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Assumptions to the Annual Energy Outlook 2006

Table 1. Summary of *AEO2006* Cases

Case name	Description	Integration mode
Reference	Baseline economic growth (3.0 percent per year), world oil price, and technology assumptions.	Fully integrated
Low Economic Growth	Gross domestic product grows at an average annual rate of 2.4 percent from 2004 through 2030.	Fully integrated
High Economic Growth	Gross domestic product grows at an average annual rate of 3.5 percent from 2004 through 2030.	Fully integrated
Low Price	More optimistic assumptions for worldwide crude oil and natural gas resources than in the reference case. World oil prices are $28 per barrel in 2030, compared with $ 50 per barrel in the reference case, and lower 48 wellhead natural gas prices $ 4.96 per thousand cubic feet in 2030, compared with $ 5.92 in the reference case.	Fully integrated
High Price	More pessimistic assumptions for worldwide crude oil and natural gas resources than in the reference case. World oil prices are about $ 90 per barrel in 2030 and lower 48 wellhead natural gas prices $ 7.72 per thousand cubic feet in 2030.	Fully integrated
Residential: 2005 Technology	Future equipment purchases based on equipment available in 2005. Existing building shell efficiencies fixed at 2005 levels.	With commercial
Residential: High Technology	Earlier availability, lower costs, and higher efficiencies assumed for more advanced equipment. Building shell efficiencies increase by 22 percent from 2003 values by 2030.	With commercial
Residential: Best Available Technology	Future equipment purchases and new building shells based on most efficient technologies available. Building shell efficiencies increase by 26 percent from 2003 values by 2030.	With commercial
Commercial: 2005 Technology	Future equipment purchases based on equipment available in 2005. Building shell efficiencies fixed at 2005 levels.	With residential
Commercial: HighTechnology	Earlier availability, lower costs, and higher efficiencies assumed for more advanced equipment. Building shell efficiencies for new and existing buildings increase by 10.4 and 7.4 percent, respectively, from 1999 values by 2030.	With residential
Commercial Best Available Technology	Future equipment purchases based on most efficient technologies available. Building shell efficiencies for new and existing buildings increase by 12.4 and 8.9 percent, respectively, from 1999 values by 2030.	With residential
Industrial: 2005 Technology	Efficiency of plant and equipment fixed at 2005 levels.	Standalone

Table 1. Summary of *AEO2006* Cases (cont.)

Case name	Description	Integration mode
Industrial: High Technology	Earlier availability, lower costs, and higher efficiencies assumed for more advanced equipment.	Standalone
Transportation: 2005 Technology	Efficiencies for new equipment in all modes of travel fixed at 2005 levels.	Standalone
Transportation: High Technology	Reduced costs and improved efficiencies assumed for advanced technologies.	Standalone
Transportation: Alternative CAFE	Assumes that manufacturers adhere to the proposed fleetwide increases in light truck CAFE standards to 24 miler per gallon for model year 2011.	Standalone
Integrated: 2005 Technology	Combination of the residential, commercial, industrial, and transportation 2005 technology cases, electricity low fossil technology case, and assumption of renewable technologies fixed at 2005 levels.	Fully integrated
Integrated: High Technology	Combination of the residential, commercial, industrial, and transportation high technology cases, electricity high fossil technology case, high renewables case, and advanced nuclear cost case.	Fully integrated
Electricity: Advanced Nuclear Cost	New nuclear capacity assumed to have 20 percent lower capital and operating costs in 2030 than in the reference case.	Fully integrated
Electricity: Nuclear Vendor Estimate	New nuclear capacity assumed to have lower capital costs based on vendor goals.	Fully Integrated
Electricity: Low Fossil Technology	New advanced fossil generating technologies assumed not to improve over time from 2006.	Fully Integrated
Electricity: High Fossil Technology	Costs and efficiencies for advanced fossil- fired generating technologies improve by 10 percent in 2030 from reference case values.	Fully Integrated
Electricity: Mercury Control Technologies	Cost and performance for halogenated activated carbon injection technology used to determine its impact on mercury removal requirements from coal-fired power plants.	Fully Integrated
Renewables: Low Renewables	New renewable generating technologies assumed not to improve over time from 2006.	Fully Integrated
Renewables: High Renewables	Levelized cost of energy for nonhydropower renewable generating technologies declines by 10 percent in 2030 from reference case values. Lower capital cost for cellulose ethanol plants.	Fully Integrated
Oil and Gas: Slow Technology	Cost, finding rate, and success rate parameters adjusted for 50- percent slower improvement than in the reference case.	Fully integrated
Oil and Gas: Rapid Technology	Cost, finding rate, and success rate parameters adjusted for 50- percent more rapid improvement than in the reference case.	Fully integrated
Oil and Gas: Low LNG	LNG imports exogenously set to 30 percent less than the results from the high price case, with remaining assumptions from the reference case.	Fully integrated
Oil and Gas: High LNG	LNG imports exogenously set to 30 percent more than the results from the low price case, with remaining assumptions from the reference case.	Fully Integrated
Oil and Gas: ANWR	Federal oil and gas leasing permitted in the Arctic National Wildlife Refuge starting in 2005.	Fully Integrated
Coal: Low Cost	Productivity for coal mining and coal transportation assumed to increase more rapidly than in the reference case. Coal mining wages, mine equipment and coal transportation equipment costs assumed to be lower than in the reference case.	Fully Integrated
Coal: High Cost	Productivity for coal mining and coal transportation assumed to increase more slowly than in the reference case. Coal mining wages, mine equipment and coal transportation equipment costs assumed to be higher than in the reference case.	Fully integrated

Table 2. Carbon Dioxide Emission Factors

(million metric tons carbon dioxide equivalent per quadrillion Btu)

Fuel Type	Carbon Dioxide Coefficient at Full Combustion	Combustion Fraction	Adjusted Emissions Factor
Petroleum			
Motor Gasoline	70.88	0.990	70.17
Liquefied Petroleum Gas			
Used as Fuel	63.07	0.995	62.75
Used as Feedstock	61.67	0.500	30.83
Jet Fuel	70.88	0.990	70.17
Distillate Fuel	73.15	0.990	72.42
Residual Fuel	78.80	0.990	78.01
Asphalt and Road Oil	75.61	0.000	0.00
Lubricants	74.21	0.500	37.11
Petrochemical Feedstocks	71.02	0.370	26.28
Kerosene	72.31	0.990	71.58
Petroleum Coke	102.12	0.500	51.06
Petroleum Still Gas	64.20	0.995	63.88
Other Industrial	74.43	0.990	73.68
Coal			
Residential and Commercial	95.48	0.990	94.53
Metallurgical	93.98	0.990	93.04
Industrial Other	94.38	0.990	93.44
Electric Utility[1]	95.26	0.990	94.31
Natural Gas			
Used as Fuel	53.06	0.995	52.79
Used as Feedstocks	53.06	0.774	41.07

[1]Emission factors for coal used for electricity generation are specified by coal supply region and types of coal, so the average carbon dioxide contents for coal varies throughout the forecast. The 2003 average is 94.31.

Source: Energy Information Administration, *Emissions of Greenhouse Gases in the United States 2004, DOE/EIA-0573(2004), (Washington, DC, December 2005).*