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# Annual Energy Outlook Retrospective Review: Evaluation of 2012 and Prior Reference Case Projections

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## AEO Retrospective Review: Evaluation of 2012 and Prior Reference Case Projections

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The U.S. Energy Information Administration (EIA) produces projections of energy production, consumption and prices each year in the *Annual Energy Outlook (AEO)*. Each year, EIA also produces an *AEO Retrospective Review* document, which presents a comparison between realized energy outcomes and the Reference case projections included in previous editions of the *AEO*. The purpose of the *Retrospective* is to show the relationship between past *AEO* projections and actual energy indicators, enable trend analysis, and inform discussions of potential improvements to the *AEO*.

The projections in the *AEO* are not statements of what will happen but of what might happen, given assumptions and methodologies. The *AEO* Reference case projection assumes trends that are consistent with historical and current market behavior, technological and demographic changes, and current laws and regulations. The potential impacts of pending or proposed legislation, regulations, and standards are not reflected in the Reference case projections<sup>1</sup>.

The discussion and analysis in each year's *AEO* primarily focuses on a Reference case, lower and higher economic growth cases, and lower and higher oil price cases. In addition to these standard cases, numerous alternative cases have been included in recent *AEOs*. Readers are encouraged to review the full range of cases, which address many of the uncertainties inherent in long-term projections.

The *AEO Retrospective* comparison, by contrast, summarizes the differences between actual energy indicators and past *AEO* Reference case projections, by calculating the average absolute differences and the average absolute percent differences for several of the major variables for *AEO1994* through *AEO2012*<sup>2</sup>. The average absolute percent difference is the simple mean of the absolute values of the percentage difference between the Reference case projection and the actual value. The historical data are primarily from the *Annual Energy Review (AER)*<sup>3</sup>. This edition includes tables for prices in constant dollars in addition to nominal-dollar tables. Projections for consumption concepts depend on real prices, so constant-dollar price comparisons give a clearer picture of the linkage between consumption projection differences and price projection differences.

The annual projection process begins with the development of assumptions for two key drivers—the world oil price and the macroeconomic growth baseline—that are determined exogenously to the National Energy Modeling System (NEMS) used to prepare the *AEO*. While the integrated nature of NEMS results in some dynamic feedback that slightly modifies the initial assumptions about the world oil price and the macroeconomic growth baseline, these feedbacks tend to be relatively small, so the initial

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<sup>1</sup> Each *Annual Energy Outlook* includes a variety of other cases with different assumptions – for *AEO2012*, 29 alternative cases exploring different assumptions and different policies were presented in addition to the Reference case.

<sup>2</sup> The National Energy Modeling System (NEMS) has been used to prepare the *Annual Energy Outlook* since *AEO1994*, and this publication covers only these *AEOs*. The *AEO2009* results are from “An Updated *Annual Energy Outlook 2009* Reference Case Reflecting Provisions of the American Recovery and Reinvestment Act and Recent Changes in the Economic Outlook” (passed after the official publication of the *AEO2009*). This version is only available on the EIA website at: <http://www.eia.gov/oiarf/servicecpt/stimulus/index.html>. Finally, projections from *AEOs* for 1994 and 1995 ended in 2010, so 2011 table entries for these two publications are now blank in Tables 2 through 22.

<sup>3</sup> GDP and the GDP price deflators come from the Bureau of Economic Analysis, while coal prices to electric generating plants are from the *Monthly Energy Review (MER)*.

assumptions for these drivers largely determine the overall projection environment. To the extent that the realized environment deviates from the initial assumptions, the NEMS projection results will also generally deviate.

Table 1 provides a summary of 25 comparisons based on 21 primary concepts (four concepts are energy price projections presented in both constant-dollar and nominal-dollar valuations). The detailed results that underlie Table 1 are presented in Tables 2 through 22. These tables show the Reference case projections, historical values and percent differences between projected and actual for all years available. They also provide the average absolute difference across all AEOs for each year of history. The tabulated results can change from one year's evaluation to the next due to data revisions for prior years that can occur in the *Annual Energy Review (AER)*, the *Monthly Energy Review (MER)*, and, occasionally, in gross domestic product (GDP).

The first column in Table 1 is the simple average of the absolute value of percent differences for each concept across all AEOs since the 1994 edition and across all available historical years. In general, energy consumption quantities tend to be less volatile and thus projected with greater accuracy than the relatively more volatile energy prices. This is because energy consumption trends reflect underlying sources of inertia in the energy-consuming capital stock, substantial lead times for capital purchase decisions, locked-in contract periods, and consumer perceptions of and responses to price changes. The average absolute percent differences for energy consumption, production, and carbon dioxide emissions range roughly between 4 and 11 percent. Net imports tend to exhibit somewhat larger average absolute differences, ranging between 13 and 29 percent. The absolute percent differences for energy prices range between 10 and 35 percent.

The second column of Table 1 provides a summary of the percentage of cases in which a particular concept is overestimated relative to its actual value out of the total number of annual projections made for which actual values are available across all AEOs since the 1994 edition. A zero would represent a concept that was always underestimated and 100 percent would represent a concept always overestimated. In an "unbiased" projection, one would expect the percentage of overestimates to be close to 50 percent when the sample size is large enough.

The underlying reasons for deviations between the AEO Reference case projections and actual outcomes are numerous and varied. Changes in economic, market, and technological trends and in policies affecting energy choices are often important drivers of these deviations. EIA monitors these developments and uses the best available data to continuously update NEMS and the AEO projections. EIA makes extensive use of scenarios in the AEO to explore the implications of major breaks from historical trends. Even though the precise timing and magnitude of a change in trend cannot be predicted, the likelihood that there will be some changes in trend is virtually certain, and the impact of such changes is estimated using the AEO scenarios. Thus, the full range of potential outcomes cannot be evaluated with the AEO Reference case alone, but only in conjunction with the relevant AEO scenarios and other analysis as applicable to a specific situation.

Table 1. AEO Reference Case Projection Results

Variable	Average Absolute Percent Difference	Percent of Projections Over-Estimated
<b>Gross Domestic Product</b>		
Real Gross Domestic Product (Average Cumulative Growth)* (Table 2)	1.0	42.6
<b>Petroleum</b>		
Imported Refiner Acquisition Cost of Crude Oil (Constant \$) (Table 3a)	35.2	18.6
Imported Refiner Acquisition Cost of Crude Oil (Nominal \$) (Table 3b)	34.7	19.7
Total Petroleum Consumption (Table 4)	6.2	66.5
Crude Oil Production (Table 5)	6.0	59.6
Petroleum Net Imports (Table 6)	13.3	67.0
<b>Natural Gas</b>		
Natural Gas Wellhead Prices (Constant \$) (Table 7a)	30.7	26.1
Natural Gas Wellhead Prices (Nominal \$) (Table 7b)	30.0	27.1
Total Natural Gas Consumption (Table 8)	7.8	70.2
Natural Gas Production (Table 9)	7.1	66.0
Natural Gas Net Imports (Table 10)	29.3	69.7
<b>Coal</b>		
Coal Prices to Electric Generating Plants (Constant \$)** (Table 11a)	18.6	39.9
Coal Prices to Electric Generating Plants (Nominal \$)** (Table 11b)	20.8	43.6
Total Coal Consumption (Table 12)	7.4	60.1
Coal Production (Table 13)	5.5	63.3
<b>Electricity</b>		
Average Electricity Prices (Constant \$) (Table 14a)	10.0	37.8
Average Electricity Prices (Nominal \$) (Table 14b)	12.5	42.6
Total Electricity Sales (Table 15)	4.2	46.3
<b>Total Energy, Carbon and Intensity</b>		
Total Energy Consumption (Table 16)	5.6	79.3
Delivered Residential Energy Consumption (Table 17)	4.3	69.7
Delivered Commercial Energy Consumption (Table 18)	6.0	44.1
Delivered Industrial Energy Consumption (Table 19)	11.2	88.3
Delivered Transportation Energy Consumption (Table 20)	6.3	78.2
Total Energy Related Carbon Dioxide Emissions (Table 21)	6.4	62.2
Energy Intensity (Energy Consumption/Real \$ GDP) (Table 22)	10.2	94.7

## AEO – Annual Energy Outlook

Source: These statistics summarize the calculations in Tables 2 through 22. The data in Tables 2 through 22 are based on the 1994 through 2012 AEO Reference case projections. Historical data are taken from the Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2011), except for Tables 11a and 11b the source is the Monthly Energy Review September 2012, DOE/EIA-0035(2012/09) (Washington, DC, September 26, 2012).

\* The basis for GDP comparison is the projection differences in the cumulative average growth rate of real GDP from the first year shown for each AEO. The summary information for projection differences given for GDP growth rates is absolute percentage point differences; for all other AEO concepts the comparison basis is absolute percent differences.

\*\*Coal prices to electric generating plants are from the Monthly Energy Review. Beginning in AEO2003, EIA electric generating projections incorporated combined heat and power (CHP) electricity generation in electricity generating plants. Prior to AEO2003, coal price projections reflected data collected, estimated, and reported to electric utilities and excluded CHP power generation.

Some notable factors contributing to deviations between actual outcomes and *AEO* projections are:

- Macroeconomic factors play a very important role in determining energy usage. The financial crisis and resulting economic weakness starting in 2007 was not anticipated in *AEO* modeling as NEMS does not project future business cycles. *AEO2001* through *AEO2009* over-projected macroeconomic growth (Table 2). Earlier *AEOs* systematically underestimated cumulative growth, even through 2007-2009, due in part to the robust 3.9% average growth in real GDP from 1993 through 2000 fueled by the “high tech bubble.” Post-2000 real GDP growth has decreased to an average of 1.6%, and *AEOs* produced during this period have tended to over-project, even before the impacts of the latest recession. In general, the *AEO* tends to lag behind macroeconomic trends as a result of an analytic framework which returns economic factors to long-run trends, rather than attempting to predict business cycles or other economic phenomena.
- The imported refiner acquisition cost of crude oil in 2011 was over \$100 per barrel, exceeding its previous annual high in 2008. Many of the *AEOs* prior to *AEO2006* projected nominal prices less than \$30 per barrel. Underestimation of crude oil prices since 2000 contributed to overestimation of petroleum consumption. This coupled with the effects of the 2007-2009 recession has generally resulted in overestimates of petroleum consumption for the years 2008 through 2011 (Table 4). Only since *AEO2009* have the projection differences become more evenly distributed.
- Petroleum net imports peaked in 2005, falling successively in each year since. Before *AEO2006*, with few exceptions, *AEOs* had projected rising net imports for this period. From *AEO2006* on, projections for net imports have included years of decline (Table 6). This effect was caused primarily by the economic situation, with a lesser contribution from increasing vehicle fuel efficiency. Recently finalized vehicle standards will increase the relative importance of fuel efficiency in future projections.
- Natural gas production has increased each year after 2005 after a long period of relatively flat production, and achieved a record high level in 2011 (Table 9). Natural gas net imports peaked in 2007, falling successively in each year since, with 2011 at the lowest level shown (Table 10). *AEOs* since *AEO2006* have tended to underestimate production growth and consequently overestimate net imports.
- The fuel with the largest absolute percent difference between the projections and historical consumption has generally been natural gas. This can be partially traced to the performance of natural gas price projections. In earlier projections, the natural gas price was influenced by the changes in the world oil price, but this relationship has decoupled since 2000. Through *AEO2005*, the Reference case has generally overestimated natural gas consumption (Table 8), in part due to the tendency for significant underestimates of the natural gas wellhead price (Tables 7a, 7b). In addition, industrial natural gas usage is highly sensitive to business cycles, leading to greater volatility in overall natural gas consumption.



- Coal prices to electric generating plants set a new high in 2011 (Tables 11a, 11b). This coupled with the “new normal” of increased natural gas production and low and declining natural gas prices, has resulted in consumption for 2011 falling and being below its level in 1996 (Table 12). The previous recent low for coal consumption was set in 2009 (the only year since 1996 lower than 2011), and was influenced by the same price effects as 2011, but with the added pressure of falling real GDP for that year.
- Electricity prices were almost always underestimated in the Reference case projections from *AEO2000* on (Tables 14a, 14b), following the pattern in the coal and natural gas price projections. In deregulated markets, natural gas tends to determine marginal electricity prices, and with part of the United States remaining regulated, this presents a complex pricing environment for a national projection; but overall, the underestimation of natural gas and coal prices noted above also results in underestimated electricity prices.
- Total energy consumption is lower in 2011 than it was in 2000 (although all but two intervening years were higher than 2011). Most AEOs projected rising consumption, with *AEO2008* and *AEO2009* being exceptions. This is the result of not anticipating the recent recession and slow recovery in the projections. Projection differences tend to be relatively small; however, some pattern of overestimation is evident (Tables 16 to 20).
- Projected energy intensity has been the concept most often overestimated (Table 22). Energy intensity for the retrospective comparisons is defined as the ratio of two other projected concepts: total energy consumption and real GDP. As a ratio, the projection differences are dependent upon relative differences in energy consumption and real GDP. The overestimates of energy intensity are the result of two “reinforcing” features of past projections. During the period through *AEO2000*, GDP tended to be underestimated, which imparts a tendency to overestimate energy intensity. Post-*AEO2000*, energy consumption has tended to be overestimated, once again imparting a tendency to overestimate intensity. The combination of these two occurrences has resulted in energy intensity being overestimated for nearly all years.

## Appendix (Tables 2 through 22)

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Tables 2 through 22

**Table 2. Real Gross Domestic Product, Projected vs. Actual**

**Projected Real GDP Growth Trend**

(cumulative average percent growth in projected real GDP from first year shown for each AEO)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
AEO 1994	3.1%	3.2%	2.9%	2.8%	2.7%	2.7%	2.6%	2.6%	2.6%	2.5%	2.5%	2.5%	2.4%	2.4%	2.4%	2.4%	2.3%	2.3%		
AEO 1995		3.7%	2.8%	2.5%	2.7%	2.7%	2.6%	2.6%	2.5%	2.5%	2.5%	2.5%	2.4%	2.4%	2.4%	2.3%	2.3%	2.2%		
AEO 1996			2.6%	2.2%	2.5%	2.5%	2.5%	2.5%	2.4%	2.4%	2.4%	2.4%	2.4%	2.3%	2.3%	2.2%	2.2%	2.2%	1.6%	
AEO 1997				2.1%	1.9%	2.0%	2.2%	2.3%	2.3%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.1%	2.1%	1.5%	
AEO 1998					3.4%	2.9%	2.6%	2.5%	2.4%	2.4%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.2%	1.8%	
AEO 1999						3.4%	2.5%	2.5%	2.4%	2.4%	2.4%	2.3%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%	1.8%	
AEO 2000							3.8%	2.9%	2.7%	2.6%	2.6%	2.6%	2.6%	2.6%	2.5%	2.5%	2.4%	2.4%	1.6%	
AEO 2001								5.2%	4.5%	4.2%	3.9%	3.7%	3.6%	3.5%	3.4%	3.4%	3.3%	3.3%	2.9%	
AEO 2002									1.0%	1.6%	2.1%	2.3%	2.5%	2.5%	2.6%	2.7%	2.8%	2.9%	3.8%	
AEO 2003										2.4%	2.8%	3.0%	3.0%	3.0%	3.0%	3.1%	3.2%	3.2%	3.4%	
AEO 2004											2.3%	3.0%	3.3%	3.3%	3.3%	3.3%	3.3%	3.2%	2.9%	
AEO 2005												4.4%	4.0%	3.6%	3.6%	3.4%	3.4%	3.4%	3.0%	
AEO 2006													3.6%	3.5%	3.4%	3.4%	3.3%	3.3%	2.9%	
AEO 2007														3.3%	2.9%	2.9%	3.0%	3.0%	3.0%	
AEO 2008															2.1%	1.9%	2.1%	2.4%	3.2%	
AEO 2009																1.3%	-0.8%	0.2%	3.7%	
AEO 2010																		-2.8%	-0.9%	3.5%
AEO 2011																			2.6%	2.2%
AEO 2012																				1.8%
<b>Average Absolute Difference</b>	0.2%	0.4%	0.3%	1.0%	1.2%	1.4%	1.6%	1.6%	1.1%	0.9%	0.8%	0.7%	0.7%	0.6%	0.6%	0.9%	1.1%	1.0%	1.4%	

**Projected vs. Historical**

(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	0.2%	-0.3%	-0.3%	-0.5%	-0.8%	-1.0%	-1.2%	-1.3%	-1.0%	-0.8%	-0.8%	-0.8%	-0.9%	-0.8%	-0.8%	-0.6%	-0.3%	-0.3%	
AEO 1995		-0.4%	-0.5%	-0.9%	-1.0%	-1.2%	-1.4%	-1.5%	-1.2%	-1.0%	-0.9%	-0.9%	-0.9%	-0.9%	-0.8%	-0.6%	-0.3%	-0.3%	
AEO 1996			0.1%	-0.9%	-1.1%	-1.3%	-1.5%	-1.5%	-1.1%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.8%	-0.6%	-0.3%	-0.3%	-0.8%
AEO 1997				-1.6%	-2.2%	-2.2%	-2.2%	-2.0%	-1.5%	-1.2%	-1.1%	-1.1%	-1.1%	-1.1%	-0.9%	-0.7%	-0.3%	-0.4%	-0.9%
AEO 1998					-1.1%	-1.5%	-1.9%	-1.9%	-1.3%	-1.1%	-1.0%	-1.0%	-1.0%	-0.9%	-0.8%	-0.5%	-0.1%	-0.1%	-0.5%
AEO 1999						-1.0%	-2.1%	-1.9%	-1.2%	-0.9%	-0.8%	-0.8%	-0.8%	-0.7%	-0.6%	-0.3%	0.2%	0.2%	-0.4%
AEO 2000							-1.0%	-1.6%	-0.6%	-0.3%	-0.2%	-0.3%	-0.4%	-0.4%	-0.3%	0.0%	0.4%	0.4%	-0.4%
AEO 2001								1.1%	1.9%	1.8%	1.5%	1.1%	0.9%	0.8%	0.8%	1.1%	1.6%	1.5%	1.1%
AEO 2002									0.0%	0.2%	0.3%	0.1%	0.1%	0.1%	0.2%	0.7%	1.4%	1.4%	2.2%
AEO 2003										0.6%	0.7%	0.4%	0.3%	0.3%	0.4%	0.9%	1.7%	1.6%	1.8%
AEO 2004											-0.2%	0.0%	0.3%	0.4%	0.6%	1.1%	1.8%	1.7%	1.3%
AEO 2005												0.9%	0.7%	0.6%	0.8%	1.3%	2.1%	1.9%	1.5%
AEO 2006													0.6%	0.6%	0.8%	1.6%	2.5%	2.2%	1.7%
AEO 2007														0.7%	0.6%	1.5%	2.7%	2.3%	2.1%
AEO 2008															0.2%	1.1%	2.6%	2.2%	2.7%
AEO 2009																1.6%	0.9%	0.6%	3.5%
AEO 2010																	0.2%	-0.5%	3.2%
AEO 2011																		0.3%	0.1%
AEO 2012																			0.0%
<b>Average Absolute Percent Difference</b>	0.2%	0.4%	0.3%	1.0%	1.2%	1.4%	1.6%	1.6%	1.1%	0.9%	0.8%	0.7%	0.7%	0.6%	0.6%	0.9%	1.1%	1.0%	1.4%

**Table 2. Real Gross Domestic Product, Projected vs. Actual (Continued)**

**Historical Real GDP Growth Trend**

(cumulative average percent growth in historical real GDP from first year shown for each AEO)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	2.9%	3.5%	3.1%	3.3%	3.5%	3.7%	3.8%	3.9%	3.6%	3.4%	3.3%	3.3%	3.3%	3.3%	3.2%	2.9%	2.6%	2.6%	2.5%
AEO 1995		4.1%	3.3%	3.4%	3.7%	3.8%	4.0%	4.0%	3.6%	3.4%	3.3%	3.4%	3.3%	3.3%	3.2%	2.9%	2.6%	2.5%	2.5%
AEO 1996			2.5%	3.1%	3.6%	3.8%	4.0%	4.0%	3.6%	3.4%	3.3%	3.3%	3.3%	3.2%	3.1%	2.9%	2.5%	2.5%	2.4%
AEO 1997				3.7%	4.1%	4.2%	4.3%	4.3%	3.8%	3.5%	3.4%	3.4%	3.3%	3.3%	3.2%	2.9%	2.5%	2.4%	2.4%
AEO 1998					4.5%	4.4%	4.5%	4.4%	3.8%	3.4%	3.3%	3.3%	3.3%	3.2%	3.1%	2.8%	2.4%	2.4%	2.3%
AEO 1999						4.4%	4.6%	4.4%	3.6%	3.2%	3.1%	3.2%	3.2%	3.1%	3.0%	2.7%	2.2%	2.2%	2.2%
AEO 2000							4.8%	4.5%	3.3%	3.0%	2.9%	3.0%	3.0%	2.9%	2.8%	2.5%	2.0%	2.0%	2.0%
AEO 2001								4.1%	2.6%	2.3%	2.4%	2.6%	2.7%	2.7%	2.6%	2.3%	1.7%	1.8%	1.8%
AEO 2002									1.1%	1.4%	1.8%	2.2%	2.4%	2.4%	2.4%	2.0%	1.4%	1.5%	1.6%
AEO 2003										1.8%	2.2%	2.6%	2.7%	2.7%	2.6%	2.2%	1.5%	1.6%	1.6%
AEO 2004											2.5%	3.0%	3.0%	2.9%	2.7%	2.2%	1.4%	1.6%	1.6%
AEO 2005												3.5%	3.3%	3.1%	2.8%	2.1%	1.3%	1.4%	1.5%
AEO 2006													3.1%	2.9%	2.5%	1.8%	0.8%	1.1%	1.2%
AEO 2007														2.7%	2.3%	1.4%	0.3%	0.7%	0.9%
AEO 2008															1.9%	0.8%	-0.5%	0.2%	0.5%
AEO 2009																-0.3%	-1.7%	-0.4%	0.2%
AEO 2010																	-3.1%	-0.4%	0.3%
AEO 2011																		2.4%	2.1%
AEO 2012																			1.8%
<b>Growth Rate, Real GDP*</b>	2.9%	4.1%	2.5%	3.7%	4.5%	4.4%	4.8%	4.1%	1.1%	1.8%	2.5%	3.5%	3.1%	2.7%	1.9%	-0.3%	-3.1%	2.4%	1.8%

\* These are historical annual growth rates in real GDP (2005 chained dollars). The annual changes are compounded and averaged in the table above beginning with the first year for each AEO.

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: Bureau of Economic Analysis, US Dept. of Commerce, October 2012.

**Table 3a. Imported Refiner Acquisition Cost of Crude Oil, Projected vs. Actual**

**Projected Price in Constant Dollars**

(constant dollars per barrel in "dollar year" specific to each AEO)

	AEO Dollar Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
		AEO 1994	1992	16.69	16.43	16.99	17.66	18.28	19.06	19.89	20.72	21.65	22.61	23.51	24.29	24.90	25.60	26.30	27.00	27.64	28.16
AEO 1995	1993		14.90	16.41	16.90	17.45	18.00	18.53	19.13	19.65	20.16	20.63	21.08	21.50	21.98	22.44	22.94	23.50	24.12		
AEO 1996	1994			16.81	16.98	17.37	17.98	18.61	19.27	19.92	20.47	20.97	21.41	21.86	22.25	22.61	22.97	23.34	23.70	24.08	
AEO 1997	1995				19.52	18.54	18.21	18.22	18.20	18.64	18.99	19.28	19.50	19.72	19.89	20.03	20.16	20.29	20.41	20.54	
AEO 1998	1996					18.16	17.99	18.57	19.11	19.36	19.51	19.79	19.99	20.19	20.22	20.37	20.52	20.66	20.81	20.95	
AEO 1999	1997						12.37	13.25	13.97	15.21	16.24	17.47	18.40	19.25	20.15	20.90	21.04	21.17	21.30	21.43	
AEO 2000	1998							17.13	21.19	20.06	20.18	20.28	20.39	20.49	20.59	20.70	20.79	20.90	21.00	21.10	
AEO 2001	1999								27.59	23.81	21.44	20.56	20.74	20.83	20.94	21.05	21.14	21.26	21.37	21.47	
AEO 2002	2000									22.48	21.11	22.39	22.59	22.73	22.85	22.99	23.11	23.24	23.36	23.49	
AEO 2003	2001											23.33	25.83	24.05	23.27	23.43	23.57	23.71	23.85	23.99	24.14
AEO 2004	2002												27.25	23.84	23.30	23.47	23.65	23.83	24.00	24.17	24.37
AEO 2005	2003													35.00	33.99	30.00	27.35	26.15	25.30	25.00	25.35
AEO 2006	2004														49.70	53.95	51.46	48.98	46.49	43.99	43.78
AEO 2007	2005															61.75	59.49	57.23	54.21	51.20	48.48
AEO 2008	2006																62.10	72.77	68.32	65.18	62.67
AEO 2009	2007																	96.46	38.75	48.99	61.99
AEO 2010	2008																		56.49	67.40	66.63
AEO 2011	2009																			74.86	80.32
AEO 2012	2010																				99.99
<b>Actual in Nominal\$</b>		16.14	15.51	17.14	20.64	18.53	12.04	17.26	27.70	22.00	23.71	27.71	35.90	48.86	59.02	67.04	92.77	59.17	75.88	102.70	
<b>Average Absolute Difference</b>		0.90	0.93	0.32	1.87	0.53	5.92	2.58	5.85	1.77	1.68	3.40	9.01	17.69	22.80	25.97	42.70	18.62	27.60	44.79	

**Projected vs. Actual**

(percent difference)

		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
AEO 1994		5.7	10.6	5.6	-7.1	9.0	76.9	30.6	-13.4	16.6	14.8	4.3	-14.5	-33.5	-41.5	-45.6	-58.7	-33.2	-46.2		
AEO 1995			-1.9	-0.2	-13.0	1.8	63.4	19.1	-21.7	3.5	0.1	-10.5	-27.4	-43.8	-50.9	-54.6	-65.7	-44.4	-54.9		
AEO 1996				0.1	-14.4	-0.7	59.9	17.1	-22.8	2.8	-0.4	-10.9	-27.8	-44.0	-51.3	-55.2	-66.4	-46.0	-56.6	-66.7	
AEO 1997					-3.6	3.8	58.6	12.4	-28.6	-5.8	-9.5	-19.7	-35.6	-50.5	-57.4	-61.1	-71.1	-54.0	-63.4	-72.2	
AEO 1998						-0.3	53.8	12.4	-26.4	-4.0	-8.8	-19.2	-35.2	-50.3	-57.5	-61.2	-71.1	-54.0	-63.4	-72.2	
AEO 1999							3.9	-21.2	-47.1	-25.9	-25.4	-29.9	-41.4	-53.5	-58.4	-60.9	-70.9	-53.7	-63.2	-72.0	
AEO 2000								0.7	-20.7	-3.3	-8.3	-19.5	-35.8	-51.0	-57.9	-61.7	-71.6	-54.8	-64.1	-72.8	
AEO 2001									1.8	13.1	-4.0	-19.6	-35.6	-50.9	-57.8	-61.6	-71.5	-54.7	-64.0	-72.7	
AEO 2002										4.5	-7.5	-14.3	-31.3	-47.6	-55.0	-58.9	-69.5	-51.5	-61.5	-70.8	
AEO 2003											0.0	-3.3	-28.5	-47.5	-54.8	-58.8	-69.4	-51.3	-61.3	-70.6	
AEO 2004												0.4	-30.3	-48.3	-55.5	-59.4	-69.8	-51.8	-61.7	-70.8	
AEO 2005													0.2	-26.1	-44.3	-54.0	-67.5	-50.3	-61.2	-70.3	
AEO 2006														5.1	-2.5	-15.8	-40.8	-11.1	-33.5	-50.1	
AEO 2007															8.0	-5.7	-33.0	0.4	-25.1	-46.5	
AEO 2008																-4.7	-17.5	22.5	-7.6	-33.0	
AEO 2009																	6.3	-32.5	-32.5	-35.6	
AEO 2010																		-3.7	-9.2	-32.3	
AEO 2011																			0.0	-19.1	
AEO 2012																					-0.6
<b>Average Absolute Percent Difference</b>		5.7	6.2	2.0	9.5	3.1	52.7	16.2	22.8	8.8	7.9	13.8	28.6	42.5	46.6	47.9	57.5	39.4	46.1	54.6	

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions, "Imported Crude Oil Price" (average imported refiners' acquisition cost for crude oil, "IRAC").

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 5.21. Bureau of Economic Analysis, US Dept. of Commerce, October 2012.

**Table 3b. Imported Refiner Acquisition Cost of Crude Oil, Projected vs. Actual**

**Projected Price in Nominal Dollars**

(nominal dollars per barrel)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	17.06	17.21	18.24	19.43	20.64	22.12	23.76	25.52	27.51	29.67	31.86	34.00	36.05	38.36	40.78	43.29	45.88	48.37	
AEO 1995		15.24	17.27	18.23	19.26	20.39	21.59	22.97	24.33	25.79	27.27	28.82	30.38	32.14	33.89	35.85	37.97	40.28	
AEO 1996			17.16	17.74	18.59	19.72	20.97	22.34	23.81	25.26	26.72	28.22	29.87	31.51	33.13	34.82	36.61	38.48	40.48
AEO 1997				19.99	19.42	19.55	20.07	20.59	21.68	22.71	23.75	24.78	25.87	26.94	28.06	29.19	30.38	31.60	32.94
AEO 1998					18.54	18.79	19.87	20.95	21.79	22.53	23.46	24.34	25.27	26.04	27.00	28.02	29.09	30.22	31.43
AEO 1999						12.50	13.64	14.67	16.35	17.87	19.64	21.14	22.59	24.20	25.72	26.54	27.42	28.38	29.41
AEO 2000							17.35	21.80	20.99	21.52	22.05	22.62	23.23	23.85	24.51	25.17	25.85	26.52	27.22
AEO 2001								28.21	24.86	22.82	22.36	23.04	23.65	24.25	24.85	25.43	26.05	26.66	27.28
AEO 2002									22.99	21.99	24.00	24.86	25.66	26.50	27.36	28.18	29.03	29.89	30.79
AEO 2003										23.65	26.92	25.70	25.40	26.10	26.75	27.39	28.07	28.79	29.61
AEO 2004											27.65	24.54	24.45	25.14	25.87	26.65	27.50	28.40	29.42
AEO 2005												35.74	35.40	31.78	29.52	28.78	28.43	28.73	29.84
AEO 2006													50.97	56.42	54.75	53.19	51.54	49.79	50.73
AEO 2007														63.64	62.68	61.40	59.20	56.89	54.85
AEO 2008															63.72	75.98	72.58	70.43	68.90
AEO 2009																98.58	39.99	50.84	65.08
AEO 2010																	57.35	69.43	69.54
AEO 2011																		75.52	82.10
AEO 2012																			102.10
<b>Actual in Nominal\$</b>	16.14	15.51	17.14	20.64	18.53	12.04	17.26	27.70	22.00	23.71	27.71	35.90	48.86	59.02	67.04	92.77	59.17	75.88	102.70
<b>Average Absolute Difference</b>	0.92	0.98	0.42	1.79	0.76	6.81	3.38	5.70	2.30	2.25	3.40	9.42	20.05	27.05	31.80	52.97	22.34	33.70	55.54

**Projected vs. Actual**

(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	5.7	10.9	6.4	-5.9	11.4	83.7	37.7	-7.9	25.0	25.1	15.0	-5.3	-26.2	-35.0	-39.2	-53.3	-22.5	-36.3	
AEO 1995		-1.8	0.8	-11.7	4.0	69.4	25.1	-17.1	10.6	8.8	-1.6	-19.7	-37.8	-45.5	-49.4	-61.4	-35.8	-46.9	
AEO 1996			0.1	-14.0	0.3	63.8	21.5	-19.3	8.2	6.5	-3.6	-21.4	-38.9	-46.6	-50.6	-62.5	-38.1	-49.3	-60.6
AEO 1997				-3.1	4.8	62.4	16.3	-25.7	-1.5	-4.2	-14.3	-31.0	-47.1	-54.3	-58.1	-68.5	-48.7	-58.3	-67.9
AEO 1998					0.0	56.1	15.1	-24.4	-1.0	-5.0	-15.3	-32.2	-48.3	-55.9	-59.7	-69.8	-50.8	-60.2	-69.4
AEO 1999						3.8	-21.0	-47.0	-25.7	-24.6	-29.1	-41.1	-53.8	-59.0	-61.6	-71.4	-53.7	-62.6	-71.4
AEO 2000							0.5	-21.3	-4.6	-9.2	-20.4	-37.0	-52.5	-59.6	-63.4	-72.9	-56.3	-65.0	-73.5
AEO 2001								1.8	13.0	-3.7	-19.3	-35.8	-51.6	-58.9	-62.9	-72.6	-56.0	-64.9	-73.4
AEO 2002									4.5	-7.3	-13.4	-30.8	-47.5	-55.1	-59.2	-69.6	-50.9	-60.6	-70.0
AEO 2003										-0.3	-2.9	-28.4	-48.0	-55.8	-60.1	-70.5	-52.6	-62.1	-71.2
AEO 2004											-0.2	-31.7	-50.0	-57.4	-61.4	-71.3	-53.5	-62.6	-71.4
AEO 2005												-0.4	-27.6	-46.2	-56.0	-69.0	-52.0	-62.1	-70.9
AEO 2006													4.3	-4.4	-18.3	-42.7	-12.9	-34.4	-50.6
AEO 2007														7.8	-6.5	-33.8	0.1	-25.0	-46.6
AEO 2008															-5.0	-18.1	22.7	-7.2	-32.9
AEO 2009																6.3	-32.4	-33.0	-36.6
AEO 2010																	-3.1	-8.5	-32.3
AEO 2011																		-0.5	-20.1
AEO 2012																			-0.6
<b>Average Absolute Percent Difference</b>	5.7	6.3	2.4	8.7	4.1	56.5	19.6	20.6	10.5	9.5	12.3	26.2	41.0	45.8	47.4	57.1	37.8	44.4	54.1

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 5.21.

**Table 4. Total Petroleum Consumption, Projected vs. Actual**

**Projected**

(million barrels)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	6450	6566	6643	6723	6811	6880	6957	7059	7125	7205	7296	7377	7446	7523	7596	7665	7712	7775	
AEO 1995		6398	6544	6555	6676	6745	6822	6888	6964	7048	7147	7245	7337	7406	7472	7537	7581	7621	
AEO 1996			6490	6526	6607	6709	6782	6855	6942	7008	7085	7176	7260	7329	7384	7450	7501	7545	7581
AEO 1997				6636	6694	6826	6953	7074	7183	7267	7369	7461	7548	7643	7731	7793	7833	7884	7924
AEO 1998					6895	6906	7066	7161	7278	7400	7488	7597	7719	7859	7959	8074	8190	8286	8361
AEO 1999						6884	7007	7269	7383	7472	7539	7620	7725	7841	7949	8069	8174	8283	8351
AEO 2000							7056	7141	7266	7363	7452	7578	7694	7815	7926	8028	8113	8217	8288
AEO 2001								7119	7314	7431	7528	7634	7740	7853	7963	8074	8179	8285	8385
AEO 2002									7170	7243	7485	7628	7765	7879	8013	8155	8311	8472	8646
AEO 2003										7143	7237	7364	7477	7634	7812	7998	8186	8390	8575
AEO 2004											7259	7359	7608	7772	7916	8063	8168	8290	8433
AEO 2005												7484	7630	7775	7928	8097	8268	8389	8510
AEO 2006													7601	7723	7742	7842	7956	8094	8220
AEO 2007														7546	7644	7721	7805	7880	7991
AEO 2008															7540	7628	7558	7660	7737
AEO 2009																7071	6851	7229	7333
AEO 2010																	6830	7026	7214
AEO 2011																		6926	6973
AEO 2012																			6909
<b>Actual</b>	6291	6467	6469	6701	6796	6905	7125	7211	7172	7213	7312	7588	7593	7551	7548	7136	6852	7001	6875
<b>Average Absolute Difference</b>	158	84	90	102	105	80	176	154	117	135	139	149	126	192	257	701	987	910	1092

**Projected vs. Actual**

(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	2.5	1.5	2.7	0.3	0.2	-0.4	-2.4	-2.1	-0.7	-0.1	-0.2	-2.8	-1.9	-0.4	0.6	7.4	12.6	11.1	
AEO 1995		-1.1	1.2	-2.2	-1.8	-2.3	-4.2	-4.5	-2.9	-2.3	-2.3	-4.5	-3.4	-1.9	-1.0	5.6	10.6	8.9	
AEO 1996			0.3	-2.6	-2.8	-2.8	-4.8	-4.9	-3.2	-2.8	-3.1	-5.4	-4.4	-2.9	-2.2	4.4	9.5	7.8	10.3
AEO 1997				-1.0	-1.5	-1.1	-2.4	-1.9	0.2	0.8	0.8	-1.7	-0.6	1.2	2.4	9.2	14.3	12.6	15.3
AEO 1998					1.4	0.0	-0.8	-0.7	1.5	2.6	2.4	0.1	1.7	4.1	5.4	13.1	19.5	18.4	21.6
AEO 1999						-0.3	-1.6	0.8	2.9	3.6	3.1	0.4	1.7	3.8	5.3	13.1	19.3	18.3	21.5
AEO 2000							-1.0	-1.0	1.3	2.1	1.9	-0.1	1.3	3.5	5.0	12.5	18.4	17.4	20.6
AEO 2001								-1.3	2.0	3.0	2.9	0.6	1.9	4.0	5.5	13.1	19.4	18.3	22.0
AEO 2002									0.0	0.4	2.4	0.5	2.3	4.4	6.2	14.3	21.3	21.0	25.8
AEO 2003										-1.0	-2.9	-1.5	1.1	3.5	12.1	19.5	19.8	24.7	
AEO 2004											-0.7	-3.0	0.2	2.9	4.9	13.0	19.2	18.4	22.7
AEO 2005												-1.4	0.5	3.0	5.0	13.5	20.7	19.8	23.8
AEO 2006													0.1	2.3	2.6	9.9	16.1	15.6	19.6
AEO 2007														-0.1	1.3	8.2	13.9	12.6	16.2
AEO 2008															-0.1	6.9	10.3	9.4	12.5
AEO 2009																-0.9	0.0	3.3	6.7
AEO 2010																	-0.3	0.4	4.9
AEO 2011																		-1.1	1.4
AEO 2012																			0.5
<b>Average Absolute Percent Difference</b>	2.5	1.3	1.4	1.5	1.5	1.2	2.5	2.1	1.6	1.9	1.9	2.0	1.7	2.5	3.4	9.8	14.4	13.0	15.9

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 5.1b (converted to million barrels).

**Table 5. Domestic Crude Oil Production, Projected vs. Actual**

**Projected**

(million barrels)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	2508	2373	2256	2161	2088	2022	1953	1891	1851	1825	1799	1781	1767	1759	1778	1789	1807	1862	
AEO 1995		2402	2307	2205	2095	2037	1967	1953	1924	1916	1905	1894	1883	1887	1887	1920	1945	1967	
AEO 1996			2387	2310	2248	2172	2113	2062	2011	1978	1953	1938	1916	1920	1927	1949	1971	1986	2000
AEO 1997				2362	2307	2245	2197	2143	2091	2055	2033	2015	2004	1997	1989	1982	1975	1967	1949
AEO 1998					2340	2332	2291	2252	2220	2192	2169	2145	2125	2104	2087	2068	2050	2033	2016
AEO 1999						2340	2309	2296	2265	2207	2171	2141	2122	2114	2092	2074	2057	2040	2025
AEO 2000							2193	2181	2122	2063	2016	1980	1957	1939	1920	1904	1894	1889	1889
AEO 2001								2152	2161	2204	2193	2111	2062	1995	1957	1934	1901	1879	1848
AEO 2002									2133	2135	2074	2008	1962	1944	1943	1913	1880	1855	1842
AEO 2003										2149	2121	2065	2038	2193	2210	2170	2119	2054	2020
AEO 2004											2076	2116	2139	2166	2222	2231	2209	2166	2124
AEO 2005												2059	2124	2200	2221	2243	2257	2198	2152
AEO 2006													1944	2008	2023	2061	2133	2146	2132
AEO 2007														1861	2001	2058	2074	2068	2086
AEO 2008															1862	1876	2064	2165	2166
AEO 2009																1809	1955	2015	2024
AEO 2010																	1913	1936	1980
AEO 2011																		2011	1993
AEO 2012																			2033
<b>Actual</b>	2499	2431	2394	2366	2355	2282	2147	2131	2118	2097	2073	1983	1890	1862	1848	1812	1957	1999	2067
<b>Average Absolute Difference</b>	9	44	78	107	139	127	116	107	101	105	93	94	133	159	169	190	103	86	88

**Projected vs. Actual**

(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	0.3	-2.4	-5.8	-8.7	-11.3	-11.4	-9.0	-11.3	-12.6	-13.0	-13.2	-10.2	-6.5	-5.5	-3.8	-1.3	-7.7	-6.9	
AEO 1995		-1.2	-3.7	-6.8	-11.0	-10.7	-8.4	-8.4	-9.2	-8.6	-8.1	-4.5	-0.4	1.3	2.1	6.0	-0.6	-1.6	
AEO 1996			-0.3	-2.3	-4.5	-4.8	-1.6	-3.2	-5.0	-5.7	-5.8	-2.3	1.4	3.1	4.3	7.6	0.7	-0.7	-3.2
AEO 1997				-0.2	-2.0	-1.6	2.4	0.6	-1.2	-2.0	-1.9	1.6	6.0	7.2	7.6	9.4	0.9	-1.6	-5.7
AEO 1998					-0.6	2.2	6.7	5.7	4.8	4.5	4.6	8.2	12.4	13.0	12.9	14.1	4.8	1.7	-2.5
AEO 1999						2.5	7.6	7.8	7.0	5.3	4.7	7.9	12.3	13.5	13.2	14.5	5.1	2.1	-2.0
AEO 2000							2.1	2.4	0.2	-1.6	-2.8	-0.1	3.5	4.1	3.9	5.1	-3.2	-5.5	-8.6
AEO 2001								1.0	2.1	5.1	5.8	6.4	9.1	7.1	5.9	6.7	-2.8	-6.0	-10.6
AEO 2002									0.7	1.8	0.0	1.3	3.8	4.4	5.1	5.6	-3.9	-7.2	-10.9
AEO 2003										2.5	2.3	4.1	7.8	17.8	19.6	19.8	8.3	2.8	-2.2
AEO 2004											0.1	6.7	13.2	16.3	20.2	23.1	12.9	8.3	2.8
AEO 2005												3.8	12.4	18.1	20.2	23.8	15.4	10.0	4.1
AEO 2006													2.8	7.8	9.4	13.8	9.0	7.4	3.2
AEO 2007														-0.1	8.2	13.6	6.0	3.5	0.9
AEO 2008															0.7	3.5	5.5	8.3	4.8
AEO 2009																-0.2	-0.1	0.8	-2.0
AEO 2010																	-2.2	-3.1	-4.2
AEO 2011																		0.6	-3.6
AEO 2012																			-1.6
<b>Average Absolute Percent Difference</b>	0.3	1.8	3.2	4.5	5.9	5.6	5.4	5.0	4.8	5.0	4.5	4.8	7.1	8.5	9.1	10.5	5.2	4.3	4.3

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 5.1b (converted to million barrels).



**Table 6. Petroleum Net Imports, Projected vs. Actual**

**Projected**

(million barrels)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	2935	3201	3362	3504	3657	3738	3880	3993	4099	4212	4303	4398	4475	4541	4584	4639	4668	4672	
AEO 1995		2953	3157	3281	3489	3610	3741	3818	3920	4000	4103	4208	4303	4362	4420	4442	4460	4460	
AEO 1996			3011	3106	3219	3398	3519	3679	3807	3891	3979	4070	4165	4212	4260	4289	4303	4322	4325
AEO 1997				3099	3245	3497	3665	3825	3975	4084	4190	4285	4380	4464	4552	4617	4654	4709	4760
AEO 1998					3303	3391	3654	3713	3876	4053	4137	4298	4415	4556	4639	4750	4910	4992	5087
AEO 1999						3380	3442	3888	4022	4153	4238	4336	4441	4545	4652	4780	4888	4999	5073
AEO 2000							3599	3847	4036	4187	4320	4465	4579	4690	4780	4882	4968	5055	5113
AEO 2001								3711	3996	4028	4114	4290	4435	4607	4747	4858	4974	5083	5198
AEO 2002									3850	3992	4191	4395	4561	4653	4749	4903	5068	5211	5360
AEO 2003										3778	4052	4056	4196	4187	4337	4534	4766	5024	5228
AEO 2004											4012	4164	4207	4331	4398	4521	4641	4806	4989
AEO 2005												4255	4346	4306	4420	4555	4693	4881	5038
AEO 2006													4545	4537	4366	4397	4415	4502	4577
AEO 2007														4553	4295	4224	4229	4304	4348
AEO 2008															4408	4540	4193	4132	4156
AEO 2009																4030	3630	3692	3737
AEO 2010																	3328	3222	3318
AEO 2011																		3346	3331
AEO 2012																			3221
<b>Actual</b>	2780	2940	2878	3110	3343	3564	3618	3813	3979	3849	4102	4427	4580	4523	4393	4068	3528	3446	3079
<b>Average Absolute Difference</b>	154	137	298	145	144	135	109	80	78	203	95	165	192	127	156	497	1012	1113	1442

**Projected vs. Actual**

(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	5.5	8.9	16.8	12.7	9.4	4.9	7.2	4.7	3.0	9.4	4.9	-0.7	-2.3	0.4	4.4	14.1	32.3	35.6	
AEO 1995		0.4	9.7	5.5	4.4	1.3	3.4	0.1	-1.5	3.9	0.0	-4.9	-6.0	-3.6	0.6	9.2	26.4	29.4	
AEO 1996			4.6	-0.1	-3.7	-4.6	-2.7	-3.5	-4.3	1.1	-3.0	-8.1	-9.1	-6.9	-3.0	5.4	22.0	25.4	40.5
AEO 1997				-0.4	-2.9	-1.9	1.3	0.3	-0.1	6.1	2.2	-3.2	-4.4	-1.3	3.6	13.5	31.9	36.6	54.6
AEO 1998					-1.2	-4.9	1.0	-2.6	-2.6	5.3	0.9	-2.9	-3.6	0.7	5.6	16.8	39.1	44.9	65.2
AEO 1999						-5.2	-4.9	2.0	1.1	7.9	3.3	-2.1	-3.0	0.5	5.9	17.5	38.5	45.1	64.8
AEO 2000							-0.5	0.9	1.5	8.8	5.3	0.9	0.0	3.7	8.8	20.0	40.8	46.7	66.1
AEO 2001								-2.7	0.4	4.6	0.3	-3.1	-3.2	1.9	8.1	19.4	41.0	47.5	68.8
AEO 2002									-3.2	3.7	2.2	-0.7	-0.4	2.9	8.1	20.5	43.6	51.2	74.1
AEO 2003										-1.9	-1.2	-8.4	-8.4	-7.4	-1.3	11.5	35.1	45.8	69.8
AEO 2004											-2.2	-6.0	-8.1	-4.2	0.1	11.1	31.5	39.5	62.0
AEO 2005												-3.9	-5.1	-4.8	0.6	12.0	33.0	41.6	63.6
AEO 2006													-0.8	0.3	-0.6	8.1	25.1	30.7	48.7
AEO 2007														0.7	-2.2	3.9	19.9	24.9	41.2
AEO 2008															0.3	11.6	18.9	19.9	35.0
AEO 2009																-0.9	2.9	7.1	21.4
AEO 2010																	-5.7	-6.5	7.8
AEO 2011																		-2.9	8.2
AEO 2012																			4.6
<b>Average Absolute Percent Difference</b>	5.5	4.7	10.4	4.7	4.3	3.8	3.0	2.1	2.0	5.3	2.3	3.7	4.2	2.8	3.5	12.2	28.7	32.3	46.8

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 5.1b (converted to million barrels).

**Table 7a. Natural Gas Wellhead Prices, Projected vs. Actual**

**Projected Price in Constant Dollars**

(constant dollars per thousand cubic feet in "dollar year" specific to each AEO)

	AEO Dollar Year																				
		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
AEO 1994	1992	1.94	2.03	2.11	2.19	2.29	2.35	2.39	2.42	2.47	2.55	2.65	2.75	2.89	3.01	3.17	3.30	3.35	3.47		
AEO 1995	1993		1.85	1.90	1.81	1.87	1.90	2.06	2.14	2.34	2.47	2.69	2.83	3.02	3.12	3.21	3.30	3.35	3.39		
AEO 1996	1994			1.60	1.67	1.74	1.82	1.87	1.89	1.91	1.93	1.96	1.99	2.00	2.02	2.06	2.10	2.15	2.22		
AEO 1997	1995				1.98	1.74	1.77	1.81	1.82	1.84	1.85	1.88	1.91	1.94	1.96	1.98	1.99	2.00	2.01	2.02	
AEO 1998	1996					2.25	2.10	2.11	2.11	2.12	2.12	2.12	2.13	2.15	2.17	2.21	2.24	2.27	2.31	2.32	
AEO 1999	1997						1.96	2.09	2.10	2.16	2.20	2.25	2.29	2.35	2.42	2.45	2.47	2.49	2.52	2.53	
AEO 2000	1998							2.12	2.17	2.17	2.17	2.20	2.26	2.34	2.43	2.51	2.56	2.58	2.60	2.63	
AEO 2001	1999								3.32	3.34	2.79	2.52	2.43	2.49	2.55	2.59	2.63	2.66	2.69	2.71	
AEO 2002	2000									3.94	1.98	2.37	2.58	2.66	2.70	2.71	2.79	2.81	2.85	2.91	
AEO 2003	2001										2.75	3.13	2.92	2.88	2.82	2.91	3.03	3.15	3.29	3.36	
AEO 2004	2002											4.90	3.88	3.54	3.48	3.53	3.64	3.47	3.40	3.56	
AEO 2005	2003												5.27	5.30	4.67	4.23	3.85	3.75	3.64	3.64	
AEO 2006	2004													7.62	6.85	6.13	5.78	5.34	5.03	4.78	
AEO 2007	2005														6.67	6.65	6.59	6.05	5.76	5.33	
AEO 2008	2006															6.21	6.58	6.75	6.33	6.02	
AEO 2009	2007																7.88	3.99	4.64	4.98	
AEO 2010	2008																		3.33	4.05	5.16
AEO 2011	2009																			4.08	4.09
AEO 2012	2010																				3.81
<b>Actual in Nominal\$</b>		2.04	1.85	1.55	2.17	2.32	1.96	2.19	3.68	4.00	2.95	4.88	5.46	7.33	6.39	6.25	7.97	3.67	4.48	3.95	
<b>Average Absolute Difference</b>		0.06	0.15	0.38	0.25	0.29	0.17	0.15	1.16	1.18	0.42	1.79	2.04	3.22	2.24	1.86	2.77	0.84	0.79	0.75	

**Projected vs. Actual**

(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
AEO 1994		-2.8	14.5	45.0	9.6	9.1	34.0	23.7	-23.8	-26.9	4.0	-33.3	-36.4	-48.5	-36.5	-29.7	-41.3	30.5	12.2	
AEO 1995			2.1	27.7	-11.4	-12.9	6.0	4.3	-34.1	-32.2	-1.4	-33.7	-35.9	-47.4	-35.6	-30.3	-42.6	27.7	7.3	
AEO 1996				5.2	-20.2	-20.5	-0.8	-7.4	-42.9	-45.7	-24.6	-53.1	-56.4	-66.1	-59.5	-57.0	-65.0	-21.6	-33.5	-20.4
AEO 1997					-6.8	-22.2	-5.1	-12.3	-46.1	-49.0	-29.1	-55.5	-58.5	-67.6	-61.2	-58.9	-66.8	-26.7	-39.0	-29.0
AEO 1998						-1.3	10.5	0.6	-38.9	-42.3	-20.5	-50.8	-54.6	-64.8	-57.8	-54.9	-63.2	-18.4	-31.3	-19.9
AEO 1999							0.9	-2.2	-40.2	-42.2	-18.6	-48.7	-52.0	-62.1	-53.9	-50.7	-60.2	-12.0	-26.4	-14.1
AEO 2000								-1.8	-38.8	-42.5	-20.7	-50.3	-53.1	-62.6	-54.1	-50.2	-59.2	-9.9	-24.7	-11.9
AEO 2001									-7.9	-12.9	0.5	-44.1	-50.4	-60.8	-52.6	-49.3	-58.7	-8.7	-23.4	-10.6
AEO 2002										0.7	-30.3	-48.6	-48.4	-59.0	-50.9	-48.0	-57.2	-5.3	-20.3	-5.8
AEO 2003											-5.3	-33.5	-42.9	-56.7	-49.7	-45.4	-54.4	3.5	-10.1	6.3
AEO 2004												2.5	-25.4	-47.6	-39.0	-34.9	-46.2	12.2	-8.7	10.9
AEO 2005													-0.7	-23.2	-19.8	-23.5	-44.3	18.8	-4.2	11.0
AEO 2006														7.3	14.3	7.7	-18.7	64.8	28.7	41.8
AEO 2007															7.7	13.0	-10.2	80.7	42.6	53.0
AEO 2008																2.2	-13.2	95.3	52.0	67.2
AEO 2009																	1.1	12.1	8.2	34.5
AEO 2010																		-8.5	-7.6	36.5
AEO 2011																			-7.7	7.3
AEO 2012																				-1.5
<b>Average Absolute Percent Difference</b>		2.8	8.3	26.0	12.0	13.2	9.5	7.5	34.1	32.7	15.5	41.3	42.9	51.8	42.3	37.0	43.9	26.9	21.5	22.4

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012) , Table 6.7. Bureau of Economic Analysis, US Dept. of Commerce, October 2012.

**Table 7b. Natural Gas Wellhead Prices, Projected vs. Actual**

**Projected Price in Nominal Dollars**

(nominal dollars per thousand cubic feet)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	1.98	2.12	2.27	2.41	2.59	2.73	2.85	2.98	3.14	3.35	3.59	3.85	4.18	4.51	4.92	5.29	5.56	5.96	
AEO 1995		1.89	2.00	1.95	2.06	2.15	2.40	2.57	2.90	3.16	3.56	3.87	4.27	4.56	4.85	5.16	5.41	5.66	
AEO 1996			1.63	1.74	1.86	1.99	2.10	2.19	2.29	2.38	2.48	2.59	2.72	2.84	2.97	3.12	3.29	3.49	3.73
AEO 1997				2.03	1.82	1.90	1.99	2.06	2.13	2.21	2.32	2.43	2.54	2.65	2.77	2.88	3.00	3.11	3.24
AEO 1998					2.30	2.20	2.26	2.31	2.38	2.44	2.52	2.60	2.69	2.79	2.93	3.06	3.20	3.35	3.48
AEO 1999						1.98	2.15	2.20	2.32	2.43	2.53	2.63	2.76	2.90	3.02	3.12	3.23	3.35	3.47
AEO 2000							2.15	2.23	2.27	2.32	2.40	2.51	2.66	2.81	2.97	3.10	3.20	3.29	3.39
AEO 2001								3.39	3.48	2.97	2.74	2.70	2.83	2.95	3.06	3.17	3.25	3.35	3.44
AEO 2002									4.03	2.06	2.53	2.84	3.01	3.13	3.23	3.40	3.52	3.65	3.82
AEO 2003										2.79	3.26	3.13	3.15	3.15	3.30	3.51	3.70	3.95	4.12
AEO 2004											4.97	4.00	3.72	3.73	3.86	4.07	3.97	3.99	4.30
AEO 2005												5.38	5.52	4.95	4.57	4.23	4.21	4.18	4.29
AEO 2006													7.81	7.16	6.53	6.27	5.92	5.69	5.54
AEO 2007														6.87	7.00	7.07	6.61	6.40	6.03
AEO 2008															6.37	6.87	7.17	6.85	6.61
AEO 2009																8.06	4.12	4.81	5.23
AEO 2010																	3.38	4.17	5.39
AEO 2011																		4.12	4.19
AEO 2012																			3.89
<b>Actual in Nominal\$</b>	2.04	1.85	1.55	2.17	2.32	1.96	2.19	3.68	4.00	2.95	4.88	5.46	7.33	6.39	6.25	7.97	3.67	4.48	3.95
<b>Average Absolute Difference</b>	0.06	0.16	0.41	0.26	0.30	0.22	0.19	1.19	1.24	0.47	1.91	2.25	3.72	2.64	2.25	3.46	1.00	1.01	0.78

**Projected vs. Actual**

(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	-2.8	14.9	46.2	11.0	11.5	39.2	30.4	-19.0	-21.5	13.4	-26.4	-29.5	-42.9	-29.4	-21.4	-33.6	51.5	33.0	
AEO 1995		2.3	28.9	-10.0	-11.0	9.8	9.6	-30.2	-27.6	7.1	-27.1	-29.1	-41.8	-28.6	-22.4	-35.3	47.5	26.4	
AEO 1996			5.2	-19.8	-19.7	1.6	-3.9	-40.4	-42.8	-19.4	-49.3	-52.6	-62.9	-55.6	-52.5	-60.9	-10.2	-22.2	-5.6
AEO 1997				-6.3	-21.4	-2.8	-9.2	-43.9	-46.6	-25.0	-52.5	-55.5	-65.3	-58.5	-55.7	-63.9	-18.3	-30.6	-18.0
AEO 1998					-1.0	12.1	3.0	-37.2	-40.5	-17.1	-48.4	-52.5	-63.3	-56.3	-53.2	-61.6	-12.7	-25.2	-11.8
AEO 1999						0.9	-1.9	-40.1	-42.1	-17.8	-48.1	-51.8	-62.4	-54.6	-51.7	-60.8	-11.9	-25.2	-12.0
AEO 2000							-2.0	-39.3	-43.3	-21.4	-50.9	-54.0	-63.7	-56.0	-52.5	-61.1	-12.9	-26.6	-14.2
AEO 2001								-7.8	-12.9	0.8	-43.9	-50.5	-61.4	-53.9	-51.0	-60.2	-11.3	-25.2	-13.0
AEO 2002									0.6	-30.1	-48.1	-47.9	-59.0	-51.0	-48.3	-57.4	-4.2	-18.5	-3.4
AEO 2003										-5.6	-33.2	-42.8	-57.1	-50.8	-47.1	-56.0	0.9	-11.8	4.3
AEO 2004											1.9	-26.8	-49.3	-41.7	-38.2	-48.9	8.2	-10.9	8.9
AEO 2005												-1.4	-24.7	-22.6	-26.9	-46.9	14.8	-6.7	8.5
AEO 2006													6.5	12.1	4.4	-21.3	61.4	27.0	40.3
AEO 2007														7.5	12.1	-11.3	80.2	42.8	52.7
AEO 2008															1.9	-13.8	95.5	52.8	67.4
AEO 2009																1.1	12.2	7.5	32.3
AEO 2010																	-7.9	-6.9	36.4
AEO 2011																		-8.1	6.0
AEO 2012																			-1.5
<b>Average Absolute Percent Difference</b>	2.8	8.6	26.8	11.8	12.9	11.1	8.6	32.2	30.9	15.8	39.1	41.2	50.8	41.3	36.0	43.4	27.2	22.6	19.8

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012) , Table 6.7.

**Table 8. Total Natural Gas Consumption, Projected vs. Actual**

**Projected**

(trillion cubic feet)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	19.87	20.21	20.64	20.99	21.20	21.42	21.60	21.99	22.37	22.63	22.95	23.22	23.58	23.82	24.09	24.13	24.02	24.14	
AEO 1995		20.82	20.66	20.85	21.21	21.65	21.95	22.12	22.25	22.43	22.62	22.87	23.08	23.36	23.61	24.08	24.23	24.59	
AEO 1996			21.32	21.64	22.11	22.21	22.26	22.34	22.46	22.74	23.14	23.63	24.08	24.25	24.63	25.11	25.56	26.00	26.63
AEO 1997				22.15	22.75	23.24	23.64	23.86	24.13	24.65	25.34	25.82	26.22	26.52	27.00	27.35	27.70	28.01	28.47
AEO 1998					21.84	23.03	23.84	24.08	24.44	24.81	25.33	25.72	26.22	26.65	27.22	27.84	28.35	28.84	29.17
AEO 1999						21.35	22.36	22.54	23.18	23.65	24.17	24.57	25.19	25.77	26.41	26.92	27.42	28.02	28.50
AEO 2000							21.46	22.36	22.19	22.42	22.92	23.27	23.91	24.53	25.25	25.84	26.22	26.95	27.47
AEO 2001								22.00	22.67	23.55	24.37	24.96	25.24	25.70	26.01	26.59	27.24	28.05	28.61
AEO 2002									22.22	23.89	24.73	25.20	25.50	26.00	26.43	26.96	27.46	28.13	28.93
AEO 2003										23.20	24.00	24.48	24.60	24.98	25.21	25.98	26.52	27.06	27.68
AEO 2004											22.09	23.17	23.53	24.04	24.50	25.12	25.43	26.15	26.71
AEO 2005												22.14	22.32	22.64	23.07	23.95	24.64	25.44	26.23
AEO 2006													22.21	22.17	22.38	22.87	23.05	23.35	23.84
AEO 2007														21.72	22.68	23.40	23.77	24.02	24.18
AEO 2008															22.90	23.12	23.31	23.25	23.37
AEO 2009																23.04	22.55	21.89	21.45
AEO 2010																	22.59	22.51	21.99
AEO 2011																		23.83	23.86
AEO 2012																			24.52
<b>Actual</b>	20.79	21.25	22.21	22.61	22.74	22.25	22.41	23.33	22.24	23.03	22.28	22.40	22.01	21.70	23.10	23.28	22.91	23.78	24.37
<b>Average Absolute Difference</b>	0.92	0.73	1.33	1.20	0.92	0.69	0.72	0.99	0.65	0.75	1.54	1.73	2.27	2.74	1.84	1.97	2.47	2.25	2.49

**Projected vs. Actual**

(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	-4.4	-4.9	-7.1	-7.2	-6.8	-3.7	-3.6	-5.8	0.6	-1.7	3.0	3.6	7.1	9.8	4.3	3.7	4.8	1.5	
AEO 1995		-2.0	-7.0	-7.8	-6.7	-2.7	-2.0	-5.2	0.1	-2.6	1.5	2.1	4.8	7.7	2.2	3.4	5.8	3.4	
AEO 1996			-4.0	-4.3	-2.8	-0.2	-0.6	-4.3	1.0	-1.2	3.9	5.5	9.4	11.8	6.6	7.9	11.6	9.4	9.3
AEO 1997				-2.0	0.1	4.5	5.5	2.3	8.5	7.0	13.8	15.3	19.1	22.2	16.9	17.5	20.9	17.8	16.8
AEO 1998					-3.9	3.5	6.4	3.2	9.9	7.7	13.7	14.8	19.1	22.8	17.8	19.6	23.7	21.3	19.7
AEO 1999						-4.0	-0.2	-3.4	4.2	2.7	8.5	9.7	14.4	18.7	14.3	15.6	19.7	17.9	17.0
AEO 2000							-4.2	-4.2	-0.2	-2.6	2.9	3.9	8.6	13.1	9.3	11.0	14.4	13.4	12.7
AEO 2001								-5.7	1.9	2.3	9.4	11.4	14.7	18.4	12.6	14.2	18.9	18.0	17.4
AEO 2002									-0.1	3.7	11.0	12.5	15.8	19.8	14.4	15.8	19.9	18.3	18.7
AEO 2003										0.8	7.7	9.3	11.8	15.1	9.1	11.6	15.7	13.8	13.6
AEO 2004											-0.8	3.4	6.9	10.8	6.0	7.9	11.0	10.0	9.6
AEO 2005												-1.2	1.4	4.3	-0.1	2.9	7.5	7.0	7.6
AEO 2006													0.9	2.2	-3.1	-1.7	0.6	-1.8	-2.2
AEO 2007														0.1	-1.8	0.5	3.7	1.0	-0.8
AEO 2008															-0.9	-0.7	1.8	-2.2	-4.1
AEO 2009																-1.0	-1.6	-7.9	-12.0
AEO 2010																	-1.4	-5.3	-9.8
AEO 2011																		0.2	-2.1
AEO 2012																			0.6
<b>Average Absolute Percent Difference</b>	4.4	3.4	6.0	5.3	4.0	3.1	3.2	4.2	2.9	3.2	6.9	7.7	10.3	12.6	8.0	8.5	10.8	9.5	10.2

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 6.1.

**Table 9. Natural Gas Production, Projected vs. Actual**

**Projected**

(trillion cubic feet)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	17.71	17.68	17.84	18.12	18.25	18.43	18.58	18.93	19.28	19.51	19.80	19.92	20.13	20.18	20.38	20.35	20.16	20.19	
AEO 1995		18.28	17.98	17.92	18.21	18.63	18.92	19.08	19.20	19.36	19.52	19.75	19.94	20.17	20.28	20.60	20.59	20.88	
AEO 1996			18.90	19.15	19.52	19.59	19.59	19.65	19.73	19.97	20.36	20.82	21.25	21.37	21.68	22.11	22.47	22.83	23.36
AEO 1997				19.10	19.70	20.17	20.32	20.54	20.77	21.26	21.90	22.31	22.66	22.93	23.38	23.68	23.99	24.25	24.65
AEO 1998					18.85	19.06	20.35	20.27	20.60	20.94	21.44	21.81	22.25	22.65	23.18	23.75	24.23	24.70	24.97
AEO 1999						18.80	19.13	19.28	19.82	20.23	20.77	21.05	21.57	21.98	22.47	22.85	23.26	23.77	24.15
AEO 2000							18.36	18.89	18.47	18.50	18.88	19.15	19.70	20.27	20.90	21.42	21.74	22.46	22.92
AEO 2001								18.61	18.89	19.67	20.28	20.65	20.81	21.11	21.34	21.81	22.36	23.14	23.60
AEO 2002									19.28	19.54	20.20	20.52	20.73	21.25	21.70	22.29	22.80	23.48	24.21
AEO 2003										19.37	19.99	20.15	20.14	20.43	20.51	21.09	21.46	21.88	22.39
AEO 2004											19.57	19.51	19.58	19.66	19.95	20.21	20.25	20.50	20.80
AEO 2005												18.91	19.27	19.24	19.49	19.90	20.44	20.42	20.91
AEO 2006													18.14	18.16	18.00	18.38	18.47	18.58	18.92
AEO 2007														18.57	19.12	19.41	19.41	19.35	19.22
AEO 2008															19.00	19.18	19.28	19.29	19.26
AEO 2009																20.48	20.61	20.02	19.81
AEO 2010																	20.60	20.01	19.46
AEO 2011																		21.28	21.06
AEO 2012																			22.95
<b>Actual</b>	18.10	18.82	18.60	18.85	18.90	19.02	18.83	19.18	19.62	18.93	19.10	18.59	18.05	18.50	19.27	20.16	20.62	21.33	23.00
<b>Average Absolute Difference</b>	0.39	0.84	0.56	0.55	0.56	0.49	0.70	0.53	0.60	0.99	1.19	1.79	2.42	2.12	1.72	1.41	1.36	1.59	1.90

**Projected vs. Actual**

(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	-2.1	-6.1	-4.1	-3.9	-3.5	-3.1	-1.3	-1.3	-1.7	3.1	3.7	7.1	11.5	9.1	5.8	0.9	-2.2	-5.4	
AEO 1995		-2.9	-3.3	-5.0	-3.7	-2.1	0.5	-0.5	-2.1	2.3	2.2	6.2	10.5	9.0	5.3	2.2	-0.2	-2.1	
AEO 1996			1.6	1.6	3.3	3.0	4.0	2.4	0.6	5.5	6.6	12.0	17.7	15.5	12.5	9.7	9.0	7.0	1.6
AEO 1997				1.3	4.2	6.0	7.9	7.1	5.9	12.3	14.7	20.0	25.5	23.9	21.4	17.5	16.3	13.7	7.2
AEO 1998					-0.3	0.2	8.1	5.7	5.0	10.7	12.3	17.3	23.3	22.4	20.3	17.8	17.5	15.8	8.6
AEO 1999						-1.2	1.6	0.5	1.0	6.9	8.7	13.2	19.5	18.8	16.6	13.4	12.8	11.4	5.0
AEO 2000							-2.5	-1.5	-5.9	-2.2	-1.1	3.0	9.1	9.5	8.5	6.3	5.4	5.3	-0.4
AEO 2001								-3.0	-3.7	3.9	6.2	11.1	15.3	14.1	10.8	8.2	8.4	8.5	2.6
AEO 2002									-1.7	3.2	5.7	10.4	14.8	14.9	12.6	10.6	10.6	10.1	5.3
AEO 2003										2.3	4.7	8.4	11.6	10.4	6.5	4.6	4.1	2.6	-2.6
AEO 2004											2.4	4.9	8.5	6.3	3.6	0.3	-1.8	-3.9	-9.6
AEO 2005												1.7	6.8	4.0	1.2	-1.3	-0.9	-4.3	-9.1
AEO 2006													0.5	-1.9	-6.6	-8.8	-10.4	-12.9	-17.7
AEO 2007														0.4	-0.7	-3.7	-5.9	-9.3	-16.4
AEO 2008															-1.4	-4.9	-6.5	-9.6	-16.3
AEO 2009																1.6	-0.1	-6.2	-13.9
AEO 2010																	-0.1	-6.2	-15.4
AEO 2011																		-0.3	-8.4
AEO 2012																			-0.2
<b>Average Absolute Percent Difference</b>	2.1	4.5	3.0	2.9	3.0	2.6	3.7	2.8	3.1	5.2	6.2	9.6	13.4	11.4	8.9	7.0	6.6	7.5	8.2

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012) , Table 6.1.

**Table 10. Natural Gas Net Imports, Projected vs. Actual**

**Projected**

(trillion cubic feet)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	2.02	2.40	2.66	2.74	2.81	2.85	2.89	2.93	2.95	2.97	3.00	3.16	3.31	3.50	3.57	3.63	3.74	3.85	
AEO 1995		2.46	2.54	2.80	2.87	2.87	2.89	2.90	2.90	2.92	2.95	2.97	3.00	3.03	3.19	3.35	3.51	3.60	
AEO 1996			2.56	2.75	2.85	2.88	2.93	2.98	3.02	3.06	3.07	3.09	3.12	3.17	3.23	3.29	3.37	3.46	3.56
AEO 1997				2.82	2.96	3.16	3.43	3.46	3.50	3.53	3.58	3.64	3.69	3.74	3.78	3.83	3.87	3.92	3.97
AEO 1998					2.95	3.19	3.53	3.84	3.87	3.89	3.94	3.98	4.02	4.06	4.11	4.16	4.22	4.28	4.34
AEO 1999						2.92	3.16	3.29	3.41	3.44	3.47	3.59	3.68	3.85	4.00	4.12	4.21	4.35	4.45
AEO 2000							3.42	3.65	3.85	4.00	4.10	4.14	4.19	4.24	4.32	4.38	4.45	4.52	4.57
AEO 2001								3.51	3.76	3.88	4.07	4.33	4.48	4.65	4.74	4.86	4.97	5.06	5.16
AEO 2002									3.68	3.74	4.04	4.31	4.50	4.58	4.68	4.72	4.80	4.89	4.97
AEO 2003										3.17	3.32	3.67	3.86	3.98	4.17	4.41	4.62	4.78	4.88
AEO 2004											3.51	3.60	3.87	4.28	4.43	4.78	5.04	5.50	5.76
AEO 2005												3.28	3.37	3.64	3.75	4.13	4.20	4.94	5.16
AEO 2006													3.39	3.65	4.00	4.09	4.16	4.35	4.49
AEO 2007														3.29	3.43	3.87	4.24	4.55	4.84
AEO 2008															3.80	3.85	3.95	3.85	4.01
AEO 2009																3.03	2.73	2.34	1.99
AEO 2010																	2.76	2.82	2.78
AEO 2011																		2.74	2.75
AEO 2012																			1.90
<b>Actual</b>	2.21	2.46	2.69	2.78	2.84	2.99	3.42	3.54	3.60	3.50	3.26	3.40	3.61	3.46	3.79	3.02	2.68	2.60	1.95
<b>Average Absolute Difference</b>	0.19	0.03	0.10	0.03	0.06	0.14	0.28	0.32	0.33	0.35	0.43	0.43	0.40	0.50	0.40	1.01	1.37	1.52	2.15

**Projected vs. Actual**

(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	-8.6	-2.5	-1.0	-1.6	-1.0	-4.8	-15.5	-17.2	-18.1	-15.1	-8.1	-7.2	-8.4	1.1	-5.7	20.2	39.6	47.9	
AEO 1995		-0.1	-5.5	0.6	1.2	-4.1	-15.5	-18.0	-19.5	-16.6	-9.6	-12.8	-17.0	-12.5	-15.7	10.9	31.0	38.3	
AEO 1996			-4.7	-1.2	0.5	-3.8	-14.4	-15.8	-16.2	-12.6	-5.9	-9.2	-13.6	-8.4	-14.7	8.9	25.8	32.9	82.9
AEO 1997				1.3	4.3	5.6	0.2	-2.2	-2.9	0.9	9.7	6.9	2.1	8.0	-0.1	26.8	44.5	50.5	104.0
AEO 1998					4.0	6.6	3.2	8.6	7.4	11.3	20.6	16.8	11.3	17.3	8.5	37.9	57.6	64.3	123.0
AEO 1999						-2.4	-7.5	-6.9	-5.3	-1.7	6.4	5.4	1.9	11.1	5.7	36.3	57.0	67.2	128.6
AEO 2000							-0.1	3.0	6.7	14.4	25.5	21.6	16.0	22.5	14.0	45.1	66.0	73.4	134.9
AEO 2001								-0.6	4.4	10.8	24.6	27.3	23.9	34.3	25.2	60.8	85.4	94.3	164.9
AEO 2002									2.2	7.0	23.7	26.7	24.6	32.3	23.6	56.2	79.3	87.8	155.4
AEO 2003										-9.3	1.6	7.9	6.8	15.1	10.3	46.0	72.4	83.8	150.8
AEO 2004											7.5	5.8	7.1	23.5	17.0	58.3	88.1	111.1	195.7
AEO 2005												-3.7	-6.7	5.2	-1.0	36.7	56.8	89.7	165.3
AEO 2006													-6.0	5.3	5.6	35.4	55.3	66.9	130.6
AEO 2007														-5.0	-9.4	28.3	58.2	74.7	148.5
AEO 2008															0.5	27.3	47.3	47.7	105.8
AEO 2009																0.3	2.1	-10.2	2.4
AEO 2010																	3.0	8.3	42.6
AEO 2011																		5.3	41.4
AEO 2012																			-2.4
<b>Average Absolute Percent Difference</b>	8.6	1.3	3.7	1.2	2.2	4.5	8.1	9.0	9.2	10.0	13.0	12.6	11.2	14.4	10.5	33.5	51.1	58.6	110.5

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012) , Table 6.1.

**Table 11a. Coal Prices to Electric Generating Plants, Projected vs. Actual**

**Projected Price in Constant Dollars**

(constant dollars per million Btu in "dollar year" specific to each AEO)

AEO Dollar Year	AEO																			
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
AEO 1994	1992	1.47	1.48	1.53	1.57	1.58	1.57	1.61	1.63	1.68	1.69	1.70	1.72	1.70	1.76	1.79	1.81	1.88	1.92	
AEO 1995	1993		1.39	1.39	1.38	1.40	1.40	1.39	1.39	1.42	1.41	1.43	1.44	1.45	1.46	1.46	1.46	1.47	1.50	
AEO 1996	1994			1.32	1.29	1.28	1.27	1.26	1.26	1.25	1.27	1.27	1.28	1.27	1.28	1.27	1.28	1.27	1.28	1.28
AEO 1997	1995				1.33	1.32	1.31	1.31	1.29	1.30	1.29	1.26	1.24	1.24	1.25	1.24	1.22	1.21	1.20	1.17
AEO 1998	1996					1.25	1.23	1.22	1.20	1.19	1.17	1.16	1.15	1.14	1.12	1.11	1.10	1.10	1.09	1.07
AEO 1999	1997						1.23	1.21	1.19	1.18	1.17	1.16	1.15	1.14	1.12	1.11	1.09	1.07	1.06	1.04
AEO 2000	1998							1.26	1.24	1.19	1.16	1.14	1.12	1.11	1.10	1.10	1.09	1.06	1.07	1.06
AEO 2001	1999								1.20	1.19	1.18	1.16	1.15	1.13	1.12	1.10	1.08	1.06	1.05	1.04
AEO 2002	2000									1.20	1.16	1.15	1.15	1.13	1.10	1.09	1.07	1.06	1.05	1.05
AEO 2003	2001										1.22	1.22	1.22	1.22	1.21	1.20	1.19	1.18	1.17	1.17
AEO 2004	2002											1.24	1.23	1.23	1.23	1.22	1.23	1.23	1.22	1.22
AEO 2005	2003												1.28	1.29	1.29	1.28	1.28	1.27	1.25	1.24
AEO 2006	2004													1.50	1.53	1.51	1.50	1.47	1.48	1.45
AEO 2007	2005														1.67	1.69	1.70	1.70	1.71	1.67
AEO 2008	2006															1.73	1.77	1.82	1.84	1.81
AEO 2009	2007																1.93	1.98	1.86	1.87
AEO 2010	2008																	2.15	1.99	1.98
AEO 2011	2009																		2.26	2.22
AEO 2012	2010																			2.34
<b>Actual in Nominal\$</b>		1.39	1.36	1.32	1.29	1.27	1.25	1.22	1.20	1.23	1.25	1.28	1.36	1.54	1.69	1.77	2.07	2.21	2.27	2.40
<b>Average Absolute Difference</b>		0.11	0.12	0.15	0.17	0.16	0.16	0.18	0.19	0.17	0.15	0.14	0.14	0.18	0.23	0.24	0.38	0.45	0.47	0.54

**Projected vs. Actual**

(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	8.5	14.0	23.7	32.2	37.1	40.1	50.1	57.3	61.5	62.7	63.2	59.8	44.1	40.4	40.2	24.0	21.6	22.6	
AEO 1995		4.7	9.9	13.7	18.9	22.2	26.8	31.3	33.6	32.8	34.3	30.9	20.3	13.9	11.9	-2.2	-6.9	-6.3	
AEO 1996			2.1	4.3	6.4	8.5	12.7	16.3	15.3	16.8	17.0	13.1	4.0	-2.8	-4.1	-16.7	-20.7	-22.8	-24.2
AEO 1997				4.9	7.3	9.5	14.6	17.2	17.3	16.1	13.3	8.5	-1.7	-6.1	-8.8	-21.6	-26.5	-28.3	-32.5
AEO 1998					-0.1	1.1	4.7	6.6	5.2	4.1	2.5	-2.0	-11.3	-17.5	-19.8	-30.5	-34.6	-36.2	-39.0
AEO 1999						-0.6	2.3	4.4	3.1	2.2	0.9	-3.5	-12.7	-19.1	-21.3	-32.6	-37.1	-38.6	-41.8
AEO 2000							5.1	7.1	2.0	0.1	-2.4	-6.6	-15.7	-21.3	-23.1	-33.2	-38.3	-38.8	-41.3
AEO 2001								1.9	0.5	0.1	-1.5	-5.9	-15.1	-21.3	-24.1	-34.8	-39.4	-40.7	-43.3
AEO 2002									-0.7	-3.8	-4.6	-7.7	-17.5	-24.2	-26.4	-36.5	-40.7	-42.0	-44.1
AEO 2003										-1.1	-1.0	-4.7	-12.3	-18.4	-20.7	-31.3	-35.7	-36.9	-39.2
AEO 2004											-1.1	-4.7	-13.2	-18.7	-20.4	-30.1	-34.1	-35.1	-37.3
AEO 2005												-3.0	-11.1	-16.2	-18.4	-28.8	-33.3	-35.0	-37.6
AEO 2006													0.3	-3.5	-6.1	-18.8	-24.6	-25.2	-29.2
AEO 2007														2.1	1.5	-10.6	-15.7	-16.6	-21.3
AEO 2008															0.7	-10.1	-12.8	-13.0	-17.0
AEO 2009																-4.6	-7.5	-14.3	-16.7
AEO 2010																	-1.8	-10.3	-13.8
AEO 2011																		1.0	-4.1
AEO 2012																			-0.3
<b>Average Absolute Percent Difference</b>	8.5	9.4	11.9	13.8	14.0	13.7	16.6	17.8	15.5	14.0	12.9	12.5	13.8	16.1	16.5	22.9	25.4	25.8	28.4

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, September 2012 Monthly Energy Review, DOE/EIA-0035(2012/09) (Washington, DC, September 26, 2012), Table 9.10. Bureau of Economic Analysis, US Dept. of Commerce, October 2012.

**Table 11b. Coal Prices to Electric Generating Plants, Projected vs. Actual**

**Projected Price in Nominal Dollars**  
(nominal dollars per million Btu)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	1.50	1.55	1.64	1.73	1.78	1.82	1.92	2.01	2.13	2.22	2.30	2.41	2.46	2.64	2.78	2.90	3.12	3.30	
AEO 1995		1.42	1.46	1.49	1.55	1.59	1.62	1.67	1.76	1.80	1.89	1.97	2.05	2.13	2.21	2.28	2.38	2.50	
AEO 1996			1.35	1.35	1.37	1.39	1.42	1.46	1.50	1.56	1.62	1.67	1.75	1.80	1.87	1.92	2.01	2.05	2.16
AEO 1997				1.36	1.38	1.40	1.44	1.46	1.51	1.54	1.55	1.58	1.62	1.70	1.74	1.77	1.81	1.85	1.87
AEO 1998					1.28	1.28	1.30	1.32	1.34	1.36	1.37	1.39	1.42	1.45	1.47	1.51	1.55	1.58	1.61
AEO 1999						1.24	1.25	1.25	1.27	1.29	1.31	1.32	1.33	1.35	1.36	1.37	1.39	1.42	1.43
AEO 2000							1.28	1.27	1.24	1.24	1.24	1.25	1.26	1.28	1.30	1.32	1.32	1.35	1.37
AEO 2001								1.22	1.24	1.25	1.26	1.28	1.29	1.30	1.30	1.30	1.30	1.31	1.33
AEO 2002									1.22	1.21	1.23	1.27	1.27	1.28	1.29	1.31	1.33	1.35	1.38
AEO 2003										1.23	1.27	1.30	1.34	1.35	1.36	1.37	1.39	1.40	1.43
AEO 2004											1.26	1.27	1.29	1.31	1.34	1.37	1.41	1.44	1.48
AEO 2005												1.31	1.34	1.37	1.38	1.41	1.42	1.44	1.46
AEO 2006													1.53	1.60	1.61	1.63	1.63	1.68	1.68
AEO 2007														1.72	1.78	1.83	1.86	1.89	1.89
AEO 2008															1.78	1.85	1.93	1.99	1.99
AEO 2009																1.97	2.05	1.93	1.97
AEO 2010																	2.18	2.05	2.07
AEO 2011																		2.28	2.27
AEO 2012																			2.39
<b>Actual in Nominal\$</b>	1.39	1.36	1.32	1.29	1.27	1.25	1.22	1.20	1.23	1.25	1.28	1.36	1.54	1.69	1.77	2.07	2.21	2.27	2.40
<b>Average Absolute Difference</b>	0.12	0.13	0.17	0.19	0.20	0.21	0.25	0.26	0.24	0.23	0.23	0.23	0.27	0.32	0.34	0.51	0.57	0.59	0.65

**Projected vs. Actual**  
(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	8.5	14.4	24.6	34.0	40.1	45.5	58.2	67.3	73.3	77.4	80.0	77.0	59.8	56.0	56.8	40.2	41.2	45.3	
AEO 1995		4.9	11.0	15.5	21.4	26.7	33.2	39.1	42.7	44.3	47.7	44.8	33.0	26.3	24.6	10.2	7.5	10.3	
AEO 1996			2.1	4.8	7.5	11.2	16.9	21.6	21.5	24.9	26.6	23.1	13.6	6.6	5.7	-7.0	-9.2	-9.7	-10.1
AEO 1997				5.4	8.4	12.1	18.6	21.9	22.7	22.9	21.0	16.2	5.2	0.6	-1.8	-14.6	-18.0	-18.4	-22.0
AEO 1998					0.2	2.6	7.2	9.6	8.5	8.5	7.4	2.6	-7.6	-14.5	-16.7	-27.3	-30.1	-30.5	-32.8
AEO 1999						-0.7	2.6	4.6	3.4	3.2	2.1	-3.1	-13.3	-20.3	-22.9	-33.7	-37.1	-37.7	-40.3
AEO 2000							5.0	6.2	0.7	-0.9	-3.5	-8.4	-18.2	-24.4	-26.6	-36.3	-40.4	-40.4	-42.8
AEO 2001								2.0	0.4	0.4	-1.2	-6.2	-16.3	-23.3	-26.8	-37.3	-41.2	-42.1	-44.8
AEO 2002									-0.8	-3.5	-3.7	-6.9	-17.3	-24.4	-26.8	-36.7	-40.0	-40.7	-42.6
AEO 2003										-1.3	-0.6	-4.5	-13.2	-20.2	-23.1	-33.7	-37.3	-38.1	-40.4
AEO 2004											-1.7	-6.6	-16.0	-22.2	-24.5	-33.7	-36.4	-36.6	-38.4
AEO 2005												-3.6	-12.8	-19.0	-21.9	-32.1	-35.6	-36.6	-39.0
AEO 2006													-0.4	-5.4	-9.0	-21.4	-26.2	-26.2	-29.9
AEO 2007														1.9	0.7	-11.7	-16.0	-16.5	-21.4
AEO 2008															0.4	-10.8	-12.7	-12.5	-16.9
AEO 2009																-4.7	-7.4	-14.9	-18.0
AEO 2010																	-1.2	-9.6	-13.9
AEO 2011																		0.5	-5.2
AEO 2012																			-0.3
<b>Average Absolute Percent Difference</b>	8.5	9.6	12.6	14.9	15.5	16.5	20.2	21.5	19.3	18.7	17.8	16.9	17.5	18.9	19.2	24.5	25.7	25.9	27.0

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, September 2012 Monthly Energy Review, DOE/EIA-0035(2012/09) (Washington, DC, September 26, 2012), Table 9.10.



**Table 12. Total Coal Consumption, Projected vs. Actual**

<b>Projected</b> (million short tons)																			
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	920	928	933	938	943	948	953	958	962	967	978	990	987	992	1006	1035	1061	1079	
AEO 1995		935	940	941	947	948	951	954	958	963	971	984	992	996	1002	1013	1025	1039	
AEO 1996			937	942	954	962	983	990	1004	1017	1027	1033	1046	1067	1070	1071	1074	1082	1087
AEO 1997				948	970	987	1003	1017	1020	1025	1034	1041	1054	1075	1086	1092	1092	1099	1104
AEO 1998					1009	1051	1044	1058	1087	1084	1090	1097	1112	1130	1142	1148	1160	1162	1180
AEO 1999						1040	1075	1092	1109	1113	1118	1120	1120	1133	1139	1150	1155	1156	1173
AEO 2000							1053	1086	1103	1124	1142	1164	1175	1184	1189	1194	1199	1195	1200
AEO 2001								1078	1112	1135	1153	1165	1183	1191	1220	1228	1228	1235	1240
AEO 2002									1088	1092	1126	1147	1176	1199	1227	1235	1243	1251	1256
AEO 2003										1040	1059	1082	1106	1138	1172	1185	1200	1218	1231
AEO 2004											1100	1098	1126	1156	1183	1193	1216	1229	1240
AEO 2005												1102	1137	1159	1189	1210	1224	1229	1237
AEO 2006													1144	1150	1172	1196	1224	1233	1245
AEO 2007														1135	1147	1152	1169	1195	1222
AEO 2008															1127	1126	1135	1145	1181
AEO 2009																1109	1077	1117	1152
AEO 2010																	1015	1035	1094
AEO 2011																		1055	1026
AEO 2012																			1039
<b>Actual</b>	944	951	962	1006	1030	1037	1039	1084	1060	1066	1095	1107	1126	1112	1128	1121	997	1051	1003
<b>Average Absolute Difference</b>	24	20	25	64	65	53	46	57	55	54	52	50	50	55	57	61	150	105	168
<b>Projected vs. Actual</b> (percent difference)																			
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	-2.6	-2.4	-3.0	-6.8	-8.4	-8.6	-8.2	-11.6	-9.3	-9.3	-10.7	-10.6	-12.3	-10.8	-10.8	-7.6	6.4	2.6	
AEO 1995		-1.7	-2.3	-6.5	-8.0	-8.6	-8.4	-12.0	-9.6	-9.7	-11.3	-11.1	-11.9	-10.5	-11.2	-9.6	2.8	-1.2	
AEO 1996			-2.6	-6.4	-7.3	-7.2	-5.4	-8.7	-5.3	-4.6	-6.2	-6.7	-7.1	-4.1	-5.1	-4.4	7.7	2.9	8.4
AEO 1997				-5.8	-5.8	-4.8	-3.4	-6.2	-3.8	-3.9	-5.6	-6.0	-6.4	-3.4	-3.7	-2.5	9.5	4.5	10.1
AEO 1998					-2.0	1.3	0.5	-2.4	2.5	1.7	-0.5	-0.9	-1.3	1.6	1.3	2.5	16.3	10.5	17.6
AEO 1999						0.3	3.5	0.8	4.6	4.4	2.2	1.1	-0.5	1.9	1.0	2.6	15.8	10.0	16.9
AEO 2000							1.4	0.2	4.1	5.4	4.3	5.2	4.4	6.5	5.4	6.5	20.2	13.7	19.7
AEO 2001								-0.6	4.9	6.4	5.3	5.2	5.0	7.1	8.2	9.6	23.2	17.4	23.6
AEO 2002									2.6	2.4	2.8	3.6	4.4	7.8	8.7	10.2	24.6	19.0	25.2
AEO 2003										-2.5	-3.2	-2.2	-1.8	2.3	3.9	5.8	20.3	15.9	22.7
AEO 2004											0.4	-0.9	0.0	3.9	4.9	6.5	21.9	16.9	23.6
AEO 2005												-0.5	0.9	4.2	5.4	8.0	22.7	16.9	23.3
AEO 2006													1.6	3.4	3.9	6.7	22.8	17.3	24.1
AEO 2007														2.0	1.7	2.8	17.2	13.6	21.8
AEO 2008															-0.1	0.5	13.8	8.9	17.8
AEO 2009																-1.0	7.9	6.3	14.9
AEO 2010																	1.8	-1.5	9.0
AEO 2011																		0.3	2.3
AEO 2012																			3.5
<b>Average Absolute Percent Difference</b>	2.6	2.1	2.6	6.4	6.3	5.1	4.4	5.3	5.2	5.0	4.8	4.5	4.4	4.9	5.0	5.4	15.0	10.0	16.7

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 7.1.

**Table 13. Coal Production, Projected vs. Actual**

**Projected**

(million short tons)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	999	1021	1041	1051	1056	1066	1073	1081	1087	1098	1107	1122	1121	1128	1143	1173	1201	1223	
AEO 1995		1006	1010	1011	1016	1017	1021	1027	1033	1040	1051	1066	1076	1083	1090	1108	1122	1137	
AEO 1996			1037	1044	1041	1045	1061	1070	1086	1100	1112	1121	1135	1156	1161	1167	1173	1184	1190
AEO 1997				1028	1052	1072	1088	1105	1110	1115	1123	1133	1146	1171	1182	1190	1193	1201	1209
AEO 1998					1088	1122	1128	1145	1176	1176	1183	1191	1207	1229	1239	1249	1261	1265	1284
AEO 1999						1125	1154	1168	1187	1193	1198	1199	1200	1213	1220	1232	1236	1236	1253
AEO 2000							1120	1136	1153	1174	1190	1212	1221	1231	1236	1242	1246	1242	1246
AEO 2001								1111	1136	1181	1198	1209	1226	1234	1262	1269	1268	1273	1277
AEO 2002									1168	1141	1162	1183	1211	1234	1262	1271	1279	1284	1292
AEO 2003										1085	1099	1102	1124	1156	1188	1200	1214	1231	1239
AEO 2004											1100	1121	1141	1168	1192	1199	1220	1230	1240
AEO 2005												1125	1179	1179	1207	1225	1237	1238	1242
AEO 2006													1145	1166	1204	1223	1252	1261	1266
AEO 2007														1149	1143	1145	1159	1189	1214
AEO 2008															1155	1152	1153	1166	1199
AEO 2009																1159	1109	1145	1182
AEO 2010																	1082	1062	1120
AEO 2011																		1100	1063
AEO 2012																			1093
<b>Actual</b>	954	1042	1042	1073	1098	1126	1109	1083	1138	1103	1082	1123	1145	1177	1161	1186	1089	1098	1107
<b>Average Absolute Difference</b>	45	28	12	39	47	52	38	40	41	45	62	40	39	36	46	41	112	110	112

**Projected vs. Actual**

(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	4.8	-2.0	-0.1	-2.0	-3.8	-5.3	-3.3	-0.2	-4.5	-0.5	2.3	-0.1	-2.1	-4.2	-1.5	-1.1	10.3	11.4	
AEO 1995		-3.4	-3.0	-5.7	-7.5	-9.7	-7.9	-5.1	-9.2	-5.7	-2.8	-5.1	-6.0	-8.0	-6.1	-6.6	3.1	3.6	
AEO 1996			-0.4	-2.7	-5.2	-7.2	-4.3	-1.2	-4.6	-0.3	2.8	-0.2	-0.9	-1.8	0.0	-1.6	7.8	7.8	7.5
AEO 1997				-4.2	-4.2	-4.8	-1.9	2.1	-2.4	1.1	3.8	0.9	0.1	-0.5	1.8	0.3	9.6	9.4	9.2
AEO 1998					-0.9	-0.4	1.7	5.7	3.3	6.6	9.3	6.0	5.4	4.4	6.7	5.3	15.8	15.2	16.0
AEO 1999						-0.1	4.0	7.9	4.3	8.1	10.8	6.7	4.8	3.1	5.1	3.9	13.5	12.5	13.2
AEO 2000							1.0	5.0	1.4	6.4	10.0	7.9	6.7	4.5	6.5	4.7	14.4	13.1	12.5
AEO 2001								2.6	-0.2	7.0	10.8	7.6	7.1	4.8	8.7	7.0	16.5	15.9	15.4
AEO 2002									2.6	3.4	7.4	5.3	5.8	4.9	8.7	7.2	17.5	17.0	16.7
AEO 2003										-1.7	1.6	-1.9	-1.8	-1.8	2.3	1.2	11.5	12.1	12.0
AEO 2004											1.7	-0.2	-0.3	-0.8	2.7	1.1	12.1	12.0	12.0
AEO 2005												0.2	2.9	0.1	4.0	3.3	13.6	12.8	12.2
AEO 2006													0.0	-1.0	3.7	3.1	15.0	14.8	14.4
AEO 2007														-2.4	-1.5	-3.5	6.4	8.3	9.7
AEO 2008															-0.5	-2.8	5.9	6.2	8.3
AEO 2009																-2.3	1.9	4.3	6.8
AEO 2010																	-0.6	-3.3	1.2
AEO 2011																		0.2	-4.0
AEO 2012																			-1.2
<b>Average Absolute Percent Difference</b>	4.8	2.7	1.2	3.6	4.3	4.6	3.4	3.7	3.6	4.1	5.8	3.5	3.4	3.0	4.0	3.4	10.3	10.0	10.1

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 7.1.

Note: Production includes waste coal supplied.

**Table 14a. Average Electricity Prices, Projected vs. Actual**

**Projected Price in Constant Dollars**

(constant dollars, cents per kilowatt-hour in "dollar year" specific to each AEO)

	AEO Dollar Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1995	1993		6.80	6.80	6.70	6.70	6.70	6.70	6.70	6.80	6.80	6.90	6.90	6.90	7.00	7.00	7.10	7.10	7.20	
AEO 1996	1994			7.09	6.99	6.94	6.93	6.96	6.96	6.96	6.97	6.98	6.97	6.98	6.95	6.95	6.94	6.96	6.95	6.91
AEO 1997	1995				6.94	6.89	6.90	6.91	6.86	6.84	6.78	6.73	6.66	6.60	6.58	6.54	6.49	6.48	6.45	6.36
AEO 1998	1996					6.80	6.60	6.57	6.46	6.36	6.29	6.26	6.18	6.12	6.05	6.01	5.97	5.94	5.91	5.81
AEO 1999	1997						6.70	6.67	6.58	6.48	6.38	6.41	6.41	6.35	6.32	6.26	6.20	6.17	6.14	6.05
AEO 2000	1998							6.60	6.57	6.45	6.31	6.25	6.19	6.09	6.09	6.07	6.03	5.95	5.97	5.90
AEO 2001	1999								6.80	6.75	6.53	6.44	6.38	6.19	6.12	5.99	5.91	5.87	5.87	5.84
AEO 2002	2000									7.06	6.71	6.52	6.50	6.43	6.35	6.32	6.32	6.32	6.34	6.37
AEO 2003	2001										6.90	6.62	6.56	6.50	6.37	6.33	6.32	6.38	6.36	6.39
AEO 2004	2002											7.13	6.96	6.84	6.73	6.63	6.63	6.67	6.64	6.64
AEO 2005	2003												7.41	7.39	7.12	6.81	6.65	6.64	6.61	6.60
AEO 2006	2004													8.34	8.21	7.82	7.56	7.42	7.31	7.19
AEO 2007	2005														8.32	8.30	8.29	8.20	8.07	7.88
AEO 2008	2006															8.90	9.06	9.35	9.18	8.93
AEO 2009	2007																9.49	9.11	8.28	8.56
AEO 2010	2008																	9.58	9.14	8.60
AEO 2011	2009																		9.57	9.03
AEO 2012	2010																			9.73
<b>Actual in Nominal\$</b>		6.93	6.91	6.89	6.86	6.85	6.74	6.64	6.81	7.29	7.20	7.44	7.61	8.14	8.90	9.13	9.74	9.82	9.83	9.99
<b>Average Absolute Difference</b>		0.02	0.11	0.32	0.36	0.38	0.43	0.55	0.44	0.40	0.44	0.50	0.48	0.62	0.83	0.84	1.06	1.05	1.03	1.09

**Projected vs. Actual**  
(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	0.3	2.7	6.7	9.2	11.3	14.4	19.5	19.1	15.4	18.7	18.9	19.5	15.5	10.5	10.9	7.7	9.2	12.0	
AEO 1995		0.5	2.9	3.7	5.7	8.7	11.9	11.5	8.1	11.2	11.5	12.1	8.3	3.7	4.0	1.1	1.2	3.8	
AEO 1996			5.0	6.0	7.3	10.1	13.8	13.4	8.4	11.7	10.5	10.9	7.3	0.8	1.1	-3.2	-2.8	-1.8	-1.9
AEO 1997				3.1	4.4	7.3	10.8	9.5	4.3	6.4	4.4	3.7	-0.7	-6.5	-6.8	-11.3	-11.4	-10.8	-11.6
AEO 1998					1.0	0.8	3.3	1.2	-4.8	-3.1	-4.7	-5.4	-9.6	-15.6	-15.9	-19.9	-20.4	-19.8	-20.8
AEO 1999						0.5	3.1	1.3	-4.7	-3.5	-4.2	-3.7	-7.8	-13.4	-13.9	-18.3	-18.7	-18.0	-18.9
AEO 2000							0.8	0.0	-6.2	-5.6	-7.6	-7.9	-12.6	-17.5	-17.5	-21.5	-22.5	-21.2	-21.8
AEO 2001								2.0	-3.3	-3.8	-6.2	-6.5	-12.4	-18.2	-19.8	-24.2	-24.6	-23.7	-23.6
AEO 2002									-1.0	-3.1	-7.0	-6.8	-11.0	-17.0	-17.1	-20.5	-20.6	-19.3	-18.6
AEO 2003										-2.7	-7.6	-8.1	-12.0	-18.5	-18.8	-22.4	-21.6	-20.8	-20.1
AEO 2004											-2.1	-4.0	-8.9	-15.3	-16.3	-19.8	-19.3	-18.7	-18.3
AEO 2005												0.2	-3.6	-12.3	-15.9	-21.2	-21.3	-20.8	-20.5
AEO 2006													5.9	-1.6	-6.0	-13.0	-14.4	-14.7	-15.8
AEO 2007														-3.5	-3.5	-7.6	-8.6	-8.8	-10.6
AEO 2008															0.3	-2.1	1.0	0.4	-1.8
AEO 2009																-0.5	-4.4	-12.0	-8.5
AEO 2010																	-1.6	-5.0	-10.2
AEO 2011																		-1.4	-6.5
AEO 2012																			-0.5
<b>Average Absolute Percent Difference</b>	0.3	1.6	4.9	5.5	5.9	7.0	9.0	7.2	6.2	7.0	7.7	7.4	8.9	11.0	11.2	13.4	13.1	12.9	13.5

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 8.10. Bureau of Economic Analysis, US Dept. of Commerce, October 2012.

**Table 14b. Average Electricity Prices, Projected vs. Actual**

**Projected Price in Nominal Dollars**

(nominal dollars, cents per kilowatt-hour)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	6.95	7.12	7.41	7.59	7.79	8.01	8.36	8.62	9.02	9.32	9.76	10.08	10.42	10.94	11.32	11.87	12.45	13.05	
AEO 1995		6.95	7.16	7.23	7.40	7.59	7.81	8.04	8.42	8.70	9.12	9.43	9.75	10.24	10.57	11.10	11.47	12.02	
AEO 1996			7.23	7.30	7.42	7.60	7.84	8.07	8.33	8.60	8.90	9.19	9.54	9.84	10.18	10.52	10.92	11.29	11.62
AEO 1997				7.11	7.22	7.41	7.61	7.76	7.95	8.11	8.30	8.46	8.65	8.92	9.16	9.40	9.71	9.98	10.19
AEO 1998					6.94	6.89	7.03	7.08	7.16	7.27	7.42	7.53	7.66	7.79	7.97	8.16	8.36	8.58	8.71
AEO 1999						6.77	6.87	6.91	6.97	7.02	7.21	7.36	7.46	7.59	7.70	7.83	7.99	8.18	8.30
AEO 2000							6.68	6.76	6.75	6.73	6.79	6.87	6.91	7.06	7.19	7.30	7.35	7.54	7.61
AEO 2001								6.95	7.05	6.94	7.00	7.09	7.03	7.09	7.07	7.11	7.19	7.32	7.42
AEO 2002									7.21	6.99	6.99	7.15	7.26	7.36	7.52	7.71	7.89	8.11	8.34
AEO 2003										6.99	6.90	7.01	7.10	7.10	7.18	7.30	7.51	7.64	7.84
AEO 2004											7.24	7.16	7.18	7.21	7.25	7.42	7.65	7.81	8.01
AEO 2005												7.57	7.70	7.54	7.35	7.32	7.46	7.59	7.77
AEO 2006													8.55	8.59	8.32	8.21	8.23	8.28	8.33
AEO 2007														8.57	8.74	8.89	8.95	8.97	8.91
AEO 2008															9.13	9.46	9.93	9.92	9.82
AEO 2009																9.69	9.40	8.60	8.99
AEO 2010																	9.72	9.41	8.97
AEO 2011																		9.65	9.23
AEO 2012																			9.93
<b>Actual in Nominal\$</b>	6.93	6.91	6.89	6.86	6.85	6.74	6.64	6.81	7.29	7.20	7.44	7.61	8.14	8.90	9.13	9.74	9.82	9.83	9.99
<b>Average Absolute Difference</b>	0.02	0.13	0.38	0.45	0.51	0.64	0.82	0.73	0.65	0.73	0.80	0.82	1.00	1.24	1.31	1.57	1.51	1.51	1.38

**Projected vs. Actual**

(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	0.3	3.1	7.5	10.7	13.7	18.8	25.9	26.6	23.8	29.4	31.1	32.4	28.1	22.9	24.0	21.8	26.8	32.8	
AEO 1995		0.6	3.9	5.4	8.0	12.6	17.6	18.1	15.5	20.8	22.6	24.0	19.8	15.0	15.8	13.9	16.8	22.3	
AEO 1996			5.0	6.4	8.4	12.8	18.1	18.4	14.2	19.5	19.6	20.8	17.2	10.6	11.5	8.1	11.2	14.8	16.3
AEO 1997				3.6	5.4	9.9	14.7	13.9	9.1	12.6	11.5	11.2	6.3	0.2	0.3	-3.5	-1.1	1.6	2.0
AEO 1998					1.3	2.3	5.9	4.0	-1.8	0.9	-0.2	-1.1	-5.9	-12.5	-12.7	-16.3	-14.9	-12.7	-12.8
AEO 1999						0.5	3.4	1.4	-4.4	-2.6	-3.2	-3.2	-8.4	-14.7	-15.6	-19.6	-18.6	-16.8	-16.9
AEO 2000							0.7	-0.8	-7.3	-6.5	-8.7	-9.7	-15.2	-20.7	-21.3	-25.1	-25.1	-23.3	-23.8
AEO 2001								2.1	-3.3	-3.5	-5.9	-6.8	-13.6	-20.3	-22.6	-27.0	-26.7	-25.5	-25.7
AEO 2002									-1.0	-2.9	-6.1	-6.0	-10.9	-17.3	-17.6	-20.8	-19.6	-17.5	-16.5
AEO 2003										-2.9	-7.2	-7.9	-12.8	-20.3	-21.3	-25.1	-23.5	-22.3	-21.5
AEO 2004											-2.7	-5.9	-11.8	-19.0	-20.6	-23.9	-22.5	-20.6	-19.8
AEO 2005												-0.5	-5.5	-15.3	-19.5	-24.8	-24.0	-22.8	-22.2
AEO 2006													5.1	-3.5	-8.9	-15.8	-16.2	-15.8	-16.7
AEO 2007														-3.7	-4.3	-8.7	-8.8	-8.7	-10.8
AEO 2008															0.0	-2.8	1.1	0.9	-1.7
AEO 2009																-0.5	-4.3	-12.6	-10.0
AEO 2010																	-1.0	-4.3	-10.2
AEO 2011																		-1.8	-7.6
AEO 2012																			-0.6
<b>Average Absolute Percent Difference</b>	0.3	1.8	5.5	6.5	7.4	9.5	12.3	10.7	8.9	10.2	10.8	10.8	12.3	14.0	14.4	16.1	15.4	15.4	13.8

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 8.10.

**Table 15. Total Electricity Sales, Projected vs. Actual**

**Projected**

(billion kilowatt-hours)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	2843	2891	2928	2962	3004	3039	3071	3112	3148	3185	3228	3263	3298	3332	3371	3406	3433	3469	
AEO 1995		2951	2967	2983	3026	3058	3085	3108	3134	3166	3204	3248	3285	3321	3357	3396	3433	3475	
AEO 1996			2973	2998	3039	3074	3106	3137	3173	3215	3262	3317	3363	3409	3454	3505	3553	3604	3660
AEO 1997				3075	3115	3168	3229	3290	3328	3379	3437	3497	3545	3596	3649	3697	3736	3784	3838
AEO 1998					3106	3204	3255	3318	3388	3438	3488	3546	3601	3658	3716	3775	3825	3877	3939
AEO 1999						3205	3262	3333	3402	3454	3492	3534	3585	3639	3691	3745	3793	3843	3900
AEO 2000							3288	3360	3402	3461	3523	3585	3647	3699	3753	3812	3861	3909	3958
AEO 2001								3364	3440	3530	3608	3681	3761	3838	3918	3998	4068	4147	4212
AEO 2002									3443	3502	3619	3711	3793	3869	3948	4022	4090	4170	4252
AEO 2003										3414	3527	3617	3684	3762	3848	3940	4014	4101	4183
AEO 2004											3495	3582	3669	3750	3830	3909	3977	4055	4133
AEO 2005												3547	3649	3722	3813	3912	3997	4070	4145
AEO 2006													3675	3700	3767	3847	3911	3978	4047
AEO 2007														3694	3757	3836	3891	3953	4014
AEO 2008															3744	3773	3807	3869	3927
AEO 2009																3725	3658	3737	3796
AEO 2010																	3589	3617	3728
AEO 2011																		3749	3692
AEO 2012																			3763
<b>Actual</b>	2861	2935	3013	3101	3146	3264	3312	3421	3394	3465	3494	3547	3661	3670	3765	3733	3597	3754	3726
<b>Average Absolute Difference</b>	18	30	57	97	88	140	127	169	101	111	105	110	122	124	128	153	250	199	238

**Projected vs. Actual**

(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994		-0.6	-1.5	-2.8	-4.5	-6.9	-7.3	-9.0	-7.3	-8.1	-7.6	-8.0	-9.9	-9.2	-10.5	-8.8	-4.6	-7.6	
AEO 1995		0.6	-1.5	-3.8	-3.8	-6.3	-6.9	-9.2	-7.7	-8.6	-8.3	-8.4	-10.3	-9.5	-10.8	-9.0	-4.6	-7.4	
AEO 1996			-1.3	-3.3	-3.4	-5.8	-6.2	-8.3	-6.5	-7.2	-6.6	-6.5	-8.1	-7.1	-8.2	-6.1	-1.2	-4.0	-1.8
AEO 1997				-0.8	-1.0	-2.9	-2.5	-3.8	-2.0	-2.5	-1.6	-1.4	-3.2	-2.0	-3.1	-1.0	3.9	0.8	3.0
AEO 1998					-1.3	-1.8	-1.7	-3.0	-0.2	-0.8	-0.2	0.0	-1.6	-0.3	-1.3	1.1	6.4	3.3	5.7
AEO 1999						-1.8	-1.5	-2.6	0.2	-0.3	-0.1	-0.4	-2.1	-0.8	-2.0	0.3	5.4	2.4	4.7
AEO 2000							-0.7	-1.8	0.2	-0.1	0.8	1.1	-0.4	0.8	-0.3	2.1	7.3	4.1	6.2
AEO 2001								-1.7	1.3	1.9	3.3	3.8	2.7	4.6	4.1	7.1	13.1	10.5	13.0
AEO 2002									1.4	1.1	3.6	4.6	3.6	5.4	4.9	7.7	13.7	11.1	14.1
AEO 2003										-1.5	1.0	2.0	0.6	2.5	2.2	5.6	11.6	9.2	12.2
AEO 2004											0.0	1.0	0.2	2.2	1.7	4.7	10.6	8.0	10.9
AEO 2005												0.0	-0.3	1.4	1.3	4.8	11.1	8.4	11.2
AEO 2006													0.4	0.8	0.1	3.1	8.7	5.9	8.6
AEO 2007														0.6	-0.2	2.8	8.2	5.3	7.7
AEO 2008															-0.6	1.1	5.8	3.0	5.4
AEO 2009																-0.2	1.7	-0.5	1.9
AEO 2010																	-0.2	-3.7	0.0
AEO 2011																		-0.2	-0.9
AEO 2012																			1.0
<b>Average Absolute Percent Difference</b>	0.6	1.0	1.9	3.1	2.8	4.3	3.8	4.9	3.0	3.2	3.0	3.1	3.3	3.4	3.4	4.1	6.9	5.3	6.4

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 8.1, Retail Sales.

**Table 16. Total Energy Consumption, Projected vs. Actual**

**Projected**  
(quadrillion Btu)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	88.0	89.5	90.7	91.7	92.7	93.6	94.6	95.7	96.7	97.7	98.9	100.0	100.8	101.7	102.7	103.6	104.3	105.2	
AEO 1995		89.2	90.0	90.6	91.9	93.0	93.8	94.6	95.3	96.2	97.2	98.4	99.4	100.3	101.2	102.1	102.9	103.9	
AEO 1996			90.6	91.3	92.5	93.5	94.3	95.1	95.9	96.9	98.0	99.2	100.4	101.4	102.1	103.1	103.8	104.7	105.5
AEO 1997				92.6	93.6	95.1	96.6	97.9	98.8	99.9	101.2	102.4	103.4	104.7	105.8	106.6	107.2	107.9	108.6
AEO 1998					94.7	96.7	98.6	99.8	101.3	102.4	103.4	104.5	105.8	107.3	108.6	109.9	111.1	112.2	113.1
AEO 1999						94.6	97.0	99.2	100.9	102.0	102.8	103.6	104.7	106.0	107.2	108.5	109.7	110.8	111.8
AEO 2000							96.4	98.1	99.4	100.9	102.4	103.8	105.3	106.6	107.9	109.2	110.2	111.3	112.2
AEO 2001								97.6	99.9	102.2	104.1	105.6	107.0	108.5	110.0	111.4	112.7	114.1	115.4
AEO 2002									98.3	101.0	104.1	105.8	107.6	109.3	110.8	112.2	113.8	115.6	117.5
AEO 2003										97.5	99.9	101.7	103.2	105.1	107.2	109.3	111.1	113.3	115.2
AEO 2004											98.1	100.2	102.8	104.9	106.8	108.6	109.9	111.8	113.5
AEO 2005												99.8	101.8	103.6	105.6	107.8	109.7	111.3	112.9
AEO 2006													100.5	101.3	103.3	104.9	106.4	107.9	109.2
AEO 2007														100.7	102.4	103.7	105.1	106.5	107.7
AEO 2008															101.4	102.3	102.2	103.3	104.6
AEO 2009																100.5	98.1	99.1	100.6
AEO 2010																	95.6	96.6	98.6
AEO 2011																		97.8	98.3
AEO 2012																			98.3
<b>Actual</b>	87.4	89.1	91.0	94.0	94.6	95.0	96.7	98.8	96.2	97.6	98.0	100.2	100.3	99.6	101.3	99.3	94.6	97.7	97.3
<b>Average Absolute Difference</b>	0.6	0.3	0.6	2.5	1.5	1.2	1.4	1.9	2.6	2.5	3.1	2.5	3.1	4.7	4.2	7.2	12.1	9.8	11.1

**Projected vs. Actual**  
(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	0.7	0.5	-0.3	-2.4	-2.0	-1.5	-2.2	-3.1	0.5	0.0	0.9	-0.2	0.5	2.1	1.4	4.4	10.3	7.7	
AEO 1995		0.1	-1.2	-3.7	-2.8	-2.1	-2.9	-4.3	-0.9	-1.5	-0.8	-1.8	-0.9	0.7	-0.1	2.8	8.8	6.3	
AEO 1996			-0.5	-2.9	-2.2	-1.6	-2.5	-3.8	-0.2	-0.7	0.0	-1.0	0.1	1.8	0.8	3.9	9.8	7.1	8.4
AEO 1997				-1.5	-1.1	0.1	-0.1	-1.0	2.7	2.3	3.3	2.2	3.1	5.1	4.4	7.4	13.4	10.4	11.6
AEO 1998					0.1	1.8	2.0	1.0	5.3	4.9	5.5	4.3	5.5	7.7	7.2	10.7	17.5	14.8	16.2
AEO 1999						-0.4	0.3	0.4	4.9	4.5	5.0	3.4	4.4	6.4	5.8	9.3	16.0	13.4	14.9
AEO 2000							-0.3	-0.7	3.3	3.3	4.6	3.6	5.0	7.0	6.5	10.0	16.5	13.9	15.3
AEO 2001								-1.2	3.9	4.6	6.2	5.4	6.7	8.9	8.6	12.2	19.2	16.8	18.6
AEO 2002									2.2	3.4	6.2	5.6	7.3	9.7	9.4	13.1	20.4	18.3	20.8
AEO 2003										-0.1	2.0	1.5	2.9	5.5	5.8	10.1	17.5	15.9	18.4
AEO 2004											0.1	0.0	2.5	5.3	5.4	9.4	16.2	14.4	16.7
AEO 2005												-0.3	1.6	4.0	4.2	8.6	16.0	13.9	16.0
AEO 2006													0.2	1.6	2.0	5.7	12.5	10.4	12.2
AEO 2007														1.1	1.0	4.5	11.1	9.0	10.7
AEO 2008															0.1	3.1	8.1	5.7	7.5
AEO 2009																1.3	3.7	1.4	3.4
AEO 2010																	1.1	-1.1	1.3
AEO 2011																		0.0	1.0
AEO 2012																			1.1
<b>Average Absolute Percent Difference</b>	0.7	0.3	0.7	2.6	1.6	1.3	1.5	1.9	2.7	2.5	3.1	2.5	3.1	4.8	4.2	7.3	12.8	10.0	11.4

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.  
Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 1.3.

**Table 17. Total Delivered Residential Energy Consumption, Projected vs. Actual**

<b>Projected</b> (quadrillion Btu)																			
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	10.3	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.5	10.5	10.5	10.5	10.5	10.6	10.6	
AEO 1995		11.0	10.8	10.8	10.8	10.8	10.8	10.8	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.8	10.8	10.9	
AEO 1996			10.4	10.7	10.7	10.7	10.8	10.8	10.9	10.9	11.0	11.2	11.2	11.3	11.4	11.5	11.6	11.7	11.8
AEO 1997				11.1	10.9	11.1	11.1	11.2	11.2	11.2	11.3	11.4	11.5	11.5	11.6	11.7	11.8	11.9	12.0
AEO 1998					10.7	11.1	11.2	11.4	11.5	11.5	11.6	11.7	11.8	11.9	11.9	12.1	12.1	12.2	12.3
AEO 1999						10.5	11.1	11.3	11.3	11.4	11.5	11.5	11.6	11.6	11.7	11.8	11.9	12.0	12.1
AEO 2000							10.7	10.9	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	12.0
AEO 2001								10.8	11.2	11.4	11.6	11.8	11.9	12.0	12.1	12.2	12.3	12.4	12.5
AEO 2002									11.3	11.5	11.8	12.0	12.0	12.1	12.1	12.3	12.3	12.4	12.5
AEO 2003										11.1	11.6	11.8	11.9	12.0	12.2	12.3	12.4	12.5	12.6
AEO 2004											11.5	11.8	11.9	12.0	12.2	12.3	12.4	12.6	12.7
AEO 2005												11.5	11.7	11.8	12.0	12.3	12.5	12.7	12.8
AEO 2006													11.7	11.7	11.8	12.0	12.1	12.2	12.4
AEO 2007														11.3	11.8	12.0	12.1	12.2	12.3
AEO 2008															11.5	11.7	11.7	11.7	11.8
AEO 2009																11.6	11.6	11.6	11.4
AEO 2010																	11.2	11.3	11.1
AEO 2011																		11.4	11.1
AEO 2012																			11.6
<b>Actual</b>	10.5	10.4	10.5	11.2	10.7	10.3	10.7	11.2	11.0	11.2	11.6	11.4	11.5	10.8	11.3	11.5	11.3	11.5	11.4
<b>Average Absolute Difference</b>	0.2	0.3	0.2	0.4	0.1	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.8	0.5	0.5	0.7	0.6	0.7
<b>Projected vs. Actual</b> (percent difference)																			
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	-2.2	-0.6	-1.3	-7.1	-3.0	1.3	-2.6	-7.3	-4.9	-7.1	-9.7	-8.3	-9.4	-2.7	-7.4	-8.6	-6.3	-8.1	
AEO 1995		5.2	2.9	-3.1	1.0	5.1	0.8	-4.3	-2.2	-4.5	-7.5	-6.2	-7.4	-0.7	-5.5	-6.7	-4.2	-5.9	
AEO 1996			-0.9	-4.5	-0.1	4.3	0.8	-3.5	-0.9	-2.5	-4.6	-2.2	-3.0	4.8	0.4	0.0	2.9	1.5	3.3
AEO 1997				-0.9	2.3	7.7	3.8	-0.6	1.9	0.1	-2.2	0.1	-0.7	7.0	2.4	1.9	4.6	3.1	4.8
AEO 1998					0.1	8.1	4.8	1.2	4.5	2.7	0.4	2.8	1.9	10.0	5.2	4.8	7.7	6.2	7.9
AEO 1999						2.6	4.2	0.3	3.5	1.7	-0.9	1.3	0.2	7.9	3.2	2.8	5.6	4.0	6.0
AEO 2000							0.3	-2.5	0.5	-1.0	-3.1	-0.6	-1.3	6.6	2.1	1.7	4.7	3.2	4.8
AEO 2001								-3.9	1.8	1.5	0.1	3.1	2.7	11.0	6.4	6.0	9.1	7.7	9.7
AEO 2002									2.6	2.7	2.0	4.8	3.9	12.0	7.1	6.4	9.2	7.5	9.2
AEO 2003										-0.9	0.5	3.6	3.1	11.8	7.2	6.8	9.8	8.1	9.8
AEO 2004											-0.4	3.2	2.7	11.5	7.2	6.9	10.3	9.0	11.0
AEO 2005												0.5	0.9	9.5	6.0	6.7	10.7	9.9	12.2
AEO 2006													1.2	8.9	4.0	4.0	7.4	6.2	8.1
AEO 2007														4.7	3.8	3.8	7.1	5.8	7.8
AEO 2008															0.9	1.2	4.0	1.1	2.8
AEO 2009																1.0	3.1	0.7	-0.3
AEO 2010																	-0.5	-2.3	-3.0
AEO 2011																		-0.9	-3.0
AEO 2012																			1.4
<b>Average Absolute Percent Difference</b>	2.2	2.9	1.7	3.9	1.3	4.8	2.5	2.9	2.5	2.5	2.9	3.0	3.0	7.8	4.6	4.3	6.3	5.1	6.2

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 2.1b (total primary consumption + electricity retail sales).

**Table 18. Total Delivered Commercial Energy Consumption, Projected vs. Actual**

**Projected**  
(quadrillion Btu)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	6.8	6.9	6.9	7.0	7.1	7.1	7.2	7.2	7.3	7.3	7.4	7.4	7.4	7.5	7.5	7.5	7.5	7.6	
AEO 1995		6.9	6.9	7.0	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.2	7.2	7.2	7.2	7.3	7.3	7.3	
AEO 1996			7.1	7.2	7.2	7.3	7.3	7.4	7.4	7.5	7.6	7.6	7.7	7.7	7.8	7.9	8.0	8.0	8.1
AEO 1997				7.4	7.4	7.4	7.5	7.5	7.6	7.7	7.7	7.8	7.8	7.9	7.9	8.0	8.1	8.1	8.2
AEO 1998					7.5	7.6	7.7	7.8	7.9	8.0	8.0	8.1	8.2	8.3	8.4	8.4	8.5	8.6	8.7
AEO 1999						7.4	7.8	7.9	8.0	8.1	8.2	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9
AEO 2000							7.7	7.8	7.9	8.0	8.1	8.2	8.3	8.4	8.5	8.5	8.7	8.7	8.8
AEO 2001								7.8	8.1	8.3	8.6	8.7	8.9	9.0	9.2	9.3	9.5	9.6	9.7
AEO 2002									8.2	8.4	8.7	8.9	9.0	9.2	9.4	9.6	9.7	9.9	10.1
AEO 2003										8.4	8.6	8.8	9.0	9.1	9.3	9.4	9.5	9.7	9.8
AEO 2004											8.4	8.5	8.8	9.0	9.2	9.4	9.5	9.7	9.9
AEO 2005												8.3	8.4	8.6	8.9	9.1	9.3	9.5	9.7
AEO 2006													8.4	8.3	8.5	8.7	8.8	9.0	9.2
AEO 2007														8.3	8.5	8.7	8.9	9.1	9.2
AEO 2008															8.6	8.7	8.5	8.6	8.8
AEO 2009																8.6	8.9	8.9	8.9
AEO 2010																	8.4	8.6	8.8
AEO 2011																		8.5	8.7
AEO 2012																			8.7
<b>Actual</b>	7.0	7.1	7.4	7.6	7.8	7.7	7.8	8.2	8.1	8.2	8.4	8.4	8.4	8.2	8.5	8.6	8.5	8.6	8.6
<b>Average Absolute Difference</b>	0.2	0.2	0.4	0.5	0.6	0.4	0.4	0.7	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6

**Projected vs. Actual**  
(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	-2.5	-3.7	-5.6	-8.1	-9.5	-7.2	-8.4	-12.3	-10.8	-11.2	-12.1	-12.5	-11.8	-8.9	-11.9	-13.1	-11.9	-12.0	
AEO 1995		-2.7	-6.2	-8.8	-10.4	-8.6	-9.8	-14.0	-13.0	-13.7	-14.8	-15.2	-14.7	-12.1	-14.9	-15.9	-14.3	-14.4	
AEO 1996			-4.0	-5.8	-7.3	-5.2	-6.2	-10.3	-8.6	-9.0	-9.7	-9.6	-8.5	-5.3	-7.9	-8.7	-6.7	-6.5	-5.9
AEO 1997				-2.8	-5.7	-3.4	-4.3	-8.4	-6.7	-7.0	-7.8	-7.7	-6.7	-3.5	-6.3	-7.2	-5.3	-5.2	-4.6
AEO 1998					-4.2	-0.7	-1.2	-5.2	-3.3	-3.4	-4.0	-3.6	-2.3	1.3	-1.4	-2.2	0.0	0.2	1.0
AEO 1999						-3.1	0.0	-3.8	-1.7	-1.8	-2.4	-2.2	-0.9	2.6	0.0	-0.6	1.8	2.2	3.3
AEO 2000							-1.4	-5.1	-2.7	-2.6	-3.2	-2.9	-1.4	2.2	-0.4	-0.9	1.5	1.9	2.9
AEO 2001								-5.4	-1.0	1.2	2.2	3.4	5.5	10.2	8.1	7.9	11.0	11.8	13.3
AEO 2002									0.4	1.8	3.5	5.4	7.7	12.7	10.8	10.8	14.2	15.6	17.4
AEO 2003										1.5	2.2	4.2	6.6	11.5	9.3	9.1	12.1	13.0	14.6
AEO 2004											0.8	1.1	4.2	9.7	8.2	8.3	11.9	13.6	15.5
AEO 2005												-1.2	-0.1	5.2	4.4	5.4	9.4	11.1	13.1
AEO 2006													0.4	1.6	-0.1	0.2	3.6	4.9	6.9
AEO 2007														1.9	0.3	1.2	4.5	5.6	7.6
AEO 2008															1.0	0.3	0.3	0.5	2.0
AEO 2009																-0.9	4.0	3.6	4.1
AEO 2010																	-1.2	0.3	2.0
AEO 2011																		-0.8	0.7
AEO 2012																			1.4
<b>Average Absolute Percent Difference</b>	2.5	3.2	5.2	6.4	7.4	4.7	4.5	8.1	5.3	5.3	5.7	5.7	5.5	6.3	5.7	5.8	6.7	6.8	6.8

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 2.1c (total primary consumption + electricity retail sales).



**Table 19. Total Delivered Industrial Energy Consumption, Projected vs. Actual**

<b>Projected</b> (quadrillion Btu)																			
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	25.4	25.9	26.3	26.7	27.0	27.1	26.8	26.6	26.9	27.2	27.7	28.1	28.3	28.7	29.1	29.4	29.7	30.0	
AEO 1995		26.2	26.3	26.5	27.0	27.3	26.9	26.6	26.8	27.1	27.5	27.9	28.2	28.4	28.7	29.0	29.3	29.6	
AEO 1996			26.5	26.6	27.3	27.5	26.9	26.5	26.7	26.9	27.2	27.6	27.9	28.2	28.3	28.5	28.7	28.9	29.2
AEO 1997				26.2	26.5	26.9	26.7	26.6	26.8	27.1	27.4	27.8	28.0	28.4	28.7	28.9	29.0	29.2	29.4
AEO 1998					27.2	27.5	27.2	26.9	27.1	27.5	27.7	27.9	28.3	28.7	29.0	29.3	29.7	29.9	30.1
AEO 1999						26.7	26.4	26.4	26.8	27.1	27.3	27.5	27.9	28.3	28.6	28.9	29.2	29.5	29.7
AEO 2000							25.8	25.5	25.7	26.0	26.5	26.9	27.4	27.8	28.1	28.3	28.5	28.8	29.0
AEO 2001								25.8	26.2	26.6	27.0	27.3	27.7	28.1	28.5	28.8	29.1	29.4	29.7
AEO 2002									24.5	25.8	26.6	27.0	27.5	28.0	28.5	28.8	29.2	29.7	30.2
AEO 2003										25.5	25.9	26.2	26.4	26.7	27.2	27.6	28.1	28.8	29.3
AEO 2004											24.5	24.9	25.7	26.1	26.5	26.9	27.1	27.5	27.9
AEO 2005												25.5	25.9	26.2	26.4	26.9	27.2	27.3	27.6
AEO 2006													25.2	25.4	26.1	26.3	26.5	26.7	27.0
AEO 2007														25.3	25.5	25.8	26.1	26.3	26.5
AEO 2008															28.5	28.5	28.7	29.0	29.3
AEO 2009																25.1	23.3	22.8	23.5
AEO 2010																	22.2	22.3	23.0
AEO 2011																		23.1	24.2
AEO 2012																			23.8
<b>Actual</b>	25.1	25.8	26.2	26.9	27.2	26.8	26.6	26.5	25.2	25.2	25.0	25.9	24.9	25.0	24.9	23.9	21.9	23.4	23.6
<b>Average Absolute Difference</b>	0.3	0.2	0.2	0.4	0.3	0.4	0.4	0.3	1.3	1.5	2.0	1.4	2.4	2.5	3.0	4.0	5.8	4.6	4.1

<b>Projected vs. Actual</b> (percent difference)																			
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	1.4	0.3	0.5	-1.0	-0.9	1.1	0.7	0.5	6.8	8.1	10.9	8.4	13.9	14.7	16.8	22.9	35.3	28.4	
AEO 1995		1.3	0.5	-1.6	-0.7	1.8	1.1	0.5	6.4	7.6	10.0	7.7	13.1	13.9	15.5	21.4	33.5	26.7	
AEO 1996			1.4	-1.2	0.3	2.7	1.3	0.1	5.9	7.0	9.1	6.6	12.1	12.7	13.8	19.2	31.0	23.8	23.5
AEO 1997				-2.7	-2.8	0.5	0.4	0.4	6.3	7.5	10.0	7.2	12.6	13.6	15.4	20.7	32.2	24.9	24.4
AEO 1998					0.1	2.6	2.5	1.7	7.7	9.1	10.8	7.9	13.7	14.8	16.7	22.7	35.1	28.0	27.6
AEO 1999						-0.1	-0.6	0.0	6.5	7.8	9.5	6.3	12.0	13.1	15.0	20.8	33.1	26.3	25.8
AEO 2000							-2.8	-3.5	2.0	3.3	6.1	4.0	10.0	11.1	12.9	18.5	30.0	23.2	22.6
AEO 2001								-2.5	3.9	5.6	8.4	5.5	11.1	12.3	14.5	20.3	32.5	25.9	25.7
AEO 2002									-2.6	2.6	6.7	4.4	10.5	11.9	14.4	20.3	33.1	26.9	28.0
AEO 2003										1.1	3.9	1.4	5.9	7.0	9.3	15.5	28.2	23.1	24.2
AEO 2004											-1.8	-3.7	3.3	4.7	6.7	12.3	23.6	17.8	18.2
AEO 2005												-1.5	4.1	5.0	6.3	12.3	23.9	17.0	16.8
AEO 2006													1.1	1.5	4.8	9.9	20.7	14.1	14.1
AEO 2007														1.4	2.7	7.9	18.9	12.7	12.2
AEO 2008															14.7	19.1	30.6	24.0	24.1
AEO 2009																4.9	6.3	-2.5	-0.6
AEO 2010																	1.4	-4.6	-2.6
AEO 2011																		-1.2	2.4
AEO 2012																			0.6
<b>Average Absolute Percent Difference</b>	1.4	0.8	0.8	1.6	1.0	1.5	1.4	1.1	5.3	6.0	7.9	5.4	9.5	9.8	12.0	16.8	26.4	19.5	17.3

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 2.1d (total primary consumption + electricity retail sales). Comparisons through AEO 2002 have been adjusted for the AER 2001 revision to industrial energy consumption that was not incorporated in the earlier projections.

**Table 20. Total Delivered Transportation Energy Consumption, Projected vs. Actual**

**Projected**  
(quadrillion Btu)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	23.6	24.1	24.5	24.7	25.1	25.4	25.7	26.2	26.5	26.9	27.2	27.6	27.9	28.3	28.6	28.9	29.2	29.5	
AEO 1995		23.3	24.0	24.2	24.7	25.1	25.5	25.9	26.2	26.5	26.9	27.3	27.7	28.0	28.3	28.5	28.7	28.9	
AEO 1996			23.9	24.1	24.5	24.8	25.3	25.7	26.0	26.4	26.7	27.1	27.5	27.8	28.1	28.4	28.6	28.9	29.1
AEO 1997				24.7	25.3	25.9	26.4	27.0	27.5	28.0	28.5	28.9	29.4	29.8	30.3	30.6	30.9	31.1	31.3
AEO 1998					25.3	25.9	26.7	27.1	27.7	28.3	28.8	29.4	30.0	30.6	31.2	31.7	32.3	32.8	33.1
AEO 1999						25.4	26.0	27.0	27.6	28.2	28.8	29.4	30.0	30.6	31.2	31.7	32.2	32.8	33.1
AEO 2000							26.2	26.8	27.4	28.0	28.5	29.1	29.7	30.3	30.9	31.4	31.9	32.5	32.9
AEO 2001								26.8	27.5	28.3	28.8	29.4	30.0	30.6	31.2	31.8	32.3	32.9	33.4
AEO 2002									27.5	28.0	28.9	29.5	30.2	30.7	31.3	32.0	32.8	33.5	34.3
AEO 2003										27.2	27.7	28.3	28.9	29.7	30.5	31.4	32.3	33.2	34.0
AEO 2004											27.2	28.1	28.9	29.6	30.2	30.9	31.5	32.2	32.8
AEO 2005												27.8	28.4	29.0	29.7	30.4	31.2	31.8	32.5
AEO 2006													28.1	28.4	29.0	29.5	30.1	30.7	31.3
AEO 2007														28.4	28.7	29.0	29.4	29.9	30.3
AEO 2008															28.5	28.5	28.7	29.0	29.3
AEO 2009																27.9	27.5	28.0	28.5
AEO 2010																	27.0	27.3	27.9
AEO 2011																		27.4	27.6
AEO 2012																			27.1
<b>Actual</b>	22.7	23.3	23.8	24.4	24.7	25.2	25.9	26.5	26.2	26.8	26.9	27.8	28.3	28.8	29.1	28.0	27.0	27.4	27.0
<b>Average Absolute Difference</b>	0.9	0.4	0.3	0.3	0.4	0.4	0.4	0.5	0.9	0.9	1.1	0.9	1.0	1.1	1.2	2.2	3.4	3.3	4.1

**Projected vs. Actual**  
(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	3.9	3.2	2.7	1.3	1.4	0.6	-0.7	-1.3	1.0	0.2	1.1	-1.0	-1.4	-1.8	-1.5	3.5	8.0	7.6	
AEO 1995		-0.3	0.8	-0.9	-0.1	-0.4	-1.6	-2.4	-0.3	-1.1	-0.2	-2.0	-2.3	-2.7	-2.8	2.0	6.3	5.6	
AEO 1996			0.4	-1.3	-1.0	-1.5	-2.5	-3.2	-0.7	-1.5	-0.8	-2.8	-2.9	-3.4	-3.2	1.6	6.0	5.3	7.6
AEO 1997				1.2	2.6	2.6	2.0	2.0	4.9	4.3	5.6	3.9	3.8	3.7	4.1	9.5	14.2	13.5	15.9
AEO 1998					2.6	2.5	2.9	2.4	5.7	5.6	7.1	5.6	5.9	6.4	7.2	13.4	19.4	19.5	22.6
AEO 1999						0.8	0.2	1.9	5.4	5.3	6.9	5.4	5.9	6.3	7.2	13.4	19.3	19.6	22.6
AEO 2000							1.3	1.2	4.4	4.3	5.8	4.6	5.0	5.3	6.3	12.4	18.1	18.5	21.8
AEO 2001								1.2	5.0	5.4	7.0	5.6	6.0	6.4	7.4	13.7	19.7	20.0	23.6
AEO 2002									4.8	4.6	7.3	6.1	6.7	6.8	7.9	14.6	21.3	22.2	26.8
AEO 2003										1.3	3.0	1.6	2.2	3.2	5.1	12.3	19.4	21.0	25.9
AEO 2004											0.9	0.8	2.2	3.0	4.1	10.5	16.6	17.4	21.4
AEO 2005												-0.2	0.5	0.9	2.3	8.9	15.4	16.2	20.2
AEO 2006													-0.8	-1.2	-0.1	5.7	11.4	12.0	15.7
AEO 2007														-1.5	-1.4	3.6	8.7	8.9	12.2
AEO 2008															-1.8	1.9	6.1	5.7	8.5
AEO 2009																-0.1	1.8	2.1	5.5
AEO 2010																	-0.2	-0.4	3.1
AEO 2011																		0.0	2.2
AEO 2012																			0.3
<b>Average Absolute Percent Difference</b>	3.9	1.8	1.3	1.2	1.5	1.4	1.6	2.0	3.6	3.4	4.1	3.3	3.5	3.8	4.2	7.9	12.5	12.0	15.1

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 2.1e (total primary consumption + electricity retail sales).

**Table 21. Total Energy Related Carbon Dioxide Emissions, Projected vs. Actual**

**Projected**  
(million metric tons)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	5060	5130	5185	5240	5287	5335	5379	5438	5482	5529	5599	5658	5694	5738	5797	5874	5925	5984	
AEO 1995		5137	5174	5188	5262	5309	5361	5394	5441	5489	5551	5621	5680	5727	5775	5841	5889	5944	
AEO 1996			5182	5224	5295	5355	5417	5464	5525	5589	5660	5735	5812	5879	5925	5981	6030	6087	6142
AEO 1997				5295	5381	5491	5586	5658	5715	5781	5863	5934	6009	6106	6184	6236	6268	6316	6365
AEO 1998					5474	5621	5711	5784	5893	5957	6026	6098	6192	6292	6379	6465	6542	6612	6683
AEO 1999						5522	5689	5810	5913	5976	6036	6084	6152	6244	6325	6418	6493	6563	6641
AEO 2000							5573	5692	5777	5865	5971	6078	6172	6262	6345	6420	6480	6551	6610
AEO 2001								5630	5781	5909	6023	6114	6197	6281	6387	6470	6541	6633	6709
AEO 2002									5723	5808	5981	6095	6210	6323	6438	6530	6624	6727	6839
AEO 2003										5633	5749	5856	5954	6095	6232	6360	6475	6602	6719
AEO 2004											5743	5826	5986	6124	6251	6357	6453	6559	6657
AEO 2005												5905	6023	6138	6274	6415	6533	6627	6721
AEO 2006													5967	5978	6080	6182	6281	6365	6440
AEO 2007														5940	5999	6059	6124	6214	6296
AEO 2008															5977	5983	5978	6011	6087
AEO 2009																5849	5699	5746	5803
AEO 2010																	5507	5521	5643
AEO 2011																		5643	5601
AEO 2012																			5632
<b>Actual</b>	5185	5258	5314	5501	5575	5622	5682	5867	5759	5806	5857	5975	5997	5919	6020	5838	5429	5612	5481
<b>Average Absolute Difference</b>	125	125	134	264	235	183	161	258	137	149	158	157	144	220	222	377	797	659	848

**Projected vs. Actual**  
(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	-2.4	-2.4	-2.4	-4.8	-5.2	-5.1	-5.3	-7.3	-4.8	-4.8	-4.4	-5.3	-5.0	-3.1	-3.7	0.6	9.1	6.6	
AEO 1995		-2.3	-2.6	-5.7	-5.6	-5.6	-5.7	-8.1	-5.5	-5.5	-5.2	-5.9	-5.3	-3.2	-4.1	0.1	8.5	5.9	
AEO 1996			-2.5	-5.0	-5.0	-4.8	-4.7	-6.9	-4.1	-3.7	-3.4	-4.0	-3.1	-0.7	-1.6	2.5	11.1	8.5	12.1
AEO 1997				-3.7	-3.5	-2.3	-1.7	-3.6	-0.8	-0.4	0.1	-0.7	0.2	3.2	2.7	6.8	15.5	12.5	16.1
AEO 1998					-1.8	0.0	0.5	-1.4	2.3	2.6	2.9	2.1	3.3	6.3	6.0	10.7	20.5	17.8	21.9
AEO 1999						-1.8	0.1	-1.0	2.7	2.9	3.1	1.8	2.6	5.5	5.1	9.9	19.6	16.9	21.2
AEO 2000							-1.9	-3.0	0.3	1.0	1.9	1.7	2.9	5.8	5.4	10.0	19.3	16.7	20.6
AEO 2001								-4.0	0.4	1.8	2.8	2.3	3.3	6.1	6.1	10.8	20.5	18.2	22.4
AEO 2002									-0.6	0.0	2.1	2.0	3.5	6.8	6.9	11.9	22.0	19.9	24.8
AEO 2003										-3.0	-1.8	-2.0	-0.7	3.0	3.5	8.9	19.3	17.6	22.6
AEO 2004											-1.9	-2.5	-0.2	3.5	3.8	8.9	18.9	16.9	21.5
AEO 2005												-1.2	0.4	3.7	4.2	9.9	20.3	18.1	22.6
AEO 2006													-0.5	1.0	1.0	5.9	15.7	13.4	17.5
AEO 2007														0.4	-0.3	3.8	12.8	10.7	14.9
AEO 2008															-0.7	2.5	10.1	7.1	11.1
AEO 2009																0.2	5.0	2.4	5.9
AEO 2010																	1.4	-1.6	3.0
AEO 2011																		0.6	2.2
AEO 2012																			2.7
<b>Average Absolute Percent Difference</b>	2.4	2.4	2.5	4.8	4.2	3.3	2.8	4.4	2.4	2.6	2.7	2.6	2.4	3.7	3.7	6.5	14.7	11.7	15.5

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.  
Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 11.1.

**Table 22. Energy Intensity, Projected vs. Actual**

**Projected**

(quadrillion Btu / real GDP in billion 2005 chained dollars)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	11.2	11.1	11.0	10.8	10.7	10.5	10.4	10.3	10.1	10.0	9.9	9.8	9.7	9.6	9.5	9.4	9.3	9.2	
AEO 1995		10.9	10.8	10.6	10.4	10.3	10.1	10.0	9.9	9.8	9.6	9.5	9.4	9.3	9.2	9.1	9.1	9.0	
AEO 1996			10.7	10.6	10.4	10.3	10.1	10.0	9.8	9.7	9.6	9.5	9.4	9.3	9.2	9.2	9.1	9.0	8.9
AEO 1997				10.3	10.3	10.2	10.1	9.9	9.8	9.7	9.6	9.5	9.4	9.3	9.2	9.2	9.1	9.0	8.9
AEO 1998					10.1	10.1	10.1	10.0	9.9	9.8	9.7	9.6	9.5	9.5	9.4	9.3	9.2	9.1	9.0
AEO 1999						9.6	9.7	9.7	9.7	9.6	9.4	9.3	9.1	9.0	8.9	8.8	8.7	8.6	8.5
AEO 2000							9.4	9.4	9.3	9.2	9.1	9.0	8.9	8.8	8.7	8.7	8.6	8.5	8.4
AEO 2001								8.7	8.6	8.5	8.4	8.3	8.1	8.0	7.9	7.8	7.6	7.5	7.4
AEO 2002									8.8	8.8	8.8	8.7	8.6	8.5	8.3	8.2	8.0	7.8	7.7
AEO 2003										8.6	8.5	8.4	8.3	8.2	8.1	8.0	7.8	7.7	7.6
AEO 2004											8.4	8.3	8.2	8.1	8.0	7.9	7.7	7.6	7.5
AEO 2005												8.2	8.1	8.0	7.8	7.8	7.7	7.5	7.4
AEO 2006													8.0	7.8	7.7	7.6	7.4	7.3	7.2
AEO 2007														7.8	7.8	7.6	7.5	7.4	7.3
AEO 2008															7.8	7.7	7.5	7.4	7.2
AEO 2009																7.6	7.7	7.6	7.4
AEO 2010																	7.5	7.5	7.4
AEO 2011																		7.4	7.3
AEO 2012																			7.4
<b>Actual</b>	10.3	10.1	10.0	10.0	9.6	9.2	9.0	8.8	8.5	8.5	8.3	8.2	7.9	7.7	7.7	7.5	7.4	7.5	7.3
<b>Average Absolute Difference</b>	1.0	0.9	0.8	0.6	0.8	0.9	1.0	1.0	1.1	0.9	0.9	0.8	0.9	1.0	0.8	0.8	0.8	0.6	0.5

**Projected vs. Actual**

(percent difference)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
AEO 1994	9.6	10.3	9.6	8.6	11.1	14.0	15.8	16.6	19.6	18.5	19.7	20.0	22.1	24.9	23.7	24.6	25.5	23.3	
AEO 1995		8.1	7.3	6.3	8.5	11.2	13.0	13.6	16.5	15.4	16.3	16.3	18.3	21.1	20.3	21.3	22.4	20.3	
AEO 1996			6.9	6.3	8.6	11.1	12.9	13.2	15.8	14.8	16.2	16.6	18.7	21.3	20.4	21.6	22.6	20.6	22.3
AEO 1997				3.4	6.7	10.1	12.2	12.8	15.7	15.0	16.4	16.7	18.8	21.6	20.5	21.4	22.5	20.3	21.9
AEO 1998					5.4	9.3	12.4	13.4	17.0	16.3	17.7	17.7	20.0	22.9	22.1	23.0	24.0	21.8	23.3
AEO 1999						4.3	8.4	10.2	13.9	13.0	13.8	13.5	15.1	17.4	16.1	16.7	17.3	14.7	16.2
AEO 2000							5.0	6.8	9.6	9.0	10.3	10.2	12.1	14.9	14.0	14.9	15.7	13.3	14.9
AEO 2001								-1.3	1.0	0.1	1.1	0.9	2.2	4.1	2.8	2.8	2.8	0.2	0.6
AEO 2002									3.4	4.3	6.4	6.5	8.1	10.3	8.7	8.2	7.6	4.4	4.6
AEO 2003										1.5	3.0	2.6	4.2	6.6	5.5	5.6	5.6	2.7	3.4
AEO 2004											2.0	1.7	3.4	5.4	4.0	4.1	4.2	1.9	2.9
AEO 2005												-0.1	1.4	3.4	2.2	3.1	3.5	0.9	1.6
AEO 2006													0.7	1.5	0.7	0.4	0.5	-1.9	-1.3
AEO 2007														1.8	1.2	1.2	1.3	-1.3	-0.9
AEO 2008															1.4	2.5	1.5	-1.6	-1.3
AEO 2009																1.3	3.6	1.3	1.4
AEO 2010																	1.1	0.1	0.9
AEO 2011																		-1.2	-0.5
AEO 2012																			0.9
<b>Average Absolute Percent Difference</b>	9.6	9.2	7.9	6.1	8.0	10.0	11.4	11.0	12.5	10.8	11.2	10.2	11.2	12.7	10.9	10.8	10.7	8.4	7.0

Sources: Projections: Annual Energy Outlook, Reference Case Projections, Various Editions.

Historical Data: U.S. Energy Information Administration, Annual Energy Review 2011, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 1.3, and Bureau of Economic Analysis, US Dept. of Commerce, October 2011.