

## Analysis of S.139, the Climate Stewardship Act of 2003

**Table 6.1. Composition of Natural Gas Supplies in 2025 by Major Source for the Reference and S.139 Cases (percent of total U.S. gas supply)**

Gas Supply Source	Reference Case	S.139 Case
Lower 48 Onshore Conventional .....	23.8	21.6
Lower 48 Onshore Unconventional.....	28.0	27.3
Lower 48 Offshore .....	16.7	15.1
Alaska .....	8.3	7.4
<b>Total U.S. Production .....</b>	<b>76.8</b>	<b>71.4</b>
Net Pipeline Imports from Canada & Mexico .....	16.0	16.4
Liquefied Natural Gas Imports .....	7.0	12.0
<b>Total Imports .....</b>	<b>23.0</b>	<b>28.4</b>
Supplemental Gaseous Fuels.....	0.3	0.3
<b>Total Gas Supply .....</b>	<b>100.0</b>	<b>100.0</b>

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

Sources: **History:** Energy Information Administration, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, November 2002). **Projections:** Energy Information Administration, Office of Integrated Analysis and Forecasting, National Energy Modeling System runs MLBASE.D050303A and MLBILL.D050503A.

**Table 6.2. Comparison of U.S. Natural Gas Projections in Seven Cases**

	Reference	S.139	No New Nuclear, No Sequestration	High Technology Reference	S.139 High Technology	High Gas Price	High Gas Price S.139
Cumulative 2001-2025 Natural Gas Consumption (Tcf).....	708	746	753	672	703	668	679
Cumulative 2001-2025 Natural Gas Consumption In Electric Power (Tcf).....	188	225	231	166	196	162	177
Cumulative 2001-2025 Natural Gas Production (Tcf).....	564	577	579	543	558	514	520
Cumulative 2001-2025 Net Natural Gas Imports (Tcf).....	138	162	168	123	138	147	152
2025 Natural Gas Consumption (Tcf).....	34.7	38.6	39.6	31.6	35.6	29.3	29.8
2025 Natural Gas Consumption In Electric Power (Tcf).....	10.4	14.0	15.3	8.6	12.4	6.7	7.5
2025 Natural Gas Production (Tcf).....	26.4	27.3	27.9	24.7	26.3	21.8	21.9
2025 Net Natural Gas Imports (Tcf) .....	7.9	10.9	11.4	6.4	8.9	7.1	7.4
2025 Natural Gas Lower 48 Average Wellhead Price (2001\$/Mcf).....	\$3.95	\$4.36	\$4.70	\$3.51	\$4.09	\$5.55	\$5.70
2025 Average Delivered Price of Natural Gas (w/o emissions costs) (2001\$/Mcf).....	\$5.80	\$6.19	\$6.54	\$5.43	\$5.94	\$7.45	\$7.66
2025 Average Industrial & Electric Power Emissions Allowance Cost (2001 \$/Mcf) .....	N/A	\$3.23	\$4.33	N/A	\$2.32	N/A	\$3.11
Cumulative 2001-2025 Carbon Dioxide Emissions From Natural Gas (billion metric tons carbon equivalent).....	10.4	10.5	11.1	9.9	9.9	9.8	9.7
Cumulative Gas Exploration and Production Employment From 2001 to 2025 (thousand person-years).....	5,790	5,926	5,940	5,673	5,789	5,500	5,850

Note: Totals may not equal the sum of the components due to independent rounding. In addition, there is a discrepancy between total production, consumption, and imports due to 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.

Sources: **History:** Energy Information Administration, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, November 2002). **Projections:** Energy Information Administration, Office of Integrated Analysis and Forecasting, National Energy Modeling System runs MLBASE.D050303A, MLBILL.D050503A, ML0NUCSEQ.D050403A, MLBASE\_HT.D052003C, ML\_HT.D050503A, MLBASE\_HGP.D052103A, and MLBILL\_HGP.D052303A.

**Table 6.3. Ethanol and Conventional Gasoline Prices in Fourteen Cases, 2025  
(2001 dollars per gasoline gallon equivalent)**

Case	Ethanol Production Cost	Federal Excise Tax Credit	Net Price, Ethanol Plant Gate	Conventional Gasoline, Including Greenhouse Gas Allowance Price, Refinery Gate
Reference .....	2.59	-0.42	2.17	0.98
High Technology Reference.....	2.56	-0.43	2.14	0.92
High Natural Gas Price Reference .....	2.68	-0.42	2.25	0.97
S.139.....	2.82	-0.41	2.41	1.39
S.139 High Technology.....	2.74	-0.41	2.32	1.22
S.139 High Natural Gas Price .....	2.89	-0.41	2.47	1.38
Commercial Coverage .....	2.81	-0.41	2.40	1.39
No New Nuclear, No Sequestration .....	2.91	-0.41	2.49	1.51
20-Percent Auction.....	2.81	-0.42	2.39	1.38
80-Percent Auction.....	2.82	-0.41	2.41	1.39
No Banking .....	2.78	-0.41	2.37	1.32
100% International Sequestration MACs ...	2.82	-0.41	2.41	1.39
0% International Sequestration MACs .....	2.83	-0.41	2.42	1.40
50% Uncovered Offsets .....	2.77	-0.42	2.35	1.29

Note: The Federal excise tax credit for blending ethanol into gasoline is assumed constant at a nominal 51 cents per gallon, or 76.5 cents per gasoline gallon equivalent, after 2004. The NEMS Macroeconomic model projects different rates of inflation in each case, hence the different projected real values of the excise tax credit in 2025.

Sources: Energy Information Administration, Office of Integrated Analysis and Forecasting, National Energy Modeling System runs MLBASE.D050303A, MLBASE\_HT.D052003C, MLBASE\_HGP.D052103A, MLBILL.D050503A, ML\_HT.D050503A, MLBILL\_HGP.D052303A, ML\_COVER\_K.D050603A, ML0NUCSEQ.D050403A, ML\_CCCC20.D050503A, ML\_CCCC80.D050503A, ML\_NOBANK\_4.D051203A, ML\_INTL100.D052703A, ML\_INTL0.D051903A, and OFFSET50.D052303A.

**Table 6.4. Comparison of U.S. Petroleum Projections in Four Cases, 2025**

Projection	Reference Case	S.139 Case	No New Nuclear, No Sequestration	High Technology Reference Case	S.139 High Technology Case
Petroleum Consumption (MMBbl per day)....	28.92	26.18	25.97	27.47	25.52
Net Petroleum Imports (MMBbl per day) .....	19.61	16.94	16.74	18.37	16.52
Average Petroleum Product Price (2001 dollars per gallon).....	\$1.31	\$1.70	\$1.82	\$1.27	\$1.53
Gasoline Price (2001 dollars per gallon).....	\$1.49	\$1.89	\$2.01	\$1.44	\$1.73
Diesel Price (2001 dollars per gallon).....	\$1.37	\$1.83	\$1.99	\$1.34	\$1.62
Jet fuel Price (2001 dollars per gallon) .....	\$0.91	\$1.40	\$1.57	\$0.87	\$1.19
Cumulative Savings from Reduced Imports (billion 2001 dollars) .....	0	\$358	\$395	\$147 (0)*	\$459 (312)*

\* Parenthetical values compare S.139 high-tech with high-tech reference case

Sources: **History:** Energy Information Administration, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, November 2002). **Projections:** Energy Information Administration, Office of Integrated Analysis and Forecasting, National Energy Modeling System runs MLBASE.D050303A, MLBILL.D050503A, ML0NUCSEQ.D050403A, MLBASE\_HT.D052003C, and ML\_HT.D050503A.

**Table 6.5. Coal Industry Related Statistics in Five Cases, 2001-2025 (million short tons per year, unless otherwise noted)**

	2001	2010					2020					2025				
		Reference	S.139	No New Nuclear, No Seq.	High Tech Reference	S.139 High Tech.	Reference	S.139	No New Nuclear, No Seq.	High Tech Reference	S.139 High Tech.	Reference	S.139	No New Nuclear, No Seq.	High Tech Reference	S.139 High Tech.
<b>Production 1/</b>																
East of the Mississippi	539	527	518	506	526	518	529	286	231	512	357	554	182	115	521	200
West of the Mississippi	599	723	563	549	695	580	839	199	139	765	266	902	132	58	798	184
Bituminous	603	612	581	568	602	581	620	318	251	588	400	653	201	126	598	230
Sub-Bituminous	445	540	406	391	517	421	663	122	81	598	169	719	89	34	630	114
Lignite	80	87	83	85	91	85	73	34	27	79	43	73	17	9	80	32
Waste Coal	11	11	11	11	11	11	11	11	11	11	11	11	7	4	11	8
<b>Total</b>	<b>1,138</b>	<b>1,250</b>	<b>1,081</b>	<b>1,055</b>	<b>1,221</b>	<b>1,098</b>	<b>1,367</b>	<b>485</b>	<b>370</b>	<b>1,277</b>	<b>623</b>	<b>1,456</b>	<b>315</b>	<b>173</b>	<b>1,319</b>	<b>384</b>
<b>Consumption by Sector</b>																
Residential and Commercial	4	5	5	5	5	5	5	5	5	5	5	5	6	6	5	6
Industrial 2/	63	67	61	61	66	61	70	59	58	67	58	71	58	55	67	57
Coke Plants	26	24	24	24	21	21	20	17	17	15	10	18	14	14	13	8
Electric Generators 3/	957	1,146	966	955	1,120	996	1,274	390	272	1,193	522	1,371	227	85	1,240	305
<b>Total</b>	<b>1,050</b>	<b>1,242</b>	<b>1,055</b>	<b>1,044</b>	<b>1,212</b>	<b>1,083</b>	<b>1,369</b>	<b>471</b>	<b>352</b>	<b>1,281</b>	<b>595</b>	<b>1,466</b>	<b>306</b>	<b>160</b>	<b>1,325</b>	<b>375</b>
<b>Average Minemouth Price</b>																
(2001 dollars per short ton)	17.59	15.06	15.84	15.83	15.09	15.68	14.34	15.27	14.86	14.20	15.51	14.39	13.67	13.40	14.05	13.29
(2001 dollars per million Btu)	0.83	0.73	0.76	0.76	0.73	0.75	0.70	0.71	0.68	0.70	0.72	0.71	0.63	0.60	0.69	0.63
<b>Delivered Price with GHG Cost (2001\$/short ton) 4/</b>																
Industrial	32.83	30.11	73.69	78.31	30.01	62.48	28.45	123.14	132.54	27.97	98.97	28.04	143.97	184.22	27.32	109.86
Coke Plants	46.42	41.27	96.11	101.91	40.91	81.74	38.08	162.07	175.21	37.28	128.81	36.67	189.79	242.35	35.73	145.24
<b>Electric Generators</b>																
(2001 dollars per short ton)	25.04	23.63	65.08	69.29	23.60	54.35	22.44	116.04	125.12	22.05	92.74	22.27	136.11	177.05	21.68	101.17
(2001 dollars per million Btu)	1.25	1.17	3.17	3.39	1.17	2.66	1.12	5.53	5.98	1.10	4.39	1.11	6.53	8.37	1.08	4.96
<b>Average</b>	<b>26.05</b>	<b>24.33</b>	<b>66.29</b>	<b>70.56</b>	<b>24.26</b>	<b>55.34</b>	<b>22.98</b>	<b>118.63</b>	<b>128.82</b>	<b>22.54</b>	<b>93.96</b>	<b>22.74</b>	<b>140.21</b>	<b>185.65</b>	<b>22.10</b>	<b>103.44</b>

**Table 6.5. Coal Industry Related Statistics for Five Cases, 2001-2025 (continued)**

	2001	2010					2020					2025				
		Reference	S.139	No New Nuclear, No Seq.	High Tech Reference	S.139 High Tech.	Reference	S.139	No New Nuclear, No Seq.	High Tech Reference	S.139 High Tech.	Reference	S.139	No New Nuclear, No Seq.	High Tech Reference	S.139 High Tech.
<b>Coal-Fired Generating Capacity (Gigawatts)</b>																
Conventional	305	309	288	288	300	286	339	197	182	298	217	369	102	106	297	156
Advanced w/o Sequestration	0	2	0	0	7	0	5	0	0	34	0	7	0	0	58	0
Advanced with Sequestration	0	0	0	0	0	0	0	12	0	0	5	0	38	0	0	18
CHP: Electric Power Sector	5	5	4	4	5	4	5	3	3	5	3	5	3	3	5	3
CHP: Industrial Steam Coal Sector	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
<b>Total Coal-Fired Generating Capacity</b>	<b>315</b>	<b>320</b>	<b>298</b>	<b>298</b>	<b>316</b>	<b>296</b>	<b>353</b>	<b>217</b>	<b>191</b>	<b>341</b>	<b>231</b>	<b>386</b>	<b>147</b>	<b>114</b>	<b>364</b>	<b>182</b>
<b>Coal-Fired Generation (Billion Killowatthours)</b>																
Conventional	1,846	2,224	1,925	1,904	2,143	1,975	2,477	746	569	2,141	1,069	2,692	246	174	2,128	530
Advanced w/o Sequestration	2	13	1	1	48	2	35	0	0	253	0	55	0	0	431	0
Advanced with Sequestration	0	0	0	0	0	0	0	91	0	0	39	0	281	0	0	130
CHP: Electric Power Sector	33	33	30	29	33	30	33	16	15	33	19	33	10	8	33	13
CHP: Industrial Steam Coal Sector	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
<b>Total Coal-Fired Generation</b>	<b>1,904</b>	<b>2,293</b>	<b>1,980</b>	<b>1,957</b>	<b>2,247</b>	<b>2,031</b>	<b>2,568</b>	<b>876</b>	<b>607</b>	<b>2,450</b>	<b>1,150</b>	<b>2,803</b>	<b>560</b>	<b>206</b>	<b>2,615</b>	<b>696</b>
<b>Coal Share of Total Electricity Generation (Percent)</b>																
	51	51	44	44	50	46	48	18	12	48	24	48	11	4	47	14
<b>Average Coal Capacity Factor (Percent) 5/</b>																
Conventional and Advanced w/o Sequestration	69	82	76	75	81	79	83	43	35	82	56	83	27	19	82	39
Advanced with Sequestration	N/A	N/A	N/A	N/A	N/A	N/A	N/A	85	N/A	N/A	85	N/A	85	N/A	N/A	85
<b>Average Capacity Factor for All Coal Plants</b>	<b>69</b>	<b>82</b>	<b>76</b>	<b>75</b>	<b>81</b>	<b>79</b>	<b>83</b>	<b>45</b>	<b>35</b>	<b>82</b>	<b>57</b>	<b>83</b>	<b>43</b>	<b>19</b>	<b>82</b>	<b>43</b>

1 Includes anthracite, bituminous, subbituminous, lignite, and waste coal delivered to independent power producers.  
 2 Includes consumption for combined heat and power plants, except those plants whose primary business is to sell electricity, or electricity and heat, to the public.  
 3 Includes all electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat to the public.  
 4 Sectoral prices weighted by consumption tonnage; weighted average excludes residential/commercial prices and export free-alongside-ship (f.a.s.) prices.  
 5 Excludes capacity and generation from combined heat and power plants.  
 Btu = British thermal unit. N/A = Not applicable. CHP = Combined Heat and Power.  
 Note: Totals may not equal sum of components due to independent rounding. Some of the data for 2001 are model results and may differ slightly from official EIA data reports.  
 Sources: **History:** Energy Information Administration (EIA), *Quarterly Coal Report, October-December 2001*, DOE/EIA-0121(2001/4Q) (Washington, DC, May 2002); EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, November 2002). **Projections:** EIA, Office of Integrated Analysis and Forecasting, National Energy Modeling System runs MLBASE.D050303A, MLBILL.D050503A, ML0NUCSEQ.D050403A, MLBASE\_HT.D052003C, and ML\_HT.D050503A.