



Annual Energy Outlook Forecast Evaluation

by Susan H. Holte

In this paper, the Office of Integrated Analysis and Forecasting (OIAF) of the Energy Information Administration (EIA) evaluates the projections published in the Annual Energy Outlook (AEO), [\(1\)](#) by comparing the projections from the Annual Energy Outlook 1982 through the Annual Energy Outlook 2001 with actual historical values. A set of major consumption, production, net import, price, economic, and carbon dioxide emissions variables are included in the evaluation, updating similar papers from previous years. These evaluations also present the reasons and rationales for significant differences.

The Office of Integrated Analysis and Forecasting has been providing an evaluation of the forecasts in the *Annual Energy Outlook (AEO)* annually since 1996. Each year, the forecast evaluation expands on that of the prior year by adding the most recent AEO and the most recent historical year of data. However, the underlying reasons for deviations between the projections and realized history tend to be the same from one evaluation to the next. The most significant conclusions are:

- Over the last two decades, there have been many significant changes in laws, policies, and regulations that could not have been anticipated or assumed in the projections. These include the National Appliance and Energy Conservation Act of 1987, the Natural Gas Wellhead Decontrol Act of 1989, the Clean Air Act Amendments of 1990, the ozone transport rule, the Energy Policy Act of 1992, the repeal of the Power Plant and Industrial Fuel Use Act of 1978, the North American Free Trade Agreement, the Omnibus Budget Reconciliation Act of 1993, the Outer Continental Shelf Deep Water Royalty Relief Act of 1995, the Tax Payer Relief Act of 1997, the Clinton Administration Climate Change Action Plan of 1993, orders issued by the Federal Energy Regulatory Commission on natural gas restructuring and open access to interstate electricity transmission lines, State initiatives for the restructuring of electricity markets, various equipment standards, and regulations issued by the Environmental Protection Agency. Many of these actions have had significant impacts on energy supply, demand, and prices; however, the impacts were not incorporated in the AEO projections until their enactment or effective dates in accordance with the practice that EIA remain policy neutral and that AEO projections include only current laws and regulations.
- Energy prices have been far more difficult to predict than consumption, production, and net imports, and prices have been more typically overestimated than underestimated. More rapid technological improvements, the erosion of the market power of the Organization of Petroleum Exporting Countries in the mid-1980s, excess productive capacity, and market competitiveness are all factors that led to lower energy prices than projected. In the 1980s and 1990s, productivity and technology improvements and the effects of gradual deregulation and changes in industry structure have more than offset the factors that have tended to raise energy prices, such as resource depletion and growing energy demand.
- Natural gas generally has been the fuel with the least accurate forecasts in consumption, production, and prices. Natural gas was the last fossil fuel to be affected by regulatory reforms following the strong regulation of energy markets in the 1970s and early 1980s. Especially as regulatory reforms were implemented, the behavior of natural gas in competitive markets was difficult to predict. Natural gas market trends in the past 25 years have not been stable, which raised the degree of difficulty in determining future

levels for market prices and volumes. Furthermore, in past projections the natural gas market outlook was influenced strongly by the assumed world oil price, which was subject to its own error.

- External factors such as severe weather, economic cycles, and strikes have also had an impact on energy markets; however, these events cannot be anticipated in the mid- to long-term period and are not captured in the models underlying the *AEO* projections.
- Technological improvements in both the production and use of energy have had a significant impact on the price, supply, and consumption of energy. For the most part, earlier *AEOs* assumed much slower technology development than actually occurred, accounting for some of the deviation between the forecasts and history. This trend was recognized, in part, by this type of forecast evaluation exercise. Beginning with the *Annual Energy Outlook 1994*, the projections in the *AEO* were produced using the National Energy Modeling System (NEMS). Because NEMS was designed with methodologies to represent technology in a more detailed fashion, there has been an improvement in the capability to represent technological change throughout energy markets. Additional studies on technological improvement have led to more optimistic assumptions in the more recent projections, along with modeling innovations, such as learning-by-doing, in which experience gained with new generation technologies and advanced end-use technologies leads to cost reductions in the model. These enhancements have significantly improved the projection capability within NEMS.

The last column of [Table 1](#) provides a summary of the average absolute forecast errors for each of the major variables included in this analysis, which are shown in more detail in [Tables 2 through 18](#). The average absolute forecast error is computed as the mean, or average, of all the absolute values of the percentage errors, expressed as percentage differences of the Reference Case projection from actual, shown for each *AEO*, for each year in the forecast, for a given variable. Table 1 also shows the same summary of forecast errors from the previous evaluations. As indicated in Table 1, the forecasts of consumption, carbon dioxide emissions, production, and gross domestic product have generally been the most accurate, and the forecasts of prices the least accurate. The percent errors change from one year's evaluation to the next as an additional year of data and projections is added. The percent errors may also change due to data revisions from each year's *Annual Energy Review*.

For the most part, the percent errors remain similar or improve over time; however, the errors for net coal exports have increased significantly. Although the projections for net coal exports have improved in the last two *AEOs*, the percentage error is increasing because of the very high projections from the earlier *AEOs*. In this year's evaluation, the earlier projections for coal exports in 2000 were added which are more than double the actual level achieved in 2000 for most of the *AEOs* through *AEO94*. Relative to the evaluation last year, net coal exports, coal prices, and electricity prices have higher errors, and net petroleum imports and natural gas wellhead prices have lower errors.

[1] Energy Information Administration, *Annual Energy Outlook 2001*, DOE/EIA-0383(2000)(Washington, DC, December 2000), www.eia.doe.gov/oiaf/aeo/index.html, is the most recent *AEO*.

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Table 1. Comparison of Absolute Percent Errors for AEO Forecast Evaluation, 1996 to 2001

	Average Absolute Percent Error	Average Absolute Percent Error	Average Absolute Percent Error	Average Absolute Percent Error	Average Absolute Percent Error	Average Absolute Percent Error
Variable	1996 Evaluation: AEO82 to AEO93	1997 Evaluation: AEO82 to AEO97	1998 Evaluation: AEO82 to AEO98	1999 Evaluation: AEO82 to AEO99	2000 Evaluation: AEO82 to AEO2000	2001 Evaluation: AEO82 to AEO2001
Consumption						
Total Energy Consumption	1.8	1.6	1.7	1.7	1.8	1.9
Total Petroleum Consumption	3.2	2.8	2.9	2.8	2.9	3.0
Total Natural Gas Consumption	6.0	5.8	5.7	5.6	5.6	5.5
Total Coal Consumption	2.9	2.7	3.0	3.2	3.3	3.5
Total Electricity Sales	1.8	1.6	1.7	1.8	1.9	2.4
Production						
Crude Oil Production	5.1	4.2	4.3	4.5	4.5	4.5
Natural Gas Production	5.4	5.0	4.8	4.7	4.6	4.6

Coal Production	3.8	3.7	3.6	3.6	3.5	3.7
Imports and Exports						
Net Petroleum Imports	12.0	10.1	9.5	8.8	8.4	7.9
Net Natural Gas Imports	20.0	17.4	16.7	16.0	15.9	15.8
Net Coal Exports	17.1	22.1	22.8	24.5	31.9	39.1
Prices, Economic, and Environmental Variables						
World Oil Prices	82.2	53.1	51.3	56.7	55.7	55.4
Natural Gas Wellhead Prices	120.4	76.0	72.1	70.2	68.2	66.3
Coal Prices to Electric Utilities	47.1	34.8	35.3	35.9	36.6	39.6
Average Electricity Prices	11.0	11.0	11.0	11.1	11.8	14.0
Gross Domestic Product	5.4	5.0	5.0	5.0	5.7	5.9
Total Carbon Dioxide Emissions					1.8	2.0

AEO = Annual Energy Outlook.

Source: Tables 2 through 18

Note: Projections of carbon dioxide emissions began in *AEO93* and were first evaluated in year 2000.

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Table 2. Total Energy Consumption, Actual vs. Forecasts

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average
																	Absolute
																	Error
(quadrillion Btu)																	
AEO82	79.1	79.6	79.9	80.8	82.0	83.3											1.8
AEO83	78.0	79.5	81.0	82.4	83.8	84.6					89.5						1.2
AEO84	78.5	79.4	81.2	83.1	85.0	86.4					93.5						1.5
AEO85	77.6	78.5	79.8	81.2	82.6	83.3	84.2	85.2	85.9	86.7	87.7						1.4
AEO86		77.0	78.8	79.8	80.6	81.5	82.9	84.0	84.8	85.7	86.5	87.9	88.4	87.8	88.7	89.6	4.0
AEO87			78.9	80.0	81.9	82.8	83.9	85.3	86.4	87.5	88.4					91.9	1.5
AEO89				82.2	83.7	84.5	85.4	86.4	87.3	88.2	89.2	90.8	91.4	90.9	91.7	92.9	2.1
AEO90					84.2	85.4					91.9					97.4	0.9
AEO91						84.4	85.0	86.0	87.0	87.9	89.1	90.4	91.8	93.1	94.3	95.6	1.6
AEO92							84.7	87.0	88.0	89.2	90.5	91.4	92.4	93.4	94.5	95.6	1.4
AEO93								87.0	88.3	89.8	91.4	92.7	94.0	95.3	96.3	97.5	0.8
AEO94									88.0	89.5	90.7	91.7	92.7	93.6	94.6	95.7	1.4
AEO95										89.2	90.0	90.6	91.9	93.0	93.8	94.6	2.2
AEO96											90.6	91.3	92.5	93.5	94.3	95.1	2.0

AEO92																			1.5
AEO93																			0.9
AEO94																			1.5
AEO95																			2.3
AEO96																			2.1
AEO97																			0.7
AEO98																			1.4
AEO99																			0.3
AEO2000																			0.4
AEO2001																			0.9
Average																			
Absolute																			
Percent	1.9	2.3	1.0	2.1	2.1	1.3	0.8	1.1	1.1	1.4	1.8	3.0	2.2	1.9	2.5	2.8			1.9
Error																			

AEO = Annual Energy Outlook.

Btu = British thermal unit.

Note: Includes nonelectric renewables.

Sources: **Actual Values:** Energy Information Administration (EIA), *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001). **Projections:** EIA, *Annual Energy Outlook*, DOE/EIA-0383(82-2001) (Washington, DC, April 1983 - December 2000).

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Table 3. Total Petroleum Consumption, Actual vs. Forecasts

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average Absolute Error	
(million barrels per day)																		
AEO82	18.00	17.89	17.55	17.24	16.98	16.99												0.86
AEO83	15.82	16.13	16.37	16.50	16.56	16.63					17.37							0.40
AEO84	15.77	15.76	16.01	16.27	16.48	16.74					18.00							0.52
AEO85	15.72	15.74	15.97	16.01	16.06	16.08	16.18	16.23	16.32	16.36	16.53							0.86
AEO86		16.07	16.29	16.05	16.07	16.15	16.31	16.37	16.42	16.44	16.46	16.50	16.64	16.80	17.21	17.38		1.24
AEO87			16.52	16.66	16.96	17.06	17.29	17.56	17.73	17.76	17.72						18.30	0.32
AEO89				17.01	17.20	17.44	17.57	17.72	17.76	17.78	17.82	18.05	18.12	18.19	18.40	18.61		0.50
AEO90					17.24	17.41					18.21						18.84	0.33
AEO91						16.95	16.65	16.83	17.01	17.17	17.34	17.53	17.83	18.09	18.33	18.53		0.55
AEO92							16.74	17.07	17.37	17.59	17.80	17.86	17.99	18.14	18.26	18.43		0.46
AEO93								17.07	17.45	17.79	18.15	18.26	18.60	18.88	19.07	19.25		0.17
AEO94									17.67	17.99	18.20	18.42	18.66	18.85	19.06	19.34		0.25
AEO95										17.53	17.93	17.96	18.29	18.48	18.69	18.87		0.42
AEO96											17.78	17.88	18.10	18.38	18.58	18.78		0.53
AEO97												18.18	18.34	18.70	19.05	19.38		0.24
AEO98													18.89	18.92	19.36	19.62		0.14
AEO99														18.86	19.2	19.91		0.27
AEO2000															19.33	19.56		0.14
AEO2001																19.50		0.02
Actual Value	15.73	16.28	16.67	17.28	17.33	16.99	16.71	17.03	17.24	17.72	17.72	18.31	18.62	18.92	19.52	19.48		
Average Absolute Error	0.60	0.61	0.51	0.75	0.64	0.37	0.41	0.42	0.47	0.44	0.41	0.49	0.54	0.53	0.81	0.57		0.53
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average Absolute Percent Error	
(percent error)																		
AEO82	14.4	9.9	5.3	-0.2	-2.0	0.0												5.3
AEO83	0.6	-0.9	-1.8	-4.5	-4.4	-2.1						-2.0						2.3

AEO84	0.3	-3.2	-4.0	-5.8	-4.9	-1.5					1.6								3.0
AEO85	-0.1	-3.3	-4.2	-7.3	-7.3	-5.4	-3.2	-4.7	-5.3	-7.7	-6.7								5.0
AEO86		-1.3	-2.3	-7.1	-7.3	-4.9	-2.4	-3.9	-4.8	-7.2	-7.1	-9.9	-10.6	-11.2	-11.8	-10.8			6.8
AEO87			-0.9	-3.6	-2.1	0.4	3.5	3.1	2.8	0.2	0.0							-6.1	1.9
AEO89				-1.6	-0.8	2.6	5.1	4.1	3.0	0.3	0.6	-1.4	-2.7	-3.9	-5.7	-4.5			2.8
AEO90					-0.5	2.5					2.8							-3.3	1.9
AEO91						-0.2	-0.4	-1.2	-1.3	-3.1	-2.1	-4.3	-4.2	-4.4	-6.1	-4.9			2.9
AEO92							0.2	0.2	0.8	-0.7	0.5	-2.5	-3.4	-4.1	-6.5	-5.4			2.4
AEO93								0.2	1.2	0.4	2.4	-0.3	-0.1	-0.2	-2.3	-1.2			0.9
AEO94									2.5	1.5	2.7	0.6	0.2	-0.4	-2.4	-0.7			1.4
AEO95										-1.1	1.2	-1.9	-1.8	-2.3	-4.3	-3.1			2.2
AEO96											0.3	-2.3	-2.8	-2.9	-4.8	-3.6			2.8
AEO97												-0.7	-1.5	-1.2	-2.4	-0.5			1.3
AEO98													1.5	0.0	-0.8	0.7			0.7
AEO99														-0.3	-1.6	2.2			1.4
AEO2000															-1.0	0.4			0.7
AEO2001																0.1			0.1
Average																			
Absolute																			
Percent																			
Error	3.8	3.7	3.1	4.3	3.7	2.2	2.5	2.5	2.7	2.5	2.3	2.7	2.9	2.8	4.1	2.9			3.0

AEO = Annual Energy Outlook.

Sources: **Actual Values:** Energy Information Administration (EIA), *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001). **Projections:** EIA, *Annual Energy Outlook*, DOE/EIA-0383(82-2001) (Washington, DC, April 1983 - December 2000).

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AEO83	2.7	8.7	2.1	-1.6	-5.5	-5.1					-21.5							6.7
AEO84	5.4	11.4	6.5	3.2	-0.4	0.2					-13.1							5.8
AEO85	3.0	9.7	4.0	1.5	-1.2	-0.1	-1.3	-3.4	-7.2	-9.1	-12.8							4.8
AEO86		1.8	-2.2	-3.8	-8.1	-6.5	-6.7	-9.1	-11.7	-13.0	-16.4	-17.9	-16.8	-13.7	-16.9	-21.1		11.1
AEO87			-2.1	-6.1	-8.3	-7.7	-8.9	-10.8	-12.9	-13.0	-15.2					-13.5		9.4
AEO89				-1.6	-4.5	-4.2	-5.0	-7.4	-9.6	-9.8	-12.2	-12.7	-11.0	-6.6	-7.9	-10.7		7.9
AEO90					-2.4	-0.3					-4.1					0.7		2.3
AEO91						-1.0	0.9	-1.0	-3.6	-4.6	-7.3	-8.0	-5.9	-1.6	-2.2	-4.7		3.7
AEO92							-1.3	-0.9	-2.2	-3.0	-4.9	-5.9	-3.8	0.8	-0.2	-3.6		2.7
AEO93								3.7	-0.5	-0.8	-2.8	-2.0	-0.6	4.4	4.0	0.5		2.2
AEO94									-2.0	-2.4	-4.4	-4.5	-3.5	0.8	-0.5	-3.2		2.6
AEO95										0.5	-4.3	-5.1	-3.4	1.8	1.2	-2.6		2.7
AEO96											-1.2	-1.5	0.7	4.5	2.6	-1.6		2.0
AEO97												0.8	3.6	9.3	8.9	5.1		5.5
AEO98													-0.5	8.3	9.9	6.0		6.2
AEO99															0.4	3.0	-0.7	1.4
AEO2000																-1.1	-1.5	1.3
AEO2001																	-3.1	3.1

Average																		
Absolute																		
Percent																		
Error	4.7	7.0	4.3	4.1	5.3	3.8	4.0	5.2	6.2	6.3	9.2	6.5	5.0	4.7	4.9	5.0	5.5	

AEO = Annual Energy Outlook.

Note: AEO82 projections given in Btu were converted to trillion cubic feet using a conversion factor of 1.03.

Sources: **Actual Values:** Energy Information Administration (EIA), *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001). **Projections:** EIA, *Annual Energy Outlook*, DOE/EIA-0383(82-2001) (Washington, DC, April 1983 - December 2000).

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Table 5. Total Coal Consumption, Actual vs. Forecasts

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average Absolute Error
(million short tons)																	
AO82	805	825	843	868	896	936											15
AO83	807	831	848	870	899	928					1061						27
AO84	843	848	866	889	919	958					1110						47
AO85	818	833	842	853	867	891	918	943	970	989	1008						25
AO86		813	831	860	870	888	919	945	972	995	1021	1038	1051	1069	1083	1105	28
AO87			837	837	854	879	896	912	932	954	975					1059	16
AO89				872	882	894	903	927	947	965	987	990	1006	1026	1045	1062	13
AO90					884	893					984					1049	14
AO91						893	902	918	932	943	948	962	973	984	991	1003	31
AO92							905	934	919	925	934	944	953	961	971	993	49
AO93								929	931	940	947	958	965	970	972	987	45
AO94									920	928	933	938	943	948	953	958	67
AO95										935	940	941	947	948	951	954	71
AO96											937	942	954	962	983	990	66

AEO97	948	970	987	1003	1017	55
AEO98		1009	1051	1044	1058	14
AEO99			1040	1075	1092	15
AEO2000				1053	1086	7
AEO2001					1078	2

Actual																	
Value	818	804	837	884	895	903	899	907	944	950	962	1006	1030	1038	1045	1080	

Average																	
Absolute Error	12	26	10	21	18	21	9	22	18	20	42	51	57	51	47	57	34

																		Average
																		Absolute
																		Percent
																		Error
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000		

(percent error)

AEO82	-1.6	2.6	0.7	-1.8	0.1	3.7													1.7
AEO83	-1.3	3.4	1.3	-1.6	0.4	2.8					10.3								3.0
AEO84	3.1	5.5	3.5	0.6	2.6	6.1					15.4								5.2
AEO85	0.0	3.6	0.6	-3.5	-3.2	-1.3	2.1	3.9	2.8	4.1	4.8								2.7
AEO86		1.1	-0.7	-2.7	-2.8	-1.7	2.2	4.1	3.0	4.7	6.1	3.2	2.0	3.0	3.6	2.3			2.9
AEO87			0.0	-5.3	-4.6	-2.6	-0.3	0.5	-1.2	0.4	1.4								1.8
AEO89				-1.4	-1.5	-1.0	0.4	2.2	0.4	1.6	2.6	-1.6	-2.3	-1.2	0.0	-1.6			1.4
AEO90					-1.3	-1.1					2.3								1.6
AEO91						-1.1	0.3	1.2	-1.2	-0.7	-1.5	-4.4	-5.5	-5.2	-5.2	-7.1			3.0

AEO92	0.7	2.9	-2.6	-2.6	-2.9	-6.2	-7.5	-7.4	-7.1	-8.0	4.8						
AEO93		2.4	-1.3	-1.1	-1.6	-4.8	-6.3	-6.6	-7.0	-8.6	4.4						
AEO94			-2.5	-2.3	-3.0	-6.8	-8.5	-8.7	-8.8	-11.3	6.5						
AEO95				-1.6	-2.3	-6.5	-8.1	-8.7	-9.0	-11.6	6.8						
AEO96					-2.6	-6.4	-7.4	-7.3	-6.0	-8.3	6.3						
AEO97						-5.8	-5.8	-4.9	-4.0	-5.8	5.3						
AEO98							-2.0	1.2	-0.1	-2.0	1.4						
AEO99								0.2	2.8	1.1	1.4						
AEO2000									0.7	0.6	0.7						
AEO2001										-0.2	0.2						
Average	1.5	3.2	1.1	2.4	2.1	2.4	1.0	2.5	1.9	2.1	4.4	5.1	5.6	5.0	4.5	5.3	3.5

Absolute

Percent Error

AEO = Annual Energy Outlook.

Sources: **Actual Values:** Energy Information Administration (EIA), *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001). **Projections:** EIA, *Annual Energy Outlook*, DOE/EIA-0383(82-2001) (Washington, DC, April 1983 - December 2000).

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Annual Energy Outlook Forecast Evaluation

Table 6. Total Electricity Sales, Actual vs. Forecasts

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average
																	Absolute
																	Error
(billion kilowatt-hours)																	
AEO82	2364	2454	2534	2626	2708	2811											62
AEO83	2318	2395	2476	2565	2650	2739					3153						30
AEO84	2321	2376	2461	2551	2637	2738					3182						32
AEO85	2317	2360	2427	2491	2570	2651	2730	2808	2879	2949	3026						36
AEO86		2363	2416	2479	2533	2608	2706	2798	2883	2966	3048	3116	3185	3255	3324	3397	41
AEO87			2460	2494	2555	2622	2683	2748	2823	2902	2977					3363	65
AEO89				2556	2619	2689	2760	2835	2917	2994	3072	3156	3236	3313	3394	3473	43
AEO90					2612	2689					3083					3488	50
AEO91						2700	2762	2806	2855	2904	2959	3022	3088	3151	3214	3282	71
AEO92							2746	2845	2858	2913	2975	3030	3087	3146	3209	3276	78
AEO93								2803	2840	2893	2946	2998	3052	3104	3157	3214	112
AEO94									2843	2891	2928	2962	3004	3039	3071	3112	166
AEO95										2951	2967	2983	3026	3058	3085	3108	161
AEO96											2973	2998	3039	3074	3106	3137	171
AEO97												3075	3115	3168	3229	3290	89
AEO98													3106	3204	3255	3318	81
AEO99														3205	3262	3333	81
AEO2000															3288	3360	52
AEO2001																3364	34
Actual	2324	2369	2457	2578	2665	2733	2773	2774	2877	2953	3029	3115	3164	3290	3354	3398	*
Value																	
Average																	
Absolute																	
Error	14	27	29	54	65	59	42	40	27	36	67	87	89	138	145	128	75

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average
																	Absolute
																	Percent
																	Error
(percent error)																	
AEO82	1.7	3.6	3.1	1.9	1.6	2.9											2.1
AEO83	-0.3	1.1	0.8	-0.5	-0.6	0.2					4.1						0.9
AEO84	-0.1	0.3	0.2	-1.0	-1.1	0.2					5.1						1.0
AEO85	-0.3	-0.4	-1.2	-3.4	-3.6	-3.0	-1.6	1.2	0.1	-0.1	-0.1						1.2
AEO86		-0.3	-1.7	-3.8	-5.0	-4.6	-2.4	0.9	0.2	0.4	0.6	0.0	0.7	-1.1	-0.9	0.0	1.5
AEO87			0.1	-3.3	-4.1	-4.1	-3.2	-0.9	-1.9	-1.7	-1.7					-1.0	2.3
AEO89				-0.9	-1.7	-1.6	-0.5	2.2	1.4	1.4	1.4	1.3	2.3	0.7	1.2	2.2	1.4
AEO90					-2.0	-1.6					1.8					2.6	1.8
AEO91						-1.2	-0.4	1.2	-0.8	-1.7	-2.3	-3.0	-2.4	-4.2	-4.2	-3.4	2.2
AEO92							-1.0	2.6	-0.7	-1.4	-1.8	-2.7	-2.4	-4.4	-4.3	-3.6	2.5
AEO93								1.0	-1.3	-2.0	-2.7	-3.8	-3.5	-5.7	-5.9	-5.4	3.5
AEO94									-1.2	-2.1	-3.3	-4.9	-5.1	-7.6	-8.4	-8.4	5.1
AEO95										-0.1	-2.0	-4.2	-4.4	-7.1	-8.0	-8.5	4.9
AEO96											-1.8	-3.8	-4.0	-6.6	-7.4	-7.7	5.2
AEO97												-1.3	-1.5	-3.7	-3.7	-3.2	2.7
AEO98													-1.8	-2.6	-3.0	-2.4	2.4
AEO99														-2.6	-2.7	-1.9	2.4
AEO2000															-2.0	-1.1	1.5
AEO2001																-1.0	1.0
Average																	
Absolute																	
Percent																	
Error	0.6	1.1	1.2	2.1	2.4	2.1	1.5	1.4	0.9	1.2	2.2	2.8	2.8	4.2	4.3	2.9	2.4

AEO = Annual Energy Outlook.

* 2000 value does not include nonutility sales to end users (N/A)

Note: Since total electricity sales for 1999 are not available at the time of publication, this table extends only through 1998.

Sources: **Actual Values:** Energy Information Administration (EIA), *Annual Energy Review 2000*, DOE/EIA-0384(2000)

(Washington, DC, August 2001). **Projections:** EIA, *Annual Energy Outlook*, DOE/EIA-0383(82-2001) (Washington, DC, April 1983 - December 2000).

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Annual Energy Outlook Forecast Evaluation

Table 7. Crude Oil Production, Actual vs. Forecasts

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average Absolute Error
(million barrels per day)																	
AEO82	8.79	8.85	8.84	8.80	8.66	8.21											0.57
AEO83	8.67	8.71	8.66	8.72	8.80	8.63					8.11						0.75
AEO84	8.86	8.70	8.59	8.45	8.28	8.25					7.19						0.41
AEO85	8.92	8.96	9.01	8.78	8.38	8.05	7.64	7.27	6.89	6.68	6.53						0.32
AEO86		8.80	8.63	8.30	7.90	7.43	6.95	6.60	6.36	6.20	5.99	5.80	5.66	5.54	5.45	5.43	0.43
AEO87			8.31	8.18	8.00	7.63	7.34	7.09	6.86	6.64	6.54					6.03	0.11
AEO89				8.18	7.97	7.64	7.25	6.87	6.59	6.37	6.17	6.05	6.00	5.94	5.90	5.89	0.26
AEO90					7.67	7.37					6.40					5.86	0.08
AEO91						7.23	6.98	7.10	7.11	7.01	6.79	6.48	6.22	5.92	5.64	5.36	0.25
AEO92							7.37	7.17	6.99	6.89	6.68	6.45	6.28	6.16	6.06	5.91	0.11
AEO93								7.20	6.94	6.79	6.52	6.22	6.00	5.84	5.72	5.60	0.20
AEO94									6.87	6.50	6.18	5.92	5.72	5.54	5.35	5.18	0.47
AEO95										6.58	6.32	6.04	5.74	5.58	5.39	5.35	0.44
AEO96											6.54	6.33	6.16	5.95	5.79	5.65	0.17
AEO97												6.47	6.32	6.15	6.02	5.87	0.08
AEO98													6.41	6.39	6.28	6.17	0.23
AEO99														6.41	6.33	6.29	0.36
AEO2000															6.01	5.98	0.14
AEO2001																5.89	0.06
Actual Value	8.97	8.68	8.35	8.14	7.61	7.36	7.42	7.17	6.85	6.66	6.56	6.46	6.45	6.25	5.88	5.83	
Average Absolute	0.16	0.12	0.34	0.35	0.59	0.50	0.24	0.16	0.17	0.19	0.34	0.27	0.40	0.36	0.27	0.28	0.31

Error	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average
																	Absolute
																	Percent
																	Error
(percent error)																	
AE082	-2.0	2.0	5.9	8.1	13.8	11.6											7.2
AE083	-3.4	0.3	3.7	7.1	15.6	17.3					23.6						10.2
AE084	-1.2	0.2	2.9	3.8	8.8	12.2					9.6						5.5
AE085	-0.6	3.2	7.9	7.9	10.1	9.4	3.0	1.4	0.6	0.3	-0.5						4.1
AE086		1.4	3.4	2.0	3.8	1.0	-6.3	-8.0	-7.1	-6.9	-8.7	10.2	12.2	11.4	-7.3	-6.9	6.4
AE087			-0.5	0.5	5.1	3.7	-1.0	-1.1	0.2	-0.3	-0.3					3.4	1.4
AE089				0.5	4.7	3.9	-2.3	-4.2	-3.8	-4.4	-5.9	-6.3	-7.0	-5.0	0.3	1.0	3.8
AE090					0.7	0.2					-2.4					0.5	1.1
AE091						-1.7	-5.9	-1.0	3.8	5.2	3.5	0.3	-3.6	-5.3	-4.1	-8.1	3.9
AE092							-0.6	0.0	2.1	3.4	1.8	-0.2	-2.6	-1.4	3.1	1.4	1.7
AE093								0.4	1.4	1.9	-0.6	-3.7	-7.0	-6.6	-2.7	-3.9	3.1
AE094									0.3	-2.4	-5.8	-8.4	11.3	11.4	-9.0	11.1	7.5
AE095										-1.2	-3.7	-6.5	11.0	10.7	-8.3	-8.2	7.1
AE096											-0.3	-2.0	-4.5	-4.8	-1.5	-3.1	2.7
AE097												0.2	-2.0	-1.6	2.4	0.7	1.4
AE098													-0.6	2.2	6.8	5.8	3.9
AE099														2.6	7.7	7.9	6.0
AE02000															2.2	2.6	2.4
AE02001																1.1	1.1
Average																	
Absolute																	
Percent																	
Error	1.8	1.4	4.0	4.3	7.8	6.8	3.2	2.3	2.4	2.9	5.1	4.2	6.2	5.7	4.6	4.8	4.5

AE0 = Annual Energy Outlook.

Sources: **Actual Values:** Energy Information Administration (EIA), *Annual Energy Review 2000*, DOE/EIA-0384 (2000) (Washington, DC, August 2001). **Projections:** EIA, *Annual Energy Outlook*, DOE/EIA-0383(82-2001) (Washington, DC, April 1983 - December 2000).

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Annual Energy Outlook Forecast Evaluation

Table 8. Natural Gas Production, Actual vs. Forecasts

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average Absolute Error
(trillion cubic feet)																	
AEO82	14.74	14.26	14.33	14.89	15.39	15.88											1.98
AEO83	16.48	16.27	16.20	16.31	16.27	16.29					14.89						1.10
AEO84	17.48	17.10	17.44	17.58	17.52	17.32					16.39						0.90
AEO85	16.95	17.08	17.11	17.29	17.40	17.33	17.32	17.27	17.05	16.80	16.50						0.81
AEO86		16.30	16.27	17.15	16.68	16.90	16.97	16.87	16.93	16.86	16.62	16.40	16.33	16.57	16.23	16.12	1.45
AEO87			16.21	16.09	16.38	16.32	16.30	16.30	16.44	16.62	16.81					17.39	1.38
AEO89				16.71	16.71	16.94	17.01	16.83	17.09	17.35	17.54	17.67	17.98	18.20	18.25	18.49	0.84
AEO90					16.91	17.25					18.84					20.58	0.40
AEO91						17.40	17.48	18.11	18.22	18.15	18.22	18.39	18.82	19.03	19.28	19.62	0.35
AEO92							17.43	17.69	17.95	18.00	18.29	18.27	18.51	18.75	18.97	19.19	0.32
AEO93								18.47	18.05	18.16	18.45	18.90	19.07	19.30	19.60	19.86	0.42
AEO94									17.71	17.68	17.84	18.12	18.25	18.43	18.58	18.93	0.56
AEO95										18.28	17.98	17.92	18.21	18.63	18.92	19.08	0.49
AEO96											18.90	19.15	19.52	19.59	19.59	19.65	0.56
AEO97												19.10	19.70	20.17	20.32	20.54	1.07
AEO98													18.85	19.06	20.35	20.27	0.75
AEO99														18.8	19.13	19.28	0.21
AEO2000															18.36	18.89	0.30
AEO2001																18.61	0.61
Actual Value	16.45	16.06	16.62	17.10	17.31	17.81	17.70	17.84	18.10	18.82	18.60	18.85	18.90	18.87	18.62	19.22	
Average Absolute Error	0.82	0.86	0.80	0.73	0.73	0.96	0.61	0.73	0.70	1.28	1.20	0.77	0.69	0.60	0.86	0.70	0.83
(percent error)																	
AEO82	-10.4	-11.2	-13.8	-12.9	-11.1	-10.8											11.7

(percent error)

AEO82	3.4	5.5	4.8	4.7	5.1	5.0												4.7
AEO83	1.8	4.0	3.0	2.5	3.0	1.6				15.3								4.5
AEO84	1.7	3.5	3.2	2.5	3.0	2.7				18.2								5.0
AEO85	0.2	2.1	1.2	-1.1	-2.3	-4.3	1.9	4.3	13.4	5.8	8.0							4.1
AEO86		0.0	0.1	0.4	-1.9	-4.5	2.1	4.6	13.5	6.1	9.0	7.3	6.1	5.2	8.2	13.2		5.5
AEO87			-0.2	-3.8	-5.0	-6.5	-1.8	-0.2	7.9	0.9	3.4						6.8	3.3
AEO89				-0.9	-3.6	-5.1	-0.6	2.0	9.9	2.3	4.7	1.9	1.6	1.1	4.7	8.9		3.6
AEO90					-0.8	-4.1					5.0						9.5	3.3
AEO91						0.6	0.6	1.8	9.1	0.9	2.0	0.1	-1.0	-2.0	1.0	5.3		2.2
AEO92							0.8	4.2	7.8	0.0	1.8	0.0	-1.5	-2.8	0.1	5.3		2.4
AEO93								4.1	10.4	1.9	3.1	1.1	-0.4	-2.1	0.1	4.6		3.1
AEO94									5.7	-1.3	0.8	-1.2	-3.1	-4.7	-2.5	0.5		2.5
AEO95										-2.7	-2.2	-5.0	-6.8	-9.0	-7.2	-4.5		5.4
AEO96											0.4	-1.9	-4.5	-6.5	-3.6	-0.5		2.9
AEO97												-3.4	-3.5	-4.1	-1.1	2.7		3.0
AEO98													-0.2	0.4	2.5	6.5		2.4
AEO99														0.6	4.9	8.6		4.7
AEO2000															1.8	5.6		3.7
AEO2001																3.3		3.3

Average																		
Absolute																		
Percent																		
Error	1.8	3.0	2.1	2.3	3.1	3.8	1.3	3.0	9.7	2.4	5.7	2.4	2.9	3.5	3.1	5.4		3.7

AEO = Annual Energy Outlook.

Sources: **Actual Values:** Energy Information Administration (EIA), *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001). **Projections:** EIA, *Annual Energy Outlook*, DOE/EIA-0383(82-2001) (Washington, DC, April 1983 - December 2000).

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	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Error	
	(percent error)																	
AEO82	76.7	36.9	20.5	3.5	-7.5	-1.0												24.3
AEO83	20.0	0.0	-3.0	12.1	20.6	16.9					11.8							12.1
AEO84	13.1	-6.1	-6.4	-9.7	12.4	-8.0					9.6							9.3
AEO85	-2.8	19.5	20.0	25.2	25.6	20.1	-6.0	-4.0	-6.3	-8.2	-1.9							12.7
AEO86		-5.3	-9.0	17.1	17.8	-9.8	6.9	8.1	2.1	-1.1	3.9	-0.4	-4.6	-7.4	-3.4	-2.9		6.7
AEO87			-1.7	-8.3	-5.4	1.7	17.9	20.2	14.3	11.1	13.8						-0.4	10.5
AEO89				-4.7	-5.0	4.6	20.1	22.9	15.9	12.3	17.6	12.9	5.2	-0.1	1.1	1.5		9.5
AEO90					0.0	6.3					15.7						-1.0	7.3
AEO91						1.7	9.4	5.8	-1.8	-4.1	2.7	0.8	-0.8	-1.5	1.6	4.6		3.2
AEO92							3.5	6.9	3.4	1.4	8.4	3.5	-1.1	-4.5	-4.1	-2.5		3.9
AEO93								4.5	5.1	5.5	14.8	10.4	8.3	5.4	6.3	7.2		7.5
AEO94									5.5	8.9	16.7	12.9	9.4	4.9	7.3	8.9		9.3
AEO95										0.5	9.6	5.8	4.4	1.3	3.4	4.1		4.2
AEO96											4.6	0.1	-3.7	-4.6	-2.7	0.3		2.7
AEO97												-0.1	-2.9	-1.8	1.3	4.3		2.1
AEO98													-1.2	-4.8	1.0	1.2		2.1
AEO99														-5.1	-4.9	6.0		5.3
AEO2000																-0.5	4.9	2.7
AEO2001																	1.2	1.2
Average																		
Absolute																		
Percent																		
Error	28.1	13.6	10.1	11.5	11.8	7.8	10.6	10.3	6.8	5.9	10.1	5.2	4.2	3.8	3.1	3.8		7.9

AEO = Annual Energy Outlook.

Sources: **Actual Values:** Energy Information Administration (EIA), *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001). **Projections:** EIA, *Annual Energy Outlook*, DOE/EIA-0383(82-2001) (Washington, DC, April 1983 - December 2000).

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Forecasts

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Annual Energy Outlook Forecast Evaluation

Table 11. Net Natural Gas Imports, Actual vs. Forecast

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average Absolute Error
(trillion cubic feet)																	
AE082	1.19	1.19	1.19	1.19	1.19	1.19											0.24
AE083	1.08	1.16	1.23	1.23	1.23	1.23					1.23						0.38
AE084	0.99	1.05	1.16	1.27	1.43	1.57					2.11						0.23
AE085	0.94	1.00	1.19	1.45	1.58	1.86	1.94	2.06	2.17	2.32	2.44						0.22
AE086		0.74	0.88	0.62	1.03	1.05	1.27	1.39	1.47	1.66	1.79	1.96	2.17	2.38	2.42	2.43	0.59
AE087			0.84	0.89	1.07	1.16	1.26	1.36	1.46	1.65	1.75					2.50	0.49
AE089				1.15	1.32	1.44	1.52	1.61	1.70	1.79	1.87	1.98	2.06	2.15	2.23	2.31	0.56
AE090					1.26	1.43					2.07					2.68	0.22
AE091						1.36	1.53	1.70	1.82	2.11	2.30	2.33	2.36	2.42	2.49	2.56	0.45
AE092							1.48	1.62	1.88	2.08	2.25	2.41	2.56	2.68	2.70	2.72	0.41
AE093								1.79	2.08	2.35	2.49	2.61	2.74	2.89	2.95	3.00	0.21
AE094									2.02	2.40	2.66	2.74	2.81	2.85	2.89	2.93	0.20
AE095										2.46	2.54	2.80	2.87	2.87	2.89	2.90	0.21
AE096											2.56	2.75	2.85	2.88	2.93	2.98	0.21
AE097												2.82	2.96	3.16	3.43	3.46	0.07
AE098													2.95	3.19	3.53	3.84	0.19
AE099														2.92	3.16	3.29	0.18
AE02000															3.42	3.65	0.08
AE02001																3.51	0.02
Actual Value	0.89	0.69	0.94	1.22	1.28	1.45	1.64	1.92	2.21	2.46	2.69	2.78	2.84	2.99	3.42	3.49	
Average Absolute Error	0.16	0.34	0.20	0.19	0.14	0.20	0.24	0.31	0.39	0.37	0.53	0.30	0.26	0.29	0.52	0.53	0.34
																	Average

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Absolute Percent Error
(percent error)																	
AEO82	33.1	72.7	26.7	-2.5	-7.0	-											26.6
AEO83	20.8	68.4	31.0	0.8	-3.9	-					-						27.7
AEO84	10.7	52.4	23.5	4.1	11.7	8.6					-						18.9
AEO85	5.1	45.1	26.7	18.9	23.4	28.6	18.0	7.2	-1.8	-5.8	-9.2						17.3
AEO86		7.4	-6.3	-	-	-	-	-	-	-	-	-	-	-	-	-	26.2
AEO87			10.5	27.0	16.4	19.8	23.4	29.2	33.9	33.0	34.9					28.4	25.3
AEO89				-5.7	3.1	-0.4	-7.5	16.2	23.1	27.3	30.4	28.8	27.5	28.1	34.8	33.8	20.5
AEO90					-1.6	-1.1					-					23.2	8.5
AEO91						-5.9	-6.9	11.5	17.6	14.3	14.4	16.2	16.9	19.1	27.2	26.6	16.1
AEO92							10.0	15.7	14.9	15.5	16.3	13.3	-9.9	10.4	21.1	22.1	14.9
AEO93								-6.8	-5.9	-4.5	-7.3	-6.1	-3.5	-3.3	13.7	14.0	7.3
AEO94									-8.6	-2.5	-1.0	-1.4	-1.1	-4.7	15.5	16.0	6.4
AEO95										-0.1	-5.5	0.7	1.1	-4.0	15.5	16.9	6.2
AEO96											-4.7	-1.1	0.4	-3.7	14.3	14.6	6.5
AEO97												1.4	4.2	5.7	0.3	-0.9	2.5
AEO98													3.9	6.7	3.2	10.0	6.0
AEO99														-2.3	-7.6	-5.7	5.2
AEO2000															0.0	4.6	2.3
AEO2001																0.7	0.7
Average																	
Absolute																	
Percent																	
Error	17.4	49.2	20.8	15.5	10.8	13.8	14.8	16.3	17.4	15.1	19.7	11.0	9.2	9.9	15.2	15.1	15.8

AEO = Annual Energy Outlook.

Note: AEO82 projections given in Btu were converted to trillion cubic feet using a conversion factor of 1.03.

Sources: **Actual Values:** Energy Information Administration (EIA), *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001). **Projections:** EIA, *Annual Energy Outlook*, DOE/EIA-0383(82-2001) (Washington, DC, April 1983 - December 2000).

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Forecasts

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Annual Energy Outlook Forecast Evaluation

Table 12. Net Coal Exports, Actual vs. Forecasts

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average Absolute Error
(million short tons)																	
AEO82	109	114	120	127	135	144											34
AEO83	83	86	90	94	99	105					116						9
AEO84	72	74	77	81	86	91					106						13
AEO85	83	83	83	84	85	87	89	92	95	98	102						15
AEO86		87	87	88	89	91	92	94	96	98	100	101	102	103	105	107	23
AEO87			76	72	73	76	77	79	82	83	86					84	19
AEO89				84	80	82	83	85	87	88	90	93	97	99	102	105	24
AEO90					95	92					99					126	11
AEO91						105	96	96	97	100	104	100	104	111	119	130	32
AEO92							98	99	103	109	116	117	120	124	130	138	43
AEO93								108	111	113	117	118	120	124	130	137	50
AEO94									79	93	108	110	113	117	120	123	42
AEO95										57	66	69	70	70	72	74	13
AEO96											71	76	77	77	78	79	14
AEO97												82	84	86	87	88	21
AEO98													80	83	85	87	24
AEO99														75	75	76	20
AEO2000															54	53	6
AEO2001																48	2
Actual Value	91	83	78	93	98	103	106	99	66	63	79	82	76	69	49	46	
Average Absolute Error	13	9	12	13	15	16	17	8	27	32	23	18	22	28	47	50	25
																	Average Absolute

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Percent Error
(percent error)																	
AEO82	19.8	37.3	53.8	36.6	37.8	39.8											37.5
AEO83	-8.8	3.6	15.4	1.1	1.0	1.9					46.8						11.2
AEO84	-	-	-1.3	-	-	-					34.2						14.9
AEO85	-8.8	0.0	6.4	-9.7	-	-	-	-7.1	43.3	56.8	29.1						18.7
AEO86		4.8	11.5	-5.4	-9.2	-	-	-5.1	44.8	56.8	26.6	22.6	34.2	48.6	112.6	132.6	36.0
AEO87			-2.6	-	-	-	-	-	23.7	32.8	8.9					82.6	21.1
AEO89				-9.7	-	-	-	-	31.2	40.8	13.9	12.9	27.6	42.9	106.5	128.3	37.6
AEO90					-3.1	-					25.3					173.9	13.0
AEO91						1.9	-9.4	-3.0	46.3	60.0	31.6	21.4	36.8	60.2	140.9	182.6	54.0
AEO92							-7.5	0.0	55.4	74.4	46.8	42.0	57.9	78.9	163.2	200.0	72.6
AEO93								9.1	67.4	80.8	48.1	43.2	57.9	78.9	163.2	197.8	82.9
AEO94									19.2	48.8	36.7	33.5	48.7	68.8	142.9	167.4	70.7
AEO95										-8.8	-	-	-7.9	1.0	45.7	60.9	22.4
AEO96											10.1	-7.8	1.3	11.1	57.9	71.7	26.7
AEO97												-0.5	10.5	24.1	76.1	91.3	40.5
AEO98													5.3	19.8	72.1	89.1	46.6
AEO99														8.2	51.8	65.2	41.8
AEO2000															9.3	15.2	12.3
AEO2001																3.3	3.3
Average																	
Absolute																	
Percent																	
Error	14.6	11.3	15.2	14.0	15.1	15.5	15.9	8.4	41.4	51.1	28.8	22.2	28.8	40.2	95.2	108.1	39.1

AEO = Annual Energy Outlook.

Sources: **Actual Values:** Energy Information Administration (EIA), *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001). **Projections:** EIA, *Annual Energy Outlook*, DOE/EIA-0383(82-2001) (Washington, DC, April 1983 - December 2000).

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Annual Energy Outlook Forecast Evaluation

Table 13. World Oil Prices, Actual vs. Forecasts

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average Absolute Error
(dollars per barrel)																	
AEO82	28.49	32.47	37.38	41.90	45.66	49.02											20.23
AEO83	28.44	28.18	30.67	36.07	41.41	46.93					74.25						22.18
AEO84	28.92	28.67	29.56	31.76	34.27	37.00					56.65						16.60
AEO85	27.00	25.70	24.38	25.26	28.60	32.23	34.75	36.99	37.95	40.22	41.14						14.09
AEO86		14.57	15.89	17.28	18.91	20.72	22.20	24.74	28.25	32.08	35.49	38.41	44.92	46.96	44.91	47.70	12.75
AEO87			18.11	17.41	19.01	20.06	20.97	21.54	23.17	25.76	28.98					43.29	4.47
AEO89				14.70	15.00	16.31	17.52	18.47	20.38	23.07	25.72	28.61	34.49	37.27	36.01	38.04	8.37
AEO90					17.70	17.53					24.45					36.25	3.97
AEO91						22.00	24.95	25.64	26.31	26.95	27.56	28.08	31.33	31.91	30.43	32.11	9.42
AEO92							19.13	20.19	20.72	22.23	23.89	25.50	29.90	31.64	30.80	32.99	7.51
AEO93								18.90	20.09	20.96	21.99	22.85	26.00	27.01	25.87	27.53	5.37
AEO94									17.12	17.27	18.26	19.34	22.34	23.52	22.75	24.23	3.68
AEO95										15.26	17.19	18.04	20.78	21.65	20.66	21.81	3.44
AEO96											17.24	17.69	20.20	21.11	20.26	21.44	3.84
AEO97												19.88	21.08	20.90	19.39	19.80	4.44
AEO98													20.27	20.27	19.40	20.41	4.85
AEO99														12.49	12.40	13.37	6.54
AEO2000															15.88	20.08	4.49
AEO2001																28.21	0.52
Actual Value	26.99	14.00	18.13	14.56	18.08	21.76	18.70	18.20	16.14	15.51	17.14	20.64	18.53	12.04	17.26	27.69	
Average Absolute Error	1.22	11.92	8.62	11.78	10.36	10.09	4.95	5.58	8.11	9.41	14.61	5.32	8.60	14.75	8.68	7.19	9.30
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average Absolute Percent

(percent error)

AEO82	5.5	131.9	106.2	187.7	152.5	125.3												118.2
AEO83	5.4	101.3	69.2	147.7	129.1	115.7					333.2							128.8
AEO84	7.2	104.8	63.1	118.2	89.6	70.0					230.5							97.6
AEO85	0.0	83.6	34.5	73.5	58.2	48.1	85.8	103.2	135.1	159.3	140.0							83.8
AEO86		4.1	-12.4	18.7	4.6	-4.8	18.7	35.9	75.0	106.8	107.1	86.1	142.4	290.0	160.2	72.3		75.9
AEO87			-0.1	19.6	5.1	-7.8	12.1	18.4	43.6	66.1	69.1						56.4	26.9
AEO89				1.0	-17.0	-25.1	-6.3	1.5	26.3	48.7	50.1	38.6	86.1	209.5	108.6	37.4		50.5
AEO90					-2.1	-19.4					42.6						30.9	21.4
AEO91						1.1	33.4	40.9	63.0	73.8	60.8	36.0	69.1	165.0	76.3	16.0		57.8
AEO92							2.3	10.9	28.4	43.3	39.4	23.6	61.3	162.8	78.5	19.1		47.0
AEO93								3.8	24.5	35.1	28.3	10.7	40.3	124.4	49.9	-0.6		35.3
AEO94									6.1	11.3	6.6	-6.3	20.6	95.4	31.8	-12.5		23.8
AEO95										-1.6	0.3	-12.6	12.2	79.8	19.7	-21.2		21.1
AEO96											0.6	-14.3	9.0	75.3	17.4	-22.6		23.2
AEO97												-3.7	13.7	73.6	12.3	-28.5		26.4
AEO98													9.4	68.4	12.4	-26.3		29.1
AEO99														3.8	-28.1	-51.7		27.9
AEO2000																-8.0	-27.5	17.7
AEO2001																	1.9	1.9
Average																		
Absolute																		
Percent																		
Error	4.5	85.1	47.6	80.9	57.3	46.4	26.5	30.7	50.2	60.7	85.3	25.8	46.4	122.5	50.3	26.0		55.4

AEO = Annual Energy Outlook.

Sources: **Actual Values:** Energy Information Administration (EIA), *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001). **Projections:** EIA, *Annual Energy Outlook*, DOE/EIA-0383(82-2001) (Washington, DC, April 1983 - December 2000).[E-Mail Subscription](#)[EIA Home](#)
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Table 14. Natural Gas Wellhead Prices, Actual vs. Forecasts

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average Absolute Error
(dollars per thousand cubic feet)																	
AEO82	4.15	5.10	6.02	6.55	6.83	7.11											4.09
AEO83	2.87	2.98	3.25	3.60	4.10	4.64					9.31						2.57
AEO84	2.76	2.82	3.07	3.39	3.81	4.34					7.15						2.08
AEO85	2.60	2.59	2.61	2.62	2.84	3.20	3.62	4.07	4.51	5.00	5.53						1.74
AEO86		1.73	1.96	2.29	2.55	2.82	3.14	3.64	4.12	4.66	5.24	5.81	6.96	7.46	7.37	8.00	2.56
AEO87			1.83	1.96	2.12	2.30	2.49	2.70	2.98	3.29	3.69					5.66	0.86
AEO89				1.62	1.71	1.90	2.10	2.49	2.86	3.18	3.49	4.10	4.77	5.09	5.00	5.31	1.36
AEO90					1.78	1.89					2.70					4.21	0.47
AEO91						1.77	1.91	2.12	2.29	2.38	2.43	2.48	2.81	2.90	2.92	3.26	0.47
AEO92							1.69	1.86	2.04	2.14	2.32	2.43	2.86	3.06	3.08	3.40	0.43
AEO93								1.85	1.92	2.06	2.25	2.35	2.70	2.88	2.82	3.08	0.42
AEO94									1.99	2.13	2.27	2.40	2.80	2.90	2.73	2.83	0.51
AEO95										1.90	1.99	1.93	2.23	2.29	2.30	2.44	0.35
AEO96											1.64	1.74	2.02	2.14	2.04	2.10	0.44
AEO97												2.02	1.98	2.03	1.93	1.98	0.49
AEO98													2.51	2.37	2.20	2.25	0.50
AEO99														1.98	1.96	2.01	0.61
AEO2000															1.97	2.06	0.87
AEO2001																3.39	0.21
Actual Value	2.51	1.94	1.67	1.69	1.69	1.71	1.64	1.74	2.04	1.85	1.55	2.17	2.32	1.94	2.17	3.60	
Average Absolute Error	0.58	1.19	1.45	1.48	1.53	1.62	0.85	0.93	0.84	1.12	2.30	0.82	0.99	1.25	0.99	1.30	1.26
(percent error)																	
AEO82	65.2	163.1	260.4	287.8	304.0	315.8											232.7
AEO83	14.5	53.5	94.7	113.3	142.5	171.1					500.6						155.7

AEO84	9.9	45.6	83.6	100.7	125.2	153.9					361.4							125.7
AEO85	3.6	33.5	56.1	55.3	67.9	87.1	121.0	133.8	121.3	170.3	256.5							100.6
AEO86		-10.8	17.2	35.3	50.8	65.0	91.4	108.9	102.2	151.6	238.2	168.0	200.0	284.4	239.5	122.1		125.7
AEO87			9.6	15.9	25.2	34.4	52.1	54.9	45.9	77.7	137.9					57.2		50.4
AEO89				-4.1	1.1	11.3	28.2	42.8	40.1	72.1	125.5	88.7	105.5	162.3	130.2	47.5		66.1
AEO90					5.3	10.5					74.0					17.0		29.9
AEO91						3.5	16.6	21.6	12.2	28.7	57.1	14.3	21.0	49.5	34.6	-9.4		24.4
AEO92							3.3	6.8	-0.1	15.9	49.7	12.1	23.2	57.7	41.9	-5.6		21.6
AEO93								6.3	-5.9	11.5	45.4	8.4	16.4	48.4	30.0	-14.5		20.8
AEO94									-2.4	15.3	46.3	10.5	20.6	49.5	26.0	-21.4		24.0
AEO95										2.4	28.4	-11.0	-4.0	17.8	5.9	-32.2		14.5
AEO96											5.6	-19.8	-12.8	10.2	-6.2	-41.6		16.0
AEO97												-7.1	-14.7	4.7	-11.2	-45.0		16.6
AEO98													8.2	22.0	1.6	-37.4		17.3
AEO99														2.0	-9.8	-44.2		18.7
AEO2000															-9.4	-42.9		26.2
AEO2001																-5.8		5.8
Average																		
Absolute																		
Percent																		
Error	23.3	61.3	86.9	87.5	90.2	94.7	52.1	53.6	41.3	60.6	148.2	37.8	42.7	64.4	45.5	36.1		66.3

AEO = Annual Energy Outlook.

Note: AEO82 projections given in Btu were converted to trillion cubic feet using a conversion factor of 1.03.

Sources: **Actual Values:** Energy Information Administration (EIA), *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001). **Projections:** EIA, *Annual Energy Outlook*, DOE/EIA-0383(82-2001) (Washington, DC, April 1983 - December 2000).

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Table 15. Coal Prices to Electric Utilities, Actual vs. Forecasts

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average Absolute Error	
(dollars per million Btu)																		
AEO82	1.95	2.02	2.10	2.20	2.32	2.48											0.66	
AEO83	1.95	2.02	2.10	2.19	2.31	2.43					3.13						0.82	
AEO84	1.89	1.96	2.04	2.13	2.25	2.37					2.90						0.73	
AEO85	1.68	1.75	1.82	1.89	1.98	2.09	2.18	2.27	2.36	2.43	2.51						0.63	
AEO86		1.61	1.68	1.75	1.84	1.94	2.04	2.13	2.23	2.33	2.43	2.50	2.80	2.86	2.65	2.73	0.86	
AEO87			1.52	1.56	1.66	1.76	1.85	1.94	2.04	2.12	2.21					2.66	0.43	
AEO89				1.50	1.52	1.67	1.75	1.81	1.88	1.95	2.01	2.06	2.33	2.36	2.22	2.28	0.60	
AEO90					1.46	1.53					1.91					2.16	0.22	
AEO91						1.51	1.59	1.67	1.76	1.85	1.91	1.97	2.22	2.27	2.14	2.24	0.59	
AEO92							1.55	1.62	1.67	1.75	1.83	1.91	2.12	2.18	2.05	2.17	0.57	
AEO93								2.19	1.53	1.59	1.67	1.71	1.95	1.98	1.87	1.97	0.53	
AEO94									1.51	1.56	1.64	1.72	1.93	1.94	1.84	1.91	0.47	
AEO95										1.42	1.46	1.47	1.67	1.68	1.55	1.58	0.28	
AEO96											1.35	1.34	1.49	1.49	1.37	1.40	0.15	
AEO97												1.35	1.50	1.50	1.39	1.40	0.19	
AEO98													1.40	1.39	1.27	1.28	0.10	
AEO99														1.24	1.13	1.14	0.05	
AEO2000																1.17	1.18	0.04
AEO2001																	1.22	0.02
Actual Value	1.65	1.58	1.51	1.47	1.45	1.46	1.45	1.41	1.39	1.35	1.32	1.29	1.27	1.25	1.22	1.20		
Average Absolute Error	0.22	0.29	0.37	0.42	0.47	0.52	0.38	0.54	0.48	0.54	0.76	0.49	0.67	0.65	0.53	0.54	0.53	
Average Absolute Percent Error																		

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Error
(percent error)																	
AEO82	18.1	28.2	39.3	50.0	59.7	70.1											44.2
AEO83	18.4	27.8	39.6	49.4	59.1	66.6					137.7						57.0
AEO84	14.7	24.4	35.2	45.5	54.9	62.2					120.3						51.0
AEO85	1.9	10.7	21.0	28.8	36.5	43.1	51.0	60.8	69.5	79.7	90.4						44.9
AEO86		2.0	11.6	19.5	26.6	32.8	41.0	51.1	60.3	72.9	84.2	93.8	120.9	129.1	117.6	127.3	66.0
AEO87			0.9	6.7	14.6	20.4	27.8	37.2	46.6	57.4	67.8					121.7	31.1
AEO89				2.3	4.9	14.7	21.1	28.3	35.5	44.7	52.5	59.7	83.3	89.2	81.9	90.2	46.8
AEO90					0.7	5.1					44.6					80.4	16.8
AEO91						3.4	9.9	18.0	27.0	37.2	44.6	52.3	74.8	81.4	75.3	86.4	46.4
AEO92							7.0	15.0	19.9	29.8	38.6	47.8	66.5	74.0	68.3	81.2	44.8
AEO93								55.3	10.0	17.6	26.6	32.6	53.3	58.3	53.2	64.3	41.2
AEO94									8.5	15.2	24.8	33.3	52.0	55.0	51.0	58.9	37.3
AEO95										5.5	10.5	14.2	31.3	34.7	27.0	32.0	22.2
AEO96											2.4	4.2	17.2	19.3	12.4	16.9	12.1
AEO97												5.0	18.2	20.3	14.3	17.0	14.9
AEO98													9.8	10.9	4.5	6.8	8.0
AEO99														-0.6	-7.1	-5.1	4.3
AEO2000															-4.3	-2.1	3.2
AEO2001																2.0	2.0
Average																	
Absolute																	
Percent																	
Error	13.3	18.6	24.6	28.9	32.1	35.4	26.3	38.0	34.6	40.0	57.3	38.1	52.7	52.1	43.1	45.4	39.6

AEO = Annual Energy Outlook.

Btu = British thermal unit.

Sources: **Actual Values:** Energy Information Administration (EIA), *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001). **Projections:** EIA, *Annual Energy Outlook*, DOE/EIA-0383(82-2001) (Washington, DC, April 1983 - December 2000).

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Forecasts

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Table 16. Average Electricity Prices, Actual vs. Forecasts

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average Absolute Error
(cents per kilowatt-hour)																	
AEO82	6.13	6.49	6.88	7.18	7.50	7.87											0.68
AEO83	6.72	6.98	7.26	7.54	7.80	8.09					9.59						1.21
AEO84	6.63	6.88	7.14	7.38	7.59	7.84					8.84						0.97
AEO85	6.62	6.89	7.18	7.40	7.60	7.79	7.95	8.07	8.14	8.23	8.32						1.03
AEO86		6.67	6.89	7.05	7.20	7.38	7.50	7.46	7.47	7.64	7.85	8.06	9.05	9.18	8.63	8.90	1.11
AEO87			6.63	6.69	6.96	7.17	7.40	7.54	7.67	7.84	8.02					9.00	0.65
AEO89				6.50	6.78	7.13	7.39	7.54	7.62	7.78	7.93	8.07	9.04	9.20	8.58	8.83	1.15
AEO90					6.49	6.73					7.73					8.63	0.35
AEO91						6.94	7.36	7.61	7.78	8.06	8.14	8.14	8.96	8.95	8.32	8.56	1.29
AEO92							7.01	7.20	7.34	7.55	7.68	7.79	8.64	8.70	8.10	8.37	1.03
AEO93								7.19	7.30	7.44	7.61	7.71	8.59	8.64	8.03	8.28	1.05
AEO94									6.98	7.15	7.42	7.56	8.43	8.52	8.01	8.19	0.97
AEO95										6.97	7.12	7.15	7.98	8.06	7.47	7.64	0.69
AEO96											7.26	7.29	8.02	8.10	7.62	7.79	0.90
AEO97												7.03	7.84	7.92	7.34	7.51	0.77
AEO98													7.59	7.44	6.90	6.94	0.49
AEO99														6.77	6.27	6.32	0.25
AEO2000															6.12	6.26	0.47
AEO2001																6.95	0.29
Actual Value	6.44	6.44	6.37	6.35	6.45	6.57	6.75	6.82	6.93	6.91	6.89	6.86	6.85	6.74	6.66	6.66	
Average Absolute Error	0.24	0.34	0.63	0.75	0.79	0.87	0.68	0.70	0.61	0.72	1.07	0.78	1.56	1.58	1.11	1.19	0.94
Average																	

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Absolute Percent Error	
(percent error)																		
AEO82	-4.8	0.7	8.0	13.1	16.3	19.8											10.5	
AEO83	4.4	8.4	14.0	18.7	21.0	23.2					39.2						18.4	
AEO84	3.0	6.8	12.1	16.2	17.7	19.3					28.4						14.8	
AEO85	2.8	7.0	12.8	16.5	17.8	18.5	17.8	18.3	17.5	19.2	20.8						15.4	
AEO86		3.5	8.1	11.0	11.6	12.4	11.1	9.4	7.9	10.6	14.0	17.4	32.1	36.2	29.5	33.7	16.6	
AEO87			4.1	5.4	7.9	9.1	9.7	10.5	10.6	13.4	16.4					35.1	9.7	
AEO89				2.3	5.1	8.5	9.4	10.6	9.9	12.6	15.1	17.6	32.0	36.5	28.9	32.6	17.0	
AEO90					0.6	2.4					12.2					29.6	5.1	
AEO91						5.6	9.0	11.5	12.3	16.7	18.2	18.7	30.7	32.8	25.0	28.5	19.0	
AEO92							3.8	5.6	6.0	9.2	11.5	13.6	26.2	29.1	21.7	25.7	15.2	
AEO93								5.5	5.3	7.7	10.5	12.4	25.4	28.1	20.6	24.4	15.5	
AEO94									0.7	3.4	7.7	10.1	23.1	26.3	20.2	22.9	14.3	
AEO95										0.8	3.4	4.2	16.5	19.6	12.2	14.7	10.2	
AEO96											5.4	6.3	17.1	20.2	14.4	17.0	13.4	
AEO97												2.5	14.5	17.5	10.3	12.7	11.5	
AEO98													10.8	10.4	3.5	4.2	7.2	
AEO99														0.4	-5.8	-5.1	3.8	
AEO2000																-8.1	-6.1	7.1
AEO2001																	4.4	4.4
Average																		
Absolute																		
Percent																		
Error	3.8	5.3	9.8	11.9	12.2	13.2	10.1	10.2	8.8	10.4	15.6	11.4	22.8	23.4	16.7	17.9	14.0	

AEO = Annual Energy Outlook.

Sources: Actual Values: Energy Information Administration (EIA), *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001). Projections: EIA, *Annual Energy Outlook*, DOE/EIA-0383(82-2001) (Washington, DC, April 1983 - December 2000).

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Table 17. Gross Domestic Product, Actual vs. Forecasts

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average Absolute Error
(billion dollars)																	
AEO82	3939	4306	4733	5201	5712	6288											192
AEO83	3919	4264	4650	5086	5549	6053					9362						410
AEO84	3910	4191	4589	5031	5490	5979					9098						381
AEO85	3882	4103	4436	4793	5207	5658	6158	6702	7252	7836	8486						433
AEO86		4203	4434	4741	5015	5371	5795	6244	6726	7270	7875	8524	9226	9973	10764	11600	585
AEO87			4483	4701	5035	5389	5773	6190	6666	7175	7716					11223	260
AEO89				4857	5182	5575	6013	6483	6987	7525	8106	8756	9400	10103	10863	11632	698
AEO90					5236	5550					7882					11329	329
AEO91						5457	5695	6078	6399	6738	7145	7607	8099	8629	9197	9828	229
AEO92							5648	5992	6346	6710	7115	7530	7968	8456	8991	9573	326
AEO93								5941	6339	6714	7117	7542	7995	8509	9027	9591	314
AEO94									6264	6622	6944	7298	7679	8070	8508	8989	613
AEO95										6761	7090	7418	7837	8244	8676	9134	497
AEO96											7057	7356	7754	8151	8574	9037	609
AEO97												7585	7881	8265	8709	9181	512
AEO98													8060	8439	8830	9245	449
AEO99														8478	8774	9177	541

AEO2000																8951	9261.6	525
AEO2001																	9974.8	12
Actual	4213	4453	4743	5108	5489	5803	5986	6319	6642	7054	7401	7813	8318	8790	9299	9963		
Value																		
Average																		
Absolute																		442
Error	309	240	188	219	257	303	205	242	285	368	666	446	526	579	649	764		
																		Average
																		Absolute
																		Percent
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Error	
																		(percent error)
AEO82	-6.5	-3.3	-0.2	1.8	4.1	8.4												4.0
AEO83	-7.0	-4.2	-1.9	-0.4	1.1	4.3					26.5							6.5
AEO84	-7.2	-5.9	-3.2	-1.5	0.0	3.0					22.9							6.3
AEO85	-7.9	-7.9	-6.5	-6.2	-5.1	-2.5	2.9	6.1	9.2	11.1	14.7							7.3
AEO86		-5.6	-6.5	-7.2	-8.6	-7.4	-3.2	-1.2	1.3	3.1	6.4	9.1	10.9	13.5	15.8	16.4		7.7
AEO87			-5.5	-8.0	-8.3	-7.1	-3.6	-2.0	0.4	1.7	4.3					12.7		4.5
AEO89				-4.9	-5.6	-3.9	0.5	2.6	5.2	6.7	9.5	12.1	13.0	14.9	16.8	16.8		8.7
AEO90					-4.6	-4.4					6.5					13.7		5.2
AEO91						-6.0	-4.9	-3.8	-3.7	-4.5	-3.5	-2.6	-2.6	-1.8	-1.1	-1.4		3.3
AEO92							-5.6	-5.2	-4.5	-4.9	-3.9	-3.6	-4.2	-3.8	-3.3	-3.9		4.3
AEO93								-6.0	-4.6	-4.8	-3.8	-3.5	-3.9	-3.2	-2.9	-3.7		4.0
AEO94									-5.7	-6.1	-6.2	-6.6	-7.7	-8.2	-8.5	-9.8		7.3
AEO95										-4.2	-4.2	-5.1	-5.8	-6.2	-6.7	-8.3		5.8
AEO96											-4.7	-5.9	-6.8	-7.3	-7.8	-9.3		6.9
AEO97												-2.9	-5.3	-6.0	-6.3	-7.8		5.7

AEO98																			-3.1	-4.0	-5.0	-7.2	4.8	
AEO99																					-3.5	-5.6	-7.9	5.7
AEO2000																						-3.7	-7.0	5.4
AEO2001																							0.1	0.1
Average																								
Absolute																								
Percent																								
Error	7.1	5.4	4.0	4.3	4.7	5.2	3.4	3.8	4.3	5.2	9.0	5.7	6.3	6.6	7.0	7.7							5.9	

AEO = Annual Energy Outlook.

Sources: **Actual Values:** 1985-1998: Council of Economic Advisors, *Economic Report of the President* (Washington, DC, February 2000). 1999: U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business* (Washington, DC, July 2000). **Projections:** EIA, *Annual Energy Outlook*, DOE/EIA-0383(82-2001) (Washington, DC, April 1983 - December 2000).

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Table 18. Total Carbon Dioxide Emissions, Actual vs. Forecasts

	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average
										Absolute
										Error
(Million Metric Tons of Carbon)										
AEO93	1366	1378	1399	1420	1437	1455	1473	1486	1501	23
AEO94		1380	1399	1414	1429	1442	1455	1467	1483	35
AEO95			1401	1411	1415	1435	1448	1462	1471	46
AEO96				1413	1425	1444	1460	1477	1490	41
AEO97					1444	1467	1497	1524	1543	15
AEO98						1493	1533	1557	1577	24
AEO99							1506	1552	1585	24
AEO2000								1520	1552	5
AEO2001									1535	23
Actual	1359	1385	1410	1421	1471	1493	1495	1517	1558	
Value										
Average										
Absolute										
Error	7	6	10	7	41	37	28	33	42	30
	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average
										Absolute
										Percent
(percent error)										
AEO93	0.5	-0.5	-0.8	-0.1	-2.3	-2.5	-1.5	-2.0	-3.7	1.5
AEO94		-0.4	-0.8	-0.5	-2.9	-3.4	-2.7	-3.3	-4.8	2.3
AEO95			-0.6	-0.7	-3.8	-3.9	-3.1	-3.6	-5.6	3.1
AEO96				-0.6	-3.1	-3.3	-2.3	-2.6	-4.4	2.7
AEO97					-1.8	-1.7	0.1	0.5	-1.0	1.0
AEO98						0.0	2.5	2.6	1.2	1.6
AEO99							0.7	2.3	1.7	1.6

AEO2000								0.2	-0.4	0.3
AEO2001									-1.5	1.5
Average										
Absolute										
Percent										
Error	0.5	0.4	0.7	0.5	2.8	2.5	1.9	2.2	2.7	2.0

AEO = Annual Energy Outlook
 Sources: **Actual Values:** Greenhouse Gas Flash Estimate, <http://www.eia.doe.gov/oiaf/1605/flash/>
Projections: EIA, *Annual Energy Outlook*, DOE/EIA-0383(93-2001) (Washington, DC, January 1993-December 2000).

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