Appendix D

Results from side cases

Table D1. Key results for demand sector technology cases

Consumption, emissions, combined heat and power capacity and generation	2012	2020				2030			
		2013 Demand Technology	Reference	High Demand Technology	Best Available Demand Technology	2013 Demand Technology	Reference	High Demand Technology	Best Available Demand Technology
Energy consumption (quadrillion Btu)									
Residential									
Liquid fuels and other petroleum[1]	1.02	0.91	0.89	0.86	0.83	0.79	0.75	0.70	0.66
Natural gas	4.26	4.65	4.56	4.33	4.04	4.63	4.43	4.06	3.51
Renewable energy[2]	0.45	0.48	0.46	0.44	0.43	0.50	0.44	0.41	0.38
Electricity	4.69	5.00	4.84	4.47	4.15	5.56	5.21	4.53	4.13
Total residential	**10.42**	**11.04**	**10.74**	**10.10**	**9.45**	**11.48**	**10.83**	**9.70**	**8.68**
Nonmarketed renewables, residential	0.04	0.11	0.14	0.15	0.16	0.12	0.19	0.28	0.40
Commercial									
Liquid fuels and other petroleum[3]	0.63	0.68	0.68	0.67	0.67	0.67	0.67	0.65	0.65
Natural gas	2.96	3.23	3.23	3.20	3.20	3.32	3.35	3.34	3.31
Coal	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Renewable energy[4]	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Electricity	4.52	4.77	4.69	4.44	4.31	5.38	5.18	4.49	4.28
Total commercial	**8.29**	**8.86**	**8.78**	**8.50**	**8.35**	**9.55**	**9.38**	**8.66**	**8.42**
Nonmarketed renewables, commercial	0.13	0.18	0.18	0.22	0.23	0.20	0.24	0.35	0.43
Industrial[5]									
Liquefied petroleum gases and other[6]	2.25	2.91	2.90	2.88	2.91	3.07	3.05	3.04	3.07
Distillate fuel oil	1.20	1.46	1.40	1.36	1.38	1.54	1.41	1.35	1.39
Petrochemical feedstocks	0.75	1.29	1.27	1.27	1.28	1.65	1.62	1.60	1.63
Other petroleum[7]	3.86	4.12	4.00	3.92	3.99	4.26	4.02	3.92	4.03
Liquid fuels and other petroleum	8.06	9.77	9.56	9.43	9.56	10.53	10.10	9.92	10.12
Natural gas	8.75	10.41	10.04	10.07	10.04	11.70	10.87	10.89	10.90
Coal	1.48	1.62	1.57	1.54	1.58	1.64	1.52	1.46	1.57
Renewable energy[8]	2.00	2.47	2.50	2.54	2.51	2.72	2.79	2.94	2.82
Electricity	3.35	4.14	4.04	3.99	4.08	4.57	4.33	4.27	4.47
Total industrial	**23.63**	**28.42**	**27.71**	**27.57**	**27.77**	**31.17**	**29.62**	**29.47**	**29.88**
Transportation									
Motor gasoline[9]	16.33	14.99	15.00	14.88	15.00	12.64	12.69	12.54	12.71
of which: E85[10]	0.01	0.18	0.19	0.20	0.19	0.45	0.46	0.48	0.47
Jet fuel	3.00	3.08	3.08	3.06	3.08	3.20	3.20	3.16	3.20
Distillate fuel oil	5.82	6.70	6.70	6.58	6.68	7.20	7.25	7.08	7.32
Other petroleum[11]	0.77	0.78	0.78	0.77	0.78	0.80	0.80	0.79	0.80
Liquid fuels and other petroleum	25.93	25.55	25.55	25.30	25.53	23.84	23.94	23.57	24.04
Pipeline fuel natural gas	0.73	0.76	0.74	0.72	0.71	0.86	0.82	0.77	0.76
Compressed / liquefied natural gas	0.04	0.08	0.08	0.08	0.08	0.28	0.28	0.21	0.30
Liquid hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.05	0.04
Total transportation	**26.72**	**26.42**	**26.40**	**26.13**	**26.36**	**25.02**	**25.08**	**24.59**	**25.14**
Electric power[12]									
Distillate and residual fuel oil	0.23	0.18	0.18	0.17	0.16	0.19	0.18	0.17	0.16
Natural gas	9.46	9.32	9.00	8.29	8.28	11.35	10.28	8.42	8.54
Steam coal	15.82	17.42	16.95	16.16	15.05	17.81	17.44	16.43	15.11
Nuclear / uranium[13]	8.05	8.15	8.15	8.15	8.15	8.20	8.18	8.15	8.15
Renewable energy[14]	4.59	6.15	6.08	5.69	5.55	7.17	6.68	6.18	6.02
Non-biogenic municipal waste	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Net electricity imports	0.16	0.11	0.11	0.11	0.11	0.12	0.12	0.09	0.09
Total electric power	**38.53**	**41.56**	**40.70**	**38.81**	**37.54**	**45.07**	**43.12**	**39.68**	**38.30**
Total energy consumption									
Liquid fuels and other petroleum	35.87	37.09	36.86	36.42	36.76	36.02	35.65	35.01	35.63
Natural gas	26.20	28.45	27.65	26.69	26.35	32.14	30.03	27.68	27.31
Steam coal	17.34	19.08	18.56	17.74	16.67	19.50	19.01	17.93	16.73
Nuclear / uranium[13]	8.05	8.15	8.15	8.15	8.15	8.20	8.18	8.15	8.15
Renewable energy[15]	7.17	9.24	9.17	8.81	8.63	10.52	10.05	9.66	9.36
Other[16]	0.39	0.34	0.34	0.34	0.34	0.35	0.35	0.32	0.32
Total energy consumption	**95.02**	**102.35**	**100.73**	**98.16**	**96.90**	**106.74**	**103.27**	**98.76**	**97.50**

2040				Annual Growth 2012-2040 (percent)			
2013 Demand Technology	Reference	High Demand Technology	Best Available Demand Technology	2013 Demand Technology	Reference	High Demand Technology	Best Available Demand Technology
0.72	0.66	0.60	0.55	-1.2%	-1.5%	-1.9%	-2.2%
4.54	4.21	3.75	3.02	0.2%	0.0%	-0.5%	-1.2%
0.50	0.42	0.36	0.33	0.4%	-0.3%	-0.8%	-1.2%
6.15	5.65	4.92	4.36	1.0%	0.7%	0.2%	-0.3%
11.91	**10.94**	**9.64**	**8.26**	**0.5%**	**0.2%**	**-0.3%**	**-0.8%**
0.13	0.27	0.48	0.79	4.3%	6.9%	9.1%	11.1%
0.68	0.68	0.65	0.65	0.2%	0.2%	0.1%	0.1%
3.53	3.65	3.69	3.63	0.6%	0.7%	0.8%	0.7%
0.04	0.04	0.04	0.04	0.0%	0.0%	0.0%	0.0%
0.13	0.13	0.13	0.13	0.0%	0.0%	0.0%	0.0%
6.27	5.72	4.71	4.48	1.2%	0.8%	0.2%	0.0%
10.66	**10.22**	**9.24**	**8.93**	**0.9%**	**0.7%**	**0.4%**	**0.3%**
0.23	0.35	0.59	0.75	2.2%	3.7%	5.6%	6.5%
2.95	2.90	2.88	2.91	1.0%	0.9%	0.9%	0.9%
1.61	1.42	1.36	1.39	1.1%	0.6%	0.4%	0.5%
1.65	1.59	1.57	1.60	2.9%	2.7%	2.7%	2.7%
4.53	4.19	4.08	4.19	0.6%	0.3%	0.2%	0.3%
10.74	10.10	9.89	10.10	1.0%	0.8%	0.7%	0.8%
12.47	11.28	11.24	11.27	1.3%	0.9%	0.9%	0.9%
1.62	1.44	1.38	1.51	0.3%	-0.1%	-0.3%	0.1%
2.92	3.07	3.32	3.09	1.4%	1.5%	1.8%	1.6%
4.78	4.34	4.24	4.51	1.3%	0.9%	0.8%	1.1%
32.53	**30.22**	**30.06**	**30.47**	**1.1%**	**0.9%**	**0.9%**	**0.9%**
12.05	12.09	12.07	12.18	-1.1%	-1.1%	-1.1%	-1.0%
0.34	0.33	0.35	0.35	11.9%	11.9%	12.0%	12.1%
3.28	3.28	3.17	3.28	0.3%	0.3%	0.2%	0.3%
7.51	7.54	7.55	7.63	0.9%	0.9%	0.9%	1.0%
0.82	0.82	0.81	0.82	0.2%	0.2%	0.2%	0.2%
23.66	23.73	23.61	23.91	-0.3%	-0.3%	-0.3%	-0.3%
0.89	0.85	0.77	0.77	0.7%	0.5%	0.2%	0.2%
0.79	0.86	0.54	0.95	11.0%	11.3%	9.5%	11.7%
0.00	0.00	0.00	0.00	- -	- -	- -	- -
0.06	0.06	0.07	0.06	3.6%	3.6%	3.9%	3.6%
25.41	**25.50**	**24.99**	**25.70**	**-0.2%**	**-0.2%**	**-0.2%**	**-0.1%**
0.20	0.19	0.17	0.16	-0.5%	-0.8%	-1.1%	-1.3%
12.38	11.48	9.08	9.24	1.0%	0.7%	-0.1%	-0.1%
17.75	17.27	16.35	15.05	0.4%	0.3%	0.1%	-0.2%
9.32	8.49	8.25	8.15	0.5%	0.2%	0.1%	0.0%
9.30	7.44	6.51	6.33	2.6%	1.7%	1.3%	1.2%
0.23	0.23	0.23	0.23	0.0%	0.0%	0.0%	0.0%
0.14	0.12	0.10	0.10	-0.4%	-1.1%	-1.6%	-1.8%
49.32	**45.20**	**40.69**	**39.26**	**0.9%**	**0.6%**	**0.2%**	**0.1%**
36.00	35.35	34.91	35.37	0.0%	-0.1%	-0.1%	-0.1%
34.61	32.32	29.08	28.88	1.0%	0.8%	0.4%	0.3%
19.41	18.75	17.77	16.60	0.4%	0.3%	0.1%	-0.2%
9.32	8.49	8.25	8.15	0.5%	0.2%	0.1%	0.0%
12.86	11.05	10.32	9.88	2.1%	1.6%	1.3%	1.2%
0.37	0.35	0.33	0.33	-0.1%	-0.4%	-0.5%	-0.6%
112.56	**106.31**	**100.67**	**99.21**	**0.6%**	**0.4%**	**0.2%**	**0.2%**

Table D1. Key results for demand sector technology cases (continued)

Consumption, emissions, combined heat and power capacity and generation	2012	2020				2030			
		2013 Demand Technology	Reference	High Demand Technology	Best Available Demand Technology	2013 Demand Technology	Reference	High Demand Technology	Best Available Demand Technology
Carbon dioxide emissions (million metric tons)									
by sector									
Residential	295	308	302	288	271	300	286	263	231
Commercial	206	224	224	222	222	228	230	228	226
Industrial[5]	937	1,094	1,060	1,054	1,061	1,183	1,107	1,097	1,114
Transportation	1,812	1,779	1,777	1,759	1,775	1,672	1,677	1,644	1,681
Electric power[12]	2,039	2,174	2,112	2,000	1,892	2,318	2,227	2,031	1,911
by fuel									
Petroleum[17]	2,254	2,263	2,252	2,226	2,244	2,152	2,136	2,098	2,133
Natural gas	1,366	1,489	1,447	1,396	1,378	1,684	1,572	1,448	1,428
Coal	1,657	1,815	1,766	1,688	1,586	1,854	1,807	1,705	1,590
Other[18]	12	12	12	12	12	12	12	12	12
Total carbon dioxide emissions	**5,290**	**5,579**	**5,476**	**5,322**	**5,220**	**5,702**	**5,527**	**5,263**	**5,163**
Residential delivered energy intensity (million Btu per household)	91.5	90.5	88.1	82.8	77.5	86.4	81.5	73.0	65.3
Commercial delivered energy intensity (thousand Btu per square foot)	100.7	99.4	98.5	95.3	93.7	97.3	95.6	88.2	85.8
Industrial delivered energy intensity (thousand Btu per 2005 dollar)	3.84	3.57	3.48	3.46	3.48	3.29	3.11	3.06	3.09
Residential sector net summer capacity (megawatts)									
Natural gas	0	0	0	0	0	0	0	0	0
Solar photovoltaic	1,553	5,330	6,327	6,867	7,904	5,638	9,364	14,807	22,999
Wind	55	186	590	644	737	186	590	644	737
Residential sector electricity generation (billion kilowatthours)									
Natural gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar photovoltaic	2.48	8.29	9.96	10.81	12.47	8.80	14.92	23.67	36.77
Wind	0.07	0.26	0.82	0.89	1.00	0.26	0.82	0.89	1.00
Commercial sector net summer capacity (megawatts)									
Natural gas	1,041	1,638	1,770	2,132	2,177	3,085	4,206	5,921	5,959
Solar photovoltaic	3,155	6,205	6,417	6,731	7,566	7,170	9,561	12,978	18,279
Wind	97	104	109	108	109	160	307	309	303
Commercial sector electricity generation (billion kilowatthours)									
Natural gas	7.57	11.91	12.87	15.50	15.83	22.43	30.59	43.07	43.35
Solar photovoltaic	4.86	9.53	9.94	10.46	11.80	11.07	15.16	20.63	28.99
Wind	0.12	0.13	0.14	0.14	0.14	0.22	0.43	0.43	0.43

[1]Includes propane, kerosene, and distillate fuel oil.
[2]Includes wood used for residential heating. Excludes nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal water heaters.
[3]Includes propane, motor gasoline (including ethanol and ethers), kerosene, distillate fuel oil, and residual fuel oil.
[4]Includes commercial sector consumption of wood and wood waste, landfill gas, municipal waste, and other biomass for combined heat and power. Excludes nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal water heaters.
[5]Includes energy for combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
[6]Includes ethane, natural gasoline, and refinery olefins.
[7]Includes motor gasoline (including ethanol and ethers), residual fuel oil, petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.
[8]Includes consumption of energy produced from hydroelectric, wood and wood waste, municipal waste, and other biomass sources. Excludes ethanol.
[9]Includes ethanol and ethers blended into gasoline.
[10]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 varies seasonally. The annual average ethanol content of 74 percent is used for this forecast.
[11]Includes propane, residual fuel oil, aviation gasoline, and lubricants.
[12]Includes consumption of energy by electricity-only and combined heat and power plants that have a regulatory status.
[13]These values represent the energy obtained from uranium when it is used in light water reactors. The total energy content of uranium is much larger, but alternative processes are required to take advantage of it.
[14]Includes conventional hydroelectric, geothermal, wood and wood waste, biogenic municipal waste, other biomass, wind, photovoltaic, and solar thermal sources. Excludes net electricity imports.
[15]Includes conventional hydroelectric, geothermal, wood and wood waste, biogenic municipal waste, other biomass, wind, photovoltaic, and solar thermal sources. Excludes ethanol, net electricity imports, and nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal water heaters.
[16]Includes non-biogenic municipal waste, liquid hydrogen, and net electricity imports.
[17]This includes carbon dioxide from international bunker fuels, both civilian and military, which are excluded from the accounting of carbon dioxide emissions under the United Nations convention. From 1990 through 2012, international bunker fuels accounted for 90 to 126 million metric tons annually.
[18]Includes emissions from geothermal power and emissions from non-biogenic municipal waste.
Btu = British thermal unit.
- - = Not applicable.
Note: Totals may not equal sum of components due to independent rounding. Data for 2012 are model results and may differ from official EIA data reports.
Source: U.S. Energy Information Administration, AEO2014 National Energy Modeling System, runs FROZTECH.D121813A, REF2014.D102413A, HIGHTECH.D121813A, and BESTTECH.D121813A.

2040				Annual Growth 2012-2040 (percent)			
2013 Demand Technology	Reference	High Demand Technology	Best Available Demand Technology	2013 Demand Technology	Reference	High Demand Technology	Best Available Demand Technology
289	268	240	197	-0.1%	-0.4%	-0.7%	-1.4%
240	246	246	242	0.5%	0.6%	0.6%	0.6%
1,235	1,123	1,110	1,128	1.0%	0.6%	0.6%	0.7%
1,685	1,691	1,660	1,703	-0.3%	-0.2%	-0.3%	-0.2%
2,361	2,271	2,057	1,941	0.5%	0.4%	0.0%	-0.2%
2,145	2,113	2,090	2,113	-0.2%	-0.2%	-0.3%	-0.2%
1,811	1,694	1,523	1,512	1.0%	0.8%	0.4%	0.4%
1,842	1,780	1,687	1,576	0.4%	0.3%	0.1%	-0.2%
12	12	12	12	0.0%	0.0%	0.0%	0.0%
5,810	**5,599**	**5,313**	**5,213**	**0.3%**	**0.2%**	**0.0%**	**-0.1%**
83.3	76.5	67.4	57.7	-0.3%	-0.6%	-1.1%	-1.6%
97.9	93.9	84.8	82.0	-0.1%	-0.3%	-0.6%	-0.7%
2.98	2.75	2.71	2.73	-0.9%	-1.2%	-1.2%	-1.2%
1	1	1	1	- -	- -	- -	- -
6,283	14,366	27,180	47,373	5.1%	8.3%	10.8%	13.0%
186	610	667	794	4.4%	8.9%	9.3%	10.0%
0.00	0.00	0.00	0.00	- -	- -	- -	- -
9.82	23.12	43.67	75.94	5.0%	8.3%	10.8%	13.0%
0.26	0.85	0.92	1.09	4.6%	9.1%	9.4%	10.0%
5,691	9,752	14,094	13,792	6.3%	8.3%	9.7%	9.6%
9,341	15,094	23,123	33,742	4.0%	5.7%	7.4%	8.8%
396	814	944	1,114	5.2%	7.9%	8.5%	9.1%
41.40	70.94	102.53	100.33	6.3%	8.3%	9.7%	9.6%
14.54	24.33	36.99	53.91	4.0%	5.9%	7.5%	9.0%
0.56	1.16	1.34	1.57	5.6%	8.3%	8.9%	9.5%

Table D2. Key results for policy extension cases

Consumption, emissions, electricity generating capacity and generation, and prices	2012	2020			2030			2040		
		Reference	No Sunset	Extended Policies	Reference	No Sunset	Extended Policies	Reference	No Sunset	Extended Policies
Energy consumption (quadrillion Btu)										
Residential										
Liquid fuels and other petroleum[1]	1.02	0.89	0.88	0.89	0.75	0.75	0.75	0.66	0.66	0.65
Natural gas	4.26	4.56	4.52	4.54	4.43	4.34	4.24	4.21	4.07	3.89
Renewable energy[2]	0.45	0.46	0.46	0.46	0.44	0.44	0.44	0.42	0.41	0.41
Electricity	4.69	4.84	4.79	4.79	5.21	5.02	4.80	5.65	5.36	4.96
Total residential	**10.42**	**10.74**	**10.65**	**10.67**	**10.83**	**10.55**	**10.22**	**10.94**	**10.50**	**9.91**
Commercial										
Liquid fuels and other petroleum[3]	0.63	0.68	0.68	0.68	0.67	0.67	0.67	0.68	0.68	0.67
Natural gas	2.96	3.23	3.23	3.22	3.35	3.38	3.35	3.65	3.72	3.65
Coal	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Renewable energy[4]	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Electricity	4.52	4.69	4.69	4.68	5.18	5.16	5.10	5.72	5.69	5.62
Total commercial	**8.29**	**8.78**	**8.78**	**8.76**	**9.38**	**9.39**	**9.29**	**10.22**	**10.27**	**10.11**
Industrial[5]										
Liquid fuels and other petroleum[6]	8.06	9.56	9.56	9.55	10.10	10.13	10.06	10.10	10.15	9.94
Natural gas	8.75	10.04	10.03	10.05	10.87	10.94	10.93	11.28	11.42	11.36
Coal	1.48	1.57	1.56	1.56	1.52	1.53	1.53	1.44	1.46	1.46
Renewable energy[7]	2.00	2.50	2.50	2.49	2.79	2.81	2.80	3.07	3.08	3.07
Electricity	3.35	4.04	4.04	4.03	4.33	4.35	4.35	4.34	4.38	4.37
Total industrial	**23.63**	**27.71**	**27.68**	**27.68**	**29.62**	**29.76**	**29.68**	**30.22**	**30.49**	**30.19**
Transportation										
Liquid fuels and other petroleum[8]	25.93	25.55	25.54	25.51	23.94	23.96	23.56	23.73	23.80	22.33
Pipeline fuel natural gas	0.73	0.74	0.74	0.75	0.82	0.81	0.80	0.85	0.80	0.80
Compressed / liquefied natural gas	0.04	0.08	0.08	0.08	0.28	0.28	0.26	0.86	0.91	0.94
Liquid hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.02	0.03	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.12
Total transportation	**26.72**	**26.40**	**26.40**	**26.37**	**25.08**	**25.10**	**24.68**	**25.50**	**25.58**	**24.19**
Electric power[9]										
Distillate and residual fuel oil	0.23	0.18	0.18	0.18	0.18	0.18	0.18	0.19	0.18	0.18
Natural gas	9.46	9.00	9.26	9.26	10.28	9.76	9.54	11.48	9.11	8.88
Steam coal	15.82	16.95	16.77	16.75	17.44	17.23	17.10	17.27	17.13	16.99
Nuclear / uranium[10]	8.05	8.15	8.15	8.15	8.18	8.15	8.15	8.49	8.15	8.15
Renewable energy[11]	4.59	6.08	5.73	5.71	6.68	7.21	6.86	7.44	10.62	9.81
Non-biogenic municipal waste	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Net electricity imports	0.16	0.11	0.11	0.11	0.12	0.11	0.10	0.12	0.11	0.10
Total electric power	**38.53**	**40.70**	**40.43**	**40.37**	**43.12**	**42.88**	**42.15**	**45.20**	**45.53**	**44.34**
Total energy consumption										
Liquid fuels and other petroleum	35.87	36.86	36.84	36.80	35.65	35.70	35.21	35.35	35.47	33.76
Natural gas	26.20	27.65	27.87	27.89	30.03	29.52	29.12	32.32	30.03	29.51
Steam coal	17.34	18.56	18.38	18.35	19.01	18.81	18.67	18.75	18.63	18.49
Nuclear / uranium[10]	8.05	8.15	8.15	8.15	8.18	8.15	8.15	8.49	8.15	8.15
Renewable energy[12]	7.17	9.17	8.81	8.79	10.05	10.59	10.23	11.05	14.25	13.42
Other[13]	0.39	0.34	0.34	0.34	0.35	0.34	0.33	0.35	0.34	0.33
Total energy consumption	**95.02**	**100.73**	**100.39**	**100.32**	**103.27**	**103.11**	**101.72**	**106.31**	**106.88**	**103.67**
Carbon dioxide emissions (million metric tons)										
by sector										
Residential	295	302	300	301	286	281	275	268	260	250
Commercial	206	224	224	223	230	231	229	246	250	245
Industrial[5]	937	1,060	1,059	1,060	1,107	1,113	1,108	1,123	1,134	1,116
Transportation	1,812	1,777	1,776	1,775	1,677	1,676	1,648	1,691	1,694	1,595
Electric power[9]	2,039	2,112	2,109	2,106	2,227	2,179	2,155	2,271	2,132	2,107
by fuel										
Petroleum[14]	2,254	2,252	2,249	2,249	2,136	2,135	2,104	2,113	2,117	2,001
Natural gas	1,366	1,447	1,459	1,460	1,572	1,545	1,524	1,694	1,573	1,545
Coal	1,657	1,766	1,748	1,746	1,807	1,788	1,775	1,780	1,768	1,755
Other[15]	12	12	12	12	12	12	12	12	12	12
Total carbon dioxide emissions	**5,290**	**5,476**	**5,468**	**5,466**	**5,527**	**5,480**	**5,415**	**5,599**	**5,469**	**5,313**

Table D2. Key results for policy extension cases (continued)

Consumption, emissions, electricity generating capacity and generation, and prices	2012	2020			2030			2040		
		Reference	No Sunset	Extended Policies	Reference	No Sunset	Extended Policies	Reference	No Sunset	Extended Policies
Electricity generating capacity (gigawatts)	**1,066**	**1,069**	**1,056**	**1,053**	**1,168**	**1,184**	**1,156**	**1,316**	**1,414**	**1,350**
Electric power sector[9]	1,032	1,022	1,000	996	1,105	1,084	1,055	1,228	1,262	1,198
Coal	307	259	255	253	258	254	252	258	254	252
Oil and natural gas steam	100	86	84	82	72	70	65	70	67	62
Combined-cycle	212	231	231	233	286	262	261	342	287	281
Combustion turbine / diesel	140	150	148	147	184	173	164	224	208	186
Nuclear / uranium	102	98	98	98	98	98	98	102	98	98
Pumped storage	22	22	22	22	22	22	22	22	22	22
Renewable sources	149	174	161	161	180	203	191	201	321	292
of which: Solar	3	10	9	9	10	19	17	19	66	58
of which: Wind	59	76	62	62	76	90	80	85	159	138
Distributed generation	0	2	1	1	5	3	2	9	5	4
Residential and commercial sectors	7	16	25	25	25	60	60	41	103	103
of which: Natural gas	1	2	2	2	4	5	4	10	10	10
of which: Solar photovoltaic	5	13	21	21	19	49	49	29	81	81
of which: Wind	0	1	1	2	1	5	5	1	11	11
Industrial sector[5]	27	31	32	32	39	40	41	46	49	49
of which: Natural gas	15	17	18	18	23	25	25	29	32	32
Cumulative capacity additions (gigawatts)	**0**	**87**	**80**	**81**	**201**	**224**	**203**	**351**	**458**	**401**
Cumulative capacity retirements (gigawatts)	**0**	**78**	**85**	**89**	**94**	**101**	**108**	**97**	**105**	**111**
Generation by fuel (billion kilowatthours)	**4,054**	**4,402**	**4,400**	**4,399**	**4,815**	**4,819**	**4,742**	**5,219**	**5,243**	**5,116**
Electric power sector[9]	3,890	4,193	4,175	4,173	4,540	4,479	4,400	4,844	4,753	4,628
Coal	1,499	1,632	1,616	1,614	1,678	1,660	1,647	1,661	1,649	1,637
Petroleum	20	16	16	16	16	16	16	16	16	16
Natural gas	1,133	1,155	1,189	1,191	1,391	1,296	1,266	1,605	1,231	1,199
Nuclear / uranium	769	779	779	779	782	779	779	811	779	779
Pumped storage / other	6	3	3	3	3	3	3	3	3	3
Renewable sources	463	607	571	569	668	723	687	743	1,072	992
of which: Wood and other biomass	11	37	43	42	68	60	59	72	64	65
of which: Solar	4	18	17	17	20	40	35	39	147	129
of which: Wind	142	218	172	172	219	258	229	248	480	417
Distributed generation	0	1	1	1	2	2	2	4	3	2
Residential and commercial sectors	20	38	53	53	66	123	123	125	225	222
of which: Natural gas	8	13	13	13	31	33	33	71	75	73
of which: Solar photovoltaic	7	20	33	33	30	79	79	47	129	129
of which: Wind	0	1	2	2	1	7	7	2	15	15
Industrial sector[5]	145	171	172	173	209	216	218	251	265	266
of which: Natural gas	88	99	101	102	128	135	137	160	174	175
Delivered natural gas prices (2012 dollars per thousand cubic feet)										
Residential	10.69	11.85	11.89	11.98	13.80	13.65	13.62	16.33	15.62	15.77
Commercial	8.29	9.70	9.73	9.83	11.44	11.25	11.11	13.37	12.65	12.56
Industrial[5]	3.85	5.92	5.94	6.06	7.14	6.96	6.81	8.78	8.28	8.23
Electric power[9]	3.51	5.19	5.21	5.32	6.64	6.43	6.27	8.34	7.70	7.65
Average electricity price (2012 cents per kilowatthour)	9.8	10.1	10.1	10.1	10.4	10.3	10.2	11.1	10.7	10.6

[1]Includes propane, kerosene, and distillate fuel oil.
[2]Includes wood used for residential heating. Excludes nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal water heaters.
[3]Includes propane, motor gasoline (including ethanol and ethers), kerosene, distillate fuel oil, and residual fuel oil.
[4]Includes commercial sector consumption of wood and wood waste, landfill gas, municipal waste, and other biomass for combined heat and power. Excludes nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal water heaters.
[5]Includes energy for combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
[6]Includes motor gasoline (including ethanol and ethers), residual fuel oil, petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.
[7]Includes consumption of energy produced from hydroelectric, wood and wood waste, municipal waste, and other biomass sources. Excludes ethanol.
[8]Includes propane, motor gasoline, ethanol and ethers, jet fuel, distillate fuel oil, residual fuel oil, aviation gasoline, and lubricants.
[9]Includes consumption of energy by electricity-only and combined heat and power plants that have a regulatory status.
[10]These values represent the energy obtained from uranium when it is used in light water reactors. The total energy content of uranium is much larger, but alternative processes are required to take advantage of it.
[11]Includes conventional hydroelectric, geothermal, wood and wood waste, biogenic municipal waste, other biomass, wind, photovoltaic, and solar thermal sources.
[12]Includes conventional hydroelectric, geothermal, wood and wood waste, biogenic municipal waste, other biomass, wind, photovoltaic, and solar thermal sources. Excludes ethanol, net electricity imports, and nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal water heaters.
[13]Includes non-biogenic municipal waste, liquid hydrogen, and net electricity imports.
[14]This includes carbon dioxide from international bunker fuels, both civilian and military, which are excluded from the accounting of carbon dioxide emissions under the United Nations convention. From 1990 through 2012, international bunker fuels accounted for 90 to 126 million metric tons annually.
[15]Includes emissions from geothermal power and emissions from non-biogenic municipal waste.
Btu = British thermal unit.
- - = Not applicable.
Note: Totals may not equal sum of components due to independent rounding. Data for 2012 are model results and may differ from official EIA data reports.
Source: U.S. Energy Information Administration, AEO2014 National Energy Modeling System, runs REF2014.D102413A, NOSUNSET.D121713A, and EXTENDED.D022814A.

Table D3. Key results for accelerated power plant retirement and nuclear plant cases

(gigawatts, unless otherwise noted)

Net summer capacity, generation, emissions, and fuel prices	2012	2040					
		High Nuclear	Reference	Accelerated Coal Retirements	Accelerated Nuclear Retirements	Accelerated Coal and Nuclear Retirements	Low Nuclear
Capacity							
Coal steam	306.6	258.3	258.4	198.8	260.0	204.7	239.1
Oil and natural gas steam	100.4	70.5	69.6	65.3	67.4	64.7	75.2
Combined cycle	211.9	331.5	342.2	383.9	373.7	406.9	406.1
Combustion turbine / diesel	139.8	221.9	223.7	221.1	223.5	220.7	229.4
Nuclear / uranium	102.1	119.7	102.0	104.1	60.4	60.4	25.2
Pumped storage	22.4	22.4	22.4	22.4	22.4	22.4	22.4
Fuel cells	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Renewable sources	148.9	199.4	200.5	202.1	213.9	211.6	200.8
Distributed generation	0.0	9.1	8.9	6.0	8.9	5.5	12.6
Combined heat and power[1]	33.8	86.4	87.7	95.3	89.8	97.5	152.5
Total	**1,065.8**	**1,319.4**	**1,315.6**	**1,299.1**	**1,319.8**	**1,294.4**	**1,363.3**
Cumulative additions							
Coal steam	0.0	2.6	2.6	2.5	4.2	2.5	2.5
Oil and natural gas steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined cycle	0.0	119.9	130.6	172.3	162.1	195.3	194.5
Combustion turbine / diesel	0.0	91.4	93.2	90.8	93.1	90.6	99.0
Nuclear / uranium	0.0	16.4	9.7	11.8	5.5	5.5	5.5
Pumped storage	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
Renewable sources	0.0	51.4	52.5	54.1	65.8	63.5	52.8
Distributed generation	0.0	9.1	8.9	6.0	8.9	5.5	12.6
Combined heat and power[1]	0.0	52.6	53.9	61.5	56.0	63.8	118.7
Total	**0.0**	**343.5**	**351.5**	**399.1**	**395.8**	**426.8**	**485.6**
Cumulative retirements	**0.0**	**95.9**	**96.7**	**160.8**	**136.8**	**193.2**	**183.2**
Generation by fuel (billion kilowatthours)							
Coal	1,499	1,659	1,661	1,118	1,672	1,178	1,504
Petroleum	20	16	16	14	16	15	16
Natural gas	1,133	1,493	1,605	1,922	1,834	2,114	2,413
Nuclear / uranium	769	951	811	827	483	483	201
Pumped storage / other	6	3	3	3	3	3	3
Renewable sources	463	739	743	820	782	849	727
Distributed generation	0	4	4	3	5	3	34
Combined heat and power[1]	165	371	375	404	383	412	505
Total	**4,054**	**5,238**	**5,219**	**5,111**	**5,178**	**5,056**	**5,404**
Carbon dioxide emissions by the electric power sector (million metric tons)[2]							
Petroleum	19	14	14	13	14	13	14
Natural gas	494	570	608	714	684	780	914
Coal	1,514	1,635	1,637	1,082	1,646	1,142	1,479
Other[3]	12	12	12	12	12	12	12
Total	**2,039**	**2,231**	**2,271**	**1,821**	**2,356**	**1,946**	**2,418**
Prices to the electric power sector[2] (2012 dollars per million Btu)							
Petroleum	21.46	24.25	24.30	23.83	24.29	23.91	21.23
Natural gas	3.44	7.87	8.16	8.60	8.57	9.03	5.43
Coal	2.39	3.18	3.19	5.14	3.20	5.20	3.01
Average electricity price (2012 cents per kilowatthour)	**9.8**	**11.0**	**11.1**	**12.0**	**11.5**	**12.5**	**9.9**

[1]Includes combined heat and power plants and electricity-only plants in commercial and industrial sectors that have a non-regulatory status. 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

[2]Includes electricity-only and combined heat and power plants that have a regulatory status.

[3]Includes emissions from geothermal power and nonbiogenic emissions from municipal solid waste.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 2012 are model results and may differ from official EIA data reports.

Source: U.S. Energy Information Administration, AEO2014 National Energy Modeling System runs HINUC14.D120313A, REF2014.D102413A, HCCSTOM.D012314A, LOWNUC14.D012314B, HCLONUC.D012314A, and ALTLOWNUC14.D012314C.

Table D4. Key results for renewable technology case

Capacity, generation, and emissions	2012	2020		2030		2040	
		Reference	Low Renewable Technology Cost	Reference	Low Renewable Technology Cost	Reference	Low Renewable Technology Cost
Net summer capacity (gigawatts)							
Electric power sector[1]							
Conventional hydropower	78.10	78.41	79.55	79.75	80.50	80.35	82.00
Geothermal[2]	2.58	4.02	4.28	6.58	6.66	8.80	9.07
Municipal waste[3]	3.57	3.63	3.63	3.63	3.63	3.63	3.63
Wood and other biomass[4]	2.70	3.14	3.14	3.14	3.26	3.46	4.56
Solar thermal	0.48	1.73	1.73	1.73	1.73	1.73	1.73
Solar photovoltaic[5]	2.49	7.90	14.63	8.62	20.83	17.07	56.34
Wind	59.01	75.59	77.27	76.12	82.63	85.48	119.92
Total	**148.92**	**174.43**	**184.23**	**179.56**	**199.24**	**200.52**	**277.26**
End-use sector[6]							
Conventional hydropower	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Municipal waste[7]	0.47	0.47	0.47	0.47	0.47	0.47	0.47
Wood and other biomass	4.89	6.27	6.92	7.95	9.86	9.62	13.35
Solar photovoltaic[5]	4.71	12.75	13.89	18.93	25.65	29.47	43.27
Wind	0.15	0.70	1.21	0.90	1.70	1.42	3.38
Total	**10.51**	**20.48**	**22.77**	**28.53**	**37.97**	**41.26**	**60.75**
Generation (billion kilowatthours)							
Electric power sector[1]							
Coal	1,499	1,632	1,602	1,678	1,656	1,661	1,644
Petroleum	20	16	16	16	16	16	17
Natural gas	1,133	1,155	1,132	1,391	1,337	1,605	1,405
Total fossil	**2,651**	**2,803**	**2,750**	**3,085**	**3,009**	**3,282**	**3,066**
Conventional hydropower	273.89	287.67	293.48	294.35	297.83	297.34	303.30
Geothermal	15.56	28.24	30.34	49.04	49.86	67.26	69.62
Municipal waste[8]	16.79	19.05	18.67	18.15	18.53	19.21	19.12
Wood and other biomass[4]	11.04	36.71	63.30	67.50	85.07	72.22	93.42
Dedicated plants	9.84	15.31	15.86	16.17	17.43	18.99	27.03
Cofiring	1.20	21.40	47.44	51.33	67.64	53.23	66.39
Solar thermal	0.90	3.52	3.52	3.53	3.53	3.53	3.53
Solar photovoltaic[5]	3.25	14.54	30.06	16.07	44.82	35.24	128.36
Wind	141.87	217.53	223.15	219.06	237.99	248.02	354.74
Total renewable	**463.29**	**607.26**	**662.52**	**667.71**	**737.62**	**742.82**	**972.09**
End-use sector[6]							
Total fossil	**112**	**128**	**128**	**175**	**173**	**247**	**247**
Conventional hydropower	1.38	1.38	1.38	1.38	1.38	1.38	1.38
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Municipal waste[7]	3.65	3.63	3.63	3.63	3.63	3.63	3.63
Wood and other biomass	26.53	34.10	37.75	43.75	54.79	53.50	75.17
Solar photovoltaic[5]	7.35	19.91	21.75	30.09	40.94	47.46	69.49
Wind	0.20	0.96	1.62	1.25	2.33	2.01	4.67
Total renewable	**39.11**	**59.98**	**66.13**	**80.10**	**103.07**	**107.99**	**154.34**

Table D4. Key results for renewable technology case (continued)

Capacity, generation, and emissions	2012	2020		2030		2040	
		Reference	Low Renewable Technology Cost	Reference	Low Renewable Technology Cost	Reference	Low Renewable Technology Cost
Carbon dioxide emissions by the electric power sector (million metric tons)[1]							
Coal	1,514	1,609	1,580	1,656	1,634	1,637	1,621
Petroleum	19	13	13	14	14	14	14
Natural gas	494	478	469	545	530	608	541
Other [9]	12	12	12	12	12	12	12
Total	**2,039**	**2,112**	**2,073**	**2,227**	**2,189**	**2,271**	**2,188**

[1]Includes electricity-only and combined heat and power plants that have a regulatory status.
[2]Includes both hydrothermal resources (hot water and steam) and near-field enhanced geothermal systems (EGS). Near-field EGS potential occurs on known hydrothermal sites, however this potential requires the addition of external fluids for electricity generation and is only available after 2025.
[3]Includes all municipal waste, landfill gas, and municipal sewage sludge. Incremental growth is assumed to be for landfill gas facilities. All municipal waste is included, although a portion of the municipal waste stream contains petroleum-derived plastics and other non-renewable sources.
[4]Facilities co-firing biomass and coal are classified as coal.
[5]Does not include off-grid photovoltaics (PV). Based on annual PV shipments from 1989 through 2012, EIA estimates that as much as 274 megawatts of remote electricity generation PV applications (i.e., off-grid power systems) were in service in 2012, plus an additional 573 megawatts in communications, transportation, and assorted other non-grid-connected, specialized applications. See U.S. Energy Information Administration, *Annual Energy Review 2011*, DOE/EIA-0384(2011) (Washington, DC, September 2012), Table 10.9 (annual PV shipments, 1989-2010), and Table 12 (U.S. photovoltaic module shipments by end use, sector, and type) in U.S. Energy Information Administration, *Solar Photovoltaic Cell/Module Shipments Report, 2011* (Washington, DC, September 2012) and U.S. Energy Information Administration, *Solar Photovoltaic Cell/Module Shipments Report, 2012* (Washington, DC, December 2013). The approach used to develop the estimate, based on shipment data, provides an upper estimate of the size of the PV stock, including both grid-based and off-grid PV. It will overestimate the size of the stock, because shipments include a substantial number of units that are exported, and each year some of the PV units installed earlier will be retired from service or abandoned.
[6]Includes combined heat and power plants and electricity-only plants in the commercial and industrial sectors that have a non-regulatory status. 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.
[7]Includes municipal waste, landfill gas, and municipal sewage sludge. All municipal waste is included, although a portion of the municipal waste stream contains petroleum-derived plastics and other non-renewable sources.
[8]Includes biogenic municipal waste, landfill gas, and municipal sewage sludge. Incremental growth is assumed to be for landfill gas facilities. Only biogenic municipal waste is included. The U.S. Energy Information Administration estimates that in 2012 approximately 7 billion kilowatthours of electricity were generated from a municipal waste stream containing petroleum-derived plastics and other non-renewable sources. See U.S. Energy Information Administration, *Methodology for Allocating Municipal Solid Waste to Biogenic and Non-Biogenic Energy* (Washington, DC, May 2007).
[9]Includes emissions from geothermal power and nonbiogenic emissions from municipal solid waste.
Note: Totals may not equal sum of components due to independent rounding. Data for 2012 are model results and may differ from official EIA data reports.
Source: U.S. Energy Information Administration, AEO2014 National Energy Modeling System runs REF2014.D102413A, and LCR_2014.D120613A.

Table D5. Key results for enviornmental cases

Net summer capacity, generation, emissions, fuel prices, and coal production	2012	2030					2040				
		Reference	GHG10	GHG25	High Oil and Gas Resource	GHG10 and Low Gas Prices	Reference	GHG10	GHG25	High Oil and Gas Resource	GHG10 and Low Gas Prices
Capacity (gigawatts)											
Coal steam	306.6	258.4	208.4	52.6	243.8	163.2	258.4	176.7	19.1	243.8	127.4
Oil and natural gas steam	100.4	72.1	64.8	42.4	81.2	65.9	69.6	55.2	31.2	79.8	60.4
Combined cycle	211.9	285.6	313.4	381.6	294.4	372.6	342.2	365.4	420.7	382.3	477.5
Combustion turbine / diesel	139.8	184.0	178.8	185.8	202.4	191.1	223.7	206.1	179.4	241.2	218.4
Nuclear / uranium	102.1	98.2	101.3	142.1	97.8	97.8	102.0	141.8	231.6	97.8	111.0
Pumped storage	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4
Renewable sources	148.9	179.6	200.5	312.6	170.1	183.5	200.5	279.8	363.1	177.4	227.5
Distributed generation	0.0	4.6	1.5	0.3	7.6	2.4	8.9	2.9	0.3	17.8	4.8
Combined heat and power[1]	33.8	63.4	67.1	75.5	64.0	67.6	87.7	96.4	109.3	86.9	95.2
Total	**1,065.8**	**1,168.2**	**1,158.4**	**1,215.2**	**1,183.7**	**1,166.5**	**1,315.6**	**1,346.6**	**1,377.3**	**1,349.5**	**1,344.4**
Cumulative additions (gigawatts)											
Coal steam	0.0	2.5	2.5	2.5	2.5	2.5	2.6	2.5	2.5	2.5	2.5
Combined cycle	0.0	74.0	101.8	170.0	82.8	160.9	130.6	153.8	209.1	170.7	265.9
Combustion turbine / diesel	0.0	53.0	48.3	59.8	70.7	60.1	93.2	77.2	75.2	110.0	88.2
Nuclear / uranium	0.0	5.8	9.0	49.8	5.5	5.5	9.7	49.4	139.3	5.5	18.7
Renewable sources	0.0	31.6	52.5	164.6	22.1	35.5	52.5	131.8	215.1	29.4	79.5
Distributed generation	0.0	4.6	1.5	0.3	7.6	2.4	8.9	2.9	0.3	17.8	4.8
Combined heat and power[1]	0.0	29.7	33.4	41.7	30.2	33.8	53.9	62.6	75.6	53.2	61.4
Total	**0.0**	**201.1**	**249.0**	**488.6**	**221.4**	**300.8**	**351.5**	**480.2**	**717.2**	**389.1**	**520.9**
Cumulative retirements (gigawatts)	**0.0**	**93.8**	**151.4**	**334.1**	**98.5**	**195.2**	**96.7**	**194.5**	**400.6**	**100.4**	**237.3**
Generation by fuel (billion kilowatthours)											
Coal	1,499	1,678	1,255	241	1,544	834	1,661	964	48	1,445	460
Petroleum	20	16	15	10	16	13	16	14	9	16	12
Natural gas	1,133	1,391	1,531	1,780	1,647	2,148	1,605	1,489	1,405	2,108	2,623
Nuclear / uranium	769	782	802	1,114	779	779	811	1,116	1,819	779	879
Pumped storage / other	6	3	3	3	3	3	3	3	3	3	3
Renewable sources	463	668	794	1,044	631	717	743	1,074	1,185	672	847
Distributed generation	0	2	1	0	22	1	4	1	0	48	2
Combined heat and power[1]	165	276	287	313	283	295	375	400	432	385	411
Total	**4,054**	**4,815**	**4,689**	**4,505**	**4,924**	**4,791**	**5,219**	**5,060**	**4,902**	**5,456**	**5,237**
Retrofits (gigawatts)											
Scrubber	0.00	31.99	23.25	22.94	28.71	23.03	31.99	23.25	22.94	28.71	23.03
Nitrogen oxide controls											
Combustion	0.00	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Selective catalytic reduction post-combustion	0.00	10.33	11.11	11.71	10.29	10.25	10.33	11.97	11.71	10.29	10.68
Selective non-catalytic reduction post-combustion	0.00	3.04	3.04	3.04	3.04	3.04	3.04	4.49	3.04	3.04	3.78
Emissions by the electric power sector[2]											
Sulfur dioxide (million short tons)	3.34	1.58	1.09	0.24	1.37	0.67	1.61	0.84	0.03	1.32	0.38
Nitrogen oxides (million short tons)	1.68	1.59	1.16	0.37	1.44	0.78	1.60	0.94	0.24	1.39	0.55
Mercury (short tons)	26.35	6.69	4.90	1.15	6.07	3.24	6.81	3.90	0.28	5.91	1.90
Carbon dioxide emissions (million metric tons)											
by sector											
Residential	295	286	282	277	291	288	268	264	257	277	271
Commercial	206	230	224	219	239	234	246	240	233	263	254
Industrial[3]	937	1,107	1,086	1,073	1,151	1,121	1,123	1,102	1,078	1,206	1,171
Transportation	1,812	1,677	1,647	1,606	1,723	1,686	1,691	1,651	1,604	1,767	1,714
Electric power[2]	2,039	2,227	1,810	826	2,201	1,620	2,271	1,446	419	2,254	1,372
by fuel											
Petroleum[4]	2,254	2,136	2,094	2,040	2,192	2,141	2,113	2,060	2,000	2,208	2,143
Natural gas	1,366	1,572	1,589	1,592	1,730	1,851	1,694	1,595	1,412	1,981	2,066
Coal	1,657	1,807	1,354	358	1,671	944	1,780	1,036	168	1,565	562
Other[5]	12	12	12	12	12	12	12	12	12	12	12
Total carbon dioxide emissions	**5,290**	**5,527**	**5,049**	**4,001**	**5,605**	**4,949**	**5,599**	**4,703**	**3,591**	**5,767**	**4,782**

Table D5. Key results for enviornmental cases (continued)

Net summer capacity, generation, emissions, fuel prices, and coal production	2012	2030					2040				
		Reference	GHG10	GHG25	High Oil and Gas Resource	GHG10 and Low Gas Prices	Reference	GHG10	GHG25	High Oil and Gas Resource	GHG10 and Low Gas Prices
Energy consumption (quadrillion Btu)											
Liquid fuels and other petroleum[6]	35.87	35.65	35.01	34.28	36.59	35.87	35.35	34.57	33.72	37.20	36.16
Natural gas	26.20	30.03	30.56	31.99	33.02	35.53	32.32	31.07	30.36	37.86	39.93
Coal[7]	17.34	19.01	14.50	3.95	17.57	10.07	18.75	11.41	1.96	16.49	6.15
Nuclear / uranium[8]	8.05	8.18	8.40	11.66	8.15	8.15	8.49	11.68	19.03	8.15	9.20
Hydropower	2.67	2.87	2.91	2.93	2.83	2.87	2.90	2.98	2.95	2.84	2.94
Biomass[9]	2.53	3.95	4.61	4.13	3.96	4.32	4.26	5.29	4.33	4.37	4.53
Other renewable energy[10]	1.97	3.23	3.76	6.69	2.91	3.32	3.89	6.03	8.15	3.21	4.62
Other[11]	0.39	0.35	0.35	0.42	0.33	0.34	0.35	0.36	0.45	0.30	0.32
Total consumption	**95.02**	**103.27**	**100.10**	**96.05**	**105.37**	**100.47**	**106.31**	**103.40**	**100.95**	**110.43**	**103.85**
Prices to the electric power sector[2] (2012 dollars per million Btu)											
Natural gas	3.44	6.49	7.70	9.34	5.02	6.07	8.16	9.57	12.38	5.17	7.31
Coal	2.39	2.93	4.74	7.14	2.78	4.45	3.19	6.08	10.27	2.97	5.62
Average energy prices to all users (2012 dollars per million Btu)											
Propane	23.24	24.66	26.03	27.85	22.48	23.99	26.79	28.59	31.75	24.04	26.10
E85[12]	35.06	27.91	28.85	30.40	26.18	26.72	35.49	35.93	37.64	33.33	33.92
Motor gasoline[13]	30.44	28.53	29.95	32.02	26.09	27.32	32.67	34.65	37.85	29.18	30.82
Jet fuel[14]	22.99	23.71	25.09	27.10	20.82	22.07	28.07	30.28	33.46	24.10	26.52
Distillate fuel oil	28.36	29.67	31.06	33.10	27.15	28.40	33.54	35.61	38.90	30.19	32.20
Residual fuel oil	20.41	16.32	17.79	19.83	14.79	16.07	19.42	21.81	25.28	17.18	19.54
Natural gas	5.38	8.49	9.62	11.07	6.88	7.65	10.38	11.86	14.65	7.06	8.92
Metallurgical coal	7.25	9.51	11.60	14.45	9.42	11.49	10.20	13.52	18.91	10.05	13.35
Other coal	2.44	2.98	4.82	7.46	2.85	4.56	3.25	6.18	11.26	3.04	5.84
Electricity	28.85	30.56	33.64	38.27	28.56	31.42	32.63	36.54	39.72	28.40	32.93
Average electricity price (2012 cents per kilowatthour)	**9.8**	**10.4**	**11.5**	**13.1**	**9.7**	**10.7**	**11.1**	**12.5**	**13.6**	**9.7**	**11.2**

[1]Includes combined heat and power plants and electricity-only plants in the commercial and industrial sectors that have a non-regulatory status. 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.
[2]Includes electricity-only and combined heat and power plants that have a regulatory status.
[3]Includes combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
[4]This includes carbon dioxide from international bunker fuels, both civilian and military, which are excluded from the accounting of carbon dioxide emissions under the United Nations convention. From 1990 through 2012, international bunker fuels accounted for 90 to 126 million metric tons annually.
[5]Includes emissions from geothermal power and emissions from non-biogenic municipal waste.
[6]Estimated consumption. Includes petroleum-derived fuels and non-petroleum derived fuels, such as ethanol and biodiesel, and coal-based synthetic liquids. Petroleum coke, which is a solid, is included. Also included are natural gas plant liquids and crude oil consumed as a fuel. Refer to Table A17 for detailed renewable liquid fuels consumption.
[7]Excludes coal converted to coal-based synthetic liquids and natural gas.
[8]These values represent the energy obtained from uranium when it is used in light water reactors. The total energy content of uranium is much larger, but alternative processes are required to take advantage of it.
[9]Includes grid-connected electricity from wood and wood waste, non-electric energy from wood, and biofuels heat and coproducts used in the production of liquid fuels, but excludes the energy content of the liquid fuels.
[10]Includes grid-connected electricity from landfill gas; biogenic municipal waste; wind; photovoltaic and solar thermal sources; and non-electric energy from renewable sources, such as active and passive solar systems. Excludes electricity imports using renewable sources and nonmarketed renewable energy.
[11]Includes non-biogenic municipal waste, liquid hydrogen, and net electricity imports.
[12]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 varies seasonally. The annual average ethanol content of 74 percent is used for this forecast.
[13]Sales weighted-average price for all grades. Includes Federal, State and local taxes.
[14]Kerosene-type jet fuel. Includes Federal and State taxes while excluding county and local taxes.
GHG = Greenhouse gas.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding. Data for 2012 are model results and may differ from official EIA data reports.
Source: U.S. Energy Information Administration, AEO2014 National Energy Modeling System runs REF2014.D102413A, CO2FEE10.D011614A, CO2FEE25.D011614A, HIGHRESOURCE.D112913B, CO2FEE10HR.D011614A.

Table D6. Key results for low electricity demand case

(gigawatts, unless otherwise noted)

Net summer capacity, generation, emissions, and fuel prices	2012	2020		2030		2040	
		Reference	Low Electricity Demand	Reference	Low Electricity Demand	Reference	Low Electricity Demand
Total electricity sales (billion kilowatthours)	**3,686**	**3,986**	**3,580**	**4,327**	**3,604**	**4,623**	**3,690**
Average electricity price (2012 cents per kilowatthour)	**9.8**	**10.1**	**9.9**	**10.4**	**9.9**	**11.1**	**10.1**
Capacity							
Coal steam	306.6	259.2	199.9	258.4	199.6	258.4	199.6
Oil and natural gas steam	100.4	86.0	65.8	72.1	37.9	69.6	32.5
Combined cycle	211.9	231.0	229.4	285.6	230.6	342.2	242.1
Combustion turbine / diesel	139.8	149.7	133.8	184.0	119.6	223.7	120.8
Nuclear / uranium	102.1	97.8	97.8	98.2	97.8	102.0	97.8
Pumped storage	22.4	22.4	22.4	22.4	22.4	22.4	22.4
Fuel cells	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Renewable sources	148.9	174.4	159.4	179.6	162.5	200.5	166.7
Distributed generation	0.0	1.6	0.2	4.6	0.2	8.9	0.5
Combined heat and power[1]	33.8	47.2	50.1	63.4	84.6	87.7	137.2
Total	**1,065.8**	**1,069.5**	**958.7**	**1,168.2**	**955.2**	**1,315.6**	**1,019.7**
Cumulative additions							
Coal steam	0.0	2.5	2.5	2.5	2.5	2.6	2.5
Oil and natural gas steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined cycle	0.0	19.4	17.8	74.0	19.0	130.6	30.5
Combustion turbine / diesel	0.0	17.8	7.4	53.0	8.1	93.2	12.5
Nuclear / uranium	0.0	5.5	5.5	5.8	5.5	9.7	5.5
Pumped storage	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
Renewable sources	0.0	26.4	11.4	31.6	14.5	52.5	18.7
Distributed generation	0.0	1.6	0.2	4.6	0.2	8.9	0.5
Combined heat and power[1]	0.0	13.5	16.3	29.7	50.8	53.9	103.4
Total	**0.0**	**86.7**	**61.0**	**201.1**	**100.6**	**351.5**	**173.6**
Cumulative retirements	**0.0**	**78.0**	**163.2**	**93.8**	**206.3**	**96.7**	**214.7**
Generation by fuel (billion kilowatthours)							
Coal	1,499	1,632	1,322	1,678	1,335	1,661	1,318
Petroleum	20	16	14	16	13	16	14
Natural gas	1,133	1,155	1,096	1,391	1,076	1,605	1,138
Nuclear / uranium	769	779	779	782	779	811	779
Pumped storage / other	6	3	3	3	3	3	3
Renewable sources	463	607	546	668	577	743	612
Distributed generation	0	1	0	2	0	4	0
Total electric power sector generation[2]	**3,890**	**4,193**	**3,760**	**4,540**	**3,783**	**4,844**	**3,865**
Combined heat and power[1]	165	209	215	276	309	375	457
Total electricity generation	**4,054**	**4,402**	**3,974**	**4,815**	**4,092**	**5,219**	**4,321**
Carbon dioxide emissions by the electric power sector (million metric tons)[2]							
Petroleum	19	13	12	14	12	14	12
Natural gas	494	478	453	545	438	608	456
Coal	1,514	1,609	1,296	1,656	1,308	1,637	1,292
Other[3]	12	12	12	12	12	12	12
Total	**2,039**	**2,112**	**1,772**	**2,227**	**1,770**	**2,271**	**1,771**
Prices to the electric power sector[2] (2012 dollars per million Btu)							
Petroleum	21.46	17.28	17.08	20.80	20.69	24.30	24.06
Natural gas	3.44	5.07	5.02	6.49	5.95	8.16	7.33
Coal	2.39	2.61	2.43	2.93	2.69	3.19	2.93

[1]Includes combined heat and power plants and electricity-only plants in commercial and industrial sectors that have a non-regulatory status. 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.
[2]Includes electricity-only and combined heat and power plants that have a regulatory status.
[3]Includes emissions from geothermal power and nonbiogenic emissions from municipal solid waste.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding. Data for 2012 are model results and may differ from official EIA data reports.
Source: U.S. Energy Information Administration, AEO2014 National Energy Modeling System runs REF2014.D102413A, and FLAT.D010914A.

Table D7. Natural gas supply and disposition, oil and gas resource cases

(trillion cubic feet per year, unless otherwise noted)

Supply, disposition, and prices	2012	2020			2030			2040		
		Low Oil and Gas Resource	Reference	High Oil and Gas Resource	Low Oil and Gas Resource	Reference	High Oil and Gas Resource	Low Oil and Gas Resource	Reference	High Oil and Gas Resource
Henry Hub spot price										
(2012 dollars per million Btu)	2.75	5.28	4.38	4.34	8.15	6.03	4.25	10.53	7.65	4.58
(2012 dollars per thousand cubic feet)	2.81	5.39	4.47	4.44	8.33	6.17	4.35	10.76	7.82	4.68
Dry gas production[1]	**24.06**	**26.77**	**29.09**	**31.29**	**28.99**	**34.43**	**39.07**	**28.07**	**37.54**	**45.51**
Lower 48 onshore	22.07	24.30	26.65	28.61	25.28	30.82	36.29	23.59	33.43	42.41
Associated-dissolved[2]	2.06	2.47	2.65	3.09	2.04	2.25	3.43	1.69	1.91	2.99
Non-associated	20.02	21.83	24.00	25.52	23.25	28.57	32.86	21.89	31.52	39.42
Tight gas	4.86	5.99	6.48	6.54	6.31	8.06	7.62	6.55	8.41	9.51
Shale gas	9.72	11.53	13.33	14.79	13.10	16.92	21.85	11.59	19.82	26.95
Coalbed methane	1.58	1.73	1.66	1.59	1.86	1.61	1.43	2.15	1.71	1.40
Other	3.86	2.57	2.53	2.60	1.97	1.98	1.96	1.59	1.58	1.56
Lower 48 offshore	1.66	2.19	2.16	2.40	2.53	2.42	2.52	3.32	2.95	2.81
Associated-dissolved[2]	0.48	0.68	0.68	0.77	0.61	0.58	0.60	0.78	0.71	0.69
Non-associated	1.18	1.51	1.48	1.64	1.92	1.84	1.92	2.53	2.24	2.13
Alaska	0.33	0.28	0.28	0.28	1.18	1.19	0.27	1.17	1.17	0.28
Supplemental natural gas[3]	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Net imports	**1.51**	**-0.99**	**-1.93**	**-2.18**	**-2.66**	**-4.94**	**-6.66**	**-2.21**	**-5.80**	**-8.30**
Pipeline[4]	1.37	0.18	0.00	0.15	-0.69	-1.57	-1.69	-0.35	-2.43	-3.33
Liquefied natural gas	0.15	-1.17	-1.93	-2.33	-1.97	-3.37	-4.97	-1.86	-3.37	-4.97
Total supply	**25.64**	**25.84**	**27.23**	**29.18**	**26.39**	**29.56**	**32.48**	**25.92**	**31.81**	**37.27**
Consumption by sector										
Residential	4.17	4.42	4.46	4.52	4.20	4.33	4.41	3.98	4.12	4.28
Commercial	2.90	3.10	3.16	3.27	3.09	3.28	3.41	3.35	3.57	3.85
Industrial[5]	7.14	8.00	8.09	8.20	8.11	8.52	8.79	8.24	8.68	9.22
Natural-gas-to-liquids heat and power[6]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural gas to liquids production[7]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electric power[8]	9.25	7.82	8.81	10.33	8.19	10.06	12.10	7.31	11.23	14.99
Transportation[9]	0.04	0.08	0.08	0.08	0.21	0.28	0.22	0.48	0.85	0.76
Pipeline fuel	0.72	0.67	0.73	0.74	0.71	0.80	0.89	0.71	0.83	0.98
Lease and plant fuel[10]	1.42	1.59	1.74	1.86	1.71	2.11	2.50	1.69	2.35	2.98
Total	**25.64**	**25.68**	**27.06**	**29.01**	**26.23**	**29.39**	**32.31**	**25.76**	**31.63**	**37.05**
Discrepancy[11]	0.00	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.18	0.21
Lower 48 end of year dry reserves[1]	**320.09**	**334.75**	**352.47**	**388.50**	**342.80**	**382.58**	**427.94**	**347.18**	**402.59**	**492.37**

[1]Marketed production (wet) minus extraction losses.
[2]Gas which occurs in crude oil reservoirs either as free gas (associated) or as gas in solution with crude oil (dissolved).
[3]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.
[4]Includes any natural gas regasified in the Bahamas and transported via pipeline to Florida, as well as gas from Canada and Mexico.
[5]Includes energy for combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
[6]Includes any natural gas used in the process of converting natural gas to liquid fuel that is not actually converted.
[7]Includes any natural gas converted into liquid fuel.
[8]Includes consumption of energy by electricity-only and combined heat and power plants that have a regulatory status.
[9]Natural gas used as fuel in motor vehicles, trains, and ships.
[10]Represents natural gas used in well, field, and lease operations, in natural gas processing plant machinery, and for liquefaction in export facilities.
[11]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, 2012 values include net storage injections.

Note: Totals may not equal sum of components due to independent rounding. Data for 2012 are model results and may differ from official EIA data reports.

Sources: 2012 supply values; lease, plant, and pipeline fuel consumption: U.S. Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2013/06) (Washington, DC, June 2013). Other 2012 consumption based on: EIA, *Monthly Energy Review*, DOE/EIA-0035(2013/09) (Washington, DC, September 2013). 2012 natural gas price at Henry Hub based on daily spot prices published in Natural Gas Intelligence. **Projections:** EIA, AEO2014 National Energy Modeling System runs LOWRESOURCE.D112913A, REF2014.D102413A, and HIGHRESOURCE.D112913B.

Table D8. Liquid fuels supply and disposition, oil and gas resource case

(million barrels per day, unless otherwise noted)

Supply, disposition, and prices	2012	2020			2030			2040		
		Low Oil and Gas Resource	Reference	High Oil and Gas Resource	Low Oil and Gas Resource	Reference	High Oil and Gas Resource	Low Oil and Gas Resource	Reference	High Oil and Gas Resource
Crude oil prices (2012 dollars per barrel)										
Brent spot	111.65	98.61	96.57	91.58	122.90	118.99	106.55	145.02	141.46	124.74
West Texas Intermediate spot	94.12	96.56	94.57	89.69	120.83	116.99	104.76	142.96	139.46	122.97
Imported crude oil[1]	101.10	90.10	88.07	82.58	113.23	109.22	96.67	133.65	130.80	113.71
Crude oil supply										
Domestic production[2]	6.49	8.85	9.55	11.41	7.05	8.30	12.85	6.61	7.48	13.22
Alaska	0.53	0.44	0.44	0.49	0.24	0.24	0.69	0.31	0.26	1.00
Lower 48 States	5.96	8.42	9.12	10.93	6.81	8.06	12.16	6.30	7.22	12.22
Net imports	8.43	6.49	5.79	3.95	7.82	6.64	2.33	8.71	7.74	2.38
Gross imports	8.49	6.64	5.94	4.10	7.95	6.77	2.46	8.84	7.87	2.51
Exports	0.06	0.15	0.15	0.15	0.13	0.13	0.13	0.12	0.12	0.12
Other crude oil supply[3]	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total crude oil supply	**15.01**	**15.35**	**15.34**	**15.36**	**14.88**	**14.94**	**15.17**	**15.32**	**15.22**	**15.60**
Other petroleum supply	**0.10**	**0.15**	**0.23**	**0.10**	**-0.08**	**-0.34**	**-0.46**	**-0.34**	**-0.86**	**-1.74**
Net product imports	-0.92	-0.94	-0.86	-0.92	-1.07	-1.29	-1.32	-1.34	-1.82	-2.55
Gross refined product imports[4]	0.85	0.94	0.98	1.12	1.02	1.06	1.26	1.19	1.10	1.08
Unfinished oil imports	0.60	0.52	0.52	0.52	0.49	0.49	0.49	0.45	0.45	0.45
Blending component imports	0.62	0.62	0.62	0.61	0.50	0.50	0.49	0.40	0.40	0.38
Exports	2.98	3.02	2.97	3.18	3.08	3.33	3.56	3.38	3.76	4.46
Refinery processing gain[5]	1.08	1.10	1.08	1.02	0.99	0.96	0.86	0.99	0.95	0.82
Product stock withdrawal	-0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other non-petroleum supply	**3.48**	**3.99**	**3.96**	**4.34**	**3.85**	**4.32**	**4.77**	**3.55**	**4.36**	**5.99**
Supply from renewable sources	0.89	1.01	1.01	1.02	1.04	1.04	1.04	1.06	1.07	1.08
Ethanol	0.83	0.89	0.90	0.90	0.92	0.91	0.92	0.96	0.95	0.96
Domestic production	0.84	0.83	0.84	0.84	0.85	0.86	0.87	0.87	0.86	0.89
Net imports	-0.02	0.06	0.06	0.06	0.07	0.06	0.05	0.08	0.08	0.07
Biodiesel	0.06	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Domestic production	0.06	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Net imports	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Other biomass-derived liquids[6]	0.00	0.03	0.03	0.03	0.03	0.04	0.03	0.01	0.03	0.03
Liquids from gas	2.40	2.68	2.65	3.05	2.50	2.98	3.44	2.17	2.98	4.62
Natural gas plant liquids	2.40	2.68	2.65	3.05	2.50	2.98	3.44	2.17	2.98	4.62
Gas-to-liquids	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liquids from coal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other[7]	0.19	0.30	0.30	0.27	0.31	0.30	0.29	0.32	0.31	0.29
Total primary supply[8]	**18.59**	**19.49**	**19.52**	**19.80**	**18.64**	**18.93**	**19.48**	**18.52**	**18.72**	**19.85**
Net import share of product supplied (percent)	40.3	28.8	25.6	15.7	36.6	28.6	5.5	40.3	32.2	-0.4
Net expenditures for imports of crude oil and petroleum products (billion 2012 dollars)	313.70	226.68	198.85	131.35	337.87	278.60	94.87	441.03	385.39	112.60
Lower 48 end of year reserves[2] (billion barrels)	**24.71**	**29.22**	**31.78**	**37.19**	**29.86**	**34.42**	**47.13**	**32.56**	**35.45**	**48.12**

Table D8. Liquid fuels supply and disposition, oil and gas resource case (continued)

(million barrels per day, unless otherwise noted)

Supply, disposition, and prices	2012	2020			2030			2040		
		Low Oil and Gas Resource	Reference	High Oil and Gas Resource	Low Oil and Gas Resource	Reference	High Oil and Gas Resource	Low Oil and Gas Resource	Reference	High Oil and Gas Resource
Refined petroleum product prices to the transportation sector (2012 dollars per gallon)										
Propane	2.30	2.33	2.27	2.20	2.54	2.45	2.27	2.68	2.63	2.42
Ethanol (E85)[9]	3.33	2.46	2.43	2.36	2.68	2.65	2.49	3.36	3.37	3.17
Ethanol wholesale price	2.58	2.71	2.66	2.64	2.62	2.52	2.41	2.64	2.65	2.54
Motor gasoline[10]	3.69	3.11	3.08	2.96	3.50	3.43	3.13	3.92	3.90	3.49
Jet fuel[11]	3.10	2.68	2.63	2.49	3.32	3.20	2.81	3.89	3.79	3.25
Distillate fuel oil[12]	3.95	3.72	3.67	3.54	4.32	4.20	3.85	4.79	4.73	4.26
Residual fuel oil	3.00	1.90	1.86	1.78	2.41	2.32	2.13	2.86	2.78	2.47
Residual fuel oil (2012 dollars per barrel)	126.17	79.86	78.31	74.64	101.27	97.43	89.26	120.14	116.65	103.86

[1]Weighted average price delivered to U.S. refiners.
[2]Includes lease condensate.
[3]Strategic petroleum reserve stock additions plus unaccounted for crude oil and crude stock withdrawals minus crude product supplied.
[4]Includes other hydrocarbons and alcohol.
[5]The volumetric amount by which total output is greater than input due to the processing of crude oil into products which, in total, have a lower specific gravity than the crude oil processed.
[6]Includes pyrolysis oils, biomass-derived Fischer-Tropsch liquids, and renewable feedstocks used for the on-site production of diesel and gasoline.
[7]Includes domestic sources of other blending components, other hydrocarbons, and ethers.
[8]Total crude supply plus other petroleum supply plus other non-petroleum supply.
[9]E85 refers to a blend of 85 pecent ethanol (renewable) and 15 percent motor gasoline (nonrenewable). To address cold starting issues, the percentage of ethanol varies seasonally. The annual average ethanol content of 74 percent is used for this forecast.
[10]Sales weighted-average price for all grades. Includes Federal, State, and local taxes.
[11]Includes only kerosene-type.
[12]Diesel fuel for on-road use. Includes Federal and State taxes while excluding county and local taxes.
Note: Totals may not equal sum of components due to independent rounding. Data for 2012 are model results and may differ from official EIA data reports.
Sources: 2012 product supplied data and imported crude oil price based on: U.S. Energy Information Administration (EIA), *Monthly Energy Review*, DOE/EIA-0035(2013/09) (Washington, DC, September 2013). 2012 crude oil spot prices: Thomson Reuters. 2012 transportation sector prices based on: EIA, Form EIA-782A, "Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report". 2012 E85 prices derived from monthly prices in the Clean Cities Alternative Fuel Price Report. 2012 wholesale ethanol prices derived from Bloomberg U.S. average rack price. Other 2012 data: EIA, *Petroleum Supply Annual 2012*, DOE/EIA-0340(2012)/1 (Washington, DC, September 2013). **Projections:** EIA, AEO2014 National Energy Modeling System runs LOWRESOURCE.D112913A, REF2014.D102413A, and HIGHRESOURCE.D112913B.

Table D9. Key transportation results, oil and gas resource cases

Consumption and indicators	2012	2020			2030			2040		
		Low Oil and Gas Resource	Reference	High Oil and Gas Resource	Low Oil and Gas Resource	Reference	High Oil and Gas Resource	Low Oil and Gas Resource	Reference	High Oil and Gas Resource
Level of travel										
(billion vehicle miles traveled)										
Light-duty vehicles less than 8,501 pounds	2,662	2,846	2,851	2,869	3,118	3,138	3,201	3,422	3,434	3,529
Commercial light trucks[1]	63	76	76	77	88	90	91	101	103	106
Freight trucks greater than 10,000 pounds	245	308	310	317	351	362	377	398	411	437
(billion seat miles available)										
Air	990	1,064	1,064	1,065	1,135	1,135	1,135	1,199	1,199	1,199
(billion ton miles traveled)										
Rail	1,729	1,675	1,624	1,581	1,761	1,738	1,688	1,763	1,736	1,647
Domestic shipping	378	386	390	406	356	369	403	360	371	419
Energy efficiency indicators										
(miles per gallon)										
Tested new light-duty vehicle[2]	31.7	38.7	38.6	38.5	47.9	47.8	47.4	48.1	48.2	47.7
New car[2]	36.3	44.2	44.2	44.2	55.2	55.4	55.2	55.4	55.6	55.3
New light truck[2]	27.5	33.7	33.7	33.6	40.8	40.7	40.6	40.9	40.8	40.7
On-road new light-duty vehicle[3]	25.6	31.2	31.2	31.1	38.7	38.6	38.3	38.9	38.9	38.5
New car[3]	29.7	36.1	36.1	36.1	45.1	45.2	45.1	45.2	45.4	45.2
New light truck[3]	22.0	27.0	27.0	26.9	32.7	32.6	32.5	32.7	32.7	32.6
Light-duty stock[4]	21.5	25.1	25.1	25.1	32.6	32.6	32.4	37.2	37.2	36.9
New commercial light truck[1]	18.1	20.9	20.9	20.8	24.5	24.5	24.4	24.6	24.6	24.5
Stock commercial light truck[1]	15.2	18.0	18.0	18.0	22.5	22.5	22.5	24.5	24.5	24.4
Freight truck	6.7	7.3	7.3	7.3	7.7	7.7	7.7	7.8	7.8	7.8
(seat miles per gallon)										
Aircraft	62.4	63.9	63.9	63.9	67.0	67.0	67.0	71.5	71.5	71.6
(ton miles per thousand Btu)										
Rail	3.4	3.6	3.6	3.6	3.9	3.9	3.9	4.2	4.2	4.2
Domestic shipping	4.7	5.0	5.0	5.0	5.4	5.4	5.4	5.8	5.8	5.8
Energy use by mode (quadrillion Btu)										
Light-duty vehicles	15.49	14.21	14.24	14.34	12.00	12.09	12.38	11.53	11.58	12.00
Commercial light trucks[1]	0.52	0.53	0.53	0.53	0.49	0.50	0.51	0.52	0.53	0.54
Bus transportation	0.24	0.25	0.25	0.25	0.27	0.27	0.27	0.29	0.29	0.29
Freight trucks	5.02	5.83	5.87	6.00	6.26	6.47	6.73	6.97	7.23	7.71
Rail, passenger	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06
Rail, freight	0.48	0.46	0.45	0.43	0.45	0.45	0.43	0.43	0.42	0.40
Shipping, domestic	0.10	0.09	0.09	0.10	0.08	0.08	0.09	0.07	0.08	0.09
Shipping, international	0.58	0.59	0.59	0.59	0.60	0.60	0.60	0.61	0.61	0.61
Recreational boats	0.24	0.25	0.25	0.26	0.27	0.27	0.28	0.28	0.28	0.29
Air	2.47	2.60	2.60	2.60	2.68	2.69	2.69	2.70	2.70	2.70
Military use	0.70	0.64	0.64	0.64	0.68	0.68	0.68	0.77	0.77	0.77
Lubricants	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Pipeline fuel	0.73	0.69	0.74	0.75	0.72	0.82	0.91	0.72	0.85	1.00
Total	**26.74**	**26.31**	**26.41**	**26.66**	**24.69**	**25.09**	**25.75**	**25.07**	**25.51**	**26.59**

Table D9. Key transportation results, oil and gas resource cases (continued)

Consumption and indicators	2012	2020			2030			2040		
		Low Oil and Gas Resource	Reference	High Oil and Gas Resource	Low Oil and Gas Resource	Reference	High Oil and Gas Resource	Low Oil and Gas Resource	Reference	High Oil and Gas Resource
Energy use by fuel (quadrillion Btu)										
Propane	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.07	0.07	0.07
Motor gasoline[5]	16.33	14.97	15.00	15.11	12.59	12.69	13.02	12.04	12.09	12.56
of which: E85[6]	0.01	0.19	0.19	0.18	0.49	0.46	0.43	0.34	0.33	0.29
Jet fuel[7]	3.00	3.08	3.08	3.08	3.20	3.20	3.20	3.28	3.28	3.28
Distillate fuel oil[8]	5.82	6.67	6.70	6.81	7.12	7.25	7.55	7.65	7.54	8.08
Residual fuel oil	0.58	0.58	0.58	0.58	0.59	0.59	0.59	0.60	0.60	0.60
Other petroleum[9]	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Liquid fuels and other petroleum	25.93	25.50	25.55	25.78	23.70	23.94	24.57	23.79	23.73	24.74
Pipeline fuel natural gas	0.73	0.69	0.74	0.75	0.72	0.82	0.91	0.72	0.85	1.00
Compressed/liquefied natural gas	0.04	0.08	0.08	0.08	0.21	0.28	0.22	0.48	0.86	0.77
Liquid hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.06	0.06	0.06
Delivered energy	**26.72**	**26.30**	**26.40**	**26.65**	**24.69**	**25.08**	**25.74**	**25.06**	**25.50**	**26.58**
Electricity related losses	0.05	0.06	0.06	0.06	0.09	0.08	0.08	0.12	0.12	0.11
Total	**26.77**	**26.36**	**26.47**	**26.71**	**24.77**	**25.17**	**25.82**	**25.18**	**25.62**	**26.68**

[1]Commercial trucks 8,501 to 10,000 pounds gross vehicle weight rating.
[2]Environmental Protection Agency rated miles per gallon.
[3]Tested new vehicle efficiency revised for on-road performance.
[4]Combined "on-the-road" estimate for all cars and light trucks.
[5]Includes ethanol and ethers blended into gasoline.
[6]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 varies seasonally. The annual average ethanol content of 74 percent is used for this forecast.
[7]Includes only kerosene type.
[8]Diesel fuel for on- and off- road use.
[9]Includes aviation gasoline and lubricants.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding. Data for 2012 are model results and may differ from official EIA data reports.
Source: 2012 consumption based on: U.S. Energy Information Administration (EIA), *Monthly Energy Review*, DOE/EIA-0384(2013/09) (Washington, DC, September 2013). Other 2012 data: Federal Highway Administration, *Highway Statistics 2010* (Washington, DC, February 2012); Oak Ridge National Laboratory, *Transportation Energy Data Book: Edition 31* (Oak Ridge, TN, July 2012); National Highway Traffic and Safety Administration, *Summary of Fuel Economy Performance* (Washington, DC, October 28, 2010); U.S. Department of Commerce, Bureau of the Census, "Vehicle Inventory and Use Survey", EC02TV (Washington, DC, December 2004); EIA, Alternatives to Traditional Transportation Fuels 2009 (Part II – User and Fuel Data), April 2011; EIA, *State Energy Data Report 2011*, DOE/EIA-0214(2011) (Washington, DC, June 2013); U.S. Department of Transportation, Research and Special Programs Administration, *Air Carrier Statistics Monthly, December 2010-2009* (Washington, DC, December 2010); and United States Department of Defense, Defense Fuel Supply Center, Factbook (January, 2010). **Projections:** EIA, AEO2014 National Energy Modeling System runs LOWRESOURCE.D112913A, REF2014.D102413A, and HIGHRESOURCE.D112913B.

Table D10. Key transportation results, vehicle miles traveled cases

Consumption and indicators	2012	2020			2030			2040		
		Low VMT	Reference	High VMT	Low VMT	Reference	High VMT	Low VMT	Reference	High VMT
Level of travel										
(billion vehicle miles traveled)										
Light-duty vehicles less than 8,501 pounds	2,662	2,752	2,851	2,954	2,772	3,138	3,301	2,793	3,434	3,624
Commercial light trucks[1]	63	75	76	77	86	90	91	97	103	105
Freight trucks greater than 10,000 pounds	245	310	310	310	362	362	362	410	411	411
(billion seat miles available)										
Air	990	1,064	1,064	1,064	1,135	1,135	1,135	1,199	1,199	1,199
(billion ton miles traveled)										
Rail	1,729	1,624	1,624	1,620	1,736	1,738	1,736	1,738	1,736	1,737
Domestic shipping	378	390	390	390	368	369	369	370	371	371
Vehicles miles traveled per licensed driver (thousand miles)	12.5	11.8	12.2	12.7	11.0	12.5	13.1	10.4	12.8	13.5
Licensed drivers (millions)	213.1	233.5	233.5	233.5	252.0	252.0	252.0	268.6	268.6	268.6
Energy efficiency indicators										
(miles per gallon)										
Tested new light-duty vehicle[2]	31.7	38.6	38.6	38.7	47.8	47.8	47.9	48.0	48.2	48.2
New car[2]	36.3	44.2	44.2	44.2	55.4	55.4	55.2	55.5	55.6	55.4
New light truck[2]	27.5	33.7	33.7	33.7	40.9	40.7	40.9	40.9	40.8	40.9
On-road new light-duty vehicle[3]	25.6	31.2	31.2	31.3	38.6	38.6	38.7	38.8	38.9	39.0
New car[3]	29.7	36.1	36.1	36.1	45.2	45.2	45.1	45.3	45.4	45.3
New light truck[3]	22.0	27.0	27.0	27.0	32.7	32.6	32.7	32.8	32.7	32.8
Light-duty stock[4]	21.5	25.1	25.1	25.1	32.6	32.6	32.6	37.2	37.2	37.3
New commercial light truck[1]	18.1	20.9	20.9	20.9	24.6	24.5	24.6	24.7	24.6	24.7
Stock commercial light truck[1]	15.2	18.0	18.0	18.0	22.6	22.5	22.6	24.6	24.5	24.6
Freight truck	6.7	7.3	7.3	7.3	7.7	7.7	7.7	7.8	7.8	7.8
(seat miles per gallon)										
Aircraft	62.4	63.9	63.9	63.9	67.0	67.0	67.0	71.5	71.5	71.5
(ton miles per thousand Btu)										
Rail	3.4	3.6	3.6	3.6	3.9	3.9	3.9	4.2	4.2	4.2
Domestic shipping	4.7	5.0	5.0	5.0	5.4	5.4	5.4	5.8	5.8	5.8
Energy use by mode (quadrillion Btu)										
Light-duty vehicles	15.49	13.74	14.24	14.75	10.66	12.09	12.71	9.42	11.58	12.21
Commercial light trucks[1]	0.52	0.52	0.53	0.54	0.48	0.50	0.51	0.49	0.53	0.53
Bus transportation	0.24	0.25	0.25	0.25	0.27	0.27	0.27	0.29	0.29	0.29
Freight trucks	5.02	5.87	5.87	5.87	6.46	6.47	6.47	7.22	7.23	7.24
Rail, passenger	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06
Rail, freight	0.48	0.45	0.45	0.45	0.45	0.45	0.45	0.42	0.42	0.42
Shipping, domestic	0.10	0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.08	0.08
Shipping, international	0.58	0.59	0.59	0.59	0.60	0.60	0.60	0.61	0.61	0.61
Recreational boats	0.24	0.25	0.25	0.25	0.27	0.27	0.27	0.29	0.28	0.28
Air	2.47	2.60	2.60	2.60	2.68	2.69	2.69	2.70	2.70	2.70
Military use	0.70	0.64	0.64	0.64	0.68	0.68	0.68	0.77	0.77	0.77
Lubricants	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Pipeline fuel	0.73	0.74	0.74	0.74	0.81	0.82	0.82	0.84	0.85	0.84
Total	**26.74**	**25.91**	**26.41**	**26.94**	**23.63**	**25.09**	**25.72**	**23.31**	**25.51**	**26.15**
Energy use by fuel (quadrillion Btu)										
Propane	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.07	0.07
Motor gasoline[5]	16.33	14.51	15.00	15.50	11.31	12.69	13.28	10.04	12.09	12.68
of which: E85[6]	0.01	0.21	0.19	0.15	0.56	0.46	0.39	0.49	0.33	0.34
Jet fuel[7]	3.00	3.08	3.08	3.08	3.20	3.20	3.20	3.28	3.28	3.28
Distillate fuel oil[8]	5.82	6.68	6.70	6.71	7.18	7.25	7.27	7.41	7.54	7.58
Residual fuel oil	0.58	0.58	0.58	0.58	0.59	0.59	0.59	0.60	0.60	0.60
Other petroleum[9]	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Liquid fuels and other petroleum	25.93	25.05	25.55	26.07	22.48	23.94	24.55	21.54	23.73	24.37
Pipeline fuel natural gas	0.73	0.74	0.74	0.74	0.81	0.82	0.82	0.84	0.85	0.84
Compressed/liquefied natural gas	0.04	0.08	0.08	0.08	0.28	0.28	0.29	0.86	0.86	0.86
Liquid hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.06	0.06
Delivered energy	**26.72**	**25.90**	**26.40**	**26.93**	**23.62**	**25.08**	**25.71**	**23.30**	**25.50**	**26.14**

Table D10. Key transportation results, vehicle miles traveled cases (continued)

Consumption and indicators	2012	2020			2030			2040		
		Low VMT	Reference	High VMT	Low VMT	Reference	High VMT	Low VMT	Reference	High VMT
Carbon dioxide emissions in the transportation sector (million metric tons)										
Petroleum[10]	1,771	1,701	1,734	1,769	1,521	1,618	1,662	1,451	1,600	1,642
Natural gas[11]	41	44	44	44	58	58	59	91	91	91
Total	**1,812**	**1,745**	**1,777**	**1,812**	**1,579**	**1,677**	**1,721**	**1,542**	**1,691**	**1,733**

[1]Commercial trucks 8,501 to 10,000 pounds gross vehicle weight rating.
[2]Environmental Protection Agency rated miles per gallon.
[3]Tested new vehicle efficiency revised for on-road performance.
[4]Combined "on-the-road" estimate for all cars and light trucks.
[5]Includes ethanol and ethers blended into gasoline.
[6]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 varies seasonally. The annual average ethanol content of 74 percent is used for this forecast.
[7]Includes only kerosene type.
[8]Diesel fuel for on- and off- road use.
[9]Includes aviation gasoline and lubricants.
[10]This includes carbon dioxide from international bunker fuels, both civilian and military, which are excluded from the accounting of carbon dioxide emissions under the United Nations convention. From 1990 through 2012, international bunker fuels accounted for 90 to 126 million metric tons annually.
[11]Include pipeline fuel natural gas and natural gas used as fuel in motor vehicles, trains, and ships.
VMT = Vehicle miles traveled.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding. Data for 2012 are model results and may differ from official EIA data reports.
Source: 2012 consumption based on: U.S. Energy Information Administration (EIA), *Monthly Energy Review*, DOE/EIA-0384(2013/09) (Washington, DC, September 2013). Other 2012 data: Federal Highway Administration, *Highway Statistics 2010* (Washington, DC, February 2012); Oak Ridge National Laboratory, *Transportation Energy Data Book: Edition 31* (Oak Ridge, TN, July 2012); National Highway Traffic and Safety Administration, *Summary of Fuel Economy Performance* (Washington, DC, October 28, 2010); U.S. Department of Commerce, Bureau of the Census, "Vehicle Inventory and Use Survey", EC02TV (Washington, DC, December 2004); EIA, Alternatives to Traditional Transportation Fuels 2009 (Part II – User and Fuel Data), April 2011; EIA, *State Energy Data Report 2011*, DOE/EIA-0214(2011) (Washington, DC, June 2013); U.S. Department of Transportation, Research and Special Programs Administration, *Air Carrier Statistics Monthly, December 2010-2009* (Washington, DC, December 2010); and United States Department of Defense, Defense Fuel Supply Center, Factbook (January, 2010). **Projections:** EIA, AEO2014 National Energy Modeling System runs LOWVMT.D020314B, REF2014.D102413A, and HIGHVMT.D020314D.

Table D11. Key transportation results, rail liquefied natural gas cases

Consumption and indicators	2012	2020			2030			2040		
		Low Rail LNG	Reference	High Rail LNG	Low Rail LNG	Reference	High Rail LNG	Low Rail LNG	Reference	High Rail LNG
Rail travel										
(billion ton miles traveled)	1,729	1,622	1,624	1,622	1,742	1,738	1,739	1,734	1,736	1,737
Rail efficiency										
(ton miles per thousand Btu)	3.4	3.6	3.6	3.6	3.9	3.9	3.9	4.2	4.2	4.2
Energy use by mode (quadrillion Btu)										
Light-duty vehicles	15.49	14.24	14.24	14.24	12.09	12.09	12.09	11.58	11.58	11.59
Commercial light trucks[1]	0.52	0.53	0.53	0.53	0.50	0.50	0.50	0.53	0.53	0.53
Bus transportation	0.24	0.25	0.25	0.25	0.27	0.27	0.27	0.29	0.29	0.29
Freight trucks	5.02	5.87	5.87	5.87	6.47	6.47	6.47	7.24	7.23	7.23
Rail, passenger	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06
Rail, freight	0.48	0.45	0.45	0.45	0.45	0.45	0.44	0.41	0.42	0.41
Distillate fuel oil	0.48	0.44	0.44	0.42	0.41	0.37	0.21	0.35	0.27	0.02
Liquefied natural gas	0.00	0.00	0.00	0.02	0.04	0.08	0.24	0.06	0.15	0.39
Shipping, domestic	0.10	0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.08	0.08
Shipping, international	0.58	0.59	0.59	0.59	0.60	0.60	0.60	0.61	0.61	0.61
Recreational boats	0.24	0.25	0.25	0.25	0.27	0.27	0.27	0.28	0.28	0.28
Air	2.47	2.60	2.60	2.60	2.69	2.69	2.69	2.70	2.70	2.70
Military use	0.70	0.64	0.64	0.64	0.68	0.68	0.68	0.77	0.77	0.76
Lubricants	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Pipeline fuel	0.73	0.74	0.74	0.74	0.83	0.82	0.83	0.85	0.85	0.85
Total	**26.74**	**26.41**	**26.41**	**26.41**	**25.10**	**25.09**	**25.10**	**25.51**	**25.51**	**25.51**
Energy use by fuel (quadrillion Btu)										
Propane	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.07
Motor gasoline[2]	16.33	15.00	15.00	15.00	12.69	12.69	12.69	12.09	12.09	12.09
of which: E85[3]	0.01	0.19	0.19	0.19	0.46	0.46	0.46	0.33	0.33	0.34
Jet fuel[4]	3.00	3.08	3.08	3.08	3.20	3.20	3.20	3.28	3.28	3.28
Distillate fuel oil[5]	5.82	6.70	6.70	6.68	7.29	7.25	7.09	7.61	7.54	7.32
Residual fuel oil	0.58	0.58	0.58	0.58	0.59	0.59	0.59	0.60	0.60	0.60
Other petroleum[6]	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Liquid fuels and other petroleum	25.93	25.55	25.55	25.53	23.98	23.94	23.78	23.79	23.73	23.51
Pipeline fuel natural gas	0.73	0.74	0.74	0.74	0.83	0.82	0.83	0.85	0.85	0.85
Compressed/liquefied natural gas	0.04	0.08	0.08	0.10	0.24	0.28	0.44	0.79	0.86	1.07
Liquid hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.06	0.06	0.06
Delivered energy	**26.72**	**26.40**	**26.40**	**26.40**	**25.09**	**25.08**	**25.09**	**25.50**	**25.50**	**25.51**
Carbon dioxide emissions in the transportation sector (million metric tons)										
Petroleum[7]	1,771	1,734	1,734	1,732	1,621	1,618	1,607	1,605	1,600	1,585
Natural gas[8]	41	44	44	45	57	58	67	87	91	103
Total	**1,812**	**1,778**	**1,777**	**1,777**	**1,678**	**1,677**	**1,674**	**1,693**	**1,691**	**1,687**

[1]Commercial trucks 8,501 to 10,000 pounds gross vehicle weight rating.
[2]Includes ethanol and ethers blended into gasoline.
[3]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 varies seasonally. The annual average ethanol content of 74 percent is used for this forecast.
[4]Includes only kerosene type.
[5]Diesel fuel for on- and off- road use.
[6]Includes aviation gasoline and lubricants.
[7]This includes carbon dioxide from international bunker fuels, both civilian and military, which are excluded from the accounting of carbon dioxide emissions under the United Nations convention. From 1990 through 2012, international bunker fuels accounted for 90 to 126 million metric tons annually.
[8]Includes pipeline fuel natural gas and natural gas used as fuel in motor vehicles, trains, and ships.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding. Data for 2012 are model results and may differ from official EIA data reports.
Source: 2012 consumption based on: U.S. Energy Information Administration (EIA), *Monthly Energy Review*, DOE/EIA-0384(2013/09) (Washington, DC, September 2013). Other 2012 data: Federal Highway Administration, *Highway Statistics 2010* (Washington, DC, February 2012); Oak Ridge National Laboratory, *Transportation Energy Data Book: Edition 31* (Oak Ridge, TN, July 2012); National Highway Traffic and Safety Administration, *Summary of Fuel Economy Performance* (Washington, DC, October 28, 2010); U.S. Department of Commerce, Bureau of the Census, "Vehicle Inventory and Use Survey", EC02TV (Washington, DC, December 2004); EIA, Alternatives to Traditional Transportation Fuels 2009 (Part II – User and Fuel Data), April 2011; EIA, *State Energy Data Report 2011*, DOE/EIA-0214(2011) (Washington, DC, June 2013); U.S. Department of Transportation, Research and Special Programs Administration, *Air Carrier Statistics Monthly, December 2010-2009* (Washington, DC, December 2010); and United States Department of Defense, Defense Fuel Supply Center, Factbook (January, 2010). **Projections:** EIA, AEO2014 National Energy Modeling System runs RLNGLOW20.D012914C, REF2014.D102413A, and RLNGHIGH20.D012914C.

Table D12. Key results for energy savings and industrial competitiveness act case

(quadrillion Btu per year, unless otherwise noted)

Consumption, emissions	2012	2020		2030		2040	
		Reference	ESICA	Reference	ESICA	Reference	ESICA
Energy consumption							
Residential	**10.42**	**10.74**	**10.70**	**10.83**	**10.71**	**10.94**	**10.78**
Propane, kerosene, and distillate fuel oil	1.02	0.89	0.88	0.75	0.75	0.66	0.66
Natural gas	4.26	4.56	4.52	4.43	4.35	4.21	4.10
Renewable energy[1]	0.45	0.46	0.46	0.44	0.44	0.42	0.41
Electricity	4.69	4.84	4.83	5.21	5.18	5.65	5.62
Commercial	**8.29**	**8.78**	**8.76**	**9.38**	**9.31**	**10.22**	**10.14**
Liquid fuels and other petroleum[2]	0.63	0.68	0.68	0.67	0.67	0.68	0.67
Natural gas	2.96	3.23	3.22	3.35	3.31	3.65	3.59
Coal	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Renewable energy[3]	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Electricity	4.52	4.69	4.68	5.18	5.16	5.72	5.70
Industrial[4]	**23.63**	**27.71**	**27.71**	**29.62**	**29.59**	**30.22**	**30.19**
Liquid fuels and other petroleum[5]	8.06	9.56	9.55	10.10	10.08	10.10	10.07
Natural gas	8.75	10.04	10.04	10.87	10.86	11.28	11.27
Coal	1.48	1.57	1.57	1.52	1.52	1.44	1.44
Renewable energy[6]	2.00	2.50	2.50	2.79	2.79	3.07	3.07
Electricity	3.35	4.04	4.04	4.33	4.33	4.34	4.35
Transportation	**26.72**	**26.40**	**26.40**	**25.08**	**25.08**	**25.50**	**25.50**
Liquid fuels and other petroleum[7]	25.93	25.55	25.55	23.94	23.94	23.73	23.73
Pipeline fuel natural gas	0.73	0.74	0.74	0.82	0.81	0.85	0.84
Compressed / liquefied natural gas	0.04	0.08	0.08	0.28	0.28	0.86	0.86
Electricity and liquid hydrogen	0.02	0.03	0.03	0.05	0.05	0.07	0.07
Electric power[8]	**38.53**	**40.70**	**40.66**	**43.12**	**43.04**	**45.20**	**45.08**
Natural gas	9.46	9.00	8.99	10.28	10.23	11.48	11.33
Steam coal	15.82	16.95	16.95	17.44	17.43	17.27	17.27
Nuclear / uranium[9]	8.05	8.15	8.15	8.18	8.18	8.49	8.56
Renewable energy[10]	4.59	6.08	6.06	6.68	6.68	7.44	7.41
Other[11]	0.62	0.52	0.52	0.53	0.53	0.53	0.52
Total energy consumption	**95.02**	**100.73**	**100.63**	**103.27**	**103.02**	**106.31**	**105.97**
Carbon dioxide emissions (million metric tons)							
by sector							
Residential	295	302	300	286	281	268	262
Commercial	206	224	223	230	227	246	242
Industrial[4]	937	1,060	1,059	1,107	1,106	1,123	1,121
Transportation	1,812	1,777	1,777	1,677	1,676	1,691	1,691
Electric power[8]	2,039	2,112	2,111	2,227	2,223	2,271	2,263
by fuel							
Petroleum[12]	2,254	2,252	2,251	2,136	2,134	2,113	2,111
Natural gas	1,366	1,447	1,443	1,572	1,563	1,694	1,676
Coal	1,657	1,766	1,766	1,807	1,805	1,780	1,780
Other[13]	12	12	12	12	12	12	12
Total carbon dioxide emissions	**5,290**	**5,476**	**5,472**	**5,527**	**5,513**	**5,599**	**5,579**

[1]Includes wood used for residential heating. Excludes nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal water heaters.
[2]Includes propane, motor gasoline, ethanol and ethers, kerosene, distillate fuel oil, and residual fuel oil.
[3]Includes commercial sector consumption of wood and wood waste, landfill gas, municipal waste, and other biomass for combined heat and power. Excludes nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal water heaters.
[4]Includes energy for combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
[5]Includes ethane, natural gasoline, refinery olefins, liquefied petroleum gases, motor gasoline, ethanol and ethers, distillate fuel oil, residual fuel oil, petrochemical feedstocks, petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.
[6]Includes consumption of energy produced from hydroelectric, wood and wood waste, municipal waste, and other biomass sources. Excludes ethanol.
[7]Includes propane, motor gasoline, ethanol and ethers, jet fuel, distillate fuel oil, residual fuel oil, aviation gasoline, and lubricants.
[8]Includes consumption of energy by electricity-only and combined heat and power plants that have a regulatory status.
[9]These values represent the energy obtained from uranium when it is used in light water reactors. The total energy content of uranium is much larger, but alternative processes are required to take advantage of it.
[10]Includes conventional hydroelectric, geothermal, wood and wood waste, biogenic municipal waste, other biomass, wind, photovoltaic, and solar thermal sources. Excludes net electricity imports.
[11]Includes distillate fuel oil, residual fuel oil, non-biogenic municipal waste, and net electricity imports.
[12]This includes carbon dioxide from international bunker fuels, both civilian and military, which are excluded from the accounting of carbon dioxide emissions under the United Nations convention. From 1990 through 2012, international bunker fuels accounted for 90 to 126 million metric tons annually.
[13]Includes emissions from geothermal power and emissions from non-biogenic municipal waste.
ESICA = Energy Savings and Industrial Competitiveness Act.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding. Data for 2012 are model results and may differ from official EIA data reports.
Source: U.S. Energy Information Administration, AEO2014 National Energy Modeling System, runs REF2014.D102413A, and ESICA.D021014A.

Table D13. Key results for no greenhouse gas concern case

(million short tons per year, unless otherwise noted)

Supply, disposition, prices, and electricity generating capacity additions	2012	2020		2030		2040	
		Reference	No GHG Concern	Reference	No GHG Concern	Reference	No GHG Concern
Production[1]	1,016	1,077	1,084	1,127	1,136	1,121	1,159
Appalachia	293	261	262	253	255	247	252
Interior	180	228	231	266	268	289	310
West	543	587	591	607	613	584	597
Waste coal supplied[2]	11	14	14	15	15	19	20
Net imports[3]	-118	-126	-126	-147	-147	-160	-160
Total supply[4]	**909**	**965**	**971**	**995**	**1,004**	**979**	**1,020**
Consumption by sector							
Commercial and institutional	2	2	2	2	2	2	2
Coke plants	21	22	22	21	21	18	18
Other industrial[5]	43	49	49	49	49	50	50
Coal-to-liquids	0	0	0	0	0	0	0
Electric power[6]	825	892	898	923	931	909	950
Total coal consumption	**891**	**965**	**971**	**995**	**1,004**	**979**	**1,020**
Average minemouth price[7]							
(2012 dollars per short ton)	39.94	46.52	46.53	53.15	53.15	59.16	59.33
(2012 dollars per million Btu)	1.98	2.33	2.33	2.67	2.67	2.96	2.98
Delivered prices[8]							
(2012 dollars per short ton)							
Commercial and institutional	90.76	95.19	95.30	101.39	102.33	108.37	109.02
Coke plants	190.55	221.01	221.03	249.43	249.52	267.23	267.29
Other industrial[5]	70.32	76.39	76.44	82.64	83.42	89.22	90.11
Coal to liquids	- -	- -	- -	- -	- -	- -	- -
Electric power[6]	46.13	49.63	49.71	55.32	55.37	60.61	61.20
Average	**50.85**	**54.99**	**55.04**	**60.85**	**60.90**	**65.97**	**66.35**
Electric power (2012 dollars per million Btu)[6]	2.39	2.61	2.62	2.93	2.93	3.19	3.23
Exports[9]	118.43	136.76	136.75	145.97	146.13	150.13	150.56
Electricity generating capacity (gigawatts)							
Cumulative capacity additions[10]							
Coal	0.0	2.5	2.5	2.5	4.1	2.6	13.0
Conventional with scrubber	0.0	1.0	1.0	1.0	2.6	1.1	11.5
IGCC without sequestration	0.0	0.6	0.6	0.6	0.6	0.6	0.6
IGCC with sequestration	0.0	0.9	0.9	0.9	0.9	0.9	0.9
End-use generators[11]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural gas	0.0	41.7	40.6	142.6	139.3	255.2	246.4
Nuclear / uranium	0.0	5.5	5.5	5.8	5.5	9.7	7.2
Renewables[12]	0.0	36.4	36.5	49.6	49.3	83.3	77.7
Other	0.0	0.6	0.6	0.6	0.6	0.6	0.6
Total cumulative additions	**0.0**	**86.7**	**85.7**	**201.1**	**198.9**	**351.5**	**344.9**
Cumulative coal capacity retirements[13]	0.0	49.9	48.5	50.7	49.3	50.8	49.4
Total coal capacity	310.0	262.6	264.0	261.8	264.8	261.8	273.6
Liquids from coal (million barrels per day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00

[1]Includes anthracite, bituminous coal, subbituminous coal, and lignite.
[2]Includes waste coal consumed by the electric power and industrial sectors. Waste coal supplied is counted as a supply-side item to balance the same amount of waste coal included in the consumption data.
[3]Excludes imports to Puerto Rico and the U.S. Virgin Islands.
[4]Production plus waste coal supplied plus net imports.
[5]Includes consumption for combined heat and power plants that have a non-regulatory status, and small on-site generating systems. Excludes all coal use in the coal-to-liquids process.
[6]Includes all electricity-only and combined heat and power plants that have a regulatory status.
[7]Includes reported prices for both open market and captive mines. Prices weighted by production, which differs from average minemouth prices published in EIA data reports where it is weighted by reported sales.
[8]Prices weighted by consumption tonnage; weighted average excludes export free-alongside-ship prices.
[9]Free-alongside-ship price at U.S. port of exit.
[10]Cumulative additions after December 31, 2012. Includes all additions of electricity only and combined heat and power plants projected for the electric power, industrial, and commercial sectors.
[11]Includes combined heat and power plants and electricity-only plants in the commercial and industrial sectors that have a non-regulatory status. 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.
[12]Includes conventional hydroelectric, geothermal, wood, wood waste, municipal waste, landfill gas, other biomass, solar, and wind power. Facilities co-firing biomass and coal are classified as coal.
[13]Cumulative retirements after December 31, 2012. Includes retirements of electricity-only and combined heat and power plants that have a regulatory status.
- - = Not applicable.
Btu = British thermal unit.
GHG = Greenhouse gas.
IGCC = Integrated coal-gasification combined cycle.
Note: Totals may not equal sum of components due to independent rounding. Data for 2012 are model results and may differ from official EIA data reports.
Sources: 2012 data based on: U.S. Energy Information Administration (EIA), *Annual Coal Report 2012*, DOE/EIA-0584(2012) (Washington, DC, December 2013); EIA, *Quarterly Coal Report, October-December 2012*, DOE/EIA-0121(2012/4Q) (Washington, DC, March 2013); and EIA, AEO2014 National Energy Modeling System run REF2014.D102413A. **Projections:** EIA, AEO2014 National Energy Modeling System runs REF2014.D102413A and NOGHGCONCERN.D120413A.

Table D14. Key results and assumptions for coal cost cases

(million short tons per year, unless otherwise noted)

Supply, disposition, prices, electricity generating capacity, and costs	2012	2020			2040			Annual growth 2012-2040 (percent)		
		Low Coal Cost	Reference	High Coal Cost	Low Coal Cost	Reference	High Coal Cost	Low Coal Cost	Reference	High Coal Cost
Production[1]	1,016	1,122	1,077	1,003	1,244	1,121	814	0.7%	0.3%	-0.8%
Appalachia	293	271	261	247	293	247	200	0.0%	-0.6%	-1.4%
Interior	180	230	228	225	268	289	253	1.4%	1.7%	1.2%
West	543	622	587	530	683	584	360	0.8%	0.3%	-1.5%
Waste coal supplied[2]	11	11	14	15	11	19	27	0.1%	1.9%	3.2%
Net imports[3]	-118	-127	-126	-122	-201	-160	-69	1.9%	1.1%	-1.9%
Total supply[4]	**909**	**1,006**	**965**	**895**	**1,054**	**979**	**771**	**0.5%**	**0.3%**	**-0.6%**
Consumption by sector										
Commercial and institutional	2	2	2	2	2	2	2	0.0%	-0.1%	-0.2%
Coke plants	21	22	22	22	18	18	17	-0.4%	-0.5%	-0.6%
Other industrial[5]	43	49	49	49	51	50	49	0.6%	0.5%	0.4%
Coal-to-liquids	0	0	0	0	0	0	0	- -	- -	- -
Electric power[6]	825	933	892	822	983	909	705	0.6%	0.3%	-0.6%
Total coal use	**891**	**1,006**	**965**	**895**	**1,054**	**979**	**773**	**0.6%**	**0.3%**	**-0.5%**
Average minemouth price[7]										
(2012 dollars per short ton)	39.94	39.46	46.52	55.11	32.29	59.16	113.47	-0.8%	1.4%	3.8%
(2012 dollars per million Btu)	1.98	1.97	2.33	2.76	1.61	2.96	5.54	-0.7%	1.4%	3.7%
Delivered prices[8]										
(2012 dollars per short ton)										
Commercial and institutional	90.76	86.19	95.19	105.18	70.73	108.37	165.32	-0.9%	0.6%	2.2%
Coke plants	190.55	197.05	221.01	248.69	170.56	267.23	428.62	-0.4%	1.2%	2.9%
Other industrial[5]	70.32	68.17	76.39	85.17	55.92	89.22	141.81	-0.8%	0.9%	2.5%
Coal to liquids	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Electric power[6]										
(2012 dollars per short ton)	46.13	44.13	49.63	55.83	35.89	60.61	105.06	-0.9%	1.0%	3.0%
(2012 dollars per million Btu)	2.39	2.31	2.61	2.95	1.89	3.19	5.36	-0.8%	1.0%	2.9%
Average	**50.85**	**48.76**	**54.99**	**62.22**	**39.28**	**65.97**	**114.80**	**-0.9%**	**0.9%**	**3.0%**
Exports[9]	118.43	120.29	136.76	155.84	96.59	150.13	250.91	-0.7%	0.9%	2.7%
Electricity generating capacity (gigawatts)										
Capacity										
Coal	310.0	269.1	262.6	244.2	274.0	261.8	243.3	-0.4%	-0.6%	-0.9%
Conventional	306.2	263.8	257.3	238.9	268.7	256.5	238.0	0.0	0.0	0.0
IGCC without sequestration	0.4	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
IGCC with sequestration	0.0	0.9	0.9	0.9	0.9	0.9	0.9	- -	- -	- -
End-use generators[10]	3.4	3.4	3.4	3.4	3.4	3.4	3.4	0.0%	0.0%	0.0%
Natural gas	367.9	397.3	401.5	410.7	609.5	613.7	622.8	1.8%	1.8%	1.9%
Nuclear / uranium	102.1	97.8	97.8	97.8	100.5	102.0	101.4	-0.1%	0.0%	0.0%
Renewables[11]	159.4	195.1	194.9	196.0	248.0	241.8	239.0	1.6%	1.5%	1.5%
Other	126.3	112.6	112.6	111.4	96.8	96.2	94.7	-0.9%	-1.0%	-1.0%
Total capacity	**1,065.8**	**1,072.0**	**1,069.5**	**1,060.2**	**1,328.9**	**1,315.6**	**1,301.3**	**0.8%**	**0.8%**	**0.7%**
Cumulative capacity additions[12]										
Coal	0.0	2.5	2.5	2.5	8.2	2.6	2.5	- -	- -	- -
Conventional with scrubber	0.0	1.0	1.0	1.0	6.8	1.1	1.0	- -	- -	- -
IGCC without sequestration	0.0	0.6	0.6	0.6	0.6	0.6	0.6	- -	- -	- -
IGCC with sequestration	0.0	0.9	0.9	0.9	0.9	0.9	0.9	- -	- -	- -
End-use generators[10]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	- -	- -	- -
Natural gas	0.0	37.5	41.7	51.1	251.0	255.2	264.3	- -	- -	- -
Nuclear / uranium	0.0	5.5	5.5	5.5	8.2	9.7	9.1	- -	- -	- -
Renewables[11]	0.0	36.6	36.4	37.5	89.5	83.3	80.5	- -	- -	- -
Other	0.0	0.6	0.6	0.6	0.6	0.6	0.6	- -	- -	- -
Total cumulative additions	**0.0**	**82.7**	**86.7**	**97.2**	**357.6**	**351.5**	**357.1**	**- -**	**- -**	**- -**
Cumulative capacity retirements[13]										
Coal	0.0	43.4	49.9	68.3	44.2	50.8	69.2	- -	- -	- -
Natural gas	0.0	8.1	8.1	8.3	9.4	9.4	9.5	- -	- -	- -
Nuclear / uranium	0.0	4.8	4.8	4.8	4.8	4.8	4.8	- -	- -	- -
Renewables[11]	0.0	0.9	0.9	0.9	0.9	0.9	0.9	- -	- -	- -
Other	0.0	14.3	14.4	15.6	30.1	30.8	32.2	- -	- -	- -
Total cumulative retirements	**0.0**	**71.5**	**78.0**	**97.9**	**89.5**	**96.7**	**116.6**	**- -**	**- -**	**- -**
Liquids from coal (million barrels per day)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	- -	- -	- -

Table D14. Key results and assumptions for coal cost cases (continued)

(million short tons per year, unless otherwise noted)

Supply, disposition, prices, electricity generating capacity, and costs	2012	2020			2040			Annual growth 2012-2040 (percent)		
		Low Coal Cost	Reference	High Coal Cost	Low Coal Cost	Reference	High Coal Cost	Low Coal Cost	Reference	High Coal Cost
Cost indices										
(constant dollar index, 2012=1.000)										
Transportation rate multipliers										
Eastern railroads	1.000	0.960	1.022	1.090	0.760	1.008	1.260	-1.0%	0.0%	0.8%
Western railroads	1.000	0.940	1.005	1.070	0.750	0.996	1.250	-1.0%	0.0%	0.8%
Mine equipment costs										
Underground	1.000	0.932	1.000	1.072	0.762	1.000	1.308	-1.0%	0.0%	1.0%
Surface	1.000	0.932	1.000	1.072	0.762	1.000	1.308	-1.0%	0.0%	1.0%
Other mine supply costs										
East of the Mississippi: all mines	1.000	0.932	1.000	1.072	0.762	1.000	1.308	-1.0%	0.0%	1.0%
West of the Mississippi: underground	1.000	0.932	1.000	1.072	0.762	1.000	1.308	-1.0%	0.0%	1.0%
West of the Mississippi: surface	1.000	0.932	1.000	1.072	0.762	1.000	1.308	-1.0%	0.0%	1.0%
Coal mining labor productivity (short tons per miner per hour)	5.19	5.52	4.64	3.85	6.89	3.68	1.68	1.0%	-1.2%	-4.0%
Average coal miner wage (2012 dollars per year)	80,450	87,295	93,666	100,431	79,835	104,525	136,440	0.0%	0.9%	1.9%

[1]Includes anthracite, bituminous coal, subbituminous coal, and lignite.
[2]Includes waste coal consumed by the electric power and industrial sectors. Waste coal supplied is counted as a supply-side item to balance the same amount of waste coal included in the consumption data.
[3]Excludes imports to Puerto Rico and the U.S. Virgin Islands.
[4]Production plus waste coal supplied plus net imports.
[5]Includes consumption for combined heat and power plants that have a non-regulatory status, and small on-site generating systems. Excludes all coal use in the coal to liquids process.
[6]Includes all electricity-only and combined heat and power plants that have a regulatory status.
[7]Includes reported prices for both open market and captive mines. Prices weighted by production, which differs from average minemouth prices published in EIA data reports where it is weighted by reported sales.
[8]Prices weighted by consumption tonnage; weighted average excludes export free-alongside-ship prices.
[9]Free-alongside-ship price at U.S. port of exit.
[10]Includes combined heat and power plants and electricity-only plants in the commercial and industrial sectors that have a non-regulatory status. 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.
[11]Includes conventional hydroelectric, geothermal, wood, wood waste, municipal waste, landfill gas, other biomass, solar, and wind power. Facilities co-firing biomass and coal are classified as coal.
[12]Cumulative additions after December 31, 2012. Includes all additions of electricity-only and combined heat and power plants projected for the electric power, industrial, and commercial sectors.
[13]Cumulative retirements after December 31, 2012. Includes retirements of electricity-only and combined heat and power plants that have a regulatory status.
- - = Not applicable.
Btu = British thermal unit.
IGCC = Integrated coal-gasification combined cycle.
Note: Totals may not equal sum of components due to independent rounding. Data for 2012 are model results and may differ from official EIA data reports.
Sources: 2012 data based on: U.S. Energy Information Administration (EIA), *Annual Coal Report 2012*, DOE/EIA-0584(2012) (Washington, DC, December 2013); EIA, *Quarterly Coal Report, October-December 2012*, DOE/EIA-0121(2012/4Q) (Washington, DC, March 2013); U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages: Coal Mining, Series ID: ENUUS0005052121; and EIA, AEO2014 National Energy Modeling System run REF2014.D102413A. **Projections:** EIA, AEO2014 National Energy Modeling System runs LCCST14.D120413A, REF2014.D102413A, and HCCST14.D120413A.

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