

U.S. Coal Supply and Demand: 2000 Review

by

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Overview

For the first time in more than 40 years, U.S. coal production has decreased for a second consecutive year. In 2000, coal production declined by 2.3 percent from 1999, to 1,075.5 million short tons, according to preliminary data from the Energy Information Administration (Table 1). Nevertheless, overall coal consumption increased in 2000. The additional needs of the industry were answered by a substantial draw down in stocks of 40.7 million short tons—lowering year-end stock levels by 22 percent from 1999 levels.

Coal consumption in the United States totaled 1070.5 million short tons, an increase of 2.4 percent. The electric power industry, excluding cogeneration facilities owned by the industrial and commercial sectors, used a record 970.7 million short tons of coal, 90.7 percent of total U.S. consumption. Coal-based electric power accounted for 51.4 percent of total electric generation. The increase in coal consumed to generate electricity was, in part, a response to the weather and the decline in hydroelectric generation. Coal use in the non-electricity sector rose for the first time in 6 years, as consumption at coke plants pushed the total sector to grow by 1.2 percent to reach a total of 99.7 million short tons.

Reflecting increasing global competition in the coal market, U.S. coal imports climbed in 2000 by more than 37 percent, achieving a record level of 12.5 million short tons. Several utilities used imported low-sulfur coal to help meet stricter sulfur emission requirements of Phase II of the 1990 Clean Air Act Amendments (CAAA), which became effective January 1, 2000. Although there was a decline in steam coal exports, the increase in metallurgical coal exports mitigated that loss, holding total coal exports at 58.5 million short tons for the year—reversing a 3 year downward trend.

Year-end coal stocks declined in both the consuming and producing sectors. Consumer stocks decreased by 35.2

million short tons while producer and distributor stocks fell by 5.3 million short tons.

The delivered price of coal continued a downward trend that started more than a decade ago. On an annual basis, the average utility price per ton of coal delivered to utilities dropped by 3.6 percent in 2000, the price of coking coal fell by 3.1 percent, while the price of other industrial steam coal declined marginally. As a result of the strong competition in the world coal market, U.S. coal export price, measured in free alongside ship (f.a.s.) value, decreased by 4.4 percent, while the price of coal imports dropped by 2.2 percent.

Production

Coal production in 2000 totaled 1,075.5 million short tons, dropping 2.3 percent (24.9 million short tons) from 1999 (Figure 1 and Table 1). The decline in production was attributable to (1) a substantial draw down in total coal stocks, (2) a lack of excess production capacity at some mines, and (3) a reluctance on the part of some producers to expand production to meet increasing demands in the latter part of the year. In a departure from the trend of the past several years, production levels in all three regions declined (Figure 2 and Table 2).

Appalachian Region

Coal production in the Appalachian Region was 420.9 million short tons in 2000, a decrease of 4.7 million short tons from 1999. Of the three major coal producing States in the region, only West Virginia had higher production levels in 2000, while Eastern Kentucky and Pennsylvania registered a decrease in production. Coal production in West Virginia, the largest coal producing State in the region, rose by 1.7 million short tons (1.1 percent) to a level of 159.6 million short tons. Although coal production increased in West Virginia in 2000, it was constrained in part by controversy surrounding a lawsuit brought by an environmental group in Federal

Table 1. U.S. Coal Supply, Disposition, and Prices, 1997-2000
(Million Short Tons and Nominal Dollars per Short Ton)

Item	1997	1998	1999	2000
Production by Region				
Appalachian	467.8	460.4	425.6	420.9
Interior	170.9	168.4	162.5	144.7
Western	451.3	488.8	512.3	509.9
Total	1,089.9	1,117.5	1,100.4	1,075.5
Consumption by Sector				
Electric Power	922.0	937.8	946.8	970.7
Electric Utilities	900.4	910.9	894.1	848.4
Other Power Producers ^a	21.6	26.9	52.7	122.3
Coke Plants	30.2	28.2	28.1	29.3
Other Industrial Plants	71.5	67.4	65.5	65.5
Residential/Commercial Users	6.5	4.9	4.9	4.9
Total	1,030.1	1,038.3	1,045.3	1,070.5
Year-End Coal Stocks				
Electric Power	98.8	120.5	136.0	100.8
Coke Plants	2.0	2.0	1.9	1.5
Other Industrial Plants	5.6	5.5	5.6	5.7
Producers/Distributors	34.0	36.5	39.5	34.2
Total	140.4	164.6	183.0	142.2
U.S. Coal Trade				
Exports	83.5	78.0	58.5	58.5
Steam Coal	31.4	31.0	26.3	25.7
Metallurgical Coal	52.2	47.1	32.1	32.8
Imports	7.5	8.7	9.1	12.5
Net Exports	76.1	69.3	49.4	46.0
Average Delivered Price				
Electric Utilities	26.16	25.64	24.72	23.83
Coke Plants	47.61	46.06	45.85	44.43
Other Industrial Plants	32.41	32.26	31.59	31.40
Average Free Alongside Ship (f.a.s.) Price				
Exports	40.55	38.89	36.50	34.90
Steam Coal	32.42	30.24	29.91	29.67
Metallurgical Coal	45.45	44.58	41.91	38.99
Imports	34.32	32.18	30.77	30.10

^aInclude utility coal-fired power plants sold to nonutilities during 1998, 1999 and 2000. Coal consumption by cogenerators are included in the end-use sector.

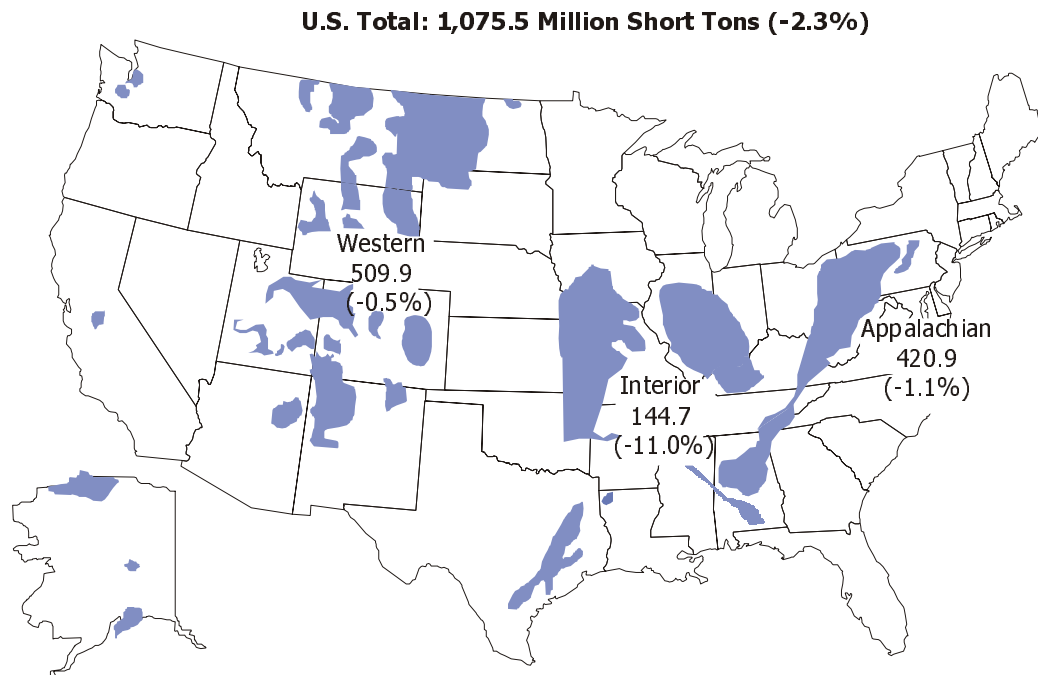
Notes: Totals may not equal sum of components due to independent rounding. Sum of net exports, stock changes, and consumption may not equal production, primarily because the supply and disposition data are obtained from different surveys.

Sources: **Production, consumption, stocks, and prices:** Energy Information Administration, *Quarterly Coal Report, October-December 2000*, DOE/EIA-0121(00/4Q) (Washington, DC, April 2001); *Coal Industry Annual 1998*, DOE/EIA-0584(98) (Washington, DC, June 2000); *Electric Power Monthly, March 2001*, DOE/EIA-0226(01/03) (Washington, DC, March 2001); and Federal Energy Regulatory Commission Form 423, "Cost and Quality of Fuels for Electric Utilities." **Exports and imports:** U.S. Department of Commerce, Bureau of the Census, "Monthly Report EM 545" and "Monthly Report IM 145."

court, involving mountaintop removal and valley fills. The judge in the case banned valley fills within the buffer zones around streams in October 1999, thereby delaying the start of several new mines that could have produced coal in 2000. Eastern Kentucky's production dropped 4.9 million short tons to end the year at 105.1

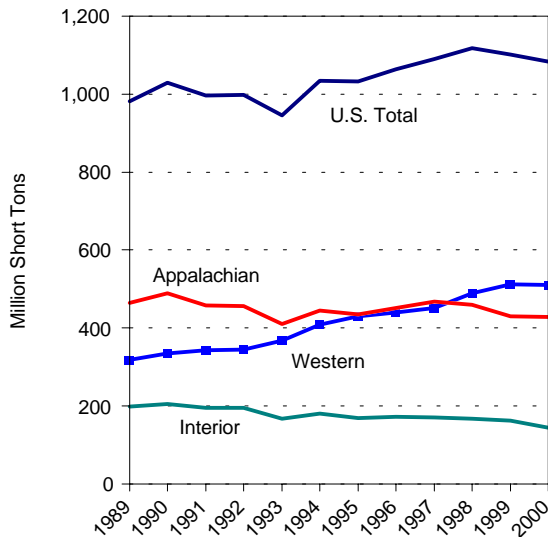
million short tons. In 2000, Pennsylvania produced 75.1 million short tons, a drop of 1.3 million short tons (1.8 percent), somewhat reflecting the drop in steam coal exports to Canada. Both Maryland and Virginia increased their production, while Alabama, Ohio, and Tennessee had decreases in coal production in 2000.

Figure 1. Coal Production by Coal-Producing Region, 2000
(Million Short Tons and Percent Change from 1999)



Source: Energy Information Administration.

Figure 2. Coal Production by Region, 1989-2000



Sources: Energy Information Administration, *Quarterly Coal Report, October-December 2000*, DOE/EIA-0121(00/4Q) (Washington, DC, April 2001); *Coal Production*, DOE/EIA-0118, various issues; and *Coal Industry Annual 1998*, DOE/EIA-0584(98) (Washington, DC, June 2000).

Interior Region

Reflecting the closure of several large mines in the region, coal production in the Interior Region dropped in 2000 by 17.8 million short tons (11 percent) to a level of 144.7 million short tons—extending a downward trend for the region to 4 years. Every major coal-producing State in the Interior Region had lower production levels in 2000. The States in the Illinois Basin (Illinois, Indiana, and Western Kentucky) accounted for 87.7 percent of the loss, falling from a combined total of 104 million short tons to 88.4 million short tons. The greatest decline in tonnage for any State in the Interior Region was registered by Illinois (down by 7 million short tons) where production ceased at two major mines, the Peabody’s Marissa mine and Arch Coal’s Conant mine, which together accounted for 5.8 million short tons of production in 1999. Coal production in the two other Illinois Basin States, Indiana and Western Kentucky, dropped by 6 million short tons (17.8 percent) and by 2.6 million short tons (8.9 percent), respectively. Production ceased at three major mines in Indiana, Peabody’s Hawthorn and Lynnville mines, and Kindell Mining’s Kindell #1 mine. These three mines produced 7 million

Table 2. U.S. Coal Production by Coal-Producing Region and State, 1997-2000
(Million Short Tons)

Coal-Producing Region and State	1997	1998	1999	2000
Appalachian Total	467.8	460.4	425.6	420.6
Alabama	24.5	23.0	19.5	19.2
Kentucky, Eastern	120.9	116.7	110.0	105.1
Maryland	4.2	4.0	3.8	4.3
Ohio	29.2	28.0	22.5	22.2
Pennsylvania Total	76.2	81.0	76.4	75.1
Anthracite	4.7	5.2	4.8	4.5
Bituminous	71.5	75.8	71.6	70.6
Tennessee	3.3	2.7	3.0	2.7
Virginia	35.8	33.7	32.3	32.8
West Virginia	173.7	171.1	158.0	159.6
Northern	42.8	44.7	38.9	37.6
Southern	130.9	126.5	119.2	122.1
Interior Total	170.9	168.4	162.5	144.7
Arkansas	*	*	*	*
Illinois	41.2	39.7	40.4	33.4
Indiana	35.5	36.8	34.0	28.0
Kansas	0.4	0.3	0.4	0.2
Kentucky, Western	34.9	33.6	29.6	27.0
Louisiana	3.5	3.2	3.0	3.7
Mississippi	-	-	*	0.9
Missouri	0.4	0.4	0.4	0.4
Oklahoma	1.6	1.7	1.7	1.6
Texas	53.3	52.6	53.1	49.5
Western Total	451.3	488.8	512.3	509.9
Alaska	1.5	1.3	1.6	1.6
Arizona	11.7	11.3	11.8	13.1
Colorado	27.4	29.6	30.0	29.1
Montana	41.0	42.8	41.1	38.4
New Mexico	27.0	28.6	29.2	26.2
North Dakota	29.6	29.9	31.1	31.3
Utah	26.7	26.1	26.4	26.7
Washington	4.5	4.6	4.1	4.3
Wyoming	281.9	314.4	337.1	339.3
U.S. Total	1,089.9	1,117.5	1,100.4	1,075.5

* = Less than 50 thousand short tons.

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

Sources: Energy Information Administration, *Coal Industry Annual 1998*, DOE/EIA-0584(98) (Washington, DC, June 2000); and *Quarterly Coal Report, October-December 2000*, DOE/EIA-0121(00/4Q) (Washington, DC, April 2001).

short tons of coal in 1999. Texas, the largest coal-producing State in the Interior Region, saw its production level decline by 3.6 million short tons (6.7 percent), which reflects the continuing displacement of state-produced lignite by Powder River Basin coal at several of the State's electric utilities. In the Interior

Region, only Louisiana increased production in 2000 from 1999, by 25.3 percent. Coal mining began in Mississippi during the last couple of weeks in December 1999 and continued throughout most of 2000 in preparation for start up of the Choctaw Generation Ltd.'s Red Hills Power Plant.

Western Region

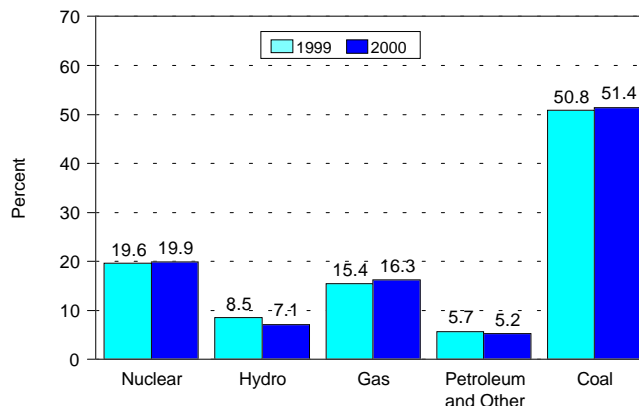
In 2000, coal production in the Western Region declined for the first time in 16 years, dropping by 2.5 million short tons to 509.9 million short tons, a decrease of only 0.5 percent. Coal production in this region (as well as in the entire United States) was dominated by Wyoming, which accounted for two thirds of the regional production and nearly one third of U.S. production in 2000. Wyoming produced 339.3 million short tons of coal—only 10 percent less than the next three largest coal-producing States combined. In 2000, Wyoming continued an eight-year trend of increasing coal production, growing by 2.1 million short tons (0.6 percent). The continued penetration of Powder River Basin coal into the eastern electric power markets has helped to drive Wyoming production to record level for another year, although the level of growth dropped substantially in 2000. The slowdown in growth in Wyoming was a reflection of the decision by some producers to limit production expansion and by the constraints of the coal transportation (or railroad loadout) capacity in the Powder River Basin.

Montana, the second largest coal producing State in the Western Region, had a decrease in production of 2.8 million short tons. Production levels in Colorado and New Mexico also declined in 2000. Colorado produced 29.1 million short tons, a decline of 2.8 percent, while New Mexico registered the largest decline of any State in the region. In 2000, New Mexico experienced a localized strike and some equipment problems. As a result, some of the producers drew down their stocks thereby decreasing New Mexico's coal production by 3 million short tons, to a level of 26.2 million short tons. Arizona increased coal production by 1.3 million short tons (11.2 percent), reflecting the increase in coal-based electric power in the area.

Consumption

Coal consumption in the United States in 2000 grew 2.4 percent to reach a level of 1,070.5 million short tons. More than 90 percent of all coal was consumed in the electric power sector. The 970.7 million short tons of coal consumed in that sector does not include coal consumed by cogeneration facilities reported in the industrial and commercial sectors. Coal was used to produce 51.4 percent of all electricity generated in the United States (Table 1 and Figure 3). Two factors affected the growth in coal consumption for power generation in 2000. The increase of 34.1 million short tons for the generation of electricity was in part a result of a decline in hydro-

Figure 3. Share of Electric Power Industry Net Generation by Energy Source, 1999 vs. 2000

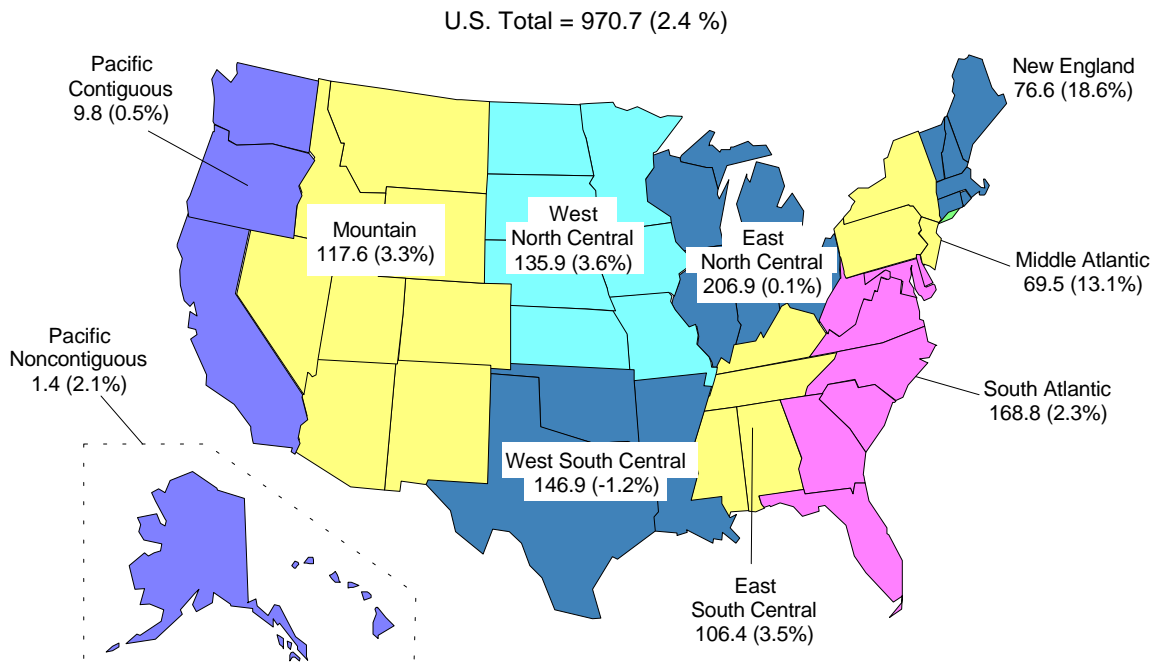


Sources: Energy Information Administration, *Electric Power Monthly*, March 2001, DOE/EIA-0226(01/02) (Washington, DC, March 2001); Form EIA-860B, "Annual Electric Generator Report - Nonutility," EIA-900, "Monthly Nonutility Power Report".

electric generation in 2000. Preliminary data for hydroelectric generation show a drop of 43.5 billion kilowatt-hours from the 1999 level.

The other factor affecting the higher level of consumption was weather. The summer of 2000 was warmer in some parts of the country than it was in 1999. During June through September, the Mountain Census Division experienced growth in cooling-degree days of more than 16 percent than the same period in 1999. During August 2000, the East North Central and West North Central Census Divisions had a higher number of cooling-degree days, 29 and 38 percent, respectively, when compared to August 1999. In addition, the cooler than normal weather across most of the nation during April, November, and December also resulted in higher coal consumption for electricity generation. Six of the nine Census Divisions (New England, Middle Atlantic, East North Central, West North Central, South Atlantic, and East South Central) had a rise in heating-degree days in April compared with April 1999, ranging from 6.6 to 69.7 percent higher. During November and December 2000, all nine Census Divisions had growth in heating-degree days, compared with the same period in 1999. These changes in weather resulted in increased coal consumption for electricity generation for the year in every Census Division except the West South Central. The West South Central Census Division had a significant increase in natural gas-fired generation, which resulted in a decrease in coal consumption for generation of 1.7 million short tons (1.2 percent).

Figure 4. Electric Power Sector Consumption of Coal by Census Division, 2000
(Million Short Tons and Percent Change from 1999)

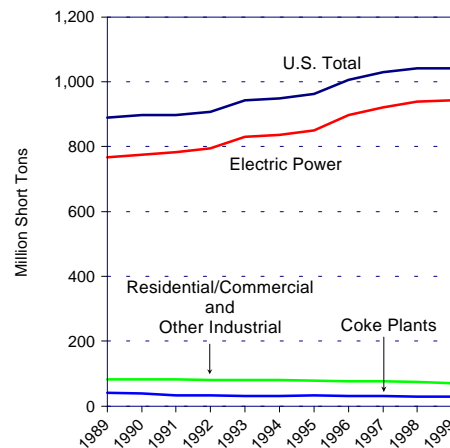


Sources: Energy Information Administration, *Electric Power Monthly*, March 2001, DOE/EIA-0226(01/03) (Washington, DC, March 2001); Form EIA-860B, "Annual Electric Generator Report - Nonutility," and EIA-900, "Monthly Nonutility Power Report."

Coal use in the non-electric power sector increased in 2000 for the first time in 6 years. While there was a slight decline (0.9 percent) in coal consumed in the residential/commercial sector, consumption by coke plants and other industrial plants increased. Coal consumed at coke plants increased in 2000 by 1.2 million short tons, up of 4.3 percent. This increase was reflective of a 3.5 percent increase in pig iron production in the United States (Figure 5).

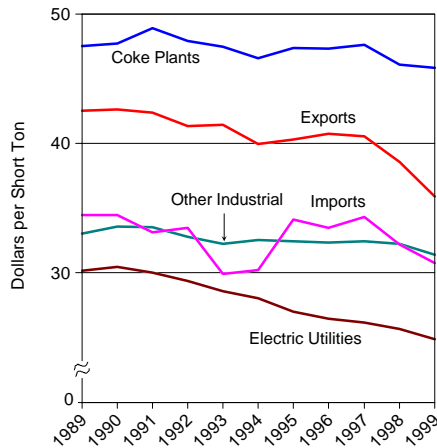
Coal prices, on an annual basis, declined in 2000, continuing the downward trend of the last several years. Although there were higher prices for some of the consuming sectors as a result of the increasing fuel costs at the end of the year (on a delivered basis), the average price of utility coal (on a delivered basis) declined 3.6 percent, for an annual average of \$23.83 per short ton (121.1 cents per million Btu). Coking coal prices dropped to \$44.43 per short ton, a 3.1 percent decline over the 1999 price. The price of other industrial steam coal was slightly lower in 2000 with an annual average price of \$31.40 per short ton (Figure 6).

Figure 5. Coal Consumption by Sector, 1989-2000



Sources: Energy Information Administration, *Quarterly Coal Report, October-December 2000*, DOE/EIA-0121(00/4Q) (Washington, DC, April 2001); *Coal Industry Annual 1998*, DOE/EIA-0584(98) (Washington, DC, June 2000); and *Electric Power Monthly*, March 2001, DOE/EIA-0226(01/03) (Washington, DC, March 2001).

Figure 6. Delivered Coal Prices, 1989-2000 (Nominal Dollars)



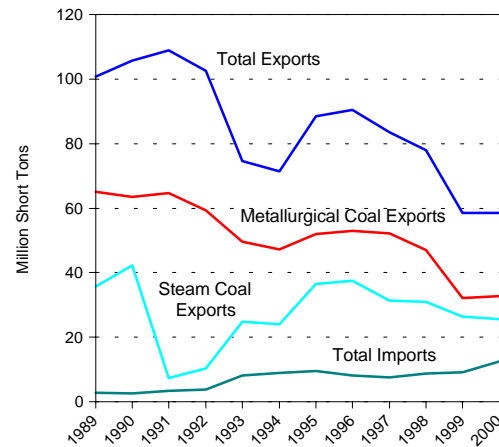
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Exports and Imports

Exports—In 2000, total U.S. coal exports remained unchanged from 1999 at 58.5 million short tons, reversing a 3-year declining trend (Figure 7). The highly competitive world coal market was again dominated by Australia, the leading coal-exporting country. The strong U.S. dollar in 1999 and 2000 gave an edge to other coal-exporting countries when contract prices were negotiated. Metallurgical coal exports increased in 2000 by 2.2 percent, regaining some of the loss experienced in 1999. The slight boost in metallurgical coal exports was helped by the world wide demand for steel, as well as a price drop of 7 percent on a per ton f.a.s. basis for metallurgical coal exports. The average price per ton dropped from \$41.91 in 1999 to \$38.99, a price that has not been seen in decades. Of the major U.S. buyers of metallurgical coal, Belgium and Luxembourg, Brazil, Spain, and Turkey each increased their imports of U.S. metallurgical coal. Canada, France, Italy, Japan, Korea, the Netherlands, and the United Kingdom, all imported less metallurgical coal in 2000. Reflecting the competitiveness in the Asian market, U.S. exports of metallurgical coal to the region declined in 2000 by 42 percent. Japan imported less than 2 million short tons in 2000, a drop of 57.6 percent, and Korea imported 29.5 percent less coal than in 1999.

The market for U.S. steam coal exports dropped somewhat in 2000. Total steam coal exports were down (by

Figure 7. U.S. Coal Exports and Imports, 1989-2000



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

2.6 percent) to a level of 25.7 million short tons, down from 26.3 million short tons in 1999. Canada represented the largest steam coal export market for the United States, accounting for 58.1 percent of all steam coal exports in 2000, despite the 4.1 percent drop from the 1999 level. Other major declines in steam coal exports were experienced in Mexico (1 million short tons) and in China, (0.8 million short tons). Although total steam coal exports were down overall, Japan and the United Kingdom increased their share of U.S. steam coal exports. The increases of 38.1 percent for the United Kingdom and 28.2 percent for Japan were not enough to compensate for the declines by other countries. The f.a.s. price of steam coal declined by only 0.8 percent in 2000 to \$29.67 per short ton.

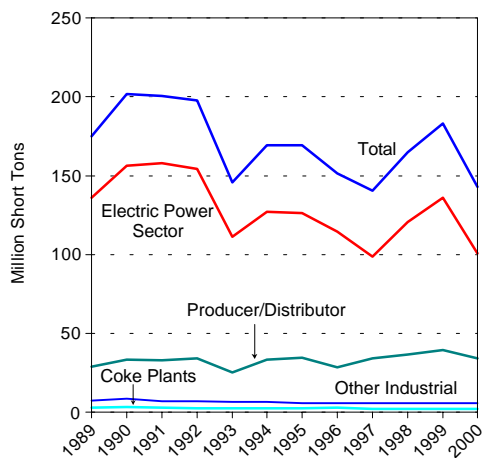
Imports—Coal imports, although an extremely small part of the total U.S. coal supply (less than 1 percent of total consumption), increased dramatically in 2000. Total coal imports were 12.5 million short tons, an increase of 37.7 percent (Figure 7). The rise in imports in 2000 was attributable to the heightened demand for low-sulfur coal to meet the stricter sulfur emission requirements of Phase II of the Clean Air Act Amendments (CAAA) of 1990. Electric utilities accounted for 60 percent of all coal imports with other power producers accounting for approximately 20 percent. A significant portion of the increase can be attributed to higher receipts of imported coal by utilities in Alabama. The average price of U.S. coal imports for 2000 was \$30.10 per short ton, only slightly less than the 1999 value of \$30.77 per short ton. Colombia remained the largest supplier of U.S. coal imports with 7.6 million short tons, or 61 percent of all

coal imports. Venezuela and Canada followed with 2 million short tons and 1.9 million short tons, respectively.

Stocks

Coal stocks at the end of 2000 totaled 142.2 million short tons, a drop of 40.7 million short tons (Figure 8). Stocks held by coal producers and distributors fell by 5.3 million short tons, a decrease of 13.4 percent. Industrial users, including coke plants, held a total of 7.3 million short tons, a decrease of 0.2 million short tons. Coal stocks in the electric power sector declined by 35.2 million short tons in 2000, helping to keep production levels down. The colder than normal weather in many parts of the country combined with the tight coal market at the end of the year, kept inventories at levels well below historical levels.

Figure 8. Year-End Coal Stocks, 1989-2000



Sources: Energy Information Administration, *Quarterly Coal Report, October-December 2000*, DOE/EIA-0121(00/4Q) (Washington, DC, April 2001); *Coal Industry Annual 1998*, DOE/EIA-0584(98) (Washington, DC, June 2000); and *Electric Power Monthly, March 2001*, DOE/EIA-0226(01/03) (Washington, DC, March 2001).

Summary

In 2000, the U.S. coal industry experienced a second year of declining production due to a drop in coal stocks and constrained production capacity. There was also a legal issue regarding valley fills that limited coal production in the Appalachian Region. The negative factors that led to lower production are expected to change in 2001, as increasing demand for reliable electricity sources and replenishment of stockpiles push production levels up. Factors contributing to increased coal demand and production (see Energy Information Administration's *Short-Term Energy Outlook*) would include:

- Increasing U.S. coal exports
- Continuing, albeit slower, economic growth
- Only slight declines in natural gas prices from their year-ending highs
- Replenishment of stocks by the electric power industry.

Spot coal prices in the final quarter of 2000 reached levels that were higher than had been seen in decades. The question remains as to whether or not the coal industry can maintain the increase for all of 2001, thereby reversing a trend of 25 years of declining prices. Overall, the outlook for U.S. coal in 2001 is likely to be better than 2000, with increasing demand pushing production to new heights.