

# Reference Case Forecast

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

| Supply, Disposition, and Prices                                                     | Reference Case |              |               |               |               |               | Annual Growth<br>2002-2025<br>(percent) |
|-------------------------------------------------------------------------------------|----------------|--------------|---------------|---------------|---------------|---------------|-----------------------------------------|
|                                                                                     | 2001           | 2002         | 2010          | 2015          | 2020          | 2025          |                                         |
| <b>Production</b>                                                                   |                |              |               |               |               |               |                                         |
| Crude Oil and Lease Condensate .....                                                | 12.16          | 11.91        | 12.56         | 11.71         | 10.49         | 9.77          | -0.9%                                   |
| Natural Gas Plant Liquids .....                                                     | 2.55           | 2.56         | 3.10          | 3.20          | 3.47          | 3.47          | 1.3%                                    |
| Dry Natural Gas .....                                                               | 20.23          | 19.56        | 21.05         | 22.20         | 24.43         | 24.64         | 1.0%                                    |
| Coal .....                                                                          | 23.97          | 22.70        | 25.25         | 26.14         | 27.92         | 31.10         | 1.4%                                    |
| Nuclear Power .....                                                                 | 8.03           | 8.15         | 8.29          | 8.48          | 8.53          | 8.53          | 0.2%                                    |
| Renewable Energy <sup>1</sup> .....                                                 | 5.25           | 5.84         | 7.18          | 7.84          | 8.45          | 9.00          | 1.9%                                    |
| Other <sup>2</sup> .....                                                            | 0.53           | 1.13         | 0.88          | 0.79          | 0.81          | 0.84          | -1.3%                                   |
| <b>Total .....</b>                                                                  | <b>72.72</b>   | <b>71.85</b> | <b>78.30</b>  | <b>80.36</b>  | <b>84.09</b>  | <b>87.33</b>  | <b>0.9%</b>                             |
| <b>Imports</b>                                                                      |                |              |               |               |               |               |                                         |
| Crude Oil <sup>3</sup> .....                                                        | 20.26          | 19.84        | 24.51         | 29.37         | 31.55         | 34.21         | 2.4%                                    |
| Petroleum Products <sup>4</sup> .....                                               | 5.04           | 4.75         | 5.76          | 6.00          | 7.83          | 9.63          | 3.1%                                    |
| Natural Gas .....                                                                   | 4.06           | 4.10         | 6.54          | 7.29          | 7.56          | 8.29          | 3.1%                                    |
| Other Imports <sup>5</sup> .....                                                    | 0.59           | 0.52         | 0.95          | 1.06          | 1.12          | 1.18          | 3.6%                                    |
| <b>Total .....</b>                                                                  | <b>29.95</b>   | <b>29.21</b> | <b>37.76</b>  | <b>43.72</b>  | <b>48.06</b>  | <b>53.30</b>  | <b>2.6%</b>                             |
| <b>Exports</b>                                                                      |                |              |               |               |               |               |                                         |
| Petroleum <sup>6</sup> .....                                                        | 2.01           | 2.03         | 2.15          | 2.18          | 2.13          | 2.15          | 0.2%                                    |
| Natural Gas .....                                                                   | 0.38           | 0.52         | 0.91          | 0.90          | 0.93          | 0.88          | 2.3%                                    |
| Coal .....                                                                          | 1.26           | 1.03         | 0.89          | 0.80          | 0.69          | 0.56          | -2.6%                                   |
| <b>Total .....</b>                                                                  | <b>3.65</b>    | <b>3.58</b>  | <b>3.95</b>   | <b>3.88</b>   | <b>3.75</b>   | <b>3.59</b>   | <b>0.0%</b>                             |
| <b>Discrepancy<sup>7</sup> .....</b>                                                | <b>2.09</b>    | <b>-0.24</b> | <b>0.34</b>   | <b>0.46</b>   | <b>0.48</b>   | <b>0.56</b>   | <b>N/A</b>                              |
| <b>Consumption</b>                                                                  |                |              |               |               |               |               |                                         |
| Petroleum Products <sup>8</sup> .....                                               | 38.49          | 38.11        | 44.15         | 48.26         | 51.35         | 54.99         | 1.6%                                    |
| Natural Gas .....                                                                   | 23.05          | 23.37        | 26.82         | 28.74         | 31.21         | 32.21         | 1.4%                                    |
| Coal .....                                                                          | 22.04          | 22.18        | 25.23         | 26.32         | 28.30         | 31.73         | 1.6%                                    |
| Nuclear Power .....                                                                 | 8.03           | 8.15         | 8.29          | 8.48          | 8.53          | 8.53          | 0.2%                                    |
| Renewable Energy <sup>1</sup> .....                                                 | 5.25           | 5.84         | 7.18          | 7.84          | 8.46          | 9.00          | 1.9%                                    |
| Other <sup>9</sup> .....                                                            | 0.08           | 0.07         | 0.11          | 0.11          | 0.07          | 0.03          | -4.6%                                   |
| <b>Total .....</b>                                                                  | <b>96.94</b>   | <b>97.72</b> | <b>111.77</b> | <b>119.75</b> | <b>127.92</b> | <b>136.48</b> | <b>1.5%</b>                             |
| <b>Net Imports - Petroleum .....</b>                                                | <b>23.29</b>   | <b>22.56</b> | <b>28.13</b>  | <b>33.20</b>  | <b>37.25</b>  | <b>41.69</b>  | <b>2.7%</b>                             |
| <b>Prices (2002 dollars per unit)</b>                                               |                |              |               |               |               |               |                                         |
| World Oil Price (dollars per barrel) <sup>10</sup> .....                            | 22.25          | 23.68        | 24.17         | 25.07         | 26.02         | 27.00         | 0.6%                                    |
| Natural Gas Wellhead Price<br>(dollars per thousand cubic feet) <sup>11</sup> ..... | 4.14           | 2.95         | 3.40          | 4.19          | 4.28          | 4.40          | 1.8%                                    |
| Coal Minemouth Price (dollars per ton) .....                                        | 17.79          | 17.90        | 16.88         | 16.47         | 16.32         | 16.57         | -0.3%                                   |
| Average Electricity Price<br>(cents per kilowatthour) .....                         | 7.4            | 7.2          | 6.6           | 6.8           | 6.9           | 6.9           | -0.2%                                   |

<sup>1</sup>Includes grid-connected electricity from conventional hydroelectric; wood and wood waste; landfill gas; municipal solid waste; other biomass; wind; photovoltaic and solar thermal sources; non-electric energy from renewable sources, such as active and passive solar systems, and wood; and both the ethanol and gasoline components of E85, but not the ethanol components of blends less than 85 percent. Excludes electricity imports using renewable sources and nonmarketed renewable energy. See Table A18 for selected nonmarketed residential and commercial renewable energy.

<sup>2</sup>Includes liquid hydrogen, methanol, supplemental natural gas, and some domestic inputs to refineries.

<sup>3</sup>Includes imports of crude oil for the Strategic Petroleum Reserve.

<sup>4</sup>Includes imports of finished petroleum products, unfinished oils, alcohols, ethers, and blending components.

<sup>5</sup>Includes coal, coal coke (net), and electricity (net).

<sup>6</sup>Includes crude oil and petroleum products.

<sup>7</sup>Balancing item. Includes unaccounted for supply, losses, gains, net storage withdrawals, heat loss when natural gas is converted to liquid fuel, and heat loss when coal is converted to liquid fuel.

<sup>8</sup>Includes natural gas plant liquids, crude oil consumed as a fuel, and nonpetroleum-based liquids for blending, such as ethanol.

<sup>9</sup>Includes net electricity imports, methanol, and liquid hydrogen.

<sup>10</sup>Average refiner acquisition cost for imported crude oil.

<sup>11</sup>Represents lower 48 onshore and offshore supplies.

Btu = British thermal unit.

N/A = Not applicable.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

Sources: 2001 natural gas supply values: Energy Information Administration (EIA), *Natural Gas Annual 2001*, DOE/EIA-0131(2001) (Washington, DC, February 2003). 2002 natural gas supply values: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2003/06) (Washington, DC, June 2003). 2001 coal minemouth prices: EIA, *Annual Coal Report 2002*, DOE/EIA-0584(2002) (Washington, DC, November 2003). 2001 petroleum supply values: EIA, *Petroleum Supply Annual 2001*, DOE/EIA-0340(2001)/1 (Washington, DC, June 2002). 2002 petroleum supply values: EIA, *Petroleum Supply Annual 2002*, DOE/EIA-0340(2002)/1 (Washington, DC, June 2003). Other 2001 and 2002 values: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002) and EIA, *Quarterly Coal Report, October-December 2002*, DOE/EIA-0121(2002/4Q) (Washington, DC, March 2003). Projections: EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

# Reference Case Forecast

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

| Sector and Source                       | Reference Case |              |              |              |              |              | Annual Growth<br>2002-2025<br>(percent) |
|-----------------------------------------|----------------|--------------|--------------|--------------|--------------|--------------|-----------------------------------------|
|                                         | 2001           | 2002         | 2010         | 2015         | 2020         | 2025         |                                         |
| <b>Energy Consumption</b>               |                |              |              |              |              |              |                                         |
| <b>Residential</b>                      |                |              |              |              |              |              |                                         |
| Distillate Fuel .....                   | 0.90           | 0.89         | 0.93         | 0.89         | 0.85         | 0.80         | -0.5%                                   |
| Kerosene .....                          | 0.11           | 0.07         | 0.11         | 0.11         | 0.10         | 0.09         | 1.3%                                    |
| Liquefied Petroleum Gas .....           | 0.50           | 0.53         | 0.56         | 0.59         | 0.61         | 0.64         | 0.8%                                    |
| Petroleum Subtotal .....                | 1.51           | 1.48         | 1.60         | 1.59         | 1.56         | 1.53         | 0.1%                                    |
| Natural Gas .....                       | 4.92           | 5.06         | 5.69         | 5.84         | 6.08         | 6.26         | 0.9%                                    |
| Coal .....                              | 0.01           | 0.01         | 0.01         | 0.01         | 0.01         | 0.01         | -0.3%                                   |
| Renewable Energy <sup>1</sup> .....     | 0.36           | 0.39         | 0.40         | 0.41         | 0.41         | 0.41         | 0.1%                                    |
| Electricity .....                       | 4.10           | 4.33         | 4.87         | 5.22         | 5.60         | 5.96         | 1.4%                                    |
| <b>Delivered Energy</b> .....           | <b>10.91</b>   | <b>11.28</b> | <b>12.58</b> | <b>13.06</b> | <b>13.66</b> | <b>14.17</b> | <b>1.0%</b>                             |
| Electricity Related Losses .....        | 9.28           | 9.60         | 10.48        | 10.92        | 11.43        | 11.95        | 1.0%                                    |
| <b>Total</b> .....                      | <b>20.18</b>   | <b>20.88</b> | <b>23.06</b> | <b>23.98</b> | <b>25.10</b> | <b>26.12</b> | <b>1.0%</b>                             |
| <b>Commercial</b>                       |                |              |              |              |              |              |                                         |
| Distillate Fuel .....                   | 0.49           | 0.49         | 0.62         | 0.65         | 0.67         | 0.70         | 1.6%                                    |
| Residual Fuel .....                     | 0.09           | 0.08         | 0.13         | 0.13         | 0.13         | 0.13         | 2.2%                                    |
| Kerosene .....                          | 0.03           | 0.02         | 0.02         | 0.02         | 0.02         | 0.02         | 1.4%                                    |
| Liquefied Petroleum Gas .....           | 0.09           | 0.09         | 0.10         | 0.10         | 0.10         | 0.10         | 0.3%                                    |
| Motor Gasoline <sup>2</sup> .....       | 0.05           | 0.05         | 0.05         | 0.05         | 0.05         | 0.05         | 0.2%                                    |
| Petroleum Subtotal .....                | 0.74           | 0.72         | 0.92         | 0.95         | 0.97         | 1.00         | 1.4%                                    |
| Natural Gas .....                       | 3.33           | 3.21         | 3.57         | 3.72         | 3.94         | 4.16         | 1.1%                                    |
| Coal .....                              | 0.10           | 0.10         | 0.10         | 0.10         | 0.10         | 0.10         | 0.0%                                    |
| Renewable Energy <sup>3</sup> .....     | 0.09           | 0.10         | 0.10         | 0.10         | 0.10         | 0.10         | 0.0%                                    |
| Electricity .....                       | 4.09           | 4.12         | 5.05         | 5.64         | 6.24         | 6.83         | 2.2%                                    |
| <b>Delivered Energy</b> .....           | <b>8.34</b>    | <b>8.25</b>  | <b>9.74</b>  | <b>10.51</b> | <b>11.35</b> | <b>12.19</b> | <b>1.7%</b>                             |
| Electricity Related Losses .....        | 9.24           | 9.15         | 10.86        | 11.79        | 12.73        | 13.70        | 1.8%                                    |
| <b>Total</b> .....                      | <b>17.58</b>   | <b>17.40</b> | <b>20.60</b> | <b>22.30</b> | <b>24.07</b> | <b>25.89</b> | <b>1.7%</b>                             |
| <b>Industrial<sup>4</sup></b>           |                |              |              |              |              |              |                                         |
| Distillate Fuel .....                   | 1.21           | 1.16         | 1.17         | 1.27         | 1.34         | 1.43         | 0.9%                                    |
| Liquefied Petroleum Gas .....           | 2.10           | 2.22         | 2.35         | 2.53         | 2.74         | 2.94         | 1.2%                                    |
| Petrochemical Feedstock .....           | 1.16           | 1.22         | 1.35         | 1.43         | 1.54         | 1.62         | 1.2%                                    |
| Residual Fuel .....                     | 0.15           | 0.20         | 0.21         | 0.23         | 0.22         | 0.23         | 0.5%                                    |
| Motor Gasoline <sup>2</sup> .....       | 0.16           | 0.16         | 0.16         | 0.17         | 0.18         | 0.19         | 0.8%                                    |
| Other Petroleum <sup>5</sup> .....      | 4.27           | 4.03         | 4.38         | 4.68         | 4.93         | 5.17         | 1.1%                                    |
| Petroleum Subtotal .....                | 9.04           | 9.00         | 9.63         | 10.31        | 10.95        | 11.59        | 1.1%                                    |
| Natural Gas .....                       | 7.56           | 7.43         | 8.62         | 9.12         | 9.84         | 10.58        | 1.5%                                    |
| Lease and Plant Fuel <sup>6</sup> ..... | 1.12           | 1.35         | 1.40         | 1.48         | 1.65         | 1.69         | 1.0%                                    |
| Natural Gas Subtotal .....              | 8.67           | 8.78         | 10.02        | 10.60        | 11.49        | 12.27        | 1.5%                                    |
| Metallurgical Coal .....                | 0.71           | 0.62         | 0.64         | 0.58         | 0.52         | 0.47         | -1.2%                                   |
| Steam Coal .....                        | 1.51           | 1.47         | 1.41         | 1.43         | 1.45         | 1.47         | -0.0%                                   |
| Net Coal Coke Imports .....             | 0.02           | 0.03         | 0.01         | 0.01         | 0.00         | 0.01         | -4.5%                                   |
| Coal Subtotal .....                     | 2.25           | 2.12         | 2.06         | 2.01         | 1.97         | 1.95         | -0.4%                                   |
| Renewable Energy <sup>7</sup> .....     | 1.64           | 1.66         | 2.00         | 2.26         | 2.48         | 2.70         | 2.1%                                    |
| Electricity .....                       | 3.29           | 3.39         | 3.82         | 4.15         | 4.47         | 4.85         | 1.6%                                    |
| <b>Delivered Energy</b> .....           | <b>24.89</b>   | <b>24.94</b> | <b>27.53</b> | <b>29.32</b> | <b>31.36</b> | <b>33.35</b> | <b>1.3%</b>                             |
| Electricity Related Losses .....        | 7.44           | 7.53         | 8.22         | 8.67         | 9.12         | 9.72         | 1.1%                                    |
| <b>Total</b> .....                      | <b>32.33</b>   | <b>32.47</b> | <b>35.75</b> | <b>37.99</b> | <b>40.48</b> | <b>43.07</b> | <b>1.2%</b>                             |

## Reference Case Forecast

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

| Sector and Source                                   | Reference Case |              |               |               |               |               | Annual Growth<br>2002-2025<br>(percent) |
|-----------------------------------------------------|----------------|--------------|---------------|---------------|---------------|---------------|-----------------------------------------|
|                                                     | 2001           | 2002         | 2010          | 2015          | 2020          | 2025          |                                         |
| <b>Transportation</b>                               |                |              |               |               |               |               |                                         |
| Distillate Fuel <sup>8</sup> .....                  | 5.32           | 5.12         | 6.42          | 7.25          | 8.02          | 8.94          | 2.5%                                    |
| Jet Fuel <sup>9</sup> .....                         | 3.43           | 3.34         | 3.93          | 4.36          | 4.69          | 4.91          | 1.7%                                    |
| Motor Gasoline <sup>2</sup> .....                   | 16.17          | 16.62        | 19.88         | 21.62         | 23.11         | 24.98         | 1.8%                                    |
| Residual Fuel .....                                 | 0.84           | 0.71         | 0.79          | 0.80          | 0.82          | 0.83          | 0.6%                                    |
| Liquefied Petroleum Gas .....                       | 0.02           | 0.02         | 0.06          | 0.07          | 0.08          | 0.08          | 6.7%                                    |
| Other Petroleum <sup>10</sup> .....                 | 0.19           | 0.24         | 0.25          | 0.27          | 0.30          | 0.32          | 1.2%                                    |
| Petroleum Subtotal .....                            | 25.96          | 26.06        | 31.34         | 34.37         | 37.00         | 40.07         | 1.9%                                    |
| Pipeline Fuel Natural Gas .....                     | 0.64           | 0.65         | 0.69          | 0.72          | 0.83          | 0.86          | 1.2%                                    |
| Compressed Natural Gas .....                        | 0.01           | 0.01         | 0.06          | 0.08          | 0.10          | 0.11          | 9.2%                                    |
| Renewable Energy (E85) <sup>11</sup> .....          | 0.00           | 0.00         | 0.00          | 0.00          | 0.00          | 0.00          | 7.6%                                    |
| Liquid Hydrogen .....                               | 0.00           | 0.00         | 0.00          | 0.00          | 0.00          | 0.00          | N/A                                     |
| Electricity .....                                   | 0.07           | 0.08         | 0.09          | 0.10          | 0.11          | 0.12          | 2.1%                                    |
| <b>Delivered Energy</b> .....                       | <b>26.69</b>   | <b>26.79</b> | <b>32.18</b>  | <b>35.28</b>  | <b>38.05</b>  | <b>41.16</b>  | <b>1.9%</b>                             |
| Electricity Related Losses .....                    | 0.17           | 0.17         | 0.19          | 0.21          | 0.22          | 0.24          | 1.6%                                    |
| <b>Total</b> .....                                  | <b>26.85</b>   | <b>26.96</b> | <b>32.37</b>  | <b>35.48</b>  | <b>38.27</b>  | <b>41.40</b>  | <b>1.9%</b>                             |
| <b>Delivered Energy Consumption for All Sectors</b> |                |              |               |               |               |               |                                         |
| Distillate Fuel .....                               | 7.92           | 7.66         | 9.15          | 10.07         | 10.88         | 11.88         | 1.9%                                    |
| Kerosene .....                                      | 0.15           | 0.09         | 0.16          | 0.15          | 0.14          | 0.13          | 1.7%                                    |
| Jet Fuel <sup>9</sup> .....                         | 3.43           | 3.34         | 3.93          | 4.36          | 4.69          | 4.91          | 1.7%                                    |
| Liquefied Petroleum Gas .....                       | 2.70           | 2.86         | 3.07          | 3.28          | 3.53          | 3.76          | 1.2%                                    |
| Motor Gasoline <sup>2</sup> .....                   | 16.37          | 16.83        | 20.09         | 21.84         | 23.34         | 25.22         | 1.8%                                    |
| Petrochemical Feedstock .....                       | 1.16           | 1.22         | 1.35          | 1.43          | 1.54          | 1.62          | 1.2%                                    |
| Residual Fuel .....                                 | 1.07           | 1.00         | 1.13          | 1.16          | 1.17          | 1.19          | 0.8%                                    |
| Other Petroleum <sup>12</sup> .....                 | 4.45           | 4.26         | 4.61          | 4.93          | 5.21          | 5.46          | 1.1%                                    |
| Petroleum Subtotal .....                            | 37.25          | 37.26        | 43.48         | 47.22         | 50.50         | 54.18         | 1.6%                                    |
| Natural Gas .....                                   | 15.81          | 15.71        | 17.94         | 18.76         | 19.95         | 21.11         | 1.3%                                    |
| Lease and Plant Fuel <sup>6</sup> .....             | 1.12           | 1.35         | 1.40          | 1.48          | 1.65          | 1.69          | 1.0%                                    |
| Pipeline Natural Gas .....                          | 0.64           | 0.65         | 0.69          | 0.72          | 0.83          | 0.86          | 1.2%                                    |
| Natural Gas Subtotal .....                          | 17.57          | 17.72        | 20.03         | 20.96         | 22.43         | 23.66         | 1.3%                                    |
| Metallurgical Coal .....                            | 0.71           | 0.62         | 0.64          | 0.58          | 0.52          | 0.47          | -1.2%                                   |
| Steam Coal .....                                    | 1.62           | 1.58         | 1.52          | 1.54          | 1.56          | 1.58          | -0.0%                                   |
| Net Coal Coke Imports .....                         | 0.02           | 0.03         | 0.01          | 0.01          | 0.00          | 0.01          | -4.5%                                   |
| Coal Subtotal .....                                 | 2.36           | 2.23         | 2.17          | 2.12          | 2.08          | 2.06          | -0.3%                                   |
| Renewable Energy <sup>13</sup> .....                | 2.09           | 2.15         | 2.50          | 2.76          | 2.99          | 3.21          | 1.8%                                    |
| Liquid Hydrogen .....                               | 0.00           | 0.00         | 0.00          | 0.00          | 0.00          | 0.00          | N/A                                     |
| Electricity .....                                   | 11.55          | 11.92        | 13.83         | 15.11         | 16.41         | 17.77         | 1.8%                                    |
| <b>Delivered Energy</b> .....                       | <b>70.83</b>   | <b>71.27</b> | <b>82.03</b>  | <b>88.17</b>  | <b>94.42</b>  | <b>100.87</b> | <b>1.5%</b>                             |
| Electricity Related Losses .....                    | 26.12          | 26.45        | 29.75         | 31.57         | 33.50         | 35.61         | 1.3%                                    |
| <b>Total</b> .....                                  | <b>96.94</b>   | <b>97.72</b> | <b>111.77</b> | <b>119.75</b> | <b>127.92</b> | <b>136.48</b> | <b>1.5%</b>                             |
| <b>Electric Power<sup>14</sup></b>                  |                |              |               |               |               |               |                                         |
| Distillate Fuel .....                               | 0.33           | 0.16         | 0.16          | 0.44          | 0.26          | 0.27          | 2.4%                                    |
| Residual Fuel .....                                 | 0.91           | 0.69         | 0.51          | 0.60          | 0.59          | 0.54          | -1.1%                                   |
| Petroleum Subtotal .....                            | 1.25           | 0.85         | 0.66          | 1.04          | 0.85          | 0.81          | -0.2%                                   |
| Natural Gas .....                                   | 5.48           | 5.65         | 6.79          | 7.78          | 8.78          | 8.55          | 1.8%                                    |
| Steam Coal .....                                    | 19.68          | 19.96        | 23.05         | 24.20         | 26.22         | 29.67         | 1.7%                                    |
| Nuclear Power .....                                 | 8.03           | 8.15         | 8.29          | 8.48          | 8.53          | 8.53          | 0.2%                                    |
| Renewable Energy <sup>15</sup> .....                | 3.16           | 3.69         | 4.68          | 5.08          | 5.47          | 5.79          | 2.0%                                    |
| Electricity Imports .....                           | 0.08           | 0.07         | 0.11          | 0.11          | 0.07          | 0.03          | -4.6%                                   |
| <b>Total</b> .....                                  | <b>37.67</b>   | <b>38.36</b> | <b>43.58</b>  | <b>46.68</b>  | <b>49.92</b>  | <b>53.37</b>  | <b>1.4%</b>                             |

# Reference Case Forecast

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

| Sector and Source                                       | Reference Case |              |               |               |               |               | Annual Growth<br>2002-2025<br>(percent) |
|---------------------------------------------------------|----------------|--------------|---------------|---------------|---------------|---------------|-----------------------------------------|
|                                                         | 2001           | 2002         | 2010          | 2015          | 2020          | 2025          |                                         |
| <b>Total Energy Consumption</b>                         |                |              |               |               |               |               |                                         |
| Distillate Fuel .....                                   | 8.26           | 7.82         | 9.31          | 10.51         | 11.14         | 12.15         | 1.9%                                    |
| Kerosene .....                                          | 0.15           | 0.09         | 0.16          | 0.15          | 0.14          | 0.13          | 1.7%                                    |
| Jet Fuel <sup>9</sup> .....                             | 3.43           | 3.34         | 3.93          | 4.36          | 4.69          | 4.91          | 1.7%                                    |
| Liquefied Petroleum Gas .....                           | 2.70           | 2.86         | 3.07          | 3.28          | 3.53          | 3.76          | 1.2%                                    |
| Motor Gasoline <sup>2</sup> .....                       | 16.37          | 16.83        | 20.09         | 21.84         | 23.34         | 25.22         | 1.8%                                    |
| Petrochemical Feedstock .....                           | 1.16           | 1.22         | 1.35          | 1.43          | 1.54          | 1.62          | 1.2%                                    |
| Residual Fuel .....                                     | 1.98           | 1.69         | 1.64          | 1.76          | 1.76          | 1.72          | 0.1%                                    |
| Other Petroleum <sup>12</sup> .....                     | 4.45           | 4.26         | 4.61          | 4.93          | 5.21          | 5.46          | 1.1%                                    |
| Petroleum Subtotal .....                                | 38.49          | 38.11        | 44.15         | 48.26         | 51.35         | 54.99         | 1.6%                                    |
| Natural Gas .....                                       | 21.30          | 21.36        | 24.73         | 26.54         | 28.73         | 29.66         | 1.4%                                    |
| Lease and Plant Fuel <sup>6</sup> .....                 | 1.12           | 1.35         | 1.40          | 1.48          | 1.65          | 1.69          | 1.0%                                    |
| Pipeline Natural Gas .....                              | 0.64           | 0.65         | 0.69          | 0.72          | 0.83          | 0.86          | 1.2%                                    |
| Natural Gas Subtotal .....                              | 23.05          | 23.37        | 26.82         | 28.74         | 31.21         | 32.21         | 1.4%                                    |
| Metallurgical Coal .....                                | 0.71           | 0.62         | 0.64          | 0.58          | 0.52          | 0.47          | -1.2%                                   |
| Steam Coal .....                                        | 21.30          | 21.54        | 24.57         | 25.74         | 27.78         | 31.25         | 1.6%                                    |
| Net Coal Coke Imports .....                             | 0.02           | 0.03         | 0.01          | 0.01          | 0.00          | 0.01          | -4.5%                                   |
| Coal Subtotal .....                                     | 22.04          | 22.18        | 25.23         | 26.32         | 28.30         | 31.73         | 1.6%                                    |
| Nuclear Power .....                                     | 8.03           | 8.15         | 8.29          | 8.48          | 8.53          | 8.53          | 0.2%                                    |
| Renewable Energy <sup>16</sup> .....                    | 5.25           | 5.84         | 7.18          | 7.84          | 8.46          | 9.00          | 1.9%                                    |
| Liquid Hydrogen .....                                   | 0.00           | 0.00         | 0.00          | 0.00          | 0.00          | 0.00          | N/A                                     |
| Electricity Imports .....                               | 0.08           | 0.07         | 0.11          | 0.11          | 0.07          | 0.03          | -4.6%                                   |
| <b>Total</b> .....                                      | <b>96.94</b>   | <b>97.72</b> | <b>111.77</b> | <b>119.75</b> | <b>127.92</b> | <b>136.48</b> | <b>1.5%</b>                             |
| <b>Energy Use and Related Statistics</b>                |                |              |               |               |               |               |                                         |
| Delivered Energy Use .....                              | 70.83          | 71.27        | 82.03         | 88.17         | 94.42         | 100.87        | 1.5%                                    |
| Total Energy Use .....                                  | 96.94          | 97.72        | 111.77        | 119.75        | 127.92        | 136.48        | 1.5%                                    |
| Population (millions) .....                             | 285.92         | 288.93       | 309.28        | 321.95        | 334.61        | 347.53        | 0.8%                                    |
| Gross Domestic Product (billion 1996 dollars) .....     | 9215           | 9440         | 12190         | 14101         | 16188         | 18520         | 3.0%                                    |
| Carbon Dioxide Emissions<br>(million metric tons) ..... | 5691.7         | 5729.3       | 6558.8        | 7028.4        | 7535.6        | 8142.0        | 1.5%                                    |

<sup>1</sup>Includes wood used for residential heating. See Table A18 for estimates of nonmarketed renewable energy consumption for geothermal heat pumps, solar thermal hot water heating, and solar photovoltaic electricity generation.

<sup>2</sup>Includes ethanol (blends of 10 percent or less) and ethers blended into gasoline.

<sup>3</sup>Includes commercial sector consumption of wood and wood waste, landfill gas, municipal solid waste, and other biomass for combined heat and power. See Table A18 for estimates of nonmarketed renewable energy consumption for solar thermal hot water heating and solar photovoltaic electricity generation.

<sup>4</sup>Fuel consumption includes consumption for combined heat and power, which produces electricity, both for sale to the grid and for own use, and other useful thermal energy.

<sup>5</sup>Includes petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.

<sup>6</sup>Represents natural gas used in the field gathering and processing plant machinery.

<sup>7</sup>Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass.

<sup>8</sup>Diesel fuel containing 500 parts per million (ppm) or 15 ppm sulfur.

<sup>9</sup>Includes only kerosene type.

<sup>10</sup>Includes aviation gasoline and lubricants.

<sup>11</sup>E85 refers to a blend of 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable). To address cold starting issues, the percentage of ethanol actually varies seasonally. The annual average ethanol content of 74 percent is used for this forecast.

<sup>12</sup>Includes unfinished oils, natural gasoline, motor gasoline blending components, aviation gasoline, lubricants, still gas, asphalt, road oil, petroleum coke, and miscellaneous petroleum products.

<sup>13</sup>Includes electricity generated for sale to the grid and for own use from renewable sources, and non-electric energy from renewable sources. Excludes nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal hot water heaters.

<sup>14</sup>Includes consumption of energy by electricity-only and combined heat and power plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes small power producers and exempt wholesale generators.

<sup>15</sup>Includes conventional hydroelectric, geothermal, wood and wood waste, municipal solid waste, other biomass, petroleum coke, wind, photovoltaic and solar thermal sources. Excludes net electricity imports.

<sup>16</sup>Includes hydroelectric, geothermal, wood and wood waste, municipal solid waste, other biomass, wind, photovoltaic and solar thermal sources. Includes ethanol components of E85; excludes ethanol blends (10 percent or less) in motor gasoline. Excludes net electricity imports and nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal hot water heaters.

Btu = British thermal unit.

N/A = Not applicable.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports. Consumption values of 0.00 are values that round to 0.00, because they are less than 0.005.

Sources: 2001 and 2002 consumption based on: Energy Information Administration (EIA), *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). 2001 and 2002 population and gross domestic product: Global Insight macroeconomic model T250803. 2001 and 2002 carbon dioxide emissions: EIA, *Emissions of Greenhouse Gases in the United States 2002*, DOE/EIA-0573(2002) (Washington, DC, October 2003). Projections: EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

## Reference Case Forecast

**Table A3. Energy Prices by Sector and Source**  
(2002 Dollars per Million Btu, Unless Otherwise Noted)

| Sector and Source                          | Reference Case |              |              |              |              |              | Annual Growth<br>2002-2025<br>(percent) |
|--------------------------------------------|----------------|--------------|--------------|--------------|--------------|--------------|-----------------------------------------|
|                                            | 2001           | 2002         | 2010         | 2015         | 2020         | 2025         |                                         |
| <b>Residential</b> .....                   | <b>15.95</b>   | <b>14.73</b> | <b>14.21</b> | <b>14.93</b> | <b>15.08</b> | <b>15.38</b> | <b>0.2%</b>                             |
| Primary Energy <sup>1</sup> .....          | 9.85           | 8.14         | 8.15         | 8.72         | 8.76         | 8.89         | 0.4%                                    |
| Petroleum Products <sup>2</sup> .....      | 10.95          | 9.87         | 9.90         | 10.38        | 10.86        | 11.26        | 0.6%                                    |
| Distillate Fuel .....                      | 9.09           | 8.23         | 7.82         | 8.06         | 8.39         | 8.53         | 0.2%                                    |
| Liquefied Petroleum Gas .....              | 15.05          | 12.92        | 13.89        | 14.46        | 14.79        | 15.19        | 0.7%                                    |
| Natural Gas .....                          | 9.53           | 7.65         | 7.67         | 8.29         | 8.24         | 8.32         | 0.4%                                    |
| Electricity .....                          | 25.51          | 24.73        | 23.30        | 23.77        | 23.73        | 23.88        | -0.2%                                   |
| <b>Commercial</b> .....                    | <b>15.67</b>   | <b>14.68</b> | <b>13.77</b> | <b>14.62</b> | <b>14.93</b> | <b>15.28</b> | <b>0.2%</b>                             |
| Primary Energy <sup>1</sup> .....          | 8.07           | 6.35         | 6.48         | 7.04         | 7.11         | 7.22         | 0.6%                                    |
| Petroleum Products <sup>2</sup> .....      | 7.25           | 6.88         | 6.34         | 6.53         | 6.83         | 6.98         | 0.1%                                    |
| Distillate Fuel .....                      | 6.38           | 6.07         | 5.45         | 5.66         | 6.01         | 6.15         | 0.1%                                    |
| Residual Fuel .....                        | 3.51           | 4.21         | 4.13         | 4.27         | 4.41         | 4.55         | 0.3%                                    |
| Natural Gas .....                          | 8.44           | 6.37         | 6.64         | 7.32         | 7.31         | 7.41         | 0.7%                                    |
| Electricity .....                          | 23.43          | 22.82        | 20.39        | 21.02        | 21.21        | 21.48        | -0.3%                                   |
| <b>Industrial<sup>3</sup></b> .....        | <b>7.24</b>    | <b>6.31</b>  | <b>6.44</b>  | <b>6.96</b>  | <b>7.21</b>  | <b>7.42</b>  | <b>0.7%</b>                             |
| Primary Energy .....                       | 5.87           | 4.77         | 5.14         | 5.64         | 5.88         | 6.07         | 1.1%                                    |
| Petroleum Products <sup>2</sup> .....      | 7.73           | 6.35         | 6.84         | 7.15         | 7.54         | 7.81         | 0.9%                                    |
| Distillate Fuel .....                      | 6.62           | 6.21         | 5.68         | 5.85         | 6.24         | 6.40         | 0.1%                                    |
| Liquefied Petroleum Gas .....              | 12.48          | 8.28         | 9.72         | 10.29        | 10.66        | 11.11        | 1.3%                                    |
| Residual Fuel .....                        | 3.31           | 3.89         | 3.74         | 3.88         | 4.03         | 4.17         | 0.3%                                    |
| Natural Gas <sup>4</sup> .....             | 4.91           | 3.75         | 4.05         | 4.81         | 4.89         | 4.99         | 1.3%                                    |
| Metallurgical Coal .....                   | 1.71           | 1.87         | 1.96         | 1.90         | 1.84         | 1.77         | -0.2%                                   |
| Steam Coal .....                           | 1.51           | 1.52         | 1.58         | 1.55         | 1.53         | 1.53         | 0.0%                                    |
| Electricity .....                          | 15.11          | 14.74        | 13.36        | 13.81        | 13.99        | 14.09        | -0.2%                                   |
| <b>Transportation</b> .....                | <b>10.58</b>   | <b>9.91</b>  | <b>10.50</b> | <b>10.53</b> | <b>10.54</b> | <b>10.69</b> | <b>0.3%</b>                             |
| Primary Energy .....                       | 10.55          | 9.88         | 10.48        | 10.50        | 10.52        | 10.67        | 0.3%                                    |
| Petroleum Products <sup>2</sup> .....      | 10.55          | 9.88         | 10.48        | 10.50        | 10.52        | 10.67        | 0.3%                                    |
| Distillate Fuel <sup>5</sup> .....         | 10.16          | 9.41         | 10.12        | 10.16        | 10.00        | 10.03        | 0.3%                                    |
| Jet Fuel <sup>6</sup> .....                | 6.27           | 5.97         | 5.76         | 5.85         | 6.06         | 6.21         | 0.2%                                    |
| Motor Gasoline <sup>7</sup> .....          | 11.99          | 11.15        | 11.87        | 11.87        | 11.90        | 12.06        | 0.3%                                    |
| Residual Fuel .....                        | 3.94           | 3.77         | 3.60         | 3.73         | 3.88         | 4.02         | 0.3%                                    |
| Liquefied Petroleum Gas <sup>8</sup> ..... | 17.12          | 15.00        | 14.96        | 15.39        | 15.51        | 15.83        | 0.2%                                    |
| Natural Gas <sup>9</sup> .....             | 8.69           | 7.38         | 8.26         | 9.07         | 9.06         | 9.09         | 0.9%                                    |
| Ethanol (E85) <sup>10</sup> .....          | 16.56          | 15.19        | 17.22        | 17.79        | 18.28        | 18.58        | 0.9%                                    |
| Electricity .....                          | 21.58          | 21.10        | 19.57        | 20.25        | 20.03        | 19.92        | -0.2%                                   |
| <b>Average End-Use Energy</b> .....        | <b>10.95</b>   | <b>10.10</b> | <b>10.23</b> | <b>10.61</b> | <b>10.76</b> | <b>10.96</b> | <b>0.4%</b>                             |
| Primary Energy .....                       | 8.69           | 7.70         | 8.22         | 8.53         | 8.64         | 8.82         | 0.6%                                    |
| Electricity .....                          | 21.79          | 21.20        | 19.47        | 19.99        | 20.10        | 20.26        | -0.2%                                   |
| <b>Electric Power<sup>11</sup></b> .....   | <b>2.27</b>    | <b>1.89</b>  | <b>1.92</b>  | <b>2.16</b>  | <b>2.18</b>  | <b>2.11</b>  | <b>0.5%</b>                             |
| Fossil Fuel Average .....                  | 2.27           | 1.89         | 1.92         | 2.16         | 2.18         | 2.11         | 0.5%                                    |
| Petroleum Products .....                   | 5.00           | 4.32         | 4.21         | 4.54         | 4.67         | 4.88         | 0.5%                                    |
| Distillate Fuel .....                      | 6.24           | 5.58         | 4.92         | 5.09         | 5.47         | 5.62         | 0.0%                                    |
| Residual Fuel .....                        | 4.55           | 4.04         | 3.99         | 4.14         | 4.31         | 4.50         | 0.5%                                    |
| Natural Gas .....                          | 5.30           | 3.77         | 4.04         | 4.78         | 4.85         | 4.92         | 1.2%                                    |
| Steam Coal .....                           | 1.25           | 1.26         | 1.22         | 1.22         | 1.20         | 1.22         | -0.1%                                   |

# Reference Case Forecast

**Table A3. Energy Prices by Sector and Source (Continued)**  
(2002 Dollars per Million Btu, Unless Otherwise Noted)

| Sector and Source                                                             | Reference Case |               |               |               |               |                | Annual Growth<br>2002-2025<br>(percent) |
|-------------------------------------------------------------------------------|----------------|---------------|---------------|---------------|---------------|----------------|-----------------------------------------|
|                                                                               | 2001           | 2002          | 2010          | 2015          | 2020          | 2025           |                                         |
| <b>Average Price to All Users<sup>12</sup></b>                                |                |               |               |               |               |                |                                         |
| Petroleum Products <sup>2</sup> .....                                         | 9.74           | 8.94          | 9.57          | 9.65          | 9.81          | 10.01          | 0.5%                                    |
| Distillate Fuel .....                                                         | 9.14           | 8.52          | 8.93          | 8.97          | 9.07          | 9.18           | 0.3%                                    |
| Jet Fuel .....                                                                | 6.27           | 5.97          | 5.76          | 5.85          | 6.06          | 6.21           | 0.2%                                    |
| Liquefied Petroleum Gas .....                                                 | 13.00          | 9.27          | 10.65         | 11.21         | 11.55         | 11.96          | 1.1%                                    |
| Motor Gasoline <sup>7</sup> .....                                             | 11.99          | 11.15         | 11.87         | 11.87         | 11.90         | 12.06          | 0.3%                                    |
| Residual Fuel .....                                                           | 4.16           | 3.92          | 3.78          | 3.93          | 4.08          | 4.23           | 0.3%                                    |
| Natural Gas .....                                                             | 6.63           | 5.07          | 5.27          | 5.93          | 5.93          | 6.03           | 0.8%                                    |
| Coal .....                                                                    | 1.27           | 1.28          | 1.25          | 1.24          | 1.22          | 1.24           | -0.1%                                   |
| Ethanol (E85) <sup>10</sup> .....                                             | 16.56          | 15.19         | 17.22         | 17.79         | 18.28         | 18.58          | 0.9%                                    |
| Electricity .....                                                             | 21.79          | 21.20         | 19.47         | 19.99         | 20.10         | 20.26          | -0.2%                                   |
| <b>Non-Renewable Energy Expenditures<br/>by Sector (billion 2002 dollars)</b> |                |               |               |               |               |                |                                         |
| Residential .....                                                             | 168.08         | 160.37        | 173.01        | 189.01        | 199.98        | 211.69         | 1.2%                                    |
| Commercial .....                                                              | 129.31         | 119.67        | 132.72        | 152.16        | 167.90        | 184.74         | 1.9%                                    |
| Industrial .....                                                              | 138.60         | 120.96        | 132.71        | 152.53        | 169.02        | 185.61         | 1.9%                                    |
| Transportation .....                                                          | 275.57         | 259.11        | 330.65        | 363.66        | 392.36        | 430.99         | 2.2%                                    |
| Total Non-Renewable Expenditures .....                                        | 711.55         | 660.11        | 769.08        | 857.37        | 929.26        | 1013.03        | 1.9%                                    |
| Transportation Renewable Expenditures .....                                   | 0.01           | 0.01          | 0.03          | 0.05          | 0.06          | 0.07           | 8.6%                                    |
| <b>Total Expenditures .....</b>                                               | <b>711.56</b>  | <b>660.12</b> | <b>769.11</b> | <b>857.41</b> | <b>929.32</b> | <b>1013.10</b> | <b>1.9%</b>                             |

<sup>1</sup>Weighted average price includes fuels below as well as coal.

<sup>2</sup>This quantity is the weighted average for all petroleum products, not just those listed below.

<sup>3</sup>Includes combined heat and power, which produces electricity and other useful thermal energy.

<sup>4</sup>Excludes use for lease and plant fuel.

<sup>5</sup>Diesel fuel containing 500 parts per million (ppm) or 15 ppm sulfur. Price includes Federal and State taxes while excluding county and local taxes.

<sup>6</sup>Kerosene-type jet fuel. Price includes Federal and State taxes while excluding county and local taxes.

<sup>7</sup>Sales weighted-average price for all grades. Includes Federal, State and local taxes.

<sup>8</sup>Includes Federal and State taxes while excluding county and local taxes.

<sup>9</sup>Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

<sup>10</sup>E85 refers to a blend of 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable). To address cold starting issues, the percentage of ethanol actually varies seasonally. The annual average ethanol content of 74 percent is used for this forecast.

<sup>11</sup>Includes electricity-only and combined heat and power plants whose primary business is to sell electricity, or electricity and heat, to the public.

<sup>12</sup>Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.

Btu = British thermal unit.

Note: Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

Sources: 2001 and 2002 prices for motor gasoline, distillate, and jet fuel are based on: EIA, *Petroleum Marketing Annual 2002*, [http://www.eia.doe.gov/pub/oil\\_gas/petroleum/data\\_publications/petroleum\\_marketing\\_annual/current/pdf/pmaall.pdf](http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_marketing_annual/current/pdf/pmaall.pdf) (August 2003). 2001 residential, commercial, and transportation natural gas delivered prices: EIA, *Natural Gas Annual 2001*, DOE/EIA-0131(2001) (Washington, DC, February 2003). 2002 residential, commercial, and transportation natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2003/06) (Washington, DC, June 2003). 2001 and 2002 electric power sector natural gas prices: Federal Energy Regulatory Commission, FERC Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants." 2001 and 2002 industrial natural gas delivered prices are based on: EIA, *Manufacturing Energy Consumption Survey 1998*. 2001 and 2002 coal prices based on EIA, *Quarterly Coal Report, October-December 2002*, DOE/EIA-0121(2002/4Q) (Washington, DC, March 2003) and EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E. 2001 and 2002 electricity prices: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). 2001 and 2002 ethanol prices derived from weekly spot prices in the Oxy Fuel News. Projections: EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

## Reference Case Forecast

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

| Key Indicators and Consumption                | Reference Case |               |               |               |               |               | Annual Growth<br>2002-2025<br>(percent) |
|-----------------------------------------------|----------------|---------------|---------------|---------------|---------------|---------------|-----------------------------------------|
|                                               | 2001           | 2002          | 2010          | 2015          | 2020          | 2025          |                                         |
| <b>Key Indicators</b>                         |                |               |               |               |               |               |                                         |
| <b>Households (millions)</b>                  |                |               |               |               |               |               |                                         |
| Single-Family .....                           | 73.73          | 74.77         | 82.87         | 87.68         | 92.09         | 96.32         | 1.1%                                    |
| Multifamily .....                             | 28.96          | 29.20         | 30.71         | 31.84         | 33.07         | 34.36         | 0.7%                                    |
| Mobile Homes .....                            | 6.37           | 6.31          | 6.25          | 6.60          | 6.88          | 7.12          | 0.5%                                    |
| <b>Total .....</b>                            | <b>109.06</b>  | <b>110.28</b> | <b>119.84</b> | <b>126.12</b> | <b>132.04</b> | <b>137.79</b> | <b>1.0%</b>                             |
| <b>Average House Square Footage .....</b>     | <b>1684</b>    | <b>1689</b>   | <b>1731</b>   | <b>1752</b>   | <b>1771</b>   | <b>1788</b>   | <b>0.2%</b>                             |
| <b>Energy Intensity</b>                       |                |               |               |               |               |               |                                         |
| <b>(million Btu per household)</b>            |                |               |               |               |               |               |                                         |
| Delivered Energy Consumption .....            | 100.0          | 102.3         | 105.0         | 103.6         | 103.5         | 102.8         | 0.0%                                    |
| Total Energy Consumption .....                | 185.0          | 189.4         | 192.4         | 190.1         | 190.1         | 189.5         | 0.0%                                    |
| <b>(thousand Btu per square foot)</b>         |                |               |               |               |               |               |                                         |
| Delivered Energy Consumption .....            | 59.4           | 60.6          | 60.6          | 59.1          | 58.4          | 57.5          | -0.2%                                   |
| Total Energy Consumption .....                | 109.9          | 112.1         | 111.1         | 108.5         | 107.3         | 106.0         | -0.2%                                   |
| <b>Delivered Energy Consumption by Fuel</b>   |                |               |               |               |               |               |                                         |
| <b>Electricity</b>                            |                |               |               |               |               |               |                                         |
| Space Heating .....                           | 0.38           | 0.40          | 0.43          | 0.44          | 0.45          | 0.46          | 0.6%                                    |
| Space Cooling .....                           | 0.63           | 0.71          | 0.69          | 0.72          | 0.76          | 0.80          | 0.5%                                    |
| Water Heating .....                           | 0.38           | 0.37          | 0.37          | 0.37          | 0.36          | 0.35          | -0.3%                                   |
| Refrigeration .....                           | 0.43           | 0.42          | 0.37          | 0.36          | 0.36          | 0.37          | -0.6%                                   |
| Cooking .....                                 | 0.10           | 0.10          | 0.11          | 0.12          | 0.12          | 0.13          | 0.9%                                    |
| Clothes Dryers .....                          | 0.23           | 0.24          | 0.25          | 0.26          | 0.26          | 0.27          | 0.6%                                    |
| Freezers .....                                | 0.14           | 0.13          | 0.12          | 0.12          | 0.12          | 0.12          | -0.4%                                   |
| Lighting .....                                | 0.72           | 0.75          | 0.87          | 0.92          | 0.97          | 1.02          | 1.4%                                    |
| Clothes Washers <sup>1</sup> .....            | 0.03           | 0.03          | 0.04          | 0.05          | 0.06          | 0.06          | 3.0%                                    |
| Dishwashers <sup>1</sup> .....                | 0.02           | 0.02          | 0.03          | 0.03          | 0.03          | 0.03          | 1.3%                                    |
| Color Televisions .....                       | 0.12           | 0.12          | 0.18          | 0.22          | 0.26          | 0.27          | 3.5%                                    |
| Personal Computers .....                      | 0.06           | 0.06          | 0.08          | 0.10          | 0.11          | 0.14          | 3.3%                                    |
| Furnace Fans .....                            | 0.07           | 0.08          | 0.09          | 0.10          | 0.10          | 0.11          | 1.7%                                    |
| Other Uses <sup>2</sup> .....                 | 0.79           | 0.88          | 1.25          | 1.44          | 1.63          | 1.83          | 3.2%                                    |
| <b>Delivered Energy .....</b>                 | <b>4.10</b>    | <b>4.33</b>   | <b>4.87</b>   | <b>5.22</b>   | <b>5.60</b>   | <b>5.96</b>   | <b>1.4%</b>                             |
| <b>Natural Gas</b>                            |                |               |               |               |               |               |                                         |
| Space Heating .....                           | 3.39           | 3.54          | 4.01          | 4.13          | 4.33          | 4.48          | 1.0%                                    |
| Space Cooling .....                           | 0.00           | 0.00          | 0.00          | 0.00          | 0.00          | 0.00          | 16.0%                                   |
| Water Heating .....                           | 1.16           | 1.15          | 1.25          | 1.25          | 1.27          | 1.28          | 0.5%                                    |
| Cooking .....                                 | 0.21           | 0.21          | 0.23          | 0.24          | 0.26          | 0.27          | 1.1%                                    |
| Clothes Dryers .....                          | 0.07           | 0.07          | 0.09          | 0.10          | 0.11          | 0.11          | 2.3%                                    |
| Other Uses <sup>3</sup> .....                 | 0.09           | 0.10          | 0.11          | 0.11          | 0.12          | 0.12          | 1.1%                                    |
| <b>Delivered Energy .....</b>                 | <b>4.92</b>    | <b>5.06</b>   | <b>5.69</b>   | <b>5.84</b>   | <b>6.08</b>   | <b>6.26</b>   | <b>0.9%</b>                             |
| <b>Distillate</b>                             |                |               |               |               |               |               |                                         |
| Space Heating .....                           | 0.77           | 0.77          | 0.81          | 0.78          | 0.75          | 0.71          | -0.4%                                   |
| Water Heating .....                           | 0.13           | 0.12          | 0.12          | 0.11          | 0.10          | 0.09          | -1.1%                                   |
| Other Uses <sup>4</sup> .....                 | 0.00           | 0.00          | 0.00          | 0.00          | 0.00          | 0.00          | N/A                                     |
| <b>Delivered Energy .....</b>                 | <b>0.90</b>    | <b>0.89</b>   | <b>0.93</b>   | <b>0.89</b>   | <b>0.85</b>   | <b>0.80</b>   | <b>-0.5%</b>                            |
| <b>Liquefied Petroleum Gas</b>                |                |               |               |               |               |               |                                         |
| Space Heating .....                           | 0.29           | 0.30          | 0.30          | 0.31          | 0.31          | 0.31          | 0.1%                                    |
| Water Heating .....                           | 0.05           | 0.05          | 0.05          | 0.05          | 0.05          | 0.05          | -0.1%                                   |
| Cooking .....                                 | 0.03           | 0.03          | 0.03          | 0.03          | 0.03          | 0.03          | 0.4%                                    |
| Other Uses <sup>3</sup> .....                 | 0.14           | 0.15          | 0.18          | 0.20          | 0.23          | 0.25          | 2.3%                                    |
| <b>Delivered Energy .....</b>                 | <b>0.50</b>    | <b>0.53</b>   | <b>0.56</b>   | <b>0.59</b>   | <b>0.61</b>   | <b>0.64</b>   | <b>0.8%</b>                             |
| Marketed Renewables (wood) <sup>5</sup> ..... | 0.36           | 0.39          | 0.40          | 0.41          | 0.41          | 0.41          | 0.1%                                    |
| Other Fuels <sup>6</sup> .....                | 0.12           | 0.08          | 0.12          | 0.12          | 0.11          | 0.10          | 1.1%                                    |

# Reference Case Forecast

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

| Key Indicators and Consumption                 | Reference Case |              |              |              |              |              | Annual Growth<br>2002-2025<br>(percent) |
|------------------------------------------------|----------------|--------------|--------------|--------------|--------------|--------------|-----------------------------------------|
|                                                | 2001           | 2002         | 2010         | 2015         | 2020         | 2025         |                                         |
| <b>Delivered Energy Consumption by End-Use</b> |                |              |              |              |              |              |                                         |
| Space Heating .....                            | 5.31           | 5.48         | 6.08         | 6.18         | 6.35         | 6.46         | 0.7%                                    |
| Space Cooling .....                            | 0.63           | 0.71         | 0.69         | 0.72         | 0.76         | 0.80         | 0.5%                                    |
| Water Heating .....                            | 1.71           | 1.69         | 1.79         | 1.78         | 1.78         | 1.77         | 0.2%                                    |
| Refrigeration .....                            | 0.43           | 0.42         | 0.37         | 0.36         | 0.36         | 0.37         | -0.6%                                   |
| Cooking .....                                  | 0.34           | 0.34         | 0.37         | 0.39         | 0.41         | 0.42         | 1.0%                                    |
| Clothes Dryers .....                           | 0.30           | 0.31         | 0.34         | 0.35         | 0.37         | 0.39         | 1.1%                                    |
| Freezers .....                                 | 0.14           | 0.13         | 0.12         | 0.12         | 0.12         | 0.12         | -0.4%                                   |
| Lighting .....                                 | 0.72           | 0.75         | 0.87         | 0.92         | 0.97         | 1.02         | 1.4%                                    |
| Clothes Washers .....                          | 0.03           | 0.03         | 0.04         | 0.05         | 0.06         | 0.06         | 3.0%                                    |
| Dishwashers .....                              | 0.02           | 0.02         | 0.03         | 0.03         | 0.03         | 0.03         | 1.3%                                    |
| Color Televisions .....                        | 0.12           | 0.12         | 0.18         | 0.22         | 0.26         | 0.27         | 3.5%                                    |
| Personal Computers .....                       | 0.06           | 0.06         | 0.08         | 0.10         | 0.11         | 0.14         | 3.3%                                    |
| Furnace Fans .....                             | 0.07           | 0.08         | 0.09         | 0.10         | 0.10         | 0.11         | 1.7%                                    |
| Other Uses <sup>7</sup> .....                  | 1.02           | 1.13         | 1.54         | 1.75         | 1.97         | 2.20         | 2.9%                                    |
| <b>Delivered Energy .....</b>                  | <b>10.91</b>   | <b>11.28</b> | <b>12.58</b> | <b>13.06</b> | <b>13.66</b> | <b>14.17</b> | <b>1.0%</b>                             |
| <b>Electricity Related Losses .....</b>        | <b>9.28</b>    | <b>9.60</b>  | <b>10.48</b> | <b>10.92</b> | <b>11.43</b> | <b>11.95</b> | <b>1.0%</b>                             |
| <b>Total Energy Consumption by End-Use</b>     |                |              |              |              |              |              |                                         |
| Space Heating .....                            | 6.16           | 6.36         | 6.99         | 7.10         | 7.27         | 7.37         | 0.6%                                    |
| Space Cooling .....                            | 2.05           | 2.29         | 2.19         | 2.23         | 2.32         | 2.41         | 0.2%                                    |
| Water Heating .....                            | 2.57           | 2.51         | 2.58         | 2.54         | 2.52         | 2.46         | -0.1%                                   |
| Refrigeration .....                            | 1.41           | 1.37         | 1.16         | 1.10         | 1.09         | 1.11         | -0.9%                                   |
| Cooking .....                                  | 0.57           | 0.57         | 0.61         | 0.63         | 0.66         | 0.68         | 0.8%                                    |
| Clothes Dryers .....                           | 0.83           | 0.83         | 0.89         | 0.89         | 0.91         | 0.94         | 0.5%                                    |
| Freezers .....                                 | 0.45           | 0.43         | 0.37         | 0.36         | 0.36         | 0.37         | -0.7%                                   |
| Lighting .....                                 | 2.34           | 2.41         | 2.73         | 2.84         | 2.95         | 3.07         | 1.1%                                    |
| Clothes Washers .....                          | 0.10           | 0.10         | 0.12         | 0.15         | 0.18         | 0.19         | 2.7%                                    |
| Dishwashers .....                              | 0.08           | 0.08         | 0.08         | 0.09         | 0.09         | 0.10         | 1.0%                                    |
| Color Televisions .....                        | 0.38           | 0.40         | 0.58         | 0.68         | 0.78         | 0.82         | 3.2%                                    |
| Personal Computers .....                       | 0.21           | 0.21         | 0.25         | 0.30         | 0.35         | 0.41         | 3.0%                                    |
| Furnace Fans .....                             | 0.24           | 0.25         | 0.28         | 0.30         | 0.32         | 0.33         | 1.4%                                    |
| Other Uses <sup>7</sup> .....                  | 2.79           | 3.09         | 4.22         | 4.76         | 5.29         | 5.87         | 2.8%                                    |
| <b>Total .....</b>                             | <b>20.18</b>   | <b>20.88</b> | <b>23.06</b> | <b>23.98</b> | <b>25.10</b> | <b>26.12</b> | <b>1.0%</b>                             |
| <b>Non-Marketed Renewables</b>                 |                |              |              |              |              |              |                                         |
| Geothermal <sup>8</sup> .....                  | 0.00           | 0.00         | 0.00         | 0.01         | 0.01         | 0.01         | 9.0%                                    |
| Solar <sup>9</sup> .....                       | 0.04           | 0.02         | 0.03         | 0.03         | 0.04         | 0.04         | 2.3%                                    |
| <b>Total .....</b>                             | <b>0.04</b>    | <b>0.02</b>  | <b>0.03</b>  | <b>0.04</b>  | <b>0.04</b>  | <b>0.05</b>  | <b>3.2%</b>                             |

<sup>1</sup>Does not include electric water heating portion of load.

<sup>2</sup>Includes small electric devices, heating elements, and motors.

<sup>3</sup>Includes such appliances as swimming pool heaters, outdoor grills, and outdoor lighting (natural gas).

<sup>4</sup>Includes such appliances as swimming pool and hot tub heaters.

<sup>5</sup>Includes wood used for primary and secondary heating in wood stoves or fireplaces as reported in the *Residential Energy Consumption Survey 2001*.

<sup>6</sup>Includes kerosene and coal.

<sup>7</sup>Includes all other uses listed above.

<sup>8</sup>Includes primary energy displaced by geothermal heat pumps in space heating and cooling applications.

<sup>9</sup>Includes primary energy displaced by solar thermal water heaters and electricity generated using photovoltaics.

N/A = Not applicable.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

Sources: 2001 and 2002 based on: Energy Information Administration (EIA), *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002).  
Projections: EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.



## Reference Case Forecast

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

| Key Indicators and Consumption                                         | Reference Case |             |             |              |              |              | Annual Growth<br>2002-2025<br>(percent) |
|------------------------------------------------------------------------|----------------|-------------|-------------|--------------|--------------|--------------|-----------------------------------------|
|                                                                        | 2001           | 2002        | 2010        | 2015         | 2020         | 2025         |                                         |
| <b>Key Indicators</b>                                                  |                |             |             |              |              |              |                                         |
| <b>Total Floorspace (billion square feet)</b>                          |                |             |             |              |              |              |                                         |
| Surviving .....                                                        | 67.2           | 68.9        | 81.1        | 87.3         | 93.1         | 98.8         | 1.6%                                    |
| New Additions .....                                                    | 3.1            | 3.2         | 2.7         | 2.6          | 2.8          | 3.0          | -0.3%                                   |
| <b>Total .....</b>                                                     | <b>70.2</b>    | <b>72.1</b> | <b>83.8</b> | <b>89.9</b>  | <b>95.9</b>  | <b>101.8</b> | <b>1.5%</b>                             |
| <b>Energy Consumption Intensity<br/>(thousand Btu per square foot)</b> |                |             |             |              |              |              |                                         |
| Delivered Energy Consumption .....                                     | 118.8          | 114.5       | 116.2       | 116.9        | 118.3        | 119.7        | 0.2%                                    |
| Electricity Related Losses .....                                       | 131.5          | 126.9       | 129.6       | 131.0        | 132.7        | 134.6        | 0.3%                                    |
| Total Energy Consumption .....                                         | 250.3          | 241.4       | 245.8       | 247.9        | 251.0        | 254.3        | 0.2%                                    |
| <b>Delivered Energy Consumption by Fuel</b>                            |                |             |             |              |              |              |                                         |
| <b>Purchased Electricity</b>                                           |                |             |             |              |              |              |                                         |
| Space Heating <sup>1</sup> .....                                       | 0.14           | 0.15        | 0.16        | 0.16         | 0.16         | 0.16         | 0.2%                                    |
| Space Cooling <sup>1</sup> .....                                       | 0.41           | 0.46        | 0.45        | 0.46         | 0.48         | 0.49         | 0.2%                                    |
| Water Heating <sup>1</sup> .....                                       | 0.14           | 0.14        | 0.15        | 0.15         | 0.15         | 0.15         | 0.3%                                    |
| Ventilation .....                                                      | 0.16           | 0.16        | 0.18        | 0.18         | 0.18         | 0.19         | 0.7%                                    |
| Cooking .....                                                          | 0.03           | 0.03        | 0.03        | 0.03         | 0.03         | 0.03         | -0.7%                                   |
| Lighting .....                                                         | 1.10           | 1.12        | 1.30        | 1.36         | 1.40         | 1.43         | 1.1%                                    |
| Refrigeration .....                                                    | 0.20           | 0.20        | 0.22        | 0.23         | 0.24         | 0.25         | 0.9%                                    |
| Office Equipment (PC) .....                                            | 0.14           | 0.14        | 0.24        | 0.29         | 0.34         | 0.37         | 4.4%                                    |
| Office Equipment (non-PC) .....                                        | 0.30           | 0.31        | 0.46        | 0.58         | 0.71         | 0.87         | 4.6%                                    |
| Other Uses <sup>2</sup> .....                                          | 1.45           | 1.41        | 1.86        | 2.21         | 2.55         | 2.91         | 3.2%                                    |
| <b>Delivered Energy .....</b>                                          | <b>4.09</b>    | <b>4.12</b> | <b>5.05</b> | <b>5.64</b>  | <b>6.24</b>  | <b>6.83</b>  | <b>2.2%</b>                             |
| <b>Natural Gas</b>                                                     |                |             |             |              |              |              |                                         |
| Space Heating <sup>1</sup> .....                                       | 1.33           | 1.42        | 1.56        | 1.58         | 1.64         | 1.69         | 0.8%                                    |
| Space Cooling <sup>1</sup> .....                                       | 0.01           | 0.01        | 0.02        | 0.02         | 0.03         | 0.03         | 3.9%                                    |
| Water Heating <sup>1</sup> .....                                       | 0.57           | 0.59        | 0.70        | 0.74         | 0.79         | 0.84         | 1.5%                                    |
| Cooking .....                                                          | 0.25           | 0.26        | 0.30        | 0.32         | 0.34         | 0.36         | 1.4%                                    |
| Other Uses <sup>3</sup> .....                                          | 1.17           | 0.93        | 0.99        | 1.06         | 1.14         | 1.24         | 1.3%                                    |
| <b>Delivered Energy .....</b>                                          | <b>3.33</b>    | <b>3.21</b> | <b>3.57</b> | <b>3.72</b>  | <b>3.94</b>  | <b>4.16</b>  | <b>1.1%</b>                             |
| <b>Distillate</b>                                                      |                |             |             |              |              |              |                                         |
| Space Heating <sup>1</sup> .....                                       | 0.17           | 0.17        | 0.24        | 0.27         | 0.29         | 0.31         | 2.6%                                    |
| Water Heating <sup>1</sup> .....                                       | 0.07           | 0.07        | 0.08        | 0.09         | 0.09         | 0.09         | 1.0%                                    |
| Other Uses <sup>4</sup> .....                                          | 0.25           | 0.24        | 0.30        | 0.30         | 0.29         | 0.29         | 0.9%                                    |
| <b>Delivered Energy .....</b>                                          | <b>0.49</b>    | <b>0.49</b> | <b>0.62</b> | <b>0.65</b>  | <b>0.67</b>  | <b>0.70</b>  | <b>1.6%</b>                             |
| <b>Other Fuels<sup>5</sup> .....</b>                                   | <b>0.35</b>    | <b>0.33</b> | <b>0.39</b> | <b>0.40</b>  | <b>0.40</b>  | <b>0.40</b>  | <b>0.8%</b>                             |
| <b>Marketed Renewable Fuels</b>                                        |                |             |             |              |              |              |                                         |
| Biomass .....                                                          | 0.09           | 0.10        | 0.10        | 0.10         | 0.10         | 0.10         | 0.0%                                    |
| <b>Delivered Energy .....</b>                                          | <b>0.09</b>    | <b>0.10</b> | <b>0.10</b> | <b>0.10</b>  | <b>0.10</b>  | <b>0.10</b>  | <b>0.0%</b>                             |
| <b>Delivered Energy Consumption by End-Use</b>                         |                |             |             |              |              |              |                                         |
| Space Heating <sup>1</sup> .....                                       | 1.64           | 1.74        | 1.97        | 2.01         | 2.09         | 2.16         | 0.9%                                    |
| Space Cooling <sup>1</sup> .....                                       | 0.43           | 0.48        | 0.47        | 0.48         | 0.50         | 0.52         | 0.4%                                    |
| Water Heating <sup>1</sup> .....                                       | 0.78           | 0.80        | 0.93        | 0.97         | 1.03         | 1.08         | 1.3%                                    |
| Ventilation .....                                                      | 0.16           | 0.16        | 0.18        | 0.18         | 0.18         | 0.19         | 0.7%                                    |
| Cooking .....                                                          | 0.29           | 0.29        | 0.34        | 0.35         | 0.37         | 0.39         | 1.2%                                    |
| Lighting .....                                                         | 1.10           | 1.12        | 1.30        | 1.36         | 1.40         | 1.43         | 1.1%                                    |
| Refrigeration .....                                                    | 0.20           | 0.20        | 0.22        | 0.23         | 0.24         | 0.25         | 0.9%                                    |
| Office Equipment (PC) .....                                            | 0.14           | 0.14        | 0.24        | 0.29         | 0.34         | 0.37         | 4.4%                                    |
| Office Equipment (non-PC) .....                                        | 0.30           | 0.31        | 0.46        | 0.58         | 0.71         | 0.87         | 4.6%                                    |
| Other Uses <sup>6</sup> .....                                          | 3.31           | 3.01        | 3.63        | 4.06         | 4.48         | 4.94         | 2.2%                                    |
| <b>Delivered Energy .....</b>                                          | <b>8.34</b>    | <b>8.25</b> | <b>9.74</b> | <b>10.51</b> | <b>11.35</b> | <b>12.19</b> | <b>1.7%</b>                             |

## Reference Case Forecast

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

| Key Indicators and Consumption             | Reference Case |              |              |              |              |              | Annual Growth<br>2002-2025<br>(percent) |
|--------------------------------------------|----------------|--------------|--------------|--------------|--------------|--------------|-----------------------------------------|
|                                            | 2001           | 2002         | 2010         | 2015         | 2020         | 2025         |                                         |
| <b>Electricity Related Losses</b> .....    | <b>9.24</b>    | <b>9.15</b>  | <b>10.86</b> | <b>11.79</b> | <b>12.73</b> | <b>13.70</b> | <b>1.8%</b>                             |
| <b>Total Energy Consumption by End-Use</b> |                |              |              |              |              |              |                                         |
| Space Heating <sup>1</sup> .....           | 1.97           | 2.07         | 2.31         | 2.34         | 2.41         | 2.47         | 0.8%                                    |
| Space Cooling <sup>1</sup> .....           | 1.36           | 1.51         | 1.43         | 1.45         | 1.48         | 1.50         | -0.0%                                   |
| Water Heating <sup>1</sup> .....           | 1.10           | 1.11         | 1.25         | 1.28         | 1.33         | 1.37         | 0.9%                                    |
| Ventilation .....                          | 0.53           | 0.52         | 0.56         | 0.55         | 0.56         | 0.57         | 0.4%                                    |
| Cooking .....                              | 0.36           | 0.36         | 0.40         | 0.41         | 0.43         | 0.44         | 0.8%                                    |
| Lighting .....                             | 3.58           | 3.60         | 4.10         | 4.20         | 4.25         | 4.30         | 0.8%                                    |
| Refrigeration .....                        | 0.65           | 0.65         | 0.70         | 0.71         | 0.73         | 0.75         | 0.6%                                    |
| Office Equipment (PC) .....                | 0.46           | 0.44         | 0.76         | 0.89         | 1.03         | 1.10         | 4.1%                                    |
| Office Equipment (non-PC) .....            | 0.99           | 1.00         | 1.46         | 1.79         | 2.16         | 2.61         | 4.3%                                    |
| Other Uses <sup>6</sup> .....              | 6.59           | 6.14         | 7.63         | 8.67         | 9.69         | 10.77        | 2.5%                                    |
| <b>Total</b> .....                         | <b>17.58</b>   | <b>17.40</b> | <b>20.60</b> | <b>22.30</b> | <b>24.07</b> | <b>25.89</b> | <b>1.7%</b>                             |
| <b>Non-Marketed Renewable Fuels</b>        |                |              |              |              |              |              |                                         |
| Solar <sup>7</sup> .....                   | 0.02           | 0.02         | 0.03         | 0.03         | 0.03         | 0.03         | 1.5%                                    |
| <b>Total</b> .....                         | <b>0.02</b>    | <b>0.02</b>  | <b>0.03</b>  | <b>0.03</b>  | <b>0.03</b>  | <b>0.03</b>  | <b>1.5%</b>                             |

<sup>1</sup>Includes fuel consumption for district services.

<sup>2</sup>Includes miscellaneous uses, such as service station equipment, automated teller machines, telecommunications equipment, and medical equipment.

<sup>3</sup>Includes miscellaneous uses, such as pumps, emergency electric generators, combined heat and power in commercial buildings, and manufacturing performed in commercial buildings.

<sup>4</sup>Includes miscellaneous uses, such as cooking, emergency electric generators, and combined heat and power in commercial buildings.

<sup>5</sup>Includes residual fuel oil, liquefied petroleum gas, coal, motor gasoline, and kerosene.

<sup>6</sup>Includes miscellaneous uses, such as service station equipment, automated teller machines, telecommunications equipment, medical equipment, pumps, emergency electric generators, combined heat and power in commercial buildings, manufacturing performed in commercial buildings, and cooking (distillate), plus residual fuel oil, liquefied petroleum gas, coal, motor gasoline, and kerosene.

<sup>7</sup>Includes primary energy displaced by solar thermal space heating and water heating, and electricity generation by solar photovoltaic systems.

N/A = Not applicable.

Btu = British thermal unit.

PC = Personal computer.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

Sources: 2001 and 2002 based on: Energy Information Administration (EIA), *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002).

Projections: EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

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

| Key Indicators and Consumption                                                                   | Reference Case |              |              |              |              |              | Annual Growth<br>2002-2025<br>(percent) |
|--------------------------------------------------------------------------------------------------|----------------|--------------|--------------|--------------|--------------|--------------|-----------------------------------------|
|                                                                                                  | 2001           | 2002         | 2010         | 2015         | 2020         | 2025         |                                         |
| <b>Key Indicators</b>                                                                            |                |              |              |              |              |              |                                         |
| <b>Value of Shipments (billion 1996 dollars)</b>                                                 |                |              |              |              |              |              |                                         |
| Manufacturing .....                                                                              | 4059           | 4064         | 5013         | 5760         | 6634         | 7636         | 2.8%                                    |
| Nonmanufacturing .....                                                                           | 1309           | 1222         | 1425         | 1585         | 1710         | 1855         | 1.8%                                    |
| <b>Total .....</b>                                                                               | <b>5368</b>    | <b>5285</b>  | <b>6439</b>  | <b>7345</b>  | <b>8344</b>  | <b>9491</b>  | <b>2.6%</b>                             |
| <b>Energy Prices (2002 dollars per million Btu)</b>                                              |                |              |              |              |              |              |                                         |
| Distillate Oil .....                                                                             | 6.62           | 6.21         | 5.68         | 5.85         | 6.24         | 6.40         | 0.1%                                    |
| Liquefied Petroleum Gas .....                                                                    | 12.48          | 8.28         | 9.72         | 10.29        | 10.66        | 11.11        | 1.3%                                    |
| Residual Oil .....                                                                               | 3.31           | 3.89         | 3.74         | 3.88         | 4.03         | 4.17         | 0.3%                                    |
| Motor Gasoline .....                                                                             | 11.70          | 11.04        | 11.84        | 11.84        | 11.87        | 12.03        | 0.4%                                    |
| Natural Gas .....                                                                                | 4.91           | 3.75         | 4.05         | 4.81         | 4.89         | 4.99         | 1.3%                                    |
| Metallurgical Coal .....                                                                         | 1.71           | 1.87         | 1.96         | 1.90         | 1.84         | 1.77         | -0.2%                                   |
| Steam Coal .....                                                                                 | 1.51           | 1.52         | 1.58         | 1.55         | 1.53         | 1.53         | 0.0%                                    |
| Electricity .....                                                                                | 15.11          | 14.74        | 13.36        | 13.81        | 13.99        | 14.09        | -0.2%                                   |
| <b>Energy Consumption<sup>1</sup></b>                                                            |                |              |              |              |              |              |                                         |
| Distillate .....                                                                                 | 1.21           | 1.16         | 1.17         | 1.27         | 1.34         | 1.43         | 0.9%                                    |
| Liquefied Petroleum Gas .....                                                                    | 2.10           | 2.22         | 2.35         | 2.53         | 2.74         | 2.94         | 1.2%                                    |
| Petrochemical Feedstocks .....                                                                   | 1.16           | 1.22         | 1.35         | 1.43         | 1.54         | 1.62         | 1.2%                                    |
| Residual Fuel .....                                                                              | 0.15           | 0.20         | 0.21         | 0.23         | 0.22         | 0.23         | 0.5%                                    |
| Other Petroleum <sup>2</sup> .....                                                               | 4.42           | 4.19         | 4.54         | 4.85         | 5.12         | 5.36         | 1.1%                                    |
| Petroleum Subtotal .....                                                                         | 9.04           | 9.00         | 9.63         | 10.31        | 10.95        | 11.59        | 1.1%                                    |
| Natural Gas .....                                                                                | 7.56           | 7.43         | 8.62         | 9.12         | 9.84         | 10.58        | 1.5%                                    |
| Lease and Plant Fuel <sup>3</sup> .....                                                          | 1.12           | 1.35         | 1.40         | 1.48         | 1.65         | 1.69         | 1.0%                                    |
| Natural Gas Subtotal .....                                                                       | 8.67           | 8.78         | 10.02        | 10.60        | 11.49        | 12.27        | 1.5%                                    |
| Metallurgical Coal and Coke <sup>4</sup> .....                                                   | 0.74           | 0.65         | 0.66         | 0.59         | 0.52         | 0.48         | -1.3%                                   |
| Steam Coal .....                                                                                 | 1.51           | 1.47         | 1.41         | 1.43         | 1.45         | 1.47         | -0.0%                                   |
| Coal Subtotal .....                                                                              | 2.25           | 2.12         | 2.06         | 2.01         | 1.97         | 1.95         | -0.4%                                   |
| Renewables <sup>5</sup> .....                                                                    | 1.64           | 1.66         | 2.00         | 2.26         | 2.48         | 2.70         | 2.1%                                    |
| Purchased Electricity .....                                                                      | 3.29           | 3.39         | 3.82         | 4.15         | 4.47         | 4.85         | 1.6%                                    |
| <b>Delivered Energy .....</b>                                                                    | <b>24.89</b>   | <b>24.94</b> | <b>27.53</b> | <b>29.32</b> | <b>31.36</b> | <b>33.35</b> | <b>1.3%</b>                             |
| Electricity Related Losses .....                                                                 | 7.44           | 7.53         | 8.22         | 8.67         | 9.12         | 9.72         | 1.1%                                    |
| <b>Total .....</b>                                                                               | <b>32.33</b>   | <b>32.47</b> | <b>35.75</b> | <b>37.99</b> | <b>40.48</b> | <b>43.07</b> | <b>1.2%</b>                             |
| <b>Energy Consumption per dollar of Shipments<sup>1</sup></b><br>(thousand Btu per 1996 dollars) |                |              |              |              |              |              |                                         |
| Distillate .....                                                                                 | 0.23           | 0.22         | 0.18         | 0.17         | 0.16         | 0.15         | -1.6%                                   |
| Liquefied Petroleum Gas .....                                                                    | 0.39           | 0.42         | 0.37         | 0.34         | 0.33         | 0.31         | -1.3%                                   |
| Petrochemical Feedstocks .....                                                                   | 0.22           | 0.23         | 0.21         | 0.19         | 0.18         | 0.17         | -1.3%                                   |
| Residual Fuel .....                                                                              | 0.03           | 0.04         | 0.03         | 0.03         | 0.03         | 0.02         | -2.0%                                   |
| Other Petroleum <sup>2</sup> .....                                                               | 0.82           | 0.79         | 0.71         | 0.66         | 0.61         | 0.56         | -1.5%                                   |
| Petroleum Subtotal .....                                                                         | 1.68           | 1.70         | 1.50         | 1.40         | 1.31         | 1.22         | -1.4%                                   |
| Natural Gas .....                                                                                | 1.41           | 1.41         | 1.34         | 1.24         | 1.18         | 1.11         | -1.0%                                   |
| Lease and Plant Fuel <sup>3</sup> .....                                                          | 0.21           | 0.26         | 0.22         | 0.20         | 0.20         | 0.18         | -1.6%                                   |
| Natural Gas Subtotal .....                                                                       | 1.62           | 1.66         | 1.56         | 1.44         | 1.38         | 1.29         | -1.1%                                   |
| Metallurgical Coal and Coke <sup>4</sup> .....                                                   | 0.14           | 0.12         | 0.10         | 0.08         | 0.06         | 0.05         | -3.8%                                   |
| Steam Coal .....                                                                                 | 0.28           | 0.28         | 0.22         | 0.19         | 0.17         | 0.15         | -2.5%                                   |
| Coal Subtotal .....                                                                              | 0.42           | 0.40         | 0.32         | 0.27         | 0.24         | 0.21         | -2.9%                                   |
| Renewables <sup>5</sup> .....                                                                    | 0.30           | 0.31         | 0.31         | 0.31         | 0.30         | 0.28         | -0.4%                                   |
| Purchased Electricity .....                                                                      | 0.61           | 0.64         | 0.59         | 0.56         | 0.54         | 0.51         | -1.0%                                   |
| <b>Delivered Energy .....</b>                                                                    | <b>4.64</b>    | <b>4.72</b>  | <b>4.28</b>  | <b>3.99</b>  | <b>3.76</b>  | <b>3.51</b>  | <b>-1.3%</b>                            |
| Electricity Related Losses .....                                                                 | 1.39           | 1.42         | 1.28         | 1.18         | 1.09         | 1.02         | -1.4%                                   |
| <b>Total .....</b>                                                                               | <b>6.02</b>    | <b>6.14</b>  | <b>5.55</b>  | <b>5.17</b>  | <b>4.85</b>  | <b>4.54</b>  | <b>-1.3%</b>                            |

<sup>1</sup>Fuel consumption includes energy for combined heat and power plants, except those whose primary business is to sell electricity, or electricity and heat, to the public.

<sup>2</sup>Includes petroleum coke, asphalt, road oil, lubricants, motor gasoline, still gas, and miscellaneous petroleum products.

<sup>3</sup>Represents natural gas used in the field gathering and processing plant machinery.

<sup>4</sup>Includes net coal coke imports.

<sup>5</sup>Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

Sources: 2001 and 2002 prices for motor gasoline and distillate are based on: Energy Information Administration (EIA), *Petroleum Marketing Annual 2002*, [http://www.eia.doe.gov/pub/oil\\_gas/petroleum/data\\_publications/petroleum\\_marketing\\_annual\\_current/pdf/pmaall.pdf](http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_marketing_annual_current/pdf/pmaall.pdf) (August 2003). 2001 and 2002 coal prices are based on: EIA, *Quarterly Coal Report, October-December 2002*, DOE/EIA-0121(2002/4Q) (Washington, DC, March 2003) and EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E. 2001 and 2002 electricity prices: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). 2001 and 2002 natural gas prices based on: EIA, *Manufacturing Energy Consumption Survey 1998*. 2001 and 2002 consumption values based on: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). 2001 and 2002 shipments: Global Insight macroeconomic model T250803. Projections: EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

# Reference Case Forecast

**Table A7. Transportation Sector Key Indicators and Delivered Energy Consumption**

| Key Indicators and Consumption                               | Reference Case |              |              |              |              |              | Annual Growth<br>2002-2025<br>(percent) |
|--------------------------------------------------------------|----------------|--------------|--------------|--------------|--------------|--------------|-----------------------------------------|
|                                                              | 2001           | 2002         | 2010         | 2015         | 2020         | 2025         |                                         |
| <b>Key Indicators</b>                                        |                |              |              |              |              |              |                                         |
| <b>Level of Travel (billions)</b>                            |                |              |              |              |              |              |                                         |
| Light-Duty Vehicles <8,500 pounds (VMT) .....                | 2485           | 2504         | 3041         | 3409         | 3768         | 4173         | 2.2%                                    |
| Commercial Light Trucks (VMT) <sup>1</sup> .....             | 64             | 65           | 79           | 90           | 101          | 114          | 2.5%                                    |
| Freight Trucks >10,000 pounds (VMT) .....                    | 201            | 196          | 242          | 276          | 313          | 354          | 2.6%                                    |
| Air (seat miles available) .....                             | 953            | 909          | 1122         | 1327         | 1455         | 1521         | 2.3%                                    |
| Rail (ton miles traveled) .....                              | 1417           | 1336         | 1545         | 1690         | 1852         | 2056         | 1.9%                                    |
| Domestic Shipping (ton miles traveled) .....                 | 774            | 724          | 805          | 857          | 918          | 977          | 1.3%                                    |
| <b>Energy Efficiency Indicators</b>                          |                |              |              |              |              |              |                                         |
| New Light-Duty Vehicle (miles per gallon) <sup>2</sup> ..... | 24.0           | 23.8         | 25.3         | 26.0         | 26.5         | 26.9         | 0.5%                                    |
| New Car (miles per gallon) <sup>2</sup> .....                | 28.2           | 28.2         | 28.8         | 29.9         | 30.4         | 30.8         | 0.4%                                    |
| New Light Truck (miles per gallon) <sup>2</sup> .....        | 20.5           | 20.5         | 22.8         | 23.5         | 24.1         | 24.7         | 0.8%                                    |
| Light-Duty Fleet (miles per gallon) <sup>3</sup> .....       | 19.8           | 19.7         | 19.6         | 20.0         | 20.5         | 20.9         | 0.3%                                    |
| New Commercial Light Truck (MPG) <sup>1</sup> .....          | 13.9           | 13.9         | 15.1         | 15.6         | 16.0         | 16.4         | 0.7%                                    |
| Stock Commercial Light Truck (MPG) <sup>1</sup> .....        | 13.7           | 13.8         | 14.5         | 15.0         | 15.5         | 15.9         | 0.6%                                    |
| Aircraft Efficiency (seat miles per gallon) .....            | 55.3           | 54.8         | 59.9         | 63.3         | 65.4         | 67.0         | 0.9%                                    |
| Freight Truck Efficiency (miles per gallon) .....            | 6.0            | 6.0          | 6.0          | 6.1          | 6.4          | 6.5          | 0.4%                                    |
| Rail Efficiency (ton miles per thousand Btu) .....           | 2.8            | 2.9          | 3.1          | 3.3          | 3.4          | 3.6          | 1.0%                                    |
| (ton miles per thousand Btu) .....                           | 2.3            | 2.3          | 2.3          | 2.4          | 2.4          | 2.4          | 0.2%                                    |
| <b>Energy Use by Mode</b>                                    |                |              |              |              |              |              |                                         |
| <b>(quadrillion Btu)</b>                                     |                |              |              |              |              |              |                                         |
| Light-Duty Vehicles .....                                    | 15.16          | 15.58        | 18.91        | 20.75        | 22.34        | 24.28        | 1.9%                                    |
| Commercial Light Trucks <sup>1</sup> .....                   | 0.58           | 0.59         | 0.68         | 0.75         | 0.82         | 0.90         | 1.9%                                    |
| Bus Transportation .....                                     | 0.25           | 0.24         | 0.25         | 0.26         | 0.26         | 0.26         | 0.4%                                    |
| Freight Trucks .....                                         | 4.22           | 4.09         | 5.03         | 5.62         | 6.15         | 6.82         | 2.2%                                    |
| Rail, Passenger .....                                        | 0.11           | 0.11         | 0.13         | 0.14         | 0.16         | 0.17         | 1.8%                                    |
| Rail, Freight .....                                          | 0.50           | 0.47         | 0.50         | 0.52         | 0.54         | 0.57         | 0.9%                                    |
| Shipping, Domestic .....                                     | 0.34           | 0.32         | 0.35         | 0.36         | 0.39         | 0.41         | 1.1%                                    |
| Shipping, International .....                                | 0.77           | 0.64         | 0.72         | 0.72         | 0.73         | 0.74         | 0.6%                                    |
| Recreational Boats .....                                     | 0.30           | 0.31         | 0.34         | 0.35         | 0.37         | 0.39         | 0.9%                                    |
| Air .....                                                    | 2.97           | 2.84         | 3.35         | 3.76         | 4.09         | 4.30         | 1.8%                                    |
| Military Use .....                                           | 0.62           | 0.66         | 0.77         | 0.79         | 0.81         | 0.82         | 0.9%                                    |
| Lubricants .....                                             | 0.19           | 0.20         | 0.21         | 0.23         | 0.25         | 0.28         | 1.5%                                    |
| Pipeline Fuel .....                                          | 0.64           | 0.65         | 0.69         | 0.72         | 0.83         | 0.86         | 1.2%                                    |
| <b>Total</b> .....                                           | <b>26.67</b>   | <b>26.70</b> | <b>31.93</b> | <b>35.00</b> | <b>37.73</b> | <b>40.79</b> | <b>1.9%</b>                             |
| <b>(million barrels per day oil equivalent)</b>              |                |              |              |              |              |              |                                         |
| Light-Duty Vehicles .....                                    | 7.98           | 8.20         | 9.96         | 10.92        | 11.74        | 12.75        | 1.9%                                    |
| Commercial Light Trucks <sup>1</sup> .....                   | 0.31           | 0.31         | 0.36         | 0.40         | 0.43         | 0.47         | 1.9%                                    |
| Bus Transportation .....                                     | 0.12           | 0.11         | 0.12         | 0.12         | 0.12         | 0.12         | 0.4%                                    |
| Freight Trucks .....                                         | 2.00           | 1.94         | 2.38         | 2.66         | 2.91         | 3.22         | 2.2%                                    |
| Rail, Passenger .....                                        | 0.05           | 0.05         | 0.06         | 0.07         | 0.07         | 0.08         | 1.8%                                    |
| Rail, Freight .....                                          | 0.24           | 0.22         | 0.24         | 0.24         | 0.25         | 0.27         | 0.9%                                    |
| Shipping, Domestic .....                                     | 0.16           | 0.15         | 0.16         | 0.17         | 0.18         | 0.19         | 1.1%                                    |
| Shipping, International .....                                | 0.34           | 0.28         | 0.32         | 0.32         | 0.32         | 0.32         | 0.6%                                    |
| Recreational Boats .....                                     | 0.16           | 0.16         | 0.18         | 0.19         | 0.19         | 0.20         | 0.9%                                    |
| Air .....                                                    | 1.44           | 1.38         | 1.62         | 1.82         | 1.98         | 2.08         | 1.8%                                    |
| Military Use .....                                           | 0.30           | 0.32         | 0.37         | 0.38         | 0.39         | 0.39         | 0.9%                                    |
| Lubricants .....                                             | 0.09           | 0.09         | 0.10         | 0.11         | 0.12         | 0.13         | 1.5%                                    |
| Pipeline Fuel .....                                          | 0.32           | 0.33         | 0.35         | 0.36         | 0.42         | 0.43         | 1.2%                                    |
| <b>Total</b> .....                                           | <b>13.50</b>   | <b>13.54</b> | <b>16.20</b> | <b>17.75</b> | <b>19.13</b> | <b>20.68</b> | <b>1.9%</b>                             |

<sup>1</sup>Commercial trucks 8,500 to 10,000 pounds.

<sup>2</sup>Environmental Protection Agency rated miles per gallon.

<sup>3</sup>Combined car and light truck "on-the-road" estimate.

Btu = British thermal unit.

VMT=Vehicle miles traveled.

MPG = Miles per gallon.

Note: Totals may not equal sum of components due to independent rounding. Data for 2000 and 2001 are model results and may differ slightly from official EIA data reports.

Sources: 2001 and 2002: Energy Information Administration (EIA), *Natural Gas Annual 2001*, DOE/EIA-0131(2001) (Washington, DC, February 2003); Federal Highway Administration, *Highway Statistics 2001* (Washington, DC, November 2002); Oak Ridge National Laboratory, *Transportation Energy Data Book: Edition 22 and Annual* (Oak Ridge, TN, September 2002) National Highway Traffic and Safety Administration, *Summary of Fuel Economy Performance* (Washington, DC, February 2000); EIA, *Household Vehicle Energy Consumption 1994*, DOE/EIA-0464(94) (Washington, DC, August 1997) U.S. Department of Commerce, Bureau of the Census, "Vehicle Inventory and Use Survey," EC97TV (Washington, DC, October 1999); EIA, *Describing Current and Potential Markets for Alternative-Fuel Vehicles*, DOE/EIA-0604(96) (Washington, DC, March 1996); EIA, *Alternatives to Traditional Transportation Fuels 1998*, [http://www.eia.doe.gov/cneaf/alt\\_trans98/table1.html](http://www.eia.doe.gov/cneaf/alt_trans98/table1.html); EIA, *State Energy Data Report 2000*, DOE/EIA-0214(2000) (Washington, DC, August 2003) U.S. Department of Transportation, Research and Special Programs Administration, *Air Carrier Statistics Monthly, December 2002/2001* (Washington, DC, 2002); EIA, *Fuel Oil and Kerosene Sales 2001*, [http://www.eia.doe.gov/oil\\_gas/petroleum/data\\_publications/fuel\\_oil\\_and\\_kerosene\\_sales/historical/foks.html](http://www.eia.doe.gov/oil_gas/petroleum/data_publications/fuel_oil_and_kerosene_sales/historical/foks.html); and United States Department of Defense, Defense Fuel Supply Center. **Projections:** EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

## Reference Case Forecast

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

| Supply, Disposition, and Prices                | Reference Case |             |             |             |             |             | Annual Growth<br>2002-2025<br>(percent) |
|------------------------------------------------|----------------|-------------|-------------|-------------|-------------|-------------|-----------------------------------------|
|                                                | 2001           | 2002        | 2010        | 2015        | 2020        | 2025        |                                         |
| <b>Generation by Fuel Type</b>                 |                |             |             |             |             |             |                                         |
| <b>Electric Power Sector<sup>1</sup></b>       |                |             |             |             |             |             |                                         |
| <b>Power Only<sup>2</sup></b>                  |                |             |             |             |             |             |                                         |
| Coal .....                                     | 1852           | 1875        | 2201        | 2318        | 2560        | 2975        | 2.0%                                    |
| Petroleum .....                                | 113            | 77          | 62          | 103         | 82          | 77          | 0.0%                                    |
| Natural Gas <sup>3</sup> .....                 | 427            | 450         | 642         | 814         | 972         | 969         | 3.4%                                    |
| Nuclear Power .....                            | 769            | 780         | 794         | 812         | 816         | 816         | 0.2%                                    |
| Pumped Storage/Other .....                     | -9             | -9          | -9          | -9          | -9          | -9          | 0.3%                                    |
| Renewable Sources <sup>4</sup> .....           | 259            | 304         | 400         | 420         | 442         | 460         | 1.8%                                    |
| Distributed Generation (Natural Gas) .....     | 0              | 0           | 0           | 1           | 3           | 5           | N/A                                     |
| Non-Utility Generation for Own Use .....       | -20            | -34         | -37         | -37         | -37         | -37         | 0.4%                                    |
| <b>Total .....</b>                             | <b>3391</b>    | <b>3443</b> | <b>4054</b> | <b>4423</b> | <b>4829</b> | <b>5257</b> | <b>1.9%</b>                             |
| <b>Combined Heat and Power<sup>5</sup></b>     |                |             |             |             |             |             |                                         |
| Coal .....                                     | 31             | 32          | 33          | 34          | 33          | 33          | 0.1%                                    |
| Petroleum .....                                | 6              | 6           | 1           | 5           | 2           | 2           | -3.8%                                   |
| Natural Gas .....                              | 128            | 148         | 174         | 165         | 159         | 149         | 0.0%                                    |
| Renewable Sources .....                        | 4              | 5           | 4           | 4           | 4           | 4           | -0.7%                                   |
| Non-Utility Generation for Own Use .....       | -9             | -11         | -24         | -24         | -24         | -24         | 3.6%                                    |
| <b>Total .....</b>                             | <b>160</b>     | <b>183</b>  | <b>188</b>  | <b>183</b>  | <b>175</b>  | <b>164</b>  | <b>-0.5%</b>                            |
| <b>Net Available to the Grid .....</b>         | <b>3551</b>    | <b>3626</b> | <b>4242</b> | <b>4606</b> | <b>5004</b> | <b>5421</b> | <b>1.8%</b>                             |
| <b>End-Use Sector Generation</b>               |                |             |             |             |             |             |                                         |
| <b>Combined Heat and Power<sup>6</sup></b>     |                |             |             |             |             |             |                                         |
| Coal .....                                     | 21             | 21          | 21          | 21          | 21          | 21          | -0.0%                                   |
| Petroleum .....                                | 6              | 5           | 12          | 15          | 17          | 18          | 5.6%                                    |
| Natural Gas .....                              | 83             | 84          | 109         | 129         | 153         | 181         | 3.4%                                    |
| Other Gaseous Fuels <sup>7</sup> .....         | 4              | 5           | 9           | 11          | 12          | 13          | 4.3%                                    |
| Renewable Sources <sup>4</sup> .....           | 29             | 30          | 39          | 45          | 50          | 54          | 2.6%                                    |
| Other <sup>8</sup> .....                       | 9              | 11          | 11          | 11          | 11          | 11          | -0.0%                                   |
| <b>Total .....</b>                             | <b>151</b>     | <b>157</b>  | <b>202</b>  | <b>231</b>  | <b>264</b>  | <b>299</b>  | <b>2.8%</b>                             |
| Other End-Use Generators <sup>9</sup> .....    | 3              | 4           | 5           | 5           | 5           | 7           | 1.9%                                    |
| Generation for Own Use .....                   | -129           | -134        | -158        | -173        | -190        | -210        | 2.0%                                    |
| <b>Total Sales to the Grid .....</b>           | <b>25</b>      | <b>27</b>   | <b>48</b>   | <b>63</b>   | <b>80</b>   | <b>95</b>   | <b>5.6%</b>                             |
| <b>Total Electricity Generation .....</b>      | <b>3734</b>    | <b>3831</b> | <b>4510</b> | <b>4904</b> | <b>5335</b> | <b>5787</b> | <b>1.8%</b>                             |
| <b>Net Imports .....</b>                       | <b>22</b>      | <b>22</b>   | <b>31</b>   | <b>32</b>   | <b>21</b>   | <b>8</b>    | <b>-4.6%</b>                            |
| <b>Electricity Sales by Sector</b>             |                |             |             |             |             |             |                                         |
| Residential .....                              | 1203           | 1268        | 1428        | 1531        | 1641        | 1747        | 1.4%                                    |
| Commercial .....                               | 1197           | 1208        | 1480        | 1653        | 1828        | 2003        | 2.2%                                    |
| Industrial .....                               | 964            | 994         | 1120        | 1216        | 1310        | 1422        | 1.6%                                    |
| Transportation .....                           | 22             | 22          | 26          | 29          | 32          | 35          | 2.1%                                    |
| <b>Total .....</b>                             | <b>3386</b>    | <b>3492</b> | <b>4055</b> | <b>4429</b> | <b>4811</b> | <b>5207</b> | <b>1.8%</b>                             |
| <b>End-Use Prices<sup>10</sup></b>             |                |             |             |             |             |             |                                         |
| <b>(2002 cents per kilowatthour)</b>           |                |             |             |             |             |             |                                         |
| Residential .....                              | 8.7            | 8.4         | 7.9         | 8.1         | 8.1         | 8.1         | -0.2%                                   |
| Commercial .....                               | 8.0            | 7.8         | 7.0         | 7.2         | 7.2         | 7.3         | -0.3%                                   |
| Industrial .....                               | 5.2            | 5.0         | 4.6         | 4.7         | 4.8         | 4.8         | -0.2%                                   |
| Transportation .....                           | 7.4            | 7.2         | 6.7         | 6.9         | 6.8         | 6.8         | -0.2%                                   |
| <b>All Sectors Average .....</b>               | <b>7.4</b>     | <b>7.2</b>  | <b>6.6</b>  | <b>6.8</b>  | <b>6.9</b>  | <b>6.9</b>  | <b>-0.2%</b>                            |
| <b>Prices by Service Category<sup>10</sup></b> |                |             |             |             |             |             |                                         |
| <b>(2002 cents per kilowatthour)</b>           |                |             |             |             |             |             |                                         |
| Generation .....                               | 4.8            | 4.6         | 4.1         | 4.4         | 4.5         | 4.5         | -0.1%                                   |
| Transmission .....                             | 0.6            | 0.6         | 0.6         | 0.7         | 0.7         | 0.7         | 0.9%                                    |
| Distribution .....                             | 2.0            | 2.0         | 1.9         | 1.8         | 1.8         | 1.7         | -0.7%                                   |

## Reference Case Forecast

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

| Supply, Disposition, and Prices                    | Reference Case |       |       |       |       |       | Annual Growth 2002-2025 (percent) |
|----------------------------------------------------|----------------|-------|-------|-------|-------|-------|-----------------------------------|
|                                                    | 2001           | 2002  | 2010  | 2015  | 2020  | 2025  |                                   |
| <b>Electric Power Sector Emissions<sup>1</sup></b> |                |       |       |       |       |       |                                   |
| Sulfur Dioxide (million tons) .....                | 10.63          | 10.54 | 9.90  | 8.95  | 8.94  | 8.95  | -0.7%                             |
| Nitrogen Oxide (million tons) .....                | 4.75           | 4.39  | 3.50  | 3.60  | 3.67  | 3.75  | -0.7%                             |
| Mercury (tons) .....                               | 49.14          | 50.95 | 52.20 | 52.65 | 53.59 | 54.37 | 0.3%                              |

<sup>1</sup>Includes electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public.

<sup>2</sup>Includes plants that only produce electricity.

<sup>3</sup>Includes electricity generation from fuel cells.

<sup>4</sup>Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power.

<sup>5</sup>Includes combined heat and power plants whose primary business is to sell electricity and heat to the public (i.e., those that report NAICS code 22).

<sup>6</sup>Includes combined heat and power plants and electricity-only plants in the commercial and industrial sectors.

<sup>7</sup>Other gaseous fuels include refinery and still gas.

<sup>8</sup>Other includes batteries, chemicals, hydrogen, pitch, purchased steam, sulfur and miscellaneous technologies.

<sup>9</sup>Other end-use generators include small on-site generating systems in the residential, commercial, and industrial sectors used primarily for own-use generation, but which may also sell some power to the grid.

<sup>10</sup>Prices represent average revenue per kilowatthour.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

**Sources:** 2001 and 2002 power only and combined heat and power generation, sales to utilities, net imports, residential, industrial, and total electricity sales, and emissions: Energy Information Administration (EIA), *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002), and supporting databases. 2001 and 2002 commercial and transportation electricity sales: EIA estimates based on Oak Ridge National Laboratory, *Transportation Energy Data Book 21* (Oak Ridge, TN, September 2001). 2001 and 2002 prices: EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E. **Projections:** EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

## Reference Case Forecast

**Table A9. Electricity Generating Capacity**  
(Gigawatts)

| Net Summer Capacity <sup>1</sup>                  | Reference Case |              |              |               |               |               | Annual Growth<br>2002-2025<br>(percent) |
|---------------------------------------------------|----------------|--------------|--------------|---------------|---------------|---------------|-----------------------------------------|
|                                                   | 2001           | 2002         | 2010         | 2015          | 2020          | 2025          |                                         |
| <b>Electric Power Sector<sup>2</sup></b>          |                |              |              |               |               |               |                                         |
| <b>Power Only<sup>3</sup></b>                     |                |              |              |               |               |               |                                         |
| Coal Steam                                        | 305.5          | 305.7        | 305.1        | 316.4         | 348.4         | 407.2         | 1.3%                                    |
| Other Fossil Steam <sup>4</sup>                   | 133.8          | 132.5        | 105.0        | 101.6         | 100.0         | 95.4          | -1.4%                                   |
| Combined Cycle                                    | 43.0           | 81.0         | 127.1        | 158.8         | 184.4         | 202.3         | 4.1%                                    |
| Combustion Turbine/Diesel                         | 97.3           | 123.5        | 131.1        | 152.7         | 163.9         | 175.0         | 1.5%                                    |
| Nuclear Power <sup>5</sup>                        | 98.2           | 98.7         | 100.6        | 102.1         | 102.6         | 102.6         | 0.2%                                    |
| Pumped Storage                                    | 19.9           | 20.2         | 20.3         | 20.3          | 20.3          | 20.3          | 0.0%                                    |
| Fuel Cells                                        | 0.0            | 0.0          | 0.1          | 0.1           | 0.1           | 0.1           | N/A                                     |
| Renewable Sources <sup>6</sup>                    | 90.4           | 91.4         | 97.1         | 101.0         | 105.7         | 109.9         | 0.8%                                    |
| Distributed Generation <sup>7</sup>               | 0.0            | 0.0          | 0.5          | 2.4           | 7.6           | 12.4          | N/A                                     |
| <b>Total</b>                                      | <b>788.0</b>   | <b>853.1</b> | <b>886.8</b> | <b>955.3</b>  | <b>1032.9</b> | <b>1125.1</b> | <b>1.2%</b>                             |
| <b>Combined Heat and Power<sup>8</sup></b>        |                |              |              |               |               |               |                                         |
| Coal Steam                                        | 5.2            | 5.2          | 5.1          | 5.1           | 5.1           | 5.1           | -0.1%                                   |
| Other Fossil Steam <sup>4</sup>                   | 1.1            | 1.1          | 1.1          | 1.1           | 1.1           | 1.1           | N/A                                     |
| Combined Cycle                                    | 22.5           | 29.4         | 32.9         | 32.9          | 32.9          | 32.9          | 0.5%                                    |
| Combustion Turbine/Diesel                         | 4.7            | 5.4          | 5.4          | 5.4           | 5.4           | 5.4           | 0.0%                                    |
| Renewable Sources <sup>6</sup>                    | 0.3            | 0.3          | 0.3          | 0.3           | 0.3           | 0.3           | N/A                                     |
| <b>Total</b>                                      | <b>33.8</b>    | <b>41.4</b>  | <b>44.8</b>  | <b>44.8</b>   | <b>44.8</b>   | <b>44.8</b>   | <b>0.3%</b>                             |
| <b>Total Electric Power Industry</b>              | <b>821.8</b>   | <b>894.5</b> | <b>931.7</b> | <b>1000.2</b> | <b>1077.7</b> | <b>1169.9</b> | <b>1.2%</b>                             |
| <b>Cumulative Planned Additions<sup>9</sup></b>   |                |              |              |               |               |               |                                         |
| Coal Steam                                        | 0.0            | 0.0          | 1.1          | 1.1           | 1.1           | 1.1           | N/A                                     |
| Other Fossil Steam <sup>4</sup>                   | 0.0            | 0.0          | 0.0          | 0.0           | 0.0           | 0.0           | N/A                                     |
| Combined Cycle                                    | 0.0            | 0.0          | 43.5         | 43.5          | 43.5          | 43.5          | N/A                                     |
| Combustion Turbine/Diesel                         | 0.0            | 0.0          | 8.1          | 8.1           | 8.1           | 8.1           | N/A                                     |
| Nuclear Power                                     | 0.0            | 0.0          | 0.0          | 0.0           | 0.0           | 0.0           | N/A                                     |
| Pumped Storage                                    | 0.0            | 0.0          | 0.0          | 0.0           | 0.0           | 0.0           | N/A                                     |
| Fuel Cells                                        | 0.0            | 0.0          | 0.1          | 0.1           | 0.1           | 0.1           | N/A                                     |
| Renewable Sources <sup>6</sup>                    | 0.0            | 0.0          | 4.3          | 4.6           | 4.7           | 4.8           | N/A                                     |
| Distributed Generation <sup>7</sup>               | 0.0            | 0.0          | 0.0          | 0.0           | 0.0           | 0.0           | N/A                                     |
| <b>Total</b>                                      | <b>0.0</b>     | <b>0.0</b>   | <b>57.1</b>  | <b>57.4</b>   | <b>57.5</b>   | <b>57.6</b>   | <b>N/A</b>                              |
| <b>Cumulative Unplanned Additions<sup>9</sup></b> |                |              |              |               |               |               |                                         |
| Coal Steam                                        | 0.0            | 0.0          | 5.7          | 17.5          | 50.7          | 110.6         | N/A                                     |
| Other Fossil Steam <sup>4</sup>                   | 0.0            | 0.0          | 0.0          | 0.0           | 0.0           | 0.0           | N/A                                     |
| Combined Cycle                                    | 0.0            | 0.0          | 6.6          | 38.3          | 64.0          | 81.9          | N/A                                     |
| Combustion Turbine/Diesel                         | 0.0            | 0.0          | 10.5         | 32.8          | 46.0          | 59.1          | N/A                                     |
| Nuclear Power                                     | 0.0            | 0.0          | 0.0          | 0.0           | 0.0           | 0.0           | N/A                                     |
| Pumped Storage                                    | 0.0            | 0.0          | 0.0          | 0.0           | 0.0           | 0.0           | N/A                                     |
| Fuel Cells                                        | 0.0            | 0.0          | 0.0          | 0.0           | 0.0           | 0.0           | N/A                                     |
| Renewable Sources <sup>6</sup>                    | 0.0            | 0.0          | 1.1          | 4.6           | 9.3           | 13.3          | N/A                                     |
| Distributed Generation <sup>7</sup>               | 0.0            | 0.0          | 0.5          | 2.4           | 7.6           | 12.4          | N/A                                     |
| <b>Total</b>                                      | <b>0.0</b>     | <b>0.0</b>   | <b>24.3</b>  | <b>95.7</b>   | <b>177.5</b>  | <b>277.2</b>  | <b>N/A</b>                              |
| <b>Cumulative Total Additions</b>                 | <b>0.0</b>     | <b>0.0</b>   | <b>81.4</b>  | <b>153.0</b>  | <b>235.0</b>  | <b>334.8</b>  | <b>N/A</b>                              |
| <b>Cumulative Retirements<sup>10</sup></b>        |                |              |              |               |               |               |                                         |
| Coal Steam                                        | 0.0            | 0.0          | 7.5          | 8.0           | 9.3           | 10.4          | N/A                                     |
| Other Fossil Steam <sup>4</sup>                   | 0.0            | 0.0          | 25.6         | 29.0          | 30.6          | 35.2          | N/A                                     |
| Combined Cycle                                    | 0.0            | 0.0          | 1.1          | 1.1           | 1.1           | 1.1           | N/A                                     |
| Combustion Turbine/Diesel                         | 0.0            | 0.0          | 10.2         | 11.0          | 13.0          | 14.9          | N/A                                     |
| Nuclear Power                                     | 0.0            | 0.0          | 0.0          | 0.0           | 0.0           | 0.0           | N/A                                     |
| Pumped Storage                                    | 0.0            | 0.0          | 0.0          | 0.0           | 0.0           | 0.0           | N/A                                     |
| Fuel Cells                                        | 0.0            | 0.0          | 0.0          | 0.0           | 0.0           | 0.0           | N/A                                     |
| Renewable Sources <sup>6</sup>                    | 0.0            | 0.0          | 0.1          | 0.1           | 0.1           | 0.1           | N/A                                     |
| <b>Total</b>                                      | <b>0.0</b>     | <b>0.0</b>   | <b>44.6</b>  | <b>49.3</b>   | <b>54.2</b>   | <b>61.8</b>   | <b>N/A</b>                              |

# Reference Case Forecast

**Table A9. Electricity Generating Capacity (Continued)**  
(Gigawatts)

| Net Summer Capacity <sup>1</sup>             | Reference Case |             |             |             |             |             | Annual Growth<br>2002-2025<br>(percent) |
|----------------------------------------------|----------------|-------------|-------------|-------------|-------------|-------------|-----------------------------------------|
|                                              | 2001           | 2002        | 2010        | 2015        | 2020        | 2025        |                                         |
| <b>End-Use Sector</b>                        |                |             |             |             |             |             |                                         |
| <b>Combined Heat and Power<sup>11</sup></b>  |                |             |             |             |             |             |                                         |
| Coal .....                                   | 4.1            | 4.2         | 4.1         | 4.1         | 4.1         | 4.1         | -0.0%                                   |
| Petroleum .....                              | 1.0            | 1.0         | 1.6         | 1.9         | 2.2         | 2.3         | 3.8%                                    |
| Natural Gas .....                            | 13.9           | 14.1        | 17.8        | 20.4        | 23.7        | 27.6        | 3.0%                                    |
| Other Gaseous Fuels .....                    | 1.6            | 1.8         | 2.2         | 2.4         | 2.6         | 2.7         | 1.8%                                    |
| Renewable Sources <sup>6</sup> .....         | 4.0            | 4.2         | 5.6         | 6.7         | 7.5         | 8.3         | 3.0%                                    |
| Other .....                                  | 0.3            | 0.3         | 0.3         | 0.3         | 0.3         | 0.3         | N/A                                     |
| <b>Total .....</b>                           | <b>24.8</b>    | <b>25.5</b> | <b>31.7</b> | <b>35.8</b> | <b>40.5</b> | <b>45.3</b> | <b>2.5%</b>                             |
| <b>Other End-Use Generators<sup>12</sup></b> |                |             |             |             |             |             |                                         |
| Renewable Sources <sup>13</sup> .....        | 1.1            | 1.1         | 1.4         | 1.4         | 1.6         | 2.1         | 3.1%                                    |
| <b>Cumulative Additions<sup>9</sup></b>      |                |             |             |             |             |             |                                         |
| Combined Heat and Power <sup>11</sup> .....  | 0.0            | 0.0         | 6.2         | 10.4        | 15.0        | 19.8        | N/A                                     |
| Other End-Use Generators <sup>12</sup> ..... | 0.0            | 0.0         | 0.3         | 0.4         | 0.5         | 1.1         | N/A                                     |

<sup>1</sup>Net summer capacity is the steady hourly output that generating equipment is expected to supply to system load (exclusive of auxiliary power), as demonstrated by tests during summer peak demand.

<sup>2</sup>Includes electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public.

<sup>3</sup>Includes plants that only produce electricity. Includes capacity increases (uprates) at existing units.

<sup>4</sup>Includes oil-, gas-, and dual-fired capacity.

<sup>5</sup>Nuclear capacity reflects operating capacity of existing units, including 3.9 gigawatts of uprates through 2025.

<sup>6</sup>Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power. Facilities co-firing biomass and coal are classified as coal.

<sup>7</sup>Primarily peak load capacity fueled by natural gas.

<sup>8</sup>Includes combined heat and power plants whose primary business is to sell electricity and heat to the public (i.e., those that report NAICS code 22).

<sup>9</sup>Cumulative additions after December 31, 2002.

<sup>10</sup>Cumulative retirements after December 31, 2002.

<sup>11</sup>Includes combined heat and power plants and electricity-only plants in the commercial and industrial sectors.

<sup>12</sup>Other end-use generators include small on-site generating systems in the residential, commercial, and industrial sectors used primarily for own-use generation, but which may also sell some power to the grid.

<sup>13</sup>See Table A17 for more detail.

N/A = Not applicable.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

Sources: 2001 and 2002 electric generating capacity and projected planned additions: Energy Information Administration (EIA), Form EIA-860, "Annual Electric Generator Report" (preliminary). Projections: EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.



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

| Electricity Trade                                               | Reference Case |                |                |                |                |               | Annual Growth<br>2002-2025<br>(percent) |
|-----------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|---------------|-----------------------------------------|
|                                                                 | 2001           | 2002           | 2010           | 2015           | 2020           | 2025          |                                         |
| <b>Interregional Electricity Trade</b>                          |                |                |                |                |                |               |                                         |
| Gross Domestic Firm Power Trade .....                           | 142.7          | 138.9          | 107.1          | 70.7           | 41.5           | 41.5          | -5.1%                                   |
| Gross Domestic Economy Trade .....                              | 182.1          | 209.9          | 229.7          | 221.2          | 218.4          | 183.4         | -0.6%                                   |
| <b>Gross Domestic Trade .....</b>                               | <b>324.8</b>   | <b>348.8</b>   | <b>336.8</b>   | <b>291.8</b>   | <b>259.9</b>   | <b>224.9</b>  | <b>-1.9%</b>                            |
| Gross Domestic Firm Power Sales<br>(million 2002 dollars) ..... | 7126.8         | 6932.4         | 5345.8         | 3528.2         | 2074.2         | 2074.2        | -5.1%                                   |
| Gross Domestic Economy Sales<br>(million 2002 dollars) .....    | 8870.2         | 6809.8         | 7629.6         | 8674.0         | 8663.8         | 7319.5        | 0.3%                                    |
| <b>Gross Domestic Sales<br/>(million 2002 dollars) .....</b>    | <b>15997.0</b> | <b>13742.1</b> | <b>12975.3</b> | <b>12202.2</b> | <b>10738.0</b> | <b>9393.7</b> | <b>-1.6%</b>                            |
| <b>International Electricity Trade</b>                          |                |                |                |                |                |               |                                         |
| Firm Power Imports From Canada and Mexico .....                 | 12.1           | 9.5            | 5.8            | 2.6            | 0.0            | 0.0           | -21.9%                                  |
| Economy Imports From Canada and Mexico .....                    | 26.3           | 26.8           | 41.3           | 40.9           | 28.9           | 15.1          | -2.5%                                   |
| <b>Gross Imports From Canada and Mexico .....</b>               | <b>38.4</b>    | <b>36.3</b>    | <b>47.2</b>    | <b>43.5</b>    | <b>28.9</b>    | <b>15.2</b>   | <b>-3.7%</b>                            |
| Firm Power Exports To Canada and Mexico .....                   | 6.6            | 5.6            | 8.7            | 3.9            | 0.0            | 0.0           | N/A                                     |
| Economy Exports To Canada and Mexico .....                      | 9.8            | 8.7            | 7.7            | 7.7            | 7.7            | 7.7           | -0.6%                                   |
| <b>Gross Exports To Canada and Mexico .....</b>                 | <b>16.4</b>    | <b>14.3</b>    | <b>16.4</b>    | <b>11.5</b>    | <b>7.7</b>     | <b>7.7</b>    | <b>-2.7%</b>                            |

N/A = Not applicable.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports. Firm Power Sales are capacity sales, meaning the delivery of the power is scheduled as part of the normal operating conditions of the affected electric systems. Economy Sales are subject to curtailment or cessation of delivery by the supplier in accordance with prior agreements or under specified conditions.

Sources: 2001 and 2002 interregional firm electricity trade data: North American Electric Reliability Council (NERC), Electricity Sales and Demand Database 1999. 2001 and 2002 Mexican electricity trade data: DOE Form FE-718R, "Annual Report of International Electrical Export/Import Data." 2001: National Energy Board, *Annual Report 2001*. 2002 Canadian electricity trade data: National Energy Board, Annual Report 2002. Projections: Energy Information Administration, AEO2004 National Energy Modeling System run AEO2004.D101703E.

# Reference Case Forecast

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

| Supply and Disposition                                                                              | Reference Case |              |               |               |               |               | Annual Growth<br>2002-2025<br>(percent) |
|-----------------------------------------------------------------------------------------------------|----------------|--------------|---------------|---------------|---------------|---------------|-----------------------------------------|
|                                                                                                     | 2001           | 2002         | 2010          | 2015          | 2020          | 2025          |                                         |
| <b>Crude Oil</b>                                                                                    |                |              |               |               |               |               |                                         |
| Domestic Crude Production <sup>1</sup> .....                                                        | 5.74           | 5.62         | 5.93          | 5.53          | 4.95          | 4.61          | -0.9%                                   |
| Alaska .....                                                                                        | 0.96           | 0.98         | 0.92          | 0.93          | 0.72          | 0.51          | -2.8%                                   |
| Lower 48 States .....                                                                               | 4.78           | 4.64         | 5.01          | 4.59          | 4.23          | 4.11          | -0.5%                                   |
| Net Imports .....                                                                                   | 9.31           | 9.13         | 11.21         | 13.47         | 14.50         | 15.74         | 2.4%                                    |
| Gross Imports .....                                                                                 | 9.33           | 9.14         | 11.29         | 13.53         | 14.53         | 15.76         | 2.4%                                    |
| Exports .....                                                                                       | 0.02           | 0.01         | 0.08          | 0.06          | 0.03          | 0.02          | 3.3%                                    |
| Other Crude Supply <sup>2</sup> .....                                                               | 0.02           | 0.07         | 0.00          | 0.00          | 0.00          | 0.00          | N/A                                     |
| <b>Total Crude Supply</b> .....                                                                     | <b>15.07</b>   | <b>14.83</b> | <b>17.15</b>  | <b>19.00</b>  | <b>19.45</b>  | <b>20.35</b>  | <b>1.4%</b>                             |
| <b>Natural Gas Plant Liquids</b> .....                                                              | <b>1.87</b>    | <b>1.88</b>  | <b>2.24</b>   | <b>2.31</b>   | <b>2.48</b>   | <b>2.47</b>   | <b>1.2%</b>                             |
| <b>Other Inputs</b> <sup>3</sup> .....                                                              | <b>0.30</b>    | <b>0.67</b>  | <b>0.47</b>   | <b>0.44</b>   | <b>0.46</b>   | <b>0.48</b>   | <b>-1.5%</b>                            |
| <b>Refinery Processing Gain</b> <sup>4</sup> .....                                                  | <b>0.93</b>    | <b>0.98</b>  | <b>0.88</b>   | <b>0.97</b>   | <b>1.00</b>   | <b>1.04</b>   | <b>0.2%</b>                             |
| <b>Net Product Imports</b> <sup>5</sup> .....                                                       | <b>1.59</b>    | <b>1.41</b>  | <b>1.95</b>   | <b>2.05</b>   | <b>2.99</b>   | <b>3.94</b>   | <b>4.6%</b>                             |
| Gross Refined Product Imports <sup>6</sup> .....                                                    | 2.08           | 1.92         | 2.17          | 2.29          | 2.82          | 3.60          | 2.8%                                    |
| Unfinished Oil Imports .....                                                                        | 0.38           | 0.41         | 0.72          | 0.74          | 1.15          | 1.34          | 5.3%                                    |
| Ether Imports .....                                                                                 | 0.08           | 0.06         | 0.00          | 0.00          | 0.00          | 0.00          | N/A                                     |
| Exports .....                                                                                       | 0.95           | 0.97         | 0.94          | 0.98          | 0.98          | 1.01          | 0.1%                                    |
| <b>Total Primary Supply</b> <sup>7</sup> .....                                                      | <b>19.75</b>   | <b>19.77</b> | <b>22.69</b>  | <b>24.77</b>  | <b>26.38</b>  | <b>28.27</b>  | <b>1.6%</b>                             |
| <b>Refined Petroleum Products Supplied</b>                                                          |                |              |               |               |               |               |                                         |
| Motor Gasoline <sup>8</sup> .....                                                                   | 8.62           | 8.86         | 10.59         | 11.51         | 12.30         | 13.30         | 1.8%                                    |
| Jet Fuel <sup>9</sup> .....                                                                         | 1.66           | 1.61         | 1.90          | 2.10          | 2.27          | 2.37          | 1.7%                                    |
| Distillate Fuel <sup>10</sup> .....                                                                 | 3.88           | 3.68         | 4.38          | 4.94          | 5.24          | 5.71          | 1.9%                                    |
| Residual Fuel .....                                                                                 | 0.86           | 0.74         | 0.71          | 0.77          | 0.77          | 0.75          | 0.1%                                    |
| Other <sup>11</sup> .....                                                                           | 4.69           | 4.72         | 5.13          | 5.48          | 5.84          | 6.16          | 1.2%                                    |
| <b>Total</b> .....                                                                                  | <b>19.71</b>   | <b>19.61</b> | <b>22.71</b>  | <b>24.80</b>  | <b>26.41</b>  | <b>28.30</b>  | <b>1.6%</b>                             |
| <b>Refined Petroleum Products Supplied</b>                                                          |                |              |               |               |               |               |                                         |
| Residential and Commercial .....                                                                    | 1.23           | 1.22         | 1.38          | 1.39          | 1.40          | 1.40          | 0.6%                                    |
| Industrial <sup>12</sup> .....                                                                      | 4.79           | 4.80         | 5.14          | 5.50          | 5.86          | 6.21          | 1.1%                                    |
| Transportation .....                                                                                | 13.14          | 13.21        | 15.91         | 17.44         | 18.77         | 20.32         | 1.9%                                    |
| Electric Generators <sup>13</sup> .....                                                             | 0.55           | 0.38         | 0.29          | 0.47          | 0.38          | 0.36          | -0.2%                                   |
| <b>Total</b> .....                                                                                  | <b>19.71</b>   | <b>19.61</b> | <b>22.71</b>  | <b>24.80</b>  | <b>26.41</b>  | <b>28.30</b>  | <b>1.6%</b>                             |
| <b>Discrepancy</b> <sup>14</sup> .....                                                              | <b>0.04</b>    | <b>0.16</b>  | <b>-0.02</b>  | <b>-0.03</b>  | <b>-0.04</b>  | <b>-0.03</b>  | <b>N/A</b>                              |
| <b>World Oil Price (2002 dollars per barrel)</b> <sup>15</sup> ...                                  | <b>22.25</b>   | <b>23.68</b> | <b>24.17</b>  | <b>25.07</b>  | <b>26.02</b>  | <b>27.00</b>  | <b>0.6%</b>                             |
| <b>Import Share of Product Supplied</b> .....                                                       | <b>0.55</b>    | <b>0.54</b>  | <b>0.58</b>   | <b>0.63</b>   | <b>0.66</b>   | <b>0.70</b>   | <b>1.1%</b>                             |
| <b>Net Expenditures for Imported Crude Oil and<br/>Petroleum Products (billion 2002 dollars)</b> .. | <b>90.15</b>   | <b>90.38</b> | <b>118.31</b> | <b>143.82</b> | <b>168.99</b> | <b>200.24</b> | <b>3.5%</b>                             |
| <b>Domestic Refinery Distillation Capacity</b> <sup>16</sup> ....                                   | <b>16.8</b>    | <b>16.8</b>  | <b>18.7</b>   | <b>20.4</b>   | <b>20.8</b>   | <b>21.8</b>   | <b>1.1%</b>                             |
| <b>Capacity Utilization Rate (percent)</b> .....                                                    | <b>93.0</b>    | <b>91.0</b>  | <b>93.1</b>   | <b>94.7</b>   | <b>94.8</b>   | <b>94.8</b>   | <b>0.2%</b>                             |

<sup>1</sup>Includes lease condensate.  
<sup>2</sup>Strategic petroleum reserve stock additions plus unaccounted for crude oil and crude stock withdrawals minus crude product supplied.  
<sup>3</sup>Includes alcohols, ethers, petroleum product stock withdrawals, domestic sources of blending components, other hydrocarbons, natural gas converted to liquid fuel, and coal converted to liquid fuel.  
<sup>4</sup>Represents volumetric gain in refinery distillation and cracking processes.  
<sup>5</sup>Includes net imports of finished petroleum products, unfinished oils, other hydrocarbons, alcohols, ethers, and blending components.  
<sup>6</sup>Includes other hydrocarbons, alcohols, and blending components.  
<sup>7</sup>Total crude supply plus natural gas plant liquids, other inputs, refinery processing gain, and net product imports.  
<sup>8</sup>Includes ethanol and ethers blended into gasoline.  
<sup>9</sup>Includes only kerosene type.  
<sup>10</sup>Includes distillate and kerosene.  
<sup>11</sup>Includes aviation gasoline, liquefied petroleum gas, petrochemical feedstocks, lubricants, waxes, asphalt, road oil, still gas, special naphthas, petroleum coke, crude oil product supplied, and miscellaneous petroleum products.  
<sup>12</sup>Includes consumption for combined heat and power, which produces electricity and other useful thermal energy.  
<sup>13</sup>Includes consumption of energy by electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes small power producers and exempt wholesale generators.  
<sup>14</sup>Balancing item. Includes unaccounted for supply, losses, and gains.  
<sup>15</sup>Average refiner acquisition cost for imported crude oil.  
<sup>16</sup>End-of-year capacity.  
N/A = Not applicable.  
Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

**Sources:** 2001 and 2002 product supplied based on: Energy Information Administration (EIA), *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). Other 2001 data: EIA, *Petroleum Supply Annual 2001*, DOE/EIA-0340(2001)/1 (Washington, DC, June 2002). Other 2002 data: EIA, *Petroleum Supply Annual 2002*, DOE/EIA-0340(2002)/1 (Washington, DC, June 2003). **Projections:** EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

# Reference Case Forecast

**Table A12. Petroleum Product Prices**  
(2002 Cents per Gallon, Unless Otherwise Noted)

| Sector and Fuel                                            | Reference Case |              |              |              |              |              | Annual Growth<br>2002-2025<br>(percent) |
|------------------------------------------------------------|----------------|--------------|--------------|--------------|--------------|--------------|-----------------------------------------|
|                                                            | 2001           | 2002         | 2010         | 2015         | 2020         | 2025         |                                         |
| <b>World Oil Price (2002 dollars per barrel)</b> . . . . . | <b>22.25</b>   | <b>23.68</b> | <b>24.17</b> | <b>25.07</b> | <b>26.02</b> | <b>27.00</b> | <b>0.6%</b>                             |
| <b>Delivered Sector Product Prices</b>                     |                |              |              |              |              |              |                                         |
| <b>Residential</b>                                         |                |              |              |              |              |              |                                         |
| Distillate Fuel . . . . .                                  | 126.1          | 114.2        | 108.4        | 111.8        | 116.4        | 118.4        | 0.2%                                    |
| Liquefied Petroleum Gas . . . . .                          | 129.1          | 110.8        | 119.1        | 124.1        | 126.9        | 130.3        | 0.7%                                    |
| <b>Commercial</b>                                          |                |              |              |              |              |              |                                         |
| Distillate Fuel . . . . .                                  | 88.5           | 84.1         | 75.6         | 78.4         | 83.3         | 85.3         | 0.1%                                    |
| Residual Fuel . . . . .                                    | 52.5           | 63.1         | 61.8         | 64.0         | 66.1         | 68.1         | 0.3%                                    |
| Residual Fuel (2002 dollars per barrel) . . . . .          | 22.07          | 26.48        | 25.97        | 26.87        | 27.75        | 28.59        | 0.3%                                    |
| <b>Industrial<sup>1</sup></b>                              |                |              |              |              |              |              |                                         |
| Distillate Fuel . . . . .                                  | 91.8           | 86.2         | 78.8         | 81.1         | 86.6         | 88.8         | 0.1%                                    |
| Liquefied Petroleum Gas . . . . .                          | 107.1          | 71.1         | 83.4         | 88.3         | 91.4         | 95.3         | 1.3%                                    |
| Residual Fuel . . . . .                                    | 49.6           | 58.3         | 56.0         | 58.2         | 60.3         | 62.4         | 0.3%                                    |
| Residual Fuel (2002 dollars per barrel) . . . . .          | 20.82          | 24.48        | 23.54        | 24.42        | 25.34        | 26.22        | 0.3%                                    |
| <b>Transportation</b>                                      |                |              |              |              |              |              |                                         |
| Diesel Fuel (distillate) <sup>2</sup> . . . . .            | 141.0          | 130.6        | 140.3        | 140.9        | 138.6        | 139.0        | 0.3%                                    |
| Jet Fuel <sup>3</sup> . . . . .                            | 84.7           | 80.6         | 77.8         | 79.0         | 81.8         | 83.9         | 0.2%                                    |
| Motor Gasoline <sup>4</sup> . . . . .                      | 148.6          | 138.1        | 146.9        | 146.8        | 147.3        | 149.2        | 0.3%                                    |
| Liquid Petroleum Gas . . . . .                             | 146.9          | 128.7        | 128.3        | 132.0        | 133.0        | 135.8        | 0.2%                                    |
| Residual Fuel . . . . .                                    | 59.0           | 56.5         | 53.9         | 55.9         | 58.0         | 60.2         | 0.3%                                    |
| Residual Fuel (2002 dollars per barrel) . . . . .          | 24.80          | 23.71        | 22.62        | 23.48        | 24.37        | 25.28        | 0.3%                                    |
| Ethanol (E85) <sup>5</sup> . . . . .                       | 148.1          | 135.8        | 153.9        | 159.1        | 163.4        | 166.1        | 0.9%                                    |
| <b>Electric Power<sup>6</sup></b>                          |                |              |              |              |              |              |                                         |
| Distillate Fuel . . . . .                                  | 86.5           | 77.4         | 68.2         | 70.5         | 75.8         | 77.9         | 0.0%                                    |
| Residual Fuel . . . . .                                    | 68.1           | 60.4         | 59.7         | 61.9         | 64.5         | 67.4         | 0.5%                                    |
| Residual Fuel (2002 dollars per barrel) . . . . .          | 28.61          | 25.38        | 25.07        | 26.01        | 27.07        | 28.30        | 0.5%                                    |
| <b>Refined Petroleum Product Prices<sup>7</sup></b>        |                |              |              |              |              |              |                                         |
| Distillate Fuel . . . . .                                  | 126.8          | 118.1        | 123.8        | 124.4        | 125.9        | 127.3        | 0.3%                                    |
| Jet Fuel <sup>3</sup> . . . . .                            | 84.7           | 80.6         | 77.8         | 79.0         | 81.8         | 83.9         | 0.2%                                    |
| Liquefied Petroleum Gas . . . . .                          | 111.5          | 79.6         | 91.3         | 96.1         | 99.1         | 102.6        | 1.1%                                    |
| Motor Gasoline <sup>4</sup> . . . . .                      | 148.5          | 138.1        | 146.9        | 146.8        | 147.3        | 149.2        | 0.3%                                    |
| Residual Fuel . . . . .                                    | 62.2           | 58.6         | 56.6         | 58.8         | 61.1         | 63.3         | 0.3%                                    |
| Residual Fuel (2002 dollars per barrel) . . . . .          | 26.14          | 24.62        | 23.76        | 24.71        | 25.65        | 26.60        | 0.3%                                    |
| <b>Average</b> . . . . .                                   | <b>126.7</b>   | <b>116.1</b> | <b>123.9</b> | <b>124.8</b> | <b>126.3</b> | <b>128.6</b> | <b>0.4%</b>                             |

<sup>1</sup>Includes combined heat and power, which produces electricity and other useful thermal energy.  
<sup>2</sup>Diesel fuel containing 500 part per million (ppm) or 15 ppm sulfur. Includes Federal and State taxes while excluding county and local taxes.  
<sup>3</sup>Includes only kerosene type.  
<sup>4</sup>Sales weighted-average price for all grades. Includes Federal, State and local taxes.  
<sup>5</sup>E85 refers to a blend of 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable). To address cold starting issues, the percentage of ethanol actually varies seasonally. The annual average ethanol content of 74 percent is used for this forecast.  
<sup>6</sup>Includes electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes small power producers and exempt wholesale generators.  
<sup>7</sup>Weighted averages of end-use fuel prices are derived from the prices in each sector and the corresponding sectoral consumption.  
Note: Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.  
**Sources:** 2001 and 2002 prices for motor gasoline, distillate, and jet fuel are based on: Energy Information Administration (EIA), *Petroleum Marketing Annual 2002*, [http://www.eia.doe.gov/pub/oil\\_gas/petroleum/data\\_publications/petroleum\\_marketing\\_annual/current/pdf/pmaall.pdf](http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_marketing_annual/current/pdf/pmaall.pdf) (August 2003). 2001 and 2002 residential, commercial, industrial, and transportation sector petroleum product prices are derived from: EIA, Form EIA-782A, "Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report." 2001 and 2002 electric power prices based on: Federal Energy Regulatory Commission, FERC Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants." 2001 and 2002 ethanol prices derived from weekly spot prices in the Oxy Fuel News. 2001 and 2002 world oil price: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). **Projections:** EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

## Reference Case Forecast

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

| Supply and Disposition                      | Reference Case |              |              |              |              |              | Annual Growth<br>2002-2025<br>(percent) |
|---------------------------------------------|----------------|--------------|--------------|--------------|--------------|--------------|-----------------------------------------|
|                                             | 2001           | 2002         | 2010         | 2015         | 2020         | 2025         |                                         |
| <b>Production</b>                           |                |              |              |              |              |              |                                         |
| Dry Gas Production <sup>1</sup> .....       | 19.70          | 19.05        | 20.50        | 21.62        | 23.79        | 23.99        | 1.0%                                    |
| Supplemental Natural Gas <sup>2</sup> ..... | 0.09           | 0.08         | 0.10         | 0.10         | 0.10         | 0.10         | 0.8%                                    |
| <b>Net Imports</b> .....                    |                |              |              |              |              |              |                                         |
| Canada .....                                | 3.60           | 3.49         | 5.50         | 6.24         | 6.47         | 7.24         | 3.2%                                    |
| Mexico .....                                | 3.56           | 3.59         | 3.68         | 3.17         | 2.51         | 2.56         | -1.4%                                   |
| Liquefied Natural Gas .....                 | -0.13          | -0.26        | -0.34        | -0.15        | -0.18        | -0.12        | -3.2%                                   |
|                                             | 0.17           | 0.17         | 2.16         | 3.22         | 4.14         | 4.80         | 15.8%                                   |
| <b>Total Supply</b> .....                   | <b>23.39</b>   | <b>22.62</b> | <b>26.09</b> | <b>27.95</b> | <b>30.36</b> | <b>31.33</b> | <b>1.4%</b>                             |
| <b>Consumption by Sector</b>                |                |              |              |              |              |              |                                         |
| Residential .....                           | 4.78           | 4.92         | 5.53         | 5.68         | 5.92         | 6.09         | 0.9%                                    |
| Commercial .....                            | 3.24           | 3.12         | 3.48         | 3.62         | 3.83         | 4.04         | 1.1%                                    |
| Industrial <sup>3</sup> .....               | 7.35           | 7.23         | 8.39         | 8.87         | 9.57         | 10.29        | 1.5%                                    |
| Electric Generators <sup>4</sup> .....      | 5.38           | 5.55         | 6.66         | 7.64         | 8.61         | 8.39         | 1.8%                                    |
| Transportation <sup>5</sup> .....           | 0.01           | 0.01         | 0.06         | 0.08         | 0.10         | 0.11         | 9.5%                                    |
| Pipeline Fuel .....                         | 0.62           | 0.63         | 0.67         | 0.70         | 0.81         | 0.84         | 1.2%                                    |
| Lease and Plant Fuel <sup>6</sup> .....     | 1.09           | 1.32         | 1.36         | 1.44         | 1.61         | 1.65         | 1.0%                                    |
| <b>Total</b> .....                          | <b>22.48</b>   | <b>22.78</b> | <b>26.15</b> | <b>28.03</b> | <b>30.44</b> | <b>31.41</b> | <b>1.4%</b>                             |
| Natural Gas to Liquids .....                | 0.00           | 0.00         | 0.00         | 0.00         | 0.00         | 0.00         | N/A                                     |
| <b>Discrepancy<sup>7</sup></b> .....        | <b>0.92</b>    | <b>-0.16</b> | <b>-0.06</b> | <b>-0.07</b> | <b>-0.08</b> | <b>-0.09</b> | <b>N/A</b>                              |

<sup>1</sup>Marketed production (wet) minus extraction losses.

<sup>2</sup>Synthetic natural gas, propane air, coke oven gas, refinery gas, biomass gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.

<sup>3</sup>Includes consumption for combined heat and power, which produces electricity and other useful thermal energy.

<sup>4</sup>Includes consumption of energy by electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes small power producers and exempt wholesale generators.

<sup>5</sup>Compressed natural gas used as vehicle fuel.

<sup>6</sup>Represents natural gas used in the field gathering and processing plant machinery.

<sup>7</sup>Balancing item. Natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type. In addition, 2000 and 2001 values include net storage injections.

Btu = British thermal unit.

N/A = Not applicable.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

Sources: 2001 supply values: Energy Information Administration (EIA), *Natural Gas Annual 2001*, DOE/EIA-0131(2001) (Washington, DC, February 2003). 2002 supply values: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2003/06) (Washington, DC, June 2003). 2001 and 2002 consumption based on: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). Projections: EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

## Reference Case Forecast

**Table A14. Natural Gas Prices, Margins, and Revenues**  
(2002 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

| Prices, Margins, and Revenue                                            | Reference Case |              |              |              |              |              | Annual Growth<br>2002-2025<br>(percent) |
|-------------------------------------------------------------------------|----------------|--------------|--------------|--------------|--------------|--------------|-----------------------------------------|
|                                                                         | 2001           | 2002         | 2010         | 2015         | 2020         | 2025         |                                         |
| <b>Source Price</b>                                                     |                |              |              |              |              |              |                                         |
| Average Lower 48 Wellhead Price <sup>1</sup> .....                      | 4.14           | 2.95         | 3.40         | 4.19         | 4.28         | 4.40         | 1.8%                                    |
| Average Import Price .....                                              | 4.49           | 3.14         | 3.78         | 4.59         | 4.58         | 4.67         | 1.7%                                    |
| <b>Average<sup>2</sup></b> .....                                        | <b>4.20</b>    | <b>2.98</b>  | <b>3.49</b>  | <b>4.29</b>  | <b>4.35</b>  | <b>4.47</b>  | <b>1.8%</b>                             |
| <b>Delivered Prices</b>                                                 |                |              |              |              |              |              |                                         |
| Residential .....                                                       | 9.79           | 7.86         | 7.88         | 8.52         | 8.47         | 8.56         | 0.4%                                    |
| Commercial .....                                                        | 8.67           | 6.55         | 6.83         | 7.52         | 7.52         | 7.62         | 0.7%                                    |
| Industrial <sup>3</sup> .....                                           | 5.04           | 3.85         | 4.16         | 4.94         | 5.02         | 5.13         | 1.3%                                    |
| Electric Generators <sup>4</sup> .....                                  | 5.40           | 3.85         | 4.12         | 4.87         | 4.94         | 5.01         | 1.2%                                    |
| Transportation <sup>5</sup> .....                                       | 8.94           | 7.58         | 8.49         | 9.32         | 9.32         | 9.34         | 0.9%                                    |
| <b>Average<sup>6</sup></b> .....                                        | <b>6.81</b>    | <b>5.21</b>  | <b>5.41</b>  | <b>6.09</b>  | <b>6.09</b>  | <b>6.19</b>  | <b>0.8%</b>                             |
| <b>Transmission and Distribution Margins<sup>7</sup></b>                |                |              |              |              |              |              |                                         |
| Residential .....                                                       | 5.59           | 4.88         | 4.40         | 4.23         | 4.11         | 4.09         | -0.8%                                   |
| Commercial .....                                                        | 4.47           | 3.56         | 3.34         | 3.23         | 3.17         | 3.15         | -0.5%                                   |
| Industrial <sup>3</sup> .....                                           | 0.84           | 0.87         | 0.68         | 0.65         | 0.67         | 0.66         | -1.2%                                   |
| Electric Generators <sup>4</sup> .....                                  | 1.20           | 0.86         | 0.63         | 0.58         | 0.59         | 0.54         | -2.0%                                   |
| Transportation <sup>5</sup> .....                                       | 4.74           | 4.60         | 5.00         | 5.03         | 4.96         | 4.87         | 0.2%                                    |
| <b>Average<sup>6</sup></b> .....                                        | <b>2.61</b>    | <b>2.23</b>  | <b>1.92</b>  | <b>1.80</b>  | <b>1.74</b>  | <b>1.72</b>  | <b>-1.1%</b>                            |
| <b>Transmission and Distribution Revenue<br/>(billion 2002 dollars)</b> |                |              |              |              |              |              |                                         |
| Residential .....                                                       | 26.74          | 24.02        | 24.33        | 24.02        | 24.34        | 24.89        | 0.2%                                    |
| Commercial .....                                                        | 14.49          | 11.12        | 11.61        | 11.71        | 12.13        | 12.72        | 0.6%                                    |
| Industrial <sup>3</sup> .....                                           | 6.20           | 6.27         | 5.67         | 5.78         | 6.42         | 6.80         | 0.3%                                    |
| Electric Generators <sup>4</sup> .....                                  | 6.46           | 4.78         | 4.21         | 4.46         | 5.10         | 4.54         | -0.2%                                   |
| Transportation <sup>5</sup> .....                                       | 0.05           | 0.06         | 0.28         | 0.40         | 0.48         | 0.54         | 9.7%                                    |
| <b>Total</b> .....                                                      | <b>53.93</b>   | <b>46.25</b> | <b>46.11</b> | <b>46.37</b> | <b>48.46</b> | <b>49.49</b> | <b>0.3%</b>                             |

<sup>1</sup>Represents lower 48 onshore and offshore supplies.

<sup>2</sup>Quantity-weighted average of the average lower 48 wellhead price and the average price of imports at the U.S. border.

<sup>3</sup>Includes consumption for combined heat and power, which produces electricity and other useful thermal energy.

<sup>4</sup>Includes consumption of energy by electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes small power producers and exempt wholesale generators.

<sup>5</sup>Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

<sup>6</sup>Weighted average prices and margins. Weights used are the sectoral consumption values excluding lease, plant, and pipeline fuel.

<sup>7</sup>Within the table, "transmission and distribution" margins equal the difference between the delivered price and the source price (average of the wellhead price and the price of imports at the U.S. border) of natural gas and, thus, reflect the total cost of bringing natural gas to market. When the term "transmission and distribution" margins is used in today's natural gas market, it generally does not include the cost of independent natural gas marketers or costs associated with aggregation of supplies, provisions of storage, and other services. As used here, the term includes the cost of all services and the cost of pipeline fuel used in compressor stations.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

**Sources:** 2001 residential, commercial, and transportation delivered prices; average lower 48 wellhead price; and average import price: Energy Information Administration (EIA), *Natural Gas Annual 2001*, DOE/EIA-0131(2001) (Washington, DC, February 2003). 2001 and 2002 electric generators delivered price: Federal Energy Regulatory Commission, FERC Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants," 2001 and 2002 industrial delivered prices based on EIA, *Manufacturing Energy Consumption Survey 1998*. 2002 residential, commercial, and transportation delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2003/06) (Washington, DC, June 2003). Other 2001 and 2002 values: EIA, Office of Integrated Analysis and Forecasting. **Projections:** EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

# Reference Case Forecast

**Table A15. Oil and Gas Supply**

| Production and Supply                                                                              | Reference Case |               |               |               |               |               | Annual Growth 2002-2025 (percent) |
|----------------------------------------------------------------------------------------------------|----------------|---------------|---------------|---------------|---------------|---------------|-----------------------------------|
|                                                                                                    | 2001           | 2002          | 2010          | 2015          | 2020          | 2025          |                                   |
| <b>Crude Oil</b>                                                                                   |                |               |               |               |               |               |                                   |
| <b>Lower 48 Average Wellhead Price<sup>1</sup></b><br>(2002 dollars per barrel) .....              | <b>23.16</b>   | <b>24.54</b>  | <b>23.61</b>  | <b>24.56</b>  | <b>25.82</b>  | <b>26.72</b>  | <b>0.4%</b>                       |
| <b>Production (million barrels per day)<sup>2</sup></b>                                            |                |               |               |               |               |               |                                   |
| <b>U.S. Total</b> .....                                                                            | <b>5.74</b>    | <b>5.62</b>   | <b>5.93</b>   | <b>5.53</b>   | <b>4.95</b>   | <b>4.61</b>   | <b>-0.9%</b>                      |
| Lower 48 Onshore .....                                                                             | 3.14           | 3.11          | 2.61          | 2.38          | 2.20          | 2.04          | -1.8%                             |
| Lower 48 Offshore .....                                                                            | 1.64           | 1.53          | 2.40          | 2.21          | 2.03          | 2.06          | 1.3%                              |
| Alaska .....                                                                                       | 0.96           | 0.98          | 0.92          | 0.93          | 0.72          | 0.51          | -2.8%                             |
| <b>Lower 48 End of Year Reserves (billion barrels)<sup>2</sup></b>                                 | <b>19.14</b>   | <b>19.05</b>  | <b>18.36</b>  | <b>17.13</b>  | <b>16.20</b>  | <b>14.98</b>  | <b>-1.0%</b>                      |
| <b>Natural Gas</b>                                                                                 |                |               |               |               |               |               |                                   |
| <b>Lower 48 Average Wellhead Price<sup>1</sup></b><br>(2002 dollars per thousand cubic feet) ..... | <b>4.14</b>    | <b>2.95</b>   | <b>3.40</b>   | <b>4.19</b>   | <b>4.28</b>   | <b>4.40</b>   | <b>1.8%</b>                       |
| <b>Dry Production (trillion cubic feet)<sup>3</sup></b>                                            |                |               |               |               |               |               |                                   |
| <b>U.S. Total</b> .....                                                                            | <b>19.70</b>   | <b>19.05</b>  | <b>20.50</b>  | <b>21.62</b>  | <b>23.79</b>  | <b>23.99</b>  | <b>1.0%</b>                       |
| Lower 48 Onshore .....                                                                             | 13.90          | 13.76         | 14.48         | 16.11         | 16.41         | 16.26         | 0.7%                              |
| Associated-Dissolved <sup>4</sup> .....                                                            | 1.63           | 1.60          | 1.41          | 1.31          | 1.23          | 1.17          | -1.4%                             |
| Non-Associated .....                                                                               | 12.27          | 12.16         | 13.08         | 14.81         | 15.18         | 15.09         | 0.9%                              |
| Conventional .....                                                                                 | 6.62           | 6.23          | 5.80          | 6.13          | 6.07          | 5.92          | -0.2%                             |
| Unconventional .....                                                                               | 5.65           | 5.93          | 7.28          | 8.67          | 9.11          | 9.16          | 1.9%                              |
| Lower 48 Offshore .....                                                                            | 5.37           | 4.86          | 5.41          | 4.87          | 5.09          | 5.03          | 0.1%                              |
| Associated-Dissolved <sup>4</sup> .....                                                            | 1.15           | 1.05          | 1.61          | 1.33          | 1.34          | 1.43          | 1.4%                              |
| Non-Associated .....                                                                               | 4.21           | 3.81          | 3.80          | 3.54          | 3.75          | 3.60          | -0.3%                             |
| Alaska .....                                                                                       | 0.44           | 0.43          | 0.60          | 0.64          | 2.29          | 2.71          | 8.3%                              |
| <b>Lower 48 End of Year Dry Reserves<sup>3</sup></b><br>(trillion cubic feet) .....                | <b>174.66</b>  | <b>180.03</b> | <b>201.20</b> | <b>203.74</b> | <b>200.97</b> | <b>193.51</b> | <b>0.3%</b>                       |
| <b>Supplemental Gas Supplies (trillion cubic feet)<sup>5</sup></b> .                               | <b>0.09</b>    | <b>0.08</b>   | <b>0.10</b>   | <b>0.10</b>   | <b>0.10</b>   | <b>0.10</b>   | <b>0.8%</b>                       |
| <b>Total Lower 48 Wells (thousands)</b> .....                                                      | <b>34.10</b>   | <b>24.47</b>  | <b>24.78</b>  | <b>26.80</b>  | <b>26.83</b>  | <b>26.00</b>  | <b>0.3%</b>                       |

<sup>1</sup>Represents lower 48 onshore and offshore supplies.

<sup>2</sup>Includes lease condensate.

<sup>3</sup>Marketed production (wet) minus extraction losses.

<sup>4</sup>Gas which occurs in crude oil reserves either as free gas (associated) or as gas in solution with crude oil (dissolved).

<sup>5</sup>Synthetic natural gas, propane air, coke oven gas, refinery gas, biomass gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

Sources: 2001 and 2002 lower 48 onshore, lower 48 offshore, and Alaska crude oil production: Energy Information Administration (EIA), *Petroleum Supply Annual 2002*, DOE/EIA-0340(2002)/1 (Washington, DC, June 2003). 2000 U.S. crude oil and natural gas reserves: EIA, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves*, DOE/EIA-0216(2001) (Washington, DC, November 2002). 2001 natural gas lower 48 average wellhead price, and total natural gas production: EIA, *Natural Gas Annual 2001*, DOE/EIA-0131(2001) (Washington, DC, February 2003). 2002 natural gas lower 48 average wellhead price, Alaska and total natural gas production, and supplemental gas supplies: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2003/06) (Washington, DC, June 2003). Other 2001 and 2002 values: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

## Reference Case Forecast

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

| Supply, Disposition, and Prices                                  | Reference Case |              |              |              |              |              | Annual Growth<br>2002-2025<br>(percent) |
|------------------------------------------------------------------|----------------|--------------|--------------|--------------|--------------|--------------|-----------------------------------------|
|                                                                  | 2001           | 2002         | 2010         | 2015         | 2020         | 2025         |                                         |
| <b>Production<sup>1</sup></b>                                    |                |              |              |              |              |              |                                         |
| Appalachia .....                                                 | 443            | 408          | 408          | 395          | 402          | 419          | 0.1%                                    |
| Interior .....                                                   | 147            | 147          | 169          | 162          | 170          | 178          | 0.8%                                    |
| West .....                                                       | 548            | 550          | 653          | 728          | 805          | 946          | 2.4%                                    |
| East of the Mississippi .....                                    | 539            | 504          | 524          | 505          | 522          | 547          | 0.4%                                    |
| West of the Mississippi .....                                    | 599            | 601          | 706          | 780          | 854          | 996          | 2.2%                                    |
| <b>Total .....</b>                                               | <b>1138</b>    | <b>1105</b>  | <b>1230</b>  | <b>1285</b>  | <b>1377</b>  | <b>1543</b>  | <b>1.5%</b>                             |
| <b>Net Imports</b>                                               |                |              |              |              |              |              |                                         |
| Imports .....                                                    | 20             | 17           | 33           | 38           | 42           | 46           | 4.4%                                    |
| Exports .....                                                    | 49             | 40           | 35           | 32           | 27           | 23           | -2.3%                                   |
| <b>Total .....</b>                                               | <b>-29</b>     | <b>-23</b>   | <b>-2</b>    | <b>6</b>     | <b>14</b>    | <b>23</b>    | <b>N/A</b>                              |
| <b>Total Supply<sup>2</sup> .....</b>                            | <b>1109</b>    | <b>1083</b>  | <b>1228</b>  | <b>1291</b>  | <b>1391</b>  | <b>1566</b>  | <b>1.6%</b>                             |
| <b>Consumption by Sector</b>                                     |                |              |              |              |              |              |                                         |
| Residential and Commercial .....                                 | 4              | 4            | 5            | 5            | 5            | 5            | 0.4%                                    |
| Industrial <sup>3</sup> .....                                    | 65             | 63           | 65           | 65           | 66           | 67           | 0.3%                                    |
| of which: Coal to Liquids .....                                  | 0              | 0            | 0            | 0            | 0            | 0            | N/A                                     |
| Coke Plants .....                                                | 26             | 22           | 23           | 21           | 19           | 17           | -1.2%                                   |
| Electric Generators <sup>4</sup> .....                           | 964            | 976          | 1136         | 1200         | 1301         | 1477         | 1.8%                                    |
| <b>Total .....</b>                                               | <b>1060</b>    | <b>1066</b>  | <b>1229</b>  | <b>1291</b>  | <b>1391</b>  | <b>1567</b>  | <b>1.7%</b>                             |
| <b>Discrepancy and Stock Change<sup>5</sup> .....</b>            | <b>49</b>      | <b>17</b>    | <b>-0</b>    | <b>-0</b>    | <b>-0</b>    | <b>-1</b>    | <b>N/A</b>                              |
| <b>Average Minemouth Price</b>                                   |                |              |              |              |              |              |                                         |
| (2002 dollars per short ton) .....                               | 17.79          | 17.90        | 16.88        | 16.47        | 16.32        | 16.57        | -0.3%                                   |
| (2002 dollars per million Btu) .....                             | 0.87           | 0.87         | 0.82         | 0.81         | 0.80         | 0.82         | -0.2%                                   |
| <b>Delivered Prices (2002 dollars per short ton)<sup>6</sup></b> |                |              |              |              |              |              |                                         |
| Industrial .....                                                 | 32.96          | 33.24        | 34.46        | 33.83        | 33.43        | 33.33        | 0.0%                                    |
| Coke Plants .....                                                | 46.94          | 51.27        | 53.68        | 52.13        | 50.45        | 48.42        | -0.2%                                   |
| Electric Generators                                              |                |              |              |              |              |              |                                         |
| (2002 dollars per short ton) .....                               | 25.13          | 25.96        | 24.67        | 24.34        | 24.01        | 24.31        | -0.3%                                   |
| (2002 dollars per million Btu) .....                             | 1.25           | 1.26         | 1.22         | 1.22         | 1.20         | 1.22         | -0.1%                                   |
| <b>Average .....</b>                                             | <b>26.15</b>   | <b>26.93</b> | <b>25.74</b> | <b>25.28</b> | <b>24.83</b> | <b>24.96</b> | <b>-0.3%</b>                            |
| Exports <sup>7</sup> .....                                       | 37.39          | 40.44        | 36.47        | 35.25        | 34.13        | 32.34        | -1.0%                                   |

<sup>1</sup>Includes anthracite, bituminous coal, lignite, and waste coal delivered to independent power producers. Waste coal deliveries totaled 10.6 million tons in 2001 and 11.1 million tons in 2002.

<sup>2</sup>Production plus net imports plus net storage withdrawals.

<sup>3</sup>Includes consumption for combined heat and power plants, except those plants whose primary business is to sell electricity, or electricity and heat, to the public.

<sup>4</sup>Includes all electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public.

<sup>5</sup>Balancing item: the sum of production, net imports, and net storage withdrawals minus total consumption.

<sup>6</sup>Sectoral prices weighted by consumption tonnage; weighted average excludes residential/ commercial prices and export free-alongside-ship (f.a.s.) prices.

<sup>7</sup>F.a.s. price at U.S. port of exit.

N/A = Not applicable.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

Sources: 2001: Energy Information Administration (EIA), *Annual Coal Report 2002*, DOE/EIA-0584(2002) (Washington, DC, November 2003). 2002 data based on: EIA, *Quarterly Coal Report, October-December 2002*, DOE/EIA-0121(2002/4Q) (Washington, DC, March 2003); EIA, *Annual Coal Report 2002*, DOE/EIA-0584(2002) (Washington, DC, November 2003); and EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E. Projections: EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

# Reference Case Forecast

**Table A17. Renewable Energy Generating Capacity and Generation**  
(Gigawatts, Unless Otherwise Noted)

| Capacity and Generation                     | Reference Case |               |               |               |               |               | Annual Growth<br>2002-2025<br>(percent) |
|---------------------------------------------|----------------|---------------|---------------|---------------|---------------|---------------|-----------------------------------------|
|                                             | 2001           | 2002          | 2010          | 2015          | 2020          | 2025          |                                         |
| <b>Electric Power Sector<sup>1</sup></b>    |                |               |               |               |               |               |                                         |
| <b>Net Summer Capacity</b>                  |                |               |               |               |               |               |                                         |
| Conventional Hydropower .....               | 78.13          | 78.29         | 78.69         | 78.68         | 78.68         | 78.68         | 0.0%                                    |
| Geothermal <sup>2</sup> .....               | 2.88           | 2.89          | 4.01          | 5.11          | 6.06          | 6.84          | 3.8%                                    |
| Municipal Solid Waste <sup>3</sup> .....    | 3.38           | 3.49          | 3.92          | 3.92          | 3.95          | 3.95          | 0.5%                                    |
| Wood and Other Biomass <sup>4,5</sup> ..... | 1.79           | 1.83          | 2.20          | 2.31          | 3.04          | 3.74          | 3.2%                                    |
| Solar Thermal .....                         | 0.33           | 0.33          | 0.43          | 0.47          | 0.49          | 0.52          | 1.9%                                    |
| Solar Photovoltaic <sup>6</sup> .....       | 0.02           | 0.02          | 0.15          | 0.24          | 0.32          | 0.41          | 13.5%                                   |
| Wind .....                                  | 4.15           | 4.83          | 8.01          | 10.48         | 13.39         | 15.99         | 5.3%                                    |
| <b>Total .....</b>                          | <b>90.67</b>   | <b>91.69</b>  | <b>97.42</b>  | <b>101.22</b> | <b>105.93</b> | <b>110.13</b> | <b>0.8%</b>                             |
| <b>Generation (billion kilowatthours)</b>   |                |               |               |               |               |               |                                         |
| Conventional Hydropower .....               | 213.7          | 255.78        | 304.37        | 304.48        | 304.63        | 304.80        | 0.8%                                    |
| Geothermal <sup>2</sup> .....               | 13.74          | 13.36         | 23.25         | 32.31         | 40.14         | 46.66         | 5.6%                                    |
| Municipal Solid Waste <sup>3</sup> .....    | 19.22          | 20.02         | 28.11         | 28.18         | 28.44         | 28.50         | 1.5%                                    |
| Wood and Other Biomass <sup>5</sup> .....   | 8.56           | 8.67          | 23.53         | 25.07         | 27.64         | 29.16         | 5.4%                                    |
| Dedicated Plants .....                      | 7.22           | 6.32          | 13.26         | 14.03         | 18.47         | 22.90         | 5.8%                                    |
| Cofiring .....                              | 1.34           | 2.35          | 10.26         | 11.05         | 9.17          | 6.25          | 4.3%                                    |
| Solar Thermal .....                         | 0.54           | 0.54          | 0.84          | 0.97          | 1.04          | 1.11          | 3.2%                                    |
| Solar Photovoltaic <sup>6</sup> .....       | 0.00           | 0.00          | 0.36          | 0.57          | 0.79          | 1.02          | 28.8%                                   |
| Wind .....                                  | 6.74           | 10.51         | 24.07         | 32.95         | 43.54         | 53.16         | 7.3%                                    |
| <b>Total .....</b>                          | <b>262.5</b>   | <b>308.87</b> | <b>404.52</b> | <b>424.54</b> | <b>446.22</b> | <b>464.40</b> | <b>1.8%</b>                             |
| <b>End-Use Sector</b>                       |                |               |               |               |               |               |                                         |
| <b>Net Summer Capacity</b>                  |                |               |               |               |               |               |                                         |
| <b>Combined Heat and Power<sup>7</sup></b>  |                |               |               |               |               |               |                                         |
| Municipal Solid Waste .....                 | 0.21           | 0.25          | 0.25          | 0.25          | 0.25          | 0.25          | 0.0%                                    |
| Biomass .....                               | 3.80           | 3.91          | 5.36          | 6.44          | 7.26          | 8.03          | 3.2%                                    |
| <b>Total .....</b>                          | <b>4.01</b>    | <b>4.16</b>   | <b>5.61</b>   | <b>6.69</b>   | <b>7.51</b>   | <b>8.29</b>   | <b>3.0%</b>                             |
| <b>Other End-Use Generators<sup>8</sup></b> |                |               |               |               |               |               |                                         |
| Conventional Hydropower <sup>9</sup> .....  | 1.02           | 1.02          | 1.02          | 1.02          | 1.02          | 1.02          | 0.0%                                    |
| Geothermal .....                            | 0.00           | 0.00          | 0.00          | 0.00          | 0.00          | 0.00          | N/A                                     |
| Solar Photovoltaic .....                    | 0.03           | 0.04          | 0.39          | 0.42          | 0.58          | 1.13          | 15.4%                                   |
| <b>Total .....</b>                          | <b>1.05</b>    | <b>1.06</b>   | <b>1.41</b>   | <b>1.45</b>   | <b>1.61</b>   | <b>2.15</b>   | <b>3.1%</b>                             |
| <b>Generation (billion kilowatthours)</b>   |                |               |               |               |               |               |                                         |
| <b>Combined Heat and Power<sup>7</sup></b>  |                |               |               |               |               |               |                                         |
| Municipal Solid Waste .....                 | 1.78           | 1.84          | 2.10          | 2.10          | 2.10          | 2.10          | 0.6%                                    |
| Biomass .....                               | 26.91          | 28.16         | 36.63         | 42.96         | 47.72         | 52.26         | 2.7%                                    |
| <b>Total .....</b>                          | <b>28.68</b>   | <b>30.00</b>  | <b>38.73</b>  | <b>45.06</b>  | <b>49.82</b>  | <b>54.36</b>  | <b>2.6%</b>                             |
| <b>Other End-Use Generators<sup>8</sup></b> |                |               |               |               |               |               |                                         |
| Conventional Hydropower <sup>9</sup> .....  | 3.21           | 4.11          | 4.11          | 4.11          | 4.11          | 4.11          | 0.0%                                    |
| Geothermal .....                            | 0.00           | 0.00          | 0.00          | 0.00          | 0.00          | 0.00          | N/A                                     |
| Solar Photovoltaic .....                    | 0.06           | 0.09          | 0.82          | 0.91          | 1.26          | 2.42          | 15.4%                                   |
| <b>Total .....</b>                          | <b>3.27</b>    | <b>4.20</b>   | <b>4.93</b>   | <b>5.02</b>   | <b>5.37</b>   | <b>6.53</b>   | <b>1.9%</b>                             |

<sup>1</sup>Includes electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public.

<sup>2</sup>Includes hydrothermal resources only (hot water and steam).

<sup>3</sup>Includes landfill gas.

<sup>4</sup>Facilities co-firing biomass and coal are classified as coal.

<sup>5</sup>Includes projections for energy crops after 2010.

<sup>6</sup>Does not include off-grid photovoltaics (PV). See Annual Energy Review 2002 Table 10.6 for estimates of 1989-2001 PV shipments, including exports, for both grid-connected and off-grid applications.

<sup>7</sup>Includes combined heat and power plants and electricity-only plants in the commercial and industrial sectors.

<sup>8</sup>Includes small on-site generating systems in the residential, commercial, and industrial sectors used primarily for own-use generation, but which may also sell some power to the grid.

<sup>9</sup>Represents own-use industrial hydroelectric power.

N/A = Not applicable.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

Sources: 2001 and 2002 capacity: Energy Information Administration (EIA), Form EIA-860, "Annual Electric Generator Report" (preliminary). 2001 and 2002 generation: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). Projections: EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.



## Reference Case Forecast

**Table A18. Renewable Energy, Consumption by Sector and Source<sup>1</sup>**  
(Quadrillion Btu per Year)

| Sector and Source                                | Reference Case |             |             |             |             |             | Annual Growth<br>2002-2025<br>(percent) |
|--------------------------------------------------|----------------|-------------|-------------|-------------|-------------|-------------|-----------------------------------------|
|                                                  | 2001           | 2002        | 2010        | 2015        | 2020        | 2025        |                                         |
| <b>Marketed Renewable Energy<sup>2</sup></b>     |                |             |             |             |             |             |                                         |
| <b>Residential</b> .....                         | <b>0.36</b>    | <b>0.39</b> | <b>0.40</b> | <b>0.41</b> | <b>0.41</b> | <b>0.41</b> | <b>0.1%</b>                             |
| Wood .....                                       | 0.36           | 0.39        | 0.40        | 0.41        | 0.41        | 0.41        | 0.1%                                    |
| <b>Commercial</b> .....                          | <b>0.09</b>    | <b>0.10</b> | <b>0.10</b> | <b>0.10</b> | <b>0.10</b> | <b>0.10</b> | <b>0.0%</b>                             |
| Biomass .....                                    | 0.09           | 0.10        | 0.10        | 0.10        | 0.10        | 0.10        | 0.0%                                    |
| <b>Industrial<sup>3</sup></b> .....              | <b>1.64</b>    | <b>1.66</b> | <b>2.00</b> | <b>2.26</b> | <b>2.48</b> | <b>2.70</b> | <b>2.1%</b>                             |
| Conventional Hydroelectric .....                 | 0.03           | 0.04        | 0.04        | 0.04        | 0.04        | 0.04        | N/A                                     |
| Municipal Solid Waste .....                      | 0.01           | 0.01        | 0.01        | 0.01        | 0.01        | 0.01        | N/A                                     |
| Biomass .....                                    | 1.59           | 1.60        | 1.95        | 2.20        | 2.43        | 2.65        | 2.2%                                    |
| <b>Transportation</b> .....                      | <b>0.14</b>    | <b>0.17</b> | <b>0.29</b> | <b>0.31</b> | <b>0.33</b> | <b>0.35</b> | <b>3.2%</b>                             |
| Ethanol used in E85 <sup>4</sup> .....           | 0.00           | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | N/A                                     |
| Ethanol used in Gasoline Blending .....          | 0.14           | 0.17        | 0.29        | 0.31        | 0.33        | 0.35        | 3.2%                                    |
| <b>Electric Generators<sup>5</sup></b> .....     | <b>3.16</b>    | <b>3.69</b> | <b>4.68</b> | <b>5.08</b> | <b>5.47</b> | <b>5.79</b> | <b>2.0%</b>                             |
| Conventional Hydroelectric .....                 | 2.29           | 2.75        | 3.13        | 3.13        | 3.13        | 3.13        | 0.6%                                    |
| Geothermal .....                                 | 0.29           | 0.30        | 0.61        | 0.90        | 1.15        | 1.36        | 6.9%                                    |
| Municipal Solid Waste <sup>6</sup> .....         | 0.33           | 0.34        | 0.39        | 0.39        | 0.39        | 0.39        | 0.6%                                    |
| Biomass .....                                    | 0.15           | 0.17        | 0.29        | 0.30        | 0.33        | 0.34        | 3.1%                                    |
| Dedicated Plants .....                           | 0.12           | 0.11        | 0.15        | 0.16        | 0.21        | 0.26        | 3.8%                                    |
| Cofiring .....                                   | 0.03           | 0.06        | 0.14        | 0.15        | 0.12        | 0.08        | 1.4%                                    |
| Solar Thermal .....                              | 0.01           | 0.01        | 0.01        | 0.02        | 0.02        | 0.02        | 6.0%                                    |
| Solar Photovoltaic .....                         | 0.00           | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | N/A                                     |
| Wind .....                                       | 0.08           | 0.13        | 0.25        | 0.34        | 0.45        | 0.55        | 6.6%                                    |
| <b>Total Marketed Renewable Energy</b> .....     | <b>5.40</b>    | <b>6.01</b> | <b>7.47</b> | <b>8.15</b> | <b>8.78</b> | <b>9.35</b> | <b>1.9%</b>                             |
| <b>Sources of Ethanol</b>                        |                |             |             |             |             |             |                                         |
| From Corn .....                                  | 0.14           | 0.17        | 0.29        | 0.30        | 0.31        | 0.31        | 2.5%                                    |
| From Cellulose .....                             | 0.00           | 0.00        | 0.00        | 0.01        | 0.02        | 0.05        | N/A                                     |
| <b>Total</b> .....                               | <b>0.14</b>    | <b>0.17</b> | <b>0.29</b> | <b>0.31</b> | <b>0.33</b> | <b>0.35</b> | <b>3.2%</b>                             |
| <b>Non-Marketed Renewable Energy<sup>7</sup></b> |                |             |             |             |             |             |                                         |
| <b>Selected Consumption</b>                      |                |             |             |             |             |             |                                         |
| <b>Residential</b> .....                         | <b>0.04</b>    | <b>0.02</b> | <b>0.03</b> | <b>0.04</b> | <b>0.04</b> | <b>0.05</b> | <b>3.2%</b>                             |
| Solar Hot Water Heating .....                    | 0.04           | 0.02        | 0.03        | 0.03        | 0.03        | 0.04        | 2.2%                                    |
| Geothermal Heat Pumps .....                      | 0.00           | 0.00        | 0.00        | 0.01        | 0.01        | 0.01        | 9.0%                                    |
| Solar Photovoltaic .....                         | 0.00           | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 15.0%                                   |
| <b>Commercial</b> .....                          | <b>0.02</b>    | <b>0.02</b> | <b>0.03</b> | <b>0.03</b> | <b>0.03</b> | <b>0.03</b> | <b>1.5%</b>                             |
| Solar Thermal .....                              | 0.02           | 0.02        | 0.03        | 0.03        | 0.03        | 0.03        | 0.6%                                    |
| Solar Photovoltaic .....                         | 0.00           | 0.00        | 0.00        | 0.00        | 0.00        | 0.01        | 15.5%                                   |

<sup>1</sup>Actual heat rates used to determine fuel consumption for all renewable fuels except hydropower, solar, and wind. Consumption at hydroelectric, solar, and wind facilities determined by using the fossil fuel equivalent of 10,280 Btu per kilowatt-hour.

<sup>2</sup>Includes nonelectric renewable energy groups for which the energy source is bought and sold in the marketplace, although all transactions may not necessarily be marketed, and marketed renewable energy inputs for electricity entering the marketplace on the electric power grid. Excludes electricity imports; see Table A8.

<sup>3</sup>Includes all electricity production by industrial and other combined heat and power for the grid and for own use.

<sup>4</sup>Excludes motor gasoline component of E85.

<sup>5</sup>Includes consumption of energy by electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes small power producers and exempt wholesale generators.

<sup>6</sup>Includes landfill gas.

<sup>7</sup>Includes selected renewable energy consumption data for which the energy is not bought or sold, either directly or indirectly as an input to marketed energy. The Energy Information Administration does not estimate or project total consumption of nonmarketed renewable energy.

N/A = Not applicable.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

Sources: 2001 and 2002 ethanol: Energy Information Administration (EIA), *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). 2001 and 2002 electric generators: EIA, Form EIA-860: "Annual Electric Generator Report" (preliminary). Other 2001 and 2002 values: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

# Reference Case Forecast

**Table A19. Carbon Dioxide Emissions by Sector and Source**  
(Million Metric Tons)

| Sector and Source                                                 | Reference Case |               |               |               |               |               | Annual Growth<br>2002-2025<br>(percent) |
|-------------------------------------------------------------------|----------------|---------------|---------------|---------------|---------------|---------------|-----------------------------------------|
|                                                                   | 2001           | 2002          | 2010          | 2015          | 2020          | 2025          |                                         |
| <b>Residential</b>                                                |                |               |               |               |               |               |                                         |
| Petroleum                                                         | 105.6          | 104.0         | 110.4         | 109.1         | 107.1         | 104.5         | 0.0%                                    |
| Natural Gas                                                       | 259.5          | 267.2         | 300.4         | 308.1         | 321.2         | 330.7         | 0.9%                                    |
| Coal                                                              | 1.1            | 1.1           | 1.2           | 1.1           | 1.1           | 1.1           | -0.3%                                   |
| Electricity                                                       | 790.8          | 816.7         | 905.3         | 954.0         | 1019.9        | 1106.7        | 1.3%                                    |
| <b>Total</b>                                                      | <b>1157.</b>   | <b>1189.0</b> | <b>1317.2</b> | <b>1372.3</b> | <b>1449.2</b> | <b>1543.0</b> | <b>1.1%</b>                             |
| <b>Commercial</b>                                                 |                |               |               |               |               |               |                                         |
| Petroleum                                                         | 52.9           | 52.6          | 66.2          | 68.6          | 70.2          | 72.2          | 1.4%                                    |
| Natural Gas                                                       | 165.0          | 169.4         | 188.7         | 196.5         | 207.9         | 219.4         | 1.1%                                    |
| Coal                                                              | 9.2            | 9.2           | 9.3           | 9.3           | 9.2           | 9.2           | 0.0%                                    |
| Electricity                                                       | 787.4          | 778.0         | 938.4         | 1030.1        | 1135.5        | 1269.2        | 2.2%                                    |
| <b>Total</b>                                                      | <b>1014.</b>   | <b>1009.1</b> | <b>1202.5</b> | <b>1304.4</b> | <b>1422.9</b> | <b>1570.1</b> | <b>1.9%</b>                             |
| <b>Industrial<sup>1</sup></b>                                     |                |               |               |               |               |               |                                         |
| Petroleum                                                         | 409.9          | 412.8         | 365.4         | 388.2         | 408.0         | 428.4         | 0.2%                                    |
| Natural Gas <sup>2</sup>                                          | 441.5          | 432.7         | 522.1         | 552.2         | 598.6         | 639.4         | 1.7%                                    |
| Coal                                                              | 196.8          | 185.1         | 191.9         | 187.1         | 183.3         | 181.1         | -0.1%                                   |
| Electricity                                                       | 634.1          | 640.0         | 710.3         | 757.4         | 813.8         | 900.7         | 1.5%                                    |
| <b>Total</b>                                                      | <b>1682.</b>   | <b>1670.6</b> | <b>1789.6</b> | <b>1885.0</b> | <b>2003.6</b> | <b>2149.5</b> | <b>1.1%</b>                             |
| <b>Transportation</b>                                             |                |               |               |               |               |               |                                         |
| Petroleum <sup>3</sup>                                            | 1789.          | 1811.2        | 2193.2        | 2406.2        | 2590.9        | 2805.8        | 1.9%                                    |
| Natural Gas <sup>4</sup>                                          | 33.9           | 35.2          | 39.5          | 42.4          | 49.1          | 51.3          | 1.7%                                    |
| Other <sup>5</sup>                                                | 0.0            | 0.0           | 0.0           | 0.0           | 0.0           | 0.0           | N/A                                     |
| Electricity                                                       | 14.2           | 14.2          | 16.7          | 18.1          | 19.9          | 22.4          | 2.0%                                    |
| <b>Total</b>                                                      | <b>1837.</b>   | <b>1860.6</b> | <b>2249.5</b> | <b>2466.7</b> | <b>2659.9</b> | <b>2879.5</b> | <b>1.9%</b>                             |
| <b>Total Carbon Dioxide Emissions by Delivered Fuel</b>           |                |               |               |               |               |               |                                         |
| Petroleum <sup>3</sup>                                            | 2358.          | 2380.5        | 2735.2        | 2972.0        | 3176.2        | 3410.9        | 1.6%                                    |
| Natural Gas                                                       | 899.9          | 904.4         | 1050.7        | 1099.2        | 1176.8        | 1240.8        | 1.4%                                    |
| Coal                                                              | 207.1          | 195.4         | 202.4         | 197.5         | 193.6         | 191.4         | -0.1%                                   |
| Other <sup>5</sup>                                                | 0.0            | 0.0           | 0.0           | 0.0           | 0.0           | 0.0           | N/A                                     |
| Electricity                                                       | 2226.          | 2249.0        | 2570.6        | 2759.6        | 2989.0        | 3299.0        | 1.7%                                    |
| <b>Total</b>                                                      | <b>5691.</b>   | <b>5729.3</b> | <b>6558.8</b> | <b>7028.4</b> | <b>7535.6</b> | <b>8142.0</b> | <b>1.5%</b>                             |
| <b>Electric Power<sup>6</sup></b>                                 |                |               |               |               |               |               |                                         |
| Petroleum                                                         | 99.6           | 72.2          | 51.0          | 78.6          | 65.2          | 61.6          | -0.7%                                   |
| Natural Gas                                                       | 289.1          | 299.1         | 358.5         | 410.9         | 463.3         | 451.6         | 1.8%                                    |
| Coal                                                              | 1838.          | 1877.8        | 2161.2        | 2270.2        | 2460.5        | 2785.8        | 1.7%                                    |
| <b>Total</b>                                                      | <b>2226.</b>   | <b>2249.0</b> | <b>2570.6</b> | <b>2759.6</b> | <b>2989.0</b> | <b>3299.0</b> | <b>1.7%</b>                             |
| <b>Total Carbon Dioxide Emissions by Primary Fuel<sup>7</sup></b> |                |               |               |               |               |               |                                         |
| Petroleum <sup>3</sup>                                            | 2457.          | 2452.7        | 2786.1        | 3050.6        | 3241.4        | 3472.5        | 1.5%                                    |
| Natural Gas                                                       | 1189.          | 1203.4        | 1409.2        | 1510.1        | 1640.1        | 1692.4        | 1.5%                                    |
| Coal                                                              | 2045.          | 2073.2        | 2363.6        | 2467.7        | 2654.1        | 2977.1        | 1.6%                                    |
| Other <sup>5</sup>                                                | 0.0            | 0.0           | 0.0           | 0.0           | 0.0           | 0.0           | N/A                                     |
| <b>Total</b>                                                      | <b>5691.</b>   | <b>5729.3</b> | <b>6558.8</b> | <b>7028.4</b> | <b>7535.6</b> | <b>8142.0</b> | <b>1.5%</b>                             |
| <b>Carbon Dioxide Emissions (ton per person)</b>                  |                |               |               |               |               |               |                                         |
|                                                                   | <b>19.9</b>    | <b>19.8</b>   | <b>21.2</b>   | <b>21.8</b>   | <b>22.5</b>   | <b>23.4</b>   | <b>0.7%</b>                             |

<sup>1</sup>Fuel consumption includes energy for combined heat and power plants, except those plants whose primary business is to sell electricity, or electricity and heat, to the public.

<sup>2</sup>Includes lease and plant fuel.

<sup>3</sup>This includes international bunker fuel, which by convention are excluded from the international accounting of carbon dioxide emissions. In the years from 1990 through 2000, international bunker fuels accounted for 24 to 30 million metric tons of carbon dioxide annually.

<sup>4</sup>Includes pipeline fuel natural gas and compressed natural gas used as vehicle fuel.

<sup>5</sup>Includes methanol and liquid hydrogen.

<sup>6</sup>Includes electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Does not include emissions from the nonbiogenic component of municipal solid waste because under international guidelines these are accounted for as waste, not energy.

<sup>7</sup>Emissions from the electric power sector are distributed to the primary fuels.

N/A = Not applicable

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

Sources: 2001 and 2002 emissions and emission factors: Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 2002*, DOE/EIA-0573(2002) (Washington, DC, October 2003). Projections: EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

## Reference Case Forecast

**Table A20. Macroeconomic Indicators**  
(Billion 1996 Chain-Weighted Dollars, Unless Otherwise Noted)

| Indicators                                                                | Reference Case |              |              |              |              |              | Annual Growth<br>2002-2025<br>(percent) |
|---------------------------------------------------------------------------|----------------|--------------|--------------|--------------|--------------|--------------|-----------------------------------------|
|                                                                           | 2001           | 2002         | 2010         | 2015         | 2020         | 2025         |                                         |
| <b>Real Gross Domestic Product</b> .....                                  | <b>9215</b>    | <b>9440</b>  | <b>12190</b> | <b>14101</b> | <b>16188</b> | <b>18520</b> | <b>3.0%</b>                             |
| <b>Real Potential Gross Domestic Product</b> .....                        | 9433           | 9726         | 12313        | 14144        | 16186        | 18520        | 2.8%                                    |
| <b>Real Disposable Personal Income</b> .....                              | <b>6748</b>    | <b>7032</b>  | <b>8894</b>  | <b>10330</b> | <b>11864</b> | <b>13826</b> | <b>3.0%</b>                             |
| <b>Components of Real Gross Domestic Product</b>                          |                |              |              |              |              |              |                                         |
| Real Consumption .....                                                    | 6377           | 6576         | 8437         | 9802         | 11296        | 12946        | 3.0%                                    |
| Real Investment .....                                                     | 1575           | 1590         | 2387         | 3021         | 3726         | 4661         | 4.8%                                    |
| Real Government Spending .....                                            | 1640           | 1713         | 1961         | 2092         | 2265         | 2423         | 1.5%                                    |
| Real Exports .....                                                        | 1076           | 1059         | 1838         | 2481         | 3376         | 4546         | 6.5%                                    |
| Real Imports .....                                                        | 1492           | 1547         | 2436         | 3265         | 4433         | 6015         | 6.1%                                    |
| <b>Energy Intensity</b>                                                   |                |              |              |              |              |              |                                         |
| (thousand Btu per 1996 dollar of GDP)                                     |                |              |              |              |              |              |                                         |
| Delivered Energy .....                                                    | 7.69           | 7.55         | 6.73         | 6.26         | 5.84         | 5.45         | -1.4%                                   |
| Total Energy .....                                                        | 10.53          | 10.36        | 9.17         | 8.50         | 7.91         | 7.37         | -1.5%                                   |
| <b>Price Indices</b>                                                      |                |              |              |              |              |              |                                         |
| GDP Chain-Type Price Index (1996=1.000) .....                             | 1.094          | 1.107        | 1.301        | 1.503        | 1.774        | 2.121        | 2.9%                                    |
| Consumer Price Index (1982-4=1) .....                                     | 1.77           | 1.80         | 2.11         | 2.44         | 2.89         | 3.49         | 2.9%                                    |
| Wholesale Price Index (1982=1.00)                                         |                |              |              |              |              |              |                                         |
| All Commodities .....                                                     | 1.34           | 1.31         | 1.46         | 1.57         | 1.74         | 1.94         | 1.7%                                    |
| Fuel and Power .....                                                      | 1.05           | 0.93         | 1.06         | 1.18         | 1.33         | 1.52         | 2.2%                                    |
| <b>Interest Rates (percent, nominal)</b>                                  |                |              |              |              |              |              |                                         |
| Federal Funds Rate .....                                                  | 3.89           | 1.67         | 5.42         | 5.74         | 6.30         | 7.00         | N/A                                     |
| 10-Year Treasury Note .....                                               | 5.02           | 4.61         | 6.60         | 6.52         | 7.07         | 7.95         | N/A                                     |
| AA Utility Bond Rate .....                                                | 7.57           | 7.19         | 7.99         | 8.19         | 8.59         | 9.27         | N/A                                     |
| <b>Unemployment Rate (percent)</b> .....                                  | <b>4.77</b>    | <b>5.78</b>  | <b>4.93</b>  | <b>4.53</b>  | <b>4.41</b>  | <b>4.44</b>  | <b>N/A</b>                              |
| <b>Housing Starts (millions)</b> .....                                    | <b>1.79</b>    | <b>1.88</b>  | <b>1.97</b>  | <b>1.94</b>  | <b>1.94</b>  | <b>1.92</b>  | <b>0.1%</b>                             |
| <b>Commercial Floorspace, Total</b><br><b>(billion square feet)</b> ..... | <b>70.2</b>    | <b>72.1</b>  | <b>83.8</b>  | <b>89.9</b>  | <b>95.9</b>  | <b>101.8</b> | <b>1.5%</b>                             |
| <b>Unit Sales of Light-Duty Vehicles</b><br><b>(millions)</b> .....       | <b>17.11</b>   | <b>16.78</b> | <b>18.01</b> | <b>18.71</b> | <b>20.25</b> | <b>21.32</b> | <b>1.0%</b>                             |
| <b>Value of Shipments (billion 1996 dollars)</b>                          |                |              |              |              |              |              |                                         |
| Total Industrial .....                                                    | 5368           | 5285         | 6439         | 7345         | 8344         | 9491         | 2.6%                                    |
| Non-manufacturing .....                                                   | 1309           | 1222         | 1425         | 1585         | 1710         | 1855         | 1.8%                                    |
| Manufacturing .....                                                       | 4059           | 4064         | 5013         | 5760         | 6634         | 7636         | 2.8%                                    |
| Energy-Intensive .....                                                    | 1085           | 1120         | 1273         | 1393         | 1500         | 1610         | 1.6%                                    |
| Non-Energy Intensive .....                                                | 2974           | 2944         | 3741         | 4367         | 5135         | 6026         | 3.2%                                    |
| <b>Population and Employment (millions)</b>                               |                |              |              |              |              |              |                                         |
| Population, with Armed Forces Overseas .....                              | 285.9          | 288.9        | 309.3        | 321.9        | 334.6        | 347.5        | 0.8%                                    |
| Population, aged 16 and over .....                                        | 221.5          | 224.3        | 244.1        | 254.5        | 264.3        | 274.3        | 0.9%                                    |
| Employment, Nonfarm .....                                                 | 131.6          | 130.5        | 145.0        | 153.4        | 161.2        | 168.6        | 1.1%                                    |
| Employment, Manufacturing .....                                           | 17.7           | 16.7         | 16.1         | 16.2         | 16.0         | 16.2         | -0.1%                                   |
| Labor Force .....                                                         | 143.9          | 145.1        | 159.8        | 166.3        | 171.3        | 176.8        | 0.9%                                    |

GDP = Gross domestic product.

Btu = British thermal unit.

N/A = Not applicable.

**Sources:** 2001 and 2002: Global Insight macroeconomic model T250803. **Projections:** Energy Information Administration, AEO2004 National Energy Modeling System run AEO2004.D101703E.

## Reference Case Forecast

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

| Supply and Disposition                                           | Reference Case |              |              |              |               |               | Annual Growth<br>2002-2025<br>(percent) |
|------------------------------------------------------------------|----------------|--------------|--------------|--------------|---------------|---------------|-----------------------------------------|
|                                                                  | 2001           | 2002         | 2010         | 2015         | 2020          | 2025          |                                         |
| World Oil Price <sup>1</sup> (2002 dollars per barrel) . . . . . | 22.25          | 23.68        | 24.17        | 25.07        | 26.02         | 27.00         | 0.6%                                    |
| <b>Production<sup>2</sup> (Conventional)</b>                     |                |              |              |              |               |               |                                         |
| <b>Industrialized Countries</b>                                  |                |              |              |              |               |               |                                         |
| U.S. (50 states) . . . . .                                       | 8.84           | 9.16         | 9.53         | 9.25         | 8.89          | 8.59          | -0.3%                                   |
| Canada . . . . .                                                 | 2.09           | 2.14         | 1.83         | 1.64         | 1.60          | 1.57          | -1.3%                                   |
| Mexico . . . . .                                                 | 3.62           | 3.61         | 4.20         | 4.53         | 4.60          | 4.82          | 1.3%                                    |
| Western Europe <sup>3</sup> . . . . .                            | 6.82           | 6.76         | 6.34         | 5.87         | 5.48          | 4.97          | -1.3%                                   |
| Japan . . . . .                                                  | 0.08           | 0.08         | 0.08         | 0.07         | 0.06          | 0.06          | -1.1%                                   |
| Australia and New Zealand . . . . .                              | 0.79           | 0.75         | 0.96         | 0.91         | 0.88          | 0.86          | 0.6%                                    |
| <b>Total Industrialized . . . . .</b>                            | <b>22.24</b>   | <b>22.51</b> | <b>22.93</b> | <b>22.28</b> | <b>21.52</b>  | <b>20.87</b>  | <b>-0.3%</b>                            |
| <b>Eurasia</b>                                                   |                |              |              |              |               |               |                                         |
| Former Soviet Union                                              |                |              |              |              |               |               |                                         |
| Russia . . . . .                                                 | 7.30           | 7.67         | 9.92         | 10.52        | 10.77         | 10.93         | 1.6%                                    |
| Caspian Area <sup>4</sup> . . . . .                              | 1.48           | 1.66         | 3.12         | 4.40         | 5.15          | 6.11          | 5.8%                                    |
| Eastern Europe <sup>5</sup> . . . . .                            | 0.24           | 0.23         | 0.33         | 0.37         | 0.41          | 0.45          | 3.0%                                    |
| <b>Total Eurasia . . . . .</b>                                   | <b>9.02</b>    | <b>9.56</b>  | <b>13.37</b> | <b>15.30</b> | <b>16.32</b>  | <b>17.48</b>  | <b>2.7%</b>                             |
| <b>Developing Countries</b>                                      |                |              |              |              |               |               |                                         |
| OPEC <sup>6</sup>                                                |                |              |              |              |               |               |                                         |
| Asia . . . . .                                                   | 1.41           | 1.36         | 1.26         | 1.25         | 1.29          | 1.33          | -0.1%                                   |
| Middle East . . . . .                                            | 20.99          | 20.79        | 24.18        | 27.51        | 33.39         | 40.07         | 2.9%                                    |
| North Africa . . . . .                                           | 3.09           | 2.99         | 2.95         | 3.09         | 3.52          | 3.90          | 1.2%                                    |
| West Africa . . . . .                                            | 2.06           | 2.02         | 2.19         | 2.59         | 3.01          | 3.37          | 2.3%                                    |
| South America . . . . .                                          | 2.63           | 2.55         | 2.65         | 2.72         | 3.23          | 3.88          | 1.9%                                    |
| Non-OPEC                                                         |                |              |              |              |               |               |                                         |
| China . . . . .                                                  | 3.30           | 3.39         | 3.62         | 3.47         | 3.45          | 3.37          | -0.0%                                   |
| Other Asia . . . . .                                             | 2.46           | 2.50         | 2.63         | 2.74         | 2.67          | 2.60          | 0.2%                                    |
| Middle East <sup>7</sup> . . . . .                               | 2.02           | 1.96         | 2.24         | 2.46         | 2.56          | 2.77          | 1.5%                                    |
| Africa . . . . .                                                 | 2.77           | 2.89         | 3.71         | 4.68         | 5.34          | 6.42          | 3.5%                                    |
| South and Central America . . . . .                              | 3.70           | 3.79         | 4.50         | 5.34         | 5.86          | 6.35          | 2.3%                                    |
| <b>Total Developing Countries . . . . .</b>                      | <b>44.44</b>   | <b>44.24</b> | <b>49.94</b> | <b>55.84</b> | <b>64.32</b>  | <b>74.05</b>  | <b>2.3%</b>                             |
| <b>Total Production (Conventional) . . . . .</b>                 | <b>75.70</b>   | <b>76.30</b> | <b>86.24</b> | <b>93.42</b> | <b>102.17</b> | <b>112.41</b> | <b>1.7%</b>                             |
| <b>Production<sup>8</sup> (Nonconventional)</b>                  |                |              |              |              |               |               |                                         |
| U.S. (50 states) . . . . .                                       | 0.00           | 0.00         | 0.00         | 0.00         | 0.00          | 0.00          | N/A                                     |
| Other North America . . . . .                                    | 0.72           | 0.79         | 1.69         | 2.97         | 3.20          | 3.28          | 6.4%                                    |
| Western Europe . . . . .                                         | 0.04           | 0.04         | 0.04         | 0.04         | 0.04          | 0.04          | 0.8%                                    |
| Asia . . . . .                                                   | 0.02           | 0.03         | 0.03         | 0.03         | 0.03          | 0.03          | 1.3%                                    |
| Middle East <sup>7</sup> . . . . .                               | 0.01           | 0.01         | 0.01         | 0.02         | 0.02          | 0.03          | 6.8%                                    |
| Africa . . . . .                                                 | 0.15           | 0.16         | 0.19         | 0.22         | 0.25          | 0.28          | 2.6%                                    |
| South and Central America . . . . .                              | 0.49           | 0.54         | 0.85         | 1.27         | 1.42          | 1.45          | 4.4%                                    |
| <b>Total Production (Nonconventional) . . . . .</b>              | <b>1.42</b>    | <b>1.55</b>  | <b>2.81</b>  | <b>4.55</b>  | <b>4.97</b>   | <b>5.11</b>   | <b>5.3%</b>                             |
| <b>Total Production . . . . .</b>                                | <b>77.12</b>   | <b>77.85</b> | <b>89.05</b> | <b>97.97</b> | <b>107.13</b> | <b>117.53</b> | <b>1.8%</b>                             |

## Reference Case Forecast

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

| Supply and Disposition                  | Reference Case |              |              |              |               |              | Annual Growth<br>2002-2025<br>(percent) |
|-----------------------------------------|----------------|--------------|--------------|--------------|---------------|--------------|-----------------------------------------|
|                                         | 2001           | 2002         | 2010         | 2015         | 2020          | 2025         |                                         |
| <b>Consumption<sup>9</sup></b>          |                |              |              |              |               |              |                                         |
| <b>Industrialized Countries</b>         |                |              |              |              |               |              |                                         |
| U.S. (50 states) .....                  | 19.71          | 19.61        | 22.71        | 24.80        | 26.41         | 28.30        | 1.6%                                    |
| U.S. Territories .....                  | 0.28           | 0.29         | 0.38         | 0.40         | 0.43          | 0.47         | 2.1%                                    |
| Canada .....                            | 1.91           | 1.96         | 2.23         | 2.32         | 2.36          | 2.44         | 1.0%                                    |
| Mexico .....                            | 1.94           | 2.01         | 2.65         | 3.19         | 3.62          | 4.09         | 3.1%                                    |
| Western Europe <sup>3</sup> .....       | 13.98          | 14.02        | 14.36        | 14.64        | 14.80         | 15.26        | 0.4%                                    |
| Japan .....                             | 5.42           | 5.45         | 5.79         | 6.07         | 6.26          | 6.54         | 0.8%                                    |
| Australia and New Zealand .....         | 1.01           | 1.04         | 1.28         | 1.43         | 1.58          | 1.75         | 2.3%                                    |
| <b>Total Industrialized .....</b>       | <b>44.25</b>   | <b>44.39</b> | <b>49.41</b> | <b>52.86</b> | <b>55.47</b>  | <b>58.85</b> | <b>1.2%</b>                             |
| <b>Eurasia</b>                          |                |              |              |              |               |              |                                         |
| Former Soviet Union .....               | 3.90           | 4.05         | 5.10         | 5.26         | 5.73          | 6.25         | 1.9%                                    |
| Eastern Europe <sup>5</sup> .....       | 1.41           | 1.44         | 1.74         | 1.96         | 2.21          | 2.54         | 2.5%                                    |
| <b>Total Eurasia .....</b>              | <b>5.30</b>    | <b>5.49</b>  | <b>6.84</b>  | <b>7.22</b>  | <b>7.94</b>   | <b>8.79</b>  | <b>2.1%</b>                             |
| <b>Developing Countries</b>             |                |              |              |              |               |              |                                         |
| China .....                             | 4.97           | 5.11         | 6.48         | 7.68         | 9.39          | 10.88        | 3.3%                                    |
| India .....                             | 2.13           | 2.16         | 2.80         | 3.53         | 4.47          | 5.48         | 4.1%                                    |
| South Korea .....                       | 2.14           | 2.20         | 2.75         | 2.99         | 3.15          | 3.32         | 1.8%                                    |
| Other Asia .....                        | 5.53           | 5.63         | 6.65         | 7.81         | 8.93          | 10.17        | 2.6%                                    |
| Middle East <sup>7</sup> .....          | 5.36           | 5.34         | 6.19         | 6.98         | 7.87          | 8.88         | 2.2%                                    |
| Africa .....                            | 2.58           | 2.56         | 2.68         | 2.91         | 3.16          | 3.50         | 1.4%                                    |
| South and Central America .....         | 4.87           | 4.91         | 5.54         | 6.28         | 7.03          | 7.99         | 2.1%                                    |
| <b>Total Developing Countries .....</b> | <b>27.59</b>   | <b>27.91</b> | <b>33.10</b> | <b>38.19</b> | <b>44.00</b>  | <b>50.22</b> | <b>2.6%</b>                             |
| <b>Total Consumption .....</b>          | <b>77.14</b>   | <b>77.79</b> | <b>89.35</b> | <b>98.27</b> | <b>107.40</b> | <b>117.8</b> | <b>1.8%</b>                             |
| OPEC Production <sup>10</sup> .....     | 30.55          | 30.11        | 33.89        | 38.12        | 45.51         | 53.67        | 2.5%                                    |
| Non-OPEC Production <sup>10</sup> ..... | 46.56          | 47.74        | 55.16        | 59.85        | 61.62         | 63.86        | 1.3%                                    |
| Net Eurasia Exports .....               | 3.73           | 4.08         | 6.54         | 8.09         | 8.40          | 8.71         | 3.4%                                    |
| OPEC Market Share .....                 | 0.40           | 0.39         | 0.38         | 0.39         | 0.42          | 0.46         | 0.7%                                    |

<sup>1</sup>Average refiner acquisition cost of imported crude oil.

<sup>2</sup>Includes production of crude oil (including lease condensates), natural gas plant liquids, other hydrogen and hydrocarbons for refinery feedstocks, alcohol and other sources, and refinery gains.

<sup>3</sup>Western Europe = Austria, Belgium, Bosnia and Herzegovina, Croatia, Denmark, Finland, France, the unified Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Macedonia, Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, Switzerland, United Kingdom, and Yugoslavia.

<sup>4</sup>Caspian area includes Other Former Soviet Union.

<sup>5</sup>Eastern Europe = Albania, Bulgaria, Czech Republic, Hungary, Poland, Romania, and Slovakia.

<sup>6</sup>OPEC = Organization of Petroleum Exporting Countries - Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.

<sup>7</sup>Non-OPEC Middle East includes Turkey.

<sup>8</sup>Includes liquids produced from energy crops, natural gas, coal, oil sands, and shale. Includes both OPEC and non-OPEC producers in the regional breakdown.

<sup>9</sup>Includes both OPEC and non-OPEC consumers in the regional breakdown.

<sup>10</sup>Includes both conventional and nonconventional liquids production.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 and 2002 are model results and may differ slightly from official EIA data reports.

N/A = Not applicable.

Sources: 2001 data derived from: Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, March 2003).  
2002 and projections: EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

