

# U.S. Coal Supply and Demand: 2005 Review

by

Fred Freme

U.S. Energy Information Administration

## Overview

Coal production in the United States reached a record level in 2005, ending the year at 1,133.3 million short tons according to preliminary data from the Energy Information Administration (Table 1). Production in 2005 was 21.2 million short tons higher than the 2004 level of 1,112.1 million short tons, and surpassed the prior record set in 2001 by 5.6 million short tons. Although total U.S. coal consumption rose in 2005, not all coal-consuming sectors had increased consumption for the year. Coal consumption increased in the electric power sector by 2.2 percent and declined in the other industrial sector, while coking coal consumption decreased slightly. (Note: All unit and percentage change calculations are done at the short-tons level.) U.S. coal exports rose for a third consecutive year in 2005, while coal imports again reached a record level. Total coal stocks declined during the year, as electric generators used their stockpiles to help meet increased demands and missed shipments, while coal producers used their stockpiles to supplement their production levels in 2005.

The expanding economy and the weather in 2005 helped to drive up the demand for coal in the electric power sector during the year. Coal consumption in the electric power sector increased 22.7 million short tons in 2005. Preliminary data show that total generation in the electric power sector (electric utilities and independent power producers) in the United States increased by 2.0 percent in 2005, while coal-based generation increased by 1.8 percent. Primarily as a result of a larger proportion of lower Btu coal being used in 2005, coal generation did not rise as much as coal consumption measured in short tons. Coal use in the non-electricity sector declined slightly by 1.9 percent to a level of 89.2 million short tons.

In the international markets in 2005, both U.S. coal exports and imports increased, with U.S. coal exports totaling 49.9 million short tons, an increase of 1.9 million short tons over 2004, and U.S. coal imports reaching another record level, ending the year at 30.5

million short tons, 3.2 million short tons higher than in 2004.

For a second consecutive year, the average delivered price of coal increased in all markets in 2005. In the domestic markets, the electric utility price-per-short-ton increase was 13.2 percent, while the increase was 11.0 percent for independent power producers. Coking coal prices had the largest increase in average delivered prices for any domestic sector, increasing by 36.2 percent, while the average delivered price for the other industrial sector increased by 21.2 percent in 2005. In the international markets, the average price per ton of export coal, measured in free alongside ship (f.a.s.) value, increased by 24.0 percent in 2005, while the average customs import price of coal imported into the United States rose by 24.5 percent.

According to preliminary data, coal used by coal synfuel plants increased in 2005 by 11.4 percent. The tax credit that the coal synfuel plants currently claim is set to expire at the end of 2007.

## Production

U.S. coal production increased in 2005 by 1.9 percent to reach a record level of 1,133.3 million short tons (Figure 1 and Table 1), 21.2 million short tons higher than the 2004 production. The 2005 coal production was 0.5 percent higher than the prior record set in 2001 of 1,127.7 million short tons. Exclusive of refuse production, all three major coal-producing regions had an increase in their production levels in 2005, something that had not happened since 2001. The percentage increases were 1.7 percent in Appalachia and 2.1 percent in both the Interior and Western Regions. The tonnage increase in coal production in the Western Region accounted for almost 56 percent of the total increase in the United States in 2005 (Figure 2 and Table 2).

The recurring problems that the coal industry typically deals with had varying impacts on coal production in 2005. Although many of these issues were the same as last year (weather, environmental, legal challenges, and global economics), the

**Table 1. U.S. Coal Supply, Disposition, and Prices, 2001 – 2005**  
(Million Short Tons and Nominal Dollars per Short Ton)

Item	2001	2002	2003	2004	2005
<b>Production By Region</b>					
Appalachia .....	431.2	396.2	376.1	389.9	396.4
Interior .....	146.9	146.6	146.0	146.0	149.2
Western.....	547.9	550.4	548.7	575.2	587.0
Refuse Recovery .....	1.8	1.0	1.0	1.0	0.7
<b>Total .....</b>	<b>1,127.7</b>	<b>1,094.3</b>	<b>1,071.8</b>	<b>1,112.1</b>	<b>1,133.3</b>
<b>Consumption By Sector</b>					
Electric Power .....	964.4	977.5	1,005.1	1,016.3	1,039.0
Coke Plants.....	26.1	23.7	24.2	23.7	23.4
Other Industrial Plants .....	65.3	60.7	61.3	62.2	60.8
Combined Heat and Power (CHP) .....	25.8	26.2	24.8	26.6	20.6
Non - CHP.....	39.5	34.5	36.4	35.6	40.2
Residential/Commercial Users.....	4.4	4.4	4.2	5.1	5.1
Residential .....	0.5	0.5	0.5	0.6	0.6
Commercial.....	3.9	4.0	3.8	4.6	4.6
<b>Total .....</b>	<b>1,060.1</b>	<b>1,066.4</b>	<b>1,094.9</b>	<b>1,107.3</b>	<b>1,128.3</b>
<b>Year-End Coal Stocks</b>					
Electric Power .....	138.5	141.7	121.6	106.7	101.2
Coke Plants.....	1.5	1.4	0.9	1.3	2.6
Other Industrial Plants .....	6.0	5.8	4.7	4.8	5.6
Producers/Distributors .....	35.9	43.3	38.3	41.2	34.6
<b>Total .....</b>	<b>181.9</b>	<b>192.1</b>	<b>165.5</b>	<b>154.0</b>	<b>144.0</b>
<b>U.S. Coal Trade</b>					
Exports.....	48.7	39.6	43.0	48.0	49.9
Steam Coal .....	23.3	18.1	20.9	21.2	21.3
Metallurgical Coal .....	25.4	21.5	22.1	26.8	28.7
Imports .....	19.8	16.9	25.0	27.3	30.5
Net Exports .....	28.9	22.7	18.0	20.7	19.5
<b>Average Delivered Price</b>					
Electric Utilities(1) .....	\$24.68	\$24.74	\$25.82	\$27.30	\$30.91
Independent Power Producers(1) .....	NA	\$27.96	\$26.20	\$27.27	\$30.26
Coke Plants.....	\$46.42	\$50.67	\$50.63	\$61.50	\$83.79
Other Industrial Plants .....	\$32.26	\$35.49	\$34.70	\$39.30	\$47.63
<b>Average Free Alongside Ship (f.a.s.) Price</b>					
Exports.....	\$36.97	\$40.44	\$35.98	\$54.11	\$67.10
Steam Coal .....	\$31.88	\$34.51	\$26.94	\$42.03	\$47.64
Metallurgical Coal .....	\$41.63	\$45.41	\$44.55	\$63.63	\$81.56
Imports.....	\$34.00	\$35.51	\$31.45	\$37.52	\$46.71

(1) Average delivered price is through November 2005.

NA – Data not available.

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. Electric power sector data are preliminary.

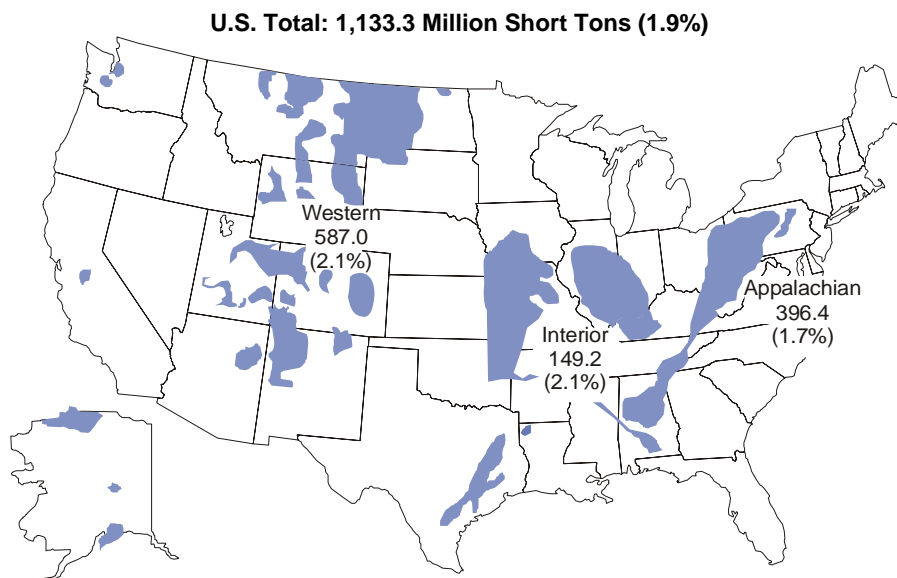
**Sources: Production, consumption, stocks, and prices:** Energy Information Administration, *Quarterly Coal Report*, October-December 2005, DOE/EIA-0121(2005/Q4) (Washington, DC, March 2006); *Annual Coal Report 2002*, DOE/EIA-0584(2002) (Washington, DC, November 2003); *Annual Coal Report 2004*, DOE/EIA-0584(2004) (Washington, DC, November 2005); *Monthly Energy Review*, February 2006, DOE/EIA-0035(2006/02) (Washington, DC, February 2006); and *Electric Power Monthly*, March 2006, DOE/EIA-0226(2006/03) (Washington DC, March 2006).

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

overriding issue for the U.S. coal industry in 2005 was transportation of coal from mines to consumers.

The majority of coal in the United States is moved by railroads exclusively or in multi-modal service with another method of transportation. Other modes of coal transport are barges, trucks, tramways, and

**Figure 1. Coal Production by Coal-Producing Region, 2005**  
 (Million Short Tons and Percent Change from 2004)  
 Regional totals do not include refuse recovery



**Source:** Energy Information Administration, *Quarterly Coal Report*, October-December 2005, DOE/EIA-0121(2005/Q4) (Washington, DC, March 2006).

conveyors. In 2005, flooding on the major waterways, along with river lock repairs and sunken barges during the winter, as well as low water levels on some major river systems during the summer, contributed to the transportation problems. In addition three major hurricanes hit the United States in 2005 (Dennis, Katrina, and Rita) causing numerous problems for the coal industry including flooding, disruptions in deliveries, closed deep-water ports, and off-line power plants. However, the one transportation issue that most affected the coal industry in 2005 was the disruption of rail traffic from the Powder River Basin (PRB) due to track maintenance. In mid-May of 2005, there were two train derailments on the southern PRB joint line, caused in part by severe weather and coal dust on the rails. This resulted in an extensive program of track repair and replacement that affected the ability of mines in the area to ship coal to consumers throughout the country. The repair work on the joint line ended for the year in early December and was scheduled to start up again after the winter season. This incident reverberated throughout all aspects of the coal industry. Several consumers experienced major disruptions in coal shipments that then resulted in precariously low stock levels and led to a major scramble to find other sources of coal to help ease the

situation. The Union Pacific railroad instituted an embargo on new southern PRB business, and the spot market price of PRB coal hit record levels in the latter part of 2005.

## Appalachian Region

Coal production in the Appalachian Region increased in 2005 by 6.5 million short tons, to end the year at 396.4 million short tons, an increase of 1.7 percent. The increase in 2005 in coal production in the region was in part fueled by the rise in U.S. metallurgical coal exports (which are produced in the East) and the increases in spot coal prices in the region that occurred during the year. However, this is the first time the Appalachian Region has experienced four consecutive years of coal production of less than 400 million short tons since the 1960s.

Although the Appalachian Region produced more coal in 2005 than in 2004, the production level was still encumbered by several factors. Transportation problems affected the amount of eastern coal moved to markets by railroads, although not to the extent of western rail problems affecting the southern PRB. Barge transportation of coal in 2005 from the region

**Table 2. U.S. Coal Production by Coal-Producing Region and State, 2001 – 2005**  
(Million Short Tons)

Coal-Producing Region and State	2001	2002	2003	2004	2005	Percent Change 2004 - 2005
<b>Appalachia Total</b> .....	<b>431.2</b>	<b>396.2</b>	<b>376.1</b>	<b>389.9</b>	<b>396.4</b>	<b>1.7</b>
Alabama .....	19.4	18.9	20.1	22.3	21.3	-4.2
Kentucky, Eastern .....	109.1	99.4	91.3	90.9	93.4	2.8
Maryland .....	4.6	5.1	5.1	5.2	5.2	-0.8
Ohio .....	25.4	21.2	22.0	23.2	24.7	6.2
Pennsylvania Total.....	74.1	68.4	63.7	66.0	67.3	1.9
Anthracite .....	1.5	1.3	1.2	1.7	1.6	-2.5
Bituminous .....	72.7	67.1	62.5	64.3	65.6	2.0
Tennessee .....	3.3	3.2	2.6	2.9	3.2	11.4
Virginia .....	32.8	30.0	31.6	31.4	27.7	-11.7
West Virginia Total.....	162.4	150.1	139.7	148.0	153.6	3.8
Northern .....	38.2	34.0	34.9	40.6	42.6	4.9
Southern .....	124.2	116.0	104.8	107.3	110.9	3.3
<b>Interior Total</b> .....	<b>146.9</b>	<b>146.6</b>	<b>146.0</b>	<b>146.0</b>	<b>149.2</b>	<b>2.1</b>
Arkansas .....	*	*	*	*	*	-65.0
Illinois .....	33.8	33.3	31.6	31.9	32.1	0.6
Indiana .....	36.7	35.3	35.4	35.1	34.4	-1.9
Kansas .....	0.2	0.2	0.2	0.1	0.2	141.6
Kentucky, Western .....	24.7	24.7	21.5	23.4	26.4	13.0
Louisiana .....	3.7	3.8	4.0	3.8	4.2	9.3
Mississippi.....	0.6	2.3	3.7	3.6	3.6	-0.9
Missouri.....	0.4	0.2	0.5	0.6	0.6	3.4
Oklahoma.....	1.7	1.4	1.6	1.8	1.8	2.9
Texas .....	45.0	45.2	47.5	45.9	45.9	0.2
<b>Western Total</b> .....	<b>547.9</b>	<b>550.4</b>	<b>548.7</b>	<b>575.2</b>	<b>587.0</b>	<b>2.1</b>
Alaska .....	1.5	1.1	1.1	1.5	1.5	-3.8
Arizona.....	13.4	12.8	12.1	12.7	12.1	-5.2
Colorado .....	33.4	35.1	35.8	39.9	38.5	-3.4
Montana .....	39.1	37.4	37.0	40.0	40.4	0.9
New Mexico .....	29.6	28.9	26.4	27.2	28.5	4.7
North Dakota.....	30.5	30.8	30.8	29.9	30.0	0.0
Utah .....	27.0	25.3	23.1	21.7	24.5	12.8
Washington .....	4.6	5.8	6.2	5.7	5.3	-6.9
Wyoming .....	368.7	373.2	376.3	396.5	406.4	2.5
<b>Refuse Recovery</b> .....	<b>1.8</b>	<b>1.0</b>	<b>1.0</b>	<b>1.0</b>	<b>0.7</b>	<b>-32.3</b>
<b>U.S. Total</b> .....	<b>1,127.7</b>	<b>1,094.3</b>	<b>1,071.8</b>	<b>1,112.1</b>	<b>1,133.3</b>	<b>1.9</b>

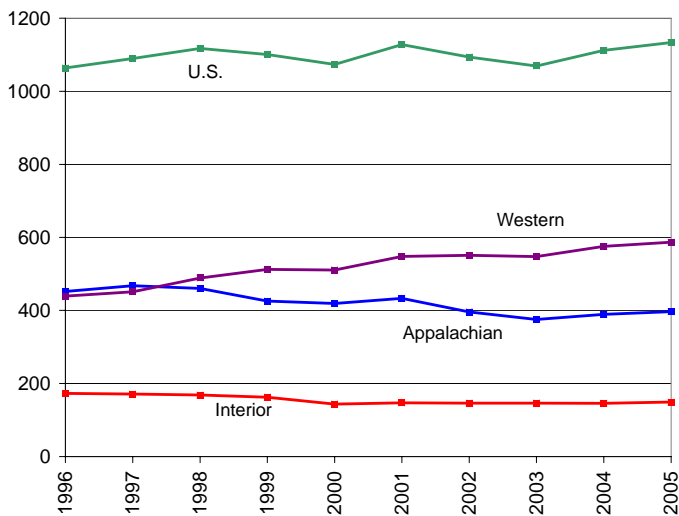
\* - Less than 50 thousand short tons.

Source: Energy Information Administration, *Annual Coal Report 2002*, DOE/EIA-0584(2002) (Washington, DC, November 2003); Energy Information Administration, *Annual Coal Report 2004*, DOE/EIA-0584(2004)(Washington, DC, November 2005); and *Quarterly Coal Report*, October-December 2005, DOE/EIA-0121(2005/Q4)(Washington, DC, March 2006).

was curtailed due to river flooding, lock maintenance, lack of available barges, and blocked river locks due to sunken barges. The combination of reserve degradation in the region, along with the legacy of past lawsuits that had either temporarily halted or extended the review time for the issuance of needed

permits for new mines or to expand current operations, continued to constrain the amount of coal produced. Increased operating costs (fuel, steel, explosives, training of new miners, etc.), along with some geological issues (roof falls, sandstone intrusions, and high methane gas levels), also

**Figure 2. Coal Production by Region, 1996-2005**  
(Million Short Tons)  
Regional totals do not include refuse recovery



**Sources:** Energy Information Administration, *Quarterly Coal Report*, October-December 2005, DOE/EIA-0121(2005/Q4) (Washington, DC, March 2006); *Coal Industry Annual*, DOE/EIA-0584, various issues; *Annual Coal Report 2002*, DOE/EIA-0584(2002) (Washington, DC, November 2003); and *Annual Coal Report 2004*, DOE/EIA-0584(2004) (Washington, DC, November 2004).

contributed to the lackluster production levels in the region. However, only three States in the region had lower production levels in 2005 than in 2004.

West Virginia, the largest coal-producing State in the Appalachian Region and the second largest in the United States, increased its coal output by 3.8 percent in 2005 to end the year with 153.6 million short tons of production, 5.6 million short tons above the 2004 level. The increase in coal production in West Virginia was in part fueled by two new mines that began production in 2005 (Alpha Resources' Seven Pines and Massey Energy's Laurel Canyon), and in part by three mines that had opened in late 2004 and had a full year's production in 2005 (Miller Brothers' Millers Creek; Dynamic Energy's Coal Mountain No. 1; and Massey Energy's Slip Ridge Cedar Grove).

Eastern Kentucky coal production was 93.4 million short tons in 2005, up by 2.5 million short tons or 2.8 percent above 2004, reversing a three-year declining trend. The production increase in 2005 in eastern Kentucky was in part driven by an entire year's production at five mines that only had partial utilization in 2004. The increases in production in these five mines (Matrix Energy's No. 1; Massey Energy's White Cabin No. 7; Miller Brothers' Trap

Branch; R & R Mining's Mine No. 30; and James River's Mine No. 23) totaled 3.7 million short tons, more than offsetting the declines in production at various other eastern Kentucky mines in 2005. Coal production in Pennsylvania in 2005 was 67.3 million short tons, an increase of 1.9 percent from 2004, or 1.3 million short tons. The expanded production levels at Foundation's Cumberland and Emerald mines and Consol's Bailey mine more than offset the drop in production due to the closing of Maple Creek's High Quality mine as a result of a legal dispute with the State mining agency.

Coal production in Ohio increased in 2005 to a total of 24.7 million short tons, an increase of 6.2 percent, as both the Century and Powhatan longwall mines each expanded production by 0.8 million short tons. Tennessee increased its coal production in 2005 by 0.3 million short tons as five new mines opened in the State. Coal production decreased in Alabama in 2005 by 4.2 percent to 21.3 million short tons. Even though seven new mines opened in Alabama during 2005, total coal production was down for the year due to production declines at two existing mines. The Jim Walter Resources No. 5 mine was idle for a period of time during 2005 due to excess water entering the mine from a previously sealed area. Production also decreased in 2005 at Drummond's Shoal Creek mine, one of the largest mines in the State. Maryland's coal production decreased slightly in 2005 by 0.8 percent, while coal production in Virginia decreased by 11.7 percent, or 3.7 million short tons, ending the year with a total of 27.7 million short tons. The drop in coal production in Virginia was primarily a result of the problems experienced at Consol's Buchanan mine during the year. In February 2005, the Buchanan mine experienced a fire that shut the underground mine for a period of four months. In September, the mine experienced a malfunction of the system that transfers the coal from the mine to the surface that lasted for almost another four months.

## Interior Region

The Interior Region experienced an increase in coal production in 2005 of 3.1 million short tons, or 2.1 percent, to achieve a total of 149.2 million short tons, the highest level seen in the region since 1999. The increase in coal production in the Interior Region was primarily a result of the increased coal production by mines in western Kentucky, which accounted for almost 97 percent of the total regional increase.

Western Kentucky coal production rose by 3.0 million short tons in 2005 to end the year at a total of 26.4 million short tons, 13.0 percent higher than in 2004. While several new mines in western Kentucky contributed to the additional production, expansions at the Cardinal, East Volunteer, and Highland No. 9 mines were the key factor in the increase for the year. Texas is the largest coal-producing State in the Interior Region and it accounts for about one-third of the region's coal production. In 2005, coal production in Texas increased slightly by 0.2 percent to end the year at 45.9 million short tons, as demand from coal-based electric generators in the State remained stable.

Indiana, the second largest coal-producing State in the Interior Region, saw a decrease of 1.9 percent to 34.4 million short tons. The decline in production in 2005 in Indiana was in part a consequence of the idling of Kindill Mining's No. 2 mine in the latter part of 2004. Coal production in Illinois rose slightly by 0.6 percent to end the year at 32.1 million short tons, as two new mines began production in 2005, North American Auger Mining's N.A.A.M. No. 11 mine and Knight Hawk Coal's Prairie Eagle mine. The other States in the Interior Region (Arkansas, Kansas, Louisiana, Mississippi, Missouri, and Oklahoma), which accounted for a total of 6.9 percent of the entire region's production in 2005, all had some change from their 2004 coal production levels.

## Western Region

Coal production in the Western Region increased in 2005 by 2.1 percent to a total of 587.0 million short tons, 51.8 percent of total U.S. coal production. The increase in production of 2.1 percent resulted in another record level for the region, surpassing the 2004 level by 11.8 million short tons. Even with the record level of coal production, four of the nine States in the Western Region had lower production levels in 2005: Alaska, Arizona, Colorado, and Washington.

Wyoming continued its dominance as the biggest coal-producing State in the nation, a position it has held since 1988. In 2005, Wyoming produced a record 406.4 million short tons of coal, an increase of 2.5 percent for the year. The sheer dominance of Wyoming's coal industry in the United States is illustrated by the fact that Wyoming accounted for about 69.2 percent of the Western Region total; produced 10.0 million short tons more than the entire

Appalachian Region; produced almost three times the Interior Region; and produced 35.9 percent of the total U.S. coal production for the year. Also, if the 26 States that produced coal in 2005 were ranked by descending total production levels, Wyoming produced 65.7 million short tons more than the next three largest coal-producing States (West Virginia, Kentucky, and Pennsylvania) combined, and 20.8 million short tons more coal than the combined total of the States ranked 5<sup>th</sup> through 26<sup>th</sup>. Although there were declines in coal production at several mines in Wyoming in 2005, in part due to the shipping issues related to the reduced capacity of the railroads during the maintenance work on the southern PRB, the expansion in production and shipments at Peabody's Caballo and Rawhide mines in the northern PRB accounted for most of the increase for the year.

In 2005, Montana was the second largest coal-producing State in the Western Region, with a total amount of coal produced of 40.4 million short tons, a slight increase over 2004 of 0.9 percent. Even with an increase in coal production in Montana in 2005, it was still below the record level set by the State in 1998 of 42.8 million short tons. Although there was a decrease in production at Decker Coal's Decker mine, the increases in production at Spring Creek Coal's Spring Creek mine and Western Energy's Rosebud mine in the northern PRB more than offset the decline. Colorado had a decline in its coal production in 2005, ending the year with a total of 38.5 million short tons, a decrease of 1.4 million short tons from 2004, due in part to the temporary closing of Mountain Coal's West Elk mine due to high carbon monoxide levels experienced at the latter part of the year.

Coal production in Utah in 2005 increased by 12.8 percent to a level of 24.5 million short tons. The 2.8-million-short-ton increase in Utah was a result of the increases in production at three mines in the State: Consol Coal's Emery, Canyon Fuel's Dugout Canyon, and Genwal Resources' Crandall Canyon. The Emery mine, which had been inactive for a period of time, restarted production late in 2004 and continued to produce for all of 2005, while expansions at the Dugout and Crandall Canyon mines added to the increased coal production level for the year.

Coal production in New Mexico increased by 1.3 million short tons in 2005 to end the year with a total of 28.5 million short tons, an increase of 4.7 percent, attributable to the increased production level at BHP's Navajo mine. Coal production in 2005 in

North Dakota was 30.0 million short tons, and production in Alaska was 1.5 million short tons, both at about the same level as the prior year.

Arizona and Washington both had declines in their coal production levels in 2005. Arizona, which has two mines, Peabody's Kayenta and Black Mesa mines, had a decrease of 0.7 million short tons to end the year at a total of 12.1 million short tons. Washington, which has only one mine, Trans Alta's Centralia mine, had a decrease of 0.4 million short tons to end the year at a total of 5.3 million short tons. The decline in coal production in Washington was in part due to increased hydro-electric generation in the State in 2005.

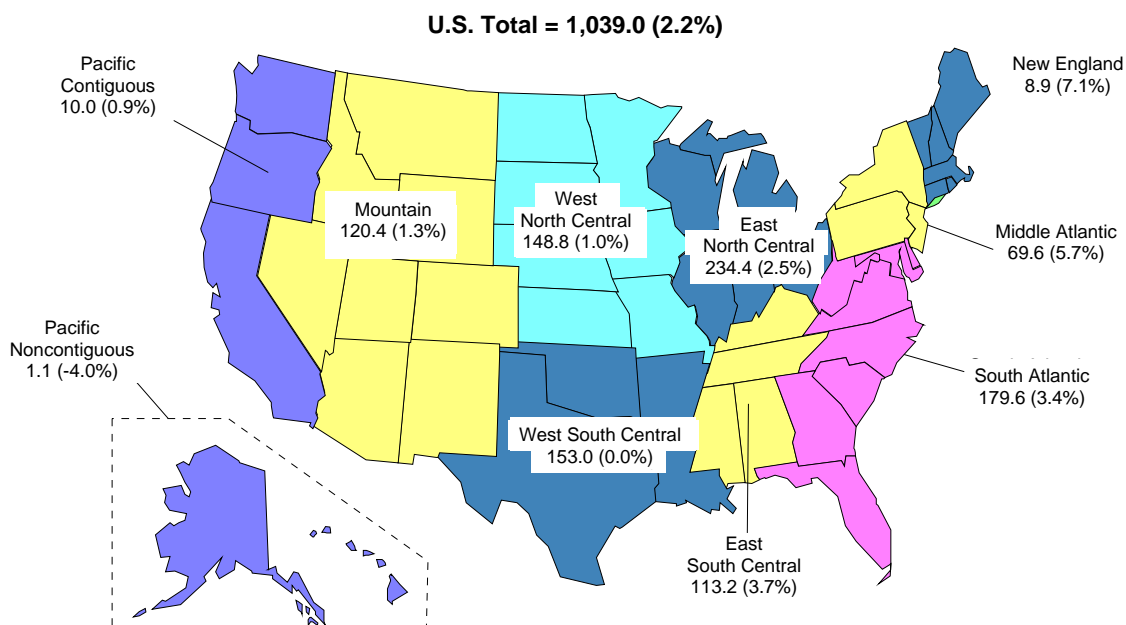
## Consumption

The combination of the continuing economic expansion with the warmer summer weather over most of the country in 2005 pushed total U.S. coal consumption to another record level. Preliminary data show that total coal consumption increased 21.0 million short tons to reach a level of 1,128.3 million short tons, an increase of 1.9 percent. Accounting for about 92 percent of all coal consumed in the United States, the electric power sector (electric utilities and independent power producers) is the driving force for all coal consumption. The other

coal-consuming sectors (coking coal, other industrial, and residential and commercial sectors) had only minor changes in their consumption totals. The other industrial sector had a decline in coal consumption in 2005 of 2.3 percent, while the coking coal sector had a decrease of 1.0 percent. The residential and commercial sector, the smallest of all coal-consuming sectors, (accounting for less than one-half of one percent of total consumption), remained at about the same level as in 2004.

Coal consumption in the electric power sector increased by 22.7 million short tons to end 2005 at a record level of 1,039.0 million short tons (Figure 3). Although coal consumption in the electric power sector increased by 2.2 percent in 2005, coal-based generation increased at a slightly lower rate, 1.8 percent, reflecting the higher volumes of lower Btu western coals (subbituminous and lignite) necessary to generate an equivalent amount of electricity. Even though there was an increase in coal consumption for electricity generation, coal's share of total generation declined slightly, decreasing by 0.2 percent. Nationally, total generation in the electric power sector from all fuels increased in 2005 by 2.0 percent, with a substantial gain in electricity generation by natural gas, helping to replace the loss in generation from nuclear and hydroelectric facilities in the U.S.

**Figure 3. Electric Power Sector Consumption of Coal by Census Region, 2005**  
(Million Short Tons and Percent Change from 2004)



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



(Figure 4). The increase in electric generation by natural gas plants of 7.6 percent in 2005 was due in large part to the numerous new natural gas-fired generating facilities which came on-line in the last several years. In 2005, almost 84 percent of the 15 gigawatts of new capacity to come on line during the year were natural gas-fired, while new coal-fired capacity was less than 3 percent. The 2005 decrease in nuclear generation of 1.0 percent from 2004's record level of generation was a result of scheduled maintenance and refueling. The small decline in electric generation in 2005 by hydroelectric plants was an outcome of the continued lower than normal precipitation levels in parts of the country with these facilities.

There are two major factors that influence total electric generation: economic growth and weather. Economic growth continued throughout 2005. For the year, the Gross Domestic Product (GDP) of the U.S. increased by 3.5 percent. As for the weather, although it was a mild winter, it was a hot summer in 2005. According to preliminary data from the National Oceanic and Atmospheric Administration (NOAA), compared to 2004, cooling degree-days in 2005 were higher for the country as a whole, by 14.9 percent, while heating degree-days were only 0.1 percent higher. The summer weather in 2005 was also significantly warmer (22.1 percent) than normal (30-year average) for the nation, while the winter

weather (January through March) was only marginally lower (4.5 percent) than normal.

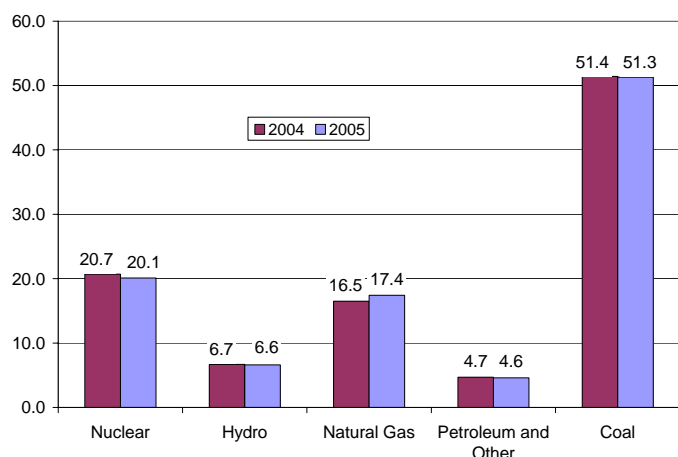
Of the nine Census Divisions, coal is a minor component (less than 20 percent) in the fuel mix for electricity generation in two Divisions, New England and Pacific, and a major component (more than 50 percent) in five Divisions, East North Central, West North Central, South Atlantic, East South Central, 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.

Eight of the nine Census Divisions had increases in coal consumption in the electric power sector in 2005, while seven of those eight had increases in coal generation. However, slightly more than half of the total increase in coal consumption in the electric power sector was attributable to two of the nine Census Divisions, the South Atlantic and the East North Central. In the South Atlantic Division, where coal's share of electric generation is about 53 percent, total generation increased by 2.9 percent in 2005, while coal-based generation increased by 3.0 percent. The increase in 2005 in coal-based generation resulted in an increase of 5.9 million short tons, or 3.4 percent in coal consumed in the electric power sector in the South Atlantic Division. Coal accounts for over 70 percent of all electric generation in the East North Central Division, making it the largest coal consuming region for the electric power sector with about 23 percent of all coal consumed for electric generation in the U.S. in 2005. Coal consumption for the electric power sector in this Division increased in 2005 by 5.8 million short tons, or 2.5 percent, and that increase represents one quarter of the total increase in U.S. coal consumption in the electric power sector for the year. Total generation in the East North Central Division increased in 2005 by 2.8 percent, while coal-based generation increased by 2.3 percent (Table 3).

Two of the Census Divisions, the East South Central and the Middle Atlantic, accounted for about one-third of the total increase in coal consumption in the electric power sector in 2005.

The East South Central Division had an increase of 1.4 percent in total generation in 2005 and an increase of 2.7 percent in coal-based generation. Coal consumption in the East South Central Division in the electric power sector increased by 4.0 million short tons, or 3.7 percent, in 2005. The Middle

**Figure 4. Share of Electric Power Sector Net Generation by Energy Source, 2004 vs. 2005 (Percent)**



**Source:** Energy Information Administration, Form EIA-906, "Power Plant Report."



**Table 3. Electric Power Sector Net Generation, 2004-2005** (Million Kilowatthours)

	2004	2005	Percent Change
<b>Census Division</b>			
<b>New England</b>			
Coal	19,024	20,101	5.7
Total	126,832	129,477	2.1
<b>Middle Atlantic</b>			
Coal	148,401	151,957	2.4
Total	401,317	416,822	3.9
<b>East North Central</b>			
Coal	449,078	459,316	2.3
Total	633,442	651,014	2.8
<b>West North Central</b>			
Coal	228,016	229,279	0.6
Total	295,280	297,525	0.8
<b>South Atlantic</b>			
Coal	412,433	424,971	3.0
Total	775,681	798,006	2.9
<b>East South Central</b>			
Coal	234,796	241,057	2.7
Total	362,445	367,667	1.4
<b>West South Central</b>			
Coal	228,415	227,685	-0.3
Total	528,683	535,630	1.3
<b>Mountain</b>			
Coal	219,311	220,516	0.5
Total	341,220	343,893	0.8
<b>Pacific</b>			
Coal	17,719	17,647	-0.4
Total	343,461	343,385	0.0
<b>U.S. Total</b>			
Coal	1,957,194	1,992,530	1.8
Total	3,808,360	3,883,420	2.0

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

Atlantic Census Division had an increase of 3.9 percent in total generation and an increase of 2.4 percent in coal-based generation, which resulted in an increase in coal consumption of 3.7 million short tons, or 5.7 percent.

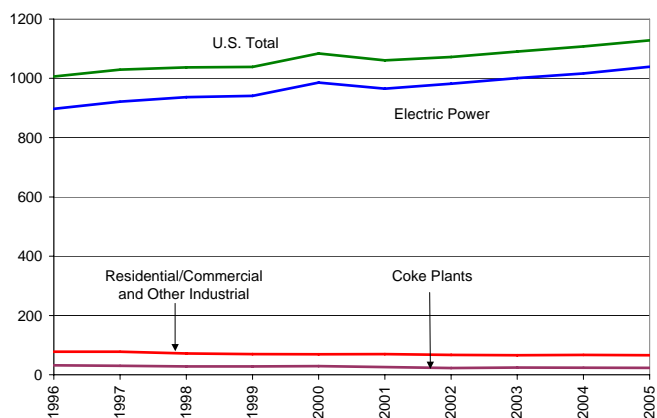
In two of the Census Divisions, the Mountain and the West North Central, coal accounts for at least over 60 percent of the fuel mix for electric generation. Each of these Census Divisions accounted for about 7 percent of the total increase in coal consumption in 2005 for the electric power sector. In the Mountain Census Division in 2005 total generation increased by only 0.8 percent, while coal-based generation increased by only 0.5 percent. This slight increase in coal-based generation resulted in an increase of 1.5 million short tons, or 1.3 percent, in coal consumption in 2005. The West North Central

Division had an increase in 2005 of only 0.8 percent in total generation and 0.6 percent increase in coal generation. Coal consumption for electric generation in the West North Central Division increased by 1.4 million short tons in 2005, or 1.0 percent.

In the West South Central Division, coal competes directly with natural gas as the main fuel for the electric power sector. In 2005 in the West South Central Division, total generation in the electric power sector increased by 1.3 percent, while coal-based generation declined by 0.3 percent, resulting in an decrease in coal consumption of only 0.3 million short tons. All of the increase in electricity generation in the West South Central Division was fueled by natural gas which increased by 7.2 percent in 2005. In the two other Census Divisions, New England and Pacific, coal is a small component in the fuel mix for electric power sector, and there were minor changes in coal consumption in those two Division in 2005.

Coal consumption in the non-electric power sector declined in 2005 (Figure 5). Although a new coke plant (the first one in 7 years) began production early in the year, coal consumption at coke plants still decreased slightly in 2005 (0.2 million short tons) to end the year at 23.4 million short tons. Even with the slight decline in U.S. coke production in 2005, concerns about the availability and price of coke in the international market resulted in decisions to : 1) expand the capacity at the newest coke plant (construct an additional 100 coke ovens); 2) build another new coke plant; and 3) refurbish a previously closed coke plant.

**Figure 5. Coal Consumption by Sector, 1996-2005** (Million Short Tons)



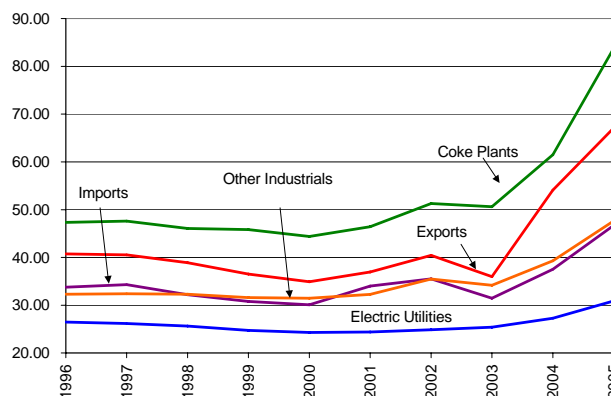
Source: Energy Information Administration, *Monthly Energy Review*, March 2006, DOE/EIA-0035(2006/03) (Washington, DC, March 2006).

Even though the GDP grew by 3.5 percent, the economic growth did not extend into the manufacturing sector in 2005, and as a result, coal consumption in the other industrial sector declined by 1.4 million short tons to end the year at 60.8 million short tons. The slight increases in coal consumption in 2005 experienced in some manufacturing sectors (food and fabricated metal) were more than offset by decreases in other manufacturing sectors (beverage, textile, paper, chemical, nonmetallic mineral, primary metal, and transportation equipment). Coal consumption in the residential and commercial sector remained steady in 2005.

## Coal Prices

For the second year in a row, coal prices rose across the board. While spot coal prices for some of the producing regions set record levels again in 2005, average delivered prices in the consuming sectors increased for the year but, for most, not as steeply as the spot prices. The majority of coal deliveries to the electric power sector are through long-term contracts, sometimes in conjunction with spot purchases to supplement the demand. According to preliminary data through November 2005, average delivered coal prices at electric utilities (a subset of the electric power sector) increased for a fifth consecutive year, to \$30.91 per short ton (\$1.52 per million Btu), an increase of 13.2 percent. Average delivered coal prices at independent power producers through November 2005 increased to \$30.26 per short ton (\$1.56 per million Btu). The increase in the delivered price of coal to the other sectors increased even more significantly in 2005 as both the coking coal sector and the other industrial sector rely more heavily on short-term contracts and the spot market. The average delivered price of coal to the other industrial sector increased by 21.2 percent to an average price of \$47.63 per short ton in 2005. However, the largest increase in consumer prices was in the coking coal sector. The tight specifications needed for coal to produce coke limit the availability of the coal. With a tight world market for metallurgical coal coupled with the U.S. metallurgical coal production issues that occurred in 2005, the average delivered price of coal to U.S. coke plants increased by 36.2 percent to reach an average price of \$83.79 per short ton in 2005 (Figure 6).

**Figure 6. Delivered Coal Prices, 1996-2005**  
(Nominal Dollars per Short Ton)



**Sources:** Energy Information Administration, *Quarterly Coal Report*, October-December 2005, DOE/EIA-0121(2005/Q4) (Washington, DC March 2006); *Coal Industry Annual*, DOE/EIA-0584, various issues; and *Annual Coal Report 2002*, DOE/EIA-0584(2002) (Washington, DC, November 2003); *Annual Coal Report 2004*, DOE/EIA-0584(2004) (Washington, DC November 2005); *Electric Power Monthly*, March 2006, DOE/EIA-0226 (2006/03) (Washington, DC); and U.S. Department of Commerce, Bureau of the Census, "Monthly Report EM 545" and "Monthly Report IM 145."

## Coal Synfuel

The coal synfuel industry, a recent addition to the U.S. marketplace, increased its presence in 2005. According to preliminary data, there were 57 coal synfuel plants in operation in the U.S. at the end of 2005 (Figure 7). The amount of coal processed by all the coal synfuel plants in 2005 was 139.7 million short tons, an increase of 13.9 million short tons over the 2004 amount (Table 4). The average price of coal delivered to the coal synfuel plants increased in 2005 by 17.7 percent to \$42.78 per short ton. These plants process both waste coal and run-of-mine coal to produce their end product, typically referred to as coal synfuel, which enters into the supply chain and is consumed by various users in almost all sectors, including the export market. As in the traditional coal industry, almost 92 percent of coal synfuel is distributed to the electric power sector, while smaller amounts are sent to coke plants, other industrial plants, and the export markets.

## Exports and Imports

**Exports.** U.S. coal exports increased for the third consecutive year in 2005, something not experienced by the U.S. coal industry since 1991. Total U.S. coal exports in 2005 were 49.9 million short tons, an increase of 1.9 million short tons over 2004 (Figure 8). While total coal exports were up 4.1 percent in 2005, the average f.a.s. price per ton increased by 24.0 percent to \$67.10 per short ton as the tightening world coal market continued to push export prices to unprecedented highs.

Total U.S. steam coal exports increased by only 0.6 percent to a level of 21.3 million short tons in 2005; however, the average f.a.s. price per ton increased by 13.4 percent to \$47.64 per ton. Although the increase in U.S. steam coal exports was only 0.1 million short tons, there were some large swings in tonnages of steam coal to several countries.

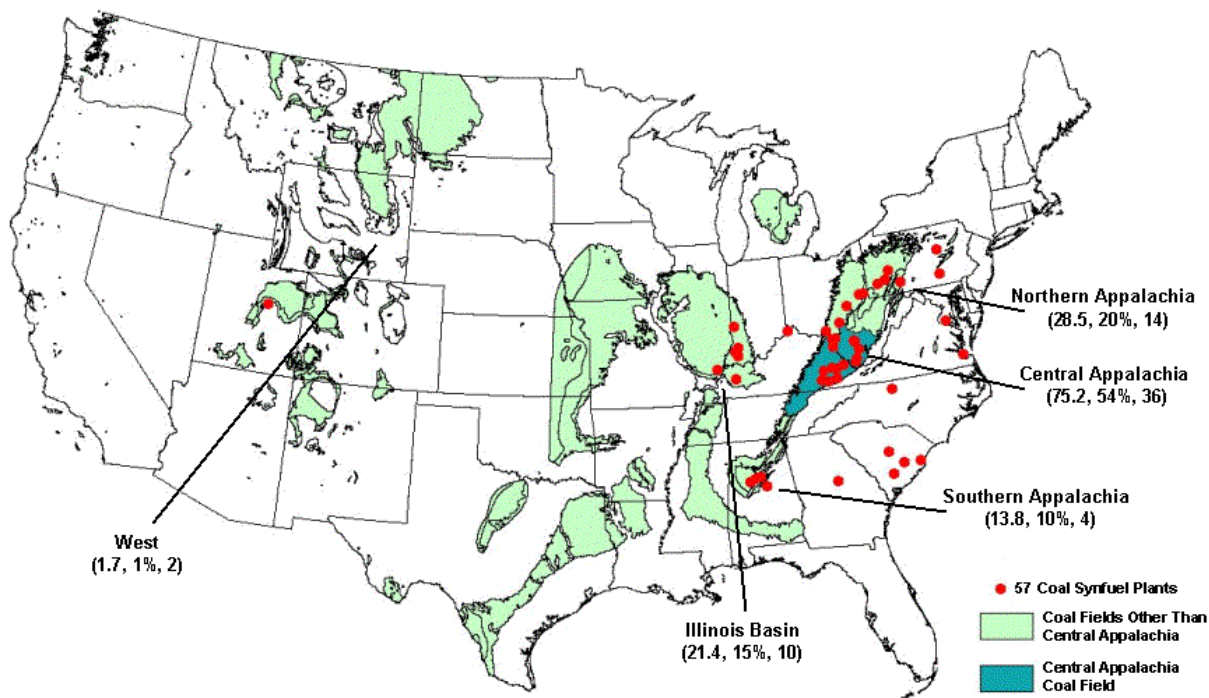
Canada, the single largest market for all U.S. coal exports, received 15.0 million short tons of steam coal exports in 2005, an increase of 1.0 million short tons. The increase in steam coal exports to Canada occurred even though the Provincial government of Ontario closed one of its coal-fired generating plants, (Lakeview), at the end of April 2005. U.S. steam coal exports to Canada account for 70.6 percent of all

steam coal exports. The average f.a.s. price of steam coal exports to Canada increased by 12.5 percent to \$38.62 per short ton in 2005.

Steam coal exports to Asia in 2005 lost some of the ground that they had gained in 2004, but were still well above the 2003 level. Total steam coal exports to Asia were 1.3 million short tons, a decline of 1.0 million short tons. Although there were slight tonnage decreases in several countries, Japan accounted for almost the entire drop in steam coal exports to Asia. In 2005, Japan only received 260 thousand short tons of steam coal from the U.S., a level 1.0 million short tons lower than the 2004 level. The decline in steam coal exports to Japan was in part a result of increasing competition in the market from Asian coal exporting countries. The average f.a.s. price of steam coal exports to Japan increased in 2005 to \$96.04 per short ton, a 15.5-percent increase over 2004.

Europe has been a mainstay for U.S. steam coal exports due to the declining coal production in many of the European countries combined with the proximity of the eastern U.S. major coal ports. Steam coal exports to Europe in 2005 were 3.5 million short tons, an increase of 9.2 percent from 2004. The average f.a.s. price of steam coal to Europe increased substantially in 2005 by 70.3

**Figure 7. Coal Shipments from Coal-Producing Regions to Coal Synfuel Plants, 2005**  
(Million Short Tons, Percent of U.S. Total, and Number of Plants)



**Note:** The numbers of plants inside the parentheses add to 66 rather than 57 plants because six synfuel plants received coal from two or more coal-producing regions.

**Source:** Energy Information Administration, Form EIA-3, "Quarterly Coal Consumption and Quality Report – Manufacturing Plants."  
Energy Information Administration/U.S. Coal Supply and Demand: 2005 Review

percent to a level of \$70.27 per short ton. The declines in steam coal exports to Germany of 267 thousand short tons, the United Kingdom of 212 thousand short tons, and Portugal of 192 thousand short tons were offset by increases to Romania of 782 thousand short tons and to the Netherlands of 263 thousand short tons

While U.S. steam coal exports to the African continent declined by 67.1 percent in 2005, the decrease in tonnage was only 280 thousand short tons. Steam coal exports to South America fell slightly in 2005 by 204 thousand short tons with Brazil accounting for most of the decrease. Steam coal exports to Brazil were 767 thousand short tons in 2005, 21.3 percent below the prior-year total.

Metallurgical coal exports in 2005 totaled 28.7 million short tons, an increase of 6.8 percent over the 2004 level, and accounted for almost 94 percent of the increase in total U.S. coal exports for the year. As the increasing world-wide demand for steel continued in 2005, metallurgical coal demand followed even in the face of increasing prices. The average f.a.s. price of U.S. metallurgical coal exports in 2005 was \$81.56 per short ton, an increase of \$17.93 per short ton over the 2004 level.

Europe is the main destination of U.S. metallurgical coal, and the increase in shipments in 2005 more than offset the decrease in metallurgical coal exports to Asia. In 2005, Italy was the primary European destination of U.S. metallurgical coal exports with a total of 2.4 million short tons, an increase of 23.3

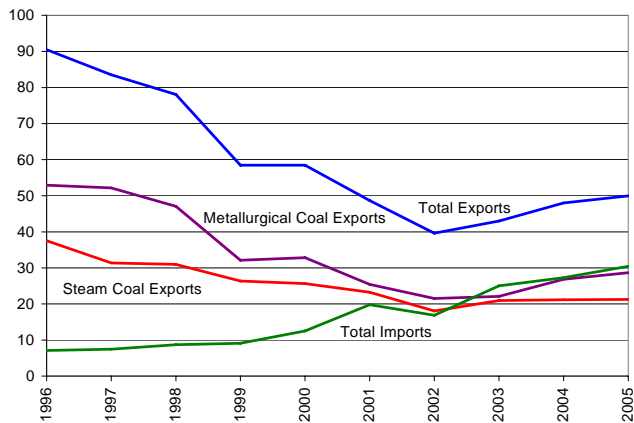
**Table 4. Coal Statistics for Synthetic Fuel Plants**  
(Thousand Short Tons and Nominal Dollars per Short Ton)

Year and Quarter	Coal Receipts	Average Price of Receipts	Coal Used	Coal Stocks
<b>2001</b>				
January - March	9,409	\$26.69	9,326	287
April - June	11,370	\$28.19	11,158	523
July - September	13,261	\$31.08	13,309	507
October - December	15,286	\$32.61	14,578	631
	<b>49,326</b>	<b>\$30.05</b>	<b>48,372</b>	
<b>2002</b>				
January - March	17,635	\$32.27	17,237	970
April - June	20,367	\$31.48	20,652	771
July - September	23,578	\$31.87	23,248	1,128
October - December	23,600	\$32.02	23,789	951
	<b>85,180</b>	<b>\$31.90</b>	<b>84,925</b>	
<b>2003</b>				
January - March	26,558	\$32.10	26,334	1,210
April - June	31,327	\$32.71	31,077	1,455
July - September	27,911	\$33.13	28,110	1,287
October - December	29,380	\$33.52	29,787	1,132
	<b>115,177</b>	<b>\$32.88</b>	<b>115,309</b>	
<b>2004</b>				
January - March	31,633	\$34.39	31,374	1,251
April - June	31,882	\$35.99	31,968	1,023
July - September	32,006	\$37.46	32,172	810
October - December	30,645	\$37.63	30,297	1,072
	<b>126,165</b>	<b>\$36.36</b>	<b>125,810</b>	
<b>2005</b>				
January - March	33,510	\$41.82	33,523	1,064
April - June	36,770	\$42.60	36,123	1,774
July - September	37,259	\$42.44	37,516	1,488
October - December	33,060	\$44.33	32,580	1,728
	<b>140,598</b>	<b>\$42.78</b>	<b>139,743</b>	

**Note:** Total may not equal sum of the components because of independent rounding.

**Source:** Energy Information Administration, Form EIA-3, "Quarterly Coal Consumption and Quality Report - Manufacturing Plants."

**Figure 8. U.S. Coal Exports and Imports, 1996-2005**  
(Million Short Tons)



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

percent. The average f.a.s. price of metallurgical coal to Italy in 2005 was \$78.21 per short ton, an increase of \$17.44 per short ton. Spain received 1.9 million short tons of U.S. metallurgical coal in 2005, an increase of 28.3 percent, while the average f.a.s. price per short ton increased \$25.66 per ton, from \$45.08 to \$70.74. U.S. metallurgical coal exports to Turkey in 2005 were 1.8 million short tons, an increase of 42.6 percent. The average f.a.s. price per short ton of metallurgical coal to Turkey in 2005 was \$101.16, an increase of \$34.55 per ton. With the exception of the Netherlands, all the other major European destinations of U.S. metallurgical coal increased in their totals in 2005. While the Netherlands had a decline of 6.1 percent to a total of 1.7 million short tons, Belgium, the United Kingdom, and France all had increases in U.S. metallurgical coal exports, with the total tonnages ranging from 1.6 million short tons for Belgium to 1.2 million short tons for France. The average f.a.s. price of metallurgical coal exports to these major destinations ranged from \$80.67 per short ton in Belgium to \$90.44 per short ton in France. The increases in the prices per short ton of U.S. metallurgical coal for these European countries ranged from \$18.91 for the Netherlands to \$28.00 for the United Kingdom. The Asian market for U.S. metallurgical coal which had roared back to life in 2004, lost some ground in 2005, but did not revert to the virtually non-existent markets of the beginning of the decade. Total metallurgical coal exports to Asia totaled 3.8 million short tons in 2005, a decline of

26.1 percent. Although there was a decrease in U.S. metallurgical coal exports to Japan, it was the largest Asian importer in 2005, with 1.8 million short tons, a decline of 42.6 percent, while the average f.a.s. price increased by only \$2.24 to \$91.27 per short ton. The two other Asian countries to receive U.S. metallurgical coal exports both increased in 2005. India received 1.2 million short tons and South Korea received 0.8 million short tons in 2005. The average f.a.s. price for India was \$109.04 per ton while it was \$87.20 per ton for South Korea. No other Asian countries received U.S. metallurgical coal in 2005 as China and Taiwan relied on other sources for their needs.

Total U.S. metallurgical coal exports to countries in North America increased in 2005, while shipments to South America remained level, with the primary destinations being Canada and Brazil. Canada received 4.4 million short tons of metallurgical coal exports, an increase of 17.6 percent over the 2004 level, while shipments to Brazil were 3.4 million short tons. The average f.a.s. price of metallurgical coal in 2005 to Canada was \$65.02 per short ton, while the price to Brazil was \$84.63 per short ton.

In part, driven by the worldwide demand for steel, U.S. coke exports increased in 2005 by 32.5 percent to a total of 1.7 million short tons. Most of the coke exports went to Canada which accounted for 43.7 percent of all coke exports with 0.8 million short tons. Other major destinations of U.S. coke exports were Portugal and Mexico, with 19 and 16 percent of the total coke exports, respectively.

**Imports.** For the third year in a row U.S. coal imports set another record in 2005. Total coal imports were 30.5 million short tons, an increase of 11.7 percent, or 3.2 million short tons. Some of the increase in imports is attributable to the internal coal transportation problems experienced during the year. Although imports represent less than 3 percent of total U.S. coal consumption, they are a factor in the supply balance, particularly for the coastal electric power producers. As all coal prices did in 2005, the average customs import price of coal increased. The average price of U.S. coal imports increased by 24.5 percent to a level of \$46.71 per short ton.

Colombia continued to dominate the U.S. coal import market, accounting for 21.2 million short tons, or almost 70 percent of all coal imports. This was an increase of 4.6 million short tons from the 2004 level. The average customs import price of Columbian coal into the U.S. was \$44.82 per ton, an increase of 28.1

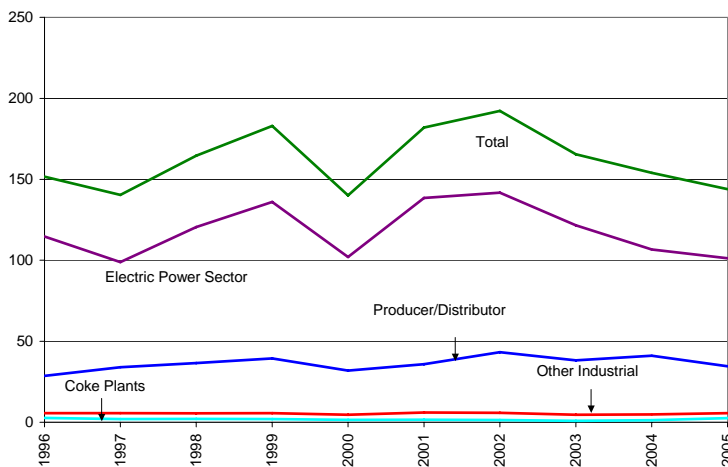


percent over 2004. Coal imports from Venezuela, the second largest supplier, decreased in 2005 by 0.7 million short tons, while the average customs import price increased by 15.5 percent to \$46.46 per ton. Coal imports from Indonesia rose by 13.2 percent to 2.5 million short tons, while coal imports from Canada decreased 29.9 percent to 2.0 million short tons in 2005. These four countries account for almost 97 percent of total U.S. coal imports. Although most coal imports are used for electric generation, metallurgical coal imports were 1.8 million short tons in 2005, mostly from Canada.

## Coal Stocks

Total coal stocks at the end of 2005 were 144.0 million short tons, a decrease of 10.0 million short tons from the prior year (Figure 9). Coal stocks held by producers and distributors decreased by 6.6 million short tons, a drop of 16.0 percent as producers used their stockpiles to help meet the increased demand. Industrial users, including coke plants, held a total of 8.2 million short tons at the end of 2005, 2.0 million short tons more than the level at the start of the year. Coal stocks in the electric power sector dropped for the third consecutive year in 2005, declining by 5.4 million short tons (5.1 percent), to end the year at 101.2 million short tons, as power facilities used their stockpiles to meet increasing demand for electricity and transportation problems slowed coal deliveries.

**Figure 9. Year-End Coal Stocks, 1996-2005**  
(Million Short Tons)



**Sources:** Energy Information Administration, *Quarterly Coal Report*, October-December 2005, DOE/EIA-0121(2005/Q4) (Washington, DC, March 2005); *Coal Industry Annual*, DOE/EIA-0584, various issues.

## Summary

In 2005, the coal industry experienced record production as well as record coal consumption. Although total coal exports continued to expand for the year, coal imports again reached a level resulting in a decline in net exports for 2005. Delivered coal prices continued to increase, while export prices reached new heights. Coal stocks declined in the electric power sector, while increasing in the other consuming sectors. Factors contributing to increased coal demand and production in 2006 (see Energy Information Administration's *Short-Term Energy Outlook*) include:

- Continued economic expansion
- Increases in electric power coal stockpiles
- Continued recovery in coal exports
- Completion of coke plant projects
- Return to normal weather patterns (colder winter weather)
- Elevated natural gas prices

With increasing economic growth pushing coal consumption higher, the replenishment of coal stocks at electric power plants from their currently low levels, as well as increases in coal exports, coal production could reach another record level in 2006. Given the general tightness in markets, both consumers and producers will continue to pay close attention to developments affecting coal transportation.