

Appendix F

**Reference case projections  
by end-use sector and country grouping**

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**Table F1. Total world delivered energy consumption by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	9.1	9.2	10.0	9.8	9.5	9.3	9.0	-0.1
Natural gas	19.9	19.4	22.8	24.6	26.2	27.4	28.1	1.3
Coal	4.7	4.8	4.5	4.3	4.1	4.1	4.0	-0.6
Electricity	18.0	18.4	22.5	25.5	28.6	32.0	35.8	2.4
Renewables	0.7	1.3	1.3	1.3	1.3	1.3	1.4	0.3
<b>Total</b>	<b>52.4</b>	<b>53.0</b>	<b>61.1</b>	<b>65.4</b>	<b>69.8</b>	<b>74.1</b>	<b>78.3</b>	<b>1.4</b>
<b>Commercial</b>								
Liquids	3.9	3.9	4.4	4.4	4.5	4.5	4.5	0.5
Natural gas	8.6	8.4	9.8	10.3	10.8	11.0	10.9	0.9
Coal	1.2	1.5	1.5	1.5	1.5	1.5	1.6	0.2
Electricity	15.2	15.4	18.6	20.8	23.1	25.6	28.1	2.2
Renewables	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5
<b>Total</b>	<b>29.0</b>	<b>29.3</b>	<b>34.5</b>	<b>37.2</b>	<b>40.0</b>	<b>42.7</b>	<b>45.2</b>	<b>1.6</b>
<b>Industrial</b>								
Liquids	65.3	66.5	72.2	76.5	80.6	84.6	88.6	1.0
Natural gas	49.1	50.7	56.2	62.0	68.0	74.5	80.4	1.7
Coal	54.5	55.7	62.0	64.3	66.0	67.5	68.7	0.7
Electricity	31.5	31.9	37.2	40.0	42.2	44.3	46.3	1.3
Renewables	16.6	17.4	18.2	19.7	21.3	23.0	25.1	1.3
<b>Total</b>	<b>217.0</b>	<b>222.3</b>	<b>245.8</b>	<b>262.6</b>	<b>278.0</b>	<b>294.0</b>	<b>309.1</b>	<b>1.2</b>
<b>Transportation</b>								
Liquids	99.0	100.3	110.0	115.3	121.0	128.4	136.8	1.1
Natural gas	3.3	3.3	5.0	6.6	9.3	12.3	16.1	5.8
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.6	0.6	0.8	1.0	1.2	1.5	2.0	4.4
<b>Total</b>	<b>102.8</b>	<b>104.2</b>	<b>115.8</b>	<b>122.9</b>	<b>131.6</b>	<b>142.2</b>	<b>154.8</b>	<b>1.4</b>
<b>All end-use sectors</b>								
Liquids	177.3	180.0	196.3	205.7	215.3	226.3	238.5	1.0
Natural gas	80.9	81.8	93.9	103.6	114.3	125.3	135.4	1.8
Coal	60.4	62.0	68.0	70.1	71.6	73.1	74.3	0.6
Electricity	65.2	66.3	79.1	87.3	95.1	103.4	112.2	1.9
Renewables	17.4	18.8	19.7	21.2	22.7	24.5	26.6	1.2
Delivered energy	<b>401.3</b>	<b>408.9</b>	<b>456.9</b>	<b>487.8</b>	<b>519.1</b>	<b>552.7</b>	<b>587.0</b>	<b>1.3</b>
Electricity-related losses	139.3	140.4	172.1	186.1	198.7	212.9	227.9	1.7
<b>Total</b>	<b>540.5</b>	<b>549.3</b>	<b>628.9</b>	<b>673.9</b>	<b>717.7</b>	<b>765.6</b>	<b>815.0</b>	<b>1.4</b>
<b>Electric power<sup>a</sup></b>								
Liquids	7.8	8.4	7.3	6.1	5.5	5.2	5.0	-1.8
Natural gas	40.0	41.8	44.4	51.3	58.8	67.3	76.0	2.2
Coal	91.4	91.1	100.7	103.0	102.8	103.9	105.9	0.5
Nuclear	26.2	24.5	30.9	34.6	40.2	43.4	46.0	2.3
Renewables	43.0	45.0	67.3	77.6	85.4	94.9	104.8	3.1
<b>Total</b>	<b>208.4</b>	<b>210.7</b>	<b>250.6</b>	<b>272.6</b>	<b>292.7</b>	<b>314.7</b>	<b>337.7</b>	<b>1.7</b>
<b>Unspecified sector</b>	<b>-3.4</b>	<b>-3.6</b>	<b>0.3</b>	<b>0.4</b>	<b>0.7</b>	<b>1.3</b>	<b>2.1</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	180.3	183.6	204.2	212.5	221.8	233.2	246.0	1.1
Natural gas	121.6	124.2	138.3	154.8	173.1	192.5	211.4	1.9
Coal	152.0	153.3	168.6	173.2	174.4	176.9	180.2	0.6
Nuclear	26.2	24.5	30.9	34.6	40.2	43.4	46.0	2.3
Renewables	60.4	63.8	87.0	98.8	108.1	119.5	131.4	2.6
<b>Total</b>	<b>540.5</b>	<b>549.3</b>	<b>628.9</b>	<b>673.9</b>	<b>717.7</b>	<b>765.6</b>	<b>815.0</b>	<b>1.4</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** EIA, *Annual Energy Outlook 2015*, DOE/EIA-0383(2015) (Washington, DC: April 2015); AEO2015 National Energy Modeling System, run REF2015, D021915A, [www.eia.gov/aeo](http://www.eia.gov/aeo); and World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.

**Table F2. Total OECD delivered energy consumption by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	4.1	4.0	4.1	4.0	3.9	3.7	3.6	-0.3
Natural gas	11.4	11.0	12.4	12.8	13.2	13.3	13.1	0.6
Coal	0.8	0.7	0.7	0.7	0.7	0.7	0.6	-0.3
Electricity	10.4	10.3	11.2	11.7	12.3	13.0	13.6	1.0
Renewables	0.7	0.6	0.6	0.6	0.6	0.5	0.5	-0.3
<b>Total</b>	<b>27.4</b>	<b>26.6</b>	<b>29.0</b>	<b>29.8</b>	<b>30.6</b>	<b>31.2</b>	<b>31.6</b>	<b>0.6</b>
<b>Commercial</b>								
Liquids	2.6	2.5	2.8	2.8	2.7	2.7	2.7	0.2
Natural gas	6.8	6.6	7.6	7.8	8.0	8.1	8.0	0.7
Coal	0.2	0.3	0.3	0.3	0.3	0.3	0.3	-0.3
Electricity	10.5	10.5	11.9	12.8	13.8	14.8	16.0	1.5
Renewables	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5
<b>Total</b>	<b>20.2</b>	<b>20.0</b>	<b>22.8</b>	<b>23.8</b>	<b>25.0</b>	<b>26.1</b>	<b>27.1</b>	<b>1.1</b>
<b>Industrial</b>								
Liquids	27.4	27.2	28.9	29.8	30.3	30.4	30.6	0.4
Natural gas	20.8	21.0	22.7	23.4	24.2	24.9	25.7	0.7
Coal	8.7	8.5	8.7	8.8	8.9	9.0	9.0	0.2
Electricity	11.2	10.9	11.6	12.1	12.5	12.8	13.2	0.7
Renewables	5.3	5.7	5.7	5.8	5.9	5.9	6.1	0.2
<b>Total</b>	<b>73.4</b>	<b>73.3</b>	<b>77.6</b>	<b>80.0</b>	<b>81.7</b>	<b>83.0</b>	<b>84.6</b>	<b>0.5</b>
<b>Transportation</b>								
Liquids	57.0	56.2	56.6	55.5	55.4	56.0	56.9	0.0
Natural gas	1.0	1.0	1.2	1.4	1.8	2.2	2.9	4.0
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.2	0.2	0.3	0.3	0.4	0.5	0.7	3.5
<b>Total</b>	<b>58.2</b>	<b>57.5</b>	<b>58.1</b>	<b>57.3</b>	<b>57.5</b>	<b>58.7</b>	<b>60.5</b>	<b>0.2</b>
<b>All end-use sectors</b>								
Liquids	91.1	90.0	92.1	91.7	91.9	92.5	93.5	0.1
Natural gas	40.0	39.6	43.9	45.5	47.2	48.6	49.7	0.8
Coal	9.6	9.5	9.7	9.8	9.9	9.9	10.0	0.2
Electricity	32.3	31.9	35.0	37.0	38.9	41.1	43.5	1.1
Renewables	6.1	6.4	6.4	6.5	6.6	6.6	6.7	0.2
Delivered energy	<b>179.2</b>	<b>177.4</b>	<b>187.1</b>	<b>190.5</b>	<b>194.5</b>	<b>198.7</b>	<b>203.4</b>	<b>0.5</b>
Electricity-related losses	62.8	61.0	66.8	70.1	72.8	75.6	78.7	0.9
<b>Total</b>	<b>242.0</b>	<b>238.4</b>	<b>253.9</b>	<b>260.6</b>	<b>267.2</b>	<b>274.3</b>	<b>282.1</b>	<b>0.6</b>
<b>Electric power<sup>a</sup></b>								
Liquids	1.7	1.9	1.3	0.9	0.9	0.8	0.8	-3.0
Natural gas	19.1	19.7	19.2	21.6	24.5	27.3	30.8	1.6
Coal	33.9	32.2	34.0	34.2	33.4	33.0	32.8	0.1
Nuclear	21.2	19.3	21.3	22.1	23.0	23.1	22.5	0.6
Renewables	20.1	20.6	29.0	31.4	33.3	35.9	38.8	2.3
<b>Total</b>	<b>96.1</b>	<b>93.8</b>	<b>104.9</b>	<b>110.2</b>	<b>115.0</b>	<b>120.1</b>	<b>125.8</b>	<b>1.1</b>
<b>Unspecified sector</b>	<b>-0.8</b>	<b>-0.7</b>	<b>-3.4</b>	<b>-3.5</b>	<b>-3.6</b>	<b>-3.8</b>	<b>-3.9</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	91.7	90.9	90.4	89.5	89.5	90.0	90.8	0.0
Natural gas	59.2	59.5	63.1	67.1	71.7	75.9	80.5	1.1
Coal	43.6	41.8	43.7	44.0	43.3	42.9	42.7	0.1
Nuclear	21.2	19.3	21.3	22.1	23.0	23.1	22.5	0.6
Renewables	26.3	27.0	35.5	37.9	39.8	42.5	45.5	1.9
<b>Total</b>	<b>242.0</b>	<b>238.4</b>	<b>253.9</b>	<b>260.6</b>	<b>267.2</b>	<b>274.3</b>	<b>282.1</b>	<b>0.6</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** EIA, *Annual Energy Outlook 2015*, DOE/EIA-0383(2015) (Washington, DC: April 2015); AEO2015 National Energy Modeling System, run REF2015, D021915A, [www.eia.gov/aeo](http://www.eia.gov/aeo); and World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.

**Table F3. Delivered energy consumption in the United States by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	1.1	0.9	0.7	0.7	0.6	0.5	0.5	-2.1
Natural gas	4.8	4.3	4.6	4.5	4.5	4.4	4.3	0.1
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	4.9	4.7	4.9	4.9	5.1	5.2	5.4	0.5
Renewables	0.5	0.4	0.4	0.4	0.4	0.4	0.4	-0.8
<b>Total</b>	<b>11.3</b>	<b>10.3</b>	<b>10.6</b>	<b>10.5</b>	<b>10.6</b>	<b>10.6</b>	<b>10.6</b>	<b>0.1</b>
<b>Commercial</b>								
Liquids	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.0
Natural gas	3.2	3.0	3.3	3.3	3.4	3.6	3.7	0.8
Coal	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Electricity	4.5	4.5	4.8	5.0	5.2	5.4	5.7	0.8
Renewables	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5
<b>Total</b>	<b>8.6</b>	<b>8.2</b>	<b>8.9</b>	<b>9.1</b>	<b>9.4</b>	<b>9.7</b>	<b>10.1</b>	<b>0.7</b>
<b>Industrial</b>								
Liquids	8.0	8.1	9.6	10.2	10.4	10.5	10.6	1.0
Natural gas	8.5	8.8	10.2	10.4	10.7	10.9	11.2	0.9
Coal	1.5	1.5	1.5	1.5	1.5	1.4	1.4	-0.1
Electricity	3.4	3.4	3.7	4.0	4.0	4.1	4.1	0.7
Renewables	2.2	2.2	2.3	2.4	2.4	2.4	2.5	0.4
<b>Total</b>	<b>23.6</b>	<b>24.0</b>	<b>27.4</b>	<b>28.6</b>	<b>29.1</b>	<b>29.3</b>	<b>29.8</b>	<b>0.8</b>
<b>Transportation</b>								
Liquids	25.9	25.3	26.3	25.6	25.0	24.9	24.8	-0.1
Natural gas	0.7	0.8	0.9	1.0	1.1	1.3	1.7	2.7
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.0	0.0	0.0	0.0	0.0	0.1	0.1	3.4
<b>Total</b>	<b>26.7</b>	<b>26.2</b>	<b>27.2</b>	<b>26.6</b>	<b>26.2</b>	<b>26.2</b>	<b>26.5</b>	<b>0.0</b>
<b>All end-use sectors</b>								
Liquids	35.6	34.9	36.9	36.7	36.3	36.1	36.0	0.1
Natural gas	17.3	16.8	19.0	19.3	19.8	20.2	20.9	0.8
Coal	1.6	1.5	1.6	1.6	1.5	1.5	1.5	0.0
Electricity	12.8	12.6	13.4	13.9	14.3	14.7	15.3	0.7
Renewables	2.8	2.8	2.9	2.9	2.9	2.9	3.0	0.2
Delivered energy	<b>70.1</b>	<b>68.7</b>	<b>73.8</b>	<b>74.4</b>	<b>74.9</b>	<b>75.4</b>	<b>76.6</b>	<b>0.4</b>
Electricity-related losses	26.7	25.7	27.0	27.6	28.0	28.5	29.1	0.4
<b>Total</b>	<b>96.8</b>	<b>94.4</b>	<b>100.8</b>	<b>102.0</b>	<b>102.9</b>	<b>103.8</b>	<b>105.7</b>	<b>0.4</b>
<b>Electric power<sup>a</sup></b>								
Liquids	0.3	0.2	0.2	0.2	0.2	0.2	0.2	-0.9
Natural gas	7.7	9.3	7.8	8.3	9.0	9.4	9.6	0.1
Coal	18.0	15.8	17.6	17.8	17.6	17.5	17.5	0.4
Nuclear	8.3	8.1	8.4	8.5	8.5	8.5	8.7	0.3
Renewables	5.1	4.9	6.5	6.8	7.1	7.6	8.3	1.9
<b>Total</b>	<b>39.5</b>	<b>38.3</b>	<b>40.4</b>	<b>41.5</b>	<b>42.4</b>	<b>43.2</b>	<b>44.4</b>	<b>0.5</b>
<b>Unspecified sector</b>	<b>0.0</b>	<b>0.0</b>	<b>-0.3</b>	<b>-0.4</b>	<b>-0.4</b>	<b>-0.4</b>	<b>-0.4</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	35.9	35.2	37.1	36.9	36.5	36.3	36.2	0.1
Natural gas	25.0	26.1	26.8	27.6	28.8	29.6	30.5	0.6
Coal	19.6	17.3	19.2	19.3	19.2	19.0	19.0	0.3
Nuclear	8.3	8.1	8.4	8.5	8.5	8.5	8.7	0.3
Renewables	7.9	7.7	9.3	9.7	9.9	10.4	11.3	1.4
<b>Total</b>	<b>96.8</b>	<b>94.4</b>	<b>100.8</b>	<b>102.0</b>	<b>102.9</b>	<b>103.8</b>	<b>105.7</b>	<b>0.4</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: EIA, *Annual Energy Outlook 2015*, DOE/EIA-0383(2015) (Washington, DC: April 2015); AEO2015 National Energy Modeling System, run REF2015.D021915A, [www.eia.gov/aeo](http://www.eia.gov/aeo).

**Table F4. Delivered energy consumption in Canada by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Natural gas	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.2
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	0.6	0.6	0.6	0.7	0.7	0.7	0.8	1.2
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
<b>Total</b>	<b>1.3</b>	<b>1.3</b>	<b>1.3</b>	<b>1.4</b>	<b>1.4</b>	<b>1.5</b>	<b>1.5</b>	<b>0.7</b>
<b>Commercial</b>								
Liquids	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Natural gas	0.5	0.4	0.4	0.4	0.4	0.3	0.3	-1.2
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.5	0.5	0.7	0.8	0.9	1.0	1.2	2.8
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
<b>Total</b>	<b>1.2</b>	<b>1.1</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	<b>1.4</b>
<b>Industrial</b>								
Liquids	1.9	1.9	1.8	1.8	1.9	1.9	2.0	0.2
Natural gas	2.1	2.2	2.3	2.4	2.5	2.7	2.8	0.9
Coal	0.1	0.2	0.2	0.2	0.2	0.2	0.2	1.3
Electricity	0.7	0.7	0.7	0.7	0.8	0.8	0.9	1.0
Renewables	0.5	0.4	0.4	0.4	0.4	0.4	0.4	-0.3
<b>Total</b>	<b>5.3</b>	<b>5.4</b>	<b>5.3</b>	<b>5.5</b>	<b>5.8</b>	<b>6.1</b>	<b>6.3</b>	<b>0.6</b>
<b>Transportation</b>								
Liquids	2.4	2.4	2.3	2.2	2.2	2.3	2.4	-0.1
Natural gas	0.1	0.1	0.1	0.1	0.1	0.2	0.2	2.4
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6
<b>Total</b>	<b>2.5</b>	<b>2.5</b>	<b>2.4</b>	<b>2.3</b>	<b>2.3</b>	<b>2.4</b>	<b>2.5</b>	<b>0.0</b>
<b>All end-use sectors</b>								
Liquids	4.5	4.5	4.3	4.3	4.3	4.4	4.6	0.0
Natural gas	3.4	3.4	3.3	3.4	3.6	3.8	4.0	0.6
Coal	0.1	0.2	0.2	0.2	0.2	0.2	0.2	1.3
Electricity	1.8	1.8	2.0	2.2	2.4	2.6	2.9	1.7
Renewables	0.5	0.4	0.4	0.4	0.4	0.4	0.4	-0.3
Delivered energy	<b>10.3</b>	<b>10.3</b>	<b>10.2</b>	<b>10.5</b>	<b>10.9</b>	<b>11.5</b>	<b>12.0</b>	<b>0.6</b>
Electricity-related losses	4.2	4.2	4.9	5.1	5.3	5.6	6.0	1.3
<b>Total</b>	<b>14.5</b>	<b>14.5</b>	<b>15.1</b>	<b>15.6</b>	<b>16.3</b>	<b>17.1</b>	<b>18.1</b>	<b>0.8</b>
<b>Electric power<sup>a</sup></b>								
Liquids	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.9
Natural gas	0.5	0.5	0.7	1.0	1.3	1.6	1.9	4.9
Coal	0.6	0.6	0.4	0.4	0.2	0.2	0.1	-5.2
Nuclear	1.0	1.0	1.0	0.8	0.8	0.8	0.7	-1.2
Renewables	3.9	3.8	4.4	4.7	5.1	5.4	5.9	1.6
<b>Total</b>	<b>6.0</b>	<b>5.9</b>	<b>6.6</b>	<b>7.0</b>	<b>7.4</b>	<b>8.0</b>	<b>8.6</b>	<b>1.4</b>
<b>Unspecified sector</b>	<b>0.1</b>	<b>0.1</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	4.6	4.7	4.7	4.6	4.6	4.7	4.9	0.2
Natural gas	3.9	3.9	4.0	4.4	4.9	5.4	5.8	1.5
Coal	0.7	0.7	0.6	0.6	0.4	0.4	0.4	-2.5
Nuclear	1.0	1.0	1.0	0.8	0.8	0.8	0.7	-1.2
Renewables	4.3	4.2	4.8	5.1	5.5	5.8	6.3	1.4
<b>Total</b>	<b>14.5</b>	<b>14.5</b>	<b>15.1</b>	<b>15.6</b>	<b>16.3</b>	<b>17.1</b>	<b>18.1</b>	<b>0.8</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.

**Table F5. Delivered energy consumption in Mexico and Chile by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.0
Natural gas	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.6
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	0.2	0.2	0.3	0.4	0.5	0.6	0.7	3.7
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
<b>Total</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>	<b>1.1</b>	<b>1.9</b>
<b>Commercial</b>								
Liquids	0.1	0.1	0.1	0.1	0.2	0.2	0.2	3.0
Natural gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	0.1	0.1	0.2	0.2	0.3	0.3	0.4	4.3
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
<b>Total</b>	<b>0.2</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.5</b>	<b>0.6</b>	<b>3.6</b>
<b>Industrial</b>								
Liquids	1.5	1.5	1.5	1.5	1.7	1.8	2.0	1.1
Natural gas	1.6	1.6	1.6	1.6	1.8	1.9	2.0	0.9
Coal	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.7
Electricity	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.7
Renewables	0.2	0.3	0.4	0.4	0.4	0.5	0.5	1.7
<b>Total</b>	<b>4.1</b>	<b>4.1</b>	<b>4.2</b>	<b>4.4</b>	<b>4.8</b>	<b>5.2</b>	<b>5.7</b>	<b>1.2</b>
<b>Transportation</b>								
Liquids	2.7	2.8	2.9	3.0	3.2	3.5	3.8	1.1
Natural gas	0.0	0.0	0.0	0.0	0.0	0.1	0.2	21.3
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2
<b>Total</b>	<b>2.7</b>	<b>2.8</b>	<b>2.9</b>	<b>3.0</b>	<b>3.2</b>	<b>3.6</b>	<b>4.0</b>	<b>1.2</b>
<b>All end-use sectors</b>								
Liquids	4.7	4.7	4.9	5.1	5.4	5.8	6.3	1.1
Natural gas	1.7	1.7	1.7	1.7	1.9	2.1	2.3	1.2
Coal	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.6
Electricity	1.0	1.0	1.2	1.3	1.6	1.8	2.1	2.6
Renewables	0.2	0.3	0.4	0.4	0.4	0.5	0.5	1.7
Delivered energy	<b>7.7</b>	<b>7.8</b>	<b>8.3</b>	<b>8.7</b>	<b>9.4</b>	<b>10.3</b>	<b>11.4</b>	<b>1.4</b>
Electricity-related losses	1.6	1.4	1.5	1.8	2.2	2.5	2.9	2.7
<b>Total</b>	<b>9.3</b>	<b>9.2</b>	<b>9.8</b>	<b>10.5</b>	<b>11.6</b>	<b>12.8</b>	<b>14.3</b>	<b>1.6</b>
<b>Electric power<sup>a</sup></b>								
Liquids	0.4	0.5	0.3	0.1	0.1	0.1	0.1	-5.6
Natural gas	1.3	1.1	1.3	1.7	2.0	2.4	2.8	3.3
Coal	0.5	0.5	0.5	0.5	0.4	0.4	0.5	-0.2
Nuclear	0.1	0.1	0.1	0.1	0.2	0.2	0.3	4.2
Renewables	0.7	0.7	1.1	1.4	1.6	1.9	2.2	4.4
<b>Total</b>	<b>3.0</b>	<b>2.8</b>	<b>3.3</b>	<b>3.8</b>	<b>4.4</b>	<b>5.0</b>	<b>5.8</b>	<b>2.7</b>
<b>Unspecified sector</b>	<b>-0.4</b>	<b>-0.4</b>	<b>-0.6</b>	<b>-0.6</b>	<b>-0.7</b>	<b>-0.7</b>	<b>-0.8</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	4.8	4.8	4.7	4.6	4.8	5.2	5.6	0.6
Natural gas	2.9	2.8	3.0	3.5	3.9	4.5	5.1	2.2
Coal	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.3
Nuclear	0.1	0.1	0.1	0.1	0.2	0.2	0.3	4.2
Renewables	0.9	1.0	1.5	1.8	2.1	2.4	2.7	3.7
<b>Total</b>	<b>9.3</b>	<b>9.2</b>	<b>9.8</b>	<b>10.5</b>	<b>11.6</b>	<b>12.8</b>	<b>14.3</b>	<b>1.6</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.

**Table F6. Delivered energy consumption in OECD Europe by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	1.9	1.8	2.0	2.0	2.0	1.9	1.9	0.1
Natural gas	4.9	5.2	6.0	6.4	6.7	6.9	6.8	1.0
Coal	0.7	0.7	0.7	0.6	0.6	0.6	0.6	-0.4
Electricity	3.1	3.2	3.6	3.9	4.2	4.4	4.7	1.4
Renewables	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.8
<b>Total</b>	<b>10.8</b>	<b>11.0</b>	<b>12.5</b>	<b>13.1</b>	<b>13.6</b>	<b>14.0</b>	<b>14.2</b>	<b>0.9</b>
<b>Commercial</b>								
Liquids	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0
Natural gas	2.1	2.2	2.7	2.8	3.0	3.0	2.8	0.9
Coal	0.1	0.3	0.3	0.2	0.2	0.2	0.2	-0.5
Electricity	3.2	3.3	3.8	4.1	4.5	4.9	5.4	1.8
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
<b>Total</b>	<b>6.2</b>	<b>6.5</b>	<b>7.5</b>	<b>8.0</b>	<b>8.5</b>	<b>8.9</b>	<b>9.2</b>	<b>1.3</b>
<b>Industrial</b>								
Liquids	9.1	8.7	8.7	8.8	9.0	9.0	9.1	0.2
Natural gas	6.7	6.5	6.5	6.7	6.8	6.9	6.9	0.2
Coal	3.2	3.1	3.0	3.1	3.1	3.1	3.2	0.1
Electricity	4.4	4.2	4.3	4.4	4.5	4.6	4.6	0.3
Renewables	1.9	1.9	1.9	1.9	1.9	1.9	1.9	-0.1
<b>Total</b>	<b>25.1</b>	<b>24.4</b>	<b>24.4</b>	<b>24.9</b>	<b>25.3</b>	<b>25.5</b>	<b>25.6</b>	<b>0.2</b>
<b>Transportation</b>								
Liquids	18.8	18.4	18.3	17.9	18.1	18.4	18.8	0.1
Natural gas	0.1	0.1	0.1	0.2	0.3	0.5	0.6	8.8
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.1	0.1	0.1	0.1	0.2	0.3	0.4	4.0
<b>Total</b>	<b>19.0</b>	<b>18.6</b>	<b>18.5</b>	<b>18.2</b>	<b>18.6</b>	<b>19.1</b>	<b>19.8</b>	<b>0.2</b>
<b>All end-use sectors</b>								
Liquids	30.5	29.7	29.8	29.6	29.8	30.1	30.5	0.1
Natural gas	13.8	13.9	15.3	16.1	16.8	17.2	17.2	0.8
Coal	4.0	4.0	4.0	4.0	4.0	4.0	4.0	0.0
Electricity	10.8	10.9	11.8	12.6	13.3	14.1	15.1	1.2
Renewables	2.0	2.1	2.0	2.0	2.1	2.0	2.0	-0.1
Delivered energy	<b>61.1</b>	<b>60.6</b>	<b>62.9</b>	<b>64.2</b>	<b>66.0</b>	<b>67.5</b>	<b>68.8</b>	<b>0.5</b>
Electricity-related losses	20.8	20.8	22.0	23.2	24.3	25.6	26.7	0.9
<b>Total</b>	<b>82.0</b>	<b>81.4</b>	<b>84.9</b>	<b>87.5</b>	<b>90.3</b>	<b>93.1</b>	<b>95.5</b>	<b>0.6</b>
<b>Electric power<sup>a</sup></b>								
Liquids	0.4	0.5	0.4	0.4	0.4	0.4	0.4	-0.8
Natural gas	5.4	4.3	4.4	5.0	6.1	7.1	8.9	2.6
Coal	8.9	9.4	9.2	9.4	9.1	8.8	8.6	-0.3
Nuclear	8.8	8.6	7.9	8.3	8.8	9.0	8.5	0.0
Renewables	8.7	9.5	13.7	14.6	15.2	16.4	17.5	2.2
<b>Total</b>	<b>32.1</b>	<b>32.2</b>	<b>35.7</b>	<b>37.8</b>	<b>39.6</b>	<b>41.8</b>	<b>43.9</b>	<b>1.1</b>
<b>Unspecified sector</b>	<b>-0.3</b>	<b>-0.5</b>	<b>-1.9</b>	<b>-2.0</b>	<b>-2.0</b>	<b>-2.1</b>	<b>-2.1</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	30.4	29.6	28.3	28.0	28.2	28.5	28.8	-0.1
Natural gas	19.2	18.3	19.7	21.1	23.0	24.3	26.1	1.3
Coal	12.9	13.4	13.2	13.3	13.1	12.8	12.6	-0.2
Nuclear	8.8	8.6	7.9	8.3	8.8	9.0	8.5	0.0
Renewables	10.7	11.5	15.7	16.7	17.3	18.5	19.6	1.9
<b>Total</b>	<b>82.0</b>	<b>81.4</b>	<b>84.9</b>	<b>87.5</b>	<b>90.3</b>	<b>93.1</b>	<b>95.5</b>	<b>0.6</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.



**Table F7. Delivered energy consumption in Japan by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.0
Natural gas	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.7
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	1.2	1.1	1.2	1.2	1.2	1.3	1.3	0.5
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
<b>Total</b>	<b>2.1</b>	<b>2.1</b>	<b>2.3</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>2.4</b>	<b>0.4</b>
<b>Commercial</b>								
Liquids	0.7	0.8	0.9	0.8	0.8	0.8	0.8	0.0
Natural gas	0.8	0.8	1.0	1.0	1.0	1.0	0.9	0.6
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
Electricity	1.3	1.3	1.4	1.5	1.6	1.6	1.6	0.9
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
<b>Total</b>	<b>2.9</b>	<b>2.8</b>	<b>3.3</b>	<b>3.4</b>	<b>3.4</b>	<b>3.5</b>	<b>3.4</b>	<b>0.6</b>
<b>Industrial</b>								
Liquids	3.7	3.9	3.9	3.8	3.7	3.6	3.3	-0.6
Natural gas	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.3
Coal	2.3	2.3	2.3	2.3	2.3	2.2	2.0	-0.5
Electricity	0.8	0.7	0.8	0.8	0.7	0.7	0.7	-0.3
Renewables	0.4	0.4	0.4	0.4	0.4	0.4	0.4	-0.3
<b>Total</b>	<b>7.8</b>	<b>8.0</b>	<b>8.1</b>	<b>8.1</b>	<b>7.9</b>	<b>7.6</b>	<b>7.0</b>	<b>-0.4</b>
<b>Transportation</b>								
Liquids	3.9	3.9	3.3	3.1	3.1	3.1	3.1	-0.8
Natural gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.1	0.1	0.1	0.1	0.1	0.1	0.2	3.0
<b>Total</b>	<b>4.0</b>	<b>3.9</b>	<b>3.4</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>	<b>3.3</b>	<b>-0.7</b>
<b>All end-use sectors</b>								
Liquids	8.9	9.1	8.7	8.5	8.3	8.1	7.7	-0.6
Natural gas	1.8	1.8	2.2	2.3	2.3	2.3	2.1	0.6
Coal	2.3	2.3	2.3	2.3	2.3	2.2	2.0	-0.5
Electricity	3.4	3.1	3.4	3.6	3.6	3.7	3.7	0.6
Renewables	0.4	0.4	0.4	0.4	0.4	0.4	0.4	-0.2
Delivered energy	<b>16.8</b>	<b>16.8</b>	<b>17.1</b>	<b>17.1</b>	<b>16.9</b>	<b>16.7</b>	<b>16.0</b>	<b>-0.2</b>
Electricity-related losses	4.4	3.9	4.8	5.3	5.4	5.5	5.4	1.2
<b>Total</b>	<b>21.2</b>	<b>20.8</b>	<b>21.9</b>	<b>22.3</b>	<b>22.3</b>	<b>22.2</b>	<b>21.5</b>	<b>0.1</b>
<b>Electric power<sup>a</sup></b>								
Liquids	0.5	0.6	0.2	0.0	0.0	0.0	0.0	-11.4
Natural gas	2.9	3.1	3.2	3.7	3.8	4.0	4.2	1.1
Coal	2.1	2.3	2.2	2.1	2.0	2.0	1.9	-0.6
Nuclear	1.6	0.2	1.7	1.9	1.8	1.8	1.5	8.0
Renewables	1.1	1.2	1.8	2.1	2.3	2.3	2.4	2.5
<b>Total</b>	<b>8.2</b>	<b>7.3</b>	<b>9.2</b>	<b>9.7</b>	<b>10.0</b>	<b>10.1</b>	<b>10.0</b>	<b>1.1</b>
<b>Unspecified sector</b>	<b>-0.4</b>	<b>-0.2</b>	<b>-1.0</b>	<b>-0.9</b>	<b>-0.9</b>	<b>-0.9</b>	<b>-0.8</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	9.0	9.5	7.9	7.6	7.4	7.2	6.9	-1.1
Natural gas	4.7	4.9	5.4	6.0	6.1	6.3	6.3	0.9
Coal	4.3	4.6	4.5	4.4	4.3	4.2	4.0	-0.5
Nuclear	1.6	0.2	1.7	1.9	1.8	1.8	1.5	8.0
Renewables	1.6	1.6	2.3	2.5	2.7	2.8	2.7	2.0
<b>Total</b>	<b>21.2</b>	<b>20.8</b>	<b>21.9</b>	<b>22.3</b>	<b>22.3</b>	<b>22.2</b>	<b>21.5</b>	<b>0.1</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.

**Table F8. Delivered energy consumption in South Korea by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5
Natural gas	0.4	0.4	0.5	0.5	0.6	0.6	0.6	1.2
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
Electricity	0.2	0.2	0.3	0.3	0.3	0.3	0.3	1.6
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
<b>Total</b>	<b>0.8</b>	<b>0.8</b>	<b>1.0</b>	<b>1.0</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>	<b>1.1</b>
<b>Commercial</b>								
Liquids	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.4
Natural gas	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.4
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.5	0.5	0.7	0.8	0.9	1.0	1.1	2.8
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
<b>Total</b>	<b>0.8</b>	<b>0.8</b>	<b>1.1</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>2.1</b>
<b>Industrial</b>								
Liquids	2.4	2.4	2.7	2.7	2.7	2.8	2.8	0.6
Natural gas	0.4	0.4	0.5	0.5	0.6	0.6	0.7	1.6
Coal	1.2	1.1	1.3	1.4	1.5	1.6	1.7	1.5
Electricity	0.9	0.9	1.0	1.1	1.2	1.2	1.3	1.3
Renewables	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.2
<b>Total</b>	<b>4.9</b>	<b>5.0</b>	<b>5.6</b>	<b>5.9</b>	<b>6.1</b>	<b>6.3</b>	<b>6.6</b>	<b>1.0</b>
<b>Transportation</b>								
Liquids	1.5	1.6	1.7	1.7	1.7	1.8	1.9	0.7
Natural gas	0.0	0.0	0.0	0.1	0.1	0.1	0.1	7.8
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
<b>Total</b>	<b>1.6</b>	<b>1.6</b>	<b>1.7</b>	<b>1.7</b>	<b>1.8</b>	<b>1.9</b>	<b>2.0</b>	<b>0.8</b>
<b>All end-use sectors</b>								
Liquids	4.2	4.3	4.7	4.7	4.8	4.9	5.0	0.6
Natural gas	0.9	1.0	1.2	1.3	1.4	1.5	1.5	1.5
Coal	1.2	1.2	1.3	1.4	1.5	1.6	1.7	1.5
Electricity	1.6	1.7	2.0	2.2	2.4	2.6	2.8	1.9
Renewables	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.2
Delivered energy	<b>8.1</b>	<b>8.2</b>	<b>9.4</b>	<b>9.8</b>	<b>10.2</b>	<b>10.7</b>	<b>11.2</b>	<b>1.1</b>
Electricity-related losses	3.2	3.2	4.5	4.9	5.2	5.4	5.7	2.0
<b>Total</b>	<b>11.3</b>	<b>11.4</b>	<b>13.9</b>	<b>14.7</b>	<b>15.4</b>	<b>16.1</b>	<b>16.9</b>	<b>1.4</b>
<b>Electric power<sup>a</sup></b>								
Liquids	0.1	0.2	0.2	0.2	0.1	0.1	0.1	-1.0
Natural gas	0.9	0.9	1.2	1.1	1.3	1.5	1.8	2.4
Coal	2.0	1.9	2.4	2.3	2.3	2.4	2.5	1.0
Nuclear	1.5	1.4	2.1	2.6	2.8	2.8	2.8	2.5
Renewables	0.1	0.1	0.6	0.7	0.9	0.9	1.0	10.2
<b>Total</b>	<b>4.5</b>	<b>4.5</b>	<b>6.4</b>	<b>6.9</b>	<b>7.4</b>	<b>7.9</b>	<b>8.3</b>	<b>2.2</b>
<b>Unspecified sector</b>	<b>0.3</b>	<b>0.4</b>	<b>0.2</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	4.6	4.8	5.0	5.0	5.0	5.2	5.3	0.4
Natural gas	1.8	2.0	2.4	2.5	2.6	3.0	3.3	1.9
Coal	3.2	3.0	3.7	3.8	3.8	4.0	4.3	1.2
Nuclear	1.5	1.4	2.1	2.6	2.8	2.8	2.8	2.5
Renewables	0.2	0.2	0.7	0.8	1.0	1.1	1.2	7.1
<b>Total</b>	<b>11.3</b>	<b>11.4</b>	<b>13.9</b>	<b>14.7</b>	<b>15.4</b>	<b>16.1</b>	<b>16.9</b>	<b>1.4</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.

**Table F9. Delivered energy consumption in Australia/New Zealand by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural gas	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.3
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	0.3	0.3	0.3	0.3	0.4	0.4	0.5	2.0
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
<b>Total</b>	<b>0.4</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>1.7</b>
<b>Commercial</b>								
Liquids	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural gas	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3
Electricity	0.2	0.2	0.3	0.4	0.5	0.5	0.6	3.5
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
<b>Total</b>	<b>0.3</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>	<b>2.9</b>
<b>Industrial</b>								
Liquids	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.3
Natural gas	1.0	0.8	0.9	1.0	1.1	1.2	1.4	1.8
Coal	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.5
Electricity	0.4	0.4	0.4	0.4	0.4	0.5	0.6	1.6
Renewables	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.8
<b>Total</b>	<b>2.5</b>	<b>2.5</b>	<b>2.5</b>	<b>2.6</b>	<b>2.8</b>	<b>3.0</b>	<b>3.4</b>	<b>1.1</b>
<b>Transportation</b>								
Liquids	1.8	1.8	2.0	2.1	2.1	2.2	2.3	0.9
Natural gas	0.0	0.0	0.0	0.0	0.1	0.1	0.1	6.7
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8
<b>Total</b>	<b>1.8</b>	<b>1.9</b>	<b>2.0</b>	<b>2.1</b>	<b>2.2</b>	<b>2.3</b>	<b>2.4</b>	<b>1.0</b>
<b>All end-use sectors</b>								
Liquids	2.6	2.7	2.8	2.9	3.0	3.1	3.3	0.7
Natural gas	1.2	1.1	1.2	1.3	1.4	1.6	1.8	1.8
Coal	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.5
Electricity	0.9	0.9	1.1	1.2	1.3	1.5	1.7	2.3
Renewables	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.8
Delivered energy	<b>5.1</b>	<b>5.1</b>	<b>5.5</b>	<b>5.8</b>	<b>6.1</b>	<b>6.6</b>	<b>7.3</b>	<b>1.3</b>
Electricity-related losses	1.8	1.7	2.1	2.2	2.4	2.6	2.9	1.8
<b>Total</b>	<b>6.9</b>	<b>6.8</b>	<b>7.6</b>	<b>8.1</b>	<b>8.5</b>	<b>9.2</b>	<b>10.1</b>	<b>1.4</b>
<b>Electric power<sup>a</sup></b>								
Liquids	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Natural gas	0.4	0.4	0.5	0.8	1.0	1.2	1.6	4.6
Coal	1.9	1.8	1.8	1.7	1.7	1.6	1.6	-0.5
Nuclear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Renewables	0.6	0.5	1.0	1.0	1.2	1.3	1.5	3.9
<b>Total</b>	<b>2.9</b>	<b>2.8</b>	<b>3.3</b>	<b>3.5</b>	<b>3.8</b>	<b>4.2</b>	<b>4.7</b>	<b>1.8</b>
<b>Unspecified sector</b>	<b>-0.1</b>	<b>-0.2</b>	<b>-0.1</b>	<b>-0.1</b>	<b>-0.1</b>	<b>-0.1</b>	<b>-0.2</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	2.4	2.5	2.7	2.8	2.9	3.0	3.1	0.8
Natural gas	1.6	1.5	1.7	2.1	2.4	2.8	3.3	2.9
Coal	2.1	2.1	2.0	1.9	1.9	1.9	1.9	-0.4
Nuclear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Renewables	0.7	0.7	1.2	1.2	1.4	1.5	1.8	3.2
<b>Total</b>	<b>6.9</b>	<b>6.8</b>	<b>7.6</b>	<b>8.1</b>	<b>8.5</b>	<b>9.2</b>	<b>10.1</b>	<b>1.4</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.

**Table F10. Total non-OECD delivered energy consumption by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	5.0	5.2	5.9	5.8	5.7	5.5	5.4	0.1
Natural gas	8.6	8.4	10.4	11.8	13.0	14.1	14.9	2.1
Coal	3.9	4.1	3.8	3.6	3.5	3.4	3.4	-0.7
Electricity	7.6	8.1	11.3	13.8	16.3	19.0	22.2	3.7
Renewables	0.0	0.7	0.7	0.7	0.8	0.8	0.8	0.8
<b>Total</b>	<b>25.0</b>	<b>26.4</b>	<b>32.1</b>	<b>35.7</b>	<b>39.2</b>	<b>42.9</b>	<b>46.7</b>	<b>2.1</b>
<b>Commercial</b>								
Liquids	1.3	1.4	1.6	1.7	1.7	1.8	1.8	0.9
Natural gas	1.7	1.8	2.3	2.5	2.8	2.9	2.9	1.7
Coal	1.0	1.1	1.1	1.2	1.2	1.2	1.3	0.4
Electricity	4.7	4.9	6.7	8.0	9.3	10.7	12.1	3.3
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
<b>Total</b>	<b>8.8</b>	<b>9.3</b>	<b>11.7</b>	<b>13.4</b>	<b>15.0</b>	<b>16.6</b>	<b>18.1</b>	<b>2.4</b>
<b>Industrial</b>								
Liquids	38.0	39.3	43.3	46.7	50.3	54.2	57.9	1.4
Natural gas	28.2	29.7	33.6	38.6	43.8	49.6	54.7	2.2
Coal	45.9	47.3	53.4	55.5	57.1	58.6	59.7	0.8
Electricity	20.4	21.0	25.5	27.9	29.7	31.5	33.1	1.6
Renewables	11.2	11.8	12.5	13.9	15.4	17.1	19.0	1.7
<b>Total</b>	<b>143.6</b>	<b>149.0</b>	<b>168.3</b>	<b>182.6</b>	<b>196.3</b>	<b>211.0</b>	<b>224.5</b>	<b>1.5</b>
<b>Transportation</b>								
Liquids	42.0	44.1	53.3	59.7	65.7	72.3	79.9	2.1
Natural gas	2.4	2.3	3.8	5.2	7.6	10.1	13.2	6.4
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.3	0.3	0.6	0.7	0.9	1.1	1.3	5.0
<b>Total</b>	<b>44.6</b>	<b>46.8</b>	<b>57.6</b>	<b>65.7</b>	<b>74.1</b>	<b>83.5</b>	<b>94.4</b>	<b>2.5</b>
<b>All end-use sectors</b>								
Liquids	86.2	90.0	104.2	113.9	123.4	133.8	145.0	1.7
Natural gas	40.9	42.2	50.0	58.1	67.1	76.7	85.7	2.6
Coal	50.8	52.5	58.3	60.3	61.8	63.2	64.3	0.7
Electricity	32.9	34.4	44.1	50.3	56.1	62.4	68.7	2.5
Renewables	11.3	12.4	13.2	14.7	16.2	17.9	19.9	1.7
Delivered energy	<b>222.1</b>	<b>231.5</b>	<b>269.7</b>	<b>297.3</b>	<b>324.6</b>	<b>354.0</b>	<b>383.6</b>	<b>1.8</b>
Electricity-related losses	76.5	79.3	105.3	116.0	125.9	137.3	149.2	2.3
<b>Total</b>	<b>298.6</b>	<b>310.8</b>	<b>375.0</b>	<b>413.3</b>	<b>450.5</b>	<b>491.2</b>	<b>532.8</b>	<b>1.9</b>
<b>Electric power<sup>a</sup></b>								
Liquids	6.1	6.4	6.0	5.2	4.6	4.4	4.2	-1.5
Natural gas	20.9	22.1	25.2	29.7	34.3	39.9	45.1	2.6
Coal	57.5	58.9	66.6	68.9	69.4	70.9	73.2	0.8
Nuclear	5.0	5.2	9.6	12.4	17.2	20.3	23.4	5.5
Renewables	22.8	24.3	38.3	46.3	52.1	59.1	66.0	3.6
<b>Total</b>	<b>112.3</b>	<b>116.9</b>	<b>145.7</b>	<b>162.4</b>	<b>177.7</b>	<b>194.6</b>	<b>211.9</b>	<b>2.1</b>
<b>Unspecified sector</b>	<b>-2.6</b>	<b>-2.9</b>	<b>3.7</b>	<b>3.9</b>	<b>4.3</b>	<b>5.0</b>	<b>6.0</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	88.6	92.6	113.8	123.0	132.3	143.3	155.3	1.9
Natural gas	62.4	64.8	75.2	87.8	101.4	116.6	130.9	2.5
Coal	108.4	111.5	124.9	129.2	131.2	134.0	137.5	0.8
Nuclear	5.0	5.2	9.6	12.4	17.2	20.3	23.4	5.5
Renewables	34.1	36.8	51.5	60.9	68.3	77.0	85.8	3.1
<b>Total</b>	<b>298.6</b>	<b>310.8</b>	<b>375.0</b>	<b>413.3</b>	<b>450.5</b>	<b>491.2</b>	<b>532.8</b>	<b>1.9</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.

**Table F11. Delivered energy consumption in Russia by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	0.4	0.4	0.4	0.4	0.4	0.4	0.4	-0.2
Natural gas	2.9	2.6	2.9	3.0	3.0	3.0	2.9	0.4
Coal	0.3	0.4	0.4	0.4	0.3	0.3	0.3	-0.6
Electricity	0.5	0.5	0.5	0.6	0.7	0.8	0.9	2.4
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
<b>Total</b>	<b>4.0</b>	<b>3.8</b>	<b>4.2</b>	<b>4.4</b>	<b>4.4</b>	<b>4.5</b>	<b>4.5</b>	<b>0.6</b>
<b>Commercial</b>								
Liquids	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Natural gas	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.2
Coal	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-0.2
Electricity	0.5	0.6	0.6	0.7	0.8	0.8	0.9	1.7
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
<b>Total</b>	<b>1.2</b>	<b>1.3</b>	<b>1.4</b>	<b>1.5</b>	<b>1.5</b>	<b>1.6</b>	<b>1.6</b>	<b>0.8</b>
<b>Industrial</b>								
Liquids	3.6	3.7	3.3	3.4	3.3	3.3	3.1	-0.6
Natural gas	5.1	5.5	5.1	5.3	5.4	5.4	4.9	-0.4
Coal	2.1	2.4	2.3	2.4	2.4	2.4	2.2	-0.3
Electricity	1.7	1.7	1.6	1.6	1.7	1.7	1.6	-0.3
Renewables	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-1.2
<b>Total</b>	<b>12.6</b>	<b>13.4</b>	<b>12.4</b>	<b>12.8</b>	<b>12.9</b>	<b>12.8</b>	<b>11.8</b>	<b>-0.4</b>
<b>Transportation</b>								
Liquids	3.2	3.4	3.5	3.6	3.6	3.6	3.6	0.2
Natural gas	1.1	1.0	1.1	1.2	1.4	1.6	1.8	2.2
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
<b>Total</b>	<b>4.3</b>	<b>4.4</b>	<b>4.6</b>	<b>4.9</b>	<b>5.1</b>	<b>5.3</b>	<b>5.5</b>	<b>0.8</b>
<b>All end-use sectors</b>								
Liquids	7.3	7.6	7.4	7.5	7.5	7.4	7.2	-0.2
Natural gas	9.4	9.5	9.5	10.0	10.2	10.4	10.1	0.2
Coal	2.6	3.0	2.8	2.9	2.9	2.9	2.7	-0.3
Electricity	2.7	2.8	2.8	3.0	3.2	3.4	3.4	0.7
Renewables	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-1.2
Delivered energy	<b>22.2</b>	<b>22.9</b>	<b>22.6</b>	<b>23.6</b>	<b>23.9</b>	<b>24.3</b>	<b>23.4</b>	<b>0.1</b>
Electricity-related losses	8.7	9.1	10.6	11.1	11.2	11.2	11.1	0.7
<b>Total</b>	<b>30.9</b>	<b>32.1</b>	<b>33.2</b>	<b>34.7</b>	<b>35.1</b>	<b>35.5</b>	<b>34.5</b>	<b>0.3</b>
<b>Electric power<sup>a</sup></b>								
Liquids	0.3	0.3	0.1	0.3	0.3	0.3	0.3	-0.2
Natural gas	6.1	6.5	6.3	6.2	6.4	6.5	6.3	-0.1
Coal	2.1	2.5	2.5	2.4	2.6	2.8	2.8	0.5
Nuclear	1.8	1.8	2.5	2.9	2.6	2.5	2.4	1.0
Renewables	1.6	1.6	1.7	2.1	2.3	2.4	2.4	1.4
<b>Total</b>	<b>11.9</b>	<b>12.6</b>	<b>13.1</b>	<b>13.9</b>	<b>14.1</b>	<b>14.4</b>	<b>14.2</b>	<b>0.4</b>
<b>Unspecified sector</b>	<b>-0.2</b>	<b>-0.5</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	6.9	7.0	7.7	8.1	8.0	8.0	7.7	0.3
Natural gas	15.7	16.1	15.7	16.2	16.6	16.9	16.4	0.1
Coal	4.7	5.4	5.3	5.3	5.5	5.7	5.5	0.1
Nuclear	1.8	1.8	2.5	2.9	2.6	2.5	2.4	1.0
Renewables	1.7	1.7	1.8	2.2	2.4	2.5	2.5	1.3
<b>Total</b>	<b>30.9</b>	<b>32.1</b>	<b>33.2</b>	<b>34.7</b>	<b>35.1</b>	<b>35.5</b>	<b>34.5</b>	<b>0.3</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.

**Table F12. Delivered energy consumption in Other Non-OECD Europe and Eurasia by end-use sector and fuel, 2011–40 (quadrillion Btu)**

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.0
Natural gas	1.8	1.8	2.3	2.5	2.7	2.9	3.0	1.8
Coal	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-0.2
Electricity	0.5	0.5	0.6	0.7	0.9	1.0	1.1	3.0
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
<b>Total</b>	<b>2.7</b>	<b>2.7</b>	<b>3.3</b>	<b>3.6</b>	<b>3.9</b>	<b>4.2</b>	<b>4.5</b>	<b>1.9</b>
<b>Commercial</b>								
Liquids	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.9
Natural gas	0.6	0.6	0.8	0.9	1.0	1.1	1.1	1.9
Coal	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-0.3
Electricity	0.3	0.3	0.4	0.4	0.5	0.6	0.7	2.9
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
<b>Total</b>	<b>1.1</b>	<b>1.0</b>	<b>1.3</b>	<b>1.5</b>	<b>1.6</b>	<b>1.7</b>	<b>1.8</b>	<b>2.1</b>
<b>Industrial</b>								
Liquids	1.3	1.3	1.2	1.3	1.3	1.3	1.3	0.0
Natural gas	2.9	2.8	2.3	2.5	2.6	2.7	2.7	-0.1
Coal	1.7	1.7	1.2	1.2	1.3	1.3	1.3	-0.8
Electricity	1.1	1.1	0.9	0.9	1.0	1.0	1.0	-0.2
Renewables	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
<b>Total</b>	<b>7.2</b>	<b>6.9</b>	<b>5.7</b>	<b>6.0</b>	<b>6.3</b>	<b>6.5</b>	<b>6.5</b>	<b>-0.2</b>
<b>Transportation</b>								
Liquids	2.1	2.1	2.4	2.7	2.8	2.9	3.0	1.2
Natural gas	0.3	0.2	0.3	0.3	0.4	0.4	0.5	2.5
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.0	0.0	0.0	0.1	0.1	0.1	0.1	1.0
<b>Total</b>	<b>2.4</b>	<b>2.4</b>	<b>2.8</b>	<b>3.0</b>	<b>3.2</b>	<b>3.4</b>	<b>3.6</b>	<b>1.4</b>
<b>All end-use sectors</b>								
Liquids	3.7	3.6	3.8	4.1	4.3	4.4	4.5	0.8
Natural gas	5.6	5.5	5.7	6.3	6.8	7.1	7.3	1.0
Coal	2.0	1.9	1.4	1.5	1.5	1.5	1.5	-0.7
Electricity	1.9	1.9	2.0	2.2	2.4	2.7	2.9	1.4
Renewables	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
<b>Delivered energy</b>	<b>13.3</b>	<b>13.0</b>	<b>13.0</b>	<b>14.1</b>	<b>15.1</b>	<b>15.8</b>	<b>16.3</b>	<b>0.8</b>
Electricity-related losses	5.7	5.6	5.7	5.9	6.2	6.5	6.8	0.7
<b>Total</b>	<b>19.0</b>	<b>18.6</b>	<b>18.7</b>	<b>20.1</b>	<b>21.3</b>	<b>22.4</b>	<b>23.1</b>	<b>0.8</b>
<b>Electric power<sup>a</sup></b>								
Liquids	0.2	0.2	0.1	0.1	0.1	0.1	0.1	-1.7
Natural gas	2.0	2.0	1.7	2.1	2.4	2.7	3.0	1.4
Coal	2.9	2.9	2.7	2.6	2.6	2.6	2.5	-0.5
Nuclear	1.3	1.2	1.4	1.5	1.7	1.8	1.9	1.6
Renewables	1.2	1.2	1.5	1.5	1.5	1.7	1.8	1.6
<b>Total</b>	<b>7.5</b>	<b>7.5</b>	<b>7.3</b>	<b>7.8</b>	<b>8.3</b>	<b>8.9</b>	<b>9.4</b>	<b>0.8</b>
<b>Unspecified sector</b>	<b>0.1</b>	<b>0.0</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	3.9	3.8	4.3	4.6	4.7	4.8	4.9	1.0
Natural gas	7.6	7.5	7.4	8.3	9.1	9.8	10.3	1.1
Coal	5.0	4.8	4.1	4.1	4.1	4.1	4.1	-0.6
Nuclear	1.3	1.2	1.4	1.5	1.7	1.8	1.9	1.6
Renewables	1.3	1.3	1.6	1.6	1.6	1.8	1.9	1.5
<b>Total</b>	<b>19.0</b>	<b>18.6</b>	<b>18.7</b>	<b>20.1</b>	<b>21.3</b>	<b>22.4</b>	<b>23.1</b>	<b>0.8</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.

**Table F13. Delivered energy consumption in China by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	1.0	1.0	1.2	1.2	1.1	1.1	1.1	0.1
Natural gas	1.0	1.1	2.1	2.7	3.5	4.2	4.7	5.3
Coal	3.1	3.2	2.9	2.8	2.6	2.6	2.6	-0.8
Electricity	2.0	2.2	3.4	4.3	5.0	5.8	6.8	4.1
Renewables	0.0	0.6	0.7	0.7	0.7	0.8	0.8	0.8
<b>Total</b>	<b>7.1</b>	<b>8.2</b>	<b>10.2</b>	<b>11.6</b>	<b>13.0</b>	<b>14.4</b>	<b>15.9</b>	<b>2.4</b>
<b>Commercial</b>								
Liquids	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.4
Natural gas	0.3	0.3	0.5	0.6	0.7	0.8	0.8	3.2
Coal	0.6	0.6	0.6	0.6	0.5	0.5	0.5	-0.6
Electricity	0.8	0.9	1.4	1.7	2.1	2.5	2.8	4.3
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
<b>Total</b>	<b>2.2</b>	<b>2.5</b>	<b>3.2</b>	<b>3.6</b>	<b>4.1</b>	<b>4.5</b>	<b>4.8</b>	<b>2.4</b>
<b>Industrial</b>								
Liquids	9.3	9.7	12.6	13.3	13.9	14.5	15.1	1.6
Natural gas	2.3	2.6	4.5	6.0	7.6	9.6	11.7	5.6
Coal	32.8	33.5	39.5	40.0	39.8	39.2	38.1	0.5
Electricity	11.6	12.0	16.2	17.5	18.3	19.1	19.7	1.8
Renewables	1.1	1.2	1.6	1.7	1.7	1.8	1.9	1.6
<b>Total</b>	<b>56.9</b>	<b>59.0</b>	<b>74.5</b>	<b>78.5</b>	<b>81.4</b>	<b>84.2</b>	<b>86.4</b>	<b>1.4</b>
<b>Transportation</b>								
Liquids	11.4	12.6	17.1	19.0	20.6	22.0	22.9	2.2
Natural gas	0.1	0.1	0.4	0.8	1.6	2.5	3.3	13.6
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.1	0.2	0.3	0.4	0.6	0.7	0.9	6.3
<b>Total</b>	<b>11.6</b>	<b>12.8</b>	<b>17.9</b>	<b>20.3</b>	<b>22.8</b>	<b>25.1</b>	<b>27.1</b>	<b>2.7</b>
<b>All end-use sectors</b>								
Liquids	22.1	24.0	31.7	34.2	36.4	38.3	39.8	1.8
Natural gas	3.6	4.1	7.5	10.3	13.5	17.0	20.5	5.9
Coal	36.4	37.4	43.0	43.3	43.0	42.3	41.2	0.3
Electricity	14.5	15.2	21.3	23.9	26.0	28.1	30.1	2.5
Renewables	1.1	1.8	2.3	2.4	2.5	2.6	2.7	1.3
Delivered energy	<b>77.8</b>	<b>82.5</b>	<b>105.8</b>	<b>114.1</b>	<b>121.4</b>	<b>128.3</b>	<b>134.2</b>	<b>1.8</b>
Electricity-related losses	31.7	32.5	41.5	45.3	49.0	52.4	55.9	2.0
<b>Total</b>	<b>109.4</b>	<b>115.0</b>	<b>147.3</b>	<b>159.4</b>	<b>170.4</b>	<b>180.7</b>	<b>190.1</b>	<b>1.8</b>
<b>Electric power<sup>a</sup></b>								
Liquids	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.7
Natural gas	0.8	0.8	2.0	3.9	4.8	6.6	8.3	8.5
Coal	38.9	38.9	43.6	44.7	44.1	43.1	42.1	0.3
Nuclear	0.8	0.9	3.4	4.7	7.8	10.2	12.6	9.7
Renewables	7.8	9.5	18.8	21.2	23.7	26.2	28.7	4.0
<b>Total</b>	<b>48.4</b>	<b>50.3</b>	<b>67.8</b>	<b>74.5</b>	<b>80.5</b>	<b>86.2</b>	<b>91.7</b>	<b>2.2</b>
<b>Unspecified sector</b>	<b>-2.1</b>	<b>-2.5</b>	<b>-5.0</b>	<b>-5.3</b>	<b>-5.5</b>	<b>-5.6</b>	<b>-5.7</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	19.5	20.9	26.7	29.0	31.0	32.7	34.1	1.8
Natural gas	4.9	5.3	9.5	14.1	18.3	23.7	28.8	6.2
Coal	75.4	76.5	86.6	88.0	87.0	85.4	83.3	0.3
Nuclear	0.8	0.9	3.4	4.7	7.8	10.2	12.6	9.7
Renewables	8.9	11.4	21.0	23.7	26.2	28.8	31.3	3.7
<b>Total</b>	<b>109.4</b>	<b>115.0</b>	<b>147.3</b>	<b>159.4</b>	<b>170.4</b>	<b>180.7</b>	<b>190.1</b>	<b>1.8</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.

**Table F14. Delivered energy consumption in India by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	1.0	1.1	1.2	1.2	1.2	1.2	1.1	0.2
Natural gas	0.1	0.1	0.1	0.1	0.2	0.2	0.2	2.8
Coal	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Electricity	0.7	0.8	1.4	1.8	2.3	2.9	3.5	5.5
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
<b>Total</b>	<b>2.0</b>	<b>2.1</b>	<b>2.8</b>	<b>3.3</b>	<b>3.8</b>	<b>4.3</b>	<b>5.0</b>	<b>3.2</b>
<b>Commercial</b>								
Liquids	0.1	0.1	0.1	0.1	0.1	0.1	0.1	3.4
Natural gas	0.0	0.0	0.0	0.1	0.1	0.1	0.1	2.8
Coal	0.1	0.2	0.2	0.2	0.3	0.3	0.3	2.6
Electricity	0.3	0.3	0.5	0.6	0.7	0.8	1.0	4.2
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
<b>Total</b>	<b>0.5</b>	<b>0.6</b>	<b>0.8</b>	<b>1.0</b>	<b>1.1</b>	<b>1.3</b>	<b>1.5</b>	<b>3.7</b>
<b>Industrial</b>								
Liquids	3.6	3.7	4.2	4.8	5.4	6.2	7.1	2.4
Natural gas	1.4	1.4	1.7	2.0	2.4	2.9	3.3	3.0
Coal	4.1	4.5	5.0	5.8	6.9	8.1	9.6	2.8
Electricity	1.6	1.8	2.1	2.4	2.7	3.0	3.5	2.4
Renewables	1.7	1.7	1.8	2.0	2.3	2.8	3.2	2.2
<b>Total</b>	<b>12.4</b>	<b>13.1</b>	<b>14.7</b>	<b>17.0</b>	<b>19.7</b>	<b>22.9</b>	<b>26.7</b>	<b>2.6</b>
<b>Transportation</b>								
Liquids	3.1	3.1	4.3	5.2	6.2	7.6	9.4	4.0
Natural gas	0.1	0.1	0.2	0.3	0.6	0.9	1.4	10.8
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.0	0.0	0.1	0.1	0.1	0.2	0.2	5.3
<b>Total</b>	<b>3.2</b>	<b>3.3</b>	<b>4.6</b>	<b>5.6</b>	<b>6.9</b>	<b>8.7</b>	<b>10.9</b>	<b>4.4</b>
<b>All end-use sectors</b>								
Liquids	7.7	8.0	9.8	11.3	12.9	15.1	17.8	2.9
Natural gas	1.6	1.6	2.0	2.5	3.2	4.0	4.9	4.1
Coal	4.4	4.7	5.3	6.1	7.2	8.5	10.0	2.7
Electricity	2.7	2.9	4.0	4.9	5.8	6.9	8.2	3.7
Renewables	1.7	1.8	1.8	2.0	2.4	2.8	3.3	2.2
Delivered energy	<b>18.0</b>	<b>19.0</b>	<b>22.9</b>	<b>26.9</b>	<b>31.6</b>	<b>37.3</b>	<b>44.2</b>	<b>3.1</b>
Electricity-related losses	6.9	7.2	9.9	11.6	13.3	15.5	18.2	3.4
<b>Total</b>	<b>25.0</b>	<b>26.2</b>	<b>32.8</b>	<b>38.4</b>	<b>44.9</b>	<b>52.8</b>	<b>62.3</b>	<b>3.2</b>
<b>Electric power<sup>a</sup></b>								
Liquids	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Natural gas	0.8	0.6	0.4	0.5	0.8	1.2	1.4	3.3
Coal	7.5	8.2	10.0	10.5	11.0	12.6	14.7	2.1
Nuclear	0.4	0.4	0.8	1.3	2.2	2.4	2.6	7.3
Renewables	1.7	1.5	2.9	4.3	5.3	6.3	7.5	5.9
<b>Total</b>	<b>10.4</b>	<b>10.8</b>	<b>14.1</b>	<b>16.7</b>	<b>19.4</b>	<b>22.6</b>	<b>26.4</b>	<b>3.2</b>
<b>Unspecified sector</b>	<b>-0.8</b>	<b>-0.7</b>	<b>-0.3</b>	<b>-0.3</b>	<b>-0.3</b>	<b>-0.2</b>	<b>-0.1</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	7.0	7.3	9.7	11.1	12.7	15.0	17.8	3.2
Natural gas	2.4	2.2	2.5	3.1	4.0	5.2	6.4	3.9
Coal	11.9	13.0	15.3	16.7	18.3	21.1	24.8	2.3
Nuclear	0.4	0.4	0.8	1.3	2.2	2.4	2.6	7.3
Renewables	3.3	3.3	4.7	6.4	7.7	9.1	10.8	4.3
<b>Total</b>	<b>25.0</b>	<b>26.2</b>	<b>32.8</b>	<b>38.4</b>	<b>44.9</b>	<b>52.8</b>	<b>62.3</b>	<b>3.2</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.



**Table F15. Delivered energy consumption in Other Non-OECD Asia by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	0.6	0.6	0.7	0.7	0.6	0.6	0.6	0.1
Natural gas	0.4	0.4	0.5	0.6	0.6	0.6	0.7	1.7
Coal	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Electricity	1.1	1.2	1.6	1.9	2.2	2.5	2.9	3.2
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
<b>Total</b>	<b>2.2</b>	<b>2.3</b>	<b>2.8</b>	<b>3.2</b>	<b>3.5</b>	<b>3.9</b>	<b>4.3</b>	<b>2.3</b>
<b>Commercial</b>								
Liquids	0.2	0.2	0.3	0.3	0.3	0.3	0.4	1.5
Natural gas	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.6
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3
Electricity	0.9	1.0	1.4	1.7	2.0	2.4	2.7	3.8
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>1.3</b>	<b>1.3</b>	<b>1.8</b>	<b>2.2</b>	<b>2.5</b>	<b>2.9</b>	<b>3.2</b>	<b>3.3</b>
<b>Industrial</b>								
Liquids	5.4	5.7	6.3	7.0	7.6	8.4	9.2	1.8
Natural gas	3.6	3.6	4.1	4.6	5.2	5.9	6.6	2.2
Coal	2.7	2.7	2.9	3.2	3.5	3.9	4.4	1.8
Electricity	1.5	1.6	1.8	2.0	2.2	2.5	2.8	2.0
Renewables	2.1	2.1	2.3	2.6	2.9	3.2	3.5	1.8
<b>Total</b>	<b>15.2</b>	<b>15.7</b>	<b>17.4</b>	<b>19.4</b>	<b>21.5</b>	<b>23.9</b>	<b>26.6</b>	<b>1.9</b>
<b>Transportation</b>								
Liquids	7.1	7.3	8.4	9.6	10.9	12.6	14.6	2.5
Natural gas	0.3	0.3	0.7	1.0	1.3	1.7	2.4	7.6
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3
<b>Total</b>	<b>7.3</b>	<b>7.6</b>	<b>9.1</b>	<b>10.6</b>	<b>12.2</b>	<b>14.3</b>	<b>17.0</b>	<b>2.9</b>
<b>All end-use sectors</b>								
Liquids	13.2	13.8	15.7	17.5	19.5	22.0	24.8	2.1
Natural gas	4.3	4.4	5.3	6.3	7.2	8.4	9.8	2.9
Coal	2.8	2.8	2.9	3.3	3.6	4.0	4.5	1.7
Electricity	3.6	3.8	4.8	5.6	6.5	7.5	8.5	2.9
Renewables	2.1	2.1	2.3	2.6	2.9	3.2	3.5	1.8
Delivered energy	<b>26.0</b>	<b>26.9</b>	<b>31.2</b>	<b>35.3</b>	<b>39.8</b>	<b>45.0</b>	<b>51.1</b>	<b>2.3</b>
Electricity-related losses	7.7	7.9	11.5	13.2	14.8	16.6	18.5	3.1
<b>Total</b>	<b>33.7</b>	<b>34.7</b>	<b>42.7</b>	<b>48.6</b>	<b>54.6</b>	<b>61.6</b>	<b>69.6</b>	<b>2.5</b>
<b>Electric power<sup>a</sup></b>								
Liquids	1.3	1.2	1.1	1.1	1.0	1.0	0.9	-0.7
Natural gas	3.5	3.6	4.1	4.6	5.6	6.7	7.6	2.6
Coal	3.1	3.3	4.4	5.0	5.4	6.1	7.0	2.7
Nuclear	0.4	0.4	0.6	0.9	0.9	0.9	1.0	2.9
Renewables	1.9	2.0	3.5	4.5	5.3	6.1	7.0	4.5
<b>Total</b>	<b>10.2</b>	<b>10.6</b>	<b>13.8</b>	<b>16.1</b>	<b>18.4</b>	<b>20.8</b>	<b>23.4</b>	<b>2.9</b>
<b>Unspecified sector</b>	<b>1.1</b>	<b>1.1</b>	<b>2.5</b>	<b>2.7</b>	<b>3.0</b>	<b>3.2</b>	<b>3.5</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	15.6	16.0	19.4	21.3	23.5	26.2	29.3	2.2
Natural gas	7.8	8.0	9.5	10.9	12.9	15.1	17.4	2.8
Coal	5.9	6.1	7.4	8.3	9.1	10.1	11.5	2.3
Nuclear	0.4	0.4	0.6	0.9	0.9	0.9	1.0	2.9
Renewables	3.9	4.1	5.8	7.1	8.2	9.3	10.5	3.4
<b>Total</b>	<b>33.7</b>	<b>34.7</b>	<b>42.7</b>	<b>48.6</b>	<b>54.6</b>	<b>61.6</b>	<b>69.6</b>	<b>2.5</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.

**Table F16. Delivered energy consumption in the Middle East by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	0.7	0.7	0.8	0.8	0.8	0.7	0.7	0.1
Natural gas	1.7	1.5	1.6	1.7	1.8	1.9	2.0	1.0
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	1.2	1.3	1.7	2.0	2.3	2.7	3.1	3.3
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
<b>Total</b>	<b>3.5</b>	<b>3.5</b>	<b>4.1</b>	<b>4.5</b>	<b>4.9</b>	<b>5.4</b>	<b>5.9</b>	<b>1.9</b>
<b>Commercial</b>								
Liquids	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0
Natural gas	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.7	0.7	0.9	1.1	1.3	1.4	1.6	2.9
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
<b>Total</b>	<b>1.0</b>	<b>1.1</b>	<b>1.3</b>	<b>1.5</b>	<b>1.7</b>	<b>1.8</b>	<b>2.0</b>	<b>2.3</b>
<b>Industrial</b>								
Liquids	7.6	7.9	8.5	9.3	10.4	11.5	12.4	1.6
Natural gas	7.9	8.6	10.2	11.6	13.4	15.2	16.7	2.4
Coal	0.1	0.1	0.1	0.1	0.1	0.2	0.2	2.2
Electricity	0.6	0.5	0.6	0.7	0.8	0.9	0.9	2.1
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5
<b>Total</b>	<b>16.1</b>	<b>17.1</b>	<b>19.4</b>	<b>21.7</b>	<b>24.7</b>	<b>27.7</b>	<b>30.3</b>	<b>2.1</b>
<b>Transportation</b>								
Liquids	5.0	5.2	5.7	6.4	7.0	7.7	8.3	1.7
Natural gas	0.2	0.3	0.6	0.7	0.8	0.9	1.1	5.4
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2
<b>Total</b>	<b>5.2</b>	<b>5.5</b>	<b>6.3</b>	<b>7.1</b>	<b>7.9</b>	<b>8.6</b>	<b>9.4</b>	<b>1.9</b>
<b>All end-use sectors</b>								
Liquids	13.4	13.9	15.1	16.5	18.3	20.0	21.6	1.6
Natural gas	10.0	10.6	12.6	14.3	16.3	18.3	20.1	2.3
Coal	0.1	0.1	0.1	0.1	0.1	0.2	0.2	2.2
Electricity	2.4	2.5	3.2	3.8	4.4	5.0	5.7	3.0
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
Delivered energy	<b>25.9</b>	<b>27.1</b>	<b>31.0</b>	<b>34.8</b>	<b>39.2</b>	<b>43.6</b>	<b>47.5</b>	<b>2.0</b>
Electricity-related losses	4.0	4.6	9.8	10.6	11.6	13.0	14.3	4.2
<b>Total</b>	<b>29.9</b>	<b>31.7</b>	<b>40.8</b>	<b>45.4</b>	<b>50.7</b>	<b>56.6</b>	<b>61.8</b>	<b>2.4</b>
<b>Electric power<sup>a</sup></b>								
Liquids	2.6	2.8	2.5	1.7	1.3	1.2	1.2	-3.2
Natural gas	4.5	4.8	6.0	7.2	8.4	9.1	10.3	2.8
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.1	—
Nuclear	0.0	0.0	0.4	0.6	1.0	1.3	1.6	18.5
Renewables	0.2	0.2	0.7	1.4	1.5	2.3	2.6	9.3
<b>Total</b>	<b>7.3</b>	<b>7.8</b>	<b>9.7</b>	<b>11.0</b>	<b>12.2</b>	<b>14.0</b>	<b>15.6</b>	<b>2.5</b>
<b>Unspecified sector</b>	<b>-0.9</b>	<b>-0.7</b>	<b>3.3</b>	<b>3.5</b>	<b>3.7</b>	<b>4.1</b>	<b>4.4</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	15.1	16.0	20.9	21.7	23.3	25.3	27.1	1.9
Natural gas	14.5	15.4	18.6	21.5	24.7	27.4	30.3	2.5
Coal	0.1	0.1	0.1	0.1	0.2	0.2	0.2	3.2
Nuclear	0.0	0.0	0.4	0.6	1.0	1.3	1.6	18.5
Renewables	0.2	0.2	0.8	1.4	1.6	2.3	2.6	9.0
<b>Total</b>	<b>29.9</b>	<b>31.7</b>	<b>40.8</b>	<b>45.4</b>	<b>50.7</b>	<b>56.6</b>	<b>61.8</b>	<b>2.4</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.

**Table F17. Delivered energy consumption in Africa by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.3
Natural gas	0.2	0.3	0.4	0.4	0.5	0.5	0.5	1.9
Coal	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.0
Electricity	0.6	0.7	0.9	1.1	1.3	1.6	1.9	3.8
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
<b>Total</b>	<b>1.6</b>	<b>1.8</b>	<b>2.2</b>	<b>2.4</b>	<b>2.7</b>	<b>3.0</b>	<b>3.4</b>	<b>2.2</b>
<b>Commercial</b>								
Liquids	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.5
Natural gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
Coal	0.1	0.1	0.1	0.1	0.1	0.1	0.2	2.3
Electricity	0.3	0.4	0.5	0.6	0.7	0.8	1.0	3.7
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5
<b>Total</b>	<b>0.5</b>	<b>0.5</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.1</b>	<b>1.3</b>	<b>3.2</b>
<b>Industrial</b>								
Liquids	1.9	1.9	2.1	2.4	2.6	2.9	3.3	2.0
Natural gas	1.8	2.0	2.5	2.9	3.3	3.7	4.1	2.6
Coal	1.7	1.7	1.9	2.2	2.4	2.7	3.0	2.0
Electricity	1.0	1.0	1.1	1.2	1.4	1.6	1.8	2.1
Renewables	3.2	3.4	3.9	4.4	5.1	5.8	6.6	2.4
<b>Total</b>	<b>9.5</b>	<b>10.0</b>	<b>11.4</b>	<b>13.1</b>	<b>14.8</b>	<b>16.7</b>	<b>18.8</b>	<b>2.3</b>
<b>Transportation</b>								
Liquids	4.1	4.2	5.2	6.0	6.6	7.5	8.7	2.6
Natural gas	0.0	0.0	0.1	0.2	0.6	0.9	1.3	13.5
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.4
<b>Total</b>	<b>4.1</b>	<b>4.3</b>	<b>5.3</b>	<b>6.2</b>	<b>7.2</b>	<b>8.4</b>	<b>10.1</b>	<b>3.1</b>
<b>All end-use sectors</b>								
Liquids	6.7	6.9	8.2	9.2	10.1	11.3	12.9	2.3
Natural gas	2.1	2.4	3.0	3.5	4.3	5.1	6.0	3.3
Coal	1.9	2.0	2.2	2.5	2.7	3.0	3.3	1.9
Electricity	2.0	2.0	2.5	2.9	3.4	4.1	4.7	3.0
Renewables	3.2	3.4	3.9	4.5	5.1	5.8	6.6	2.4
Delivered energy	<b>15.8</b>	<b>16.7</b>	<b>19.7</b>	<b>22.6</b>	<b>25.6</b>	<b>29.2</b>	<b>33.5</b>	<b>2.5</b>
Electricity-related losses	4.3	4.8	6.5	7.4	8.1	9.2	10.4	2.8
<b>Total</b>	<b>20.1</b>	<b>21.5</b>	<b>26.1</b>	<b>30.0</b>	<b>33.8</b>	<b>38.4</b>	<b>44.0</b>	<b>2.6</b>
<b>Electric power<sup>a</sup></b>								
Liquids	0.5	0.6	0.7	0.6	0.6	0.6	0.6	-0.4
Natural gas	2.0	2.3	2.8	3.0	3.8	4.8	5.7	3.3
Coal	2.7	2.8	3.2	3.3	3.3	3.4	3.6	0.9
Nuclear	0.1	0.1	0.1	0.2	0.3	0.3	0.4	4.4
Renewables	1.1	1.1	1.5	2.3	2.7	3.2	3.7	4.3
<b>Total</b>	<b>6.5</b>	<b>7.0</b>	<b>8.3</b>	<b>9.5</b>	<b>10.7</b>	<b>12.3</b>	<b>14.0</b>	<b>2.5</b>
<b>Unspecified sector</b>	<b>-0.2</b>	<b>-0.1</b>	<b>0.7</b>	<b>0.8</b>	<b>0.8</b>	<b>1.0</b>	<b>1.1</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	7.0	7.4	9.5	10.6	11.6	12.8	14.6	2.5
Natural gas	4.1	4.7	5.8	6.6	8.1	9.9	11.7	3.3
Coal	4.6	4.8	5.4	5.8	6.0	6.4	7.0	1.4
Nuclear	0.1	0.1	0.1	0.2	0.3	0.3	0.4	4.4
Renewables	4.3	4.5	5.4	6.8	7.8	9.0	10.3	3.0
<b>Total</b>	<b>20.1</b>	<b>21.5</b>	<b>26.1</b>	<b>30.0</b>	<b>33.8</b>	<b>38.4</b>	<b>44.0</b>	<b>2.6</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.

**Table F18. Delivered energy consumption in Brazil by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0
Natural gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.5	0.5	0.5	0.6	0.7	0.8	0.9	2.4
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
<b>Total</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>0.9</b>	<b>1.0</b>	<b>1.1</b>	<b>1.2</b>	<b>1.6</b>
<b>Commercial</b>								
Liquids	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
Natural gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.5	0.5	0.5	0.6	0.6	0.7	0.8	1.8
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
<b>Total</b>	<b>0.5</b>	<b>0.5</b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.8</b>	<b>1.8</b>
<b>Industrial</b>								
Liquids	2.9	3.0	2.8	3.0	3.2	3.5	3.7	0.8
Natural gas	0.7	0.8	0.8	1.0	1.1	1.3	1.5	2.4
Coal	0.5	0.5	0.4	0.4	0.5	0.5	0.6	0.7
Electricity	0.7	0.7	0.7	0.8	0.9	1.1	1.2	1.9
Renewables	2.5	2.5	2.2	2.4	2.6	2.8	3.0	0.6
<b>Total</b>	<b>7.3</b>	<b>7.5</b>	<b>6.9</b>	<b>7.7</b>	<b>8.4</b>	<b>9.2</b>	<b>10.0</b>	<b>1.0</b>
<b>Transportation</b>								
Liquids	2.8	2.8	3.0	3.3	3.7	4.0	4.4	1.6
Natural gas	0.1	0.1	0.1	0.1	0.1	0.2	0.3	3.7
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6
<b>Total</b>	<b>2.9</b>	<b>2.9</b>	<b>3.1</b>	<b>3.4</b>	<b>3.8</b>	<b>4.2</b>	<b>4.7</b>	<b>1.7</b>
<b>All end-use sectors</b>								
Liquids	5.9	6.1	6.1	6.7	7.3	7.8	8.5	1.2
Natural gas	0.8	0.9	0.9	1.1	1.3	1.5	1.8	2.5
Coal	0.5	0.5	0.4	0.4	0.5	0.5	0.6	0.7
Electricity	1.6	1.6	1.8	2.0	2.3	2.6	2.9	2.0
Renewables	2.5	2.5	2.2	2.4	2.6	2.8	3.0	0.6
Delivered energy	<b>11.4</b>	<b>11.6</b>	<b>11.4</b>	<b>12.7</b>	<b>13.9</b>	<b>15.2</b>	<b>16.7</b>	<b>1.3</b>
Electricity-related losses	3.4	3.6	4.9	5.5	6.1	6.8	7.6	2.7
<b>Total</b>	<b>14.8</b>	<b>15.2</b>	<b>16.3</b>	<b>18.1</b>	<b>20.0</b>	<b>22.0</b>	<b>24.3</b>	<b>1.7</b>
<b>Electric power<sup>a</sup></b>								
Liquids	0.1	0.2	0.2	0.1	0.1	0.1	0.1	-0.6
Natural gas	0.1	0.3	0.5	0.5	0.5	0.5	0.5	2.3
Coal	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.4
Nuclear	0.2	0.2	0.3	0.3	0.6	0.6	0.6	4.8
Renewables	4.5	4.3	4.7	5.5	6.0	7.0	8.1	2.3
<b>Total</b>	<b>4.9</b>	<b>5.0</b>	<b>5.8</b>	<b>6.6</b>	<b>7.4</b>	<b>8.3</b>	<b>9.4</b>	<b>2.3</b>
<b>Unspecified sector</b>	<b>0.2</b>	<b>0.3</b>	<b>0.9</b>	<b>0.9</b>	<b>1.0</b>	<b>1.1</b>	<b>1.1</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	6.2	6.6	7.1	7.8	8.4	9.0	9.7	1.4
Natural gas	0.9	1.1	1.4	1.6	1.8	2.0	2.3	2.6
Coal	0.5	0.6	0.5	0.6	0.6	0.7	0.7	0.8
Nuclear	0.2	0.2	0.3	0.3	0.6	0.6	0.6	4.8
Renewables	7.0	6.8	7.0	8.0	8.6	9.8	11.1	1.7
<b>Total</b>	<b>14.8</b>	<b>15.2</b>	<b>16.3</b>	<b>18.1</b>	<b>20.0</b>	<b>22.0</b>	<b>24.3</b>	<b>1.7</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, "Balances of OECD and Non-OECD Statistics" (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** World Energy Projection System Plus (2016), run IEO2016-reference\_final\_2016.02.19\_115008.

**Table F19. Delivered energy consumption in Other Non-OECD Americas by end-use sector and fuel, 2011–40**  
(quadrillion Btu)

Sector/fuel	History		Projections					Average annual percent change, 2012–40
	2011	2012	2020	2025	2030	2035	2040	
<b>Residential</b>								
Liquids	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.0
Natural gas	0.4	0.4	0.6	0.6	0.7	0.7	0.8	2.1
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
Electricity	0.5	0.5	0.7	0.7	0.8	0.9	1.0	2.3
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>1.3</b>	<b>1.3</b>	<b>1.6</b>	<b>1.7</b>	<b>1.8</b>	<b>2.0</b>	<b>2.1</b>	<b>1.8</b>
<b>Commercial</b>								
Liquids	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.1
Natural gas	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.4
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.4	0.4	0.5	0.5	0.6	0.6	0.7	2.2
Renewables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>0.5</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.8</b>	<b>0.9</b>	<b>2.0</b>
<b>Industrial</b>								
Liquids	2.5	2.5	2.3	2.4	2.5	2.6	2.7	0.2
Natural gas	2.6	2.4	2.4	2.6	2.7	3.0	3.2	1.0
Coal	0.2	0.2	0.2	0.2	0.2	0.2	0.3	1.3
Electricity	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.5
Renewables	0.6	0.6	0.5	0.5	0.6	0.6	0.6	0.0
<b>Total</b>	<b>6.4</b>	<b>6.3</b>	<b>5.9</b>	<b>6.3</b>	<b>6.6</b>	<b>7.0</b>	<b>7.5</b>	<b>0.6</b>
<b>Transportation</b>								
Liquids	3.3	3.3	3.7	4.0	4.2	4.5	5.0	1.4
Natural gas	0.2	0.2	0.4	0.6	0.8	1.0	1.2	5.8
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7
<b>Total</b>	<b>3.5</b>	<b>3.6</b>	<b>4.1</b>	<b>4.5</b>	<b>5.0</b>	<b>5.5</b>	<b>6.2</b>	<b>2.0</b>
<b>All end-use sectors</b>								
Liquids	6.1	6.2	6.4	6.8	7.1	7.5	8.1	0.9
Natural gas	3.3	3.2	3.4	3.9	4.3	4.8	5.2	1.8
Coal	0.2	0.2	0.2	0.2	0.2	0.2	0.3	1.3
Electricity	1.5	1.5	1.7	1.9	2.0	2.2	2.4	1.6
Renewables	0.6	0.6	0.5	0.5	0.6	0.6	0.6	0.0
Delivered energy	<b>11.7</b>	<b>11.7</b>	<b>12.2</b>	<b>13.3</b>	<b>14.2</b>	<b>15.3</b>	<b>16.6</b>	<b>1.3</b>
Electricity-related losses	4.0	4.1	5.0	5.3	5.6	6.0	6.4	1.6
<b>Total</b>	<b>15.7</b>	<b>15.8</b>	<b>17.2</b>	<b>18.6</b>	<b>19.8</b>	<b>21.2</b>	<b>23.0</b>	<b>1.4</b>
<b>Electric power<sup>a</sup></b>								
Liquids	1.0	1.1	1.1	1.1	1.0	1.0	0.9	-0.6
Natural gas	1.1	1.2	1.4	1.5	1.7	1.9	2.1	2.0
Coal	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.2
Nuclear	0.1	0.1	0.1	0.1	0.2	0.3	0.3	5.8
Renewables	2.9	2.8	3.0	3.4	3.6	3.9	4.3	1.4
<b>Total</b>	<b>5.3</b>	<b>5.3</b>	<b>5.7</b>	<b>6.2</b>	<b>6.6</b>	<b>7.2</b>	<b>7.7</b>	<b>1.4</b>
<b>Unspecified sector</b>	<b>0.3</b>	<b>0.3</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>	<b>1.1</b>	<b>—</b>
<b>Total energy consumption</b>								
Liquids	7.4	7.7	8.5	8.8	9.1	9.5	10.1	1.0
Natural gas	4.4	4.3	4.8	5.4	6.0	6.6	7.3	1.9
Coal	0.3	0.3	0.3	0.3	0.4	0.4	0.4	1.3
Nuclear	0.1	0.1	0.1	0.1	0.2	0.3	0.3	5.8
Renewables	3.5	3.4	3.5	3.9	4.2	4.5	4.9	1.2
<b>Total</b>	<b>15.7</b>	<b>15.8</b>	<b>17.2</b>	<b>18.6</b>	<b>19.8</b>	<b>21.2</b>	<b>23.0</b>	<b>1.4</b>

<sup>a</sup>Fuel inputs used in the production of electricity and heat, excluding captive generators.

Sources: **History:** Derived from U.S. Energy Information Administration (EIA), International Energy Statistics database (as of May 2015), [www.eia.gov/ies](http://www.eia.gov/ies); and International Energy Agency, “Balances of OECD and Non-OECD Statistics” (2014), [www.iea.org](http://www.iea.org) (subscription site). **Projections:** EIA, World Energy Projection System Plus (2015), run reference\_final\_2016.02.19\_115008.