.99	0.96	0.95	0.94	0.3%	0.3%	0.2%
1.11	1.11	1.10	1.11	1.10	1.10	1.06	1.04	1.04	-0.1%	-0.1%	-0.2%
0.80	0.80	0.80	0.80	0.80	0.80	0.78	0.77	0.77	-0.1%	-0.1%	-0.1%
0.74	0.74	0.74	0.66	0.65	0.66	0.59	0.58	0.58	-2.6%	-2.6%	-2.6%
0.23	0.23	0.23	0.24	0.23	0.23	0.23	0.23	0.23	0.3%	0.2%	0.2%
0.40	0.40	0.40	0.41	0.41	0.41	0.41	0.41	0.41	0.3%	0.3%	0.3%
0.17	0.17	0.17	0.15	0.15	0.15	0.14	0.13	0.13	-3.7%	-3.7%	-3.8%
0.73	0.73	0.73	0.74	0.73	0.74	0.71	0.71	0.70	0.1%	0.0%	0.0%
3.35	3.35	3.34	4.00	3.99	4.00	4.61	4.58	4.57	3.5%	3.5%	3.5%
8.52	**8.52**	**8.49**	**9.10**	**9.07**	**9.08**	**9.47**	**9.40**	**9.38**	**1.0%**	**1.0%**	**1.0%**
6.85	6.78	6.70	6.99	6.90	6.81	7.04	6.91	6.80	0.4%	0.3%	0.2%
1.64	1.63	1.62	1.64	1.63	1.63	1.60	1.58	1.57	0.1%	0.1%	0.0%
2.63	2.63	2.63	2.67	2.67	2.67	2.70	2.70	2.69	0.2%	0.2%	0.2%
1.09	1.09	1.09	0.97	0.97	0.97	0.89	0.89	0.88	-2.4%	-2.4%	-2.4%
0.56	0.56	0.56	0.57	0.57	0.57	0.58	0.58	0.58	0.5%	0.5%	0.5%
0.65	0.65	0.65	0.67	0.67	0.67	0.68	0.67	0.67	0.5%	0.5%	0.5%
0.25	0.25	0.25	0.22	0.22	0.22	0.21	0.20	0.20	-3.5%	-3.5%	-3.6%
1.08	1.08	1.08	1.09	1.09	1.09	1.07	1.07	1.07	0.3%	0.3%	0.3%
5.06	5.06	5.05	6.08	6.06	6.07	7.12	7.09	7.07	3.6%	3.6%	3.6%
19.79	**19.73**	**19.60**	**20.91**	**20.78**	**20.70**	**21.88**	**21.68**	**21.54**	**0.9%**	**0.9%**	**0.8%**
0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	4.8%	4.8%	4.8%
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-0.3%	-0.3%	-0.3%
0.02	**0.02**	**0.02**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**3.5%**	**3.5%**	**3.5%**

Btu = British thermal unit.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993: Energy Information Administration (EIA), *State Energy Data Report*, DOE/EIA-0214(93) (Washington, DC, July 1995). 1994: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C5. Commercial Sector Key Indicators and Consumption
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Key Indicators						
Total Floor Space (billion square feet)						
Surviving	67.2	68.2	69.2	73.7	73.7	73.7
New Additions	1.8	1.8	1.9	1.7	1.7	1.7
Total	**69.1**	**70.0**	**71.0**	**75.4**	**75.4**	**75.4**
Energy Consumption Intensity (thousand Btu per square foot)						
Delivered Energy Consumption	98.9	99.3	99.4	98.2	98.0	97.8
Electricity Related Losses	97.3	99.3	99.8	96.0	95.9	95.9
Total Energy Consumption	196.2	198.6	199.2	194.3	193.9	193.7
Delivered Energy Consumption by Fuel						
Electricity						
Space Heating	0.12	0.11	0.11	0.12	0.12	0.12
Space Cooling	0.54	0.53	0.56	0.51	0.51	0.51
Water Heating	0.17	0.17	0.17	0.16	0.16	0.16
Ventilation	0.17	0.17	0.17	0.18	0.18	0.18
Cooking	0.03	0.03	0.03	0.03	0.03	0.03
Lighting	1.16	1.15	1.16	1.21	1.20	1.20
Refrigeration	0.14	0.14	0.14	0.15	0.15	0.15
Office Equipment (PC)	0.06	0.07	0.07	0.09	0.09	0.09
Office Equipment (non-PC)	0.17	0.18	0.18	0.21	0.21	0.21
Other Uses[1]	0.46	0.57	0.59	0.70	0.70	0.70
Delivered Energy	**3.01**	**3.13**	**3.20**	**3.36**	**3.36**	**3.35**
Natural Gas[2]						
Space Heating	1.34	1.26	1.26	1.31	1.32	1.33
Space Cooling	0.02	0.02	0.03	0.03	0.03	0.03
Water Heating	0.48	0.48	0.49	0.49	0.50	0.49
Cooking	0.18	0.18	0.19	0.21	0.21	0.21
Other Uses[3]	0.96	1.07	1.08	1.15	1.15	1.15
Delivered Energy	**2.98**	**3.01**	**3.04**	**3.19**	**3.20**	**3.20**
Distillate						
Space Heating	0.20	0.20	0.19	0.21	0.19	0.18
Water Heating	0.06	0.06	0.05	0.06	0.05	0.05
Other Uses[4]	0.21	0.17	0.17	0.18	0.18	0.18
Delivered Energy	**0.46**	**0.42**	**0.42**	**0.45**	**0.42**	**0.40**
Other Fuels[5]	**0.37**	**0.39**	**0.40**	**0.41**	**0.41**	**0.41**
Marketed Renewable Fuels						
Biomass	0.00	0.00	0.00	0.00	0.00	0.00
Delivered Energy	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Delivered Energy Consumption by End-Use						
Space Heating	1.66	1.57	1.56	1.65	1.64	1.63
Space Cooling	0.56	0.55	0.59	0.54	0.54	0.54
Water Heating	0.71	0.71	0.72	0.72	0.71	0.71
Ventilation	0.17	0.17	0.17	0.18	0.18	0.18
Cooking	0.21	0.21	0.22	0.24	0.24	0.24
Lighting	1.16	1.15	1.16	1.21	1.20	1.20
Refrigeration	0.14	0.14	0.14	0.15	0.15	0.15
Office Equipment (PC)	0.06	0.07	0.07	0.09	0.09	0.09
Office Equipment (non-PC)	0.17	0.18	0.18	0.21	0.21	0.21
Other Uses[6]	2.00	2.20	2.25	2.43	2.43	2.43
Delivered Energy	**6.83**	**6.96**	**7.06**	**7.40**	**7.39**	**7.37**

Table C5. Commercial Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
77.6	77.6	77.6	81.6	81.6	81.6	86.0	86.0	86.0	1.1%	1.1%	1.1%
1.7	1.7	1.7	1.8	1.8	1.8	2.0	2.0	2.0	0.5%	0.5%	0.5%
79.3	**79.3**	**79.3**	**83.3**	**83.3**	**83.3**	**88.1**	**88.1**	**88.1**	**1.1%**	**1.1%**	**1.1%**
97.2	96.9	96.6	96.6	96.2	95.9	95.9	95.4	95.0	-0.2%	-0.2%	-0.2%
95.2	95.2	95.0	94.2	93.8	93.9	90.3	89.5	89.2	-0.5%	-0.5%	-0.5%
192.4	192.2	191.6	190.8	190.0	189.8	186.3	184.9	184.2	-0.3%	-0.3%	-0.4%
0.13	0.12	0.12	0.13	0.13	0.13	0.14	0.14	0.14	1.0%	1.0%	0.9%
0.51	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	-0.2%	-0.2%	-0.3%
0.15	0.15	0.15	0.14	0.14	0.14	0.13	0.13	0.13	-1.3%	-1.4%	-1.4%
0.19	0.19	0.19	0.20	0.20	0.20	0.21	0.21	0.21	1.1%	1.1%	1.1%
0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	-0.5%	-0.5%	-0.5%
1.26	1.25	1.25	1.32	1.32	1.31	1.41	1.40	1.39	1.0%	0.9%	0.9%
0.15	0.15	0.15	0.16	0.16	0.16	0.18	0.18	0.18	1.0%	1.0%	1.0%
0.10	0.10	0.10	0.11	0.11	0.11	0.12	0.12	0.12	2.6%	2.6%	2.6%
0.24	0.24	0.24	0.27	0.27	0.27	0.30	0.30	0.30	2.5%	2.5%	2.5%
0.80	0.80	0.80	0.91	0.91	0.91	1.05	1.05	1.05	3.0%	3.0%	3.0%
3.55	**3.55**	**3.54**	**3.78**	**3.77**	**3.76**	**4.08**	**4.06**	**4.05**	**1.3%**	**1.2%**	**1.2%**
1.31	1.34	1.35	1.32	1.35	1.36	1.30	1.35	1.35	0.1%	0.3%	0.3%
0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	2.4%	2.3%	2.3%
0.51	0.52	0.52	0.54	0.54	0.54	0.57	0.57	0.56	0.8%	0.8%	0.8%
0.23	0.22	0.22	0.25	0.24	0.24	0.26	0.26	0.26	1.8%	1.8%	1.7%
1.20	1.20	1.20	1.24	1.24	1.24	1.30	1.30	1.30	0.9%	0.9%	0.9%
3.28	**3.31**	**3.32**	**3.38**	**3.42**	**3.43**	**3.47**	**3.51**	**3.51**	**0.7%**	**0.7%**	**0.7%**
0.22	0.18	0.16	0.22	0.17	0.15	0.23	0.16	0.14	0.8%	-1.0%	-1.6%
0.05	0.05	0.05	0.05	0.05	0.04	0.05	0.04	0.04	-0.5%	-1.1%	-1.3%
0.18	0.18	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.4%	0.4%	0.4%
0.46	**0.41**	**0.39**	**0.46**	**0.40**	**0.38**	**0.47**	**0.39**	**0.37**	**0.5%**	**-0.4%**	**-0.6%**
0.42	**0.42**	**0.42**	**0.42**	**0.42**	**0.42**	**0.43**	**0.43**	**0.43**	**0.5%**	**0.5%**	**0.5%**
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.7%	0.7%	0.7%
0.00	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.7%**	**0.7%**	**0.7%**
1.66	1.65	1.64	1.67	1.66	1.64	1.67	1.64	1.63	0.3%	0.2%	0.2%
0.54	0.54	0.53	0.54	0.53	0.53	0.54	0.54	0.54	-0.1%	-0.1%	-0.1%
0.72	0.72	0.71	0.73	0.73	0.72	0.75	0.74	0.74	0.3%	0.2%	0.2%
0.19	0.19	0.19	0.20	0.20	0.20	0.21	0.21	0.21	1.1%	1.1%	1.1%
0.26	0.26	0.25	0.28	0.27	0.27	0.29	0.29	0.29	1.5%	1.5%	1.5%
1.26	1.25	1.25	1.32	1.32	1.31	1.41	1.40	1.39	1.0%	0.9%	0.9%
0.15	0.15	0.15	0.16	0.16	0.16	0.18	0.18	0.18	1.0%	1.0%	1.0%
0.10	0.10	0.10	0.11	0.11	0.11	0.12	0.12	0.12	2.6%	2.6%	2.6%
0.24	0.24	0.24	0.27	0.27	0.27	0.30	0.30	0.30	2.5%	2.5%	2.5%
2.59	2.59	2.59	2.77	2.77	2.77	2.97	2.97	2.97	1.4%	1.4%	1.4%
7.71	**7.68**	**7.66**	**8.05**	**8.02**	**7.99**	**8.45**	**8.40**	**8.36**	**0.9%**	**0.9%**	**0.9%**

Table C5. Commercial Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Electricity Related Losses by End-Use						
Space Heating	0.26	0.25	0.24	0.26	0.26	0.26
Space Cooling	1.19	1.18	1.24	1.11	1.11	1.11
Water Heating	0.39	0.38	0.38	0.36	0.35	0.35
Ventilation	0.38	0.38	0.38	0.39	0.39	0.39
Cooking	0.08	0.07	0.07	0.07	0.07	0.07
Lighting	2.58	2.56	2.57	2.60	2.59	2.59
Refrigeration	0.31	0.31	0.31	0.32	0.32	0.32
Office Equipment (PC)	0.12	0.15	0.16	0.19	0.19	0.19
Office Equipment (non-PC)	0.39	0.40	0.41	0.45	0.45	0.45
Other Uses[6]	1.02	1.27	1.31	1.50	1.50	1.50
Total Electricity Related Losses	**6.72**	**6.95**	**7.08**	**7.24**	**7.23**	**7.23**
Total Energy Consumption by End-Use						
Space Heating	1.92	1.82	1.80	1.90	1.89	1.88
Space Cooling	1.75	1.73	1.83	1.65	1.65	1.65
Water Heating	1.10	1.09	1.10	1.07	1.07	1.06
Ventilation	0.54	0.55	0.55	0.57	0.57	0.57
Cooking	0.29	0.29	0.29	0.31	0.31	0.31
Lighting	3.74	3.72	3.73	3.81	3.80	3.79
Refrigeration	0.45	0.45	0.46	0.46	0.46	0.46
Office Equipment (PC)	0.18	0.22	0.23	0.28	0.28	0.28
Office Equipment (non-PC)	0.56	0.58	0.59	0.66	0.66	0.66
Other Uses[6]	3.02	3.47	3.56	3.93	3.93	3.93
Total	**13.55**	**13.91**	**14.14**	**14.64**	**14.62**	**14.60**
Non-Marketed Renewable Fuels						
Solar[7]	0.01	0.01	0.01	0.02	0.02	0.02
Total	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.02**

Table C5. Commercial Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.26	0.26	0.4%	0.3%	0.3%
1.07	1.08	1.07	1.04	1.04	1.04	0.98	0.98	0.97	-0.9%	-0.9%	-0.9%
0.32	0.32	0.32	0.29	0.29	0.29	0.25	0.25	0.25	-1.9%	-2.0%	-2.0%
0.40	0.41	0.40	0.42	0.42	0.42	0.42	0.42	0.41	0.5%	0.5%	0.5%
0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06	-1.1%	-1.1%	-1.2%
2.67	2.67	2.66	2.75	2.73	2.73	2.76	2.72	2.70	0.3%	0.3%	0.3%
0.33	0.33	0.33	0.34	0.34	0.34	0.34	0.34	0.34	0.4%	0.4%	0.4%
0.21	0.21	0.21	0.22	0.22	0.23	0.23	0.22	0.22	2.0%	2.0%	2.0%
0.50	0.51	0.50	0.56	0.55	0.56	0.59	0.59	0.59	1.9%	1.9%	1.9%
1.70	1.70	1.70	1.90	1.89	1.90	2.05	2.05	2.04	2.3%	2.3%	2.3%
7.55	**7.55**	**7.53**	**7.85**	**7.82**	**7.83**	**7.95**	**7.88**	**7.86**	**0.6%**	**0.6%**	**0.6%**
1.93	1.91	1.90	1.94	1.93	1.91	1.94	1.91	1.89	0.3%	0.2%	0.2%
1.61	1.61	1.61	1.58	1.57	1.57	1.52	1.52	1.51	-0.6%	-0.6%	-0.6%
1.05	1.04	1.04	1.03	1.02	1.01	1.00	0.99	0.99	-0.4%	-0.4%	-0.5%
0.60	0.60	0.59	0.62	0.62	0.62	0.63	0.63	0.63	0.7%	0.7%	0.7%
0.32	0.32	0.32	0.34	0.34	0.34	0.35	0.35	0.35	1.0%	0.9%	0.9%
3.93	3.92	3.90	4.07	4.05	4.04	4.17	4.12	4.10	0.5%	0.5%	0.5%
0.48	0.48	0.48	0.50	0.50	0.50	0.52	0.52	0.51	0.6%	0.6%	0.6%
0.31	0.31	0.31	0.33	0.33	0.33	0.34	0.34	0.34	2.2%	2.2%	2.2%
0.74	0.74	0.74	0.82	0.82	0.82	0.89	0.89	0.89	2.1%	2.1%	2.1%
4.29	4.30	4.29	4.66	4.66	4.67	5.03	5.02	5.02	1.8%	1.8%	1.8%
15.26	**15.24**	**15.19**	**15.90**	**15.84**	**15.82**	**16.40**	**16.28**	**16.22**	**0.8%**	**0.8%**	**0.7%**
0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	5.7%	5.7%	5.7%
0.03	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.04**	**0.04**	**0.04**	**5.7%**	**5.7%**	**5.7%**

[1]Includes miscellaneous uses such as service station equipment, district services, automated teller machines, telecommunications equipment, and medical equipment.
[2]Excludes estimated consumption from independent power producers.
[3]Includes miscellaneous uses such as district services, pumps, lighting, emergency electric generators, and manufacturing performed in commercial buildings.
[4]Includes miscellaneous uses such as cooking, district services, and emergency electric generators.
[5]Includes residual fuel oil, liquefied petroleum gas, coal, motor gasoline, and kerosene.
[6]Includes miscellaneous uses such as service station equipment, district services, automated teller machines, telecommunications equipment, medical equipment, pumps, lighting, emergency electric generators, manufacturing performed in commercial buildings, and cooking (distillate) plus residual fuel oil, liquefied petroleum gas, coal, motor gasoline, and kerosene.
[7]Includes primary energy displaced by solar thermal water heaters.
Btu = British thermal unit.
PC = Personal computer.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993: Energy Information Administration (EIA), *State Energy Data Report*, DOE/EIA-0214(93) (Washington, DC, July 1995). 1994: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C6. Industrial Sector Key Indicators and Consumption
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Key Indicators						
Value of Gross Output (billion 1987 dollars)						
Manufacturing	2596	2784	2829	3139	3127	3111
Nonmanufacturing	888	934	952	1032	1030	1026
Total	**3484**	**3718**	**3782**	**4171**	**4157**	**4136**
Energy Prices (1994 dollars per million Btu)						
Electricity	14.76	14.75	14.55	14.21	14.33	14.46
Natural Gas	2.82	2.56	2.30	2.46	2.57	2.69
Steam Coal	1.45	1.45	1.38	1.25	1.30	1.34
Residual Oil	2.44	2.50	2.54	2.22	2.92	3.94
Distillate Oil	4.87	4.59	4.64	4.53	5.33	6.40
Liquefied Petroleum Gas	4.87	6.11	5.84	5.53	6.66	8.06
Motor Gasoline	9.09	8.91	8.24	8.32	9.26	10.48
Metallurgical Coal	1.77	1.76	1.77	1.61	1.63	1.72
Energy Consumption						
Consumption[1] (quadrillion Btu per year)						
Purchased Electricity	3.33	3.39	3.43	3.62	3.61	3.61
Natural Gas[2]	9.07	9.34	9.76	10.35	10.49	10.91
Steam Coal	1.66	1.69	1.67	1.71	1.73	1.77
Metallurgical Coal and Coke[3]	0.86	0.86	0.84	0.74	0.74	0.74
Residual Fuel	0.45	0.47	0.47	0.50	0.48	0.38
Distillate	1.10	1.15	1.16	1.22	1.21	1.21
Liquefied Petroleum Gas	1.79	1.87	1.92	2.03	1.97	1.96
Petrochemical Feedstocks	1.19	1.25	1.25	1.28	1.27	1.27
Other Petroleum[4]	3.87	4.09	4.11	4.38	4.27	3.94
Renewables[5]	2.08	2.16	2.19	2.37	2.36	2.35
Delivered Energy	**25.42**	**26.27**	**26.80**	**28.20**	**28.15**	**28.13**
Electricity Related Losses	7.43	7.53	7.58	7.79	7.78	7.78
Total	**32.85**	**33.80**	**34.38**	**35.99**	**35.93**	**35.91**
Consumption per Unit of Output[1] (thousand Btu per 1987 dollars)						
Purchased Electricity	0.96	0.91	0.91	0.87	0.87	0.87
Natural Gas[2]	2.60	2.51	2.58	2.48	2.52	2.64
Steam Coal	0.48	0.45	0.44	0.41	0.42	0.43
Metallurgical Coal and Coke[3]	0.25	0.23	0.22	0.18	0.18	0.18
Residual Fuel	0.13	0.13	0.12	0.12	0.11	0.09
Distillate	0.32	0.31	0.31	0.29	0.29	0.29
Liquefied Petroleum Gas	0.52	0.50	0.51	0.49	0.47	0.47
Petrochemical Feedstocks	0.34	0.34	0.33	0.31	0.31	0.31
Other Petroleum[4]	1.11	1.10	1.09	1.05	1.03	0.95
Renewables[5]	0.60	0.58	0.58	0.57	0.57	0.57
Delivered Energy	**7.30**	**7.07**	**7.09**	**6.76**	**6.77**	**6.80**
Electricity Related Losses	2.13	2.02	2.00	1.87	1.87	1.88
Total	**9.43**	**9.09**	**9.09**	**8.63**	**8.64**	**8.68**

Table C6. Industrial Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
3521	3508	3485	3824	3811	3794	4133	4120	4107	1.9%	1.9%	1.9%
1100	1099	1097	1154	1155	1157	1226	1226	1227	1.3%	1.3%	1.3%
4620	**4607**	**4582**	**4978**	**4966**	**4951**	**5358**	**5346**	**5334**	**1.8%**	**1.7%**	**1.7%**
14.18	14.37	14.58	13.90	14.14	14.39	13.68	14.07	14.35	-0.4%	-0.2%	-0.1%
2.54	2.64	2.74	2.60	2.76	2.84	2.93	3.20	3.38	0.6%	1.1%	1.3%
1.28	1.33	1.36	1.27	1.33	1.39	1.24	1.31	1.39	-0.8%	-0.5%	-0.2%
2.41	3.35	4.82	2.48	3.66	5.01	2.46	3.92	5.20	-0.1%	2.2%	3.5%
4.66	5.72	7.31	4.76	6.04	7.50	4.64	6.18	7.59	0.1%	1.4%	2.4%
5.66	7.13	9.33	5.82	7.50	9.71	5.70	7.59	9.38	-0.3%	1.0%	2.1%
8.48	9.79	11.45	8.41	10.12	11.48	8.16	10.09	11.35	-0.4%	0.6%	1.2%
1.64	1.66	1.74	1.60	1.66	1.74	1.58	1.64	1.74	-0.5%	-0.3%	-0.1%
3.86	3.86	3.85	4.04	4.04	4.04	4.22	4.23	4.23	1.1%	1.1%	1.1%
10.77	11.12	11.58	11.10	11.55	12.04	11.16	11.86	12.35	0.8%	1.1%	1.3%
1.74	1.76	1.80	1.80	1.83	1.84	1.92	1.96	1.98	0.6%	0.7%	0.8%
0.66	0.66	0.66	0.59	0.59	0.59	0.52	0.52	0.52	-2.4%	-2.4%	-2.4%
0.53	0.49	0.39	0.54	0.49	0.40	0.61	0.52	0.42	1.2%	0.4%	-0.5%
1.29	1.28	1.28	1.37	1.34	1.33	1.44	1.40	1.40	1.1%	0.9%	0.9%
2.17	2.11	2.08	2.27	2.19	2.18	2.45	2.30	2.29	1.3%	1.0%	1.0%
1.36	1.36	1.35	1.42	1.42	1.41	1.49	1.48	1.48	0.8%	0.8%	0.8%
4.53	4.38	3.93	4.60	4.44	4.02	4.72	4.55	4.10	0.7%	0.5%	0.0%
2.58	2.56	2.54	2.72	2.71	2.69	2.88	2.86	2.85	1.4%	1.3%	1.3%
29.49	**29.58**	**29.47**	**30.45**	**30.60**	**30.54**	**31.41**	**31.68**	**31.61**	**0.9%**	**0.9%**	**0.9%**
8.21	8.22	8.19	8.38	8.38	8.40	8.24	8.22	8.21	0.4%	0.4%	0.4%
37.69	**37.81**	**37.66**	**38.83**	**38.98**	**38.95**	**39.65**	**39.89**	**39.83**	**0.8%**	**0.8%**	**0.8%**
0.84	0.84	0.84	0.81	0.81	0.82	0.79	0.79	0.79	-0.7%	-0.7%	-0.7%
2.33	2.41	2.53	2.23	2.33	2.43	2.08	2.22	2.31	-0.9%	-0.6%	-0.4%
0.38	0.38	0.39	0.36	0.37	0.37	0.36	0.37	0.37	-1.1%	-1.0%	-0.9%
0.14	0.14	0.14	0.12	0.12	0.12	0.10	0.10	0.10	-4.1%	-4.1%	-4.0%
0.11	0.11	0.08	0.11	0.10	0.08	0.11	0.10	0.08	-0.6%	-1.3%	-2.2%
0.28	0.28	0.28	0.27	0.27	0.27	0.27	0.26	0.26	-0.7%	-0.8%	-0.8%
0.47	0.46	0.45	0.46	0.44	0.44	0.46	0.43	0.43	-0.5%	-0.8%	-0.8%
0.29	0.29	0.29	0.29	0.29	0.29	0.28	0.28	0.28	-0.9%	-0.9%	-0.9%
0.98	0.95	0.86	0.93	0.89	0.81	0.88	0.85	0.77	-1.1%	-1.2%	-1.7%
0.56	0.56	0.56	0.55	0.55	0.54	0.54	0.54	0.53	-0.4%	-0.4%	-0.4%
6.38	**6.42**	**6.43**	**6.12**	**6.16**	**6.17**	**5.86**	**5.93**	**5.93**	**-0.9%**	**-0.8%**	**-0.8%**
1.78	1.79	1.79	1.68	1.69	1.70	1.54	1.54	1.54	-1.3%	-1.3%	-1.3%
8.16	**8.21**	**8.22**	**7.80**	**7.85**	**7.87**	**7.40**	**7.46**	**7.47**	**-1.0%**	**-0.9%**	**-0.9%**

Btu = British thermal unit.

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

Sources: 1993 prices for gasoline and distillate are based on prices in the Energy Information Administration (EIA), *Petroleum Marketing Annual 1993*, DOE/EIA-0487(93) (Washington, DC, July 1994). 1994 prices for gasoline and distillate are based on prices in various issues of EIA, *Petroleum Marketing Monthly*, DOE/EIA-0380(94/1-12) (Washington, DC, 1994). 1993 and 1994 coal prices: EIA, *Monthly Energy Review*, DOE/EIA-0035(95/08) (Washington, DC, August 1995). 1993 and 1994 natural gas and electricity prices: EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B. Other 1993 values and 1994 prices derived from EIA, *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, July 1995). Other 1994 values: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C7. Transportation Sector Key Indicators and Delivered Energy Consumption

Key Indicators and Consumption	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Key Indicators						
Level of Travel (billions)						
Light-Duty Vehicles (vehicle miles traveled)	2054	2068	2099	2277	2263	2245
Freight Trucks (vehicle miles traveled)	330	347	355	394	392	389
Air (seat miles available)	794	875	1013	1262	1246	1223
Rail (ton miles traveled)	1086	1137	1148	1188	1196	1207
Marine (ton miles traveled)	799	817	823	834	844	856
Energy Efficiency Indicators						
New Car (miles per gallon)[1]	28.2	28.0	27.5	27.7	28.1	28.8
New Light Truck (miles per gallon)[1]	20.8	20.6	20.2	20.5	20.7	21.0
Light-Duty Fleet (miles per gallon)[2]	19.3	19.4	19.2	19.6	19.6	19.8
Aircraft Efficiency (seat miles per gallon)	49.7	50.3	50.8	53.3	53.3	53.2
Freight Truck Efficiency (miles per gallon)	8.5	8.5	8.7	8.8	8.9	9.1
Rail Efficiency (ton miles per thousand Btu)	2.9	2.9	2.9	3.0	3.0	3.0
Domestic Shipping Efficiency (ton miles per thousand Btu)	2.6	2.6	2.6	2.6	2.6	2.6
Energy Use by Mode (quadrillion Btu per year)						
Light-Duty Vehicles[3]	13.27	13.34	13.68	14.61	14.47	14.25
Freight Trucks[3]	5.32	5.60	5.63	6.14	6.06	5.90
Air	3.07	3.20	3.31	3.80	3.76	3.70
Rail	0.40	0.42	0.42	0.43	0.43	0.44
Marine	1.43	1.44	1.49	1.64	1.64	1.64
Pipeline Fuel	0.64	0.66	0.68	0.67	0.67	0.67
Other[4]	0.16	0.16	0.16	0.18	0.18	0.17
Total[5]	**22.87**	**23.34**	**23.90**	**25.89**	**25.66**	**25.27**

Table C7. Transportation Sector Key Indicators and Delivered Energy Consumption (Continued)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
2476	2457	2433	2652	2629	2610	2800	2774	2759	1.5%	1.4%	1.4%
431	428	425	460	458	455	492	489	487	1.7%	1.6%	1.6%
1484	1463	1429	1678	1652	1621	1865	1833	1805	3.7%	3.6%	3.5%
1258	1276	1295	1320	1345	1372	1395	1425	1451	1.0%	1.1%	1.2%
869	889	911	906	933	963	956	989	1018	0.8%	0.9%	1.1%
29.8	30.5	31.5	30.8	31.9	32.9	31.8	33.1	34.1	0.6%	0.8%	0.9%
21.6	21.9	22.3	23.3	23.8	24.2	24.5	25.1	25.6	0.8%	1.0%	1.1%
20.0	20.2	20.5	20.5	20.8	21.2	21.4	21.8	22.3	0.5%	0.6%	0.7%
55.8	55.7	55.6	58.1	58.1	58.0	60.5	60.5	60.4	0.9%	0.9%	0.9%
8.9	9.0	9.3	9.0	9.2	9.4	9.1	9.3	9.5	0.3%	0.4%	0.5%
3.0	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.1	0.3%	0.3%	0.3%
2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	0.0%	0.0%	0.0%
15.53	15.26	14.89	16.16	15.78	15.37	16.40	15.92	15.52	1.0%	0.8%	0.7%
6.65	6.52	6.30	7.03	6.88	6.69	7.46	7.29	7.10	1.4%	1.3%	1.1%
4.23	4.17	4.09	4.55	4.48	4.41	4.82	4.75	4.69	2.0%	1.9%	1.8%
0.45	0.45	0.46	0.46	0.47	0.48	0.48	0.49	0.50	0.7%	0.8%	0.8%
1.82	1.82	1.82	2.00	2.00	2.00	2.18	2.18	2.18	2.0%	2.0%	2.0%
0.71	0.71	0.72	0.77	0.76	0.78	0.86	0.86	0.87	1.3%	1.3%	1.4%
0.19	0.19	0.18	0.20	0.19	0.19	0.21	0.20	0.20	1.2%	1.2%	1.1%
27.88	**27.47**	**26.88**	**29.40**	**28.86**	**28.26**	**30.56**	**29.90**	**29.31**	**1.3%**	**1.2%**	**1.1%**

[1]Environmental Protection Agency rated miles per gallon.
[2]Combined car and light truck "on-the-road" estimate.
[3]Includes light-duty trucks used for freight.
[4]Includes lubricants and aviation gasoline.
[5]Total will not equal sum of components due to light-duty freight trucks included in both light-duty vehicle and freight truck consumption.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding.

Sources: 1993 pipeline fuel consumption: Energy Information Administration (EIA), *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). Other 1993 values: Federal Highway Administration, *Highway Statistics 1993* (Washington, DC, 1993); Oak Ridge National Laboratory, *Transportation Energy Data Book: 12, 13, 14, and 15*, (Oak Ridge, TN, May 1995); Federal Aviation Administration (FAA), *FAA Aviation Forecasts Fiscal Years 1993-2004*; National Highway Traffic and Safety Administration, *Summary of Fuel Economy Performance*, (Washington, DC, February 1994); EIA, *Residential Transportation Energy Consumption Survey 1991*, DOE/EIA-0464(91) (Washington, DC, December 1993); Argonne National Laboratory, FRATE Model 1990; and EIA, *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, July 1995). 1994 pipeline fuel consumption: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). Other 1994 values: FAA, *FAA Aviation Forecasts Fiscal Years 1993-2004*, (Washington, DC, February 1994); EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995); EIA, *Fuel Oil and Kerosene Sales 1993*, DOE/EIA-0535(92) (Washington, DC, September 1994); and United States Department of Defense, Defense Fuel Supply Center. **Projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C8. Electricity Supply, Disposition, and Prices
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Generation by Fuel Type						
Electric Utilities						
Coal	1639	1635	1654	1777	1778	1776
Petroleum	100	91	66	98	63	51
Natural Gas	259	291	312	272	299	299
Nuclear Power	610	640	658	664	664	664
Pumped Storage	-2	-3	-3	-3	-3	-3
Renewable Sources[1]	277	256	290	294	294	294
Total	**2883**	**2911**	**2977**	**3102**	**3095**	**3082**
Nonutilities (excluding cogenerators)[2]						
Coal	10	12	13	15	15	**15**
Petroleum	1	2	3	3	3	3
Natural Gas	13	12	15	27	28	33
Renewable Sources[1]	49	52	56	67	67	67
Total	**73**	**78**	**86**	**112**	**114**	**119**
Sales to Utilities	47	51	59	84	86	91
Generation for Own Use	26	27	27	28	28	28
Cogenerators[3]						
Coal	43	47	43	48	48	48
Petroleum	7	7	5	5	5	5
Natural Gas	154	171	176	183	191	197
Other Gaseous Fuels[4]	15	14	17	17	17	17
Renewable Sources[1]	38	40	40	43	43	43
Other[5]	3	3	3	3	3	3
Total	**259**	**282**	**284**	**299**	**307**	**313**
Sales to Utilities	137	153	148	162	163	164
Generation for Own Use	123	129	136	137	144	149
Net Imports	**28**	**45**	**39**	**40**	**40**	**43**
Electricity Sales by Sector						
Residential	995	1006	1024	1085	1084	1082
Commercial	884	917	939	985	984	983
Industrial	977	992	1004	1061	1059	1057
Transportation	6	6	6	9	9	9
Total	**2861**	**2921**	**2973**	**3141**	**3137**	**3132**
End-Use Prices (1994 cents per kilowatthour)[6]						
Residential	8.5	8.4	8.4	8.3	8.4	8.4
Commercial	7.9	7.9	7.9	7.6	7.7	7.7
Industrial	5.0	5.0	5.0	4.8	4.9	4.9
Transportation	5.0	5.0	5.1	5.2	5.2	5.2
All Sectors Average	**7.1**	**7.1**	**7.1**	**6.9**	**7.0**	**7.0**
Price Components (1994 cents per kwh)						
Capital Component	2.7	2.8	2.7	2.6	2.6	2.6
Fuel Component	1.2	1.2	1.2	1.1	1.1	1.2
Operation and Maintenance Component	2.8	2.8	2.8	2.8	2.8	2.8
Wholesale Power Cost	0.4	0.4	0.4	0.4	0.4	0.4
Total	**7.1**	**7.1**	**7.1**	**6.9**	**7.0**	**7.0**

[1]Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, other biomass, solar and wind power.
[2]Includes generation at all nonutilities except for cogenerators. Includes small power producers, exempt wholesale generators, and generators at industrial and commercial facilities which provide electricity for on-site use and for sales to utilities.
[3]Includes cogeneration at facilities whose primary function is not electricity production. Includes sales to utilities and generation for own use.
[4]Other gaseous fuels include refinery and still gas.
[5]Other includes hydrogen, sulfur, batteries, chemicals, fish oil, and spent sulfite liquor.
[6]Prices represent average revenue per kilowatthour.

Table C8. Electricity Supply, Disposition, and Prices (Continued)
(Billion Kilowatthours, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
1908	1909	1917	1997	1995	1999	2050	2054	2055	1.1%	1.1%	1.1%
120	89	70	165	111	83	190	104	76	3.6%	0.6%	-0.9%
350	363	369	399	446	455	517	590	599	2.8%	3.4%	3.5%
649	649	649	610	610	610	434	434	434	-1.8%	-1.8%	-1.8%
-3	-3	-3	-3	-3	-3	-3	-3	-3	0.3%	0.3%	0.3%
297	297	296	298	299	300	304	308	312	0.8%	0.9%	1.0%
3320	**3304**	**3298**	**3467**	**3458**	**3444**	**3492**	**3487**	**3472**	**0.9%**	**0.9%**	**0.8%**
17	17	19	17	23	21	27	37	30	4.0%	5.5%	4.5%
4	5	4	9	7	7	14	9	10	10.9%	8.5%	9.3%
41	51	45	122	117	123	351	332	337	17.4%	17.1%	17.1%
73	73	73	79	82	86	102	110	122	3.3%	3.7%	4.1%
135	**145**	**141**	**227**	**229**	**238**	**494**	**489**	**499**	**9.2%**	**9.2%**	**9.3%**
107	117	113	199	200	210	466	461	471	11.1%	11.1%	11.2%
28	28	28	28	28	28	28	28	28	0.2%	0.2%	0.2%
51	51	51	53	53	53	55	55	55	0.7%	0.7%	0.7%
6	6	6	6	6	6	7	6	6	-0.1%	-0.9%	-0.9%
193	206	217	204	220	232	213	231	240	1.1%	1.5%	1.6%
17	17	17	17	17	17	17	17	17	0.8%	0.8%	0.8%
47	47	47	50	50	50	54	54	54	1.4%	1.4%	1.4%
3	3	3	4	4	4	4	4	4	1.0%	1.0%	1.0%
317	**329**	**341**	**333**	**349**	**361**	**349**	**366**	**375**	**1.0%**	**1.2%**	**1.4%**
167	168	169	170	172	174	174	176	177	0.6%	0.7%	0.7%
150	161	171	163	177	187	175	190	198	1.5%	1.8%	2.0%
28	**28**	**31**	**30**	**30**	**32**	**25**	**25**	**28**	**-2.6%**	**-2.7%**	**-2.2%**
1174	1172	1170	1285	1282	1279	1423	1419	1416	1.7%	1.7%	1.6%
1041	1039	1037	1108	1105	1103	1194	1189	1186	1.3%	1.2%	1.2%
1131	1131	1128	1183	1184	1184	1238	1240	1240	1.1%	1.1%	1.1%
20	20	21	33	32	36	41	40	46	9.6%	9.5%	10.2%
3367	**3363**	**3357**	**3609**	**3604**	**3602**	**3896**	**3889**	**3888**	**1.4%**	**1.4%**	**1.4%**
8.3	8.4	8.5	8.2	8.4	8.6	8.2	8.4	8.6	-0.1%	0.0%	0.1%
7.6	7.7	7.8	7.5	7.6	7.7	7.4	7.6	7.8	-0.3%	-0.2%	-0.1%
4.8	4.9	5.0	4.7	4.8	4.9	4.7	4.8	4.9	-0.4%	-0.2%	-0.1%
5.3	5.3	5.3	5.3	5.3	5.3	5.2	5.3	5.3	0.2%	0.2%	0.2%
6.9	**7.0**	**7.1**	**6.8**	**7.0**	**7.1**	**6.8**	**7.0**	**7.1**	**-0.2%**	**-0.1%**	**0.0%**
2.5	2.5	2.6	2.4	2.4	2.5	2.4	2.4	2.5	-0.7%	-0.6%	-0.5%
1.1	1.2	1.3	1.1	1.2	1.3	1.1	1.2	1.3	-0.3%	0.1%	0.4%
2.8	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.7	-0.2%	-0.2%	-0.2%
0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.7	2.3%	2.5%	2.8%
6.9	**7.0**	**7.1**	**6.8**	**7.0**	**7.1**	**6.8**	**7.0**	**7.1**	**-0.2%**	**-0.1%**	**0.0%**

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

Sources: 1993 and 1994 commercial and transportation sales: Total transportation plus commercial sales come from Energy Information Administration (EIA), *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, August 1995), but individual sectors do not match because sales taken from commercial and placed in transportation, according to Oak Ridge National Laboratories, *Transportation Energy Data Book 15* (May 1995) which indicates the transportation value should be higher. 1993 and 1994 generation by electric utilities, nonutilities, and cogenerators, net electricity imports, residential sales, and industrial sales: EIA, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995). 1993 residential electric prices derived from EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **1993 and 1994 electricity prices for commercial, industrial, and transportation; price components; and projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C9. Electricity Generating Capability
(Thousand Megawatts)

Net Summer Capability[1]	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Electric Utilities						
Capability						
Coal Steam	302.4	301.9	303.0	297.9	298.0	298.0
Other Fossil Steam[2]	141.0	140.0	138.3	128.0	128.0	128.0
Combined Cycle	11.4	11.5	12.7	19.5	19.2	18.5
Combustion Turbine/Diesel	50.8	51.0	54.3	75.9	75.9	77.1
Nuclear Power	99.1	99.1	99.2	100.3	100.3	100.3
Pumped Storage	19.0	19.0	19.9	19.9	19.9	19.9
Fuel Cells	0.0	0.0	0.0	0.2	0.3	0.1
Renewable Sources[3]	77.2	77.2	77.5	78.5	78.5	78.5
Total	**700.9**	**699.8**	**704.8**	**720.2**	**720.1**	**720.4**
Cumulative Planned Additions[4]						
Coal Steam	0.0	0.1	1.2	4.1	4.1	4.1
Other Fossil Steam[2]	0.0	0.0	0.0	0.4	0.4	0.4
Combined Cycle	0.0	0.1	1.4	6.1	6.1	6.1
Combustion Turbine/Diesel	0.0	0.3	3.5	15.9	15.9	15.9
Nuclear Power	0.0	0.0	0.0	1.2	1.2	1.2
Pumped Storage	0.3	0.3	1.1	1.1	1.1	1.1
Fuel Cells	0.0	0.0	0.0	0.0	0.0	0.0
Renewable Sources[3]	0.0	0.0	0.2	0.8	0.8	0.8
Total	**0.3**	**0.8**	**7.5**	**29.6**	**29.6**	**29.6**
Cumulative Unplanned Additions[4]						
Coal Steam	0.0	0.0	0.0	0.3	0.3	0.4
Other Fossil Steam[2]	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	0.0	0.0	1.9	1.6	0.9
Combustion Turbine/Diesel	0.0	0.0	0.0	9.4	9.4	10.6
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.0	0.2	0.3	0.1
Renewable Sources[3]	0.0	0.0	0.0	0.1	0.1	0.1
Total	**0.0**	**0.0**	**0.0**	**11.9**	**11.7**	**12.0**
Cumulative Total Additions	**0.3**	**0.8**	**7.5**	**41.4**	**41.3**	**41.6**
Cumulative Retirements[5]	**8.5**	**10.1**	**11.9**	**30.9**	**30.9**	30.9
Nonutilities (excludes cogenerators)[6,7]						
Capability						
Coal Steam	2.4	2.4	2.6	3.2	3.2	3.2
Other Fossil Steam[2]	1.0	1.0	1.1	1.1	1.1	1.1
Combined Cycle	2.0	2.0	2.0	3.6	4.2	3.6
Combustion Turbine/Diesel	1.9	1.9	1.9	12.4	11.6	12.2
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.0	0.0	0.1	0.4
Renewable Sources[3]	10.8	10.9	11.7	14.3	14.3	14.4
Total	**18.1**	**18.2**	**19.4**	**34.7**	**34.5**	**34.9**

Table C9. Electricity Generating Capability (Continued)
(Thousand Megawatts)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
302.5	302.1	304.9	308.7	308.8	309.8	312.0	312.6	312.9	0.2%	0.2%	0.2%
121.8	121.8	121.8	118.2	118.2	118.2	113.5	113.5	113.5	-1.0%	-1.0%	-1.0%
27.3	27.1	26.4	32.2	33.4	32.9	52.3	56.4	57.8	7.5%	7.9%	8.0%
90.6	90.4	90.5	104.6	103.4	103.3	119.7	115.8	113.0	4.1%	4.0%	3.9%
99.7	99.7	99.7	93.3	93.3	93.3	63.6	63.6	63.6	-2.1%	-2.1%	-2.1%
19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	0.2%	0.2%	0.2%
0.3	0.5	0.3	0.6	0.6	1.3	0.9	1.4	2.7	44.6%	47.3%	52.1%
79.0	79.0	79.0	79.4	79.6	79.8	81.0	82.0	83.0	0.2%	0.3%	0.3%
741.1	**740.5**	**742.4**	**756.8**	**757.2**	**758.4**	**762.9**	**765.0**	**766.3**	**0.4%**	**0.4%**	**0.4%**
9.1	9.1	9.1	14.8	14.8	14.8	16.5	16.5	16.5	29.7%	29.7%	29.7%
0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	N/A	N/A	N/A
13.4	13.4	13.4	13.6	13.6	13.6	13.6	13.6	13.6	24.5%	24.5%	24.5%
27.6	27.6	27.6	28.5	28.5	28.5	28.5	28.5	28.5	24.5%	24.5%	24.5%
1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	N/A	N/A	N/A
1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	6.6%	6.6%	6.6%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	N/A
1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	36.2%	36.2%	36.2%
53.8	**53.8**	**53.8**	**60.6**	**60.6**	**60.6**	**62.4**	**62.4**	**62.4**	**23.1%**	**23.1%**	**23.1%**
1.2	0.9	1.0	1.6	1.7	2.1	5.3	5.9	5.6	N/A	N/A	N/A
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	N/A
2.5	2.2	1.5	7.1	8.3	7.8	27.3	31.3	32.7	N/A	N/A	N/A
13.0	12.8	12.9	26.4	25.3	25.1	42.7	38.7	36.0	N/A	N/A	N/A
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	N/A
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	N/A
0.3	0.5	0.3	0.6	0.6	1.3	0.9	1.4	2.7	N/A	N/A	N/A
0.5	0.4	0.4	1.0	1.1	1.4	2.9	3.9	4.9	N/A	N/A	N/A
17.5	**16.8**	**16.2**	**36.6**	**37.0**	**37.7**	**79.1**	**81.1**	**81.8**	**N/A**	**N/A**	**N/A**
71.3	**70.7**	**70.0**	**97.3**	**97.6**	**98.3**	**141.4**	**143.5**	**144.1**	**28.0%**	**28.1%**	**28.1%**
40.3	**40.3**	**40.3**	**53.9**	**53.9**	**53.9**	**93.9**	**93.9**	**93.9**	**11.2%**	**11.2%**	**11.2%**
3.5	3.5	3.9	3.5	4.4	4.2	5.0	6.5	5.5	3.6%	4.9%	4.1%
1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.3%	0.3%	0.3%
3.9	4.8	4.4	9.2	11.8	10.7	38.7	37.6	36.0	15.2%	15.0%	14.8%
16.8	15.5	14.1	35.5	31.5	28.2	49.4	43.9	41.4	16.8%	16.2%	15.9%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	N/A
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A	N/A
0.2	0.1	0.4	0.2	0.2	0.8	0.4	1.0	1.9	N/A	N/A	N/A
15.6	15.5	15.7	16.7	17.5	18.6	22.0	24.4	27.5	3.4%	3.9%	4.5%
41.1	**40.5**	**39.6**	**66.3**	**66.5**	**63.7**	**116.7**	**114.5**	**113.3**	**9.3%**	**9.2%**	**9.1%**

Table C9. Electricity Generating Capability (Continued)
(Thousand Megawatts)

Net Summer Capability[1]	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Cogenerators[7]						
Capacity						
Coal	8.0	7.7	8.2	9.2	9.2	9.2
Petroleum	0.8	0.8	0.9	0.9	0.9	0.9
Natural Gas	27.4	28.7	29.5	30.9	31.9	32.6
Other Gaseous Fuels	0.9	0.9	0.9	1.0	1.0	1.0
Renewable Sources[3]	5.9	6.1	6.2	6.6	6.6	6.5
Other	0.1	0.0	0.0	0.0	0.0	0.0
Total	**43.1**	**44.3**	**45.6**	**48.6**	**49.5**	**50.3**
Cumulative Additions[4]	**8.4**	**9.7**	**12.1**	**30.4**	**31.2**	**32.3**

Table C9. Electricity Generating Capability (Continued)
(Thousand Megawatts)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
9.6	9.6	9.6	9.9	9.9	9.9	10.2	10.2	10.2	1.4%	1.4%	1.4%
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0%	1.0%	0.9%
32.3	33.9	35.3	33.8	35.8	37.2	35.2	37.2	38.4	1.0%	1.2%	1.4%
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.1%	0.1%	0.1%
7.2	7.2	7.2	7.7	7.7	7.7	8.2	8.2	8.2	1.4%	1.4%	1.4%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3%	-0.3%	-0.3%
51.0	**52.6**	**54.0**	**53.3**	**55.3**	**56.8**	**55.6**	**57.7**	**58.8**	**1.1%**	**1.3%**	**1.4%**
39.3	**40.3**	**40.8**	**66.8**	**69.0**	**67.6**	**119.5**	**119.3**	**119.2**	**12.8%**	**12.7%**	**12.7%**

[1]Net summer capability is the steady hourly output that generating equipment is expected to supply to system load (exclusive of auxiliary power), as demonstrated by tests during summer peak demand.
[2]Includes oil-, gas-, and dual-fired capability.
[3]Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, other biomass, solar and wind power.
[4]Cumulative additions after December 31, 1993. Non-zero utility planned additions in 1993 indicate units operational in 1993, but not supplying power to the grid.
[5]Cumulative total retirements from 1993.
[6]Includes nonutilities except for cogenerators. These facilities include small power producers, exempt wholesale generators and generators at industrial and commercial facilities which provide electricity for on-site use and for sale to utilities.
[7]Nameplate capacity is reported for nonutilities on Form EIA-867, "Annual Power Producer Report." Nameplate capacity is designated by the manufacturer. The nameplate capacity has been converted to the net summer capacity based on historic relationships.
N/A = Not applicable.
Notes: Totals may not equal sum of components due to independent rounding. Net summer capacity has been estimated for nonutility generators for AEO96. Net summer capacity is used to be consistent with electric utility capacity estimates. Electric utility capacity is the most recent data available as of August 15, 1994. Therefore, capacity estimates may differ from other Energy Information Administration sources.
Sources: 1993 and 1994 net summer capacity at electric utilities and planned additions: Energy Information Administration (EIA), Form EIA-860, "Annual Electric Generator Report." Net summer capacity for nonutilities and cogeneration in 1993 and 1994 and planned additions estimated based on EIA, Form EIA-867, "Annual Nonutility Power Producer Report." **Projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C10. Electricity Trade

(Billion Kilowatthours, Unless Otherwise Noted)

Electricity Trade	1993	1994	1995	Projections		
				2000		
				Low World Oil Price	Reference	High World Oil Price
Interregional Electricity Trade						
Gross Domestic Firm Power Sales	153.4	160.4	155.0	133.4	133.4	133.4
Gross Domestic Economy Sales	64.5	74.6	75.0	84.7	87.9	85.5
Gross Domestic Trade	**217.8**	**234.9**	**230.0**	**218.1**	**221.3**	218.9
Gross Domestic Firm Power Sales (million 1994 dollars)	6766.9	7075.7	6838.6	5886.1	5886.1	5886.1
Gross Domestic Economy Sales (million 1994 dollars)	1435.6	1630.1	1605.7	1562.1	1676.1	1704.5
Gross Domestic Sales (million 1994 dollars)	**8202.5**	**8705.9**	**8444.4**	**7448.2**	**7562.2**	**7590.6**
International Electricity Trade						
Firm Power Imports From Canada and Mexico	14.1	24.8	24.9	33.0	33.0	35.4
Economy Imports From Canada and Mexico	20.7	27.3	22.8	21.6	21.7	21.7
Gross Imports From Canada and Mexico	**34.8**	**52.1**	**47.7**	**54.6**	**54.8**	**57.1**
Firm Power Exports To Canada and Mexico	2.3	1.9	2.8	8.1	8.1	8.1
Economy Exports To Canada and Mexico	4.0	5.6	5.9	6.4	6.4	6.4
Gross Exports To Canada and Mexico	**6.4**	**7.5**	**8.8**	**14.5**	**14.5**	**14.5**

Table C10. Electricity Trade (Continued)
(Billion Kilowatthours, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
124.8	124.8	124.8	124.8	124.8	124.8	124.8	124.8	124.8	-1.2%	-1.2%	-1.2%
83.1	89.4	94.1	58.5	67.0	73.9	51.5	48.5	63.0	-1.7%	-2.0%	-0.8%
208.0	**214.2**	**218.9**	**183.3**	**191.8**	**198.7**	**176.3**	**173.3**	**187.9**	**-1.3%**	**-1.4%**	**-1.1%**
5507.9	5507.9	5507.9	5507.9	5507.9	5507.9	5507.9	5507.9	5507.9	-1.2%	-1.2%	-1.2%
1709.0	1938.2	1968.1	1215.9	1516.3	1880.8	1264.5	1251.8	1955.2	-1.1%	-1.2%	0.9%
7217.0	**7446.1**	**7476.0**	**6723.8**	**7024.2**	**7388.7**	**6772.4**	**6759.8**	**7463.1**	**-1.2%**	**-1.2%**	**-0.7%**
24.8	24.8	27.2	25.6	25.6	28.0	25.6	25.6	28.0	0.1%	0.2%	0.6%
23.3	23.5	23.5	25.6	25.6	25.2	20.6	20.5	20.6	-1.3%	-1.3%	-1.3%
48.1	**48.3**	**50.6**	**51.3**	**51.3**	**53.2**	**46.2**	**46.2**	**48.6**	**-0.6%**	**-0.6%**	**-0.3%**
13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	9.7%	9.7%	9.7%
7.0	7.0	7.0	7.7	7.7	7.7	7.7	7.7	7.7	1.5%	1.5%	1.5%
20.1	**20.1**	**20.1**	**20.8**	**20.8**	**20.8**	**20.8**	**20.8**	**20.8**	**5.0%**	**5.0%**	**5.0%**

Note: Totals may not equal sum of components due to independent rounding. Firm Power Sales are capacity sales, meaning the delivery of the power is scheduled as part of the normal operating conditions of the affected electric systems. Economy Sales are subject to curtailment or cessation of delivery by the supplier in accordance with prior agreements or under specified conditions.

Sources: 1993 and 1994 interregional electricity trade data: Energy Information Administration (EIA), Bulk Power Data System. 1993 and 1994 international electricity trade data: DOE Form FE-718R, "Annual Report of International Electrical Export/Import Data." Firm/economy share: National Energy Board, *Annual Report 1993*. Planned interregional and international firm power sales: DOE Form IE-411, "Coordinated Bulk Power Supply Program Report," April 1995. **Projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C11. Petroleum Supply and Disposition Balance
(Million Barrels per Day, Unless Otherwise Noted)

Supply and Disposition	1993	1994	1995	Projections		
				2000		
				Low World Oil Price	Reference	High World Oil Price
Crude Oil						
Domestic Crude Production[1]	6.85	6.66	6.54	5.05	5.65	6.35
Alaska	1.58	1.56	1.49	1.02	1.16	1.26
Lower 48 States	5.26	5.10	5.05	4.04	4.49	5.09
Net Imports	6.67	6.95	7.40	9.60	8.95	8.33
Other Crude Supply[2]	0.08	0.24	0.00	0.00	0.00	0.00
Total Crude Supply	**13.60**	**13.85**	**13.94**	**14.65**	**14.60**	**14.68**
Natural Gas Plant Liquids	**1.74**	**1.73**	**1.80**	**1.81**	**1.85**	**1.89**
Other Inputs[3]	**0.19**	**0.27**	**0.23**	**0.25**	**0.27**	**0.29**
Refinery Processing Gain[4]	**0.77**	**0.77**	**0.81**	**0.79**	**0.82**	**0.85**
Net Product Imports[5]	**0.93**	**1.09**	**0.85**	**1.57**	**1.13**	**0.44**
Total Primary Supply[6]	**17.22**	**17.70**	**17.64**	**19.07**	**18.66**	**18.15**
Refined Petroleum Products Supplied						
Motor Gasoline[7]	7.48	7.60	7.77	8.29	8.21	8.06
Jet Fuel[8]	1.47	1.53	1.58	1.82	1.80	1.77
Distillate Fuel[9]	3.04	3.16	3.22	3.45	3.40	3.32
Residual Fuel	1.08	1.02	0.96	1.18	1.02	0.92
Other[10]	4.17	4.41	4.25	4.46	4.36	4.19
Total	**17.24**	**17.72**	**17.78**	**19.20**	**18.78**	**18.26**
Refined Petroleum Products Supplied						
Residential and Commercial	1.14	1.17	1.08	1.12	1.08	1.04
Industrial[11]	4.45	4.58	4.66	4.91	4.81	4.59
Transportation	11.18	11.50	11.72	12.72	12.59	12.38
Electric Generators[12]	0.46	0.47	0.33	0.45	0.30	0.25
Total	**17.24**	**17.72**	**17.78**	**19.20**	**18.78**	**18.26**
Discrepancy[13]	**-0.02**	**-0.01**	**-0.14**	**-0.13**	**-0.12**	**-0.11**
World Oil Price (1994 dollars per barrel)[14]	**16.48**	**15.52**	**16.81**	**14.66**	**19.27**	**25.97**
Import Share of Product Supplied	**0.44**	**0.45**	**0.46**	**0.58**	**0.54**	**0.48**
Domestic Refinery Distillation Capacity	**15.1**	**15.0**	**15.4**	**15.8**	**15.6**	**16.0**
Capacity Utilization Rate (percent)	**92.0**	**93.0**	**90.7**	**93.1**	**93.4**	**92.3**

Table C11. Petroleum Supply and Disposition Balance (Continued)
(Million Barrels per Day, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
4.14	5.25	6.82	3.77	5.44	7.21	3.66	5.81	7.51	-2.8%	-0.6%	0.6%
0.64	0.80	1.01	0.45	0.71	0.94	0.33	0.73	1.12	-7.1%	-3.5%	-1.6%
3.49	4.44	5.81	3.32	4.73	6.26	3.33	5.08	6.39	-2.0%	0.0%	1.1%
10.52	9.62	8.01	10.86	9.58	7.84	11.09	9.42	7.58	2.2%	1.5%	0.4%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	N/A
14.66	**14.86**	**14.83**	**14.63**	**15.02**	**15.05**	**14.76**	**15.23**	**15.08**	**0.3%**	**0.5%**	**0.4%**
1.89	**1.97**	**1.99**	**2.03**	**2.11**	**2.18**	**2.19**	**2.27**	**2.32**	**1.1%**	**1.3%**	**1.4%**
0.29	**0.31**	**0.31**	**0.31**	**0.31**	**0.31**	**0.30**	**0.31**	**0.31**	**0.5%**	**0.7%**	**0.6%**
0.78	**0.85**	**0.88**	**0.78**	**0.87**	**0.89**	**0.74**	**0.86**	**0.89**	**-0.2%**	**0.5%**	**0.7%**
2.64	**1.79**	**1.00**	**3.55**	**2.26**	**1.39**	**4.14**	**2.37**	**1.70**	**6.6%**	**3.8%**	**2.1%**
20.26	**19.78**	**19.00**	**21.29**	**20.56**	**19.81**	**22.13**	**21.04**	**20.29**	**1.1%**	**0.8%**	**0.7%**
8.69	8.53	8.31	8.85	8.64	8.41	8.81	8.56	8.31	0.7%	0.6%	0.4%
2.02	1.99	1.95	2.17	2.14	2.11	2.30	2.27	2.24	2.0%	1.9%	1.8%
3.72	3.64	3.53	3.97	3.86	3.76	4.28	4.11	4.01	1.5%	1.3%	1.1%
1.33	1.18	1.05	1.59	1.33	1.16	1.76	1.36	1.20	2.6%	1.4%	0.8%
4.68	4.54	4.30	4.85	4.69	4.47	5.11	4.89	4.66	0.7%	0.5%	0.3%
20.43	**19.89**	**19.14**	**21.44**	**20.67**	**19.91**	**22.26**	**21.18**	**20.42**	**1.1%**	**0.9%**	**0.7%**
1.11	1.05	0.98	1.10	1.02	0.96	1.11	1.01	0.94	-0.3%	-0.7%	-1.0%
5.17	5.03	4.76	5.35	5.18	4.93	5.64	5.38	5.12	1.0%	0.8%	0.5%
13.61	13.39	13.07	14.21	13.93	13.61	14.63	14.29	13.96	1.2%	1.0%	0.9%
0.55	0.42	0.33	0.77	0.52	0.41	0.89	0.50	0.39	3.0%	0.3%	-0.9%
20.43	**19.89**	**19.14**	**21.44**	**20.67**	**19.91**	**22.26**	**21.18**	**20.42**	**1.1%**	**0.9%**	**0.7%**
-0.18	**-0.11**	**-0.14**	**-0.14**	**-0.10**	**-0.10**	**-0.13**	**-0.14**	**-0.13**	**N/A**	**N/A**	**N/A**
15.78	**21.86**	**31.47**	**16.02**	**23.70**	**32.61**	**16.07**	**25.43**	**33.89**	**0.2%**	**2.4%**	**3.8%**
0.64	**0.57**	**0.47**	**0.67**	**0.57**	**0.46**	**0.68**	**0.56**	**0.45**	**2.0%**	**1.0%**	**0.0%**
15.9	**16.1**	**16.2**	**15.9**	**16.2**	**16.5**	**15.9**	**16.4**	**16.5**	**0.3%**	**0.4%**	**0.5%**
92.2	**92.5**	**91.6**	**92.0**	**92.9**	**91.8**	**92.8**	**93.5**	**91.7**	**0.0%**	**0.0%**	**-0.1%**

[1]Includes lease condensate.
[2]Strategic petroleum supply stock additions plus unaccounted for crude oil plus crude stock withdrawals minus crude products supplied.
[3]Includes alcohols, ethers, petroleum product stock withdrawals, domestic sources of blending components, and other hydrocarbons.
[4]Represents volumetric gain in refinery distillation and cracking processes.
[5]Includes net imports of finished petroleum products, unfinished oils, other hydrocarbons, alcohols, ethers, and blending components.
[6]Total crude supply plus natural gas plant liquids plus other inputs plus refinery processing gain plus net petroleum imports.
[7]Includes ethanol and ethers blended into gasoline.
[8]Includes naphtha and kerosene type.
[9]Includes distillate and kerosene.
[10]Includes aviation gasoline, liquefied petroleum gas, petrochemical feedstocks, lubricants, waxes, asphalt, road oil, still gas, special naphthas, petroleum coke, crude oil product supplied, and miscellaneous petroleum products.
[11]Includes consumption by cogenerators.
[12]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[13]Balancing item. Includes unaccounted for supply, losses and gains.
[14]Average refiner acquisition cost for imported crude oil.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993: Energy Information Administration (EIA), *Petroleum Supply Annual 1993*, DOE/EIA-0340(93) (Washington, DC, June 1994). 1994: EIA, *Petroleum Supply Annual 1994*, DOE/EIA-0340(94) (Washington, DC, May 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LMAC96.D101995F, AEO96B.D101995C, and HMAC96.D101995D.

Table C12. Petroleum Product Prices
(1994 Cents per Gallon, Unless Otherwise Noted)

Sector and Fuel	1993	1994	1995	Projections		
				2000		
				Low World Oil Price	Reference	High World Oil Price
World Oil Price (dollars per barrel)	**16.48**	**15.52**	**16.81**	**14.66**	**19.27**	**25.97**
Delivered Sector Product Prices						
Residential						
Distillate Fuel	92.7	87.8	94.6	92.8	103.7	118.9
Liquefied Petroleum Gas	92.9	90.1	94.9	91.7	102.4	115.4
Commercial						
Distillate Fuel	65.3	61.6	64.5	62.4	73.5	88.4
Residual Fuel	43.1	42.6	39.7	35.1	45.4	60.8
Residual Fuel (dollars per barrel)	18.11	17.89	16.67	14.72	19.08	25.52
Industrial[1]						
Distillate Fuel	67.5	63.6	64.3	62.8	73.9	88.7
Liquefied Petroleum Gas	42.0	52.8	50.4	47.7	57.4	69.6
Residual Fuel	36.5	37.5	38.0	33.3	43.7	58.9
Residual Fuel (dollars per barrel)	15.33	15.74	15.96	13.99	18.35	24.75
Transportation						
Distillate Fuel[2]	113.9	111.5	114.7	111.3	121.9	136.4
Jet Fuel[3]	59.2	53.3	57.9	61.5	72.2	86.8
Motor Gasoline[4]	113.9	111.6	120.1	119.0	130.5	145.8
Residual Fuel	31.5	30.2	34.4	29.7	40.3	56.1
Residual Fuel (dollars per barrel)	13.22	12.68	14.45	12.46	16.94	23.57
Electric Generators[5]						
Distillate Fuel	58.7	54.9	58.3	57.3	68.7	83.4
Residual Fuel	39.6	39.3	41.8	34.2	45.6	61.1
Residual Fuel (dollars per barrel)	16.62	16.49	17.54	14.34	19.14	25.67
Refined Petroleum Product Prices[6]						
Distillate Fuel	98.6	96.3	99.4	97.2	108.1	122.7
Jet Fuel	59.2	53.3	57.9	61.5	72.2	86.8
Liquefied Petroleum Gas	52.3	59.9	59.0	55.8	65.7	77.8
Motor Gasoline	113.9	111.6	119.8	118.8	130.3	145.5
Residual Fuel	36.3	35.8	37.6	32.3	42.8	58.2
Residual Fuel (dollars per barrel)	15.24	15.04	15.81	13.55	17.96	24.43
Average	**91.2**	**89.7**	**94.7**	**92.7**	**104.3**	**119.3**

Table C12. Petroleum Product Prices (Continued)
(1994 Cents per Gallon, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
15.78	**21.86**	**31.47**	**16.02**	**23.70**	**32.61**	**16.07**	**25.43**	**33.89**	**0.2%**	**2.4%**	**3.8%**
94.6	109.4	131.7	95.8	113.6	134.3	94.4	115.8	135.3	0.3%	1.3%	2.1%
93.8	107.5	126.6	96.5	112.4	130.8	95.7	114.5	129.5	0.3%	1.1%	1.7%
64.0	78.9	100.9	65.1	83.1	103.4	63.3	85.0	104.4	0.1%	1.5%	2.5%
38.2	52.0	74.0	39.4	56.8	77.1	39.7	60.7	80.0	-0.3%	1.7%	3.0%
16.05	21.86	31.08	16.54	23.88	32.37	16.67	25.47	33.60	-0.3%	1.7%	3.0%
64.7	79.3	101.4	65.9	83.7	104.1	64.3	85.8	105.3	0.1%	1.4%	2.4%
48.8	61.6	80.5	50.2	64.7	83.8	49.2	65.5	81.0	-0.3%	1.0%	2.1%
36.1	50.2	72.2	37.1	54.8	75.1	36.9	58.7	77.9	-0.1%	2.2%	3.5%
15.15	21.07	30.32	15.59	23.01	31.52	15.50	24.64	32.71	-0.1%	2.2%	3.5%
110.7	124.8	146.3	109.2	126.5	146.1	106.4	127.7	146.7	-0.2%	0.6%	1.3%
64.8	79.3	100.3	66.0	83.2	103.9	65.8	85.9	105.1	1.0%	2.3%	3.3%
118.9	135.2	155.9	116.1	137.3	154.4	111.3	135.1	150.8	0.0%	0.9%	1.4%
32.5	46.8	69.4	33.6	51.4	72.4	34.0	55.6	75.6	0.6%	3.0%	4.5%
13.65	19.64	29.16	14.09	21.60	30.40	14.29	23.36	31.74	0.6%	3.0%	4.5%
58.7	73.8	95.9	58.8	77.2	97.4	57.1	79.0	98.6	0.2%	1.8%	2.8%
36.7	51.3	73.7	37.8	56.1	77.2	38.2	60.3	80.5	-0.1%	2.1%	3.5%
15.42	21.56	30.93	15.86	23.58	32.41	16.06	25.34	33.80	-0.1%	2.1%	3.5%
97.7	112.2	133.8	97.1	114.9	134.6	94.6	116.6	135.7	-0.1%	0.9%	1.6%
64.8	79.3	100.3	66.0	83.2	103.9	65.8	85.9	105.1	1.0%	2.3%	3.3%
56.6	69.4	88.2	58.7	73.2	92.0	58.0	74.6	89.9	-0.2%	1.1%	2.0%
118.7	135.0	155.7	115.9	137.1	154.2	111.1	134.9	150.6	0.0%	0.9%	1.4%
35.0	49.1	71.3	36.2	53.9	74.4	36.5	57.8	77.4	0.1%	2.3%	3.7%
14.70	20.63	29.95	15.19	22.62	31.24	15.34	24.27	32.49	0.1%	2.3%	3.7%
92.9	**108.5**	**129.6**	**91.0**	**110.6**	**129.5**	**87.3**	**110.2**	**127.4**	**-0.1%**	**1.0%**	**1.7%**

[1]Includes cogenerators.
[2]Includes Federal and State taxes on diesel fuel and excludes county and local taxes.
[3]Kerosene-type jet fuel.
[4]Sales weighted average price for all grades. Includes Federal and State taxes and excludes county and local taxes.
[5]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[6]Weighted averages of end-use fuel prices are derived from the prices in each sector and the corresponding sectoral consumption.

Sources: 1993 prices for gasoline, distillate, and jet fuel are based on prices in the Energy Information Administration (EIA), *Petroleum Marketing Annual 1993*, DOE/EIA-0487(93) (Washington, DC, July 1994). 1994 prices for gasoline, distillate, and jet fuel are based on prices in various 1994 issues of EIA, *Petroleum Marketing Monthly*, DOE/EIA-0380(94/1-12) (Washington, DC, 1994). 1993 and 1994 prices for all other petroleum products are derived from EIA, *State Energy Price and Expenditures Report: 1992*, DOE/EIA-0376(92) (Washington, DC, September 1994). **Projections**: EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C13. Natural Gas Supply and Disposition
(Trillion Cubic Feet per Year)

Supply and Disposition	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Production						
Dry Gas Production[1]	18.42	18.84	18.90	19.24	19.65	20.17
Supplemental Natural Gas[2]	0.12	0.12	0.13	0.09	0.09	0.09
Net Imports	**2.21**	**2.40**	**2.56**	**2.98**	**2.98**	**2.98**
Canada	2.22	2.45	2.65	2.87	2.87	2.87
Mexico	-0.04	-0.04	-0.03	-0.05	-0.05	-0.05
Liquefied Natural Gas	0.03	-0.01	-0.05	0.16	0.16	0.16
Total Supply	**20.74**	**21.36**	**21.60**	**22.30**	**22.71**	**23.23**
Consumption by Sector						
Residential	4.94	4.87	4.84	5.09	5.07	5.07
Commercial	2.89	2.92	2.95	3.09	3.10	3.11
Industrial[3]	7.62	7.83	8.23	8.75	8.90	9.28
Electric Generators[4]	2.94	3.25	3.39	3.06	3.33	3.43
Lease and Plant Fuel[5]	1.18	1.24	1.24	1.29	1.28	1.31
Pipeline Fuel	0.62	0.64	0.66	0.65	0.65	0.66
Transportation[6]	0.01	0.01	0.01	0.01	0.01	0.01
Total	**20.20**	**20.75**	**21.32**	**21.93**	**22.34**	**22.86**
Discrepancy[7]	**0.54**	**0.61**	**0.28**	**0.37**	**0.37**	**0.37**

Table C13. Natural Gas Supply and Disposition (Continued)
(Trillion Cubic Feet per Year)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
20.63	21.25	21.83	22.02	22.83	23.60	23.81	24.97	25.56	1.1%	1.3%	1.5%
0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	-3.1%	-3.1%	-3.0%
3.12	**3.12**	**3.12**	**3.46**	**3.46**	**3.46**	**4.02**	**4.02**	**4.02**	**2.5%**	**2.5%**	**2.5%**
2.90	2.90	2.90	3.11	3.11	3.11	3.42	3.42	3.42	1.6%	1.6%	1.6%
-0.03	-0.03	-0.03	0.10	0.10	0.10	0.35	0.35	0.35	N/A	N/A	N/A
0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	N/A	N/A	N/A
23.81	**24.43**	**25.00**	**25.53**	**26.35**	**27.12**	**27.88**	**29.04**	**29.63**	**1.3%**	**1.5%**	**1.6%**
5.18	5.17	5.21	5.33	5.33	5.36	5.45	5.44	5.45	0.5%	0.5%	0.5%
3.18	3.21	3.22	3.28	3.32	3.32	3.37	3.41	3.41	0.7%	0.7%	0.7%
9.07	9.40	9.83	9.30	9.72	10.16	9.27	9.91	10.35	0.8%	1.1%	1.3%
3.94	4.20	4.27	4.95	5.29	5.54	6.85	7.30	7.39	3.6%	3.9%	4.0%
1.37	1.38	1.41	1.46	1.48	1.52	1.56	1.59	1.63	1.1%	1.2%	1.3%
0.69	0.69	0.70	0.74	0.74	0.75	0.83	0.83	0.85	1.3%	1.3%	1.4%
0.03	0.03	0.03	0.12	0.11	0.11	0.21	0.21	0.21	18.2%	18.1%	18.1%
23.46	**24.08**	**24.66**	**25.19**	**26.00**	**26.77**	**27.54**	**28.70**	**29.29**	**1.4%**	**1.6%**	**1.7%**
0.35	**0.35**	**0.35**	**0.35**	**0.35**	**0.35**	**0.35**	**0.35**	**0.35**	**N/A**	**N/A**	**N/A**

[1]Market production (wet) minus extraction losses.
[2]Synthetic natural gas, propane air, coke oven gas, refinery gas, biomass gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.
[3]Includes consumption by cogenerators.
[4]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[5]Represents natural gas used in the field gathering and processing plant machinery.
[6]Compressed natural gas used as vehicle fuel.
[7]Balancing item. 1993 and 1994 values reflect net storage injections plus natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type.
Btu = British thermal unit.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding. Figures for 1993 and 1994 may differ from published data due to internal conversion factors.
Sources: 1993 supply values and consumption as lease, plant, and pipeline fuel: Energy Information Administration (EIA), *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994) with adjustments to end-use sector consumption levels based on Form EIA-867, "Annual Nonutility Power Producer Report." Other 1993 consumption: EIA, *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, July 1995) with adjustments to end-use sector consumption levels based on Form EIA-867, "Annual Nonutility Power Producer Report." 1994 supply values and consumption as lease, plant, and pipeline fuel: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). 1994 transportation sector consumption: EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B. Other 1994 consumption: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995) with adjustments to end-use sector consumption levels for consumption of natural gas by electric wholesale generators based on EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B. **Projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C14. Natural Gas Prices, Margins, and Revenues
(1994 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Prices, Margins, and Revenue	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Source Price						
Average Lower 48 Wellhead Price[1]	2.09	1.88	1.60	1.79	1.89	2.07
Average Import Price	2.06	1.85	1.55	1.69	1.79	1.91
Average[2]	**2.08**	**1.87**	**1.59**	**1.77**	**1.88**	**2.04**
Delivered Prices						
Residential	6.26	6.40	6.13	6.17	6.26	6.34
Commercial	5.26	5.44	5.06	5.21	5.30	5.38
Industrial[3]	2.91	2.64	2.37	2.54	2.65	2.78
Electric Generators[4]	2.61	2.24	2.09	2.14	2.24	2.38
Transportation[5]	5.69	6.19	6.26	6.61	6.75	6.85
Average[6]	**4.14**	**3.98**	**3.67**	**3.82**	**3.89**	**3.97**
Transmission and Distribution Margins[7]						
Residential	4.18	4.52	4.54	4.40	4.38	4.30
Commercial	3.18	3.56	3.47	3.44	3.42	3.34
Industrial[3]	0.83	0.77	0.78	0.77	0.77	0.73
Electric Generators[4]	0.52	0.36	0.50	0.37	0.36	0.34
Transportation[5]	3.61	4.32	4.67	4.84	4.87	4.80
Average[6]	**2.05**	**2.10**	**2.08**	**2.05**	**2.01**	**1.92**
Transmission and Distribution Revenue (billion 1994 dollars)						
Residential	20.66	22.05	22.00	22.38	22.22	21.79
Commercial	9.19	10.41	10.25	10.61	10.61	10.36
Industrial[3]	6.32	6.01	6.42	6.71	6.88	6.80
Electric Generators[4]	1.54	1.17	1.68	1.12	1.20	1.15
Transportation[5]	0.02	0.03	0.03	0.04	0.04	0.04
Total	**37.73**	**39.67**	**40.39**	**40.86**	**40.94**	**40.15**

Table C14. Natural Gas Prices, Margins, and Revenues (Continued)
(1994 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
1.90	1.99	2.13	2.01	2.15	2.27	2.34	2.57	2.79	1.0%	1.5%	1.9%
1.81	1.90	2.05	1.94	2.08	2.21	2.27	2.53	2.76	1.0%	1.5%	1.9%
1.89	**1.98**	**2.12**	**2.00**	**2.14**	**2.26**	**2.33**	**2.57**	**2.78**	**1.0%**	**1.5%**	**1.9%**
6.06	6.15	6.22	5.91	6.08	6.17	6.30	6.59	6.83	-0.1%	0.1%	0.3%
5.12	5.21	5.28	5.02	5.19	5.26	5.40	5.70	5.91	0.0%	0.2%	0.4%
2.62	2.72	2.82	2.68	2.84	2.93	3.02	3.30	3.49	0.6%	1.1%	1.3%
2.22	2.31	2.42	2.35	2.49	2.59	2.70	3.02	3.22	0.9%	1.4%	1.7%
6.61	6.71	6.82	6.50	6.67	6.77	6.94	7.37	7.58	0.5%	0.8%	1.0%
3.75	**3.82**	**3.89**	**3.72**	**3.84**	**3.90**	**4.00**	**4.25**	**4.44**	**0.0%**	**0.3%**	**0.5%**
4.17	4.17	4.10	3.91	3.94	3.90	3.97	4.02	4.04	-0.6%	-0.6%	-0.5%
3.24	3.24	3.17	3.02	3.05	3.00	3.08	3.14	3.13	-0.7%	-0.6%	-0.6%
0.73	0.75	0.71	0.68	0.70	0.67	0.70	0.73	0.70	-0.5%	-0.2%	-0.4%
0.33	0.33	0.30	0.35	0.36	0.33	0.38	0.45	0.43	0.2%	1.1%	0.9%
4.73	4.73	4.71	4.50	4.53	4.50	4.62	4.80	4.80	0.3%	0.5%	0.5%
1.87	**1.84**	**1.77**	**1.72**	**1.70**	**1.64**	**1.68**	**1.69**	**1.66**	**-1.1%**	**-1.1%**	**-1.1%**
21.58	21.57	21.37	20.86	21.01	20.92	21.64	21.90	22.05	-0.1%	0.0%	0.0%
10.29	10.38	10.18	9.91	10.11	9.96	10.35	10.69	10.66	0.0%	0.1%	0.1%
6.63	7.01	6.94	6.37	6.85	6.76	6.45	7.23	7.30	0.3%	0.9%	0.9%
1.31	1.39	1.29	1.74	1.89	1.81	2.57	3.28	3.20	3.8%	5.0%	4.9%
0.14	0.14	0.14	0.52	0.51	0.51	0.99	1.00	1.00	18.6%	18.7%	18.7%
39.96	**40.49**	**39.91**	**39.39**	**40.36**	**39.96**	**42.00**	**44.11**	**44.21**	**0.3%**	**0.5%**	**0.5%**

[1]Represents lower 48 onshore and offshore supplies.
[2]Quantity-weighted average of the average lower 48 wellhead price and the average price of imports at the United States border.
[3]Includes consumption by cogenerators.
[4]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[5]Compressed natural gas used as a vehicle fuel.
[6]Weighted average prices and margins. Weights used are the sectoral consumption values excluding lease, plant, and pipeline fuel.
[7]Within the table, "transmission and distribution" margins equal the difference between the delivered price and the source price (average of the wellhead price and the price of imports at the United States border) of natural gas, and thus, reflect the total cost of bringing natural gas to market. When the term "transmission and distribution" margins is used in today's natural gas market, it generally does not include the cost of independent natural gas marketers or costs associated with aggregation of supplies, provisions of storage, and other services. As used here, the term includes the cost of all services and the cost of pipeline fuel used in compressor stations.

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

Sources: 1993 residential, commercial, and transportation delivered prices; average lower 48 wellhead price; and average import price: Energy Information Administration (EIA), *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). 1993 electric generators delivered price: Form FERC-423, "Monthly Report of Cost and Quality of Fuels for Electric Plants". 1993 and 1994 industrial delivered prices based on EIA, *Manufacturing Energy Consumption Survey, 1991*. 1994 residential and commercial delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). **Other 1993 values, other 1994 values, and projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C15. Oil and Gas Supply

Production and Supply	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Crude Oil						
Lower 48 Average Wellhead Price[1] (1994 dollars per barrel)	**15.59**	**14.35**	**16.59**	**14.60**	**18.90**	**25.12**
Production (million barrels per day)[2]						
U.S. Total	**6.85**	**6.66**	**6.54**	**5.05**	**5.65**	**6.35**
Lower 48 Onshore	4.18	3.96	3.80	2.84	3.26	3.82
Conventional	3.48	3.34	3.23	2.47	2.74	3.18
Enhanced Oil Recovery	0.69	0.62	0.58	0.37	0.51	0.64
Lower 48 Offshore	1.09	1.14	1.24	1.20	1.23	1.27
Alaska	1.58	1.56	1.49	1.02	1.16	1.26
Lower 48 End of Year Reserves (billion barrels)	**18.37**	**17.84**	**16.93**	**11.76**	**13.28**	**15.51**
Natural Gas						
Lower 48 Average Wellhead Price[1] (1994 dollars per thousand cubic feet)	**2.09**	**1.88**	**1.60**	**1.79**	**1.89**	**2.07**
Production (trillion cubic feet)[3]						
U.S. Total	**18.42**	**18.84**	**18.90**	**19.24**	**19.65**	**20.17**
Lower 48 Onshore	12.99	13.26	13.38	13.35	13.75	14.33
Associated-Dissolved[4]	1.93	1.78	1.70	1.32	1.40	1.54
Non-Associated	11.06	11.47	11.68	12.03	12.35	12.79
Conventional	8.61	8.94	9.00	9.79	10.02	10.32
Unconventional	2.44	2.53	2.68	2.24	2.33	2.48
Lower 48 Offshore	5.03	5.17	5.02	5.34	5.35	5.28
Associated-Dissolved[4]	0.69	0.65	0.66	0.69	0.70	0.71
Non-Associated	4.34	4.52	4.35	4.65	4.65	4.58
Alaska	0.40	0.42	0.50	0.54	0.55	0.56
U.S. End of Year Reserves (trillion cubic feet)	**152.51**	**154.10**	**151.49**	**147.95**	**154.89**	**165.35**
Supplemental Gas Supplies (trillion cubic feet)[5]	**0.12**	**0.12**	**0.13**	**0.09**	**0.09**	**0.09**
Total Lower 48 Wells Completed (thousands)	**25.27**	**20.99**	**20.71**	**24.70**	**31.92**	**45.87**

Table C15. Oil and Gas Supply (Continued)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
15.60	**21.22**	**30.08**	**15.76**	**22.87**	**31.05**	**15.76**	**24.46**	**32.21**	**0.5%**	**2.6%**	**3.9%**
4.14	**5.25**	**6.82**	**3.77**	**5.44**	**7.21**	**3.66**	**5.81**	**7.51**	**-2.8%**	**-0.6%**	**0.6%**
2.48	3.38	4.64	2.42	3.75	5.14	2.48	4.10	5.25	-2.2%	0.2%	1.3%
2.10	2.75	3.68	1.98	2.94	3.86	1.97	3.13	3.80	-2.5%	-0.3%	0.6%
0.38	0.62	0.96	0.44	0.82	1.28	0.51	0.97	1.45	-0.7%	2.1%	4.1%
1.01	1.06	1.17	0.90	0.98	1.13	0.86	0.98	1.14	-1.3%	-0.7%	0.0%
0.64	0.80	1.01	0.45	0.71	0.94	0.33	0.73	1.12	-7.1%	-3.5%	-1.6%
9.50	**12.65**	**17.16**	**8.80**	**13.44**	**18.39**	**8.84**	**14.52**	**18.82**	**-3.3%**	**-1.0%**	**0.3%**
1.90	**1.99**	**2.13**	**2.01**	**2.15**	**2.27**	**2.34**	**2.57**	**2.79**	**1.0%**	**1.5%**	**1.9%**
20.63	**21.25**	**21.83**	**22.02**	**22.83**	**23.60**	**23.81**	**24.97**	**25.56**	**1.1%**	**1.3%**	**1.5%**
14.72	15.41	16.16	15.74	16.45	17.23	16.26	17.19	17.75	1.0%	1.2%	1.4%
1.13	1.32	1.74	1.05	1.40	1.79	1.02	1.47	1.64	-2.6%	-0.9%	-0.4%
13.59	14.08	14.42	14.68	15.05	15.45	15.24	15.71	16.12	1.4%	1.5%	1.6%
11.30	11.54	11.58	12.10	12.13	12.12	12.26	12.29	12.29	1.5%	1.5%	1.5%
2.29	2.55	2.84	2.58	2.92	3.33	2.97	3.43	3.83	0.8%	1.5%	2.0%
5.32	5.25	5.05	5.64	5.74	5.71	6.87	7.09	7.10	1.4%	1.5%	1.5%
0.65	0.66	0.68	0.62	0.64	0.67	0.61	0.64	0.68	-0.3%	-0.1%	0.2%
4.67	4.59	4.37	5.03	5.10	5.04	6.26	6.45	6.42	1.6%	1.7%	1.7%
0.59	0.60	0.61	0.64	0.65	0.66	0.68	0.69	0.71	2.4%	2.5%	2.5%
154.21	**163.38**	**180.19**	**154.94**	**164.42**	**181.91**	**150.50**	**162.00**	**178.57**	**-0.1%**	**0.2%**	**0.7%**
0.06	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**-3.1%**	**-3.1%**	**-3.0%**
31.64	**43.10**	**60.56**	**38.45**	**54.83**	**69.64**	**50.10**	**71.67**	**85.52**	**4.2%**	**6.0%**	**6.9%**

[1]Represents lower 48 onshore and offshore supplies.
[2]Includes lease condensate.
[3]Market production (wet) minus extraction losses.
[4]Gas which occurs in crude oil reserves either as free gas (associated) or as gas in solution with crude oil (dissolved).
[5]Synthetic natural gas, propane air, coke oven gas, refinery gas, biomass gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.

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

Sources: 1993 lower 48 onshore, lower 48 offshore, Alaska crude oil production: Energy Information Administration (EIA), *Petroleum Supply Annual 1993*, DOE/EIA-0340(93)/1 (Washington, DC, June 1993). 1993 U.S. crude oil and natural gas reserves: EIA, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves*, DOE/EIA-0216(93) (Washington, DC, October 1994). 1993 natural gas lower 48 average wellhead price, Alaska, total natural gas production, and supplemental gas supplies: EIA, *Natural Gas Annual 1993*, DOE/EIA-0131(93) (Washington, DC, October 1994). 1993 and 1994 crude oil lower 48 average wellhead price: EIA, Office of Integrated Analysis and Forecasting. 1993 and 1994 total wells completed: EIA, Office of Integrated Analysis and Forecasting. 1994 lower 48 onshore, lower 48 offshore, Alaska crude oil production: EIA, *Petroleum Supply Annual 1994*, DOE/EIA-0340(94) (Washington, DC, May 1995). 1994 U.S. crude oil reserves and U.S. natural gas reserves: EIA, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, Advanced Summary*, DOE/EIA-0216(94) (Washington, DC, August 1995). 1994 natural gas lower 48 average wellhead price, total natural gas production: *Natural Gas Monthly*, DOE/EIA-0130(95/06) (Washington, DC, June 1995). Other 1993 and 1994 values: EIA, Office of Integrated Analysis and Forecasting. Figures for 1993 and 1994 may differ from published data due to internal conversion factors. **Projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C16. Coal Supply, Disposition, and Prices

(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1993	1994	1995	Projections		
				2000		
				Low World Oil Price	Reference	High World Oil Price
Production[1]						
East of the Mississippi	516	566	558	531	530	544
West of the Mississippi	429	467	479	539	540	523
Total	**945**	**1034**	**1037**	**1069**	**1070**	**1067**
Net Imports						
Imports	7	8	8	10	10	10
Exports	75	71	79	89	89	88
Total	**-67**	**-64**	**-71**	**-79**	**-79**	**-78**
Total Supply[2]	**877**	**971**	**965**	**991**	**992**	**989**
Consumption by Sector						
Residential and Commercial	6	6	6	6	6	6
Industrial[3]	75	75	74	75	76	77
Coke Plants	31	32	30	27	27	27
Electric Generators[4]	813	826	827	882	882	877
Total	**926**	**938**	**937**	**989**	**990**	**987**
Discrepancy and Stock Change[5]	**-48**	**32**	**28**	**1**	**1**	**1**
Average Minemouth Price (1994 dollars per short ton)	**19.85**	**19.41**	**18.54**	**16.74**	**17.44**	**18.12**
Delivered Prices (1994 dollars per short ton)[6]						
Industrial	32.23	32.54	31.34	28.54	29.68	30.55
Coke Plants	47.44	46.56	47.39	43.25	43.74	46.04
Electric Utilities	28.60	28.03	27.13	24.86	25.77	26.90
Average[6]	**29.54**	**29.02**	**28.13**	**25.64**	**26.56**	**27.70**
Average Price to All Users (1994 dollars per million Btu)	1.41	1.39	1.33	1.22	1.26	1.31
Exports[7]	41.41	39.93	38.61	36.80	38.01	39.12

Table C16. Coal Supply, Disposition, and Prices (Continued)
(Million Short Tons per Year, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
552	557	583	575	584	597	604	617	635	0.3%	0.4%	0.5%
583	577	542	608	599	578	630	623	596	1.4%	1.4%	1.2%
1135	**1135**	**1126**	**1184**	**1184**	**1174**	**1234**	**1240**	**1230**	**0.8%**	**0.9%**	**0.8%**
10	10	10	10	10	10	10	10	10	1.5%	1.5%	1.5%
98	97	97	111	111	111	130	130	129	2.9%	2.9%	2.9%
-87	**-87**	**-87**	**-101**	**-100**	**-100**	**-120**	**-119**	**-119**	**3.0%**	**3.0%**	**3.0%**
1047	**1048**	**1039**	**1083**	**1083**	**1074**	**1114**	**1120**	**1111**	**0.7%**	**0.7%**	**0.6%**
6	6	6	6	6	6	6	6	6	0.3%	0.2%	0.1%
77	78	80	79	80	81	84	86	86	0.5%	0.6%	0.7%
23	23	23	20	20	20	18	18	18	-2.7%	-2.7%	-2.7%
937	939	929	976	975	970	1005	1009	999	0.9%	1.0%	0.9%
1043	**1046**	**1037**	**1082**	**1082**	**1077**	**1113**	**1120**	**1110**	**0.8%**	**0.8%**	**0.8%**
5	**2**	**1**	**1**	**1**	**-3**	**1**	**1**	**2**	**N/A**	**N/A**	**N/A**
17.08	**17.68**	**18.80**	**16.59**	**17.43**	**18.81**	**16.54**	**17.39**	**18.79**	**-0.8%**	**-0.5%**	**-0.2%**
29.17	30.06	30.88	28.80	30.13	31.70	28.28	29.81	31.81	-0.7%	-0.4%	-0.1%
43.95	44.57	46.60	42.76	44.60	46.74	42.32	44.00	46.57	-0.5%	-0.3%	0.0%
25.10	26.28	27.89	24.79	25.88	28.27	24.32	26.17	28.17	-0.7%	-0.3%	0.0%
25.82	**26.97**	**28.54**	**25.42**	**26.55**	**28.88**	**24.92**	**26.74**	**28.75**	**-0.7%**	**-0.4%**	**0.0%**
1.23	1.28	1.35	1.22	1.27	1.37	1.19	1.28	1.37	-0.7%	-0.4%	0.0%
37.47	38.30	40.17	35.87	37.64	39.55	35.12	37.22	39.51	-0.6%	-0.3%	-0.1%

[1]Includes anthracite, bituminous coal, and lignite.
[2]Production plus net imports plus net storage withdrawals.
[3]Includes consumption by cogenerators.
[4]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[5]Balancing item: the sum of production, net imports, and net storage minus total consumption.
[6]Sectoral prices weighted by consumption tonnage; weighted average excludes residential/ commercial prices and export f.a.s. prices.
[7]Free-alongside-ship (f.a.s.) price at United States port-of-exit.
N/A = Not applicable.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993 production, imports, exports, consumption, minemouth price, and delivered prices: Energy Information Administration (EIA), *Coal Industry Annual*, DOE/EIA-0584(93) (Washington, DC, December 1994). 1994 production, imports, exports, consumption, minemouth price, and delivered prices: EIA, *Coal Industry Annual*, DOE/EIA-0584(94) (Washington, DC, 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C17. Renewable Energy Generating Capacity and Generation
(Thousand Megawatts, Unless Otherwise Noted)

Capacity and Generation	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Electric Utilities and Nonutilities[1] (excluding cogenerators)						
Capability						
Conventional Hydropower	78.21	78.20	78.50	80.60	80.60	80.60
Geothermal[2]	2.97	2.97	3.01	3.21	3.21	3.21
Municipal Solid Waste	3.00	3.04	3.45	4.04	4.03	4.02
Wood and Other Biomass[3]	1.71	1.71	1.75	1.80	1.80	1.80
Solar Thermal	0.35	0.35	0.36	0.40	0.40	0.40
Solar Photovoltaic	0.01	0.01	0.01	0.02	0.02	0.02
Wind	1.78	1.79	2.09	2.72	2.73	2.81
Total	**88.04**	**88.07**	**89.17**	**92.79**	**92.79**	**92.87**
Generation (billion kilowatthours)						
Conventional Hydropower	279.10	259.86	293.80	303.09	303.10	303.10
Geothermal[2]	17.32	17.06	17.10	18.18	18.18	18.18
Municipal Solid Waste	17.38	17.29	21.49	25.46	25.41	25.34
Wood and Other Biomass[3]	8.64	8.90	8.00	8.32	8.32	8.32
Solar Thermal	0.90	0.82	0.92	1.04	1.04	1.04
Solar Photovoltaic	0.00	0.00	0.03	0.08	0.08	0.08
Wind	3.04	3.45	3.93	5.29	5.32	5.60
Total	**326.38**	**307.39**	**345.28**	**361.46**	**361.44**	**361.66**
Cogenerators[4]						
Capability						
Municipal Solid Waste	0.40	0.37	0.37	0.38	0.38	0.38
Biomass	5.54	5.72	5.81	6.10	6.10	6.09
Total	**5.94**	**6.09**	**6.18**	**6.48**	**6.48**	**6.47**
Generation (billion kilowatthours)						
Municipal Solid Waste	1.88	1.93	1.75	1.79	1.79	1.78
Biomass	36.21	37.69	38.49	40.59	40.57	40.50
Total	**38.10**	**39.62**	**40.24**	**42.37**	**42.36**	**42.29**

Table C17. Renewable Energy Generating Capacity and Generation (Continued)
(Thousand Megawatts, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
80.92	80.92	80.92	80.97	80.97	80.97	80.97	80.97	80.97	0.2%	0.2%	0.2%
3.11	3.08	3.11	3.14	3.36	3.38	3.57	3.72	3.89	0.9%	1.1%	1.3%
4.44	4.43	4.41	4.86	4.85	4.83	5.25	5.23	5.22	2.6%	2.6%	2.6%
1.92	1.92	1.92	1.92	1.93	2.06	2.32	2.84	3.31	1.5%	2.4%	3.2%
0.52	0.52	0.52	0.63	0.63	0.63	1.95	1.73	1.98	8.5%	7.9%	8.6%
0.07	0.07	0.07	0.18	0.18	0.18	0.32	0.32	0.32	17.6%	17.6%	17.6%
3.63	3.57	3.71	4.42	5.10	6.40	8.71	11.64	14.77	7.8%	9.3%	10.6%
94.61	**94.51**	**94.66**	**96.12**	**97.02**	**98.46**	**103.09**	**106.45**	**110.46**	**0.8%**	**0.9%**	**1.1%**
305.60	305.60	305.60	306.16	306.16	306.17	306.35	306.35	306.36	0.8%	0.8%	0.8%
18.16	17.94	18.16	18.85	20.36	20.52	22.49	23.55	24.73	1.3%	1.5%	1.8%
28.25	28.18	28.06	31.16	31.08	30.96	33.86	33.74	33.63	3.3%	3.2%	3.2%
8.86	8.86	8.86	8.86	8.89	9.85	11.63	15.26	18.56	1.3%	2.6%	3.6%
1.38	1.38	1.38	1.71	1.71	1.71	6.17	5.43	6.29	10.1%	9.4%	10.2%
0.18	0.18	0.18	0.40	0.40	0.40	0.69	0.69	0.69	29.6%	29.6%	29.6%
7.38	7.19	7.67	10.13	12.33	16.63	24.40	33.37	43.36	9.8%	11.4%	12.8%
369.82	**369.33**	**369.93**	**377.27**	**380.94**	**386.24**	**405.60**	**418.39**	**433.63**	**1.3%**	**1.5%**	**1.7%**
0.39	0.39	0.39	0.40	0.40	0.40	0.41	0.41	0.41	0.5%	0.5%	0.5%
6.76	6.76	6.73	7.22	7.22	7.21	7.70	7.70	7.69	1.4%	1.4%	1.4%
7.15	**7.15**	**7.12**	**7.62**	**7.62**	**7.61**	**8.11**	**8.11**	**8.11**	**1.4%**	**1.4%**	**1.4%**
1.85	1.85	1.84	1.89	1.89	1.89	1.93	1.93	1.93	0.0%	0.0%	0.0%
44.98	44.96	44.80	48.09	48.09	47.99	51.30	51.28	51.26	1.5%	1.5%	1.5%
46.82	**46.81**	**46.64**	**49.98**	**49.98**	**49.88**	**53.23**	**53.21**	**53.18**	**1.4%**	**1.4%**	**1.4%**

[1]Includes traditional utilities and nonutilities other than cogenerators. These nonutility facilities include small power producers, exempt wholesale generators and generators at industrial and commercial facilities who do not produce steam for other uses.
[2]Includes hydrothermal resources only (hot water and steam).
[3]Includes projections for energy crops after 2010.
[4]Includes cogenerators at facilities whose primary function is not electricity production. In general, biomass and other waste facilities are cogenerators while the remaining renewables produce only electricity.

Notes: Totals may not equal sum of components due to independent rounding. Net summer capability has been estimated for nonutility generators for AEO96. Net summer capability is used to be consistent with electric utility capacity estimates. Electric utility capacity data are the most recent available as of August 30, 1995. Additional retirements are also determined based on the size and age of the units. Therefore, capacity estimates may differ from other Energy Information Administration sources.

Sources: 1993 and 1994 electric utility capability: Energy Information Administration (EIA), Form EIA-860 "Annual Electric Utility Report." 1993 and 1994 nonutility and cogenerator capability: Form EIA-867, "Annual Nonutility Power Producer Report." 1993 and 1994 generation: EIA, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C18. Renewable Energy, Consumption by Sector and Source[1]
(Quadrillion Btu per Year)

Sector and Source	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Marketed Renewable Energy[2]						
Residential	**0.575**	**0.553**	**0.550**	**0.571**	**0.570**	**0.569**
Wood	0.575	0.553	0.550	0.571	0.570	0.569
Commercial	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**
Biomass	0.002	0.002	0.002	0.002	0.002	0.002
Industrial	**2.077**	**2.163**	**2.189**	**2.374**	**2.364**	**2.349**
Conventional Hydroelectric	0.033	0.033	0.033	0.033	0.033	0.033
Municipal Solid Waste	0.006	0.005	0.005	0.005	0.005	0.005
Biomass	2.039	2.126	2.152	2.336	2.326	2.312
Transportation	**0.077**	**0.086**	**0.090**	**0.074**	**0.092**	**0.138**
Ethanol used in E85[3]	0.001	0.001	0.002	0.003	0.003	0.005
Ethanol used in Gasoline Blending	0.076	0.085	0.089	0.072	0.089	0.133
Electric Generators[4]	**3.625**	**3.430**	**3.823**	**4.036**	**4.036**	**4.038**
Conventional Hydroelectric	2.869	2.671	3.020	3.116	3.116	3.116
Geothermal	0.448	0.445	0.450	0.507	0.507	0.507
Municipal Solid Waste	0.179	0.178	0.221	0.262	0.261	0.261
Biomass	0.089	0.091	0.082	0.086	0.086	0.086
Solar Thermal	0.009	0.008	0.009	0.011	0.011	0.011
Solar Photovoltaic	0.000	0.000	0.000	0.001	0.001	0.001
Wind	0.031	0.035	0.040	0.054	0.055	0.058
Total Marketed Renewable Energy	**6.356**	**6.234**	**6.654**	**7.057**	**7.064**	**7.097**
Non-Marketed Renewable Energy[5]						
Selected Consumption						
Residential	**0.016**	**0.016**	**0.017**	**0.020**	**0.020**	**0.020**
Solar Hot Water Heating	0.006	0.006	0.006	0.006	0.006	0.006
Geothermal Heat Pumps	0.010	0.011	0.011	0.015	0.015	0.015
Commercial	**0.011**	**0.011**	**0.012**	**0.024**	**0.024**	**0.024**
Solar Thermal	0.011	0.011	0.012	0.024	0.024	0.024

Table C18. Renewable Energy, Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
0.578	**0.577**	**0.576**	**0.587**	**0.585**	**0.583**	**0.595**	**0.592**	**0.589**	**0.3%**	**0.3%**	**0.3%**
0.578	0.577	0.576	0.587	0.585	0.583	0.595	0.592	0.589	0.3%	0.3%	0.3%
0.002	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	**0.7%**	**0.7%**	**0.7%**
0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.7%	0.7%	0.7%
2.577	**2.564**	**2.543**	**2.721**	**2.707**	**2.690**	**2.879**	**2.862**	**2.848**	**1.4%**	**1.3%**	**1.3%**
0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.0%	0.0%	0.0%
0.005	0.005	0.005	0.005	0.005	0.005	0.006	0.006	0.006	0.9%	0.9%	0.9%
2.539	2.527	2.506	2.683	2.669	2.652	2.841	2.824	2.810	1.4%	1.4%	1.3%
0.166	**0.190**	**0.209**	**0.243**	**0.248**	**0.263**	**0.288**	**0.290**	**0.306**	**5.9%**	**5.9%**	**6.2%**
0.047	0.046	0.051	0.098	0.096	0.103	0.142	0.137	0.148	25.6%	25.4%	25.8%
0.119	0.145	0.157	0.145	0.152	0.160	0.146	0.152	0.159	2.6%	2.8%	3.0%
4.137	**4.129**	**4.139**	**4.240**	**4.310**	**4.371**	**4.628**	**4.787**	**4.968**	**1.4%**	**1.6%**	**1.8%**
3.142	3.142	3.142	3.147	3.147	3.147	3.149	3.149	3.149	0.8%	0.8%	0.8%
0.522	0.516	0.523	0.555	0.604	0.612	0.690	0.728	0.764	2.1%	2.4%	2.6%
0.290	0.290	0.288	0.320	0.319	0.318	0.348	0.347	0.346	3.3%	3.2%	3.2%
0.091	0.091	0.091	0.091	0.091	0.101	0.120	0.157	0.191	1.3%	2.6%	3.6%
0.014	0.014	0.014	0.018	0.018	0.018	0.063	0.056	0.065	10.1%	9.4%	10.2%
0.002	0.002	0.002	0.004	0.004	0.004	0.007	0.007	0.007	29.6%	29.6%	29.6%
0.076	0.074	0.079	0.104	0.127	0.171	0.251	0.343	0.446	9.8%	11.4%	12.8%
7.460	**7.463**	**7.469**	**7.792**	**7.852**	**7.909**	**8.393**	**8.533**	**8.714**	**1.4%**	**1.5%**	**1.6%**
0.025	**0.025**	**0.025**	**0.029**	**0.029**	**0.029**	**0.034**	**0.034**	**0.034**	**3.5%**	**3.5%**	**3.5%**
0.006	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	-0.3%	-0.3%	-0.3%
0.019	0.019	0.019	0.024	0.024	0.024	0.028	0.028	0.028	4.8%	4.8%	4.8%
0.027	**0.027**	**0.027**	**0.030**	**0.030**	**0.030**	**0.037**	**0.037**	**0.037**	**5.7%**	**5.7%**	**5.7%**
0.027	0.027	0.027	0.030	0.030	0.030	0.037	0.037	0.037	5.7%	5.7%	5.7%

[1]Actual heat rates used to determine fuel consumption for all renewable fuels except hydropower, solar, and wind. Consumption at hydroelectric, solar, and wind facilities determined using the fossil fuel equivalent of 10,280 Btu per kilowatthour.

[2]Includes nonelectric renewable energy groups for which the energy source is bought and sold in the marketplace, although individual instances may not necessarily be marketed, and marketed renewable energy inputs for electricity entering the marketplace on the electric power grid.

[3]Excludes motor gasoline component of E85.

[4]Includes renewable energy delivered to the grid from electric utilities, nonutilities, and that part of industrial and other cogeneration delivered to the grid. Renewable energy used in generating electricity for own use is included in the individual sectoral electricity energy consumption values.

[5]Includes selected renewable energy consumption for which the energy is not bought or sold, either directly or indirectly as an input to marketed energy. The Energy Information Administration does not estimate or project total consumption of nonmarketed renewable energy.

N/A = Not available.

Btu = British thermal unit.

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

Sources: 1993 ethanol: Energy Information Administration (EIA), *Annual Energy Review*, DOE/EIA-0384(94) (Washington, DC, July 1995). 1993 and 1994 electric generator: EIA, Form EIA-860, "Annual Electric Utility Report" and EIA, Form EIA-867, "Annual Nonutility Power Producer Report." Other 1993: EIA, Office of Integrated Analysis and Forecasting. 1994 ethanol: EIA, *Petroleum Supply Annual*, 1994, DOE/EIA-0340(94/1) (Washington, DC, June 1995). Other 1994: EIA, Office of Integrated Analysis and Forecasting. **Projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C19. Carbon Emissions by End-Use Sector and Source
(Million Metric Tons per Year)

Sector and Source	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
Residential						
Petroleum	26.2	25.4	24.6	25.2	24.5	23.2
Natural Gas	73.4	72.4	71.9	75.5	75.2	75.3
Coal	1.5	1.4	1.4	1.3	1.3	1.3
Electricity	170.6	170.9	170.8	180.8	179.9	179.3
Total	**271.6**	**270.1**	**268.8**	**282.8**	**280.9**	**279.1**
Commercial						
Petroleum	14.9	14.6	14.5	15.3	14.8	14.4
Natural Gas	43.1	43.4	43.8	45.9	46.0	46.1
Coal	2.2	2.1	2.1	2.2	2.2	2.2
Electricity	151.8	155.7	156.5	164.2	163.3	162.9
Total	**212.1**	**215.8**	**217.0**	**227.5**	**226.4**	**225.6**
Industrial[1]						
Petroleum	92.5	98.7	100.6	106.8	103.4	95.2
Natural Gas[2]	131.6	133.5	139.2	148.3	150.1	156.1
Coal	62.3	63.9	63.0	61.4	61.7	62.7
Electricity	167.5	168.6	167.5	176.7	175.7	175.1
Total	**454.0**	**464.7**	**470.2**	**493.2**	**491.0**	**489.2**
Transportation						
Petroleum	426.8	436.2	446.4	485.3	480.5	471.9
Natural Gas[3]	9.3	9.6	9.8	9.8	9.7	9.8
Other[4]	0.7	0.0	0.0	0.0	0.0	0.1
Electricity	0.0	1.0	1.0	1.6	1.5	1.5
Total	**436.7**	**446.8**	**457.3**	**496.7**	**491.8**	**483.3**
Total Carbon Emissions[5]						
Petroleum	560.4	574.9	586.1	632.6	623.2	604.8
Natural Gas	257.4	258.8	264.8	279.5	281.1	287.3
Coal	66.0	67.4	66.5	65.0	65.3	66.3
Other[4]	0.0	0.0	0.0	0.0	0.0	0.1
Electricity	490.6	496.2	495.8	523.2	520.5	518.9
Total	**1374.4**	**1397.3**	**1413.2**	**1500.3**	**1490.1**	**1477.3**
Electric Generators[6]						
Petroleum	22.5	20.9	15.5	21.8	14.5	12.0
Natural Gas	39.5	44.9	47.3	41.5	45.8	47.3
Coal	428.6	430.4	433.0	459.9	460.2	459.5
Total	**490.6**	**496.2**	**495.8**	**523.2**	**520.5**	**518.9**
Total Carbon Emissions[7]						
Petroleum	582.9	595.8	601.6	654.4	637.7	616.7
Natural Gas	296.9	303.7	312.1	320.9	326.9	334.7
Coal	494.6	497.8	499.4	524.9	525.4	525.8
Other[4]	0.0	0.0	0.0	0.0	0.0	0.1
Total	**1374.4**	**1397.3**	**1413.2**	**1500.3**	**1490.1**	**1477.3**

Table C19. Carbon Emissions by End-Use Sector and Source (Continued)
(Million Metric Tons per Year)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
24.7	23.5	21.3	24.5	22.8	20.8	24.6	22.5	20.5	-0.2%	-0.6%	-1.0%
76.8	76.8	77.3	79.1	79.2	79.6	80.9	80.8	81.0	0.5%	0.5%	0.5%
1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.0	-1.1%	-1.2%	-1.5%
199.9	198.8	197.2	219.5	217.1	215.5	242.9	239.3	236.8	1.7%	1.6%	1.6%
302.6	**300.4**	**297.0**	**324.3**	**320.3**	**317.0**	**349.5**	**343.8**	**339.3**	**1.2%**	**1.2%**	**1.1%**
15.5	14.7	14.2	15.6	14.5	14.0	15.9	14.4	13.9	0.4%	-0.1%	-0.2%
47.2	47.6	47.7	48.7	49.2	49.3	50.0	50.6	50.6	0.7%	0.7%	0.7%
2.3	2.3	2.3	2.4	2.4	2.4	2.5	2.5	2.5	0.9%	0.9%	0.9%
177.1	176.2	174.8	189.3	187.1	185.8	203.9	200.6	198.4	1.3%	1.2%	1.2%
242.2	**240.8**	**239.1**	**256.1**	**253.3**	**251.6**	**272.4**	**268.1**	**265.5**	**1.1%**	**1.0%**	**1.0%**
111.8	107.3	96.9	115.0	109.5	99.9	121.2	113.0	103.1	1.0%	0.6%	0.2%
153.5	158.3	165.0	157.5	163.9	170.8	157.6	167.6	174.6	0.8%	1.1%	1.3%
59.9	60.4	61.4	59.5	60.2	60.6	60.7	61.8	62.3	-0.2%	-0.2%	-0.1%
192.5	191.9	190.2	202.1	200.5	199.4	211.4	209.1	207.4	1.1%	1.0%	1.0%
517.6	**518.0**	**513.5**	**534.1**	**534.1**	**530.7**	**550.9**	**551.6**	**547.5**	**0.8%**	**0.8%**	**0.8%**
519.6	511.3	499.1	543.1	532.7	520.3	559.7	547.2	534.7	1.2%	1.1%	1.0%
10.6	10.6	10.7	12.7	12.7	12.9	15.6	15.5	15.6	2.4%	2.3%	2.4%
0.7	0.7	0.8	1.6	1.6	1.6	2.3	2.3	2.4	23.7%	23.7%	23.9%
3.4	3.4	3.6	5.6	5.5	6.1	7.0	6.7	7.7	9.6%	9.4%	10.1%
534.4	**526.0**	**514.3**	**563.0**	**552.4**	**540.9**	**584.6**	**571.7**	**560.3**	**1.3%**	**1.2%**	**1.1%**
671.6	656.8	631.5	698.2	679.6	655.0	721.4	697.1	672.2	1.1%	0.9%	0.7%
288.1	293.4	300.7	298.1	305.0	312.6	304.1	314.5	321.8	0.8%	0.9%	1.0%
63.5	64.0	65.0	63.2	63.8	64.1	64.4	65.5	65.9	-0.2%	-0.1%	-0.1%
0.7	0.7	0.8	1.6	1.6	1.6	2.3	2.3	2.4	23.7%	23.7%	23.9%
572.9	570.3	565.9	616.6	610.2	606.9	665.2	655.7	650.3	1.4%	1.3%	1.3%
1596.9	**1585.2**	**1563.9**	**1677.6**	**1660.0**	**1640.3**	**1757.4**	**1735.1**	**1712.6**	**1.1%**	**1.0%**	**1.0%**
26.5	20.1	15.8	36.9	24.9	19.3	42.5	23.8	18.3	3.4%	0.6%	-0.6%
55.3	59.2	60.4	70.7	75.9	79.6	99.2	105.9	107.3	3.9%	4.2%	4.2%
491.1	491.0	489.7	508.9	509.4	508.1	523.4	526.0	524.7	0.9%	1.0%	0.9%
572.9	**570.3**	**565.9**	**616.6**	**610.2**	**606.9**	**665.2**	**655.7**	**650.3**	**1.4%**	**1.3%**	**1.3%**
698.1	676.8	647.4	735.1	704.5	674.3	763.9	720.9	690.4	1.2%	0.9%	0.7%
343.4	352.6	361.1	368.8	380.9	392.2	403.3	420.5	429.2	1.4%	1.6%	1.7%
554.6	555.0	554.6	572.0	573.1	572.2	587.8	591.4	590.6	0.8%	0.8%	0.8%
0.7	0.7	0.8	1.6	1.6	1.6	2.3	2.3	2.4	23.7%	23.7%	23.9%
1596.9	**1585.2**	**1563.9**	**1677.6**	**1660.0**	**1640.3**	**1757.4**	**1735.1**	**1712.6**	**1.1%**	**1.0%**	**1.0%**

[1]Includes consumption by cogenerators.
[2]Includes lease and plant fuel.
[3]Includes pipeline fuel natural gas and compressed natural gas used as vehicle fuel.
[4]Other includes methanol and liquid hydrogen.
[5]Measured for delivered energy consumption.
[6]Includes all electric power generators except cogenerators, which produce electricity as a by-product of other processes.
[7]Measured for total energy consumption, with emissions for electric power generators distributed to the primary fuels.
Note: Totals may not equal sum of components due to independent rounding.

Sources: Utility coal carbon emissions from Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States, 1987-1992*, DOE/EIA-0573 (Washington, DC, November 1994). Carbon coefficients from EIA, *Emissions of Greenhouse Gases in the United States, 1987-1994*, DOE/EIA-0573(95) (Washington, DC, October 1995). 1993 consumption estimates based on: EIA, *State Energy Data Report 1993*, DOE/EIA-0214(93) (Washington, DC, July 1995). 1994 consumption estimates based on: EIA, *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Consumption projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C20. Macroeconomic Indicators
(Billion 1987 Dollars, Unless Otherwise Noted)

Indicators	1993	1994	1995	Projections 2000		
				Low World Oil Price	Reference	High World Oil Price
GDP Implicit Price Deflator (index 1987=1.000)	**1.235**	**1.261**	**1.287**	**1.455**	**1.462**	**1.472**
Real Gross Domestic Product	**5134**	**5344**	**5483**	**6205**	**6181**	**6146**
Real Consumption	3459	3580	3671	4178	4158	4130
Real Investment	820	952	1008	1208	1200	1187
Real Government Spending	930	923	924	980	976	971
Real Exports	602	657	723	958	954	949
Real Imports	676	767	844	1119	1107	1091
Real Disposable Personal Income	**3704**	**3836**	**3955**	**4483**	**4463**	**4434**
Index of Manufacturing Gross Output (index 1987=1.000)	**1.113**	**1.193**	**1.213**	**1.346**	**1.340**	**1.333**
AA Utility Bond Rate (percent)	7.43	8.21	7.76	8.14	8.27	8.48
90-Day U.S. Government Treasury Bill Rate (percent)	3.00	4.25	5.44	4.65	4.75	4.89
Real Yield on Government 10 Year Bonds (percent)	3.22	5.44	5.22	4.28	4.27	4.19
Real 90-Day U.S. Government Treasury Bill Rate (percent)	0.83	2.18	3.35	1.80	1.86	1.89
Real Utility Bond Rate (percent)	5.26	6.14	5.68	5.29	5.39	5.48
Delivered Energy Intensity (thousand Btu per 1987 dollar of GDP)						
Delivered Energy	12.79	12.54	12.44	11.67	11.66	11.65
Total Energy	17.02	16.69	16.53	15.39	15.39	15.40
Consumer Price Index (1982=1.00)	1.45	1.48	1.53	1.78	1.79	1.82
Employment Cost Index (1987=1.00)	1.15	1.19	1.22	1.43	1.43	1.44
Unemployment Rate (percent)	6.81	6.08	5.74	5.75	5.92	6.17
Million Units						
Truck Deliveries, Light-Duty	5.19	5.86	5.68	6.32	6.26	6.19
Unit Sales of Automobiles	8.72	9.24	8.66	9.17	9.19	9.16
Millions of People						
Population with Armed Forces Overseas	258.4	261.0	263.6	275.6	275.6	275.6
Population (aged 16 and over)	198.2	200.1	202.1	212.8	212.8	212.8
Employment, Non-Agriculture	112.6	115.9	118.2	127.4	127.0	126.5
Employment, Manufacturing	18.1	18.3	18.5	18.5	18.4	18.3
Labor Force	128.0	131.0	132.8	143.0	142.9	142.7

Table C20. Macroeconomic Indicators (Continued)
(Billion 1987 Dollars, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
1.714	**1.723**	**1.739**	**2.038**	**2.047**	**2.058**	**2.428**	**2.433**	**2.432**	**3.2%**	**3.2%**	**3.2%**
6931	**6901**	**6852**	**7557**	**7523**	**7484**	**8155**	**8114**	**8083**	**2.0%**	**2.0%**	**2.0%**
4629	4603	4561	5030	4999	4963	5439	5401	5371	2.0%	2.0%	2.0%
1429	1419	1404	1607	1595	1583	1761	1744	1731	3.0%	2.9%	2.9%
1037	1031	1022	1096	1089	1079	1152	1143	1134	1.1%	1.0%	1.0%
1280	1273	1261	1655	1643	1628	2039	2022	2005	5.5%	5.5%	5.5%
1444	1426	1397	1830	1803	1770	2236	2197	2159	5.2%	5.1%	5.1%
4984	**4958**	**4916**	**5412**	**5383**	**5348**	**5834**	**5798**	**5771**	**2.0%**	**2.0%**	**2.0%**
1.509	**1.504**	**1.494**	**1.639**	**1.634**	**1.626**	**1.771**	**1.766**	**1.760**	**1.9%**	**1.9%**	**1.9%**
8.42	8.57	8.81	8.10	8.24	8.40	7.83	7.96	8.01	N/A	N/A	N/A
4.75	4.84	4.99	4.60	4.66	4.70	4.48	4.49	4.41	N/A	N/A	N/A
3.52	3.72	3.96	3.06	3.28	3.70	3.05	3.32	3.70	N/A	N/A	N/A
1.09	1.18	1.33	1.09	1.17	1.31	0.92	0.97	1.04	N/A	N/A	N/A
4.75	4.91	5.15	4.59	4.76	5.01	4.26	4.44	4.64	N/A	N/A	N/A
11.02	11.01	10.97	10.56	10.53	10.49	10.16	10.15	10.09	-1.0%	-1.0%	-1.0%
14.55	14.55	14.53	13.94	13.92	13.90	13.35	13.32	13.27	-1.1%	-1.1%	-1.1%
2.14	2.16	2.21	2.60	2.63	2.68	3.14	3.19	3.23	3.6%	3.7%	3.8%
1.72	1.73	1.74	2.09	2.11	2.12	2.55	2.57	2.59	3.7%	3.7%	3.8%
5.72	5.79	5.94	6.09	6.15	6.13	5.96	6.05	6.03	N/A	N/A	N/A
7.18	7.12	7.02	7.85	7.76	7.66	8.51	8.40	8.30	1.8%	1.7%	1.7%
9.32	9.33	9.33	9.22	9.22	9.25	9.14	9.15	9.17	-0.1%	0.0%	0.0%
287.1	287.1	287.1	298.9	298.9	298.9	311.2	311.2	311.2	0.8%	0.8%	0.8%
223.8	223.8	223.8	235.4	235.4	235.4	245.8	245.8	245.8	1.0%	1.0%	1.0%
137.0	136.6	135.8	143.2	142.7	142.1	148.0	147.4	146.9	1.2%	1.2%	1.1%
18.8	18.7	18.5	18.5	18.4	18.3	18.1	18.0	17.9	-0.1%	-0.1%	-0.1%
152.3	152.2	152.0	159.5	159.4	159.3	163.4	163.3	163.2	1.1%	1.1%	1.1%

GDP = Gross domestic product.
Btu = British thermal unit.
N/A = Not available.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993 and 1994: Data Resources Incorporated (DRI), DRI Trend0295. **Projections:** Energy Information Administration, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Table C21. International Petroleum Supply and Disposition Summary
(Million Barrels per Day, Unless Otherwise Noted)

Supply and Disposition	1993	1994	1995	Projections		
				2000		
				Low World Oil Price	Reference	High World Oil Price
World Oil Price (1994 dollars per barrel)[1]	**16.48**	**15.52**	**16.82**	**14.66**	**19.27**	**25.97**
Production[2]						
OECD						
U.S. (50 states)	9.54	9.34	9.35	7.86	8.54	9.35
Canada	2.24	2.33	2.42	2.45	2.48	2.50
Mexico	3.16	3.18	3.18	3.15	3.21	3.26
OECD Europe[3]	5.29	6.13	6.46	6.76	6.82	6.88
Other OECD	0.68	0.73	0.75	0.74	0.76	0.77
Total OECD	**20.90**	**21.70**	**22.16**	**20.97**	**21.80**	**22.76**
Developing Countries						
Other South & Central America	2.26	2.82	2.91	2.89	2.94	2.99
Pacific Rim	1.81	1.89	1.95	2.09	2.12	2.16
OPEC	27.57	27.63	27.63	36.51	34.67	31.81
Other Developing Countries	3.84	3.82	3.93	3.95	4.02	4.09
Total Developing Countries	**35.48**	**36.16**	**36.43**	**45.44**	**43.76**	**41.05**
Eurasia						
Former Soviet Union	8.10	7.01	6.60	7.92	7.29	6.72
Eastern Europe	0.27	0.30	0.29	0.26	0.27	0.27
China	2.91	2.94	2.97	2.97	3.02	3.07
Total Eurasia	**11.28**	**10.25**	**9.86**	**11.15**	**10.58**	**10.06**
Total Production	**67.66**	**68.11**	**68.45**	**77.56**	**76.14**	**73.87**
Consumption						
OECD						
U.S. (50 states)	17.24	17.72	17.79	19.20	18.79	18.26
U.S. Territories	0.24	0.26	0.26	0.32	0.30	0.27
Canada	1.69	1.73	1.76	1.99	1.86	1.74
Mexico	1.87	1.91	1.94	2.15	2.06	1.98
Japan	5.41	5.68	5.79	6.80	6.36	5.95
Australia and New Zealand.	0.88	0.94	0.94	1.05	1.02	1.00
OECD Europe[3]	13.50	13.59	13.78	14.71	14.24	13.77
Total OECD	**40.82**	**41.82**	**42.26**	**46.23**	**44.63**	**42.96**
Developing Countries						
Other South and Central America	3.20	3.26	3.34	4.02	3.93	3.85
Pacific Rim	3.87	4.12	4.39	7.33	7.17	7.01
OPEC	4.58	4.74	4.94	5.56	5.56	5.56
Other Developing Countries	4.10	4.21	4.30	4.96	4.78	4.61
Total Developing Countries	15.76	16.33	16.98	**21.87**	**21.45**	**21.03**

Table C21. International Petroleum Supply and Disposition Summary (Continued)
(Million Barrels per Day, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
15.78	**21.87**	**31.48**	**16.02**	**23.71**	**32.62**	**16.07**	**25.43**	**33.90**	**0.2%**	**2.4%**	**3.8%**
7.10	8.38	10.03	6.95	8.79	10.70	7.04	9.38	11.21	-1.3%	0.0%	0.9%
2.44	2.47	2.52	2.32	2.37	2.41	2.20	2.26	2.31	-0.3%	-0.1%	-0.1%
3.07	3.16	3.25	3.00	3.11	3.21	2.93	3.06	3.15	-0.4%	-0.2%	0.0%
5.99	6.07	6.16	5.15	5.24	5.32	4.20	4.29	4.35	-1.8%	-1.7%	-1.6%
0.69	0.71	0.74	0.63	0.66	0.69	0.58	0.61	0.64	-1.1%	-0.8%	-0.6%
19.29	**20.80**	**22.70**	**18.05**	**20.16**	**22.34**	**16.95**	**19.60**	**21.66**	**-1.2%**	**-0.5%**	**0.0%**
2.62	2.69	2.77	2.28	2.36	2.43	1.86	1.94	2.00	-2.0%	-1.8%	-1.6%
2.22	2.28	2.35	2.12	2.20	2.27	1.97	2.05	2.12	0.2%	0.4%	0.5%
44.92	41.16	35.80	52.49	46.55	40.76	60.83	52.37	46.78	3.8%	3.1%	2.5%
3.76	3.87	3.98	3.47	3.59	3.70	3.09	3.22	3.32	-1.0%	-0.8%	-0.7%
53.52	**50.00**	**44.90**	**60.36**	**54.70**	**49.16**	**67.75**	**59.58**	**54.21**	**3.0%**	**2.4%**	**1.9%**
9.18	8.41	7.58	10.05	9.55	8.34	11.22	10.27	9.13	2.3%	1.8%	1.3%
0.23	0.23	0.24	0.21	0.21	0.22	0.18	0.18	0.19	-2.5%	-2.3%	-2.2%
2.99	3.07	3.16	2.94	3.04	3.14	2.88	3.00	3.09	-0.1%	0.1%	0.2%
12.39	**11.71**	**10.98**	**13.20**	**12.81**	**11.71**	**14.28**	**13.46**	**12.42**	**1.6%**	**1.3%**	**0.9%**
85.20	**82.51**	**78.58**	**91.61**	**87.67**	**83.21**	**98.99**	**92.63**	**88.29**	**1.8%**	**1.5%**	**1.2%**
20.43	19.89	19.14	21.45	20.67	19.91	22.27	21.18	20.43	1.1%	0.9%	0.7%
0.37	0.33	0.29	0.41	0.36	0.31	0.46	0.39	0.34	2.8%	2.0%	1.4%
2.16	1.95	1.74	2.32	2.04	1.81	2.49	2.13	1.90	1.7%	1.0%	0.4%
2.41	2.24	2.06	2.66	2.41	2.19	2.91	2.57	2.34	2.0%	1.4%	1.0%
7.53	6.64	5.80	8.18	6.85	5.75	8.90	7.08	5.86	2.2%	1.1%	0.1%
1.13	1.08	1.04	1.21	1.15	1.09	1.29	1.21	1.16	1.5%	1.2%	1.0%
15.28	14.57	13.81	15.63	14.75	13.96	16.00	14.92	14.19	0.8%	0.4%	0.2%
49.31	**46.71**	**43.88**	**51.86**	**48.22**	**45.02**	**54.31**	**49.49**	**46.22**	**1.3%**	**0.8%**	**0.5%**
4.40	4.27	4.14	4.72	4.56	4.42	5.04	4.84	4.71	2.1%	1.9%	1.8%
9.06	8.77	8.46	10.09	9.69	9.34	11.08	10.57	10.21	4.8%	4.6%	4.4%
6.14	6.14	6.14	6.78	6.78	6.78	7.48	7.48	7.48	2.2%	2.2%	2.2%
5.51	5.13	4.76	6.07	5.48	4.95	6.73	5.87	5.23	2.3%	1.6%	1.0%
25.10	**24.31**	**23.49**	**27.65**	**26.51**	**25.48**	**30.33**	**28.75**	**27.62**	**3.0%**	**2.7%**	**2.5%**

Table C21. International Petroleum Supply and Disposition Summary (Continued)
(Million Barrels per Day, Unless Otherwise Noted)

Supply and Disposition	1993	1994	1995	Projections		
				2000		
				Low World Oil Price	Reference	High World Oil Price
Eurasia						
Former Soviet Union	5.78	4.89	4.53	4.04	4.87	4.88
Eastern Europe	1.21	1.21	1.24	1.38	1.35	1.32
China	3.11	3.30	3.49	4.35	4.15	3.96
Total Eurasia	**10.09**	**9.40**	**9.26**	**9.76**	**10.37**	**10.17**
Total Consumption	**66.67**	**67.56**	**68.50**	**77.86**	**76.44**	**74.17**
Non-OPEC Production	40.09	40.48	40.82	41.05	41.47	42.06
Net Eurasia Exports	1.19	0.85	0.60	1.39	0.22	-0.11
OPEC Market Share	0.41	0.41	0.40	0.47	0.46	0.43

Table C21. International Petroleum Supply and Disposition Summary (Continued)
(Million Barrels per Day, Unless Otherwise Noted)

Projections									Annual Growth 1994-2015 (percent)		
2005			2010			2015					
Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price	Low World Oil Price	Reference	High World Oil Price
4.67	5.73	5.82	5.29	6.60	6.77	6.80	7.46	7.92	1.6%	2.0%	2.3%
1.48	1.44	1.40	1.57	1.52	1.48	1.64	1.59	1.55	1.5%	1.3%	1.2%
4.93	4.62	4.29	5.54	5.11	4.75	6.21	5.64	5.28	3.1%	2.6%	2.3%
11.08	**11.79**	**11.51**	**12.40**	**13.24**	**13.00**	**14.65**	**14.69**	**14.75**	**2.1%**	**2.1%**	**2.2%**
85.50	**82.81**	**78.88**	**91.91**	**87.97**	**83.51**	**99.29**	**92.93**	**88.59**	**1.9%**	**1.5%**	**1.3%**
40.28	41.34	42.78	39.13	41.11	42.45	38.15	40.26	41.50	-0.3%	0.0%	0.1%
1.31	-0.08	-0.53	0.81	-0.43	-1.30	-0.37	-1.23	-2.33	N/A	N/A	N/A
0.53	0.50	0.46	0.57	0.53	0.49	0.61	0.57	0.53	2.0%	1.6%	1.3%

[1]Average refiner acquisition cost of imported crude oil.
[2]Includes production of crude oil (including lease condensates), natural gas plant liquids, other hydrogen and hydrocarbons for refinery feedstocks, alcohol, liquids produced from coal and other sources, and refinery gains.
[3]OECD Europe includes the unified Germany.
OECD = Organization for Economic Cooperation and Development - Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States (including territories).
Pacific Rim = Hong Kong, Malaysia, Philippines, Singapore, South Korea, Taiwan, and Thailand.
OPEC = Organization of Petroleum Exporting Countries - Algeria, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.
Eurasia = Albania, Bulgaria, China, Czech Republic, Hungary, Poland, Romania, Slovak Republic, the Former Soviet Union, and the Former Yugoslavia.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding.
Sources: 1993 to 1995: Energy Information Administration (EIA), *Short-Term Energy Outlook*, DOE/EIA-0202(95/3Q) (Washington, DC, August 1995). **Projections:** EIA, AEO96 National Energy Modeling System, runs LWOP96.D101995B, AEO96B.D101995C, and HWOP96.D101995B.

Appendix D

Crude Oil Equivalency Summary

Table D1. Total Energy Supply and Disposition Crude Oil Equivalency Summary

(Million Barrels per Day, Unless Otherwise Noted)

Supply, Disposition, and Prices	Reference Case							
	1993	1994	1995	1996	1997	1998	1999	2000
Production								
Crude Oil and Lease Condensate	6.85	6.66	6.54	6.33	6.16	5.95	5.79	5.65
Natural Gas Plant Liquids	1.17	1.17	1.15	1.16	1.17	1.20	1.20	1.20
Dry Natural Gas	8.96	9.17	9.20	9.29	9.50	9.53	9.53	9.53
Coal	9.56	10.40	10.34	10.41	10.41	10.46	10.58	10.64
Nuclear Power	3.08	3.23	3.32	3.35	3.35	3.35	3.35	3.34
Renewable Energy[1]	3.02	2.96	3.15	3.16	3.20	3.23	3.26	3.30
Other[2]	0.26	0.47	0.21	0.21	0.24	0.23	0.23	0.21
Total	**32.90**	**34.05**	**33.91**	**33.93**	**34.02**	**33.96**	**33.95**	**33.88**
Imports								
Crude Oil[3]	6.80	7.06	7.52	7.91	8.48	8.37	8.64	9.06
Petroleum Products[4]	1.76	1.85	1.67	1.75	1.64	1.97	1.97	1.90
Natural Gas	1.13	1.23	1.31	1.41	1.47	1.50	1.53	1.56
Other Imports[5]	0.24	0.32	0.29	0.24	0.29	0.30	0.29	0.33
Total	**9.93**	**10.46**	**10.79**	**11.32**	**11.88**	**12.15**	**12.43**	**12.85**
Exports								
Petroleum[6]	1.00	0.94	1.08	1.27	1.39	1.14	1.04	1.00
Natural Gas	0.07	0.08	0.08	0.09	0.10	0.11	0.12	0.13
Coal	0.93	0.89	0.89	0.96	0.98	0.99	1.01	1.02
Total	**2.00**	**1.91**	**2.04**	**2.32**	**2.48**	**2.25**	**2.17**	**2.15**
Discrepancy[7]	**0.44**	**-0.51**	**0.13**	**0.10**	**0.29**	**0.28**	**0.32**	**0.20**
Consumption								
Petroleum Products[8]	15.98	16.33	16.48	16.52	16.79	17.05	17.24	17.37
Natural Gas	9.83	10.09	10.37	10.50	10.75	10.80	10.83	10.83
Coal	9.22	9.27	9.28	9.30	9.43	9.51	9.67	9.72
Nuclear Power	3.08	3.23	3.32	3.35	3.35	3.35	3.35	3.34
Renewable Energy[1]	3.02	2.96	3.15	3.16	3.20	3.23	3.26	3.30
Other[9]	0.14	0.22	0.19	0.18	0.19	0.19	0.17	0.20
Total	**41.27**	**42.10**	**42.79**	**43.02**	**43.71**	**44.14**	**44.52**	**44.77**
Net Imports - Petroleum	**7.56**	**7.97**	**8.11**	**8.39**	**8.73**	**9.21**	**9.56**	**9.96**
Prices (1994 dollars per unit)								
World Oil Price (dollars per barrel)[10]	16.48	15.52	16.81	16.98	17.37	17.98	18.61	19.27
Gas Wellhead Price (dollars per Mcf)[11]	2.09	1.88	1.60	1.67	1.74	1.82	1.87	1.89
Coal Minemouth Price (dollars per ton)	19.85	19.41	18.54	18.26	18.03	17.85	17.67	17.44

Table D1. Total Energy Supply and Disposition Crude Oil Equivalency Summary (Continued)
(Million Barrels per Day, Unless Otherwise Noted)

Reference Case											Annual Growth 1994-2015 (percent)
2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	
5.51	5.42	5.35	5.31	5.25	5.26	5.28	5.34	5.40	5.44	5.81	-0.6%
1.21	1.23	1.23	1.26	1.30	1.31	1.33	1.36	1.36	1.40	1.51	1.2%
9.60	9.71	9.90	10.10	10.34	10.40	10.55	10.73	10.93	11.11	12.15	1.3%
10.81	10.93	11.07	11.15	11.31	11.49	11.54	11.57	11.66	11.78	12.35	0.8%
3.34	3.33	3.32	3.29	3.27	3.27	3.21	3.17	3.13	3.08	2.19	-1.8%
3.35	3.38	3.41	3.43	3.49	3.51	3.52	3.57	3.62	3.67	4.02	1.5%
0.20	0.22	0.23	0.23	0.24	0.24	0.24	0.25	0.25	0.26	0.28	-2.5%
34.01	**34.21**	**34.50**	**34.77**	**35.19**	**35.50**	**35.69**	**35.99**	**36.36**	**36.74**	**38.30**	**0.6%**
9.21	9.33	9.60	9.69	9.73	10.01	9.87	9.80	9.88	9.69	9.61	1.5%
2.08	2.17	2.16	2.29	2.47	2.39	2.60	2.72	2.71	2.91	3.02	2.4%
1.59	1.62	1.63	1.63	1.65	1.67	1.70	1.72	1.77	1.81	2.09	2.5%
0.31	0.32	0.29	0.28	0.28	0.29	0.32	0.31	0.30	0.29	0.27	-0.9%
13.19	**13.43**	**13.67**	**13.89**	**14.13**	**14.36**	**14.47**	**14.55**	**14.66**	**14.70**	**14.99**	**1.7%**
0.96	0.93	0.95	0.93	0.89	0.93	0.88	0.85	0.87	0.83	0.90	-0.2%
0.14	0.15	0.15	0.15	0.15	0.15	0.14	0.14	0.15	0.15	0.16	3.5%
1.04	1.05	1.07	1.09	1.12	1.14	1.17	1.19	1.22	1.25	1.48	2.5%
2.14	**2.13**	**2.17**	**2.17**	**2.15**	**2.22**	**2.19**	**2.19**	**2.25**	**2.24**	**2.54**	**1.4%**
0.24	**0.25**	**0.27**	**0.21**	**0.24**	**0.24**	**0.24**	**0.18**	**0.25**	**0.23**	**0.26**	**N/A**
17.65	17.83	18.03	18.21	18.48	18.66	18.80	18.92	19.10	19.21	19.69	0.9%
10.92	11.06	11.25	11.46	11.71	11.79	11.97	12.17	12.43	12.64	13.94	1.6%
9.87	9.98	10.10	10.15	10.29	10.46	10.49	10.49	10.54	10.63	10.97	0.8%
3.34	3.33	3.32	3.29	3.27	3.27	3.21	3.17	3.13	3.08	2.19	-1.8%
3.35	3.38	3.41	3.43	3.49	3.52	3.53	3.57	3.62	3.68	4.02	1.5%
0.19	0.19	0.16	0.16	0.16	0.17	0.20	0.20	0.20	0.19	0.19	-0.7%
45.31	**45.77**	**46.27**	**46.70**	**47.40**	**47.87**	**48.21**	**48.53**	**49.02**	**49.43**	**51.01**	**0.9%**
10.33	**10.57**	**10.81**	**11.04**	**11.31**	**11.47**	**11.59**	**11.67**	**11.71**	**11.77**	**11.73**	**1.9%**
19.92	20.47	20.97	21.41	21.86	22.25	22.61	22.97	23.34	23.70	25.43	2.4%
1.91	1.93	1.94	1.96	1.99	2.00	2.02	2.06	2.10	2.15	2.57	1.5%
17.39	17.49	17.51	17.60	17.68	17.50	17.54	17.50	17.45	17.43	17.39	-0.5%

[1]Includes utility and nonutility electricity from hydroelectric, wood and wood waste, municipal solid waste, other biomass, wind, photovoltaic and solar thermal sources; non-electric energy from renewable sources, such as active and passive solar systems, and wood; and both the ethanol and gasoline components of E85, but not the ethanol components of blends less than 85 percent. Excludes nonmarketed renewable energy.
[2]Includes liquid hydrogen, methanol, supplemental natural gas, and some domestic inputs to refineries.
[3]Includes imports of crude oil for the Strategic Petroleum Reserve.
[4]Includes imports of finished petroleum products, imports of unfinished oils, alcohols, ethers, and blending components.
[5]Includes coal, coal coke (net), and electricity (net).
[6]Includes crude oil and petroleum products.
[7]Balancing item. Includes unaccounted for supply, losses, gains, and net storage withdraws.
[8]Includes natural gas plant liquids, crude oil consumed as a fuel, and nonpetroleum based liquids for blending, such as ethanol.
[9]Includes net electricity imports, methanol, and liquid hydrogen.
[10]Average refiner acquisition cost for imported crude oil.
[11]Represents lower 48 onshore and offshore supplies.
Btu = British thermal unit.
N/A = Not applicable.
Mcf = Thousand cubic feet.
Note: Totals may not equal sum of components due to independent rounding. Figures for 1993 and 1994 may differ from published data due to internal conversion factors.
Sources: 1993 natural gas values: Energy Information Administration (EIA), *Natural Gas Annual 1993, Volume 1*, DOE/EIA-0131(93)/1 (Washington, DC, October 1994). 1993 coal minemouth prices: EIA, *Coal Industry Annual 1993*, DOE/EIA-0584(93) (Washington, DC, December 1994). Other 1993 values: EIA, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995). 1994 natural gas supply and price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(95/6) (Washington, DC, June 1995). 1994 coal minemouth prices: EIA, *Coal Industry Annual 1994*, DOE/EIA-0584(94) (Washington, DC, December 1995). 1994 coal production, exports, and consumption: EIA, *Monthly Energy Review*, Tables 1.3, 6.1, 6.2, and A5, DOE/EIA-0035(95/08) (Washington, DC, August 1995). Other 1994 values: EIA, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995). **Projections:** EIA, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Appendix E

Household Expenditures

Table E1. 1994 Average Household Expenditures for Energy by Household Characteristic
(1994 Dollars)

Household Characteristics	Fuels					
	Total Energy	Total Home	Electricity	Natural Gas	Fuel Oil and Kerosene	Motor Gasoline
Average U.S. Household	**2156.21**	**1227.08**	**836.42**	**326.80**	**63.85**	**929.14**
Households by Income Quintile						
1st	1375.59	936.30	610.29	281.55	44.46	439.29
2nd	1793.60	1085.00	720.00	311.95	53.05	708.60
3rd	2272.73	1223.59	864.05	292.61	66.94	1049.13
4th	2423.40	1327.05	924.73	330.11	72.21	1096.36
5th	2943.21	1567.18	1071.14	412.57	83.47	1376.03
Households by Census Division						
New England	2475.23	1553.75	897.77	316.33	339.65	921.48
Middle Atlantic	2143.80	1432.24	745.98	483.43	202.84	711.56
South Atlantic	2229.73	1245.19	711.90	509.34	23.95	984.55
East North Central	2119.90	1171.12	784.93	343.51	42.68	948.78
East South Central	2091.71	1233.11	1029.76	168.50	34.85	858.60
West North Central	2472.74	1372.35	1154.12	212.61	5.62	1100.39
West South Central	2218.54	1224.15	929.22	294.93	0.00	994.39
Mountain	2107.71	1000.02	687.60	306.57	5.86	1107.69
Pacific	1912.01	935.54	694.15	229.92	11.47	976.47

Source: Energy Information Administration, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table E2. 2000 Average Household Expenditures for Energy by Household Characteristic
(1994 Dollars)

Household Characteristics	Fuels					
	Total Energy	Total Home	Electricity	Natural Gas	Fuel Oil and Kerosene	Motor Gasoline
Average U.S. Household	**2327.45**	**1218.38**	**837.39**	**313.37**	**67.62**	**1109.07**
Households by Income Quintile						
1st	1459.38	929.96	614.19	269.10	46.67	529.41
2nd	1923.64	1077.68	722.19	299.30	56.20	845.96
3rd	2470.03	1216.57	864.86	281.07	70.64	1253.46
4th	2624.13	1317.36	924.71	316.17	76.48	1306.77
5th	3188.33	1552.91	1068.06	395.97	88.89	1635.42
Households by Census Division						
New England	2717.24	1567.46	870.77	316.77	379.92	1149.78
Middle Atlantic	2315.20	1440.85	761.68	460.24	218.93	874.35
South Atlantic	2348.38	1214.94	707.41	482.47	25.07	1133.43
East North Central	2294.98	1137.61	765.22	328.56	43.83	1157.37
East South Central	2250.36	1226.89	1028.89	161.82	36.18	1023.47
West North Central	2696.35	1357.45	1145.80	205.73	5.92	1338.90
West South Central	2442.45	1199.77	899.17	300.60	0.00	1242.68
Mountain	2315.49	1009.23	699.01	304.14	6.08	1306.26
Pacific	2061.63	951.37	716.07	224.01	11.28	1110.27

Source: Energy Information Administration, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table E3. 2005 Average Household Expenditures for Energy by Household Characteristic
(1994 Dollars)

Household Characteristics	Fuels					
	Total Energy	Total Home	Electricity	Natural Gas	Fuel Oil and Kerosene	Motor Gasoline
Average U.S. Household	**2354.66**	**1225.65**	**862.47**	**297.85**	**65.33**	**1129.02**
Households by Income Quintile						
1st	1471.35	932.42	632.92	254.85	44.65	538.93
2nd	1942.33	1083.35	744.64	284.63	54.08	858.98
3rd	2500.30	1225.32	889.04	268.16	68.12	1274.98
4th	2658.90	1326.96	952.48	300.46	74.01	1331.94
5th	3228.80	1562.88	1100.18	376.20	86.49	1665.92
Households by Census Division						
New England	2770.62	1598.28	919.67	300.45	378.16	1172.34
Middle Atlantic	2353.87	1449.32	799.03	433.30	216.99	904.55
South Atlantic	2356.92	1206.44	718.16	463.95	24.33	1150.48
East North Central	2317.73	1136.53	772.33	323.40	40.80	1181.20
East South Central	2250.84	1229.25	1040.12	156.48	32.65	1021.59
West North Central	2696.99	1355.28	1148.83	200.93	5.52	1341.72
West South Central	2476.95	1216.53	927.66	288.86	0.00	1260.42
Mountain	2345.59	1044.49	743.03	296.14	5.32	1301.11
Pacific	2134.47	970.10	752.03	207.57	10.50	1164.37

Source: Energy Information Administration, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table E4. 2010 Average Household Expenditures for Energy by Household Characteristic
(1994 Dollars)

Household Characteristics	Fuels					
	Total Energy	Total Home	Electricity	Natural Gas	Fuel Oil and Kerosene	Motor Gasoline
Average U.S. Household	**2341.18**	**1242.72**	**892.53**	**287.46**	**62.73**	**1098.46**
Households by Income Quintile						
1st	1466.18	942.31	654.74	245.10	42.46	523.87
2nd	1931.87	1097.17	771.19	274.27	51.71	834.70
3rd	2482.89	1242.74	918.08	259.33	65.33	1240.15
4th	2646.17	1348.59	987.05	290.25	71.29	1297.58
5th	3209.53	1586.85	1139.43	363.79	83.63	1622.68
Households by Census Division						
New England	2789.81	1657.35	992.43	295.28	369.64	1132.46
Middle Atlantic	2368.31	1478.48	848.62	415.89	213.98	889.83
South Atlantic	2344.21	1218.92	748.67	446.12	24.13	1125.29
East North Central	2313.71	1162.04	801.26	322.62	38.16	1151.67
East South Central	2221.43	1240.06	1057.70	152.65	29.70	981.37
West North Central	2652.91	1366.64	1157.84	203.62	5.19	1286.26
West South Central	2452.63	1229.23	949.34	279.88	0.00	1223.40
Mountain	2327.37	1068.70	769.61	294.52	4.57	1258.67
Pacific	2127.01	980.15	772.70	198.17	9.27	1146.86

Source: Energy Information Administration, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table E5. 2015 Average Household Expenditures for Energy by Household Characteristic
(1994 Dollars)

Household Characteristics	Fuels					
	Total Energy	Total Home	Electricity	Natural Gas	Fuel Oil and Kerosene	Motor Gasoline
Average U.S. Household	**2312.61**	**1300.31**	**938.21**	**301.60**	**60.51**	**1012.30**
Households by Income Quintile						
1st	1467.13	985.13	687.68	256.88	40.57	482.00
2nd	1917.17	1148.21	811.31	287.27	49.63	768.97
3rd	2440.63	1297.68	962.42	272.42	62.84	1142.95
4th	2610.18	1412.57	1038.68	304.94	68.95	1197.61
5th	3160.67	1663.58	1200.22	381.99	81.37	1497.09
Households by Census Division						
New England	2812.77	1767.66	1076.46	324.37	366.83	1045.11
Middle Atlantic	2396.31	1564.00	911.86	440.78	211.36	832.31
South Atlantic	2324.35	1276.85	779.09	474.77	22.99	1047.50
East North Central	2311.30	1237.82	857.02	344.93	35.87	1073.47
East South Central	2172.05	1271.43	1088.29	156.26	26.88	900.63
West North Central	2593.87	1417.05	1173.46	238.66	4.93	1176.82
West South Central	2401.55	1268.10	978.12	289.98	0.00	1133.45
Mountain	2243.65	1109.23	802.20	303.03	4.00	1134.42
Pacific	2093.47	1050.99	844.14	198.56	8.29	1042.48

Source: Energy Information Administration, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table F1. Comparison of Electricity Forecasts
(Billion Kilowatthours, Except Where Noted)

Projection	EIA *AEO96*			Other Forecasts				
	Reference	Low Economic Growth	High Economic Growth	WEFA	GRI	DRI	NERC	NERA
2000								
Average End-Use Price (1994 cents per kilowatthour)	**7.00**	**6.80**	**7.00**	**6.80**	**6.35**	**6.40**	**NA**	**NA**
Residential	8.40	8.20	8.40	8.00	7.71	7.70	NA	NA
Commercial	7.70	7.50	7.70	7.40	6.86	6.90	NA	NA
Industrial	4.90	4.80	4.90	4.80	4.60	4.60	NA	NA
Net Energy for Load	**3,384**	**3,301**	**3,471**	**3,445**	**3,573**	**3,496**	**3,519**	**3,740**
Coal	1,778	1,753	1,797	1,708	1,726	1,666	1,800	1,730
Petroleum	63	55	71	92	138	114	52	130
Natural Gas	299	251	339	403	421	374	348	440
Nuclear	664	664	664	637	663	651	681	650
Hydroelectric/Other[a]	291	291	291	274	284	293	290	380
Nonutility Sales to Grid	249	247	269	304	303	359	266	330
Net Imports	40	40	40	26	38	39	76	80
Electricity Sales	**3,137**	**3,058**	**3,217**	**3,224**	**3,280**	**3,204**	**NA**	**3,470**
Residential	1,084	1,063	1,107	1,118	1,102	1,090	NA	1,200
Commercial/Other[b]	993	977	1,010	1,022	1,031	997	NA	1,100
Industrial	1,059	1,017	1,100	1,084	1,147	1,110	NA	1,170
Capability (gigawatts)[c,d,e]	**804.1**	**799.8**	**811.9**	**814.6**	**786.3**	**779.0**	**750.2**	**NA**
Coal Steam	310.4	310.5	310.9	312.9	320.3	318.8	293.1	NA
Oil and Gas	274.2	270.0	281.3	282.1	242.4	238.1	219.7	NA
Nuclear	100.3	100.3	100.3	101.4	108.5	108.5	104.8	NA
Hydroelectric/Other[a]	119.2	119.0	119.4	118.2	115.2	113.5	113.5	NA
2010								
Average End-Use Price (1994 cents per kilowatthour)	**7.00**	**6.70**	**7.10**	**6.90**	**5.19**	**5.70**	**NA**	**NA**
Residential	8.40	8.00	8.60	8.10	6.25	6.80	NA	NA
Commercial	7.60	7.30	7.80	7.50	5.49	6.00	NA	NA
Industrial	4.80	4.60	5.00	5.00	3.99	4.30	NA	NA
Net Energy for Load	**3,861**	**3,631**	**4,097**	**4,093**	**4,314**	**4,106**	**NA**	**NA**
Coal	1,995	1,938	2,031	2,107	2,156	2,026	NA	NA
Petroleum	111	96	110	80	166	147	NA	NA
Natural Gas	446	356	483	471	551	428	NA	NA
Nuclear	610	610	610	641	649	622	NA	NA
Hydroelectric/Other[a]	296	295	300	277	300	308	NA	NA
Nonutility Sales to Grid	373	305	533	491	450	530	NA	NA
Net Imports	30	31	30	27	42	44	NA	NA
Electricity Sales	**3,604**	**3,389**	**3,827**	**3,831**	**3,958**	**3,751**	**NA**	**NA**
Residential	1,282	1,219	1,346	1,346	1,277	1,220	NA	NA
Commercial/Other[b]	1,137	1,083	1,193	1,235	1,262	1,216	NA	NA
Industrial	1,184	1,087	1,288	1,251	1,419	1,303	NA	NA
Capability (gigawatts)[c,d,e]	**879.0**	**842.1**	**926.5**	**971.2**	**826.8**	**836.0**	**NA**	**NA**
Coal Steam	323.1	322.0	326.1	420.6	336.3	351.2	NA	NA
Oil and Gas	338.0	304.0	376.6	331.0	269.0	266.3	NA	NA
Nuclear	93.3	93.3	93.3	101.4	104.8	104.8	NA	NA
Hydroelectric/Other[a]	124.6	122.8	130.5	118.2	116.5	113.5	NA	NA

[a]Other includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, other biomass, solar and wind power, plus a small quantity of petroleum coke. For nonutility generators, other also includes waste heat, blast furnace gas, and coke oven gas.
[b]Other includes sales of electricity to government, railways, and street lighting authorities.
[c]For DRI and GRI, capability represents nameplate capacity; for the others, capability represents net summer capability.
[d]WEFA's and DRI's capacity projections include cogeneration.
[e]DRI and NERC do not provide nonutility capacity by plant type. The total nonutility capacity in 2000 is 86.1, and 41.3 gigawatts for DRI, and NERC, respectively. In 2010, the projections are 129.8 gigawatts for DRI.
NA = Not available.
Sources: **EIA:** AEO96 National Energy Modeling System, runs AEO96B.D101995C (Reference Case), LMAC96.D101995F (Low Economic Growth Case), and HMAC96.D101995D (High Economic Growth Case). **WEFA:** The WEFA Group, *Coal and Electricity Report* (Spring-Summer 1995). **GRI:** Gas Research Institute, *GRI Projection of U.S. Energy Supply and Demand*, 1996 Edition (draft report). **DRI:** DRI/McGraw-Hill, *World Energy Service U.S. Outlook* (Spring-Summer 1995). **NERC:** North American Electric Reliability Council, *Electricity Supply and Demand 1994-2003* (June 1994). **NERA:** National Economic Research Association, *NERA Energy Outlook* (December 1993).

Table F2. Comparison of Petroleum Forecasts
(Million Barrels per Day, Except Where Noted)

Projection	EIA *AEO96*			Other Forecasts			
	Reference	Low World Oil Price	High World Oil Price	WEFA	GRI	DRI	IPAA
2000							
World Oil Price (1994 dollars per barrel)	**19.27**	**14.66**	**25.97**	**22.73[a]**	**16.17[a]**	**16.49[a]**	**NA**
Crude Oil and NGL Production	**7.50**	**6.86**	**8.24**	**7.40**	**7.77**	**7.99**	**7.50**
Crude Oil	5.65	5.05	6.35	5.62	5.98	6.09[b]	5.65
Natural Gas Liquids	1.85	1.81	1.89	1.78	1.79	1.90	1.85
Total Net Imports	**10.08**	**11.17**	**8.77**	**10.00**	**10.32**	**10.07**	**10.25**
Petroleum Demand	**18.78**	**19.20**	**18.26**	**18.78**	**19.39**	**19.11**	**19.13**
Motor Gasoline	8.21	8.29	8.06	7.85	7.70	7.94	8.00
Jet Fuel	1.80	1.82	1.77	1.62	1.76	1.78	1.72
Distillate Fuel	3.40	3.45	3.32	3.58	3.44	3.44	3.51
Residual Fuel	1.02	1.18	0.92	1.14	1.41	1.21	1.18
Other	4.36	4.46	4.19	4.59	5.08	4.74	4.73
2010							
World Oil Price (1994 dollars per barrel)	**23.70**	**16.02**	**32.61**	**22.11[a]**	**16.17[a]**	**22.03[a]**	**NA**
Crude Oil and NGL Production	**7.55**	**5.80**	**9.39**	**6.50**	**8.24**	**7.38**	**6.62**
Crude Oil	5.44	3.77	7.21	4.69	6.41	5.53[b]	4.71
Natural Gas Liquids	2.11	2.03	2.18	1.81	1.83	1.85	1.91
Total Net Imports	**11.84**	**14.41**	**9.23**	**12.59**	**11.78**	**12.73**	**13.50**
Petroleum Demand	**20.67**	**21.44**	**19.91**	**20.49**	**21.19**	**21.18**	**21.18**
Motor Gasoline	8.64	8.85	8.41	8.35	7.77	8.48	8.52
Jet Fuel	2.14	2.17	2.11	1.85	2.05	2.08	2.03
Distillate Fuel	3.86	3.97	3.76	4.14	3.90	3.94	4.05
Residual Fuel	1.33	1.59	1.16	1.23	1.70	1.32	1.27
Other	4.69	4.85	4.47	4.93	5.77	5.37	5.32
2015							
World Oil Price (1994 dollars per barrel)	**25.43**	**16.07**	**33.89**	**NA**	**16.17[a]**	**23.58[a]**	**NA**
Crude Oil and NGL Production	**8.08**	**5.85**	**9.83**	**NA**	**8.89**	**6.92**	**NA**
Crude Oil	5.81	3.66	7.51	NA	7.08	5.10[b]	NA
Natural Gas Liquids	2.27	2.19	2.32	NA	1.81	1.82	NA
Total Net Imports	**11.79**	**15.23**	**9.28**	**NA**	**11.92**	**13.74**	**NA**
Petroleum Demand	**21.18**	**22.26**	**20.42**	**NA**	**21.95**	**22.06**	**NA**
Motor Gasoline	8.56	8.81	8.31	NA	7.62	8.50	NA
Jet Fuel	2.27	2.30	2.24	NA	2.20	2.22	NA
Distillate Fuel	4.11	4.28	4.01	NA	4.16	4.21	NA
Residual Fuel	1.36	1.76	1.20	NA	1.83	1.37	NA
Other	4.89	5.11	4.66	NA	6.14	5.77	NA

[a]Composite U.S. refiner's acquisition cost.
[b]Includes shale and other.
NA = not available.

Sources: **EIA:** AEO96 National Energy Modeling System, runs AEO96B.D101995C (Reference Case), LWOP96.D101995B (Low World Oil Price Case), and HWOP95.D101995B (High World Oil Price Case). **WEFA:** The WEFA Group, *U.S. Energy Report* (Third Quarter 1995). **GRI:** Gas Research Institute, *Draft of the GRI Baseline Projection of U.S. Energy Supply and Demand*, 1995 Edition (October 1995). **DRI:** DRI/McGraw-Hill, *World Energy Service U.S. Outlook* (Spring-Summer 1995). **IPAA:** Independent Petroleum Association of America, *IPAA Supply and Demand Committee Long-Run Forecast 1994-2010* (March 1995).

Table F3. Comparison of Natural Gas Forecasts
(Trillion Cubic Feet, Except Where Noted)

Projection	EIA *AEO96*			Other Forecasts			
	Reference	Low Economic Growth	High Economic Growth	WEFA	GRI	DRI	AGA
2000							
Lower 48 Wellhead Price (1994 dollars per thousand cubic feet)	**1.89**	**1.79**	**1.91**	**1.93[d]**	**2.34[a]**	**1.83**	**2.30[a]**
Dry Gas Production	**19.65**	**18.77**	**20.71**	**21.97**	**19.70**	**20.72**	**19.82**
Net Imports	**2.98**	**2.98**	**2.98**	**NA**	**2.91**	**2.69**	**3.40**
Consumption	**22.34[c]**	**21.46[c]**	**23.40[c]**	**21.34[e,d]**	**23.01[c]**	**23.09[c]**	**23.24[c]**
Residential	5.07	5.00	5.18	4.94[d]	5.05	5.14	5.33
Commercial	3.10	3.07	3.15	3.04[d]	3.11[b]	3.26	3.58
Industrial	8.90[b,e]	8.67[b,e]	9.14[b,e]	9.21[b,d,e]	9.90[b,c]	9.01[b,e]	9.26[b,e]
Electric Generators	3.33	2.81	3.93	4.14[b]	4.27	3.62	3.22
Other	1.94[c]	1.91[c]	1.99[c]	NA	0.78	2.07[c]	1.86[c]
End-Use Prices							
Residential	6.26	6.06	6.24	6.66[d]	6.65	6.17	6.78
Commercial	5.30	5.10	5.28	5.67[d]	5.69	5.13	5.59
Industrial	2.65[b,e]	2.47[b,e]	2.68[b,e]	3.59[b,d,e]	3.08[b,e]	3.07[b,e,f]	3.12[b,e]
Electric Generators	2.24	2.06	2.30	2.60[d]	2.91	2.27	2.89
Transportation	6.75	6.54	6.78	NA	NA	NA	NA
2010							
Lower 48 Wellhead Price (1994 dollars per thousand cubic feet)	**2.15**	**1.82**	**2.51**	**2.43[d]**	**2.32[a]**	**2.70**	**2.67[a]**
Dry Gas Production	**22.83**	**20.81**	**24.92**	**22.88**	**22.72**	**22.89**	**21.32**
Net Imports	**3.46**	**3.46**	**3.46**	**NA**	**3.59**	**3.43**	**3.75**
Consumption	**26.00[c]**	**23.98[c]**	**28.08[c]**	**22.95[e,d]**	**26.60[c]**	**25.96[c]**	**25.10[c]**
Residential	5.33	5.13	5.55	4.96[d]	5.24	5.32	5.50
Commercial	3.32	3.19	3.44	3.12[d]	3.30[b]	3.59	4.22
Industrial	9.72[b,e]	9.31[b,e]	10.19[b,e]	10.14[b,d,e]	11.26[b,c]	10.56[b,e]	9.46[b,e]
Electric Generators	5.29	4.15	6.44	4.73[d]	5.63	3.96	3.75
Other	2.33[c]	2.20[c]	2.47[c]	NA	1.17	2.53[c]	2.18[c]
End-Use Prices							
Residential	6.08	5.64	6.56	7.23[d]	6.13	6.84	6.92
Commercial	5.19	4.75	5.65	6.24[d]	5.23	5.83	5.55
Industrial	2.84[b,e]	2.45[b,e]	3.26[b,e]	4.18[b,d,e]	3.09[b,e]	3.91[b,e,f]	3.35[b,e]
Electric Generators	2.49	2.07	2.93	3.16[d]	2.90	3.14	3.20
Transportation	6.67	6.17	7.16	NA	NA	NA	NA
2015							
Lower 48 Wellhead Price (1993 dollars per thousand cubic feet)	**2.57**	**2.07**	**3.34**	**2.68[d]**	**2.30[a]**	**2.98**	**NA**
Dry Gas Production	**24.97**	**22.46**	**26.79**	**22.21**	**24.27**	**25.38**	**NA**
Net Imports	**4.02**	**4.02**	**4.02**	**NA**	**3.69**	**3.66**	**NA**
Consumption	**28.70[c]**	**26.19[c]**	**30.53[c]**	**22.54[e,d]**	**28.45[c]**	**28.62[c]**	**NA**
Residential	5.44	5.20	5.63	4.95[d]	5.44[b]	5.43	NA
Commercial	3.41	3.25	3.54	3.11[d]	3.40[b]	3.79	NA
Industrial	9.91[b,e]	9.33[b,e]	10.46[b,e]	10.17[b,d,e]	11.75[b,c]	11.92[b,e]	NA
Electric Generators	7.30	5.95	8.12	4.32[d]	6.31	4.56	NA
Other	2.63[c]	2.47[c]	2.78[c]	NA	1.46	2.91[c]	NA
End-Use Prices							
Residential	6.59	5.91	7.51	7.53[d]	5.85	7.01	NA
Commercial	5.70	5.03	6.61	6.54[d]	5.01	6.02	NA
Industrial	3.30[b,e]	2.70[b,e]	4.14[b,e]	4.47[b,d,e]	3.07[b,e]	4.20[b,e,f]	NA
Electric Generators	3.02	2.37	3.88	3.45[d]	2.89	3.40	NA
Transportation	7.37	6.67	8.27	NA	NA	NA	NA

[a]Average acquisition price.
[b]Includes gas consumed in cogeneration.
[c]Includes lease and plant fuels.
[d]Excludes Alaska and Hawaii.
[e]Excludes lease and plant fuel.
[f]On-system sales.
NA = not available.

Sources: EIA: AEO96 National Energy Modeling System, runs AEO96B.D101995C (Reference Case), LMAC96.D101995F (Low Economic Growth Case), and HMAC96.D101995D (High Economic Growth Case). **WEFA:** The WEFA Group, *Natural Gas Service Long Term Forecast* (Spring 1995). **GRI:** Gas Research Institute, *GRI Baseline Projection of U.S. Energy Supply and Demand*, 1996 Edition (August 1995). **DRI:** DRI/McGraw-Hill, *World Energy Service U.S. Outlook* (Spring-Summer 1995). **AGA:** American Gas Association, *1995 AGA-TERA Base Case* (January 1995).

Table F4. Comparison of Coal Forecasts
(Million Short Tons, Except Where Noted)

Projection	EIA *AEO96*			Other Forecasts		
	Reference	Low Economic Growth	High Economic Growth	WEFA	GRI	DRI
2000						
Production	**1070**	**1058**	**1087**	**1064**	**1164**	**1028**
Consumption by Sector						
Electricity[a]	882	868	892	843	962	829
Coking Plants	27	26	27	35	28	29
Industrial/Other	82	79	85	101	85	94
Total	**990**	**974**	**1004**	**979**	**1075**	**952**
Net Coal Exports	**79**	**79**	**79**	**84**	**89**	**77**
Minemouth Price (1994 dollars per short ton)	**17.44**	**17.05**	**17.35**	**22.20**	**NA**	**NA**
Average Delivered Price: Electricity (1994 dollars per short ton)	**25.77**	**25.11**	**25.40**	**28.00**	**27.31**	**24.59**
2010						
Production	**1184**	**1145**	**1212**	**1355**	**1308**	**1227**
Consumption by Sector						
Electricity[a]	975	944	994	1036	1114	998
Coking Plants	20	20	21	36	22	27
Industrial/Other	86	79	96	178	81	111
Total	**1082**	**1044**	**1110**	**1249**	**1217**	**1135**
Net Coal Exports	**100**	**100**	**100**	**99**	**91**	**85**
Minemouth Price (1994 dollars per short ton)	**17.43**	**16.96**	**17.79**	**23.19**	**NA**	**NA**
Average Delivered Price: Electricity (1994 dollars per short ton)	**25.88**	**25.44**	**26.82**	**29.79**	**25.99**	**22.90**

[a]The WEFA forecast for electricity coal consumption excludes coal consumed by independent power producers. For the WEFA forecast, all coal consumed by nonutility generators (NUGS) has been grouped into the industrial/other category. WEFA forecasts 18 million tons of coal consumption for NUGS by 2000 and 95 million tons by 2010.
NA = not available.

Sources: **EIA:** AEO96 National Energy Modeling System, runs AEO96B.D101995C (Reference Case), LMAC96.D101995F (Low Economic Growth Case), and HMAC96.D101995D (High Economic Growth Case). **DRI:** DRI/McGraw-Hill, *World Energy Service U.S. Outlook* (Spring-Summer 1995). **GRI:** Gas Research Institute, *Final Report, Coal Demand and Price Projections* (February 1995). **WEFA:** The WEFA Group, *U.S. Energy Report* (Spring/Summer 1995).

Major Assumptions for the Forecasts

The National Energy Modeling System

The projections in the *Annual Energy Outlook 1996 (AEO96)* are generated with the National Energy Modeling System (NEMS), developed and maintained by the Office of Integrated Analysis and Forecasting of the Energy Information Administration (EIA). In addition to developing the *AEO* projections, NEMS is also used in analytical studies for the U.S. Congress and other offices within the Department of Energy. The *AEO* forecasts are also used by analysts and planners in other government agencies and outside organizations.

The projections in NEMS are developed using a market-based approach to energy analysis. For each fuel and consuming sector, NEMS balances the energy supply and demand, accounting for the economic competition between the various energy fuels and sources. The time horizon of NEMS is the midterm period, 20 years in the future. In order to represent the regional differences in energy markets, the component models of NEMS function at the regional level: the 9 Census divisions for the end-use demand models; production regions specific to oil, gas, and coal supply and distribution; the North American Electric Reliability Council regions and subregions for electricity; and the Petroleum Administration for Defense Districts for refineries.

NEMS is organized and implemented as a modular system. The modules represent each of the fuel supply markets, conversion sectors, and end-use consumption sectors of the energy system. NEMS also includes macroeconomic and international modules. The primary flows of information between each of these modules are the delivered prices of energy to the end user and the quantities consumed by product, region, and sector. The delivered prices of fuel encompass all the activities necessary to produce, import, and transport fuels to the end user. The information flows also include other data such as economic activity, domestic production activity, and international petroleum supply availability.

The integrating module controls the execution of each of the component modules. To facilitate modularity, the components do not pass information to each other directly but communicate through a central data file. This modular design provides the capability to execute modules individually, thus allowing decentralized development of the system and independent analysis and testing of individual modules. This modularity allows the use of the methodology and level of detail most appropriate for each energy sector. NEMS solves by calling each supply, conversion, and end-use demand module in sequence until the delivered prices of energy and the quantities demanded have converged within tolerance, thus achieving an economic equilibrium of supply and demand in the consuming sectors. Solution is reached annually through the midterm horizon. Other variables are also evaluated for convergence such as petroleum product imports, crude oil imports, and several macroeconomic indicators.

Each NEMS component also represents the impact and cost of legislation and environmental regulations that affect that sector and reports key emissions. NEMS represents all current legislation and environmental regulations, such as the Clean Air Act Amendments of 1990 (CAAA90), and the costs of compliance with other regulations.

Component modules

The component modules of NEMS represent the individual supply, demand, and conversion sectors of domestic energy markets and also include international and macroeconomic modules. In general, the modules interact through values representing the prices of energy delivered to the consuming sectors and the quantities of end-use energy consumption.

Macroeconomic Activity Module

The Macroeconomic Activity Module provides a set of essential macroeconomic drivers to the energy modules, macroeconomic feedback mechanism within NEMS, and a mechanism to evaluate detailed macroeconomic and interindustry impacts associated with energy events. Key macroeconomic variables include Gross Domestic Product (GDP), interest rates, disposable income, and employment. Industrial drivers are calculated for 35 industrial sectors. This module is a response surface representation of the Data Resources, Inc., Quarterly Model of the U.S. Economy.

International Module

The International Module represents the world oil markets, calculating the average world oil price and computing supply curves for 5 categories of imported crude oil for the Petroleum Market Module of NEMS, in response to changes in U.S. import requirements. International petroleum product supply curves, including curves for oxygenates, are also calculated.

Household Expenditures Module

The Household Expenditures Module provides estimates of average household direct expenditures for energy used in the home and in private motor vehicle transportation. The forecasts of expenditures reflect the projections from NEMS for the residential and transportation sectors. The projected household energy expenditures incorporate the changes in residential energy prices and motor gasoline price determined in NEMS, as well as the changes in the efficiency of energy use for residential end-uses and in light-duty vehicle fuel efficiency. Average expenditures estimates are provided for households by income group and Census division.

Residential and Commercial Demand Modules

The Residential Demand Module forecasts consumption of residential sector energy by housing type and end use, subject to delivered energy prices, availability of renewable sources of energy, and housing starts. The Commercial Demand Module forecasts consumption of commercial sector energy by building types and nonbuilding uses of energy and by category of end use, subject to delivered prices of energy, availability of renewable sources of energy, and macroeconomic variables representing interest rates, and floorspace construction. Both modules estimate the equipment stock for the major end-use services, incorporating assessments of advanced technologies, including representations of renewable energy technologies, and effects of both building shell and appliance standards.

Industrial Demand Module

The Industrial Demand Module forecasts the consumption of energy for heat and power and for feedstocks and raw materials in each of 35 industries, subject to the delivered prices of energy and macroeconomic variables representing employment and the value of output for each industry. The industries are classified into three groups—energy-intensive, non-energy-intensive, and nonmanufacturing. Of the 8 energy intensive industries, 7 are modeled in the Industrial Demand Module with components for boiler/steam/ cogeneration, buildings, and process/assembly use of energy. A representation of cogeneration and a recycling component are also included. The use of energy for petroleum refining is modeled in the Petroleum Market Module, and the projected consumption is included in the industrial totals.

Transportation Demand Module

The Transportation Demand Module forecasts consumption of transportation sector fuels, including petroleum products, electricity, methanol, ethanol, and compressed natural gas by transportation mode, vehicle vintage, and size class, subject to delivered prices of energy fuels and macroeconomic variables representing disposable personal income, GDP, population, interest rates, and the value of output for industries in the freight sector. Fleet vehicles are represented separately to allow analysis of CAAA90 and other legislative proposals, and the module includes a component to explicitly assess the penetration of alternatively-fueled vehicles.

Electricity Market Module

The Electricity Market Module represents generation, transmission, and pricing of electricity, subject to delivered prices for coal, petroleum products, and natural gas, costs of generation by centralized renewables, macroeconomic variables for costs of capital and domestic investment, and electricity load shapes and demand. There are four primary submodules—capacity planning, fuel dispatching, finance and pricing, and load and demand-side management. Nonutility generation and transmission and trade are represented in the planning and dispatching submodules. The levelized fuel cost of uranium fuel for nuclear generation is directly incorporated into the Electricity Market Module. All CAAA90 compliance options are explicitly represented in the capacity expansion and dispatch decisions. Both new generating technologies and renewable technologies compete directly in these decisions. The competition between utility and nonutility genera-

tion and several options for wholesale pricing are included.

Renewable Fuels Module

The Renewable Fuels Module includes submodules that provide explicit representation of the supply of wood, municipal solid waste, wind energy, solar thermal electric and photovoltaic energy, and geothermal energy. It provides cost and performance criteria to the Electricity Market Module and also interacts with the Petroleum Market Module to represent the production and pricing of alcohol fuels derived from renewable sources. The Electricity Market Module represents market penetration of renewable technologies used for centralized electricity generation, and the end-use demand modules incorporate market penetration of selected off-grid electric and nonmarketed nonelectric renewables.

Oil and Gas Supply Module

The Oil and Gas Supply Module represents domestic crude oil and natural gas supply within an integrated framework that captures the interrelationships between the various sources of supply: onshore, offshore, and Alaska by both conventional and nonconventional techniques, including enhanced oil recovery and unconventional gas recovery from tight gas formations, Devonian shale, and coalbeds. This framework analyzes cash flow and profitability to compute investment and drilling in each of the supply sources, subject to the prices for crude oil and natural gas, the domestic recoverable resource base, and technology. Oil and gas production functions are computed at a level of 12 supply regions, including 3 offshore and 3 Alaskan regions. This module also represents foreign sources of natural gas, including pipeline imports and exports with Canada and Mexico and liquefied natural gas imports and exports. The crude oil supply curves are input to the Petroleum Market Module in NEMS for conversion and blending into refined petroleum products. The supply curves for natural gas are input to the Natural Gas Transmission and Distribution Module.

Natural Gas Transmission and Distribution Module

The Natural Gas Transmission and Distribution Module represents the transmission, distribution, and pricing of natural gas, subject to end-use demand for natural gas, and the availability of domestic natural gas and natural gas traded on the international market. The module tracks the flows of natural gas in an aggregate, domestic pipeline network, connecting the domestic and foreign supply regions with 12 demand regions. This capability allows the analysis of impacts of regional capacity constraints in the interstate natural gas pipeline network and the identification of pipeline capacity expansion requirements. Core and noncore markets are explicitly represented for natural gas transmission. Key components of pipeline and distributor tariffs are included in the pricing algorithms.

Petroleum Market Module

The Petroleum Market Module forecasts prices of petroleum products, crude oil and product import activity, and domestic refinery operations, including fuel consumption, subject to the demand for petroleum products, availability and price of imported petroleum, and domestic production of crude oil, natural gas liquids, and alcohol fuels. The module represents refining activities for the 5 Petroleum Administration for Defense Districts, using the same crude oil types as the International Module. It explicitly models the requirements of CAAA90 and the costs of new automotive fuels, such as oxygenated and reformulated gasoline, and includes oxygenate production and blending for reformulated gasoline. Costs include capacity expansion for refinery processing units. End-use prices are based on the marginal costs of production, plus markups representing product distribution costs, State and Federal taxes, and environmental costs.

Coal Market Module

The Coal Market Module simulates mining, transportation, coal pricing , subject to the end-use demand for coal differentiated by physical characteristics, such as the heat and sulfur content. The coal supply curves include a response to capacity utilization and fuel costs, as well as reserve depletion, labor productivity, and factor input costs. Twenty-eight coal types are represented, differentiated by thermal grade, sulfur content, and mining process. Production and distribution are computed for 16 supply and 23 demand regions, using imputed coal transportation costs and trends in factor input costs. The Coal Market Module also forecasts the requirements for U.S. coal exports and imports. The inter-

national coal market component of the module computes trade in 4 types of coal for 16 export and 20 import regions. Both the domestic and international coal markets are simulated in a linear program.

Major assumptions for the *Annual Energy Outlook 1996*

Assumptions on world oil markets and domestic macroeconomic activity are primary drivers to the forecasts presented in *AEO96*. These assumptions are presented in Chapter 1. The following section describes the key regulatory, programmatic, and resource assumptions that factor into the projections. More detailed assumptions for each sector, formerly presented in the *Supplement to the Annual Energy Outlook*, will be available via the EIA Home Page on the Internet and on the EIA CD-ROM, along with regional results and other details of the projections.

Building sector assumptions

The buildings sector includes both residential and commercial structures. Both the National Appliance Energy Conservation Act of 1987 (NAECA), the Energy Policy Act of 1992 (EPACT), and the Climate Change Action Plan (CCAP) contain provisions which impact future buildings sector energy use. The provisions with the most significant effect are minimum equipment efficiency standards. These standards require that new heating, cooling, and other specified energy-using equipment meet minimum energy efficiency levels which change over time. The manufacture of equipment that does not meet the standards is prohibited.

Residential assumptions. The NAECA minimum standards [*1*] for the major types of equipment in the residential sector are:

- Heat pumps—a 10.0 minimum seasonal energy efficiency ratio for 1992
- Room air conditioners—an 8.6 energy efficiency ratio in 1990
- Gas/oil furnaces—a 0.78 annual fuel utilization efficiency in 1992
- Refrigerators—a standard of 976 kilowatthours per year in 1990, decreasing to 691 kilowatthours per year in 1993
- Electric water heaters—a 0.88 energy factor in 1990
- Natural gas water heaters—a 0.54 energy factor in 1990.

Building codes relevant to CCAP are represented by an increase in the shell integrity of new construction over time. By the year 2015, heating and cooling shell efficiency improves by 9 percent relative to 1994.

Other CCAP programs which could have a major impact on residential energy consumption are the Environmental Protection Agency's (EPA) Green Programs. These programs, which are cooperative efforts between the EPA and home builders and energy appliance manufacturers, encourage the development and production of highly energy-efficient housing and equipment. One of the best known examples of these programs is the "golden carrot refrigerator," a very efficient design that is projected to be widely available by 1998 and to consume less than two-thirds of the energy specified in the 1993 NAECA standard. At fully funded levels, residential CCAP programs are estimated by program sponsors to reduce carbon emissions by nearly 7 million metric tons by the year 2000. Adjustments for estimated funding levels are included in the reference case assumptions. For the reference case carbon reductions are estimated to be 4 million metric tons.

In addition to the *AEO96* reference case, two standalone side cases were developed to examine the effect of equipment and building standards on residential energy use. The *1995 technology case* assumes that all future equipment purchases are made based only on the range of equipment available in 1995. Building shell efficiency is assumed to increase by 3 percent over 1994 for this case. The *high technology case* assumes that all future equipment purchases are made from a menu of technologies that includes only the most efficient models available in a particular year regardless of cost. Building shell efficiency is assumed to increase by 17 percent in 2015 relative to 1994.

Commercial assumptions. Minimum 1994 equipment efficiency standards for the commercial sector are mandated in the EPACT legislation [*2*]. Minimum standards for representative equipment types produced after January 1, 1994, are:

- Central air-conditioning heat pumps—a 9.7 seasonal energy efficiency rating
- Gas-fired forced-air furnaces—a 0.8 annual fuel utilization efficiency standard
- Fluorescent reflector lamps—a 75.0 lumens per watt lighting efficacy standard.

The CCAP programs recognized in the *AEO96* reference case include enhanced efficiency standards for central air-conditioning units, the expansion of the EPA Green Lights and Energy Star Buildings programs, and improvements to building shells from advanced insulation methods and technologies. The minimum efficiency standard for air-conditioning units is assumed to rise to a seasonal energy efficiency rating of 10.5 in 1998. The EPA green programs are designed to facilitate cost-effective retrofitting of equipment by providing participants with information and analysis as well as participation recognition. Retrofitting behavior is captured in the commercial module via discount parameters for controlling cost-based equipment retrofit decisions for various market segments. To model programs such as Green Lights, which target particular end uses, the *AEO96* version of the commercial module includes end-use-specific segmentation of discount rates. Existing building shell efficiency is assumed to increase by 5 percent over the 1992 average by the year 2015, saving a proportional amount of space heating and cooling energy. At fully funded levels, commercial CCAP programs are estimated by program sponsors to reduce carbon emissions by 6 million metric tons by the year 2000. Adjustments for estimated funding levels are included in the reference case assumptions. For the reference case carbon reductions are estimated to be just over 3 million metric tons.

In addition to the reference case, two standalone side cases examine the effects of technologies on commercial energy use. The *1995 technology case* assumes that all future equipment choices are made from the menu of equipment available in 1995. However, the choice of specific equipment type and efficiency is still made endogenously. For example, if the price of a particular fuel rises relative to other fuels, shifts to competing technologies using different fuels could occur, or more efficient 1995 models of the same technology might be chosen. Existing building shell efficiency is assumed to remain at 1992 levels in this case. The *high technology case* assumes that all future equipment choices are made from a menu of technologies that includes only the most efficient models available in a particular year, regardless of cost. For example, in the high technology case, the most efficient gas furnace technology competes with the most efficient electric heat pump technology. Existing building shells are also assumed to become as efficient as newly constructed buildings by 2015 in the high technology case.

Industrial sector assumptions

Compared to the building sector, there are relatively few regulations which target industrial sector energy use. The electric motor standards in EPACT require a 10-percent increase in efficiency above 1992 efficiency levels for motors sold after 1997 [*3*]. These standards have been incorporated into the Industrial Demand Module through the analysis of process efficiencies for new industrial processes. These standards are expected to lead to significant improvements in efficiency since it has been estimated that electric motors account for about 60 percent of industrial process electricity use.

Climate Change Action Plan. Several programs included in the CCAP target the industrial sector. (Note that the potential impacts of the Climate Wise Program are not included in the CCAP impacts.) The intent of these programs is to reduce greenhouse gas emissions by lowering industrial energy consumption. It was estimated that full implementation of these programs would reduce industrial electricity consumption by 40 billion kilowatthours and non-electric consumption by 146 trillion Btu by 2000. However, the programs were not fully funded. The energy savings were revised in proportion to the funding received. Consequently, electricity consumption is reduced by 10 billion kilowatthours, and non-electric energy consumption is reduced by 80 trillion Btu. The non-electric energy is assumed to be steam coal.

High efficiency and 1995 technology cases. Over the 1970-1990 period, industrial energy intensity fell by 1.9 percent annually. This was due to energy conservation and the changing composition of industrial output. The *high efficiency case* approximates the 1.9-percent annual decline from 1996 through 2015. This is almost twice the rate of decline anticipated

in the reference case (0.9 percent). For this exercise the composition of industrial output remains the same as in the reference case.

The *1995 technology case* holds the energy efficiency of plant and equipment constant at the 1995 level over the forecast.

Both cases were run with only the Industrial Demand Module rather than as a fully integrated NEMS run. Consequently, no potential feedback effects from energy market interactions were captured.

Transportation sector assumptions

The transportation sector accounts for the two-thirds of the Nation's oil use and has been subject to regulations for many years. The Corporate Average Fuel Economy (CAFE) standards, which mandate average miles-per-gallon standards for manufacturers, continue to be widely debated. The projections appearing in this report assume that there will be no further increase in the CAFE standards from the current 27.5 miles per gallon standard. This assumption is consistent with the overall policy that only current legislation is assumed.

EPACT requires that centrally-fueled automobile fleet operators—Federal, State, and local governments, and fuel providers (e.g., gas and electric utilities)—purchase a minimum fraction of alternative-fuel vehicles [*4*]. Federal fleet purchases of alternative-fuel vehicles must reach 50 percent of their total vehicle purchases by 1998 and 75 percent by 2002. Purchases of alternative-fuel vehicles by State and local governments must realize 20 percent of total purchases by 2002 and 70 percent by 2005. Private fuel-provider companies are required to purchase 30 percent alternative-fuel vehicles in 1996, increasing to 90 percent by 1999. It is assumed that the fuel provider fleet provisions and business fleet mandates begin in 1996.

In addition to these requirements, the State of California has adopted a Low Emission Vehicle Program, which requires that 10 percent of all new vehicles sold by 2000 meet the "zero emissions requirements." At present, only electric-dedicated vehicles meet these requirements. Both Massachusetts and New York have also adopted this program. Other States could opt-in for adoption, but these projections assume that only the three States that have formally adopted the California program will participate.

The projections assume that these regulations represent minimum requirements for alternative-fuel vehicle sales; consumers are allowed to purchase more of these vehicles, should vehicle cost, fuel efficiency, range, and performance characteristics make them desirable. In fact, the projections indicate that more than the minimum will be purchased, as shown in Figure 35.

Projections for both vehicle-miles traveled [*5*] and ton-miles traveled [*6*] are calculated endogenously and are based on the assumption that modal shares, for example, personal automobile travel versus mass transit, remain stable over the forecast and track recent historical patterns. Other important factors affecting the forecast of vehicle-miles traveled are personal disposable income per capita; the ratio of miles driven by females to males in the total driving population, which increases from 56 percent in 1990 to 80 percent by 2015; and the aging of the largest segment of the age distribution of the population, which will slow the growth in vehicle-miles traveled.

Climate Change Action Plan. There are four CCAP programs that focus on transportation energy use: (1) reform Federal subsidy for employer-provided parking; (2) adopt a transportation system efficiency strategy; (3) promote telecommuting; and (4) develop fuel economy labels for tires. The combined assumed effect of the Federal subsidy, system efficiency, and telecommuting policies is a 1.1-percent reduction in vehicle-miles traveled (161 trillion Btu). The fuel economy tire labeling program improved new fuel efficiency by 4 percent among vehicles that switched to low rolling resistance tires, and resulted in a reduction in fuel consumption of 40 trillion Btu.

High efficiency and 1995 technology cases. Over the 1970-1990 period, transportation energy efficiency rose by 1.9 percent annually for light-duty vehicles, 1.5 percent for freight trucks, 1.6 percent for rail locomotives and marine vessels, and 2.1 percent for aircraft. In the *high efficiency case*, fuel efficiency improvements from new technology over the forecast were set at 1970-1990 historical growth rates. The *1995 technology case* assumes that new vehicle fuel

efficiencies do not increase beyond their 1995 levels over the forecast.

Both cases were run with only the Transportation Demand Module rather than as a fully integrated NEMS run. Consequently, no potential macroeconomic feedback on travel demand was captured.

Electricity assumptions

Characteristics of generating technologies. The costs and performance of new generating technologies are important factors in determining the future mix of capacity. There are 26 fossil, renewable, and nuclear generating technologies included in these projections. Technologies represented include those currently available as well as those that are assumed to be commercially available within the horizon of the forecast. Capital cost estimates and operational characteristics, such as efficiency of electricity production, are used for decisionmaking where it is assumed that the selection of new plants to be built is based on least cost subject to environmental constraints. The levelized lifetime cost, including fuel costs, is evaluated and is used as the basis for selecting plants to be built. Details about each of the generating plant options are described in the detailed assumptions formerly published in the *Supplement to the Annual Energy Outlook*,which will be available via the EIA Home Page on the Internet and on the EIA CD-ROM.

Regulation of electricity markets. It is assumed that electricity producers comply with CAAA90, which mandates a limit of 8.95 million short tons of sulfur dioxide emissions by 2000. Utilities are assumed to comply with the limits on sulfur emissions by retrofitting units with flue gas desulfurization (FGD) equipment, transferring or purchasing sulfur emission allowances, operating high-sulfur coal units at a lower capacity utilization rate, or switching to low-sulfur fuels. The costs for FGD equipment average approximately $183 per kilowatt, in 1994 dollars, although the costs vary widely across the regions. It is also assumed that the market for trading emission allowances is allowed to operate without regulation and that the States do not further regulate the selection of coal to be used.

The provisions of EPACT include revised licensing procedures for nuclear plants and the creation of exempt wholesale generators [*7*]. These entities are included among nonutility producers and are assumed to have a capital structure which is highly leveraged, compared with that of investor-owned regulated utilities.

Prices for electricity are assumed to be regulated at the State level. Prices for the residential, commercial, industrial, and transportation sectors are developed by classifying costs into four categories: fuel, fixed operation and maintenance, variable operation and maintenance, and capital. These costs are allocated to each of the four customer classes using the proportion of sales to the class and each class's contribution to system peak load requirements. These allocated costs are divided by the sales to each sector to obtain electricity prices to the sector.

Energy efficiency and demand-side management. Improvements in energy efficiency induced by growing energy prices, new appliance standards, and utility demand-side management programs are represented in the end-use demand models. Appliance choice decisions are a function of the relative costs and performance characteristics of a menu of technology options. Utilities have reported plans to increase their expenditures on demand-side management programs to more than $3.9 billion per year by 1998.

Representation of utility Climate Challenge participation agreements. As a result of the Climate Challenge Program, many utilities have announced efforts to voluntarily reduce their greenhouse gas emissions between now and 2000. These efforts cover a wide variety of programs including increasing demand-side management (DSM) investments, repowering (fuel-switching) of fossil plants, restarting of nuclear plants that have been out-of-service, planting trees, and purchasing emission offsets from international sources. To the degree possible, each one of the participation agreements was examined to determine if the commitments made were addressed in the normal reference case assumptions or whether they were addressable in NEMS. Programs like tree planting and emission offset purchasing are not addressable in NEMS. With regard to the other programs, they are, for the most part, captured in NEMS. For example, utilities annually report to EIA their plans (over the next 10 years) to bring a plant

back on line, repower a plant, life extend a plant, cancel a previously planned plant, build a new plant, or switch fuel at a plant. These data are inputs to NEMS. Thus, programs that would affect these areas are reflected in NEMS input data. However, because many of the agreements do not identify the specific plants where action is planned, it is not possible to determine which of the specified actions, together with their greenhouse gas emissions savings, should be attributed to the Climate Challenge Program and which are the result of normal business operations.

Nuclear power. It is assumed that one nuclear generating units currently under construction will be operational by 2015: Watts Bar 1 in 1996, which is owned by Tennessee Valley Authority (TVA). TVA has three additional nuclear units partially completed, Watts Bar 2, and Bellefonte 1 and 2. However, in December of 1994, TVA announced that they were canceling these units, due to the high costs estimated to complete their construction.

It is assumed that no newly-ordered nuclear power plants will be operational through 2010 for the following reasons:

- Concerns about the disposal of radioactive waste
- Public concerns about safety
- Concern about economic and financial risk

In the reference case, nuclear units are assumed to operate until their license expiration, typically 40 years from the date of first operation. Two standalone side cases were developed with alternate retirement dates for nuclear units. The *low nuclear case* assumes that all reactors retire 10 years earlier than their license expiration dates, while the *high nuclear case* assumes 10 years of operation past the license expiration dates for all reactors.

The average nuclear capacity factor is currently 74 percent and is expected to remain between 73 and 76 percent throughout the forecast. Capacity factor assumptions are developed at the unit level, and improvements and losses are forecast based on the age of the reactor. Unit level projections are aggregated to the regional level for use in the model.

High electricity demand case. The *high electricity demand case,* which is a standalone case, assumes that the demand for electricity grows at the same rate as the economy in the reference case through 2000. After 2000, the ratio of electricity demand growth to economic growth is assumed to fall linearly from 1.00 in 2000 to 0.67 in 2015. The 0.67 ratio was chosen because it is approximately the ratio of electricity sales growth to economic growth over the 1993 to 2015 time frame in the reference case. No attempt was made to determine the changes necessary in the end-use sectors needed to result in the stronger demand growth. The high electricity demand case is a partially integrated run, i.e., the Macroeconomic Activity, Petroleum Marketing, International Energy, and end-use demand modules use the reference case values and are not effected by the higher electricity demand growth. Conversely, the Oil and Gas, Natural Gas Transmission and Distribution, Coal Market, and Renewable Fuels Modules are allowed to interact with the Electricity Market Module in the high electricity demand case.

High and low technology cases. The high and low technology cases assume that the advanced generating technologies will reach their full commercialization cost sooner in the high case and later in the low case than in the reference case. Input for each technology is an *n*th-of-a-kind cost, which occurs when plant cost estimates approach actual costs and the effects of "learning by doing" are no longer observed. To get the current overnight cost, the *n*th-of-a-kind cost is multiplied by an optimism factor and a learning factor.

The optimism factor is a measure of the project risk for the first commercialization of a new technology. In the reference case this factor decreases linearly over the first four plants. For the high technology case this factor is halved and decreases linearly over the first two plants. For the low technology case, the factor is doubled and decreases over the first six plants. This assumption says that engineers are more optimistic about a new technology in the high case but more pessimistic in the low case.

The learning factor captures the decrease in costs that occurs from 'learning by doing'. The learning function is a log-linear function which decreases the plant cost by a learning factor for each doubling of capacity. The number of units during which learning occurs is reduced from 40 units in the reference case to 20 units in the high technology case, to allow technologies to reach their *n*th-of-a-kind cost sooner.

Conversely, learning occurs for the first 80 units in the low technology case. The *n*th-of-a-kind cost did not change for these runs. Because the first-of-a-kind cost is not an input into the model, the first-of-a-kind cost was lowered in the high case and increased in the low case relative to the reference case by adjusting the learning factor. The learning factor for the high technology case was calculated by taking the midpoint between the cost of the plant when learning is first applied (the fourth plant in the reference case) and the *n*th-of-a-kind cost. The factor was then calculated so that the overnight cost would hit this value for the first plant where the learning factor is applied (the second plant in the high technology case). This calculation resulted in a learning factor of 6 percent in the high technology case. For symmetry, the learning factor in the low case was assumed to be 14 percent, or 4 percent higher than in the reference case.

In the high technology case, efficiency gains were accelerated for advanced technologies—pulverized coal (PC), advanced clean coal (IG), advanced combined cycle (AC), advanced combustion turbines (CT), fuel cells (FC), and biomass gasification (WD)—so that they realized their maximum heat rate in 2005 rather than 2010. Wind turbine efficiency gains that had been capped in 2005 for the reference case were allowed to continue until 2010 at the same growth rate that occurred between 2000 and 2005. The efficiency gain assumptions in the low case were the same as those in the reference case.

This is a partially integrated run of the Electricity Market, Oil and Gas Supply, Natural Gas Transmission and Distribution, Petroleum Market, and Coal Market Modules.

Renewable fuels assumptions

Energy Policy Act of 1992. The Renewable Fuels Module incorporates the provisions of EPACT that support the development of renewable energy forms. EPACT provides a renewable electricity production credit of 1.5 cents per kilowatthour for electricity produced by wind, applied to plants that become operational between January 1, 1994, and June 30, 1999 [*8*]. The credit extends for 10 years after the date of initial operation. EPACT also includes provisions that allow an investment tax credit of 10 percent for solar and geothermal technologies that generate electric power [*9*]. This credit is included as a 10-percent reduction to the capital costs in the Renewable Fuels Module.

Mandates. *AEO96* includes EIA estimates of 400 megawatts (net summer capability) of new wind-powered capacity in Minnesota.

Renewable resources. The major source of renewable energy for electricity generation is hydroelectric power. Environmental and other restrictions are assumed to limit the growth of hydroelectric power, which grows slightly. The total resources for most other renewables are theoretically large, for example, the amount of sunlight. However, total resources are not always the relevant measure. Regional characterization is required in order to properly represent the resource. For example, while the capability to produce solar thermal energy is present in all regions of the United States, it is assumed that solar thermal energy technologies will penetrate first in those regions where its economics are most favorable. Wind energy resource potential, while large, is constrained by land-use and environmental factors that result in the exclusion of some land area within suitable wind classes. The geographic distribution of available wind resources is based on a resource assessment study by the Pacific Northwest Laboratory as revised in 1992 [*10*]. Geothermal energy is limited geographically to regions in the western United States with hydrothermal resources of hot water and steam. Although the potential for biomass is large, transportation costs limit the amount of the resource that is economically producible, since biomass fuels have a low Btu value per weight of fuel. Municipal solid waste resources are limited by the amount of the waste that is managed by other methods such as recycling or landfills and by the impact of waste minimization as a strategy for addressing the waste problem.

Non-electric renewable energy. The forecast for wood consumption in the residential sector is based on the Residential Energy Consumption Survey [*11*] (RECS) and data from the *Characteristics of New Housing: 1993*, published by the Bureau of the Census [*12*]. The RECS data provide a benchmark for Btu of wood use in 1993. The Census data are used to develop the forecasts of new housing units utilizing wood. Wood consumption is then computed

by multiplying the number of homes that use wood for main and secondary space heating by the amount of wood used. Ground source (geothermal) heat pump consumption is also based on the latest RECS and Census data; however, the measure of geothermal energy consumption is represented by the amount of primary energy displaced by using a geothermal heat pump in place of an electric resistance furnace. Solar thermal consumption for water heating is also represented by displaced primary energy relative to an electric water heater.

Exogenous projections of active and passive solar technologies and geothermal heat pumps in the commercial sector are based on projections from the National Renewable Energy Laboratory [*13*]. Industrial use of renewable energy is primarily the use of wood and wood byproducts in the paper and lumber industries as well as a small amount of hydropower for electricity generation.

Oil and gas supply assumptions

Domestic oil and gas economically recoverable resources. The projections are based on analyses of estimates of the economically recoverable resource base from the U.S. Geological Survey and the Minerals Management Service of the Department of the Interior, the National Petroleum Council, and the Office of Fossil Energy of the Department of Energy [*14*]. Economically recoverable resources are those volumes considered to be of sufficient size and quality for their production to be commercially profitable by current conventional or nonconventional techniques, under specified economic conditions. Estimates were developed on a regional basis. Total lower 48 unproved oil resources are assumed to be 106 billion barrels with 1990 technology and 142 billion barrels with 2015 technology. Total lower 48 unproved gas resources are assumed to be 915 trillion cubic feet with 1990 technology and 1,555 trillion cubic feet with 2015 technology. Unproved resources comprise inferred reserves and undiscovered resources. Inferred reserves are that part of expected ultimate recovery from known fields in excess of cumulative production plus current reserves. Undiscovered resources are located outside oil and gas fields in which the presence of resources has been confirmed by exploratory drilling. The assumed lower 48 undiscovered resource base in *AEO96* has not changed substantially from *AEO95*, but the assumed inferred reserve estimates are substantially higher—98 percent for crude oil and 93 percent for natural gas.

The CCAP includes a program promoting the capture of methane from coal mining activities to reduce carbon emissions. That methane would be marketed as part of the domestic natural gas supply. The *AEO96* assumption for this program is that it begins in 1995, reaching a maximum annual production level of 19.1 billion cubic feet by 2000. The volumes of recoverable methane from the program are not included in the economically recoverable gas estimates discussed previously in this appendix.

Technological improvements affecting recovery and costs. Productivity improvements are simulated by assuming that the undiscovered recoverable resource target will expand and the effective cost of supply activities will be reduced. The projections assume that the total volumes of undiscovered domestic oil and natural gas resources that are economically recoverable will increase over the 1990-2015 period in response to technological innovation, as indicated by the volumes cited above. The increase is due to both the development and deployment of new technologies, for example, three-dimensional seismology, and horizontal drilling and completion techniques. Drilling, operating, and lease equipment costs are expected to decline at econometrically estimated rates that vary somewhat by cost and fuel categories, ranging from roughly 1 to 4 percent, with most of them generally at 2 percent.

Two special technology cases were created to assess the sensitivity of the projections to the assumed rates of technological progress—a *high technological progress case* and a *low technological progress case*. This was a supply side analysis only; the reference case consumption requirements were assumed in both cases. The assumed average annual rates for expansion of the undiscovered economically recoverable oil and gas resource estimates were varied by plus or minus 50 percent. This change modifies the outlook by altering the productivity for drilling, which indirectly affects the unit supply cost. The impact of the assumed technological improvement rates applied to drilling, lease equipment, and operating costs also were adjusted by 50 percent from the reference case.

Leasing and drilling restrictions. The projections of crude oil and natural gas supply assume that current restrictions on leasing and drilling will continue to be enforced throughout the forecast period. At present, drilling is prohibited along the entire East Coast, the west coast of Florida, and the West Coast except for the area off the Southern California. In Alaska, drilling is prohibited in a number of areas including the Arctic National Wildlife Refuge. The projections also assume that coastal leasing and drilling activities will be reduced in response to the restrictions of CAAA90, which requires that offshore drilling sites within 25 miles of the coast, with the exception of areas off Texas, Louisiana, Mississippi, and Alabama, meet the same clean air requirements as onshore drilling sites.

Gas supply from Alaska and imports. The Alaska Natural Gas Transportation System is assumed to come on line no earlier than 2005 and only after the border price reaches $3.64, in 1993 dollars per thousand cubic feet. Pipeline import volumes from Canada are constrained by the pipeline design capacity, which is assumed to increase from 2.3 trillion cubic feet in 1990 to 4.2 trillion cubic feet in 2010. The liquefied natural gas facilities at Everett, Massachusetts, and Lake Charles, Louisiana (the only ones currently in operation) have an operating capacity of 311 billion cubic feet. The facilities at Cove Point, Maryland, and Elba Island, Georgia, are assumed to reopen when economically justified, but not before 1996 and 1998, respectively, expanding total liquefied natural gas operating capacity to 794 billion cubic feet.

Natural gas transmission and distribution assumptions. The projections reflect the assumptions that the provisions of Order 636 have been fully implemented, and that all interstate pipeline companies have completed the switch from modified fixed variable (MFV) to straight fixed variable (SFV) rate design. Approved transition costs are assumed to be consistent with the revised cost estimate published by the Federal Energy Regulatory Commission (FERC) in the November 1993 GAO report. Gas supply realignment (GSR) costs are recovered from 1994 through 1998, with 90 percent assigned to firm markets and 10 percent to interruptible markets as stipulated in FERC Order 636. Account 191 costs are collected in 1994 and 1995 from firm customers only.

Consistent with the industry restructuring, the methodology employed in solving for the market equilibrium assumes that marginal costs are the basis for determining market-clearing prices for noncore markets. Core market prices are based on average cost of service rates minus a credit (to account for capacity release) that credits a share of the revenue from interruptible and release capacity services to holders of firm capacity should those revenues exceed costs.

Firm transportation rates for pipeline services are calculated assuming that the costs of new pipeline capacity will be rolled into the existing rate base (the test for determining whether or not to build new capacity is done based on incremental rates, however). Although distribution markups to firm service customers are based on historical data, they also respond to changes in consumption levels, cost of capital, and assumed industry efficiency improvements. It is assumed that independent of changes in costs related to the cost of capital and consumption levels, that distributor costs for firm service customers will decline 1 percent per year.

In determining interstate pipeline tariffs, capital expenditures for refurbishment over and above that included in operations and maintenance costs are not considered, nor are potential future expenditures for pipeline safety. (Refurbishment costs include any expenditures for repair and/or replacement of existing pipe). Reductions in operations and maintenance costs and total administrative and general costs as a result of efficiency improvements are accounted for based on historical trends.

The vehicle natural gas (VNG) sector is divided into fleet and non-fleet vehicles. The end-use price of natural gas to fleet vehicles is based on EIA's *Natural Gas Annual* historical tariffs plus Federal and State VNG taxes. The price to non-fleet vehicles is based on the industrial sector firm price plus an assumed $3 (1987 dollars) dispensing charge plus taxes. Federal taxes of $0.50 (1994 dollars) per thousand cubic feet plus corresponding State taxes are levied starting in 1994.

Provisions of the CCAP to increase the natural gas share of total energy use through Federal regulatory reform (Action 23) is assumed to have no impact on the transmission and distribution segment of the

industry. Although regulatory changes that are recommended in this Action may be considered by the FERC in the near future, they go beyond the current FERC regulatory policy and thus are not considered in the reference case. Provisions of the CCAP to expand the Natural Gas Star program (Action 32) are assumed to recover 35 billion cubic feet of natural gas per year by the year 2000 that otherwise might be lost to fugitive emissions. This is phased in by recovering an additional 7 billion cubic feet per year from 1996 through 2000, and by recovering the full 35 billion cubic feet from 2000 through the end of the forecast period.

Petroleum market assumptions

The petroleum refining and marketing industry is assumed to incur large environmental costs to comply with CAAA90 and other regulations. Investments related to reducing emissions at refineries are represented as an average annualized expenditure. Costs identified by the National Petroleum Council *[15]* are allocated among the prices of liquefied petroleum gases, gasoline, distillate, and jet fuel, assuming they are recovered in the prices of light products. The lighter products, such as gasoline and distillate, are assumed to bear a greater amount of these costs because demand for these products is less price-responsive than for the heavier products.

Petroleum product prices also include additional costs resulting from requirements for new fuels, including oxygenated and reformulated gasolines and low-sulfur diesel. These additional costs are determined in the representation of refinery operations by incorporating specifications and demands for these fuels. Demands for traditional, reformulated, oxygenated, and high-oxygen reformulated gasolines are disaggregated from composite gasoline consumption based on market share assumptions for each Census Division. The expected oxygenated gasoline market shares assume wintertime participation of 39 carbon monoxide nonattainment areas and year-round participation of Minnesota beginning in 1995.

Starting in 1995, reformulated gasoline is assumed to be consumed in the nine serious ozone nonattainment areas required by CAAA90 and in areas in 12 States and the District of Columbia that voluntarily opted into the program [*16*]. The reformulated gasoline is assumed to account for about 35 percent of annual gasoline sales throughout the *AEO96* forecast

Reformulated gasoline reflects "Simple Model" standards between 1995 and 1997 and meets the "Complex Model" definition beginning in 1998 as required by the EPA. *AEO96* projections also reflect California's statewide requirement for severely reformulated gasoline beginning in 1996. Throughout the forecast, traditional gasoline is blended according to 1990 baseline specifications, to reflect CAAA90 "antidumping" requirements aimed at preventing traditional gasoline from becoming more polluting.

AEO96 assumes that the 54 cent per gallon tax credit for gasoline blended with ethanol will not expire in 2000 and will remain at 54 cents per gallon throughout the forecast. A side case projection is provided on page 50 which assumes that the ethanol tax credit is allowed to expire in 2000.

AEO96 assumes that State taxes on gasoline, diesel, jet fuel, M85, and E85 increase with inflation, as they have tended to in the past. Federal taxes which have increased sporadically in the past, are assumed to stay at 1995 nominal levels (a decline in real terms).

Two oil and gas technology cases were run to assess higher and lower rates of technology progress. In the high technology progress case, refinery processing units were assumed to be become more efficient in their use of natural gas, electricity, and steam. The efficiency improvements relative to the reference case reached 2 percent for steam in 2010, 8 percent for electricity, and 2 percent for natural gas. In 2015, the improvements were 5 percent for steam, 12 percent for electricity, and 4 percent for natural gas. The low technology case assumed no change from the reference case.

Coal market assumptions

Resource base. Estimates of recoverable coal reserves are based on the EIA Demonstrated Reserve Base (DRB) of in-ground coal resources of the United States. Resource estimates from the DRB are correlated with coal quality data from other sources to create a Coal Reserves Data Base. Estimates are developed on a regionally disaggregated basis.

In certain coal-producing regions, the DRB estimates have been augmented by a proration of inferred resources. The extent of augmentation varies by State and coal type, based on the recency of DRB estimates and the amount of inferred coal that meets criteria related to seam thickness, depth, and overburden. The purpose of this change is to represent expected additions to demonstrated reserves that would occur in later years of the forecast. The effect of the change is to reduce somewhat minemouth and delivered prices in that period.

Productivity. Technological advances in the coal industry, such as continuous mining, contribute to increases in productivity, as measured in average tons of coal per miner per hour. Productivity improvements are assumed to continue, but to decline in magnitude over the forecast horizon. Different rates of improvement are assumed by region and by mine type, surface and deep. On a national basis, labor productivity is assumed to improve at a rate of 3.6 percent per year, declining from an annual rate of 6.0 percent in 1994 to 2.6 percent over the 2010 to 2015 period. In the alternative cases that were run to examine the impacts of different labor productivity assumptions, the annual growth rates for productivity were increased and decreased by 50 percent in each region for each year after 1995. The resulting national average productivities attained in 2015 (in short tons per hour) were 14.07 in the *high productivity case* and 7.82 in the *low productivity case*, compared with 10.37 in the *reference case*.

In the reference case and the primary scenario cases, labor wage rates for coal mine production workers are assumed to remain constant in real terms over the forecast period. In the alternative *low wage case* and *high wage case* that were run to examine the effects of different labor cost escalation rates, wages were assumed to increase and decline by 0.5 percent per year in real terms.

The productivity and wage cases were run without allowing demands to shift in response to changing prices. Had demands been allowed to shift, the price changes would be smaller, since minemouth prices vary with the levels of capacity utilization required to meet demand.

Notes

[1] Lawrence Berkeley Laboratory, *U.S. Residential Appliance Energy Efficiency: Present Status and Future Direction*.

[2] National Energy Policy Act of 1992, P.L. 102-486, Title I, Subtitle C, Sections 122 and 124.

[3] National Energy Policy Act of 1992, P.L. 102-486, Title II, Subtitle C, Section 342.

[4] National Energy Policy Act of 1992, P.L. 102-486, Title III, Section 303, and Title V, Sections 501 and 507.

[5] Vehicle-miles traveled are the miles traveled yearly by light-duty vehicles.

[6] Ton-miles traveled are the miles traveled and their corresponding tonnage for freight modes, such as trucks, rail, air, and shipping.

[7] National Energy Policy Act of 1992, P.L. 102-486, Title VII, Subtitle A, Section 711, and Title XXVIII, Sections 2801 and 2802.

[8] National Energy Policy Act of 1992, P.L. 102-486, Title XIX, Section 1914.

[9] National Energy Policy Act of 1992, P.L. 102-486, Title XIX, Section 1916.

[10] Pacific Northwest Laboratory, *An Assessment of the Available Windy Land Area and Wind Energy Potential in the Contiguous United States*, PNL-7789, prepared for the U.S. Department of Energy under Contract DE-AC06-76RLO 1830 (August 1991), and Schwartz, M.N.; Elliott, O.L.; and Gower, G.L.: *Gridded State Maps of Wind Electric Potential. Proceedings Wind Power 1992*, October 19-23, 1992, Seattle.

[11] Energy Information Administration, *Household Energy Consumption and Expenditures 1993*, DOE/EIA-0321(93) (Washington, DC, 1995).

[12] U.S. Bureau of the Census, U.S. Department of Commerce, *Current Construction Reports, Series C25 Characteristics of New Housing: 1993* (Washington, DC, 1994).

[13] National Renewable Energy Laboratory, "Baseline Projections of Renewables Use in the Buildings Sector," prepared for the U.S. Department of Energy under Contract DE-AC02-83CH10093 (December 1992).

[14] Mast, Richard F., et al., United States Department of the Interior, Geological Survey and Minerals Management Service, *Estimates of Undiscovered Conventional Oil and Gas Resources in the United States—A Part of the Nation's Energy Endowment*, United States Government Printing Office, 1989; Cooke, Larry W.,

United States Department of the Interior, Minerals Management Service, *Estimates of Undiscovered, Economically Recoverable Oil and Gas Resources for the Outer Continental Shelf, Revised as of January 1990*, OCS Report MMS 91-0051, July 1991; National Petroleum Council, Committee on Natural Gas, *The Potential for Natural Gas in the United States, Volume II, Source and Supply*, Washington, DC, December 1992; Fisher, William L., et al., Oil Resources Panel convened by the U.S. Department of Energy, *An Assessment of the Oil Resource Base of the United States*, October 1992; Potential Gas Committee, *Potential Supply of Natural Gas in the United States (December 31, 1992)*, Potential Gas Agency, Colorado School of Mines, May 1993.

[*15*] Estimated from National Petroleum Council, *U.S. Petroleum Refining—Meeting Requirements for Cleaner Fuels and Refineries*, Volume I (Washington, DC, August 1993) excludes operation and maintenance base cost prior to 1996.

[*16*] Required areas: Baltimore, Chicago, Hartford, Houston, Los Angeles, Milwaukee, New York City, Philadelphia, and San Diego. 1995 opt-in areas are in the following States: Connecticut, Delaware, Kentucky, Maine, Massachusetts, Maryland, New Hampshire, New Jersey, New York, Rhode Island, Texas, Virginia, and the District of Columbia. Excludes areas that "opted-out" prior to June 1995.

Results from Side Cases

Table H1. Key Results for Residential Sector Efficiency Cases

	1994	2000			2010			2015		
		1995 Technology	Reference Case	High Efficiency	1995 Technology	Reference Case	High Efficiency	1995 Technology	Reference Case	High Efficiency
Energy Consumption (quadrillion Btu)										
Distillate Fuel	0.87	0.86	0.84	0.83	0.85	0.80	0.74	0.86	0.80	0.72
Kerosene	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06
Liquefied Petroleum Gas	0.41	0.39	0.39	0.38	0.35	0.34	0.33	0.34	0.33	0.31
Natural Gas	5.03	5.28	5.22	4.93	5.78	5.50	4.70	6.06	5.61	4.66
Coal	0.06	0.05	0.05	0.05	0.05	0.05	0.04	0.05	0.04	0.03
Renewable Energy	0.55	0.58	0.57	0.56	0.62	0.59	0.54	0.64	0.59	0.53
Electricity	3.43	3.73	3.70	3.50	4.54	4.37	3.83	5.11	4.84	4.19
Delivered Energy	10.41	10.96	10.84	10.30	12.26	11.71	10.23	13.13	12.28	10.49
Electricity Related Losses	7.63	8.02	7.96	7.53	9.42	9.07	7.93	9.93	9.40	8.13
Total	**18.04**	**18.98**	**18.80**	**17.84**	**21.67**	**20.78**	**18.17**	**23.05**	**21.68**	**18.63**
Total Energy Consumption per Household (million Btu per year)	**184.3**	**182.0**	**180.3**	**171.0**	**186.3**	**178.6**	**156.1**	**187.9**	**176.7**	**151.8**

Btu = British thermal units.
Note: Side cases were run without the fully integrated modeling system, so not all feedbacks are captured.
Source: AEO96 National Energy Modeling System, runs RSBEST.D102395D, AEO96B.D101995C, and RSFRZN.D102395A.

Table H2. Key Results for Commercial Sector Efficiency Cases

	1994	2000			2010			2015		
		1995 Technology	Reference Case	High Efficiency	1995 Technology	Reference Case	High Efficiency	1995 Technology	Reference Case	High Efficiency
Energy Consumption (quadrillion Btu)										
Distillate Fuel	0.42	0.42	0.42	0.42	0.41	0.40	0.39	0.40	0.39	0.37
Kerosene	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Motor Gasoline	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Residual Fuel	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.19	0.19
Natural Gas	3.01	3.21	3.20	3.09	3.46	3.42	3.16	3.57	3.51	3.20
Coal	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.10
Liquefied Petroleum Gas	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06
Electricity	3.13	3.38	3.36	3.16	3.85	3.77	3.34	4.17	4.06	3.51
Delivered Energy	6.96	7.42	7.39	7.08	8.13	8.02	7.30	8.57	8.40	7.51
Electricity Related Losses	**6.95**	**7.27**	**7.23**	**6.81**	**7.98**	**7.82**	**6.92**	**8.10**	**7.88**	**6.81**
Total	**13.91**	**14.68**	**14.62**	**13.88**	**16.11**	**15.84**	**14.23**	**16.66**	**16.28**	**14.32**
Total Energy Consumption per Square Foot per Year (thousand Btu)	**198.62**	**194.82**	**193.88**	**184.18**	**193.31**	**189.99**	**170.69**	**189.23**	**184.85**	**162.64**

Btu = British thermal units.
Note: Side cases were run without the fully integrated modeling system, so not all potential feedbacks are captured.
Source: AEO96 National Energy Modeling System, runs BEST.D102095A, AEO96B.D101995C, and TECH95.D102095A.

Table H3. Key Results for Industrial Sector Efficiency Cases

	1994	2000			2010			2015		
		1995 Technology	Reference Case	High Efficiency	1995 Technology	Reference Case	High Efficiency	1995 Technology	Reference Case	High Efficiency
Energy Consumption (quadrillion Btu)										
Distillate Fuel	1.15	1.22	1.21	1.17	1.35	1.34	1.07	1.42	1.40	0.96
Liquefied Petroleum Gas	1.87	1.97	1.97	1.92	2.19	2.19	1.74	2.30	2.30	1.53
Petrochemical Feedstocks	1.25	1.27	1.27	1.24	1.42	1.42	1.12	1.48	1.48	0.98
Residual Fuel	0.47	0.51	0.48	0.46	0.55	0.49	0.42	0.59	0.52	0.41
Motor Gasoline	0.19	0.20	0.20	0.19	0.22	0.22	0.17	0.23	0.23	0.15
Other Petroleum	3.90	4.10	4.07	4.01	4.26	4.22	3.78	4.35	4.32	3.59
Petroleum Subtotal	8.83	9.27	9.21	8.98	10.00	9.89	8.30	10.37	10.24	7.62
Natural Gas	9.34	10.70	10.49	10.30	12.00	11.55	10.55	12.41	11.86	10.36
Metallurgical Coal	0.84	0.88	0.71	0.68	0.81	0.55	0.47	0.79	0.48	0.39
Steam Coal	1.69	2.00	1.73	1.57	2.60	1.83	1.38	3.07	1.96	1.36
Net Coal Coke Imports	0.02	0.03	0.03	0.02	0.04	0.04	0.02	0.04	0.04	0.02
Coal Subtotal	2.55	2.90	2.47	2.27	3.46	2.42	1.87	3.90	2.48	1.77
Renewable Energy	2.16	2.36	2.36	2.36	2.71	2.71	2.69	2.86	2.86	2.84
Electricity	3.39	3.62	3.61	3.52	4.14	4.04	3.64	4.39	4.23	3.64
Delivered Energy	**26.27**	**28.86**	**28.15**	**27.43**	**32.31**	**30.60**	**27.05**	**33.94**	**31.68**	**26.22**
Electricity Related Losses	7.53	7.79	7.78	7.57	8.59	8.38	7.55	8.52	8.22	7.07
Total	**33.80**	**36.65**	**35.93**	**35.00**	**40.90**	**38.98**	**34.60**	**42.46**	**39.89**	**33.29**
Energy Use per Dollar of Output (thousand Btu per 1987 dollar)										
Delivered Energy	**7.07**	**6.94**	**6.77**	**6.60**	**6.50**	**6.16**	**5.45**	**6.35**	**5.93**	**4.90**
Total Energy	**9.09**	**8.82**	**8.64**	**8.42**	**8.23**	**7.85**	**6.97**	**7.94**	**7.46**	**6.23**

Btu = British thermal units.
Note: Side cases were run without the fully integrated modeling system, so not all potential feedbacks are captured.
Source: AEO96 National Energy Modeling System, runs FRZTECH.D101995A, AEO96B.D101995C, and HITECH.D102795D.

Table H4. Key Results for Transportation Sector Efficiency Cases

	1994	2000			2010			2015		
		1995 Technology	Reference Case	High Efficiency	1995 Technology	Reference Case	High Efficiency	1995 Technology	Reference Case	High Efficiency
Energy Consumption (quadrillion Btu)										
Distillate	4.17	4.64	4.58	4.34	5.55	5.39	4.53	6.03	5.84	4.59
Jet Fuel	3.15	3.74	3.72	3.69	4.58	4.43	4.23	4.94	4.69	4.36
Motor Gasoline	14.21	15.46	15.35	14.96	17.27	16.16	14.89	17.69	15.98	14.28
Residual Fuel	.90	1.07	1.07	1.06	1.37	1.37	1.35	1.51	1.51	1.48
Liquefied Petroleum Gas	.03	.02	.02	.02	.09	.08	.07	.16	.14	.12
Other Petroleum	.20	.22	.22	.22	.23	.23	.23	.24	.24	.24
Pipeline Fuel Natural Gas	.66	.67	.67	.67	.76	.76	.76	.86	.86	.86
Compressed Natural Gas	.01	.01	.01	.01	.13	.12	.10	.25	.22	.18
Renewables (ethanol)	.00	.00	.00	.00	.12	.11	.10	.19	.16	.14
Liquid Hydrogen	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Methanol	.00	.00	.00	.00	.10	.09	.08	.15	.13	.12
Electricity	.02	.03	.03	.03	.12	.11	.10	.15	.14	.12
Total	**23.39**	**25.93**	**25.72**	**25.05**	**30.57**	**29.09**	**26.64**	**32.46**	**30.17**	**26.71**
Light-Duty Fleet (miles per gallon)	**19.4**	**19.5**	**19.6**	**20.1**	**19.4**	**20.8**	**22.6**	**19.6**	**21.8**	**24.4**

Btu = British thermal units.
Note: Side cases were run without the fully integrated modeling system, so not all potential feedbacks are captured.
Source: AEO96 National Energy Modeling System, runs MYRUN.D102495B, AEO96B.D101995C, and MYRUN.D102495C.

Table H5. Key Results for Nuclear Retirement Cases
(Thousand Megawatts, Unless Otherwise Noted)

	1994	2000			2010			2015		
		Low Nuclear	Reference Case	High Nuclear	Low Nuclear	Reference Case	High Nuclear	Low Nuclear	Reference Case	High Nuclear
Electric Utilities										
Capacity										
Coal Steam	301.9	298.2	298.0	297.9	310.4	308.8	308.9	314.5	312.6	310.4
Other Fossil Fuel	140.0	128.0	128.0	128.0	118.2	118.2	118.2	121.8	113.5	113.5
Combined Cycle	11.5	18.0	19.2	18.8	44.7	33.4	32.5	66.0	56.4	43.5
Combustion Turbine/Diesel	51.0	77.9	75.9	76.0	106.7	103.4	102.0	114.1	115.8	108.8
Nuclear Power	99.1	93.3	100.3	100.4	48.9	93.3	100.3	22.1	63.6	99.7
Pumped Storage	19.0	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9
Fuel Cells	0.0	0.4	0.3	0.3	1.7	0.6	0.5	2.8	1.4	1.0
Renewable Sources	77.2	78.5	78.5	78.5	80.3	79.6	79.0	83.7	82.0	81.3
Total	**699.8**	**714.2**	**720.1**	**719.8**	**730.8**	**757.2**	**761.8**	**736.5**	**765.0**	**778.0**
Cumulative Planned Additions	**0.8**	**29.6**	**29.6**	**29.6**	**60.6**	**60.6**	**60.6**	**62.4.**	**62.4**	**62.4**
Cumulative Unplanned Additions										
Coal Steam	0.0	0.5	0.3	0.3	2.7	1.7	1.1	7.2	5.9	3.0
Other Fossil Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	0.4	1.6	1.3	19.6	8.3	7.5	40.9	31.3	18.4
Combustion Turbine/Diesel	0.0	11.4	9.4	9.5	28.5	25.3	23.8	37.0	38.7	31.7
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Calls	0.0	0.4	0.3	0.3	1.7	0.6	0.5	2.8	1.4	1.0
Renewable Sources	0.0	0.1	0.1	0.1	1.8	1.1	1.1	5.5	3.9	3.2
Total	**0.0**	**12.9**	**11.7**	**11.4**	**54.4**	**37.0**	**34.0**	**93.4**	**81.1**	**57.4**
Cumulative Total Additions	**0.8**	**42.5**	**41.3**	**41.0**	**115.0**	**97.6**	**94.6**	**155.8**	**143.5**	**119.8**
Cumulative Retirements	**10.1**	**38.7**	**30.9**	**31.6**	**99.0**	**53.9**	**47.6**	**136.1**	**93.9**	**58.5**
Nonutilities (excluding cogenerators)										
Capacity										
Coal Steam	2.4	3.2	3.2	3.5	6.8	4.4	5.1	9.6	6.5	6.3
Other Fossil Steam	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Combined Cycle	2.0	5.3	4.2	4.9	26.4	11.8	12.6	56.5	37.6	30.3
Combustion Turbine/Diesel	1.9	13.3	11.6	11.4	35.6	31.5	29.1	42.9	43.9	36.8
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Calls	0.0	0.1	0.1	0.2	0.5	0.2	0.3	1.0	1.0	0.8
Renewable Sources	10.9	14.3	14.3	14.3	19.4	17.5	17.9	29.8	24.4	24.8
Total	**18.2**	**37.3**	**34.5**	**35.4**	**89.7**	**66.5**	**66.1**	**140.9**	**114.5**	**103.1**
Cogenerators										
Capacity	44.3	49.6	49.5	49.5	55.4	55.3	55.3	57.7	57.7	57.6
Cumulative Additions	9.7	34.1	31.2	32.1	92.2	69.0	68.6	145.7	119.3	107.9

Table H5. Key Results for Nuclear Retirement Cases (Continued)

(Thousand Megawatts, Unless Otherwise Noted)

	1994	2000			2010			2015		
		Low Nuclear	Reference Case	High Nuclear	Low Nuclear	Reference Case	High Nuclear	Low Nuclear	Reference Case	High Nuclear
Electric Generation by Fuel Type (billion kilowatthours)										
Electric Utilities										
Coal	1635	1793	1778	1771	2032	1995	1978	2069	2054	2025
Petroleum	91	78	63	59	108	111	96	99	104	104
Natural Gas	291	313	299	282	515	446	410	639	590	470
Nuclear Power	640	605	664	689	353	610	678	179	434	662
Pumped Storage	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
Renewable Sources	256	294	294	294	301	299	299	314	308	306
Total	**2911**	**3080**	**3095**	**3093**	**3306**	**3458**	**3459**	**3297**	**3487**	**3563**
Nonutilities (excluding cogenerators)										
Coal	12	15	15	17	39	23	28	58	37	35
Petroleum	2	4	3	3	8	7	6	8	9	8
Natural Gas	12	41	28	29	236	117	113	469	332	264
Renewable Sources	52	67	67	67	89	82	84	132	110	112
Total	**78**	**127**	**114**	**116**	**372**	**229**	**231**	**667**	**489**	**420**
Cogenerators	**282**	**307**	**307**	**307**	**349**	**349**	**349**	**366**	**366**	**366**
Net Imports	**45**	**40**	**40**	**40**	**30**	**30**	**31**	**25**	**25**	**25**
Electricity Sales	**2921**	**3135**	**3137**	**3137**	**3596**	**3604**	**3607**	**3878**	**3889**	**3895**
Energy Consumption for Electric Generators by Source (quadrillion Btu per year)										
Distillate Fuel	0.10	0.10	0.08	0.07	0.18	0.19	0.16	0.19	0.24	0.21
Residual Fuel	0.89	0.74	0.60	0.57	0.98	1.00	0.87	0.89	0.90	0.92
Natural Gas	3.32	3.72	3.41	3.23	6.67	5.41	.50	8.55	7.46	6.25
Steam Coal	16.97	18.22	18.07	18.01	20.5	19.99	19.84	20.96	20.64	20.35
Nuclear Power	6.84	6.45	7.09	7.36	3.77	6.52	7.24	1.92	4.63	7.07
Renewable Energy	3.55	4.07	4.07	4.07	4.48	4.38	4.39	5.31	4.90	4.95
Electricity Imports	0.46	0.42	0.42	0.42	0.32	0.32	0.32	0.26	0.26	0.26
Total	**32.12**	**33.73**	**33.74**	**33.74**	**36.89**	**37.80**	**37.82**	**38.08**	**39.04**	**40.01**
Carbon Emissions by Electric Generators by Source (million metric tons per year)										
Petroleum	20.9	17.4	14.5	13.5	24.5	24.9	21.6	22.6	23.8	23.7
Natural Gas	44.9	50.3	45.8	42.8	94.2	75.9	69.6	121.7	105.9	88
Steam Coal	430.4	464.0	460.2	458.9	522.2	509.4	505.6	533.8	526.0	518.6
Total	**496.2**	**532.0**	**520.5**	**515.2**	**640.9**	**610.2**	**596.9**	**678.2**	**655.7**	**630.3**
Electric Generators Delivered Prices										
Coal (1994 dollars per short ton)	28.03	26.07	25.77	25.48	26.69	25.88	25.73	26.27	26.17	26.19
Natural Gas (1994 dollars per thousand cubic feet)	2.24	2.26	2.24	2.25	2.74	2.49	2.42	3.35	3.02	2.84

Btu = British thermal units.
Note: Side cases were run without the fully integrated modeling system, so not all potential feedbacks are captured.
Source: AEO96 National Energy Modeling System, runs LNUC96.D102195A, AEO96B.D101995C, and HNUC96.D102195A.

Table H6. Key Results for Electricity Demand Cases

	1994	2000		2010		2015		Annual Growth 1994-2015	
		Reference Case	High Demand	Reference Case	High Demand	Reference Case	High Demand	Reference Case	High Demand
Electric Generation by Fuel Type (billion kilowatthours)									
Electricity Sales (billion kilowatthours)	2921	3137	3380	3604	4022	3889	4247	1.4	1.8
Net Imports (billion kilowatthours)	45	40	40	30	38	25	32	-2.7	-1.6
Electricity Prices (1994 cents per kilowatthour)	7.1	7.0	7.3	7.0	7.7	7.0	7.6	-0.1	0.3
Generation by fuel (billion kilowatthours)									
Coal	1694	1841	1893	2071	2137	2146	2283	1.1	1.4
Natural Gas	474	518	682	782	1110	1153	1322	4.3	5.0
Renewables	348	404	402	428	469	472	547	1.5	2.2
Other	754	752	686	755	634	571	458	-1.3	-2.3
Total	**3271**	**3516**	**3662**	**4036**	**4349**	**4342**	**4609**	**1.4**	**1.6**
Generating Capacity (gigawatts)									
Coal	304	301	302	313	318	319	339	0.2	0.5
Combined-Cycle/Combustion Turbine	66	111	121	180	258	254	318	6.6	7.8
Renewables	88	93	93	97	108	106	125	0.9	1.7
Nuclear Power	99	100	100	93	93	64	64	-2.1	-2.1
Cogenerators	44	50	50	55	55	58	58	1.3	1.3
Other	160	149	151	140	148	137	143	-0.7	-0.5
Total	**762**	**804**	**816**	**879**	**980**	**937**	**1046**	**1.0**	**1.5**
Energy Production									
Coal (million short tons)	1034	1070	1094	1184	1214	1240	1290	0.9	1.1
Natural Gas (trillion cubic feet)	18.8	19.7	21.5	22.8	25.2	25.0	25.7	1.4	1.5
Carbon Emissions (million metric tons)	1397	1490	1541	1660	1711	1735	1773	1.0	1.1
Prices to Utilities ($1994/million btu)									
Coal	1.36	1.26	1.28	1.26	1.29	1.28	1.30	-0.3	-0.2
Natural Gas	2.19	2.19	2.52	2.44	3.05	2.95	3.54	1.4	2.3

Btu = British thermal units.
Note: Other includes non-coal fossil steam, pumped storage, methane, propane and blast furnace gas.
Source: AEO96 National Energy Modeling System, runs HGDEM.D102695A and AEO96B.D101995C.

Table H7. Key Results for Low and High Technological Optimism Cases
(Thousand Megawatts)

	1994	2000			2010			2015		
		Low Technological Optimism	Reference Case	High Technological Optimism	Low Technological Optimism	Reference Case	High Technological Optimism	Low Technological Optimism	Reference Case	High Technological Optimism
Electric Utilities										
Capability										
Coal Stream	301.9	298.3	298.0	298.8	309.0	308.8	309.1	313.1	312.6	311.3
Other Fossil Stream	140.0	128.0	128.0	128.0	118.2	118.2	118.2	113.5	113.5	113.5
Combined Cycle	11.5	19.0	19.2	19.0	33.3	33.4	35.5	54.5	56.4	60.2
Combustion Turbine/Diesel	51.0	76.5	75.9	76.1	102.1	103.4	102.0	116.3	115.8	113.1
Nuclear Power	99.1	100.3	100.3	100.3	93.3	93.3	93.3	63.6	63.6	63.6
Pumped Storage	19.0	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9
Fuel Cells	0.0	0.1	0.3	0.1	1.0	0.6	1.1	3.1	1.4	2.4
Renewable Sources	77.2	78.5	78.5	78.8	79.2	79.6	79.9	80.2	82.0	83.9
Total	**699.8**	**720.5**	**720.1**	**721.1**	**755.9**	**757.2**	**758.9**	**764.1**	**765.0**	**767.8**
Cumulative Unplanned Additions										
Coal Stream	0.0	0.6	0.3	1.1	1.2	1.7	1.9	5.8	5.9	4.6
Other Fossil Stream	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	1.4	1.6	1.5	8.2	8.3	10.4	29.4	31.3	35.1
Combustion Turbine/Diesel	0.0	10.0	9.4	9.6	24.0	25.3	23.8	39.2	38.7	36.1
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cells	0.0	0.1	0.3	0.1	1.0	0.6	1.1	3.1	1.4	2.4
Renewable Sources	0.0	0.1	0.1	0.4	0.8	1.1	1.5	2.1	3.9	5.8
Total	**0.0**	**12.2**	**11.7**	**12.7**	**35.1**	**37.0**	**38.7**	**79.6**	**81.1**	**84.0**
Nonutilities (excludes cogenerators)										
Capability										
Coal Stream	2.4	3.4	3.2	3.3	5.1	4.4	4.5	8.4	6.5	6.4
Other Fossil Stream	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Combined Cycle	2.0	5.0	4.2	5.1	13.6	11.8	14.0	38.6	37.6	36.2
Combustion Turbine/Diesel	1.9	12.2	11.6	11.3	29.7	31.5	28.6	43.4	43.9	39.0
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.1	0.1	0.3	0.2	0.3	1.5	1.0	0.8
Renewable Sources	10.9	14.3	14.3	14.5	16.1	17.5	20.3	19.3	24.4	31.3
Total	**18.2**	**36.0**	**34.5**	**35.4**	**65.9**	**66.5**	**68.8**	**112.2**	**114.5**	**114.7**
Cogenerators										
Capability										
Coal	7.7	9.2	9.2	9.2	9.9	9.9	9.9	10.2	10.2	10.2
Petroleum	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0
Natural Gas	28.7	31.9	31.9	31.9	35.8	35.8	35.8	37.2	37.2	37.2
Other Gaseous Fuels	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Renewables	6.1	6.6	6.6	6.6	7.7	7.7	7.7	8.2	8.2	8.2
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**44.3**	**49.6**	**49.5**	**49.6**	**55.4**	**55.3**	**55.4**	**57.7**	**57.7**	**57.7**

Btu = British thermal units.
Note: Other includes non-coal fossil steam, pumped storage, methane, propane and blast furnace gas.
Source: AEO96 National Energy Modeling System, runs HITECH.D102295A, LOTECH.D110195B, and AEO96B.D101995C.

Table H8. Key Results for Oil and Gas Technology Cases

	1994	2010		2015	
		Low Technology	High Technology	Low Technology	High Technology
Lower 48 Crude Oil					
Average Wellhead Price (1994 dollars per barrel)	14.35	22.81 (0%)	22.96 (0%)	24.39 (0%)	24.56 (0%)
Successful New Wells (thousands)	5.4	18.9 (-12%)	24.6 (14%)	24.0 (-10%)	31.1 (17%)
Production (million barrels per day)	5.1	4.3 (-10%)	5.4 (13%)	4.4 (-13%)	6.0 (18%)
Lower 48 Natural Gas					
Average Wellhead Price (1994 dollars per thousand cubic feet)	1.88	2.60 (21%)	1.73 (-19%)	4.22 (64%)	1.87 (-27%)
Successful New Wells (thousands)	9.3	17.1 (6%)	14.7 (-9%)	30.5 (37%)	19.8 (-11%)
Production (trillion cubic feet)	18.4	22.2 (0%)	22.2 (0%)	24.3 (-0%)	24.3 (0%)

Note: Numbers in parentheses represent percentage variations from reference case projections. Side cases were run without the fully integrated modeling system, so not all potential feedbacks are captured.
Source: AEO96 National Energy Modeling System, runs LOTEC3.D102395A, AEO96B.D101995C, and HITEC3.D102395A.

Table H9. Key Results for Ethanol Tax Credit Case
(Thousand Barrels per Day)

	1994	2010		2015	
		Reference Case	No Ethanol Tax Credit	Reference Case	No Ethanol Tax Credit
Refinery Inputs					
Ethanol	74	80	0	116	9
Ethyl Ethers	[a]5	20	0	35	9
Methyl Ethers	[b]145	290	463	198	459
Total Oxygenates	**224**	**390**	**463**	**349**	**477**

[a]Includes ethyl tertiary butyl ether and other oxygenates.
[b]Methyl tertiary butyl ether only.
Source: AEO96 National Energy Modeling System, runs AEO96B.D101995C and ETH.D101995A.

Table H10. Key Results for Coal Productivity Cases

	1994	2000			2010			2015		
		Low Productivity	Reference Case	High Productivity	Low Productivity	Reference Case	High Productivity	Low Productivity	Reference Case	High Productivity
Minemouth Price (1994 dollars per short ton)	19.41	18.14	17.44	16.72	18.85	17.43	16.81	18.44	17.39	16.64
Labor Productivity (short tons per miner per hour)	4.98	6.30	7.07	7.97	7.49	9.59	12.38	7.82	10.37	14.07
Labor Productivity (average annual growth from 1994)	NA	4.0	6.0	8.2	2.6	4.2	5.9	2.2	3.6	5.1

NA = Not Applicable.
Note: Side cases were run without the fully integrated modeling system, so not all potential feedbacks are captured.
Source: AEO96 National Energy Modeling System, runs LPRD.D102095A, AEO96.D101995C, and HPRD.D102095A.

Table H11. Key Results for Coal Miner Wage Cases

	1994	2000			2010			2015		
		Low Wage	Reference Case	High Wage	Low Wage	Reference Case	High Wage	Low Wage	Reference Case	High Wage
Minemouth Price (1994 dollars per short ton)	19.41	17.00	17.44	17.72	17.00	17.43	18.42	16.42	17.39	18.80
Average Coal Miner Wage (1994 dollars per hour)	17.75	17.31	17.75	18.20	16.46	17.75	19.13	16.06	17.75	19.61
Average Coal Miner Wage (average annual growth from 1994)	NA	-0.4	0.0	0.4	-0.5	0.0	0.5	-0.5	0.0	0.5

NA = Not Applicable.
Note: Side cases were run without the fully integrated modeling system, so not all potential feedbacks are captured.
Source: AEO96 National Energy Modeling System, runs LWAG.D102095A, AEO96B.D101995C, and HWAG.D102095A.

Table I1. Heat Rates

Fuel	Units	Approximate Heat Content
Coal[1]		
Production	million Btu per short ton	21.407
Consumption	million Btu per short ton	21.143
Coke Plants	million Btu per short ton	26.819
Industrial	million Btu per short ton	22.195
Residential and Commercial	million Btu per short ton	22.468
Electric Utilities	million Btu per short ton	20.762
Imports	million Btu per short ton	26.064
Exports	million Btu per short ton	26.139
Coal Coke	million Btu per short ton	24.800
Crude Oil		
Production	million Btu per barrel	5.800
Imports	million Btu per barrel	5.948
Petroleum Products		
Consumption	million Btu per barrel	5.800
Motor Gasoline[2]	million Btu per barrel	5.253
Jet Fuel (Kerosene)	million Btu per barrel	5.670
Distillate Fuel Oil	million Btu per barrel	5.825
Residual Fuel Oil	million Btu per barrel	6.287
Liquefied Petroleum Gas	million Btu per barrel	3.625
Kerosene	million Btu per barrel	5.670
Petrochemical Feedstocks	million Btu per barrel	5.630
Unfinished Oils	million Btu per barrel	5.800
Imports[2]	million Btu per barrel	5.538
Exports[2]	million Btu per barrel	5.779
Natural Gas Plant Liquids		
Production[2]	million Btu per barrel	3.794
Natural Gas		
Production, Dry	Btu per cubic foot	1,030
Consumption	Btu per cubic foot	1,031
Non-electric Utilities	Btu per cubic foot	1,030
Electric Utilities	Btu per cubic foot	1,034
Imports	Btu per cubic foot	1,004
Exports	Btu per cubic foot	1,004
Electricity Consumption	Btu per kilowatthour	3,412
Electricity Component		
Plant Generation Efficiency (heat rate)		
Fossil Fuel Steam	Btu per kilowatthour	10,280
Nuclear Energy	Btu per kilowatthour	10,678
Geothermal	Btu per kilowatthour	21,000

[1]Conversion factors vary from year to year. 1993 values are reported.
[2]Conversion factors vary from year to year. 1994 values are reported.
Source: Energy Information Administration, AEO96 National Energy Modeling System, run AEO96B.D101995C.

Table I2. Metric Conversion Factors

United States Unit	multiplied by	Conversion Factor	equals	Metric Unit
Mass				
Pounds (lb)	X	0.453 592 37	=	kilograms (kg)
Short Tons (2000 lb)	X	0.907 184 7	=	metric tons (t)
Distance				
Miles	X	1.609 344	=	kilometers (km)
Energy				
British Thermal Unit (Btu)[1]	X	1055.056	=	joules(j)
Kilowatthours	X	3.6	=	megajoules(MJ)
Volume				
Barrels of Oil (bbl)	X	0.158 987 3	=	cubic meters (m^3)
Cubic Feet (ft^3)	X	0.028 316 85	=	cubic meters (m^3)
Gallons (gal)	X	3.785 412	=	liters (L)
Area				
Square feet (ft^2)	X	0.092 903 04	=	square meters (m^2)

[1]The Btu used in this table is the International Table Btu adopted by the Fifth International Conference on Properties of Steam, London, 1956.

Note: Spaces have been inserted after every third digit to the right of the decimal for ease of reading.

Source: Energy Information Administration, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington DC, July 1995), Table B1.

Table I3. Metric Prefixes

Unit Multiple	Prefix	Symbol
10^3	kilo	k
10^6	mega	M
10^9	giga	G
10^{12}	tera	T
10^{15}	peta	P
10^{18}	exa	E

Source: Energy Information Administration, *Annual Energy Review 1994*, DOE/EIA-0384(94) (Washington, DC, July 1995), Table B2, and EIA, Office of Statistical Standards.

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