U.S. Coal Supply and Demand: 2008 Review

by

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Overview

Coal production in the United States in 2008 reached a record level of 1,171.5 million short tons according to preliminary data from the Energy Information Administration (Table 1), an increase of 2.2 percent, or 24.8 million short tons above the 2007 level and 8.7 million short tons above the prior record level set in 2006. Although coal production was higher in 2008, U.S. total coal consumption decreased in all sectors for the year. Coal consumption in the electric power sector in 2008 was lower by 0.3 percent, while coking coal consumption decreased by 2.8 percent and the other industrial sector declined by 3.7 percent. The commercial and institutional sector (which prior to 2008 had been called 'residential and commercial'), the smallest of all the coal-consuming sectors, declined by 0.6 percent in 2008. (Note: All percentage change calculations are done at the short-tons level.) U.S. coal exports were significantly higher in 2008, while coal imports decreased during the year. Total coal stocks increased in 2008, as some consumers added to their stockpiles. The coal synfuel industry, which grew throughout most of this decade, disappeared from the scene due to the expiration of the available federal tax credits at the end of 2007.

The decline in coal consumption during the year was the consequence of slowing domestic economic growth, particularly in the latter half of the year, combined with the weather in 2008, resulting in lower demand for electricity. Preliminary data show that total generation in the electric power sector (electric utilities and independent power producers, including useful thermal output) in the U.S. decreased in 2008. Coal-based generation also decreased, resulting in a 3.5 million short ton drop in coal consumed in the electric power sector. Coal use in the non-electricity sector decreased by 3.3 percent to a level of 80.1 million short tons.

The international coal markets in 2008 were the driving force behind the increase in U.S. coal production. U.S. coal exports increased to levels not seen since the 1980's while coal imports declined. U.S. coal exports totaled 81.5 million short tons, an increase of 22.4 million short tons over 2007. Coal imports in 2008 ended the year at 34.2 million short tons, 2.1 million short tons below 2007.

Coal prices increased in 2008, driven, in large part, by the international markets where U.S. coal was in demand. Another factor that affected coal prices was the escalating delivery costs for users due to the growing fuel surcharges added by transportation companies in response to the unprecedented rise in oil prices experienced during the first half of the year. In the domestic markets in 2008, the electric utility price-per-short-ton increase was 14.3 percent, while the increase was 18.7 percent for independent power producers. Coking coal prices had the greatest increase domestically, climbing by 24.3 percent, while the price for the other industrial sector increased by 16.6 percent in 2008. Coal prices in the international markets had the largest percentage increase of all. The average price per ton of export coal, measured in free alongside ship (f.a.s.) value, grew by 39.0 percent in 2008, while the price of coal imported into the U.S., measured by the customs import value (c.i.v.), rose by 25.6 percent.

Production

U.S. coal production grew in 2008 by 2.2 percent to reach a record level of 1,171.5 million short tons (Figure 1 and Table 1), 24.8 million short tons more than the 2007 production total. Although total U.S. coal production was higher in 2008, only two of the three coal-producing regions had increases in coal production while the other was about level. Exclusive of refuse production, the Appalachian and Western Regions had an increase in their production levels in

Table 1. U.S. Coal Supply, Disposition, and Prices, 2004 - 2008

(Million Short Tons and Nominal Dollars per Short Ton)

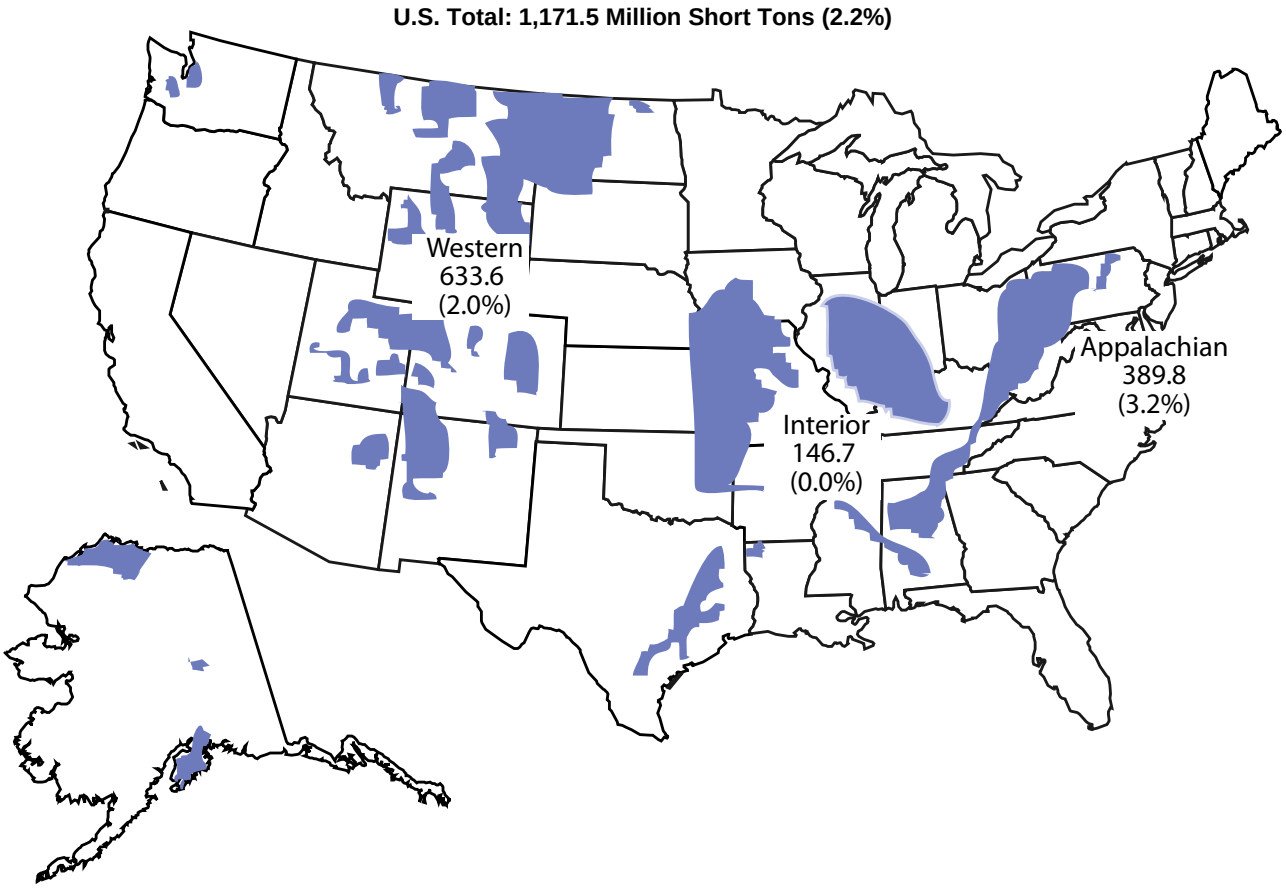
Item	2004	2005	2006	2007	2008
Production By Region					
Appalachia	389.9	396.7	391.2	377.8	389.8
Interior	146.0	149.2	151.4	146.7	146.7
Western	575.2	585.0	619.4	621.0	633.6
Refuse Recovery	1.0	0.7	0.8	1.2	1.4
Total	**1,112.1**	**1,131.5**	**1,162.8**	**1,146.6**	**1,171.5**
Consumption By Sector					
Electric Power	1,016.3	1,037.5	1,026.6	1,045.1	1,041.6
Coke Plants	23.7	23.4	23.0	22.7	22.1
Other Industrial Plants	62.2	60.3	59.5	56.6	54.5
Residential/Commercial Users [1]	5.1	4.7	3.2	3.5	3.5
Total	**1,107.3**	**1,126.0**	**1,112.3**	**1,128.0**	**1,121.7**
Year-End Coal Stocks					
Electric Power	106.7	101.1	141.0	151.2	163.1
Coke Plants	1.3	2.6	2.9	1.9	2.3
Other Industrial Plants	4.8	5.6	6.5	5.6	6.0
Producers/Distributors	41.2	35.0	36.5	34.0	27.3
Commercial/Institutional	-	-	-	-	0.5
Total	**154.0**	**144.3**	**186.9**	**192.8**	**199.2**
U.S. Coal Trade					
Exports	48.0	49.9	49.6	59.2	81.5
Steam Coal	21.2	21.3	22.1	27.0	39.0
Metallurgical Coal	26.8	28.7	27.5	32.2	42.5
Imports	27.3	30.5	36.2	36.3	34.2
Steam Coal	25.1	28.7	34.6	34.7	32.5
Metallurgical Coal	2.2	1.8	1.7	1.7	1.7
Net Exports	20.7	19.5	13.4	22.8	47.3
Average Prices					
Domestic					
Average Delivered Price					
Electric Utilities	$27.30	$31.22	$34.26	$36.06	$41.23
Independent Power Producers	$27.27	$30.39	$33.04	$33.11	$39.31
Coke Plants	$61.50	$83.79	$92.87	$94.97	$118.09
Other Industrial Plants	$39.30	$47.63	$51.67	$54.42	$63.44
International					
Average Free Alongside Ship (f.a.s.) Price					
Exports	$54.11	$67.10	$70.93	$70.25	$97.68
Steam Coal	$42.03	$47.64	$46.25	$47.90	$57.35
Metallurgical Coal	$63.63	$81.56	$90.81	$88.99	$134.62
Average Customs Import Value (c.i.v.) Price					
Imports	$37.52	$46.71	$49.10	$47.64	$59.83
Steam Coal	$36.06	$43.35	$46.15	$45.31	$56.75
Metallurgical Coal	$54.27	$101.88	$109.36	$96.05	$117.18

1 The sector that was titled 'Residential and Commercial' has been renamed as 'Commercial and Institutional.'.

Notes: Totals may not equal sum of components due to independent rounding. Sum of net exports, stock changes, and consumption may not equal production, primarily because the supply and disposition data are obtained from different surveys.

Sources: Production, consumption, stocks, and prices: Energy Information Administration, Quarterly Coal Report, October-December 2006, DOE/EIA-0121(2006/Q4) (Washington, DC, March 2007); Annual Coal Report 2005, DOE/EIA-0584(2005) (Washington, DC, October 2006); Annual Coal Report 2007, DOE/EIA-0584(2007) (Washington, DC, January 2009); and Electric Power Monthly, March 2009,DOE/EIA-0226(2009/03) (Washington DC, March 2009). Exports and imports: U.S. Department of Commerce, Bureau of the Census, "Monthly Report EM 545" and "Monthly Report IM 145."

Figure 1. Coal Production by Coal-Producing Region, 2008
(Million Short Tons and Percent Change from 2007)
Regional Totals do not include refuse recovery



Source: Energy Information Administration, Quarterly Coal Report, October-December 2008, DOE/EIA-0121(2008/Q4) (Washington, DC, April 2009).

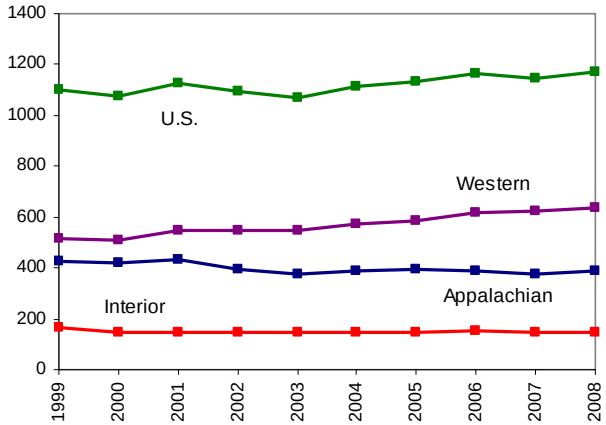
2008 of 3.2 percent and 2.0 percent respectively, while the Interior Region remained essentially unchanged (Figure 2 and Table 2). In the amount of tons of coal produced, the increase in the Appalachian Region production was 12.0 million short tons, while the increase in the Western Region production in 2008 was 12.6 million short tons. Coal production in the Interior Region increased by only 57 thousand short tons.

Appalachian Region

Coal production in the Appalachian Region reversed a two-year declining trend and ended 2008 at 389.8 million short tons, an increase of 3.2 percent, or 12.0 million short tons. The growth in 2008 in coal production in the Appalachian Region was primarily driven by the large increase in U.S. coal exports, which are predominantly produced in this region. International demand for metallurgical coal, which is primarily produced in the central and southern portions of the Appalachian Region, helped to push several of the States to higher production totals for the year. Four of the States in the Appalachian Region (Alabama, East Kentucky, Ohio, and West Virginia) had an increase of over a million short tons in 2008, more than offsetting the two States (Tennessee and Virginia) that had a decline in production for the year.

West Virginia, the largest coal-producing State in the Appalachian Region and the second largest in the U.S., had an increase in total coal production of 2.9 percent in 2008 to end the year with 158.0 million short tons of production, 4.5 million short tons above the 2007 level. Even though there were large declines in production at several mines in the state due to either production related issues or the idling or suspension of production totaling a combined drop of

Figure 2. Coal Production by Region, 1999-2008
(Million Short Tons)
Regional totals do not include refuse recovery



Sources: Energy Information Administration, Quarterly Coal Report, October-December 2008, DOE/EIA-0121(2008/Q4) (Washington, DC, April 2009); Coal Industry Annual, DOE/EIA-0584, various issues; Annual Coal Report, DOE/EIA-0584, various issues.

5.1 million short tons, the increases in production at existing mines or the start-up of new mines more than offset the those decreases. The idling or suspension of production by Massey Energy's No. 130 and Laurel Creek mines, Patriot Coal's Europa mine, and Appalachian Fuels Big Creek No. 2 surface mine accounted for 2.7 million short tons of the decrease while production issues [movement of longwalls, geological impairments, or equipment issues] at ANR's Alma mine, Patriot Coal's Samples mine, Massey Energy's Black Castle mine, and Frasure Creek's Mine No. 7 accounted for 2.4 million short tons of the decrease. Major increases in coal production of at least 0.5 million short tons in 2008 experienced by Arch Coal's Mountaineer II mine, Massey Energy's Republic mine, Brody Mining's Mine No. 1, Cleveland-Cliff's Pinnacle mine, Eagle Creek Mining's MT-11 Surface mine, Hanover Resources' Four Mile Mine No. 2, and Patriot Coal's American Eagle mine added over 6.7 million short tons to West Virginia's total.

Coal production in Ohio in 2008 increased by 3.7 million short tons, or 16.3 percent to end the year at 26.3 million short tons, the highest level in a decade. The increase in production was primarily a result of higher production levels at four mines in the State. Ohio American Energy's Salt Run mine had an increase of 1.4 million short tons in 2008, its first full year of production. Ohio Valley Coal's Powhatan No. 6 mine had an increase of 1.2 million short tons in 2008, while Buckingham Coal's Mine No. 6 had an increase of 0.6 million short tons and Oxford Mining's Snyder mine had an increase of 0.5 million short tons.

Eastern Kentucky produced 89.9 million short tons of coal in 2008, an increase of 3.2 percent or 2.8 million short tons above the 2007 level. Although there were 16 mines in Eastern Kentucky that had a 2008 production increase of at least a quarter-of-a-million short tons, there were also 16 mines that had a production decrease of at least a quarter-of-a-million short tons. The primary reason that total coal production in Eastern Kentucky was higher for the year was the fact that there were 141 mines that had production that were either new in 2008 or did not produce coal in 2007 and these mines accounted for 9.1 million short tons, more than enough to offset the 90 mines that had produced coal in 2007 but were either closed or idled for 2008.

Coal production in Alabama in 2008 totaled 20.6 million short tons, 6.6 percent higher than the 2007 level. Although production levels decreased at several mines in the State, with the largest being a drop of 0.5 million short tons of Twin Pines Coal Company's Mine No. 2 which suspended production after the first quarter of the year, increases in coal production by several other mines along with production from six new mines resulted in a coal production level that was just slightly below the 2005 level. The largest portion of the 1.3 million short ton increase for 2008 was due to the increase in coal production by Drummond Company's Shoal Creek mine, which produced 2.1 million short tons, 0.8 million short tons more than it produced in 2007.

Pennsylvania produced 65.3 million short tons, an increase of 0.4 percent from 2007 or 0.3 million short tons. Coal production in Maryland in 2008 totaled 2.8 million short tons, an increase of 0.5 million short tons. Tennessee, one of the two States in the Appalachian Region to have a decrease in production in 2008, produced a total of 2.3 million short tons, down by 0.3 million short tons. Coal production in Virginia decreased in 2008 by 0.8 million short tons to a total of 24.6 million short tons, a decline of 3.0 percent. The decrease in coal production in Virginia was primarily a result of the abandonment of Paramount Coal's Lovers Gap No. 2 mine and Exeter Coal's Mine No. 1, combined with the suspension of production at Arch Coal's Pardee mine in the latter half of 2007.

Interior Region

Coal production in the Interior Region in 2008 was 146.7 million short tons, comparable to the 2007 production level. While the total coal production for

Table 2. U.S. Coal Production by Coal-Producing Region and State, 2004 - 2008

(Million Short Tons)

Coal-Producing Region and State	2004	2005	2006	2007	2008	Percent Change 2007 - 2008
Appalachia Total	**389.9**	**396.7**	**391.2**	**377.8**	**389.8**	**3.2**
Alabama	22.3	21.3	18.8	19.3	20.6	6.6
Kentucky, Eastern	90.9	93.3	93.6	87.1	89.9	3.2
Maryland	5.2	5.2	5.1	2.3	2.8	22.0
Ohio	23.2	24.7	22.7	22.6	26.3	16.3
Pennsylvania Total	66.0	67.5	66.0	65.0	65.3	0.4
Anthracite	1.7	1.6	1.5	1.6	1.7	8.7
Bituminous	64.3	65.8	64.5	63.5	63.6	0.2
Tennessee	2.9	3.2	2.8	2.7	2.3	-12.0
Virginia	31.4	27.7	29.7	25.3	24.6	-3.0
West Virginia Total	148.0	153.6	152.4	153.5	158.0	2.9
Northern	40.6	42.6	42.4	42.2	40.9	-3.1
Southern	107.3	111.0	110.0	111.3	117.1	5.2
Interior Total	**146.0**	**149.2**	**151.4**	**146.7**	**146.7**	**0.0**
Arkansas	*	*	*	0.1	0.1	-16.3
Illinois	31.9	32.0	32.7	32.4	33.0	1.6
Indiana	35.1	34.5	35.1	35.0	36.2	3.3
Kansas	0.1	0.2	0.4	0.4	0.2	-45.5
Kentucky, Western	23.4	26.4	27.2	28.2	30.0	6.3
Louisiana	3.8	4.2	4.1	3.1	3.8	22.9
Mississippi	3.6	3.6	3.8	3.5	2.8	-19.9
Missouri	0.6	0.6	0.4	0.2	0.2	4.6
Oklahoma	1.8	1.9	2.0	1.6	1.4	-17.7
Texas	45.9	45.9	45.5	41.9	39.0	-7.0
Western Total	**575.2**	**585.0**	**619.4**	**621.0**	**633.6**	**2.0**
Alaska	1.5	1.5	1.4	1.3	1.5	11.6
Arizona	12.7	12.1	8.2	8.0	8.0	0.5
Colorado	39.9	38.5	36.3	36.4	32.0	-12.0
Montana	40.0	40.4	41.8	43.4	44.8	3.2
New Mexico	27.2	28.5	25.9	24.5	25.6	4.9
North Dakota	29.9	30.0	30.4	29.6	29.6	0.1
Utah	21.7	24.5	26.0	24.3	24.4	0.2
Washington	5.7	5.3	2.6	-	-	0.0
Wyoming	396.5	404.3	446.7	453.6	467.6	3.1
Refuse Recovery	**1.0**	**0.7**	**0.8**	**1.2**	**1.4**	**17.9**
U.S. Total	**1,112.1**	**1,131.5**	**1,162.7**	**1,146.6**	**1,171.5**	**2.2**

* Less than 50 thousand short tons.

Source: Energy Information Administration, Annual Coal Report 2005, DOE/EIA-0584(2005)(Washington, DC, October 2006); Energy Information Administration, Annual Coal Report 2007, DOE/EIA-0584(2007)(Washington, DC, January 2009); and Quarterly Coal Report, October-December 2008, DOE/EIA-0121(2008/Q4)(Washington, DC, April 2009).

the region was basically unchanged, that was not the case when it came to the respective States' production levels in 2008. Three of the four largest coal-producing States (Indiana, West Kentucky, and Texas) in the region had major changes in their production levels in 2008 when compared to 2007. Texas, the largest coal-producing State in the region, had a decrease in coal production of 2.9 million short tons to end the year at 39.0 million short tons, a level not seen since 1983. Texas coal is lignite, the lowest rank of coal with the lowest amount of energy (or Btus) and the vast majority of the coal is used in the electric power sector, primarily at mine-mouth facilities. The amount of Texas-produced lignite consumed by the electric power sector in the State dropped by 7.9 percent while the total amount of coal consumed in the electric power sector in Texas declined only slightly, by 1.3 percent. The

discrepancy is due to the fact that the amount of subbituminous coal consumed for power production increased by 4.3 percent. Declines in coal production by three Texas mines accounted for most drop in 2008 production. The three mines are Luminant Mining's Beckville Strip, Winfield South Strip, and Big Brown Strip down by 1.1, 0.7, and 0.6 million short tons, respectively.

Western Kentucky had the largest increase in coal production in the Interior Region in 2008, increasing by 1.8 million short tons to reach a total of 30.0 million short tons. This is the fourth year in a row that Western Kentucky experienced growth in coal production and the 2008 increase of 6.3 percent was primarily a result of the growth in production by one mine and the opening of a new mine in the second quarter of the year. The increase of 1.4 million short tons experienced by Hopkins County Coal's Elk Creek mine and the opening of Armstrong Coal's Midway mine which produced 0.8 million short tons in 2008 more than offset the production declines experienced by several other mines during the year.

Indiana produced a total of 36.2 million short tons in 2008, an increase of 3.3 percent, or 1.2 million short tons. Although there was a decrease of 0.5 million short tons by United Minerals' Somerville East mine, an increase in production of 0.9 million short tons by Sunrise Coal's Carlisle mine and an increase of 0.6 million short tons by both Gibson County Coal's Gibson mine and Black Beauty Coal's Francisco mine lead to Indiana's highest production level since 2001. Illinois is the other major coal-producing State in the Interior Region, and it had an increase of 1.6 percent to end the year at a total of 33.0 million short tons. The other States in the Interior Region (Arkansas, Kansas, Louisiana, Mississippi, Missouri, and Oklahoma), which together produced 8.4 million short tons of coal, accounted for a total of 5.7 percent of the entire region's production in 2008. Of these States, only Louisiana and Missouri had increases in their coal production from their prior year levels.

Western Region

The Western Region is the largest coal-producing region in the U.S., and in 2008 coal production rose by 2.0 percent to reach a total of 633.6 million short tons, 54 percent of total U.S. production for the year. The increase of 12.6 million short tons resulted in another record level for the region, the fifth year in a row. Although there was a record level of coal production in 2008, one State in the Western Region (Colorado) had a lower production level than the previous year.

Wyoming, the largest coal-producing State in the nation, a position it has held for two decades, continues to dominate the U.S. coal production picture. In 2008, Wyoming produced 467.6 million short tons of coal, an increase of 3.1 percent, or 14.1 million short tons for the year, another record year. Wyoming has dominated U.S. coal production since 1995 when it first accounted for more than one-quarter of total U.S. production. Examples of how much Wyoming dominates the U.S. coal supply include that for 2008, it accounted for 73.8 percent of the Western Region production total; was 77.8 million short tons more than the entire Appalachian Region; was more than three times the Interior Region; and was almost 40 percent of the total U.S. coal production for the year. Also, if all of the coal-producing States in 2008 were ranked by descending total production levels, Wyoming produced more than the next six largest coal-producing States (West Virginia, Kentucky, Pennsylvania, Montana, Texas, and Indiana), besting their combined production by 4.5 million short tons. Wyoming also produced 261.3 million short tons more coal than the summation of the States ranked 8th through 25th. Although seven of the twenty mines in Wyoming had decreases in coal production in 2008, the increased production levels at the rest of the mines pushed the state to a new record level for the year. Peabody's North Antelope Rochelle mine was again the largest coal mine in Wyoming and the U.S. in 2008, producing a total of 97.6 million short tons, an increase of 6.1 million short tons or 6.6 percent. This one mine produced more coal than the combined total of the other coal-producing States ranked 13th through 25th in 2008. Although there were increases of over 2 million short tons experienced by three other mines in Wyoming, one mine, Foundation Coal's Eagle Butte mine, had a decrease in production of 4.5 million short tons, a decline of 18.2 percent, to end the year at 20.4 million short tons.

In 2008, Montana, the second largest coal-producing State in the Western Region, produced a total of 44.8 million short tons, an increase of 3.2 percent. Although there were decreases in production at half of the six mines in the State, the increase in coal production at Spring Creek Coal's Spring Creek mine of 2.2 million short tons in 2008 to reach a total of 17.9 million short tons, more than offset the declines. Colorado, the third largest coal-producing State in the Western Region, was the only State in the region to have a decrease in coal production for 2008.

Colorado ended the year with a total of 32.0 million short tons, a decline of 12.0 percent, or 4.4 million short tons. Although eight of the twelve mines in the State had lower coal production in 2008, the majority

of the decrease in Colorado's total production was accounted for by two mines. Bowie Resources' Bowie No. 2 mine had a decrease of 2.6 million short tons to end the year at 2.9 million short tons, and Arch Coal's West Elk mine had a decrease of 1.0 million short tons to end the year at 5.9 million short tons. Both of these are underground longwall mines and they experienced production problems relating to geologic faults that impacted production due to relocating the longwall mining systems.

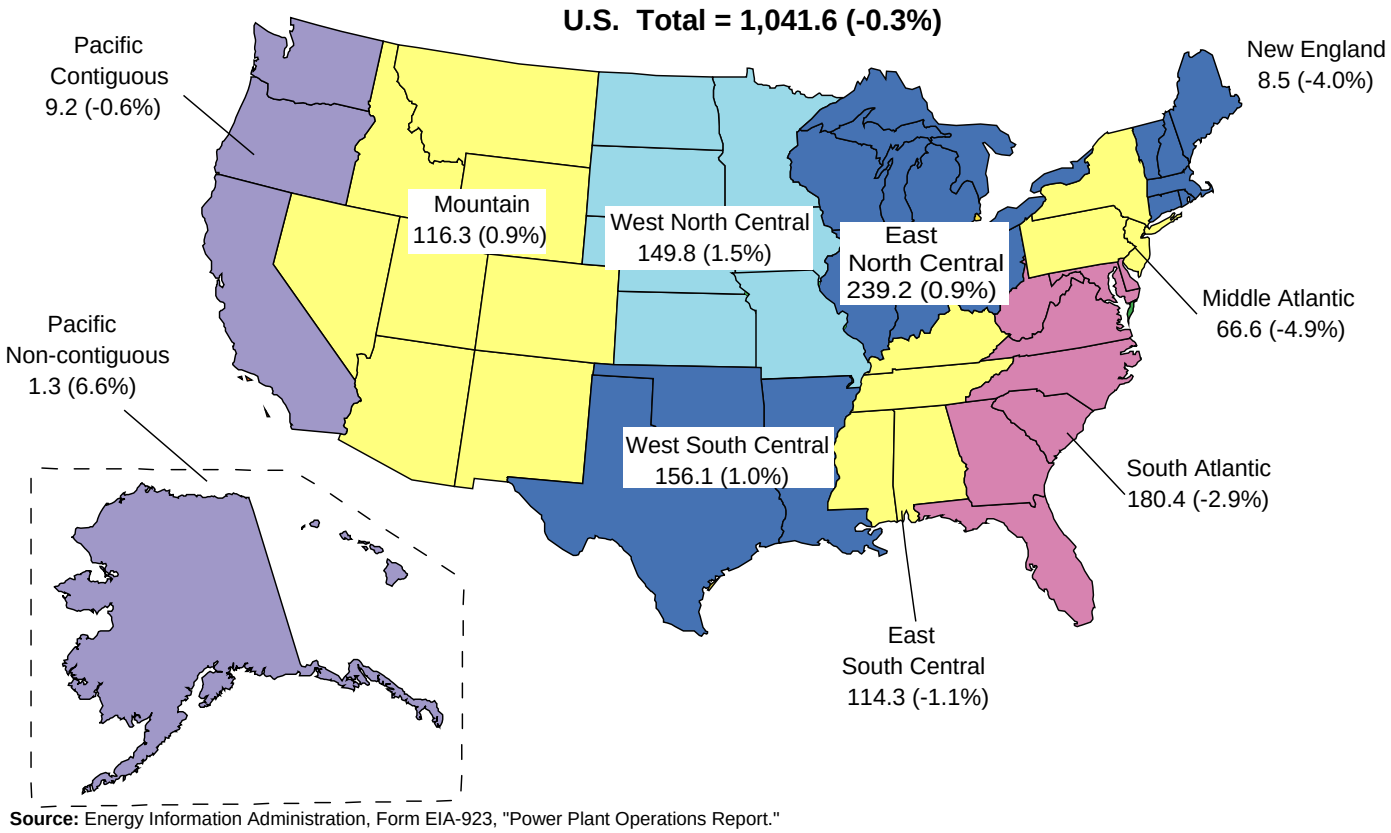
Total coal production in the other States in the Western Region (Alaska, Arizona, New Mexico, North Dakota, and Utah) had increases in their respective production levels in 2008. The increases ranged in percentages from a low of 0.1 percent in North Dakota to a high of 11.6 percent in Alaska, while the tonnage increases ranged from a low of 21 thousand short tons in North Dakota to a high of 1.2 million short tons in New Mexico.

Consumption

Preliminary data shows that total coal consumption declined slightly in 2008, dropping by 0.6 percent from the 2007 level. Total U.S. coal consumption was 1,121.7 million short tons, a decrease of 6.3 million short tons, with all of the coal-consuming sectors having lower consumption for the year. Although all sectors had declines, the electric power sector (electric utilities and independent power producers), which consumes almost 93 percent of all coal in the U.S., is the overriding force for determining total domestic coal consumption.

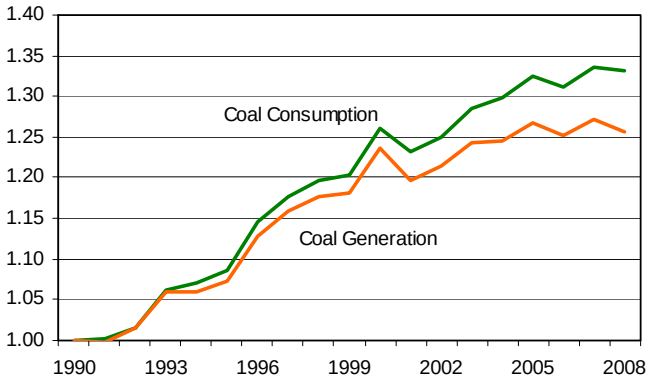
Coal consumption in the electric power sector decreased by 0.3 percent or 3.5 million short tons to end 2008 at 1,041.6 million short tons (Figure 3), while coal-based electricity generation in kilowatt hours decreased at a slightly higher rate of 1.1 percent, reflecting increasing volumes of lower Btu western coals (subbituminous and lignite) to generate electricity (Figure 4.) (Note: Graph shows both tons of coal consumed in the electric power sector and coal-generated kilowatt hours indexed to 1990, i.e., values for the data were set to 1 for 1990. 1990 was the year that the Clean Air Act Amendments were passed.) Nationally, total generation in the electric power sector from all fuels declined in 2008 by 0.9

Figure 3. Electric Power Sector Consumption of Coal by Census Region, 2008
(Million Short Tons and Percent Change from 2007)



Source: Energy Information Administration, Form EIA-923, "Power Plant Operations Report."

Figure 4. Comparison of Coal Consumption to Coal Generation (indexed to 1990)



Sources: 1990-1997—EIA, Form EIA-759, "Monthly Power Plant Report," and Form EIA-867, Annual Nonutility Power Producer Report. 1998-2000—EIA, Form EIA-759, "Monthly Power Plant Report," and Form EIA-860B, "Annual Electric Generator Report—Nonutility." 2001-2003—EIA, Form EIA-906, "Power Plant Report." 2004-2007—EIA, Form EIA-906, "Power Plant Report," and Form-920, "Combined Heat and Power Plant Report" 2008 — EIA, Form 923, "Power Plant Operations Report."

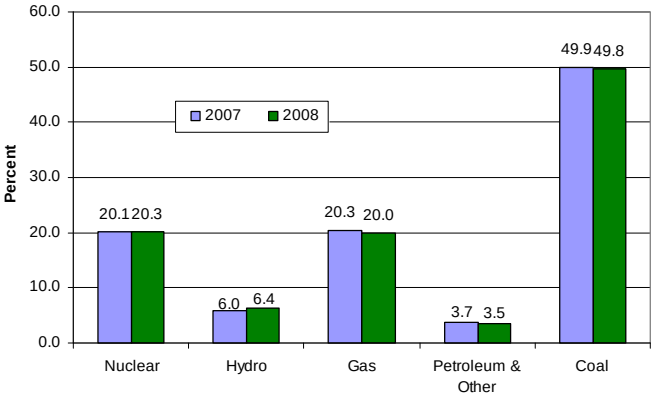
percent with losses in electricity generation by all sources except the hydroelectric and nuclear sectors in the U.S. (Figure 5). The increase of 1.1 percent in electricity generation by hydroelectric facilities in the country was a direct result of the improved water levels experienced across all regions during the year. Nuclear power generation increased slightly in 2008 by 0.3 percent. The decreases in electric generation in 2008 by other fuel categories were 0.6 percent for the petroleum and other sources1 category and 2.0 percent for natural gas.

Total electricity generation in the U.S. is primarily driven by two factors: economic growth and weather (as measured by heating and cooling degree-days). Economic growth slowed during the first three quarters of the year and declined during the fourth quarter resulting in the Gross Domestic Product (GDP) of the U.S. for 2008 increasing by only 1.3 percent for the year, down from the 2.0 percent growth experienced in 2007. The weather was also a factor in the decline of total electricity generation in 2008. Although the winter weather across a large portion of the country was colder than it was in 2007, it was still not as cold as the normal 30-year average. According to preliminary data from the National Weather Service Climate Prediction Center of the National Oceanic and Atmospheric Administration (NOAA), heating degree-days in 2008 were lower for the country as a whole than the normal by 0.6 percent. Also, the summer weather in 2008 was not as hot over most parts of the country as it was in 2007, which lead to a decrease in cooling degree-days of 11.1 percent, resulting in less need for electricity to run air-conditioners and lower demand for generation.

Of the nine Census Divisions, coal is a minor component (less than 20 percent) in the fuel mix for electricity generation in two divisions, New England and Pacific, and a major component (more than 50 percent) in five divisions, East North Central, West North Central, South Atlantic, East South Central, and Mountain. In the other two divisions, coal is one of two main fuel sources for the electric power sector. In the Middle Atlantic, coal competes with nuclear power for dominance, while in the West South Central coal competes with natural gas.

In 2008, three of the nine Census Divisions had an increase in total electricity generation, while five of the nine had increases in coal-based generation. However, only four of the five Census Divisions that had increased coal-based generation, had increases in coal consumption in 2008 while the other remained at the same level. The decreases in coal consumption by the four Census Divisions more than offset those that had increases. The decline in total U.S. coal consumption for 2008 in the electric power sector was primarily a result of lower consumption in two of the Census Divisions, the South Atlantic and the Middle Atlantic.

Figure 5. Share of Electric Power Sector Net Generation by Energy Source, 2007 vs. 2008



Source: Energy Information Administration, Form EIA-906, "Power Plant Report" and Form EIA-923, "Power Plant Operations Report."

[1] This category includes electric generation from petroleum liquids, petroleum coke, other gases, wood and wood wastes, municipal solid wastes, and agriculture products, other biomass, geothermal, solar thermal, solar photovoltaic, wind and miscellaneous technologies.

The South Atlantic Census Division usually accounts for about 20 percent of total U.S. electricity generation, while the Middle Atlantic Census Division usually accounts for about 10 percent of the total. Coal is the primary fuel for electricity generation in the South Atlantic while in the Middle Atlantic coal competes with nuclear power for the largest share of total generation. In 2008 total generation in the South Atlantic Census Division decreased by 3.5 percent (Table 3) while coal-based generation decreased by 4.4 percent. The decline in coal-based electricity generation in 2008 in the South Atlantic resulted in a decrease in coal consumption of 5.5 million short tons, down 2.9 percent to end the year at 180.4 million short tons. Both nuclear and hydroelectric generation increased in the South Atlantic Census Division in 2008, with the increase in nuclear generation of only 0.9 percent. Even though hydroelectric generation increased by 4.7 percent for the year, it still only accounted for slightly more than 1 percent of total generation for the division. In 2008 total generation in the Middle Atlantic Census Division decreased by 2.0 percent, while both nuclear and hydroelectric generation increased for the year. The increase in the Middle Atlantic Census Division for hydroelectric generation was 7.5 percent while the increase in nuclear generation was 1.4 percent. Coal-based generation declined in 2008 by 4.9 percent and that resulted in a decrease in coal consumption of 3.4 million short tons, down 4.9 percent to end the year at 66.6 million short tons.

In the East South Central Census Division coal is the dominant fuel for generation, typically accounting for just under two-thirds of total generation in a year. In 2008 total generation in the East South Central Division decreased slightly by 0.2 percent, while coal-based generation declined by 2.2 percent. Both nuclear and hydroelectric generation increased in the East South Central in 2008. The decline in coal generation in the division in 2008 resulted in a decrease of 1.2 million short tons in the East South Central Census Division to a level of 114.3 million short tons.

Over half of the electricity generated in the Mountain Census Division is derived from coal. In 2008 total generation in the Mountain Census Division increased by 3.1 percent, with increases experienced by all generation categories. However, coal-based generation increased the least, growing by 1.5 percent with the increases in the other sources ranging from 1.7 percent for natural gas to 39.5 percent for petroleum and other sources. Total coal consumption in the electric power sector in the Mountain Census Division increased in 2008, ending the year at 116.3 million short tons, an increase of 1.1 million short tons. In the West South Central Census Division coal competes with natural gas as the primary source for electric power generation, both accounting for about 40 percent of the Division's generation. Total generation in 2008 in the electric power sector in the West South Central Census Division grew by 0.8 percent, while coal-based generation grew at a higher rate of 1.4 percent. Declines in generation were experienced by both natural gas and nuclear in the division. Total coal consumption in 2008 for the electric power sector in the West South Central Census Division increased by 1.5 million short tons, or 1.0 percent, ending the year at a total of 156.1 million short tons.

Table 3. Electric Power Sector Net Generation, 2007-2008

(Million Kilowatthours)

	2007	2008	Percent Change
Census Division			
New England			
Coal	19,791	18,768	-5.2
Total	126,059	119,232	-5.4
Middle Atlantic			
Coal	152,607	145,095	-4.9
Total	428,648	420,274	-2.0
East North Central			
Coal	456,905	457,608	0.2
Total	656,142	650,943	-0.8
West North Central			
Coal	230,004	233,955	1.7
Total	311,406	315,276	1.2
South Atlantic			
Coal	438,823	419,507	-4.4
Total	815,153	786,354	-3.5
East South Central			
Coal	244,504	239,053	-2.2
Total	376,578	375,887	-0.2
West South Central			
Coal	229,930	233,089	1.4
Total	558,246	562,971	0.8
Mountain			
Coal	209,121	212,298	1.5
Total	363,605	374,985	3.1
Pacific			
Coal	16,706	16,801	0.6
Total	369,508	365,330	-1.1
U.S. Total			
Coal	**1,998,391**	**1,976,174**	**-1.1**
Total	**4,005,345**	**3,971,252**	**-0.9**

Source: Energy Information Administration, Form EIA-906, "Power Plant Report" and Form EIA-923, "Power Plant Operations Report."

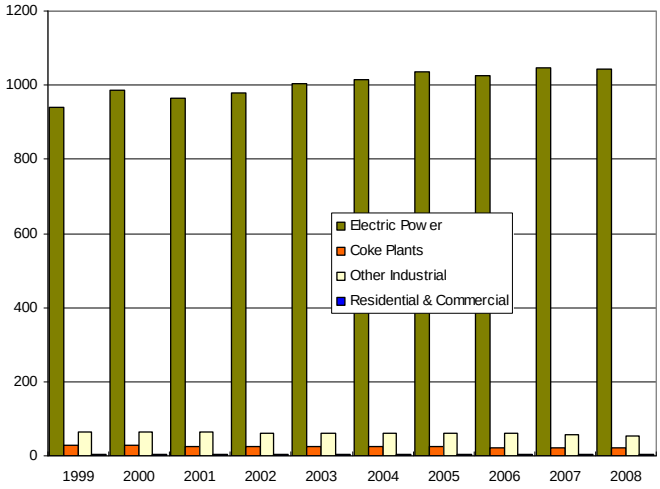
In the East North Census Division, coal usually accounts for about 70 percent of total generation and although total generation in the division decreased in 2008 by 0.8 percent, coal-based generation increased by 0.2 percent. The only fuel source to have a decrease in generation for the division in 2008 was natural gas, declining by 30.2 percent. For 2008, total coal consumption in the East North Central Census Division was 239.2 million short tons, an increase in coal consumption of 2.1 million short tons, or 0.9 percent, making it the largest electric power coal-consuming division in the U.S. The dichotomy of slightly lower total generation with increased coal consumption in the East North Central Census Division is a result of an increasing share of lower Btu coal being used by the electric generating plants in the division.

In the West North Central Census Division coal is the dominant source for electric power generation accounting for about three-fourths of the Division's generation. Total generation in 2008 in the electric power sector in the West North Central Census Division grew by 1.2 percent, while coal-based generation grew by 1.7 percent. Total coal consumption in 2008 for the electric power sector in the West North Central Census Division increased by 2.2 million short tons, or 1.5 percent, ending the year at a total of 149.8 million short tons.

Coal accounts for less than one-sixth of total generation in the New England Census Division and in 2008 total coal consumption for electricity generation decreased by 0.4 million short tons, ending the year at a total of 8.5 million short tons. Coal accounts for less than five percent of total generation in the Pacific Census Division and in 2008 total coal consumption for electricity generation increased slightly by 0.2 percent to end the year at 10.4 million short tons.

Coal consumption in the non-electric power sector (comprised of the other industrial, coking coal, and the commercial and institutional sectors) declined in 2008 (Figure 6). Coal consumption at coke plants decreased by 0.6 million short tons to end the year at 22.1 million short tons, a decline of 2.8 percent. The decline in U.S. coke production in 2008 was a result of the economic downturn in the last quarter of the year when several steel plants lowered production, some by more than half, in response to the world-wide drop in demand for their products.

Figure 6. Coal Consumption by Sector, 1999-2008
(Million Short Tons)



Source: Energy Information Administration, Monthly Energy Review, March 2009, DOE/EIA-0035(2009/03) (Washington, DC, March 2009).

Although the GDP grew in 2008 by 1.3 percent, the economic growth did not extend into the manufacturing sector, and as a result, coal consumption in the other industrial sector declined by 2.1 million short tons to end the year at 54.5 million short tons. Within the manufacturing economic sector of the North American Industry Classification System (NAICS) most of the manufacturing subsectors showed lower coal consumption for 2008. The only major coal-consuming manufacturing subsector to have an increase in consumption was the paper sector and it had only a slight increase in coal consumption. However, the decrease in coal consumption in 2008 in the other industrial sector was primarily a result of the large decrease in the nonmetallic mineral products segment, a decline of 1.1 million short tons. Also contributing to the overall decline in consumption for the other industrial sector was the decrease of 0.4 million short tons by the primary metal manufacturing segment. Coal consumption in the commercial and institutional sector2 decreased slightly in 2008, ending the year at 3.5 million short tons.

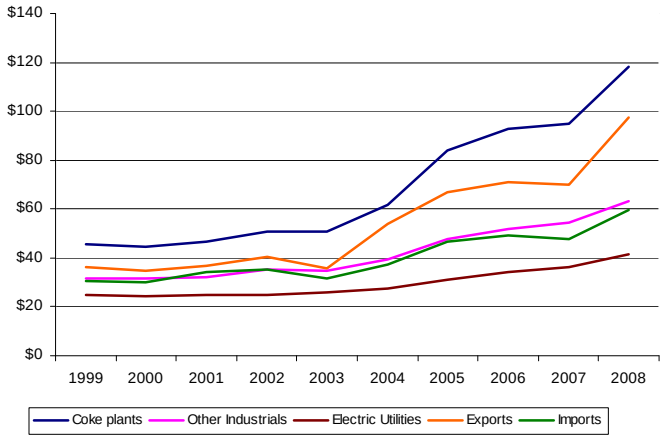
[2] The sector that was titled 'residential and commercial' has been renamed as 'commercial and institutional.' The data for this sector is now collected on a different survey form so exact comparison of 2008 to 2007 data is not applicable for this sector.

Coal Prices

Even though it was not a great year for coal consumption in 2008, domestic coal prices continued to increase in 2008 rising for the fifth consecutive year. Two factors drove the increase: increases in fuel surcharges by the transportation sector in response to the large rise in oil prices, and the dramatic rise in the eastern coal spot market prices in response to the increased demand internationally for U.S. coal.

The majority of coal sold in the electric power sector is through long-term contracts, in conjunction with spot purchases to supplement the demand. Also, the majority of the coal is transported from the mine to the electric generating facility by train, barge, truck or a combination of these methods. All of these transportation methods use fuel oil and as a consequence of the rapid increase in oil prices through most of the year, higher fuel surcharges increased the delivered price of coal. According to preliminary data for 2008, coal prices at electric utilities (a subset of the electric power sector) increased for an eighth consecutive year, to $41.23 per short ton, an increase of 14.3 percent over the 2007 price. Coal prices at independent power producers for 2008 increased to $39.31 per short ton, an increase of 18.7 percent. The average delivered price of coal to the other industrial sector increased by 16.6 percent to an average price of $63.44 per short ton in 2008. In 2008 the delivered price of coal to U.S. coke plants increased by 24.3 percent to reach an average price of $118.09 per short ton (Figure 7).

Figure 7. Delivered Coal Prices, 1999-2008
(Nominal Dollars)



Sources: Energy Information Administration, Quarterly Coal Report, October-December 2008, DOE/EIA-0121(2008/Q4) (Washington, DC April 2009); Coal Industry Annual, DOE/EIA-0584, various issues; and Annual Coal Report, DOE/EIA-0584(2003), various issues; Electric Power Monthly, March 2009, DOE/EIA-0226 (2009/03), (Washington, DC); and U.S. Department of Commerce, Bureau of the Census, "Monthly Report EM 545" and "Monthly Report IM 145..

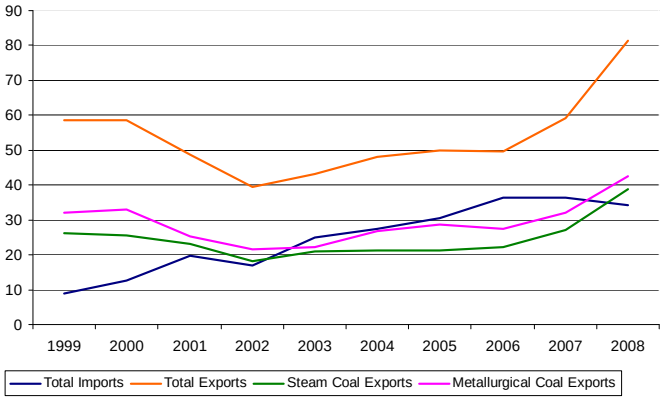
Exports and Imports

Exports. Increased international demand for coal helped to push U.S. coal exports to levels not seen in over a decade. Total U.S. coal exports for 2008 were 81.5 million short tons, an increase of 22.4 million short tons over the 2007 level, or 37.8 percent (Figure 8). The large increase was in response to growing demand, predominantly from Europe and Asia for coal due to supply disruptions that affected the ability of other coal-exporting countries to ship their product. Heavy rains in the beginning of the year caused production problems for Australia while increased domestic demand for coal in South Africa, Indonesia, Vietnam, and Russia cut into their available tonnage for the world markets. The increasing demand for U.S. coal also resulted in increasing coal export prices. The average price of U.S. coal exports in 2008 was $97.68 per short ton, an increase of 39.0 percent.

Metallurgical coal exports increased in 2008 to end the year at 42.5 million short tons, an increase of 32.2 percent as the world metallurgical coal market tightened due to increasing world demand combined with production and transportation issues experienced during the year in other metallurgical coal exporting countries. With tightened world-wide demand, the result was a huge increase in metallurgical coal export prices. In 2008, the average price of U.S. metallurgical coal exports rose by 51.3 percent to a level of $134.62 per short ton, an increase of $43.63 per short ton over the 2007 level. In part, as a consequence of the increasing demand for metallurgical coal, several of the international steel companies purchased U.S. metallurgical coal producing companies during 2008.

As it has traditionally been in the past, Europe is the main destination of U.S. metallurgical coal and in 2008 accounted for almost 60 percent of the total metallurgical coal exports. Europe was the destination for 25.5 million short tons in 2008, an increase of 38.8 percent from 2007. In 2008, the Netherlands was the primary destination of U.S. metallurgical coal exports with a total of 3.4 million short tons, an increase of 1.3 million short tons. (Note: Some ports in the Netherlands serve as transshipment points for coal being sent to other countries and the coal exports shipped there may move to other destinations.) The average price per

Figure 8. U.S. Coal Export and Imports, 1999-2008
(Million Short Tons)



Sources: U.S. Department of Commerce, Bureau of the Census, "Monthly Report EM 545" and "Monthly Report IM 145."

short ton to the Netherlands increased 37.3 percent in 2008, from $85.78 to $117.81. Italy, France, and the United Kingdom were also major European destinations of U.S. metallurgical coal in 2008. Italy received a total of 2.9 million short tons, 15.1 percent less than the 2007 total, while the average price of metallurgical coal exports to Italy was up from $94.65 per short ton to $110.27 per short ton in 2008. Both France and the United Kingdom each received 2.1 million short tons of U.S. metallurgical coal in 2008; that total was an increase of 19.0 percent for France and an increase of 23.0 percent for the United Kingdom. The percentage increases in the average price per short ton of those metallurgical coal exports were 31.2 and 34.2 percent respectively, with the average price per short ton for metallurgical coal to France at $114.74 and the price for the United Kingdom at $121.01 in 2008. Other major European destinations for U.S. metallurgical coal in 2008 were Turkey, Belgium, Poland, Romania, Croatia, Spain and Germany, with each receiving over 1 million short tons of coal. The average price of metallurgical coal exports to these major destinations ranged from $110.40 per short ton in Germany to $203.69 per short ton in Turkey.

Total U.S. metallurgical coal exports to countries in North America increased in 2008, while shipments to South America decreased, with the primary destinations being Canada and Brazil. Canada received 3.6 million short tons of metallurgical coal from the U.S., a slight decrease of 1.0 percent over the 2007 level, while shipments to Brazil totaled 6.0 million short tons, a decline of 6.1 percent. The average price of metallurgical coal in 2008 increased to both countries with the price to Canada at $91.00 per short ton, while the price to Brazil was $143.40 per short ton, representing increases of 18.2 and 62.4 percent respectively.

The Asian market accounted for almost 10 percent of U.S. metallurgical coal exports in 2008. Total metallurgical coal exports to Asia totaled 4.2 million short tons in 2008, an increase of 311.2 percent from 2007, as the U.S. helped to meet the gap in supply due to the production problems in Australia. India was the major Asian destination of U.S. coal exports in 2008, with a total of 1.6 million short tons, an increase of 79.9 percent. Japan, which did not receive any U.S. metallurgical coal exports in 2007, was also a major Asian destination in 2008, with a total of 1.4 million short tons. South Korea received 1.1 million short tons in 2008, almost 650 percent higher than the 143 thousand short tons it received in 2007. The average price for U.S. metallurgical coal exports to India was $217.77 per short ton, an increase of $115.10 per short ton. The average price for metallurgical coal exports to Japan was $142.96 per short ton while the price to South Korea rose considerably in 2008 by $92.36 per short ton to $165.62.

Metallurgical coal exports to countries in Africa decreased somewhat in 2008 from 2.1 million short tons to 2.0 million short tons. The majority of the metallurgical coal exports to Africa went to Egypt. Total U.S. metallurgical coal exports to Egypt in 2008 were 1.4 million short tons with an average price of $209.49 per short ton, an increase in price of 130.9 percent from 2007.

Total U.S. steam coal exports increased in 2008 for the sixth consecutive year as the tight world market drove many users to the U.S. for their steam coal needs. In 2008, steam coal exports rose by 44.5 percent to a level of 39.0 million short tons, while the average price per ton increased by 19.7 percent to $57.35 per short ton. Canada is the single largest market for all U.S. coal exports as well as the primary North American destination of steam coal exports. In 2008, Canada received 19.4 million short tons of steam coal exports, an increase of 4.6 million short tons and accounted for 49.7 percent of all of 2008 steam coal exports. The average price of steam coal exports to Canada decreased by $4.63 in 2008 to $36.00 per short ton. (Note: The steam coal exports to Canada contain some tonnage of U.S. steam coal exports to countries in Asia. This is due to the fact that there are currently no major coal-exporting facilities on the U.S. west coast. Some coal producers shipped steam coal by rail to coal-export terminals in British Columbia that were then loaded to ships for further transport to Asian buyers.)

Europe is the second largest market for U.S. steam coal exports due to the declining coal production in many of the countries combined with the proximity of the major eastern U.S. coal ports. Total steam coal exports to Europe increased in 2008 to a total of 14.8 million short tons, an increase of 69.2 percent from 2007. The average price of steam coal to Europe rose in 2008 by 25.3 percent, increasing to a level of $74.93 per short ton. One-third of the increase in U.S. steam coal exports to Europe was accounted for by one country: the United Kingdom. Total U.S. steam coal exports to the U.K. in 2008 were 3.7 million short tons, an increase of 119.4 percent. The average price of steam coal exports to the U.K. in 2008 was $62.53 per short ton, an increase of 33.5 percent from 2007. Other major European destinations for U.S. steam coal were: the Netherlands, Germany, France, Belgium, and Spain. The respective amount of steam coal exports in 2008 were: 3.6 million short tons, 1.4 million short tons, 1.4 million short tons, 1.3 million short tons, and 1.1 million short tons, while the average price per short ton was: $71.77, $75.23, $92.93, $85.35, and $65.56. These steam coal export prices represent increases that range from a low of $7.95 per short ton (the Netherlands) to a high of $25.41 (Belgium).

U.S. steam coal exports to the African continent declined by 22.2 percent in 2008, to a total of 1.9 million short tons. The majority of the decrease in steam coal exports to Africa is attributable to one country, Morocco. Total steam coal exports to Morocco in 2008 were 1.7 million short tons, down by 28.2 percent. The average price of steam coal exports to Morocco in 2008 was $84.15 per short ton, an increase of 77.8 percent from 2007.

Although the total amount of steam coal exports to South America (the primary source of coal imports for the U.S.) increased dramatically in 2008 to a total of 1.3 million short tons, it still only accounted for 3.2 percent of all U.S. steam coal exports. The majority of the South American steam coal exports went to Chile with a total of 854 thousand short tons. The average price of steam coal exports to South America increased to $74.40 per short ton from the 2007 level of $50.87 per short ton, while the average price to Chile increased to $47.93 per short ton from $38.42 per short ton.

Steam coal exports to Asia in 2008 were 1.1 million short tons, a level not seen since 2005, and an increase of 496.5 percent from 2007. Japan was the primary Asian destination of U.S. steam coal exports in 2008 with a total of 337 thousand short tons, well above the 5 thousand short tons it received in 2007. The average price of U.S. steam coal exports to Japan was $129.67 per short ton, a decrease from the $175.33 per short ton level of 2007. The two other primary Asian destinations of U.S. steam coal exports were South Korea and China, with totals of 281 thousand short tons and 242 thousand short tons respectively. The average price per short ton for South Korea in 2008 was $63.03 per short ton and for China was $122.93 per short ton.

U.S. coke exports increased in 2008 by 35.7 percent to a total of 2.0 million short tons. Most of the coke exports went to Canada which accounted for 38.7 percent of all U. S. coke exports with 758 thousand short tons. The average price of coke exports in 2008 was $107.42 per short ton, an increase of 18.4 percent over 2007.

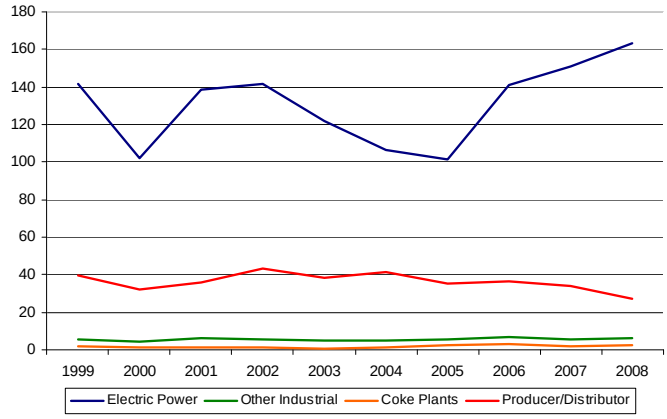
Imports. U.S. coal imports declined in 2008 for the first time in six years. Total coal imports were 34.2 million short tons, a decrease of 5.9 percent, or 2.1 million short tons. Coal imports represent a small portion of the domestic coal consumption, averaging about 3 percent of total U.S. coal consumption. The average price of imported coal rose significantly, by 25.6 percent, to a level of $59.83 per short ton. Colombia, which dominates the U.S. coal import market, accounted for over three-fourths of all 2008 coal imports. The U.S. imported 26.3 million short tons of coal from Colombia in 2008, a drop of 0.6 million short tons, or 2.2 percent. The average price of Colombian coal into the U.S. was $57.01 per short ton, an increase of 23.1 percent over 2007. In 2008, total coal imports from Indonesia, the second largest supplier of coal imports, were 3.4 million short tons, a slight decrease of 0.3 million short tons, while the average price increased by 44.4 percent to $37.68 per ton. Coal imports from Venezuela declined by 32.5 percent to 2.3 million short tons, while the price of the coal imports increased by 38.9 percent. Canada was another major source of U.S. coal imports in 2008 with a total of 2.0 million short tons, unchanged from the 2007 total. These four countries accounted for over 99 percent of total U.S. coal imports, the same rate as in 2007. Although most coal imports are used for electric generation, metallurgical coal imports were 1.7 million short tons in 2008, all from Canada.

U.S. coke imports increased substantially in 2008 by 46.5 percent to end the year at 3.6 million short tons. Increases in shipments of coke from China of 1.3 million short tons in 2008 accounted for most of the increase in coke imports. Due to the tight world metallurgical coal market during most of 2008, the average price of U.S. coke imports rose dramatically by 139.2 percent to a level of $465.15 per short ton.

Coal Stocks

Total coal stocks at the end of 2008 were 199.2 million short tons, an increase of 6.4 million short tons from the prior year (Figure 9). Estimated coal stocks held by producers and distributors were lower by 19.6 percent, as coal producers used stocks to supplement the increasing demand. Industrial users, including coke plants, held a total of 8.3 million short tons at the end of 2008, 0.8 million short tons above the level at the start of the year. Coal stocks in the electric power sector continued to increase in 2008. The electric power sector ended the year with a total of 163.1 million short tons, an increase of 11.8 million short tons, or 7.8 percent over the 2007 level. Coal stocks for the commercial and institutional sector totaled 0.5 million short tons. [Note: No stock data is available for the commercial and institutional sector prior to 2008.]

Figure 9. Year-End Coal Stocks, 1999-2008
(Million Short Tons)



Sources: Energy Information Administration, Quarterly Coal Report, October-December 2008, DOE/EIA-0121(2008/Q4) (Washington, DC, April 2009); and Coal Industry Annual, DOE/EIA-0584, various issues."

Summary

The U.S. coal industry experienced a record year in 2008, with increased production, prices, and exports. However, domestic coal consumption declined for the year as did coal imports. Both delivered coal prices and export coal prices continued to increase in 2008, some to record levels. Coal stocks continued to increase in all sectors.

While 2008 was a banner year for the U.S. coal industry, the outlook for U.S. coal in 2009 is bleak. With the majority of the world in an economic recession, and increasing competition by other coal-producing countries, the domestic coal industry could see a decline in both coal production and consumption for 2009, as well as lower coal exports. (See Energy Information Administration's Short-Term Energy Outlook.)