

## **Appendix C**

### Comparison Tables for Reference, Carper International, and Carper Domestic Cases

**Table C1. Total Energy Supply and Disposition Summary**  
(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Production</b>										
Crude Oil and Lease Condensate . . .	11.91	12.61	12.60	12.60	10.52	10.53	10.54	9.81	9.86	9.85
Natural Gas Plant Liquids . . . . .	2.56	3.19	3.19	3.20	3.44	3.48	3.49	3.44	3.53	3.54
Dry Natural Gas . . . . .	19.56	21.76	21.78	21.87	24.20	24.52	24.60	24.38	25.17	25.29
Coal . . . . .	22.70	25.11	24.74	24.60	27.88	25.39	24.54	30.88	26.36	25.24
Nuclear Power . . . . .	8.15	8.42	8.42	8.42	8.61	8.61	8.61	8.61	8.61	8.61
Renewable Energy <sup>1</sup> . . . . .	5.84	7.22	7.39	7.62	8.56	10.13	11.36	9.20	11.57	13.30
Other <sup>2</sup> . . . . .	1.13	0.89	0.88	0.89	0.81	0.81	0.81	0.84	0.84	0.84
<b>Total . . . . .</b>	<b>71.85</b>	<b>79.19</b>	<b>79.01</b>	<b>79.20</b>	<b>84.03</b>	<b>83.47</b>	<b>83.94</b>	<b>87.16</b>	<b>85.94</b>	<b>86.67</b>
<b>Imports</b>										
Crude Oil <sup>3</sup> . . . . .	19.84	24.53	24.44	24.41	31.43	31.46	31.38	34.07	34.05	33.93
Petroleum Products <sup>4</sup> . . . . .	4.76	5.69	5.53	5.51	8.25	7.93	7.87	10.10	9.77	9.72
Natural Gas . . . . .	4.10	5.67	5.71	5.72	7.50	7.76	7.79	8.17	8.89	8.77
Other Imports <sup>5</sup> . . . . .	0.52	0.95	0.97	0.62	1.12	1.13	0.57	1.18	1.18	0.51
<b>Total . . . . .</b>	<b>29.22</b>	<b>36.84</b>	<b>36.65</b>	<b>36.26</b>	<b>48.30</b>	<b>48.28</b>	<b>47.61</b>	<b>53.52</b>	<b>53.89</b>	<b>52.94</b>
<b>Exports</b>										
Petroleum <sup>6</sup> . . . . .	2.03	2.14	2.14	2.14	2.13	2.14	2.13	2.14	2.15	2.14
Natural Gas . . . . .	0.52	0.81	0.81	0.81	0.80	0.77	0.77	0.72	0.66	0.67
Coal . . . . .	1.03	0.89	0.89	0.89	0.69	0.69	0.63	0.58	0.58	0.58
<b>Total . . . . .</b>	<b>3.58</b>	<b>3.85</b>	<b>3.84</b>	<b>3.84</b>	<b>3.61</b>	<b>3.60</b>	<b>3.54</b>	<b>3.44</b>	<b>3.39</b>	<b>3.39</b>
<b>Discrepancy<sup>7</sup> . . . . .</b>	<b>-0.23</b>	<b>0.32</b>	<b>0.31</b>	<b>0.33</b>	<b>0.47</b>	<b>0.46</b>	<b>0.46</b>	<b>0.56</b>	<b>0.57</b>	<b>0.54</b>
<b>Consumption</b>										
Petroleum Products <sup>8</sup> . . . . .	38.11	44.25	44.00	43.96	51.64	51.39	51.27	55.34	55.10	54.96
Natural Gas . . . . .	23.37	26.78	26.84	26.95	31.09	31.68	31.80	32.02	33.59	33.58
Coal . . . . .	22.18	25.08	24.73	24.20	28.27	25.79	24.42	31.49	26.98	25.19
Nuclear Power . . . . .	8.15	8.42	8.42	8.42	8.61	8.61	8.61	8.61	8.61	8.61
Renewable Energy <sup>1</sup> . . . . .	5.84	7.22	7.39	7.62	8.56	10.13	11.36	9.20	11.57	13.30
Other <sup>9</sup> . . . . .	0.07	0.11	0.13	0.14	0.07	0.08	0.09	0.03	0.03	0.03
<b>Total . . . . .</b>	<b>97.72</b>	<b>111.86</b>	<b>111.50</b>	<b>111.29</b>	<b>128.24</b>	<b>127.69</b>	<b>127.55</b>	<b>136.68</b>	<b>135.88</b>	<b>135.68</b>
<b>Net Imports - Petroleum . . . . .</b>	<b>22.57</b>	<b>28.07</b>	<b>27.83</b>	<b>27.78</b>	<b>37.55</b>	<b>37.25</b>	<b>37.12</b>	<b>42.04</b>	<b>41.67</b>	<b>41.51</b>
<b>Prices (2002 dollars per unit)</b>										
World Oil Price (dollars per barrel) <sup>10</sup> . .	23.68	24.17	24.17	24.17	26.02	26.02	26.02	27.00	27.00	27.00
Natural Gas Wellhead Price (dollars per thousand cubic feet) <sup>11</sup> . .	2.95	3.40	3.43	3.44	4.15	4.27	4.31	4.43	4.48	4.49
Coal Minemouth Price (dollars per ton)	17.90	16.71	16.79	17.02	16.51	15.83	16.00	16.58	15.58	15.87
Average Electricity Price (cents per kilowatthour) . . . . .	7.2	6.7	6.8	6.9	6.8	7.1	7.2	6.9	7.2	7.4

<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.

<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.

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

Sources: 2002 natural gas supply values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2003/06) (Washington, DC, June 2003). 2002 petroleum supply values: EIA, *Petroleum Supply Annual 2002*, DOE/EIA-0340(2002)/1 (Washington, DC, June 2003). Other 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 runs INBASE.D040904A, INCA4P.D040904A, and INCA4PLO.D040904A.

**Table C2. Energy Consumption by Sector and Source**  
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Energy Consumption</b>										
<b>Residential</b>										
Distillate Fuel .....	0.89	0.93	0.93	0.93	0.85	0.85	0.85	0.80	0.81	0.81
Kerosene .....	0.07	0.11	0.11	0.11	0.10	0.10	0.10	0.09	0.09	0.09
Liquefied Petroleum Gas .....	0.53	0.56	0.56	0.56	0.62	0.62	0.62	0.64	0.64	0.64
Petroleum Subtotal .....	1.48	1.60	1.60	1.60	1.57	1.57	1.57	1.53	1.53	1.54
Natural Gas .....	5.06	5.70	5.70	5.70	6.13	6.11	6.11	6.30	6.28	6.29
Coal .....	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Renewable Energy <sup>1</sup> .....	0.39	0.40	0.40	0.40	0.41	0.41	0.41	0.40	0.40	0.40
Electricity .....	4.33	4.86	4.83	4.82	5.57	5.51	5.50	5.91	5.86	5.81
<b>Delivered Energy</b> .....	<b>11.28</b>	<b>12.58</b>	<b>12.55</b>	<b>12.54</b>	<b>13.68</b>	<b>13.61</b>	<b>13.60</b>	<b>14.16</b>	<b>14.09</b>	<b>14.05</b>
Electricity Related Losses .....	9.60	10.46	10.34	10.27	11.39	11.26	11.21	11.88	11.66	11.58
<b>Total</b> .....	<b>20.88</b>	<b>23.04</b>	<b>22.89</b>	<b>22.81</b>	<b>25.07</b>	<b>24.87</b>	<b>24.81</b>	<b>26.04</b>	<b>25.75</b>	<b>25.63</b>
<b>Commercial</b>										
Distillate Fuel .....	0.49	0.63	0.63	0.63	0.68	0.69	0.69	0.70	0.71	0.71
Residual Fuel .....	0.08	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Kerosene .....	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Liquefied Petroleum Gas .....	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Motor Gasoline <sup>2</sup> .....	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Petroleum Subtotal .....	0.72	0.93	0.93	0.93	0.98	0.99	0.99	1.01	1.01	1.02
Natural Gas .....	3.21	3.55	3.55	3.55	3.94	3.92	3.91	4.14	4.13	4.13
Coal .....	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Renewable Energy <sup>3</sup> .....	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Electricity .....	4.12	5.04	5.01	5.01	6.23	6.16	6.15	6.83	6.74	6.71
<b>Delivered Energy</b> .....	<b>8.25</b>	<b>9.72</b>	<b>9.69</b>	<b>9.69</b>	<b>11.34</b>	<b>11.26</b>	<b>11.25</b>	<b>12.17</b>	<b>12.08</b>	<b>12.05</b>
Electricity Related Losses .....	9.15	10.84	10.73	10.66	12.75	12.58	12.55	13.71	13.42	13.37
<b>Total</b> .....	<b>17.40</b>	<b>20.56</b>	<b>20.43</b>	<b>20.34</b>	<b>24.09</b>	<b>23.84</b>	<b>23.80</b>	<b>25.89</b>	<b>25.50</b>	<b>25.42</b>
<b>Industrial<sup>4</sup></b>										
Distillate Fuel .....	1.16	1.18	1.18	1.18	1.34	1.34	1.33	1.43	1.43	1.42
Liquefied Petroleum Gas .....	2.22	2.36	2.36	2.36	2.74	2.74	2.74	2.95	2.95	2.95
Petrochemical Feedstock .....	1.22	1.35	1.35	1.35	1.54	1.54	1.54	1.63	1.62	1.62
Residual Fuel .....	0.20	0.21	0.21	0.21	0.22	0.22	0.22	0.23	0.23	0.23
Motor Gasoline <sup>2</sup> .....	0.16	0.16	0.16	0.16	0.18	0.18	0.18	0.19	0.19	0.19
Other Petroleum <sup>5</sup> .....	4.03	4.40	4.39	4.39	4.97	4.98	4.97	5.17	5.19	5.19
Petroleum Subtotal .....	9.00	9.65	9.64	9.64	10.99	11.00	10.99	11.60	11.61	11.60
Natural Gas .....	7.43	8.62	8.62	8.62	9.83	9.87	9.90	10.54	10.61	10.69
Lease and Plant Fuel <sup>6</sup> .....	1.35	1.34	1.34	1.34	1.52	1.53	1.54	1.54	1.58	1.59
Natural Gas Subtotal .....	8.78	9.96	9.96	9.97	11.35	11.41	11.44	12.08	12.19	12.28
Metallurgical Coal .....	0.62	0.65	0.65	0.65	0.53	0.52	0.52	0.47	0.47	0.47
Steam Coal .....	1.47	1.43	1.43	1.43	1.47	1.46	1.46	1.49	1.48	1.48
Net Coal Coke Imports .....	0.03	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00
Coal Subtotal .....	2.12	2.09	2.09	2.09	2.00	1.99	1.99	1.97	1.96	1.95
Renewable Energy <sup>7</sup> .....	1.66	2.00	2.00	2.00	2.48	2.48	2.48	2.70	2.70	2.70
Electricity .....	3.39	3.84	3.83	3.83	4.49	4.44	4.43	4.87	4.82	4.79
<b>Delivered Energy</b> .....	<b>24.94</b>	<b>27.54</b>	<b>27.51</b>	<b>27.52</b>	<b>31.31</b>	<b>31.32</b>	<b>31.32</b>	<b>33.22</b>	<b>33.28</b>	<b>33.32</b>
Electricity Related Losses .....	7.53	8.26	8.19	8.14	9.18	9.07	9.04	9.79	9.60	9.54
<b>Total</b> .....	<b>32.47</b>	<b>35.80</b>	<b>35.71</b>	<b>35.66</b>	<b>40.49</b>	<b>40.39</b>	<b>40.36</b>	<b>43.01</b>	<b>42.87</b>	<b>42.87</b>

**Table C2. Energy Consumption by Sector and Source (Continued)**  
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Transportation</b>										
Distillate Fuel <sup>8</sup>	5.12	6.43	6.43	6.42	8.03	8.01	8.00	8.94	8.90	8.88
Jet Fuel <sup>9</sup>	3.34	3.93	3.93	3.92	4.69	4.69	4.69	4.91	4.91	4.92
Motor Gasoline <sup>2</sup>	16.62	19.94	19.96	19.96	23.38	23.40	23.41	25.32	25.34	25.34
Residual Fuel	0.71	0.79	0.79	0.79	0.82	0.81	0.81	0.83	0.82	0.82
Liquefied Petroleum Gas	0.02	0.06	0.06	0.06	0.08	0.08	0.08	0.09	0.09	0.09
Other Petroleum <sup>10</sup>	0.24	0.26	0.25	0.25	0.30	0.30	0.30	0.32	0.32	0.32
Petroleum Subtotal	26.06	31.41	31.42	31.41	37.30	37.29	37.28	40.40	40.38	40.37
Pipeline Fuel Natural Gas	0.65	0.72	0.72	0.72	0.85	0.86	0.87	0.86	0.90	0.91
Compressed Natural Gas	0.01	0.06	0.06	0.06	0.10	0.10	0.10	0.11	0.11	0.11
Renewable Energy (E85) <sup>11</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.08	0.09	0.09	0.09	0.11	0.11	0.11	0.12	0.12	0.12
<b>Delivered Energy</b>	<b>26.79</b>	<b>32.27</b>	<b>32.28</b>	<b>32.28</b>	<b>38.36</b>	<b>38.36</b>	<b>38.36</b>	<b>41.50</b>	<b>41.51</b>	<b>41.52</b>
Electricity Related Losses	0.17	0.19	0.19	0.19	0.22	0.22	0.22	0.24	0.24	0.24
<b>Total</b>	<b>26.96</b>	<b>32.47</b>	<b>32.48</b>	<b>32.48</b>	<b>38.58</b>	<b>38.58</b>	<b>38.58</b>	<b>41.74</b>	<b>41.75</b>	<b>41.76</b>
<b>Delivered Energy Consumption for All Sectors</b>										
Distillate Fuel	7.66	9.17	9.17	9.16	10.90	10.88	10.87	11.88	11.84	11.82
Kerosene	0.09	0.16	0.16	0.16	0.14	0.14	0.15	0.13	0.13	0.13
Jet Fuel <sup>9</sup>	3.34	3.93	3.93	3.92	4.69	4.69	4.69	4.91	4.91	4.92
Liquefied Petroleum Gas	2.86	3.07	3.07	3.07	3.54	3.54	3.54	3.77	3.77	3.77
Motor Gasoline <sup>2</sup>	16.83	20.15	20.17	20.17	23.61	23.63	23.63	25.56	25.58	25.58
Petrochemical Feedstock	1.22	1.35	1.35	1.35	1.54	1.54	1.54	1.63	1.62	1.62
Residual Fuel	1.00	1.13	1.13	1.14	1.17	1.17	1.17	1.19	1.19	1.18
Other Petroleum <sup>12</sup>	4.26	4.63	4.62	4.62	5.24	5.25	5.24	5.47	5.49	5.49
Petroleum Subtotal	37.26	43.59	43.59	43.59	50.84	50.85	50.83	54.54	54.54	54.53
Natural Gas	15.71	17.94	17.93	17.93	20.00	20.00	20.02	21.10	21.12	21.21
Lease and Plant Fuel Plant <sup>6</sup>	1.35	1.34	1.34	1.34	1.52	1.53	1.54	1.54	1.58	1.59
Pipeline Natural Gas	0.65	0.72	0.72	0.72	0.85	0.86	0.87	0.86	0.90	0.91
Natural Gas Subtotal	17.72	19.99	19.99	20.00	22.36	22.39	22.42	23.49	23.60	23.71
Metallurgical Coal	0.62	0.65	0.65	0.65	0.53	0.52	0.52	0.47	0.47	0.47
Steam Coal	1.58	1.54	1.54	1.54	1.58	1.57	1.57	1.60	1.59	1.59
Net Coal Coke Imports	0.03	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00
Coal Subtotal	2.23	2.20	2.20	2.20	2.11	2.10	2.09	2.08	2.07	2.06
Renewable Energy <sup>13</sup>	2.15	2.50	2.50	2.50	2.99	2.99	2.99	3.21	3.21	3.21
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	11.92	13.82	13.76	13.75	16.39	16.22	16.20	17.73	17.54	17.43
<b>Delivered Energy</b>	<b>71.27</b>	<b>82.11</b>	<b>82.04</b>	<b>82.03</b>	<b>94.69</b>	<b>94.55</b>	<b>94.53</b>	<b>101.06</b>	<b>100.96</b>	<b>100.93</b>
Electricity Related Losses	26.45	29.75	29.46	29.26	33.55	33.13	33.02	35.62	34.92	34.74
<b>Total</b>	<b>97.72</b>	<b>111.86</b>	<b>111.50</b>	<b>111.29</b>	<b>128.24</b>	<b>127.68</b>	<b>127.55</b>	<b>136.68</b>	<b>135.88</b>	<b>135.68</b>
<b>Electric Power<sup>14</sup></b>										
Distillate Fuel	0.16	0.16	0.10	0.09	0.24	0.30	0.22	0.25	0.32	0.20
Residual Fuel	0.69	0.50	0.31	0.28	0.56	0.25	0.23	0.55	0.24	0.24
Petroleum Subtotal	0.85	0.66	0.41	0.38	0.80	0.54	0.45	0.80	0.56	0.44
Natural Gas	5.65	6.79	6.85	6.95	8.72	9.29	9.37	8.52	9.98	9.87
Steam Coal	19.96	22.88	22.53	22.00	26.16	23.69	22.32	29.41	24.91	23.13
Nuclear Power	8.15	8.42	8.42	8.42	8.61	8.61	8.61	8.61	8.61	8.61
Renewable Energy <sup>15</sup>	3.69	4.72	4.89	5.12	5.57	7.15	8.37	5.99	8.37	10.09
Electricity Imports	0.07	0.11	0.13	0.14	0.07	0.08	0.09	0.03	0.03	0.03
<b>Total</b>	<b>38.36</b>	<b>43.57</b>	<b>43.23</b>	<b>43.00</b>	<b>49.94</b>	<b>49.36</b>	<b>49.22</b>	<b>53.35</b>	<b>52.46</b>	<b>52.17</b>

**Table C2. Energy Consumption by Sector and Source (Continued)**  
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Total Energy Consumption</b>										
Distillate Fuel	7.82	9.33	9.27	9.26	11.14	11.18	11.09	12.13	12.16	12.02
Kerosene	0.09	0.16	0.16	0.16	0.14	0.14	0.15	0.13	0.13	0.13
Jet Fuel <sup>9</sup>	3.34	3.93	3.93	3.92	4.69	4.69	4.69	4.91	4.91	4.92
Liquefied Petroleum Gas	2.86	3.07	3.07	3.07	3.54	3.54	3.54	3.77	3.77	3.77
Motor Gasoline <sup>2</sup>	16.83	20.15	20.17	20.17	23.61	23.63	23.63	25.56	25.58	25.58
Petrochemical Feedstock	1.22	1.35	1.35	1.35	1.54	1.54	1.54	1.63	1.62	1.62
Residual Fuel	1.69	1.64	1.45	1.42	1.73	1.42	1.40	1.73	1.42	1.42
Other Petroleum <sup>12</sup>	4.26	4.63	4.62	4.62	5.24	5.25	5.24	5.47	5.49	5.49
Petroleum Subtotal	38.11	44.25	44.00	43.96	51.64	51.39	51.27	55.34	55.10	54.96
Natural Gas	21.36	24.73	24.78	24.88	28.72	29.29	29.40	29.63	31.11	31.09
Lease and Plant Fuel <sup>6</sup>	1.35	1.34	1.34	1.34	1.52	1.53	1.54	1.54	1.58	1.59
Pipeline Natural Gas	0.65	0.72	0.72	0.72	0.85	0.86	0.87	0.86	0.90	0.91
Natural Gas Subtotal	23.37	26.78	26.84	26.95	31.09	31.68	31.80	32.02	33.59	33.58
Metallurgical Coal	0.62	0.65	0.65	0.65	0.53	0.52	0.52	0.47	0.47	0.47
Steam Coal	21.54	24.42	24.07	23.54	27.74	25.26	23.90	31.01	26.50	24.72
Net Coal Coke Imports	0.03	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00
Coal Subtotal	22.18	25.08	24.73	24.20	28.27	25.79	24.42	31.49	26.98	25.19
Nuclear Power	8.15	8.42	8.42	8.42	8.61	8.61	8.61	8.61	8.61	8.61
Renewable Energy <sup>16</sup>	5.84	7.22	7.39	7.62	8.56	10.13	11.36	9.20	11.57	13.30
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Imports	0.07	0.11	0.13	0.14	0.07	0.08	0.09	0.03	0.03	0.03
<b>Total</b>	<b>97.72</b>	<b>111.86</b>	<b>111.50</b>	<b>111.29</b>	<b>128.24</b>	<b>127.69</b>	<b>127.55</b>	<b>136.68</b>	<b>135.88</b>	<b>135.68</b>
<b>Energy Use and Related Statistics</b>										
Delivered Energy Use	71.27	82.11	82.04	82.03	94.69	94.55	94.53	101.06	100.96	100.93
Total Energy Use	97.72	111.86	111.50	111.29	128.24	127.68	127.55	136.68	135.88	135.68
Population (millions)	288.93	309.28	309.28	309.28	334.61	334.61	334.61	347.53	347.53	347.53
Gross Domestic Product (billion 1996 dollars)	9440	12198	12190	12190	16194	16189	16189	18523	18518	18516
Carbon Dioxide Emissions (million metric tons)	5729.4	6550.5	6499.4	6452.4	7545.1	7321.5	7189.5	8133.4	7770.6	7590.3

<sup>1</sup>Includes wood used for residential heating.

<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.

<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.

Note: Totals may not equal sum of components due to independent rounding. Data for 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: 2002 consumption based on: Energy Information Administration (EIA), *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). 2002 population and gross domestic product: Global Insight macroeconomic model T250803. 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 runs INBASE.D040904A, INCA4P.D040904A, and INCA4PLO.D040904A.

**Table C3. Energy Prices by Sector and Source**  
(2002 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Residential</b>	<b>14.73</b>	<b>14.18</b>	<b>14.42</b>	<b>14.47</b>	<b>14.94</b>	<b>15.33</b>	<b>15.44</b>	<b>15.27</b>	<b>15.66</b>	<b>16.01</b>
Primary Energy <sup>1</sup>	8.14	8.14	8.15	8.16	8.64	8.73	8.76	8.90	8.95	8.97
Petroleum Products <sup>2</sup>	9.87	9.89	9.89	9.89	10.86	10.85	10.85	11.27	11.27	11.27
Distillate Fuel	8.23	7.82	7.81	7.81	8.37	8.36	8.37	8.54	8.54	8.53
Liquefied Petroleum Gas	12.92	13.86	13.84	13.84	14.82	14.81	14.81	15.20	15.18	15.19
Natural Gas	7.64	7.66	7.68	7.68	8.09	8.19	8.24	8.33	8.39	8.42
Electricity	24.73	23.28	23.92	24.04	23.66	24.55	24.78	23.72	24.63	25.49
<b>Commercial</b>	<b>14.70</b>	<b>13.79</b>	<b>14.10</b>	<b>14.15</b>	<b>14.87</b>	<b>15.35</b>	<b>15.45</b>	<b>15.21</b>	<b>15.69</b>	<b>16.07</b>
Primary Energy <sup>1</sup>	6.38	6.46	6.47	6.48	6.99	7.07	7.10	7.23	7.28	7.29
Petroleum Products <sup>2</sup>	6.88	6.33	6.32	6.32	6.81	6.80	6.80	6.98	6.96	6.96
Distillate Fuel	6.07	5.45	5.45	5.45	5.99	5.99	5.99	6.15	6.15	6.15
Residual Fuel	4.21	4.13	4.09	4.08	4.41	4.35	4.35	4.55	4.49	4.49
Natural Gas	6.40	6.63	6.65	6.66	7.17	7.27	7.31	7.42	7.49	7.51
Electricity	22.83	20.46	21.06	21.17	21.22	22.08	22.24	21.35	22.24	22.92
<b>Industrial<sup>3</sup></b>	<b>6.31</b>	<b>6.45</b>	<b>6.53</b>	<b>6.55</b>	<b>7.18</b>	<b>7.32</b>	<b>7.36</b>	<b>7.42</b>	<b>7.55</b>	<b>7.62</b>
Primary Energy	4.77	5.13	5.14	5.15	5.83	5.88	5.89	6.08	6.10	6.10
Petroleum Products <sup>2</sup>	6.35	6.83	6.82	6.82	7.56	7.55	7.55	7.79	7.78	7.78
Distillate Fuel	6.21	5.68	5.67	5.67	6.24	6.23	6.23	6.40	6.40	6.39
Liquefied Petroleum Gas	8.28	9.68	9.66	9.66	10.67	10.66	10.66	11.10	11.03	11.03
Residual Fuel	3.89	3.74	3.73	3.72	4.03	4.00	3.99	4.17	4.14	4.14
Natural Gas <sup>4</sup>	3.75	4.06	4.09	4.11	4.76	4.88	4.92	5.03	5.11	5.11
Metallurgical Coal	1.87	1.96	1.97	1.97	1.84	1.85	1.85	1.77	1.77	1.77
Steam Coal	1.48	1.57	1.57	1.58	1.54	1.49	1.49	1.52	1.45	1.45
Electricity	14.74	13.42	13.91	14.03	14.01	14.74	14.91	14.04	14.83	15.34
<b>Transportation</b>	<b>9.91</b>	<b>10.52</b>	<b>10.51</b>	<b>10.51</b>	<b>10.58</b>	<b>10.59</b>	<b>10.59</b>	<b>10.74</b>	<b>10.75</b>	<b>10.75</b>
Primary Energy	9.88	10.49	10.48	10.48	10.55	10.56	10.55	10.72	10.72	10.71
Petroleum Products <sup>2</sup>	9.88	10.49	10.48	10.48	10.56	10.56	10.56	10.72	10.72	10.72
Distillate Fuel <sup>5</sup>	9.41	10.16	10.13	10.13	10.09	10.11	10.11	10.12	10.14	10.14
Jet Fuel <sup>6</sup>	5.97	5.76	5.76	5.76	6.09	6.08	6.08	6.31	6.31	6.31
Motor Gasoline <sup>7</sup>	11.15	11.88	11.87	11.87	11.90	11.90	11.90	12.06	12.06	12.05
Residual Fuel	3.77	3.60	3.58	3.58	3.87	3.86	3.86	4.02	4.00	4.00
Liquefied Petroleum Gas <sup>8</sup>	15.00	14.94	14.93	14.92	15.55	15.54	15.53	15.84	15.82	15.83
Natural Gas <sup>9</sup>	7.38	8.24	8.26	8.27	8.91	9.03	9.07	9.11	9.18	9.20
Ethanol (E85) <sup>10</sup>	15.19	17.21	17.24	17.31	18.24	18.33	18.42	18.66	18.75	18.83
Electricity	20.89	19.62	20.17	20.26	20.05	20.80	20.97	19.88	20.74	21.26
<b>Average End-Use Energy</b>	<b>10.10</b>	<b>10.23</b>	<b>10.32</b>	<b>10.35</b>	<b>10.73</b>	<b>10.88</b>	<b>10.92</b>	<b>10.95</b>	<b>11.10</b>	<b>11.22</b>
Primary Energy	7.70	8.22	8.22	8.22	8.63	8.66	8.67	8.86	8.87	8.87
Electricity	21.21	19.49	20.07	20.18	20.07	20.90	21.09	20.12	20.99	21.68
<b>Electric Power<sup>11</sup></b>										
Fossil Fuel Average	1.89	1.92	2.06	2.48	2.15	2.78	3.56	2.13	2.99	3.79
Petroleum Products	4.33	4.21	4.34	4.73	4.66	5.50	6.15	4.85	5.85	6.47
Distillate Fuel	5.58	4.91	5.03	5.36	5.46	5.90	6.55	5.63	6.20	6.92
Residual Fuel	4.04	3.99	4.11	4.52	4.32	5.02	5.76	4.50	5.38	6.10
Natural Gas	3.77	4.08	4.21	4.47	4.75	5.28	5.79	4.99	5.62	6.13
Steam Coal	1.25	1.22	1.37	1.82	1.21	1.74	2.57	1.22	1.88	2.74

**Table C3. Energy Prices by Sector and Source (Continued)**  
(2002 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Average Price to All Users<sup>12</sup></b>										
Petroleum Products <sup>2</sup> .....	8.94	9.58	9.60	9.60	9.84	9.88	9.89	10.04	10.07	10.09
Distillate Fuel .....	8.52	8.95	8.96	8.96	9.15	9.15	9.18	9.26	9.25	9.30
Jet Fuel .....	5.97	5.76	5.76	5.76	6.09	6.08	6.08	6.31	6.31	6.31
Liquefied Petroleum Gas .....	9.27	10.61	10.59	10.59	11.56	11.56	11.56	11.96	11.91	11.91
Motor Gasoline <sup>7</sup> .....	11.15	11.88	11.87	11.87	11.90	11.90	11.90	12.06	12.06	12.05
Residual Fuel .....	3.92	3.78	3.76	3.84	4.08	4.13	4.23	4.23	4.30	4.43
Natural Gas .....	5.08	5.27	5.32	5.40	5.81	6.03	6.22	6.07	6.27	6.44
Coal .....	1.27	1.24	1.38	1.80	1.23	1.73	2.50	1.24	1.85	2.66
Ethanol (E85) <sup>10</sup> .....	15.19	17.21	17.24	17.31	18.24	18.33	18.42	18.66	18.75	18.83
Electricity .....	21.21	19.49	20.07	20.18	20.07	20.90	21.09	20.12	20.99	21.68
<b>Non-Renewable Energy Expenditures</b>										
<b>by Sector (billion 2002 dollars)</b>										
Residential .....	160.36	172.65	175.22	175.64	198.31	202.47	203.70	210.08	214.30	218.37
Commercial .....	119.80	132.62	135.24	135.69	167.25	171.33	172.32	183.65	188.03	191.98
Industrial .....	120.90	133.42	135.15	135.72	168.58	172.25	173.22	185.98	189.71	192.05
Transportation .....	259.09	331.86	331.67	331.66	396.83	396.91	396.79	436.57	436.46	436.30
Total Non-Renewable Expenditures .....	660.15	770.54	777.27	778.71	930.96	942.97	946.04	1016.28	1028.49	1038.70
Transportation Renewable Expenditures ..	0.01	0.03	0.03	0.03	0.06	0.06	0.06	0.07	0.07	0.07
<b>Total Expenditures .....</b>	<b>660.16</b>	<b>770.58</b>	<b>777.31</b>	<b>778.75</b>	<b>931.02</b>	<b>943.02</b>	<b>946.09</b>	<b>1016.35</b>	<b>1028.56</b>	<b>1038.78</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 2002 are model results and may differ slightly from official EIA data reports.

**Sources:** 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). 2002 residential, commercial, and transportation natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2003/06) (Washington, DC, June 2003). 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." 2002 industrial natural gas delivered prices based on: EIA, *Manufacturing Energy Consumption Survey 1998*. 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 INBASE.D040904A. 2002 electricity prices: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). 2002 ethanol prices derived from weekly spot prices in the Oxy Fuel News. **Projections:** EIA, AEO2004 National Energy Modeling System runs INBASE.D040904A, INCA4P.D040904A, and INCA4PLO.D040904A.

**Table C4. Electricity Supply, Disposition, Prices, and Emissions**  
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Generation by Fuel Type</b>										
<b>Electric Power Sector<sup>1</sup></b>										
<b>Power Only<sup>2</sup></b>										
Coal .....	1875	2181	2127	2086	2556	2242	2114	2954	2410	2225
Petroleum .....	77	62	39	36	76	58	46	76	60	44
Natural Gas <sup>3</sup> .....	450	643	670	686	957	1087	1114	966	1227	1225
Nuclear Power .....	780	806	806	806	824	824	824	824	824	824
Pumped Storage/Other .....	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
Renewable Sources <sup>4</sup> .....	304	404	417	439	449	588	694	471	691	864
Distributed Generation (Natural Gas) ..	0	0	0	0	4	4	4	6	7	6
Non-Utility Generation for Own Use ..	-34	-37	-42	-42	-37	-41	-42	-37	-42	-42
<b>Total .....</b>	<b>3443</b>	<b>4050</b>	<b>4008</b>	<b>4003</b>	<b>4820</b>	<b>4751</b>	<b>4745</b>	<b>5250</b>	<b>5169</b>	<b>5137</b>
<b>Combined Heat and Power<sup>5</sup></b>										
Coal .....	32	34	36	35	34	36	35	33	36	34
Petroleum .....	6	1	1	1	2	2	2	2	2	2
Natural Gas .....	148	176	188	189	163	168	163	148	155	150
Renewable Sources .....	5	4	4	4	4	4	4	4	4	4
Non-Utility Generation for Own Use ..	-11	-24	-24	-24	-24	-24	-24	-24	-24	-24
<b>Total .....</b>	<b>183</b>	<b>190</b>	<b>205</b>	<b>205</b>	<b>179</b>	<b>186</b>	<b>180</b>	<b>164</b>	<b>173</b>	<b>165</b>
<b>Net Available to the Grid .....</b>	<b>3626</b>	<b>4240</b>	<b>4213</b>	<b>4208</b>	<b>4999</b>	<b>4937</b>	<b>4924</b>	<b>5414</b>	<b>5342</b>	<b>5302</b>
<b>End-Use Sector Generation</b>										
<b>Combined Heat and Power<sup>6</sup></b>										
Coal .....	21	21	21	21	21	21	21	21	21	21
Petroleum .....	5	12	12	12	18	19	19	19	19	19
Natural Gas .....	84	105	106	107	146	160	163	174	194	204
Other Gaseous Fuels <sup>7</sup> .....	5	9	9	9	12	12	13	13	13	14
Renewable Sources <sup>4</sup> .....	30	39	39	39	50	50	50	54	54	54
Other <sup>8</sup> .....	11	11	11	11	11	11	11	11	11	11
<b>Total .....</b>	<b>157</b>	<b>197</b>	<b>199</b>	<b>199</b>	<b>259</b>	<b>273</b>	<b>277</b>	<b>292</b>	<b>313</b>	<b>324</b>
Other End-Use Generators <sup>9</sup> .....	4	5	5	5	6	6	6	7	8	8
Generation for Own Use .....	-134	-156	-157	-157	-187	-194	-196	-207	-218	-224
<b>Total Sales to the Grid .....</b>	<b>27</b>	<b>46</b>	<b>47</b>	<b>47</b>	<b>77</b>	<b>85</b>	<b>86</b>	<b>91</b>	<b>102</b>	<b>108</b>
<b>Total Electricity Generation .....</b>	<b>3831</b>	<b>4504</b>	<b>4483</b>	<b>4478</b>	<b>5325</b>	<b>5282</b>	<b>5273</b>	<b>5774</b>	<b>5729</b>	<b>5700</b>
<b>Net Imports .....</b>	<b>22</b>	<b>32</b>	<b>38</b>	<b>40</b>	<b>21</b>	<b>25</b>	<b>27</b>	<b>7</b>	<b>9</b>	<b>10</b>
<b>Electricity Sales by Sector</b>										
Residential .....	1268	1424	1416	1414	1631	1616	1612	1733	1716	1703
Commercial .....	1208	1476	1469	1468	1825	1805	1804	2000	1976	1966
Industrial .....	994	1125	1122	1121	1315	1302	1299	1428	1412	1403
Transportation .....	22	26	26	26	32	32	32	35	35	35
<b>Total .....</b>	<b>3492</b>	<b>4051</b>	<b>4033</b>	<b>4030</b>	<b>4803</b>	<b>4755</b>	<b>4747</b>	<b>5196</b>	<b>5140</b>	<b>5107</b>
<b>End-Use Prices<sup>10</sup></b> (2002 cents per kilowatthour)										
Residential .....	8.4	7.9	8.2	8.2	8.1	8.4	8.5	8.1	8.4	8.7
Commercial .....	7.8	7.0	7.2	7.2	7.2	7.5	7.6	7.3	7.6	7.8
Industrial .....	5.0	4.6	4.7	4.8	4.8	5.0	5.1	4.8	5.1	5.2
Transportation .....	7.1	6.7	6.9	6.9	6.8	7.1	7.2	6.8	7.1	7.3
<b>All Sectors Average .....</b>	<b>7.2</b>	<b>6.7</b>	<b>6.8</b>	<b>6.9</b>	<b>6.8</b>	<b>7.1</b>	<b>7.2</b>	<b>6.9</b>	<b>7.2</b>	<b>7.4</b>
<b>Prices by Service Category<sup>10</sup></b> (2002 cents per kilowatthour)										
Generation .....	4.6	4.1	4.3	4.4	4.5	4.7	4.8	4.5	4.8	5.0
Transmission .....	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7
Distribution .....	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.7



**Table C4. Electricity Supply, Disposition, Prices, and Emissions (Continued)**  
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Electric Power Sector Emissions<sup>1</sup></b>										
Sulfur Dioxide (million tons) . . . . .	10.19	9.62	5.33	5.32	8.95	3.31	3.28	8.95	2.84	2.86
Nitrogen Oxide (million tons) . . . . .	4.39	3.48	1.81	1.80	3.66	1.70	1.70	3.72	1.70	1.70
Mercury (tons) . . . . .	50.81	52.60	24.00	24.00	53.50	10.00	10.00	54.60	10.00	10.00

<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 2002 are model results and may differ slightly from official EIA data reports.  
**Source:** 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. 2002 commercial and transportation electricity sales: EIA estimates based on Oak Ridge National Laboratory, *Transportation Energy Data Book 21* (Oak Ridge, TN, September 2001). 2002 prices: EIA, National Energy Modeling System run INBASE.D040904A. **Projections:** EIA, AEO2004 National Energy Modeling System runs INBASE.D040904A, INCA4P.D040904A, and INCA4PLO.D040904A.

**Table C5. Electricity Generating Capacity**  
(Gigawatts)

Net Summer Capacity <sup>1</sup>	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Electric PowerSector<sup>2</sup></b>										
<b>Power Only<sup>3</sup></b>										
Coal Steam	305.7	302.4	299.5	297.6	348.0	306.4	297.0	403.6	328.8	311.8
Other Fossil Steam <sup>4</sup>	132.5	102.2	101.5	100.7	97.5	93.9	92.1	95.5	92.7	91.4
Combined Cycle	81.0	126.6	130.3	130.8	180.0	201.4	206.7	200.7	235.8	237.1
Combustion Turbine/Diesel	122.7	130.4	128.6	128.2	162.2	162.5	158.7	176.1	181.6	169.1
Nuclear Power <sup>5</sup>	98.7	100.6	100.6	100.6	102.6	102.6	102.6	102.6	102.6	102.6
Pumped Storage	20.2	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3
Fuel Cells	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Renewable Sources <sup>6</sup>	91.4	98.1	100.4	107.2	107.1	143.5	167.1	112.3	163.5	192.9
Distributed Generation <sup>7</sup>	0.0	0.5	0.7	0.6	8.4	9.7	8.9	13.8	15.4	14.0
<b>Total</b>	<b>852.3</b>	<b>881.2</b>	<b>882.0</b>	<b>886.2</b>	<b>1026.3</b>	<b>1040.4</b>	<b>1053.6</b>	<b>1124.9</b>	<b>1140.9</b>	<b>1139.2</b>
<b>Combined Heat and Power<sup>8</sup></b>										
Coal Steam	5.2	5.2	4.6	4.6	5.2	4.6	4.6	5.2	4.6	4.6
Other Fossil Steam <sup>4</sup>	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Combined Cycle	29.4	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9
Combustion Turbine/Diesel	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
Renewable Sources <sup>6</sup>	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
<b>Total</b>	<b>41.4</b>	<b>44.9</b>	<b>44.3</b>	<b>44.3</b>	<b>44.9</b>	<b>44.3</b>	<b>44.3</b>	<b>44.9</b>	<b>44.3</b>	<b>44.3</b>
<b>Total Electric Power Industry</b>	<b>893.7</b>	<b>926.1</b>	<b>926.3</b>	<b>930.5</b>	<b>1071.1</b>	<b>1084.7</b>	<b>1097.8</b>	<b>1169.8</b>	<b>1185.2</b>	<b>1183.5</b>
<b>Cumulative Planned Additions<sup>9</sup></b>										
Coal Steam	0.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Other Fossil Steam <sup>4</sup>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
Combustion Turbine/Diesel	0.0	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cells	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Renewable Sources <sup>6</sup>	0.0	4.3	4.3	4.3	4.7	4.7	4.7	4.8	4.8	4.8
Distributed Generation <sup>7</sup>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>57.1</b>	<b>57.1</b>	<b>57.1</b>	<b>57.5</b>	<b>57.5</b>	<b>57.5</b>	<b>57.6</b>	<b>57.6</b>	<b>57.6</b>
<b>Cumulative Unplanned Additions<sup>9</sup></b>										
Coal Steam	0.0	2.9	0.7	0.0	50.4	10.6	3.7	107.1	34.1	19.8
Other Fossil Steam <sup>4</sup>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	6.7	10.4	10.9	60.0	81.5	86.8	80.8	115.9	117.1
Combustion Turbine/Diesel	0.0	10.7	8.8	8.1	43.8	44.9	39.7	61.6	64.0	52.2
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Renewable Sources <sup>6</sup>	0.0	2.1	4.4	11.2	10.7	47.1	70.7	15.7	67.0	96.3
Distributed Generation <sup>7</sup>	0.0	0.5	0.7	0.6	8.4	9.7	8.9	13.8	15.4	14.0
<b>Total</b>	<b>0.0</b>	<b>22.9</b>	<b>25.0</b>	<b>30.8</b>	<b>173.4</b>	<b>193.7</b>	<b>209.8</b>	<b>279.0</b>	<b>296.4</b>	<b>299.5</b>
<b>Cumulative Total Additions</b>	<b>0.0</b>	<b>80.0</b>	<b>82.0</b>	<b>87.9</b>	<b>230.9</b>	<b>251.2</b>	<b>267.3</b>	<b>336.6</b>	<b>354.0</b>	<b>357.1</b>
<b>Cumulative Retirements<sup>10</sup></b>										
Coal Steam	0.0	7.4	8.7	9.8	9.2	11.6	14.2	10.4	12.7	15.5
Other Fossil Steam <sup>4</sup>	0.0	28.4	29.1	29.9	33.1	36.7	38.5	35.1	37.9	39.2
Combined Cycle	0.0	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Combustion Turbine/Diesel	0.0	10.3	10.2	10.0	11.6	12.4	11.0	15.6	12.5	13.2
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Renewable Sources <sup>6</sup>	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Total</b>	<b>0.0</b>	<b>47.9</b>	<b>49.8</b>	<b>51.5</b>	<b>55.8</b>	<b>62.6</b>	<b>65.6</b>	<b>62.9</b>	<b>64.9</b>	<b>69.7</b>

**Table C5. Electricity Generating Capacity (Continued)**  
(Gigawatts)

Net Summer Capacity <sup>1</sup>	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>End-Use Sector</b>										
Combined Heat and Power <sup>11</sup>										
Coal	4.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Petroleum	1.0	1.6	1.6	1.6	2.3	2.4	2.4	2.4	2.4	2.4
Natural Gas	14.1	17.1	17.4	17.4	22.7	24.5	25.0	26.4	29.2	30.6
Other Gaseous Fuels	1.8	2.2	2.2	2.2	2.5	2.6	2.6	2.7	2.7	2.8
Renewable Sources <sup>6</sup>	4.2	5.6	5.6	5.6	7.5	7.5	7.5	8.3	8.3	8.3
Other	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
<b>Total</b>	<b>25.5</b>	<b>31.0</b>	<b>31.2</b>	<b>31.3</b>	<b>39.6</b>	<b>41.5</b>	<b>42.0</b>	<b>44.2</b>	<b>47.1</b>	<b>48.6</b>
<b>Other End-Use Generators<sup>12</sup></b>										
Renewable Sources <sup>13</sup>	1.1	1.4	1.4	1.4	1.9	2.0	1.9	2.5	2.7	2.8
<b>Cumulative Additions<sup>9</sup></b>										
Combined Heat and Power <sup>11</sup>	0.0	5.5	5.8	5.8	14.1	16.0	16.5	18.7	21.6	23.1
Other End-Use Generators <sup>12</sup>	0.0	0.4	0.4	0.4	0.8	0.9	0.9	1.5	1.7	1.7

<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 capability.

<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 total 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 C10 for more detail.

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

Source: 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 runs INBASE.D040904A, INCA4P.D040904A, and INCA4PLO.D040904A.

**Table C6. Natural Gas Supply and Disposition**  
(Trillion Cubic Feet per Year)

Supply and Disposition	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Production</b>										
Dry Gas Production <sup>1</sup> . . . . .	19.05	21.19	21.21	21.30	23.56	23.87	23.96	23.74	24.51	24.62
Supplemental Natural Gas <sup>2</sup> . . . . .	0.08	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
<b>Net Imports</b> . . . . .	<b>3.49</b>	<b>4.74</b>	<b>4.77</b>	<b>4.79</b>	<b>6.55</b>	<b>6.82</b>	<b>6.86</b>	<b>7.28</b>	<b>8.05</b>	<b>7.92</b>
Canada . . . . .	3.59	2.86	2.88	2.88	2.68	2.75	2.78	2.80	2.88	2.91
Mexico . . . . .	-0.26	-0.30	-0.29	-0.29	-0.09	-0.07	-0.07	-0.02	0.04	0.04
Liquefied Natural Gas . . . . .	0.17	2.17	2.19	2.21	3.96	4.14	4.15	4.50	5.12	4.98
<b>Total Supply</b> . . . . .	<b>22.62</b>	<b>26.02</b>	<b>26.08</b>	<b>26.18</b>	<b>30.21</b>	<b>30.79</b>	<b>30.91</b>	<b>31.11</b>	<b>32.65</b>	<b>32.64</b>
<b>Consumption by Sector</b>										
Residential . . . . .	4.92	5.55	5.55	5.54	5.96	5.95	5.94	6.13	6.11	6.11
Commercial . . . . .	3.12	3.46	3.45	3.45	3.83	3.81	3.81	4.03	4.01	4.01
Industrial <sup>3</sup> . . . . .	7.23	8.39	8.39	8.39	9.56	9.60	9.63	10.26	10.32	10.40
Electric Power <sup>4</sup> . . . . .	5.55	6.66	6.72	6.82	8.56	9.12	9.20	8.36	9.80	9.68
Transportation <sup>5</sup> . . . . .	0.01	0.06	0.06	0.06	0.10	0.10	0.10	0.11	0.11	0.11
Pipeline Fuel . . . . .	0.63	0.70	0.70	0.70	0.82	0.84	0.84	0.84	0.87	0.88
Lease and Plant Fuel <sup>6</sup> . . . . .	1.32	1.30	1.30	1.31	1.48	1.49	1.50	1.50	1.54	1.55
<b>Total</b> . . . . .	<b>22.78</b>	<b>26.11</b>	<b>26.17</b>	<b>26.28</b>	<b>30.32</b>	<b>30.90</b>	<b>31.02</b>	<b>31.23</b>	<b>32.76</b>	<b>32.75</b>
Natural Gas to Liquids . . . . .	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Discrepancy<sup>7</sup></b> . . . . .	<b>-0.16</b>	<b>-0.09</b>	<b>-0.09</b>	<b>-0.09</b>	<b>-0.11</b>	<b>-0.11</b>	<b>-0.11</b>	<b>-0.11</b>	<b>-0.11</b>	<b>-0.11</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, 2002 values include net storage injections.

Btu = British thermal unit.

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

Sources: 2002 supply values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2003/06) (Washington, DC, June 2003). 2002 consumption based on: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). Projections: EIA, AEO2004 National Energy Modeling System runs INBASE.D040904A, INCA4P.D040904A, and INCA4PLO.D040904A.

**Table C7. Oil and Gas Supply**

Production and Supply	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Crude Oil</b>										
<b>Lower 48 Average Wellhead Price<sup>1</sup></b> (2002 dollars per barrel) .....	24.54	23.64	23.64	23.64	25.61	25.87	25.60	26.86	26.85	26.84
<b>Production (million barrels per day)<sup>2</sup></b>										
<b>U.S. Total</b> .....	5.62	5.96	5.95	5.95	4.97	4.98	4.98	4.63	4.66	4.65
Lower 48 Onshore .....	3.11	2.61	2.61	2.61	2.20	2.20	2.20	2.04	2.04	2.04
Lower 48 Offshore .....	1.53	2.43	2.42	2.42	2.03	2.04	2.04	2.08	2.10	2.10
Alaska .....	0.98	0.92	0.92	0.92	0.74	0.74	0.74	0.51	0.51	0.51
<b>Lower 48 End of Year Reserves (billion barrels)<sup>2</sup></b> .	19.05	18.42	18.41	18.41	16.17	16.21	16.19	15.04	15.11	15.09
<b>Natural Gas</b>										
<b>Lower 48 Average Wellhead Price<sup>1</sup></b> (2002 dollars per thousand cubic feet) .....	2.95	3.40	3.43	3.44	4.15	4.27	4.31	4.43	4.48	4.49
<b>Dry Production (trillion cubic feet)<sup>3</sup></b>										
<b>U.S. Total</b> .....	19.05	21.19	21.21	21.30	23.57	23.88	23.96	23.74	24.51	24.63
Lower 48 Onshore .....	13.76	15.13	15.16	15.24	16.33	16.61	16.68	16.47	16.84	16.97
Associated-Dissolved <sup>4</sup> .....	1.60	1.41	1.41	1.41	1.23	1.23	1.23	1.17	1.17	1.17
Non-Associated .....	12.16	13.72	13.75	13.83	15.10	15.38	15.44	15.31	15.68	15.81
Conventional .....	6.14	5.94	5.97	5.99	6.07	6.17	6.20	5.92	6.01	6.02
Unconventional .....	6.02	7.78	7.78	7.84	9.02	9.21	9.24	9.38	9.67	9.78
Lower 48 Offshore .....	4.86	5.62	5.61	5.61	5.14	5.17	5.18	5.15	5.19	5.18
Associated-Dissolved <sup>4</sup> .....	1.05	1.64	1.64	1.64	1.34	1.34	1.34	1.43	1.43	1.43
Non-Associated .....	3.81	3.98	3.97	3.97	3.80	3.83	3.84	3.72	3.76	3.75
Alaska .....	0.43	0.45	0.45	0.45	2.10	2.10	2.10	2.12	2.47	2.47
<b>Lower 48 End of Year Dry Reserves<sup>3</sup></b> (trillion cubic feet) .....	180.03	201.99	202.01	202.07	198.74	198.26	198.39	191.26	189.91	189.99
<b>Supplemental Gas Supplies (trillion cubic feet)<sup>5</sup></b> ..	0.08	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
<b>Total Lower 48 Wells (thousands)</b> .....	24.47	25.36	25.43	25.66	26.64	26.89	26.86	26.09	26.19	26.21

<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 2002 are model results and may differ slightly from official EIA data reports.  
**Sources:** 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). 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 2002 values: EIA, Office of Integrated Analysis and Forecasting. **Projections:** EIA, AEO2004 National Energy Modeling System runs INBASE.D040904A, INCA4P.D040904A, and INCA4PLO.D040904A.

**Table C8. Coal Supply, Disposition, and Prices**  
(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Production<sup>1</sup></b>										
Appalachia .....	408	404	394	398	406	379	375	418	369	366
Interior .....	147	166	140	141	171	120	112	177	124	128
West .....	550	655	667	651	796	741	705	937	800	736
East of the Mississippi .....	504	517	492	496	528	470	460	546	467	467
West of the Mississippi .....	601	708	709	694	845	770	732	987	827	763
<b>Total .....</b>	<b>1105</b>	<b>1225</b>	<b>1201</b>	<b>1190</b>	<b>1373</b>	<b>1239</b>	<b>1193</b>	<b>1532</b>	<b>1294</b>	<b>1230</b>
<b>Net Imports</b>										
Imports .....	17	33	33	19	42	42	19	46	46	19
Exports .....	40	35	35	35	27	28	25	24	24	23
<b>Total .....</b>	<b>-23</b>	<b>-2</b>	<b>-2</b>	<b>-16</b>	<b>14</b>	<b>14</b>	<b>-6</b>	<b>22</b>	<b>22</b>	<b>-4</b>
<b>Total Supply<sup>2</sup> .....</b>	<b>1083</b>	<b>1223</b>	<b>1199</b>	<b>1174</b>	<b>1387</b>	<b>1253</b>	<b>1187</b>	<b>1554</b>	<b>1316</b>	<b>1226</b>
<b>Consumption by Sector</b>										
Residential and Commercial .....	4	5	5	5	5	5	5	5	5	5
Industrial <sup>3</sup> .....	63	66	66	66	68	67	67	69	68	68
of which: Coal to Liquids .....	0	0	0	0	0	0	0	0	0	0
Coke Plants .....	23	24	24	24	19	19	19	17	17	17
Electric Power <sup>4</sup> .....	976	1129	1105	1079	1296	1163	1096	1464	1227	1138
<b>Total .....</b>	<b>1066</b>	<b>1223</b>	<b>1199</b>	<b>1174</b>	<b>1388</b>	<b>1255</b>	<b>1188</b>	<b>1555</b>	<b>1317</b>	<b>1228</b>
<b>Discrepancy and Stock Change<sup>5</sup> .....</b>	<b>17</b>	<b>-0</b>	<b>-1</b>	<b>0</b>	<b>-1</b>	<b>-1</b>	<b>-1</b>	<b>-1</b>	<b>-1</b>	<b>-2</b>
<b>Average Minemouth Price</b>										
(2002 dollars per short ton) .....	17.90	16.71	16.79	17.02	16.51	15.83	16.00	16.58	15.58	15.87
(2002 dollars per million Btu) .....	0.87	0.82	0.81	0.82	0.81	0.77	0.78	0.82	0.76	0.77
<b>Delivered Prices (2002 dollars per short ton)<sup>6</sup></b>										
Industrial .....	32.39	34.11	34.15	34.36	33.45	32.34	32.39	33.09	31.51	31.53
Coke Plants .....	51.27	53.70	53.92	53.95	50.45	50.62	50.71	48.44	48.65	48.67
Electric Power										
(2002 dollars per short ton) .....	25.88	24.55	27.68	36.86	24.16	35.17	52.03	24.33	37.75	55.49
(2002 dollars per million Btu) .....	1.25	1.22	1.37	1.82	1.21	1.74	2.57	1.22	1.88	2.74
<b>Average .....</b>	<b>26.80</b>	<b>25.63</b>	<b>28.56</b>	<b>37.07</b>	<b>24.98</b>	<b>35.25</b>	<b>50.89</b>	<b>24.98</b>	<b>37.57</b>	<b>54.06</b>
Exports <sup>7</sup> .....	40.44	36.44	36.36	36.42	34.13	33.82	34.82	32.23	31.93	33.60

<sup>1</sup>Includes anthracite, bituminous coal, lignite, and waste coal delivered to independent power producers. Waste coal deliveries totaled 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.

Btu = British thermal unit.

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

Sources: 2002 data based on Energy Information Administration (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 INBASE.D040904A. Projections: EIA, AEO2004 National Energy Modeling System runs INBASE.D040904A, INCA4P.D040904A, and INCA4PLO.D040904A.

**Table C9. Coal Production by Region and Type**  
(Million Short Tons)

Supply Regions and Coal Types	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Northern Appalachia</b> .....	<b>139.9</b>	<b>173.6</b>	<b>166.4</b>	<b>166.5</b>	<b>186.2</b>	<b>162.2</b>	<b>159.2</b>	<b>202.1</b>	<b>163.8</b>	<b>169.8</b>
Medium Sulfur (Premium) <sup>1</sup> .....	2.8	3.1	3.1	3.1	2.8	2.8	2.8	2.8	2.8	2.8
Low Sulfur (Bituminous) <sup>2</sup> .....	0.0	0.0	0.7	0.7	0.0	0.8	0.8	0.0	0.5	0.7
Medium Sulfur (Bituminous) <sup>2</sup> .....	66.6	86.4	75.8	75.6	86.9	78.3	77.2	92.1	81.3	79.9
High Sulfur (Bituminous) .....	59.4	75.7	81.1	81.5	88.1	74.7	72.9	98.4	73.7	80.8
High Sulfur (Gob) <sup>3</sup> .....	11.1	8.5	5.6	5.6	8.5	5.6	5.6	8.8	5.6	5.5
<b>Central Appalachia</b> .....	<b>249.1</b>	<b>218.8</b>	<b>214.1</b>	<b>218.5</b>	<b>208.8</b>	<b>205.7</b>	<b>204.9</b>	<b>206.1</b>	<b>194.6</b>	<b>185.5</b>
Medium Sulfur (Premium) <sup>1</sup> .....	34.0	34.5	34.5	34.5	29.1	29.1	29.1	23.6	23.3	25.6
Low Sulfur (Bituminous) .....	63.9	51.4	57.6	59.1	53.7	51.2	51.2	52.3	51.2	41.4
Medium Sulfur (Bituminous) .....	151.2	132.8	121.9	124.9	126.0	125.4	124.6	130.2	120.0	118.4
<b>Southern Appalachia</b> .....	<b>19.1</b>	<b>11.9</b>	<b>13.5</b>	<b>13.4</b>	<b>11.0</b>	<b>10.8</b>	<b>11.2</b>	<b>9.8</b>	<b>11.0</b>	<b>10.4</b>
Low Sulfur (Premium) <sup>1</sup> .....	4.6	4.8	4.8	4.8	1.1	1.1	1.1	1.0	0.9	0.9
Low Sulfur (Bituminous) .....	3.1	0.7	2.0	1.9	2.0	1.9	2.0	1.8	2.1	1.7
Medium Sulfur (Bituminous) .....	11.4	6.5	6.7	6.7	7.9	7.8	8.1	7.1	8.0	7.8
<b>Eastern Interior</b> .....	<b>96.0</b>	<b>113.1</b>	<b>98.0</b>	<b>98.0</b>	<b>121.9</b>	<b>91.2</b>	<b>84.9</b>	<b>127.7</b>	<b>97.5</b>	<b>101.6</b>
Medium Sulfur (Bituminous) .....	33.0	35.1	34.1	34.3	37.3	37.3	37.9	39.7	37.5	38.2
High Sulfur (Bituminous) .....	60.7	74.3	63.9	63.8	80.7	53.9	47.1	88.1	59.9	63.4
Medium Sulfur (Lignite) .....	2.3	3.8	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0
<b>Western Interior High Sulfur (Bituminous)</b>	<b>1.9</b>	<b>1.7</b>	<b>1.6</b>	<b>1.7</b>	<b>1.5</b>	<b>1.8</b>	<b>1.8</b>	<b>1.9</b>	<b>0.3</b>	<b>1.5</b>
<b>Gulf</b> .....	<b>49.0</b>	<b>50.7</b>	<b>40.5</b>	<b>41.3</b>	<b>47.9</b>	<b>26.8</b>	<b>25.6</b>	<b>47.3</b>	<b>26.5</b>	<b>25.0</b>
Medium Sulfur (Lignite) .....	26.7	18.3	14.6	14.6	16.5	19.0	17.8	17.9	16.1	16.1
High Sulfur (Lignite) .....	22.3	32.4	25.9	26.7	31.4	7.8	7.8	29.5	10.4	8.9
<b>Dakota Medium Sulfur (Lignite)</b> .....	<b>31.1</b>	<b>32.9</b>	<b>29.4</b>	<b>29.5</b>	<b>30.3</b>	<b>24.1</b>	<b>21.5</b>	<b>32.9</b>	<b>20.5</b>	<b>20.7</b>
<b>Powder/Green River</b> .....	<b>410.2</b>	<b>512.7</b>	<b>513.0</b>	<b>496.3</b>	<b>628.1</b>	<b>580.3</b>	<b>544.7</b>	<b>751.5</b>	<b>630.7</b>	<b>571.8</b>
Low Sulfur (Bituminous) .....	0.0	1.0	1.0	0.8	1.1	1.1	0.6	0.0	0.0	0.8
Low Sulfur (Sub-Bituminous) .....	372.1	464.9	483.1	467.5	581.1	538.6	504.8	691.7	579.6	526.2
Medium Sulfur (Sub-Bituminous) .....	38.2	46.7	29.0	28.1	46.0	40.5	39.3	59.8	51.1	44.8
<b>Rocky Mountain</b> .....	<b>60.4</b>	<b>62.4</b>	<b>77.0</b>	<b>79.0</b>	<b>90.3</b>	<b>89.2</b>	<b>91.3</b>	<b>102.6</b>	<b>102.2</b>	<b>96.8</b>
Low Sulfur (Bituminous) .....	50.4	54.2	69.8	71.9	78.8	82.0	84.1	91.1	94.1	92.3
Low Sulfur (Sub-Bituminous) .....	10.0	8.2	7.1	7.0	11.6	7.2	7.2	11.5	8.1	4.5
<b>Arizona/New Mexico</b> .....	<b>41.7</b>	<b>41.8</b>	<b>41.6</b>	<b>40.2</b>	<b>41.6</b>	<b>41.9</b>	<b>41.8</b>	<b>44.9</b>	<b>41.0</b>	<b>41.5</b>
Low Sulfur (Bituminous) .....	23.0	22.7	24.4	24.9	17.8	18.3	19.0	21.5	18.6	18.7
Medium Sulfur (Bituminous) .....	1.8	8.3	8.3	4.6	9.8	9.8	9.8	9.4	9.8	9.8
Medium Sulfur (Sub-bituminous) .....	17.0	10.9	8.9	10.7	13.9	13.7	12.9	13.9	12.6	12.9
<b>Washington/Alaska Medium Sulfur (Sub-Bituminous)</b> .....	<b>7.0</b>	<b>5.3</b>	<b>5.6</b>	<b>5.6</b>	<b>5.4</b>	<b>5.6</b>	<b>5.6</b>	<b>5.4</b>	<b>5.6</b>	<b>5.6</b>

**Table C9. Coal Production by Region and Type (Continued)**  
(Million Short Tons)

Supply Regions and Coal Types	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Subtotals: All Regions</b>										
Premium Metallurgical <sup>1</sup> .....	41.4	42.4	42.4	42.4	33.0	33.0	32.9	27.3	27.1	29.4
Bituminous .....	526.2	550.7	549.0	552.2	591.5	544.2	537.1	633.6	557.0	555.4
Sub-Bituminous .....	444.2	536.1	533.6	518.9	657.9	605.7	569.8	782.3	657.1	594.1
Lignite .....	93.6	95.8	75.6	76.5	90.6	56.5	52.7	89.0	52.7	51.2
Low Sulfur .....	527.0	607.9	650.5	638.6	747.1	702.2	670.7	870.9	755.1	687.2
Medium Sulfur .....	423.0	424.6	372.0	372.2	415.8	393.4	386.7	434.8	388.7	382.7
High Sulfur .....	155.4	192.5	178.1	179.3	210.2	143.7	135.2	226.5	150.0	160.2
Underground .....	356.9	382.4	386.5	385.5	419.6	387.3	383.1	452.1	397.4	394.4
Surface .....	748.5	842.6	814.1	804.5	953.4	852.1	809.5	1080.1	896.4	835.6
<b>U.S. Total .....</b>	<b>1105.4</b>	<b>1225.0</b>	<b>1200.6</b>	<b>1190.1</b>	<b>1373.0</b>	<b>1239.3</b>	<b>1192.5</b>	<b>1532.2</b>	<b>1293.8</b>	<b>1230.1</b>

<sup>1</sup>Premium coal is used to make metallurgical coke.

<sup>2</sup>Includes Pennsylvania anthracite.

<sup>3</sup>Waste coal delivered to Independent Power Producers (IPP) that is not included in other Energy Information Administration coal production tables. The totals for this table include this waste coal tonnage.

Northern Appalachia: Pennsylvania, Maryland, Ohio, Northern West Virginia (Pennsylvania anthracite is included under low and medium sulfur bituminous).

Central Appalachia: Southern West Virginia, Virginia, Eastern Kentucky, Northern Tennessee.

Southern Appalachia: Alabama, Southern Tennessee.

Eastern Interior: Illinois, Indiana, Mississippi, Western Kentucky.

Western Interior (Bituminous only): Iowa, Missouri, Kansas, Oklahoma, Arkansas, Texas.

Gulf (Lignite only): Texas, Louisiana, Arkansas.

Dakota: North Dakota, Eastern Montana (Lignite only).

Powder/Green River: Wyoming, Montana (Sub-Bituminous and Bituminous)

Rocky Mountain: Colorado, Utah.

Sulfur Definitions:

Low Sulfur: 0 - 0.60 pounds of sulfur per million British thermal unit.

Medium Sulfur: 0.61 - 1.67 pounds of sulfur per million British thermal unit.

High Sulfur: Over 1.67 pounds of sulfur per million British thermal unit.

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

Sources: Energy Information Administration, AEO2004 National Energy Modeling System runs INBASE.D040904A, INCA4P.D040904A, and INCA4PLO.D040904A.



**Table C10. Renewable Energy Generating Capacity and Generation**  
(Gigawatts, Unless Otherwise Noted)

Capacity and Generation	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Electric Power Sector<sup>1</sup></b>										
<b>Net Summer Capacity</b>										
Conventional Hydropower	78.29	78.69	78.69	78.69	78.68	78.68	78.68	78.68	78.68	78.68
Geothermal <sup>2</sup>	2.89	4.05	4.21	4.23	6.28	7.11	8.09	7.36	8.38	9.10
Municipal Solid Waste <sup>3</sup>	3.49	3.91	3.96	4.01	3.95	4.05	4.10	3.95	4.10	4.10
Wood and Other Biomass <sup>4,5</sup>	1.83	2.46	2.36	3.16	3.47	6.79	15.01	5.07	17.13	38.86
Solar Thermal	0.33	0.43	0.43	0.43	0.49	0.49	0.49	0.52	0.52	0.52
Solar Photovoltaic <sup>5</sup>	0.02	0.15	0.15	0.15	0.32	0.32	0.32	0.41	0.41	0.41
Wind	4.83	8.72	10.87	16.78	14.19	46.29	60.69	16.54	54.58	61.46
<b>Total</b>	<b>91.69</b>	<b>98.41</b>	<b>100.68</b>	<b>107.45</b>	<b>107.39</b>	<b>143.75</b>	<b>167.39</b>	<b>112.53</b>	<b>163.80</b>	<b>193.12</b>
<b>Generation (billion kilowatthours)</b>										
Conventional Hydropower	255.78	304.37	304.37	304.38	304.63	304.63	304.64	304.80	304.79	304.80
Geothermal <sup>2</sup>	13.36	23.54	24.83	24.93	41.95	48.67	56.23	50.84	58.90	64.30
Municipal Solid Waste <sup>3</sup>	20.02	28.09	28.45	28.82	28.44	29.24	29.63	28.50	29.70	29.70
Wood and Other Biomass <sup>5</sup>	8.67	24.21	28.78	30.03	30.79	43.22	92.59	34.56	106.87	251.14
Dedicated Plants	6.33	14.26	13.53	16.57	21.50	39.69	88.56	31.22	105.44	250.97
Cofiring	2.34	9.95	15.25	13.46	9.30	3.53	4.03	3.34	1.43	0.17
Solar Thermal	0.54	0.84	0.84	0.84	1.04	1.04	1.04	1.11	1.11	1.11
Solar Photovoltaic <sup>6</sup>	0.00	0.36	0.36	0.36	0.79	0.79	0.79	1.02	1.02	1.02
Wind	10.51	26.41	33.69	54.06	45.77	164.02	213.15	54.29	193.05	215.79
<b>Total</b>	<b>308.87</b>	<b>407.81</b>	<b>421.32</b>	<b>443.41</b>	<b>453.42</b>	<b>591.62</b>	<b>698.07</b>	<b>475.11</b>	<b>695.44</b>	<b>867.85</b>
<b>End-Use Sector</b>										
<b>Net Summer Capacity</b>										
<b>Combined Heat and Power<sup>7</sup></b>										
Municipal Solid Waste	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Biomass	3.91	5.36	5.35	5.35	7.27	7.25	7.25	8.04	8.03	8.03
<b>Total</b>	<b>4.16</b>	<b>5.61</b>	<b>5.60</b>	<b>5.60</b>	<b>7.52</b>	<b>7.51</b>	<b>7.50</b>	<b>8.29</b>	<b>8.28</b>	<b>8.28</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	1.02	1.02	1.02	1.02
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.04	0.40	0.40	0.40	0.85	0.93	0.90	1.52	1.69	1.73
<b>Total</b>	<b>1.06</b>	<b>1.42</b>	<b>1.42</b>	<b>1.42</b>	<b>1.88</b>	<b>1.95</b>	<b>1.93</b>	<b>2.54</b>	<b>2.72</b>	<b>2.75</b>
<b>Generation (billion kilowatthours)</b>										
<b>Combined Heat and Power<sup>7</sup></b>										
Municipal Solid Waste	1.84	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
Biomass	28.16	36.65	36.60	36.59	47.79	47.71	47.69	52.31	52.25	52.22
<b>Total</b>	<b>30.00</b>	<b>38.75</b>	<b>38.70</b>	<b>38.69</b>	<b>49.89</b>	<b>49.81</b>	<b>49.79</b>	<b>54.41</b>	<b>54.35</b>	<b>54.32</b>
<b>Other End-Use Generators<sup>8</sup></b>										
Conventional Hydropower <sup>9</sup>	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.09	0.86	0.86	0.86	1.84	2.00	1.94	3.25	3.60	3.67
<b>Total</b>	<b>4.20</b>	<b>4.97</b>	<b>4.97</b>	<b>4.96</b>	<b>5.95</b>	<b>6.11</b>	<b>6.05</b>	<b>7.35</b>	<b>7.71</b>	<b>7.78</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.

Note: Totals may not equal sum of components due to independent rounding. Data for 2002 are model results and may differ slightly from official EIA data reports. Net summer capacity has been estimated for nonutility generators for AEO2004. Net summer capacity is used to be consistent with electric utility capacity estimates. Additional retirements are determined on the basis of the size and age of the units.

Sources: 2002 capacity: Energy Information Administration (EIA), Form EIA-860: "Annual Electric Generator Report" (preliminary). 2002 generation: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). Projections: EIA, AEO2004 National Energy Modeling System runs INBASE.D040904A, INCA4P.D040904A, and INCA4PLO.D040904A.

**Table C11. Carbon Dioxide Emissions by Sector and Source**  
(Million Metric Tons)

Sector and Source	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Residential</b>										
Petroleum	104.0	110.6	110.6	110.6	107.4	107.5	107.5	104.7	104.8	104.9
Natural Gas	267.2	301.0	301.0	300.9	323.7	322.8	322.6	332.8	331.7	331.9
Coal	1.1	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1
Electricity	816.7	897.8	878.9	862.0	1010.7	935.1	889.7	1091.2	970.1	907.0
<b>Total</b>	<b>1189.0</b>	<b>1310.6</b>	<b>1291.6</b>	<b>1274.7</b>	<b>1443.0</b>	<b>1366.5</b>	<b>1320.9</b>	<b>1529.8</b>	<b>1407.7</b>	<b>1344.8</b>
<b>Commercial</b>										
Petroleum	52.6	66.9	67.0	67.0	70.8	71.1	71.2	72.6	73.1	73.2
Natural Gas	169.4	187.6	187.5	187.4	207.9	207.0	206.6	218.7	217.9	217.9
Coal	9.2	9.3	9.3	9.3	9.2	9.2	9.2	9.2	9.2	9.2
Electricity	778.0	930.8	912.1	894.9	1131.2	1044.6	995.3	1259.6	1116.7	1047.2
<b>Total</b>	<b>1009.1</b>	<b>1194.5</b>	<b>1175.9</b>	<b>1158.6</b>	<b>1419.1</b>	<b>1331.9</b>	<b>1282.4</b>	<b>1560.2</b>	<b>1416.9</b>	<b>1347.5</b>
<b>Industrial<sup>1</sup></b>										
Petroleum	412.8	366.4	366.0	366.0	409.8	410.8	410.0	428.7	429.7	429.4
Natural Gas <sup>2</sup>	432.7	519.2	519.3	519.5	591.7	594.5	596.2	629.8	635.5	640.3
Coal	185.1	194.6	194.2	194.2	185.8	184.7	184.4	183.4	182.1	181.7
Electricity	640.0	709.4	696.3	683.5	814.7	753.6	717.0	898.9	798.2	747.3
<b>Total</b>	<b>1670.6</b>	<b>1789.6</b>	<b>1775.8</b>	<b>1763.3</b>	<b>2002.0</b>	<b>1943.6</b>	<b>1907.7</b>	<b>2140.7</b>	<b>2045.5</b>	<b>1998.7</b>
<b>Transportation</b>										
Petroleum <sup>3</sup>	1811.2	2198.2	2198.9	2198.6	2611.3	2610.5	2609.9	2829.1	2827.0	2826.6
Natural Gas <sup>4</sup>	35.2	41.0	40.9	41.2	49.9	50.5	51.0	51.4	53.4	53.9
Other <sup>5</sup>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	14.2	16.6	16.3	16.0	19.8	18.5	17.7	22.3	20.0	18.8
<b>Total</b>	<b>1860.6</b>	<b>2255.7</b>	<b>2256.1</b>	<b>2255.8</b>	<b>2681.0</b>	<b>2679.5</b>	<b>2678.5</b>	<b>2902.7</b>	<b>2900.4</b>	<b>2899.3</b>
<b>Total Carbon Dioxide Emissions by Delivered Fuel</b>										
Petroleum <sup>3</sup>	2380.5	2742.1	2742.5	2742.2	3199.3	3199.9	3198.6	3435.0	3434.7	3434.1
Natural Gas	904.4	1048.8	1048.7	1049.0	1173.2	1174.8	1176.4	1232.7	1238.5	1243.9
Coal	195.4	205.0	204.6	204.6	196.1	195.0	194.8	193.7	192.4	191.9
Other <sup>5</sup>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	2249.0	2554.6	2503.6	2456.6	2976.5	2751.8	2619.7	3271.9	2905.1	2720.2
<b>Total</b>	<b>5729.3</b>	<b>6550.5</b>	<b>6499.4</b>	<b>6452.4</b>	<b>7545.1</b>	<b>7321.5</b>	<b>7189.5</b>	<b>8133.4</b>	<b>7770.6</b>	<b>7590.3</b>
<b>Electric Power<sup>6</sup></b>										
Petroleum	72.2	50.6	31.4	29.0	61.2	40.8	33.7	60.8	42.0	33.1
Natural Gas	299.1	358.5	361.4	366.9	460.5	490.4	495.0	450.0	527.0	521.1
Coal	1877.8	2145.4	2110.8	2060.7	2454.7	2220.7	2091.0	2761.1	2336.1	2166.0
<b>Total</b>	<b>2249.0</b>	<b>2554.6</b>	<b>2503.6</b>	<b>2456.6</b>	<b>2976.5</b>	<b>2751.8</b>	<b>2619.7</b>	<b>3271.9</b>	<b>2905.1</b>	<b>2720.2</b>
<b>Total Carbon Dioxide Emissions by Primary Fuel<sup>7</sup></b>										
Petroleum <sup>3</sup>	2452.7	2792.7	2773.9	2771.2	3260.5	3240.7	3232.4	3495.9	3476.7	3467.2
Natural Gas	1203.4	1407.4	1410.1	1416.0	1633.8	1665.1	1671.4	1682.7	1765.5	1765.0
Coal	2073.2	2350.4	2315.4	2265.2	2650.8	2415.7	2285.8	2954.8	2528.5	2358.0
Other <sup>5</sup>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>5729.4</b>	<b>6550.5</b>	<b>6499.4</b>	<b>6452.4</b>	<b>7545.1</b>	<b>7321.5</b>	<b>7189.5</b>	<b>8133.4</b>	<b>7770.6</b>	<b>7590.3</b>
<b>Carbon Dioxide Emissions (tons per person)</b>										
	<b>19.8</b>	<b>21.2</b>	<b>21.0</b>	<b>20.9</b>	<b>22.5</b>	<b>21.9</b>	<b>21.5</b>	<b>23.4</b>	<b>22.4</b>	<b>21.8</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 electric power generators are distributed to the primary fuels.  
Note: Totals may not equal sum of components due to independent rounding. Data for 2002 are model results and may differ slightly from official EIA data reports.  
**Sources:** 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 runs INBASE.D040904A, INCA4P.D040904A, and INCA4PLO.D040904A.

**Table C12. Emissions, Allowance Prices, and Emission Controls in the Electric Power Sector**

Supply and Disposition	2002	Projections								
		2010			2020			2025		
		Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic	Reference	Carper Intl	Carper Domestic
<b>Emissions</b>										
Nitrogen Oxides (million tons) . . . . .	4.39	3.48	1.81	1.80	3.66	1.70	1.70	3.72	1.70	1.70
Sulfur Dioxide (million tons) . . . . .	10.19	9.62	5.33	5.32	8.95	3.31	3.28	8.95	2.84	2.86
From Coal . . . . .	9.95	9.41	5.22	5.23	8.72	3.25	3.22	8.73	2.78	2.80
From Oil/Other . . . . .	0.24	0.21	0.11	0.10	0.23	0.07	0.05	0.21	0.05	0.05
Mercury (tons) . . . . .	50.81	52.60	24.00	24.00	53.50	10.00	10.00	54.60	10.00	10.00
Carbon Dioxide (million metric tons) . . .	2248.9	2554.56	2503.62	2456.57	2976.48	2751.83	2619.74	3271.93	2905.06	2720.25
<b>Allowance Prices</b>										
Nitrogen Oxides (2002 dollars per ton)										
Regional/Seasonal . . . . .	0.00	4347.54	0.00	0.00	4929.66	0.00	0.00	5114.85	0.00	0.00
East/Annual . . . . .	0.00	0.00	1987.48	1992.57	0.00	1718.99	1665.24	0.00	1856.76	1791.73
West/Annual . . . . .	0.00	0.00	1987.51	1992.60	0.00	1719.01	1665.26	0.00	1856.77	1791.75
Sulfur Dioxide										
(2002 dollars per ton) . . . . .	108.61	150.41	905.76	898.22	258.59	1715.76	1867.84	173.48	2064.34	1792.45
Mercury										
(thousand 2002 dollars per pound) . . . .	0.00	0.00	16.56	16.55	0.00	63.52	55.52	0.00	68.60	55.35
Carbon Dioxide (2002 dollars per million metric ton) . . . . .	0.00	0.00	1.27	6.04	0.00	5.78	14.60	0.00	7.31	16.67
<b>Retrofits (gigawatts)</b>										
Scrubber <sup>6</sup>										
Planned . . . . .	2.26	20.20	20.20	20.20	23.05	23.05	23.05	23.05	23.05	23.05
Unplanned . . . . .	0.00	1.60	53.46	51.50	1.60	114.17	106.49	1.60	126.74	122.72
Total . . . . .	2.26	21.80	73.66	71.69	24.65	137.22	129.54	24.65	149.79	145.77
Nitrogen Oxides Controls										
Combustion . . . . .	0.00	14.85	24.38	26.01	15.41	28.30	29.62	15.76	28.30	29.62
SCR Post-combustion . . . . .	6.32	82.04	157.15	153.95	90.14	164.27	157.57	92.89	164.58	158.96
SNCR Post-combustion . . . . .	0.00	11.43	8.87	9.34	16.75	11.97	10.84	22.81	14.10	13.27
<b>Coal Production by Sulfur Category (million tons)</b>										
Low Sulfur (< .61 lbs per million Btu) . .	527.04	607.94	650.50	638.60	747.05	702.19	670.68	870.88	755.06	687.17
Medium Sulfur . . . . .	422.96	424.57	371.97	372.20	415.78	393.41	386.66	434.80	388.75	382.69
High Sulfur (> 1.67 lbs per million Btu) .	155.38	192.53	178.11	179.27	210.16	143.73	135.18	226.54	150.00	160.19
<b>Interregional Sulfur Dioxide Allowances</b>										
Target (million tons) . . . . .	9.48	8.95	4.50	4.50	8.95	2.25	2.25	8.95	2.25	2.25
Cumulative Banked Allowances . . . . .	9.23	2.38	18.37	18.14	0.00	9.01	8.95	0.00	4.86	4.73
<b>Coal Characteristics</b>										
SO <sub>2</sub> Content (lbs per million Btu) . . . . .	1.86	1.89	1.81	1.85	1.82	1.68	1.71	1.78	1.66	1.79
Mercury Content (lbs per trillion Btu) . . .	7.55	7.23	6.99	7.12	7.00	6.78	6.95	6.91	6.66	6.96
<b>ACI Controls (gigawatts)</b>										
Spray Cooling . . . . .	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Supplemental Fabric Filter . . . . .	0.00	0.00	39.91	41.98	0.00	139.89	137.52	0.00	141.66	138.50
<b>ACI Mercury Removal (tons) . . . . .</b>	<b>0.00</b>	<b>0.00</b>	<b>15.86</b>	<b>15.44</b>	<b>0.00</b>	<b>25.53</b>	<b>24.35</b>	<b>0.00</b>	<b>25.46</b>	<b>23.95</b>
<b>Allowance Revenues (billion 2002 dollars)</b>										
Nitrogen Oxides . . . . .	0.00	2.06	3.72	3.73	2.33	2.92	2.83	2.42	3.16	3.05
Sulfur Dioxide . . . . .	1.42	1.61	4.69	4.83	2.67	5.48	5.63	1.90	5.22	3.98
Mercury . . . . .	0.00	0.00	1.00	0.89	0.00	1.23	1.10	0.00	1.15	1.10
Carbon Dioxide . . . . .	0.00	0.00	3.19	14.84	0.00	15.92	38.24	0.00	21.25	45.34
<b>Total . . . . .</b>	<b>1.42</b>	<b>3.67</b>	<b>12.59</b>	<b>24.28</b>	<b>5.00</b>	<b>25.55</b>	<b>47.80</b>	<b>4.32</b>	<b>30.77</b>	<b>53.46</b>

ACI: Activated carbon injection.

SCR: Selective catalytic reduction.

SNCR: Selective non-catalytic reduction.

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

Sources: Energy Information Administration, AEO2004 National Energy Modeling System runs INBASE.D040904A, INCA4P.D040904A, and INCA4PLO.D040904A.