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# ILLINOIS MINERAL INDUSTRY IN 1992

and Review of Preliminary Mineral Production Data for 1993

Irma E. Samson

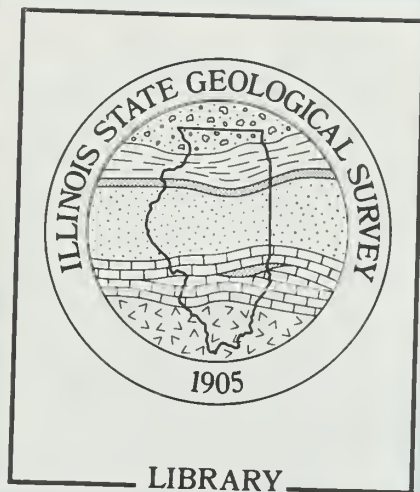
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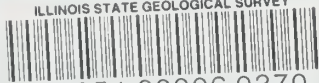
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Department of Energy and Natural Resources  
ILLINOIS STATE GEOLOGICAL SURVEY



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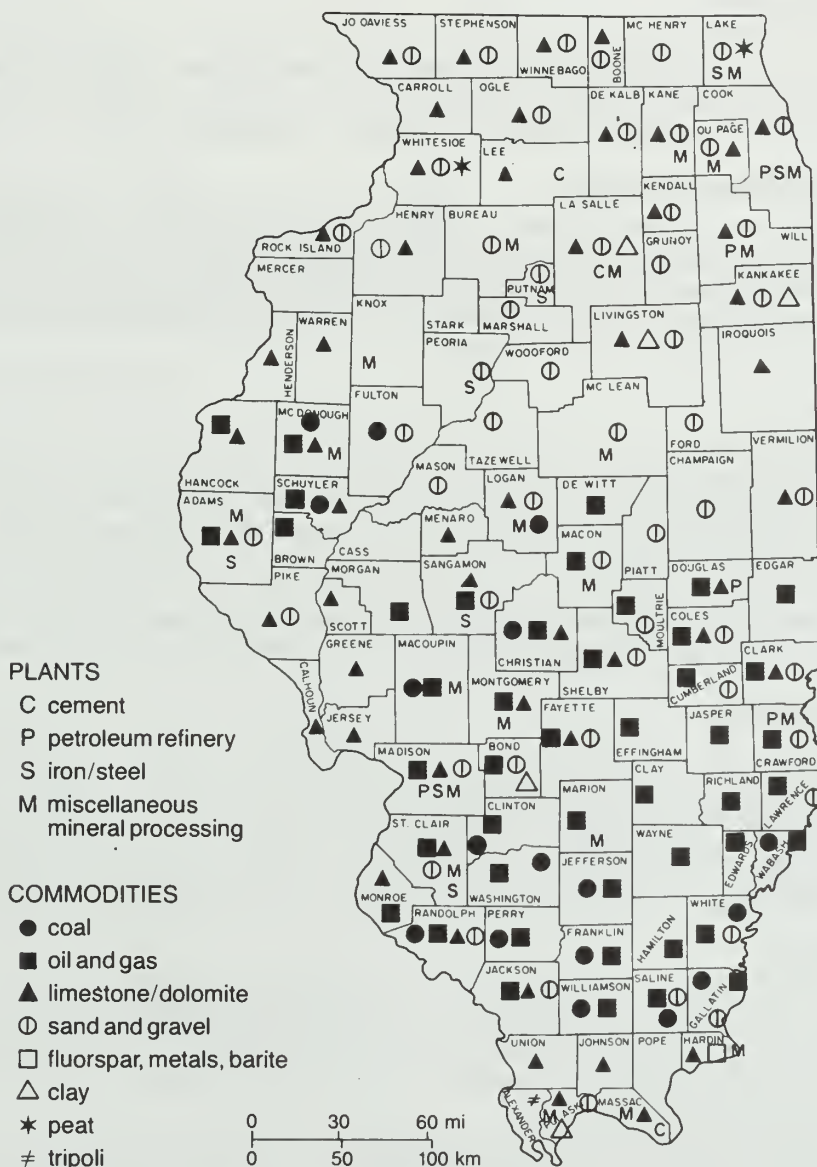
## EXECUTIVE SUMMARY

This report covers three types of mineral industry operations in Illinois (fig. 1):

- extracting minerals from the ground
- processing crude minerals (mined primarily out of state) into raw industrial materials
- manufacturing mineral products such as coke, lime, and cement from minerals extracted and processed primarily, but not exclusively, in Illinois.

## 1992 Reported Value

The total reported value of minerals extracted, processed, and manufactured in Illinois during 1992 was \$2,894.3 million, 0.5% lower than the 1991 total. The total of the values reported to the U.S. Bureau of Mines (USBM) is not necessarily the actual value because many producers do not report their production figures. Minerals extracted accounted for 90% of the reported value; processed crude minerals and manufactured minerals accounted for the remaining 10%. Coal continued to lead in value, followed by industrial and construction materials and oil (table 1, p. 23).



**Figure 1** Mineral production and mineral-processing plants.



Illinois produced 6% of the tonnage and contributed about 8% of the value of coal produced nationally. The state continued to lead the nation in production of fluorspar, industrial sand, and tripoli. Production of stone was 6.3% and sand and gravel, 4.2% of the national total (table 2). Illinois ranked sixteenth in the value of nonfuel minerals produced in the United States in 1992.

## **Extracted Minerals**

In 1992, the value of commodities mined in Illinois was \$2,607.6 million, a decrease of 4.4% from the 1991 total. Mineral fuels (coal, crude oil, natural gas) accounted for 78.2% of the total; coal alone accounted for 64% of the total. Industrial and construction materials such as clay, fluorspar, sand and gravel, stone, and tripoli accounted for 21.4%. The remaining 0.4% was contributed by metals such as lead, zinc, and silver, and minerals such as peat and gemstones.

Mineral extraction was reported from 98 of the 102 counties in Illinois (table 3, fig. 1). Only Cass, Mercer, Pope, and Stark Counties had no reported mineral extraction. Perry, Franklin and Saline Counties, major producers of coal and crude oil, accounted for more than one-quarter of the state's total value of minerals produced: 11.3%, 8.5% and 8.2%, respectively.

## **Processed Minerals**

Data for total value of processed minerals in 1992 are incomplete. The total includes only the figures for ground barite, expanded perlite, sulfur, calcined gypsum, exfoliated vermiculite, iron-oxide pigments, and slag. Minerals not listed (tables 1 and 3), but processed in the state, are natural gas liquids, bismuth, and primary and secondary slab zinc.

## **Manufactured Mineral Products**

Mineral products manufactured in Illinois, primarily from minerals mined within the state, include cement (portland and masonry), coke, clay products, lime, and glass. The average unit value of sales of portland cement increased about 1.0%; no 1992 data are available for masonry cement. Lime production and its value was up 0.4%. Clay products increased 3.9% in value. Data are no longer available for coke or glass.

## **Employment**

The Illinois Department of Labor reports that jobs in mining, quarrying, and oil and gas extraction continued to trend downward, decreasing 9.9% from 19,200 employees in 1991 to 17,300 in 1992. Total nonagricultural employment went up 0.3% from 5,220,100 employees in 1991 to 5,234,900 in 1992. Employment in the goods-producing sector decreased 4.7% from 1,165,100 employees in 1991 to 1,133,500 in 1992, and in the service-producing sector, increased 1.1% from 4,055,100 employees in 1991 to 4,101,400 in 1992 (table 4). The Illinois Department of Mines and Minerals reported in the *Annual Coal, Oil and Gas Report, 1992* that employment in the Illinois coal industry decreased 7.6% from 9,667 in 1991 to 8,932 in 1992 (table 9).

## **Mineral Shipments**

Mineral shipments are a large part of the Illinois transportation industry. Stone, sand and gravel are usually shipped by truck because they are primarily used near their sources. Coal is largely shipped by rail, barge, or rail/barge combination; only about 4% of the coal was moved to mine-mouth electricity-generating plants by conveyor belt. Crude oil and natural gas are mainly transported by pipeline. Other materials, such as fluorspar and clay products, are shipped by rail, truck, and barge. Pig iron and coke are generally used on-site by integrated mills.

## **Consumption**

In 1992, the value of the state's consumption of mineral commodities was about 4.5% to 5% of the nation's total, or about the same proportion as Illinois' share of the total U.S. population. In physical units, Illinois' mineral consumption varied from less than 1% of the U.S. total (for residual fuel oil) to almost 15% (for zinc) (table 5). The high zinc consumption reflects Illinois' status as a major manufacturing state.

The state's energy consumption was estimated to be 3.3 quadrillion Btu in 1992 (4.1% of the U.S. total), 1.5% less than it was in 1991 (table 6). Fossil fuels provided 76.4% of the state's energy needs: 26.2% was provided by oil and oil products, 30.1% by natural gas, and



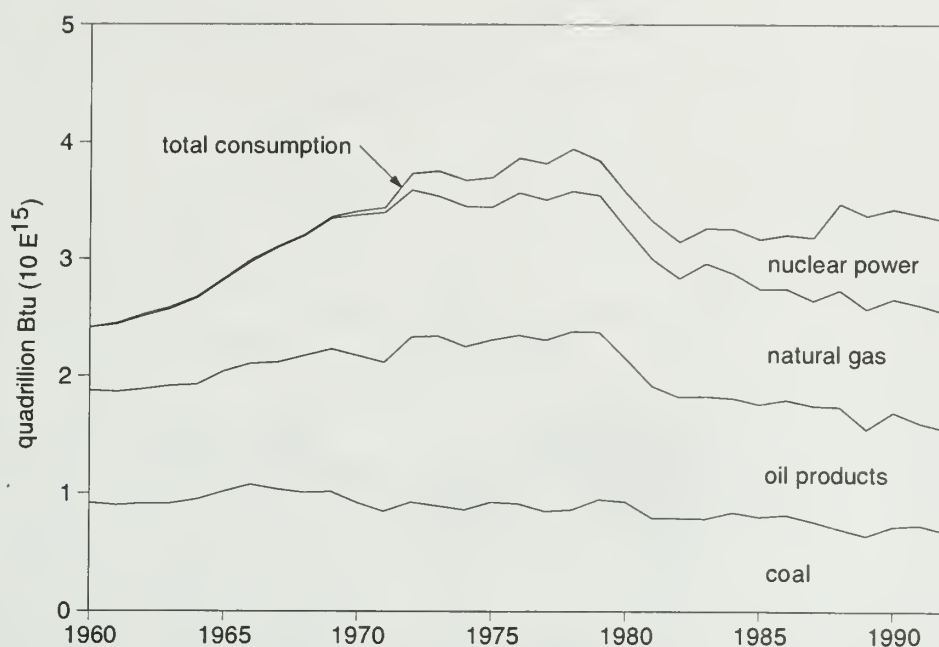


Figure 2 Energy used in Illinois, 1960–1992.

20.1% by coal (fig. 2). Nuclear power provided the other 23.6 % of Illinois energy needs, exceeding the amount produced by coal for the fourth year. Its consumption increased in 1992 to 787 trillion Btu from 772 trillion in 1991.

## MINERALS EXTRACTED

### Fuels

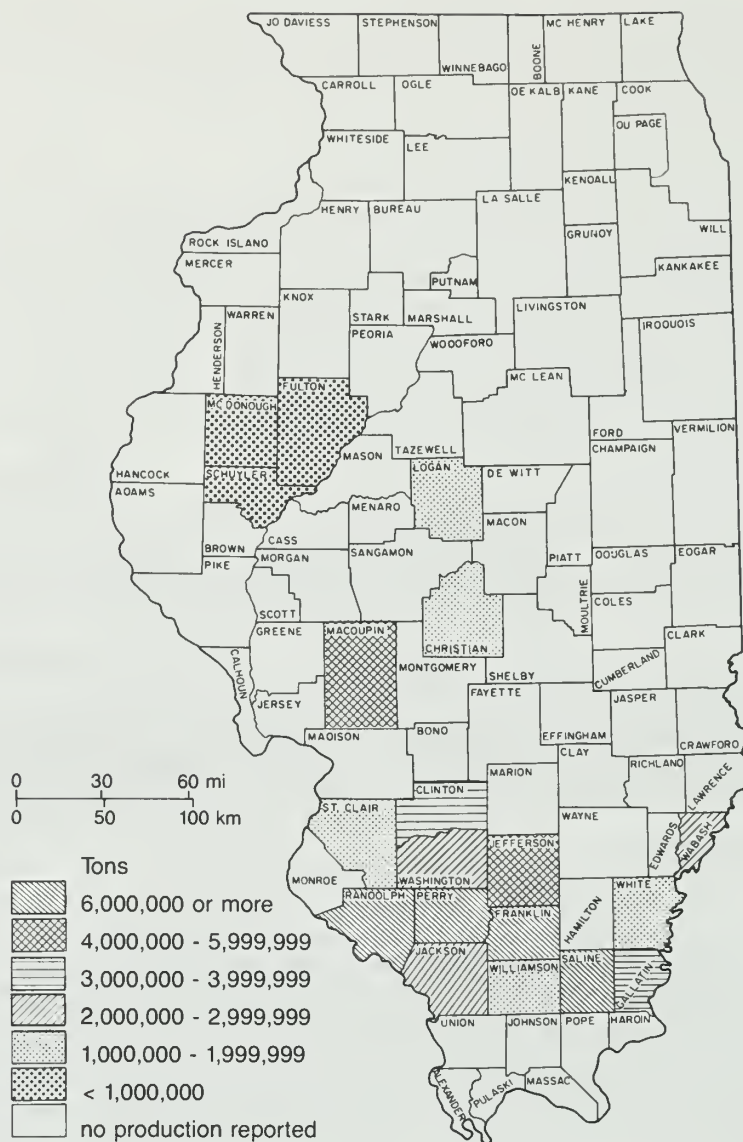
#### Coal

**Production** In 1992, Illinois continued to rank fifth in production, behind Wyoming, West Virginia, Kentucky, and Pennsylvania. Illinois coal production increased less than 1% from 60.0 million tons in 1991 to 60.3 million tons in 1992 (table 7). Total value was \$1,668.8 million, based on a unit value of \$27.66 per ton, a 2.4% decrease in per ton value from 1991 (table 1).

In 1992, coal was produced in 17 counties (fig. 3), as compared with 18 counties in 1991. Douglas County's only coal mine, Zeigler Coal Company's Murdock Mine, closed September 1991. Perry, Franklin, Saline, and Randolph Counties together accounted for 53.1% of the state's production. Perry County remained the top producer, contributing 17.6% of all coal produced in the state.

Approximately 79% of the state's total production came from underground and 21% from surface mines; whereas 5 years ago, 67% came from underground and 33% from surface mines (fig. 4). Production from surface mines has been declining since 1980. Approximately 76% of Perry County's output came from surface mines—a significant percentage that represented about 63% of the state's output of surface-mined coal. Franklin County, producing solely from underground mines, contributed more than 16% of the total underground production. In Saline County, about 93% of its coal was produced from underground mines—output that contributed more than 15% of the state's total underground production. More than 87% of Randolph County's coal came from underground mines and accounted for about 12% of the state's total underground mined production. Other counties contributing substantially (more than 3 million tons each) to underground coal mine production were Jefferson (9.4%), Macoupin (8.9%), Gallatin (6.5%), and Clinton (6.5%) (table 7).

The number of coal mines operating in Illinois has steadily declined since the early 1900s. There were 920 mines in 1900. By the 1950s, approximately 200 mines were in operation. A further rapid decline to about 60 mines had occurred by 1970. In the latter half of the 1970s, the number of mines increased to about 70 as new mines opened after the first oil-price shock of 1974. Demand for coal did not increase, however, and the number of mines dropped again.



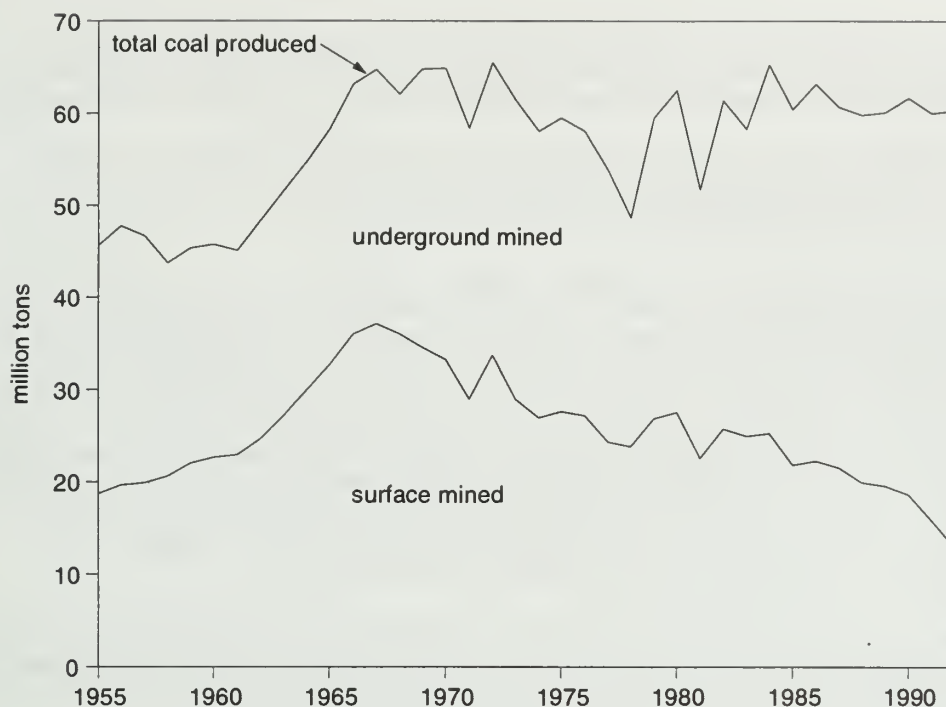
**Figure 3** Coal production in each county in 1992.

By 1992, 39 mines remained in operation: 27 underground and 12 surface mines (fig. 5). The number of surface mines, like production from surface mines, has been steadily declining. In 1988, there were 27 underground mines and 16 surface mines.

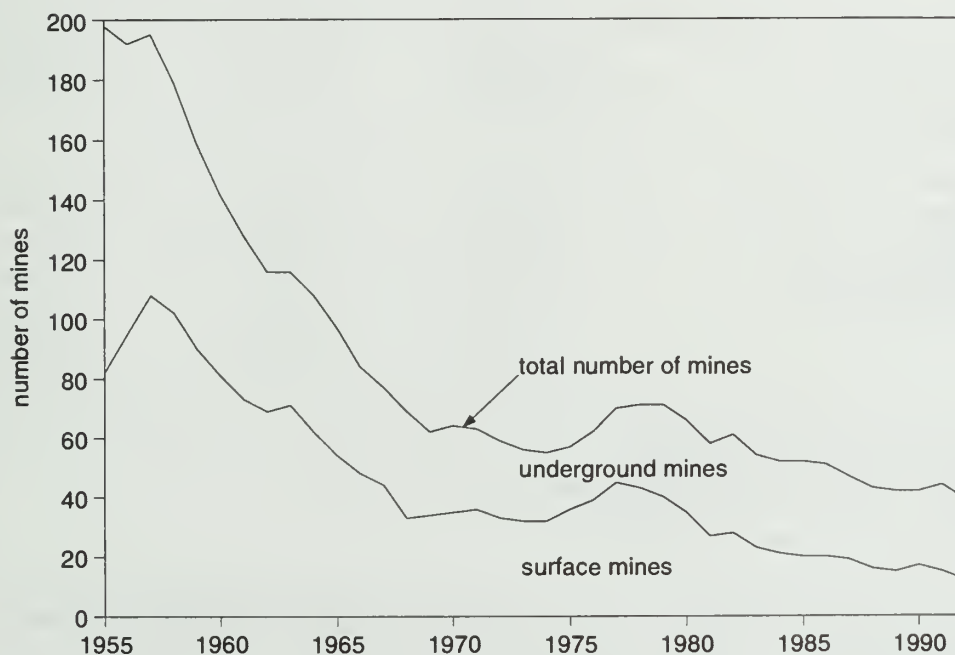
Since 1833, Illinois mines have produced more than 5.57 billion tons of coal (table 8). Surface mines operating since 1911 account for 1.32 billion tons or 23.7% of the total production. The peak year for surface mining was 1967 when production reached 37.2 million tons, whereas underground mining hit a high in 1918 with 89.5 million tons.

The average output per underground mine reached a new peak of 1.76 million tons in 1992 after dropping 8% in 1991. The average surface-mine output increased about 1% in 1992; however, output per mine has been decreasing after reaching a high of 1.31 million tons in 1989 (table 9).

The trend in Illinois is toward fewer but larger coal companies. Of the 21 coal mining companies operating in Illinois in 1992, the top five companies—Old Ben (Zeigler), Peabody, Consolidation, Monterey, and AMAX—contributed about 59% of the state's total output (table 10). For comparison, the top five U.S. companies produced 26.1% of the national total in 1992. Peabody, Consolidation, AMAX, and Old Ben (Zeigler) are four of the top five U.S. companies.



**Figure 4** Trends in Illinois coal production, 1955–1992.



**Figure 5** Trends in the number of Illinois coal mines, 1955–1992.

**Employment and wages** In 1992, employment in Illinois coal mines declined 7.6% to 8,932 employees (table 9). Employment has declined about 51.3% from the 1981 level of 18,148 coal mine employees. The decrease was 4.5% in underground mines and 21% in surface mines.

**Mine productivity** Productivity is measured in tons per shift per miner and calculated by multiplying average production per miner per hour by average length of a miner's shift. Unrounded data are used in calculating the changes in percentages. The labor productivity of underground mining operations increased 12% to 26.9 tons per shift per miner in 1992—a 17.3% increase

over the previous high of 22.9 tons in 1969. In surface mines, labor productivity in 1992 increased 5.5% to 36.3 tons per shift per miner. The peak year was 1967 with 41.6 tons (fig. 6). The productivity of Illinois' surface coal mines continues to fall farther behind the U.S. average.

**Prices** The average price (f.o.b. mine) of Illinois coal decreased 2.4% to \$27.66 per ton in 1992 (table 7). Coal mined underground in Illinois averaged \$27.93 per ton, down 3.9% from the 1991 price, and surface-mined coal was \$26.69 per ton, up 0.4% from the 1991 price.

**Shipments** Illinois coal was used in 18 states to generate electricity, manufacture coke, and supply energy for other industries. In 1992, about 90% of Illinois coal was sold to electric utility plants, about 1.0% to plants manufacturing metallurgical coke, and 7.7% to industrial plants and retail dealers. Illinois' coal exports to foreign countries dropped to 1.25 million tons in 1992 from 1.27 million tons in 1991 (table 11). Shipments to electric utilities increased slightly from 52.5 million tons in 1991 to 52.6 million tons in 1992. Only 28.4% of shipments went to utilities in the state. Out-of-state shipments to utilities increased 4%; 29% of the out-of-state shipments went to Missouri, 28% to Georgia and Florida, and 24% to Indiana. All Illinois coal used for making coke was used in coking plants in northwestern Indiana. Of the Illinois coal used for other industrial activities, 71% was consumed in the state, and about 14% was shipped to Missouri, 7% to Wisconsin, 3% to Indiana, and the remaining 5% to other states.

**Transportation** Coal was shipped from mines to the consumer by rail, barge, and truck. Barge or rail/barge combination has been gaining importance in Illinois as transportation costs become an important aspect of price competition. Use of Illinois coal depends primarily on out-of-state markets and transportation costs must be kept low to compete with other coals.

	Tonnage		
	1990	1991	1992
Rail <sup>a</sup>	35,893,529	33,643,740	35,544,779
Local trade and truck <sup>b</sup>	10,814,982	8,724,763	6,244,205
Barge or rail/barge <sup>c</sup>	16,920,572	17,721,595	18,767,991
Rail lines			
Illinois Central	17,108,784	21,554,145	21,479,345
Union Pacific	14,346,093	8,606,695	8,754,660
Norfolk Southern	6,084,152	5,859,135	6,042,372
Chicago & North Western	1,850,480	1,764,601	1,866,388
Burlington Northern	2,200,114	2,467,688	4,430,867
Others	3,112,844	6,900,205	6,766,972
Total rail <sup>d</sup>	44,702,467	47,152,469	49,340,604

<sup>a</sup> Part of the rail tonnage is shown in the combined rail/barge category and some was shipped from inventory.

<sup>b</sup> Some of the coal was sent by truck to barge.

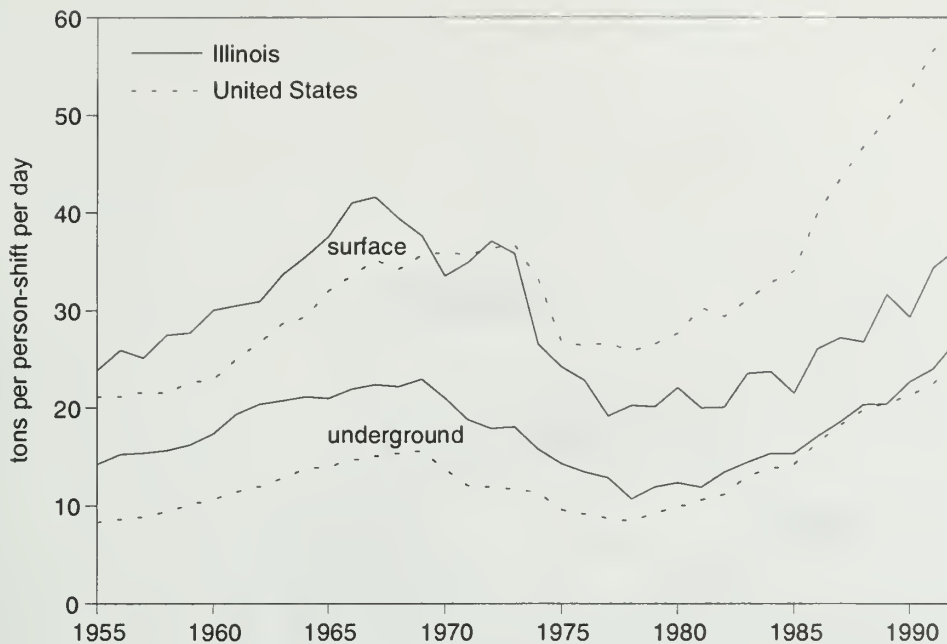
<sup>c</sup> Some of the coal was sent from mine to barge-loading facility by conveyor belt.

<sup>d</sup> Total rail includes part of the rail/barge shipments.

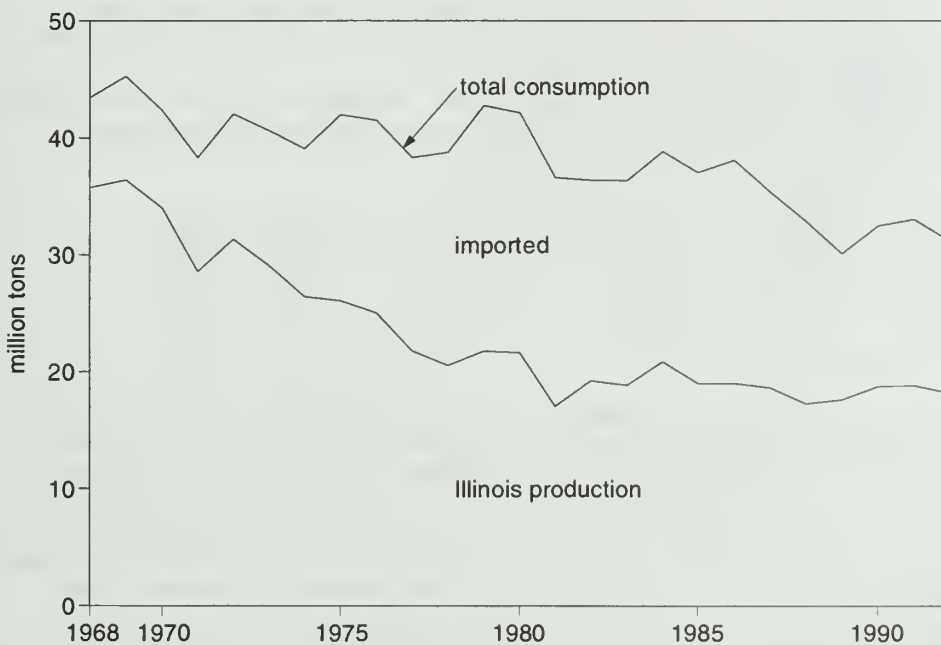
Source: Illinois Department of Mines and Minerals.

**Consumption** Illinois ranked seventh in coal consumption in 1992 after being fifth in 1991. Consumption decreased 5.6% to 31.2 million tons in 1992 (table 12). Coal shipments from Illinois mines to Illinois markets have declined steadily since the late 1960s. In 1990 and 1991, however, consumption increased in the state; then in 1992, consumption declined more than 3%, back to the 1989 level. As figure 7 shows, coal imports from western states are increasing, primarily because of the impact of the Clean Air Act on markets for high-sulfur coal. In 1968, more than 82% of all coal consumed in state was also produced in state, as compared with 58% of coal produced and consumed in Illinois in 1992. Total coal consumption by electric utilities in Illinois has fallen each year, and 1992 was no exception as consumption fell 5%. Declines are the result of the increasing use of nuclear energy. Coking-coal consumption increased 6.5% in 1992; however, all coal used came from out-of-state, 99% from Appalachian states and 1% from western states. Industrial consumption, 81% of it in-state, still showed a decrease of about 15%.





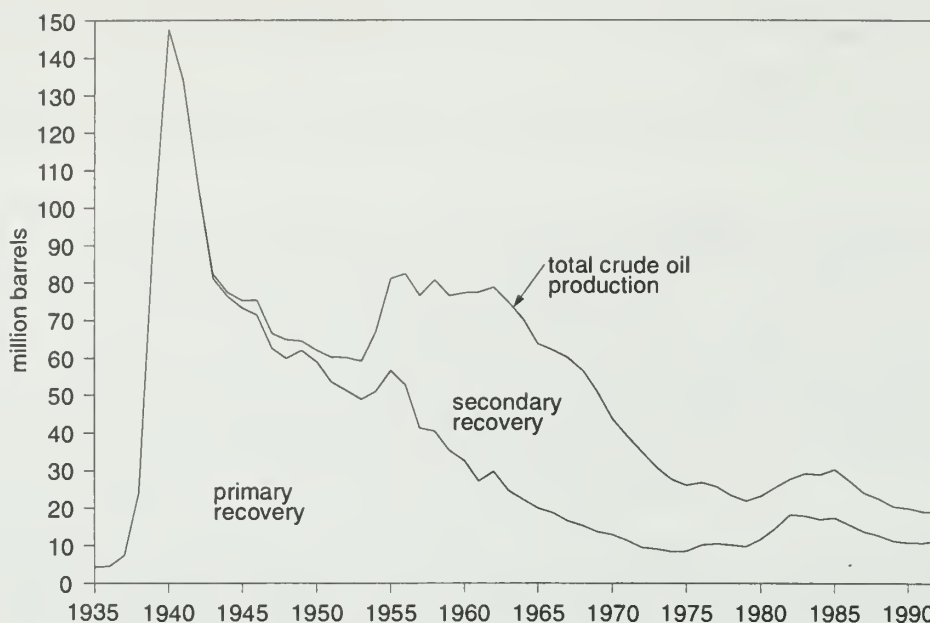
**Figure 6** Trends in the productivity of Illinois coal mining, 1955–1992.



**Figure 7** Coal consumption in Illinois, 1968–1992.

## Crude Oil

**Production** Crude oil production in Illinois increased 0.4% after decreasing 37% during the previous 6 years. Crude oil production in Illinois supplied only about 9% of the petroleum products needed in the state in 1992. Other states and foreign countries supplied the rest. The 1992 production of 19.1 million barrels of oil had a value of \$368.6 million, with an average unit value of \$19.26 per barrel. This represents a 4.6% decrease in per-barrel value from that 1991 (table 1). Secondary production by waterflooding accounted for approximately 7.85 million barrels or



**Figure 8** Annual crude oil production in Illinois, 1935–1992.

about 41% of the state's total. Pressure-maintenance operations produced an estimated 995,000 barrels or 5.2% of the state's total (fig. 8). About 3.44 billion barrels of oil has been produced in Illinois during the past 104 years (table 13).

Illinois ranked 13th of 31 oil-producing states in 1992. Forty-six counties produced crude oil (fig. 9, table 13). The following five counties produced more than 1 million barrels each, contributing about 46.5% of the state's total oil production.

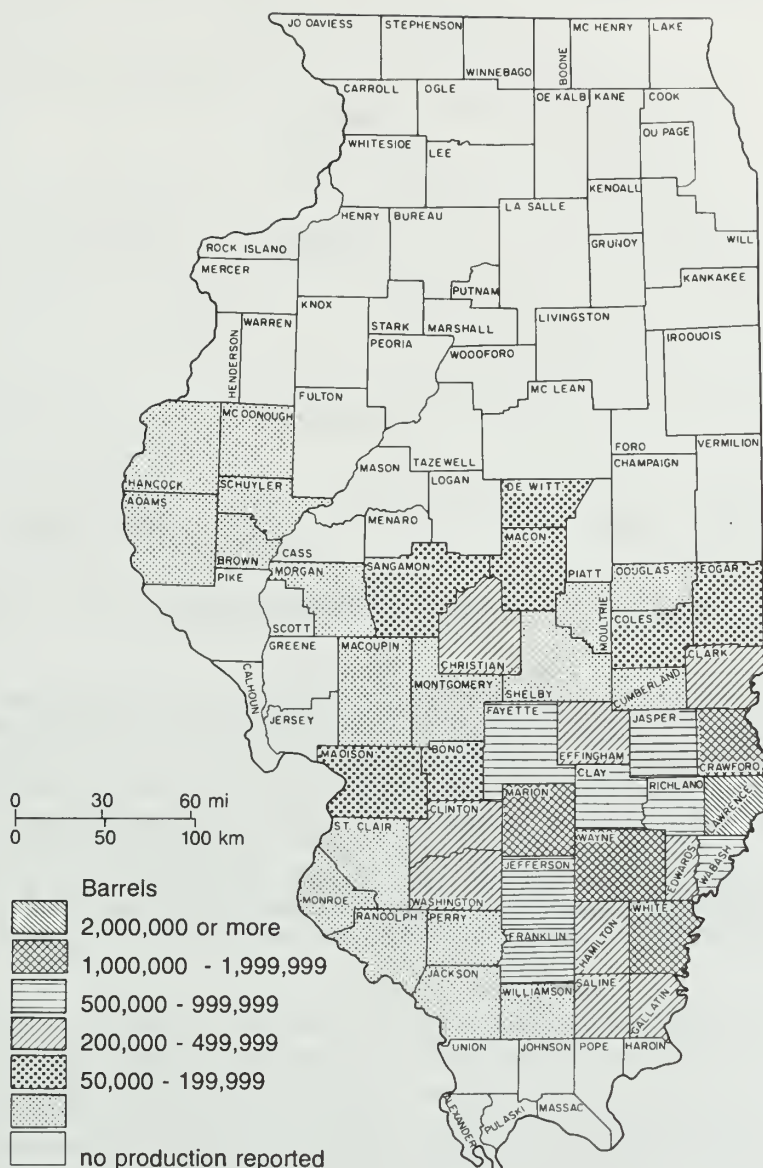
<i>County</i>	<i>1991</i>	<i>1992</i>	<i>County</i>	<i>1991</i>	<i>1992</i>
Lawrence	13.4%	13.0%	Wayne	8.2%	9.4%
Crawford	11.0	9.2	Marion	6.3	6.4
White	9.1	8.5	<i>Total</i>	<i>48.0</i>	<i>46.5</i>

An oil field producing more than 200,000 barrels per year is considered a major field in Illinois. In 1991 and 1992, there were 12 major fields, which together produced 55.7% of the state's total in 1992 (table 14). The two largest fields, Lawrence and Clay City Consolidated, each produced 2 million barrels or more during 1992 or 23.7% of the state's total. In 1992, there were 42 new wells with reported initial production of 100 or more barrels of oil per well per day. The highest initial production reported during the year was 816 barrels of oil per day for a well located in a field in White County. The average daily per-well production in Illinois is 1.65 barrels, so the state remains highly sensitive to oil price changes.

Crude oil production reached a peak of 147.6 million barrels in 1940 (fig. 8). From that level, oil produced by primary recovery methods declined steadily until 1973, although some years showed small gains. The introduction of the hydraulic rock-fracturing method in 1954 and the increased use of waterflooding stabilized oil production at about 78 million barrels per year from 1955 to 1962. Production fell steadily after 1962 as reserves were depleted. In 1989, production dropped to 20.3 million barrels, the lowest since 1937 when production was just 7.4 million barrels. It continued to drop in 1990 to 20.0 million barrels and in 1991 to 19.07 million barrels, but in 1992, it rose to 19.14 million barrels.

By December 1992, proved reserves were 138 million barrels, a 7.8% increase from that of December 1991. Current reserves are 80.3% below the 700 million barrels of reserves of January 1956, the post-World War II peak.

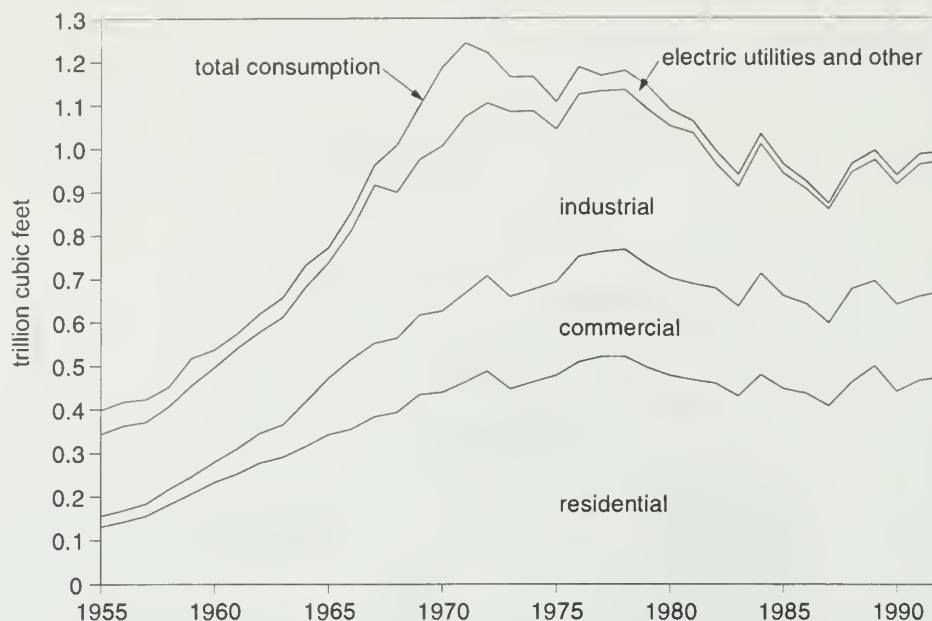




**Figure 9** Crude oil production in each county in 1992.

**Refineries** As of January 1993, Illinois had seven refineries operating in Cook, Crawford, Lawrence, Madison, and Will Counties. Total refining capacity was 965,600 barrels of oil per day, up 1.4% from January 1, 1992. Illinois' annual refining capacity far exceeds its total consumption of petroleum products and makes the state a net exporter of petroleum products. Low oil prices, although detrimental to crude oil producers, can work to the advantage of the refining industry and the state's economy.

**Consumption** Reported consumption of major petroleum products in Illinois increased 2.6% in 1992 because of an increase in motor gasoline, lubricants, and asphalt and road oil. The use of residual fuel oil, liquified gases, and kerosene declined (table 15).



**Figure 10** Consumption of natural gas in Illinois, 1955–1992.

## **Natural Gas**

**Production** Natural gas is not produced in large quantities in Illinois, therefore the state is almost totally dependent on other sources for its needs. In 1992, the state's reported production of natural gas decreased 26% (table 16). Although production has been slowly declining for several years, in the last 3 years it dropped 77%, primarily due to several depleted or idled gas fields such as the Pittsburg field in Williamson County. There was no production in Williamson County in 1992, although it was the top producer in 1991. St. Clair County, with 27% of the state's total output, was the top producer in 1992. Gallatin County with 24% was second and Saline County, also with 24%, was third (table 17). The average wellhead value of Illinois gas decreased less than 1% from \$2.17 per thousand cubic feet (Mcf) in 1991 to \$2.15 per Mcf in 1992 (table 1).

**Consumption** Natural gas consumption in Illinois began to decline after 1971 and reached a recent low in 1987. Since then, consumption has been generally rising in Illinois (fig. 10). Reported consumption of natural gas decreased 0.5% in 1992 (table 18). Although the largest percentage of decrease (28%) was for electric utilities, it represented only a small volume of gas. Industrial and commercial usage increased slightly (0.2% and 0.3%, respectively). There were small decreases in consumption in the residential (1.8%) and other sectors (6.8%).

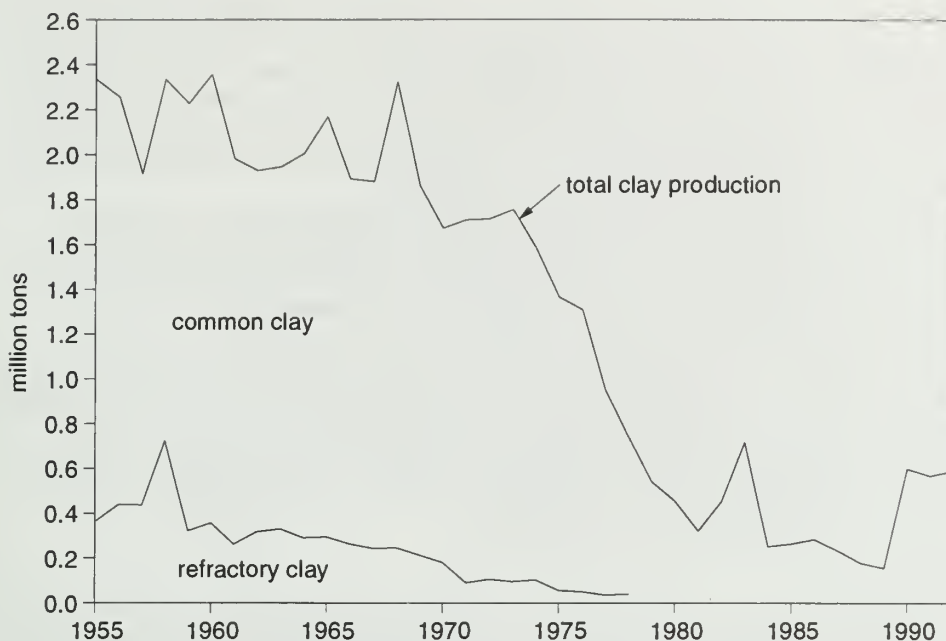
## **Industrial and Construction Materials**

### **Primary Barite**

An accessory mineral in fluorspar ore, barite, is recovered as a byproduct by the fluorspar industry of Hardin County. Ozark-Mahoning, the only producer in Illinois, continues to turn out barite at its Rosiclare mill. Because of the small scale of the barite operation, the increases shown in 1992 were 94% in production and 61% in value. Barite is used primarily as a weighting agent in mud systems for drilling for oil and gas. Other uses include the manufacture of paints, rubber, glass, and barium chemicals.

### **Clays**

**Production** Shale, absorbent clay (fuller's earth), and common clay are mined in Illinois. A partly consolidated bedrock clay is mined in southernmost Illinois to produce absorbent clay products. Fuller's earth is also an absorbent clay or clay-like material that decolorizes and purifies. In Illinois, deposits of unconsolidated surficial clays and consolidated bedrock clays and



**Figure 11** Common clay production in Illinois, 1955–1992.

shales are mined to produce common clay. Common clay is defined as a clay or clay-like material that is sufficiently plastic to permit ready molding. The USBM reported Illinois clay production (excluding fuller's earth) increased 4.1% from 566,741 tons in 1991 to 590,047 tons in 1992 (fig. 11). Nationally, Illinois ranked 15th in quantity and 8th in the value of total clay production. U.S. production of common clay decreased about 5% from 27.2 million in 1991 to 25.9 million in 1992. The total of all clay produced in the United States decreased 15.5%.

In 1992, the average value per ton of common clay in Illinois declined from \$4.31 to \$4.00, making a total value of \$2,362,467 for the year. Production of common clay was reported from six companies in four counties. Livingston County was the leading producer of common clay; La Salle County was second; Bond County was a close third; and Kankakee County, fourth. In Pulaski County, only one company (Golden Cat Corporation) reported production of absorbent clay (fuller's earth) at two pits. The combined total of the two pits' production decreased about 20%, whereas their value was about 25% less in 1992.

**Uses** Common clays and shales mined in Illinois are used to manufacture bricks, drain tiles, dinnerware, and cement. Manufacturing common brick used about 85% of the state's common clay production in 1992; portland cement took 14%; and drain tile required the remaining 1%. Absorbent clay is used in cat litter and oil-sweep compounds, as a filler and pelletizer in animal feeds, and for steel casting.

## Fluorspar

**Production and shipments** One company in southern Illinois was the only producer of fluorspar in the United States. Ozark-Mahoning Company operated three mines—the Annabell Lee, Denton, and No. 1 mines—and a flotation plant near Rosiclare in Hardin County. The company also dried imported fluorspar to supplement production. Production decreased about 5% from 1991 to 1992. The steady decline can be traced to the decreasing use of chlorofluorocarbons, as a response to concerns about the environment, and to cheaper foreign imports (especially those from China). The United States depends on foreign sources for most of its fluorspar.

Barite, copper, lead, silver, and zinc (sphalerite) concentrates were recovered as coproducts of fluorspar processing in Illinois. In the United States, about 60,000 tons of the byproduct fluosilicic acid (FSA), equivalent to 105,600 tons of 92% fluorspar, was recovered. FSA was used primarily in the aluminum industry for making aluminum fluoride and in water fluoridation, either directly or after processing to sodium silicofluoride.



**Consumption** Reported U.S. consumption of fluorspar (acid spar and metallurgical spar) fell for the fourth year, a drop of about 44% from 651,055 tons in 1988 to 365,000 tons in 1992. More than 65% of the reported production went into hydrofluoric acid, the primary ingredient in most organic and inorganic fluorine-bearing chemicals. Hydrofluoric acid is also used in processing aluminum and uranium. The steel industry took about 15% of the fluorspar produced, using it as a flux and in iron and steel foundries. The remainder was consumed in manufacturing glass, welding-rod coatings, and enamels, and for fluoridating water.

The apparent U.S. consumption (production + imports - exports  $\pm$  change in stocks) increased 9% from 365,831 tons in 1991 to 399,000 tons in 1992. Apparent consumption has gone down about 45% since 1988. The discrepancy between apparent and reported consumption is often large for many minerals, including fluorspar, because users are more numerous than producers or traders, and not all users report consumption to the USBM.

Consumption of metallurgical-grade fluorspar by the steel industry is decreasing drastically, partly because of the drop in steel output, but mainly because of continuing improvements in efficiency and more rigid raw material specifications. These modernizations will probably lower consumption of fluorspar for several years. Further decline in consumption is anticipated as the government restricts use of chlorofluorocarbons in an effort to implement the Montreal Protocol on Substances that Deplete the Ozone Layer.

### ***Sand and Gravel***

Since 1981, the USBM has surveyed sand and gravel producers only in even-numbered years. In odd-numbered years, estimates are published. In 1985, the USBM began compiling sand and gravel production by district rather than by county to preserve the confidentiality of the data (fig. 12). Data for individual counties are no longer available.

**Production** Sand and gravel deposits are widely distributed in Illinois. Glacial deposits, chiefly valley trains and outwash plains, are the primary sources of construction sand and gravel. Environmental restrictions, local zoning regulations, and land development continue to concern the sand and gravel industry. New operations tend to locate away from highly populated areas.

Production in 1992 was 35.7 million tons, about 36% more than the 1991 estimated production. The USBM has not revised their 1991 estimate, which appears to be much too low. The combined value of sand and gravel was \$123.7 million (table 19); the average estimated unit value at the pit was \$3.47 per ton, about a 1% increase from the 1991 estimate (table 1). Illinois ranked seventh of the 50 states in production of sand and gravel in 1992.

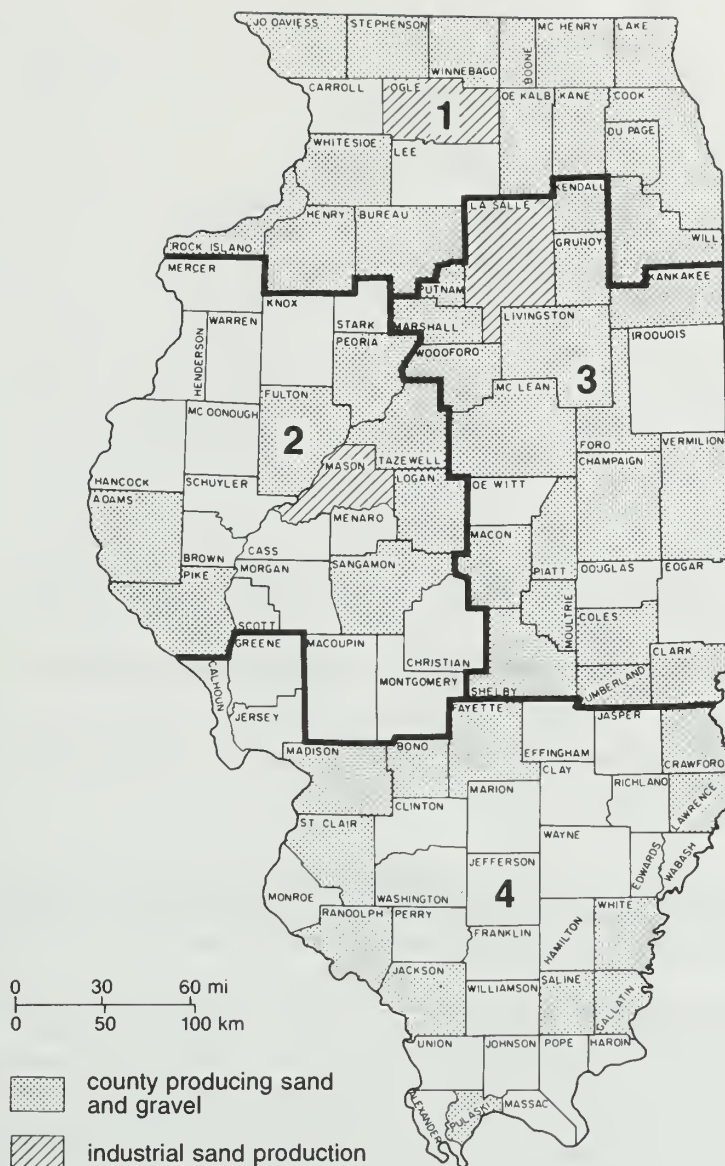
Nine counties (McHenry, Kane, Lake, Du Page, Cook, Tazewell, Grundy, Woodford, and Peoria), each producing more than 1 million tons, accounted for about 70% of the sand and gravel production in Illinois. The concentration of about two-thirds of Illinois' population in Cook and five surrounding metropolitan counties makes a ready market for sand and gravel. District 1 produced 63%; District 2, 11%; District 3, 19%; and District 4, 7%. In 1992, 113 companies operated 149 pits in 54 counties of Illinois (fig. 12). About 38% of the state's production came from operations of 1 million tons per year and more, as compared to 49% in 1990 (table 20). As shown in figure 13, Illinois' sand and gravel production has grown more slowly than its stone production in the past decade, a trend indicating a preference for stone in the construction industry.

**Transportation** Because of its low unit price, most construction sand and gravel is not shipped farther than 50 miles from the pit, although operations on navigable rivers may ship material much farther by barge. About three-quarters of the material was shipped by truck in 1992; the remainder was shipped by barge or rail, or used at the pit, for example, in asphalt production.

**Consumption and uses** Production reported is actually material sold or used; stockpiled production is not reported until it is sold or consumed. Illinois sand and gravel is primarily used as various types of construction aggregate for buildings and road construction.

### ***Industrial Sand***

**Production** The area best known for production of industrial (silica) sand from the St. Peter Sandstone of Middle Ordovician age is the Ottawa district of La Salle County. Within the district, the St. Peter is called the Ottawa Sand. Illinois again ranked first of 37 states in industrial sand



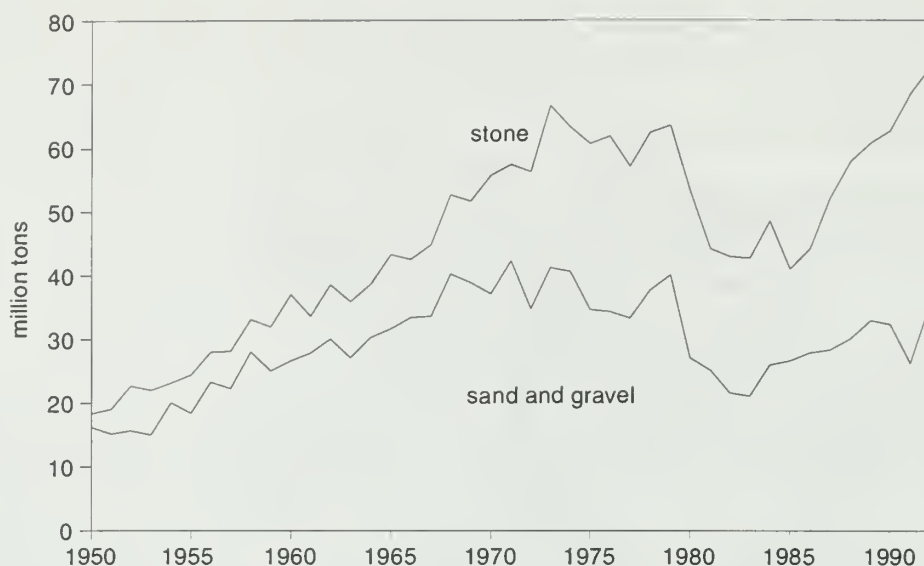
**Figure 12** Districts and counties producing sand and gravel in 1992.

production. The 4.4 million tons (17% of the U.S. total) produced in 1992 was a 6.4% increase over the estimated tonnage for 1991. The total value decreased about 1% to \$56.7 million. The average unit value was estimated at \$12.87 per ton, a decrease from the estimated \$13.80 for 1991. Five companies operated six pits in La Salle, Mason, and Ogle Counties.

**Transportation** Industrial sand was shipped mainly by rail in 1992; however, a significant amount is still shipped by truck and a small amount by barge.

**Consumption and uses** Industrial silica sand was produced in both ground and unground forms. Unground sand is used primarily in glass manufacturing. Other uses include sand for molding, blasting, grinding and polishing, railroad traction, filtration, and propping (frac sand) for hydrofracturing reservoir rock in oil wells. Ground sand is used in chemicals, abrasives, enamels, pottery, porcelain, tile, and various fillers.

Unimin Corporation, U.S. Silica Company, Manley Brothers, and Fairmont Minerals Ltd. mined silica sand in the Ottawa district of La Salle County, and Unimin's operation in Ogle County mined sand for glass, blasting, foundry, and frac sand markets. Manito Investment



**Figure 13** Stone production compared with sand and gravel production in Illinois, 1950–1992.

Company mined Quaternary-age quartz-feldspar dune sand in Mason County for foundry sand and the amber-colored glass market.

### **Stone**

Since 1981, the USBM has surveyed stone production only in odd-numbered years. Estimated data are given for 1992 and actual data for 1991. In 1985, the USBM began compiling stone production in Illinois by district (fig. 14). Data for individual counties are no longer available.

**Production** Limestone and dolomite quarries are located where thick stone deposits occur near the surface because of upwarping of bedrock and erosion of overlying materials.

Crushed stone is the state's most important rock product. In 1992, Illinois continued to rank second in production of crushed stone among 49 producing states. An estimated 72.7 million tons of stone was produced in Illinois in 1992, a 6% increase from 68.6 million tons produced in 1991. Total value was estimated at \$322.8 million, a 9.3% gain. In 1991, the last year for which actual figures are available, 53 of the state's 102 counties reported production (fig. 14). A small amount of dimension stone was produced by one producer in Kane County.

**Shipments** Stone, a bulk commodity, is used primarily near the quarry, so more than one-half of the stone produced was transported by truck. A small percentage was used at the site and the remainder went by rail or barge. Waterways were put to use by some producers along the Illinois, Ohio, and Mississippi Rivers. Crushed stone was barged to in-state destinations as well as to Pennsylvania and Gulf Coast markets in Alabama, Texas, and Louisiana. The Illinois Central Railroad uses stone produced in Illinois for ballast throughout its entire system.

**Consumption and uses** Stone is used primarily as construction aggregate in portland cement, in bituminous highway construction as road-base stone, and in manufacturing portland cement. It also has chemical, agricultural, and environmental uses. The small amount of dimension stone mined in Illinois is used as veneer for houses, small retaining walls, rubble, and flagging.

### **Tripoli**

**Production** The term tripoli refers to microcrystalline silica. Unimin Specialty Minerals Inc., a division of Unimin Corporation, is the nation's leading producer of tripoli. Located in Alexander County in southern Illinois, Unimin is the only producer of high-grade tripoli in Illinois.





**Consumption and uses** Tripoli processed in Illinois is used as filler in paints, plastics, and rubber products, and as an abrasive in buffing and polishing compounds, soap, and toothpaste. Some iron-stained tripoli is now being used in the manufacture of portland cement.

### ***Zinc, Lead, Silver, and Copper***

15

## **Other Minerals**

### ***Peat***

All commercial sales of peat in the United States (excluding imports) are for agriculture and horticulture. Three types of peat—reed sedge, moss, and peat humus—were produced in Illinois by four companies: Dahl Enterprises and Roots Peat Farm in Lake County, and Hyponex Corporation and Markman Peat Company in Whiteside County. Illinois ranked fifth of 20 states in production of peat. In 1992, peat production and value jumped 41% and 34%, respectively. More than 96% of the state's peat was sold in package form for general soil improvement. Small amounts were sold in bulk form for nurseries and earthworm cultivation.

### ***Gemstones***

Production of fluorite and accessory minerals is limited to mineral-specimen grade in Illinois. As a result, gemstones contributed little to the total value of mineral production. The estimated value of gemstones must be withheld in Illinois; however, it increased about 31% in 1992. Illinois ranked 15th of 50 states producing gemstones.

## **MINERALS PROCESSED**

Minerals extracted mainly in other states or foreign countries but processed in Illinois include ground barite, calcined gypsum, crude iodine, iron-oxide pigments, natural gas liquids, expanded perlite, pig iron, sulfur, exfoliated vermiculite, primary slab zinc, and secondary slab zinc. The total value of processed minerals is incomplete because the two largest producers of pig iron did not respond to the USBM annual survey and, therefore, no figures are available for pig-iron production in the state.

### ***Ground Barite***

J. M. Huber Corporation in Quincy, Adams County; American Minerals in Rosiclare, Hardin County; and Harcros Pigments in East St. Louis, St. Clair County, continued to process ground barite. The ground barite processed in Illinois is used almost exclusively as a filler or extender in paints.

### ***Columbium and Tantalum***

Fansteel in Cook County is no longer processing columbium-tantalum concentrate imported from foreign countries, but the firm retains a corporate office in North Chicago. Columbium and tantalum are used primarily to produce various steel alloys.

### ***Calcined Gypsum***

The National Gypsum Company in Lake County processed calcined gypsum from gypsum mined in Michigan. The product is used primarily for prefabricated housing materials such as wallboard, which is increasingly in demand. It is used in manufactured (mobile) homes and in the building and remodeling of homes and offices. Repair and remodeling remained a strong market for the gypsum industry.

Production and value of calcined gypsum increased about 10% in 1992 as the economy began to gain slowly. Although gypsum wallboard prices hit a 14-year low early in 1992, they rebounded by the end of the year and were expected to continue rising during 1993 as the construction industry continued to recover.

### ***Crude Iodine***

Crude iodine was processed into inorganic compounds for commercial use at three Illinois plants: Allied Signal Company in Metropolis, Massac County; West Agro in Des Plaines, Cook County; and ECHOLAB in Joliet, Will County. Although crude iodine is used primarily as a catalyst or stabilizer, it also is added to animal feed, salt, inks, colorants, pharmaceuticals, sanitary products and industrial disinfectants. Consumption in Illinois increased about 32% in 1992.

### ***Iron-Oxide Pigments***

Finished pigments were produced from iron ore imported from other states by five companies: the Prince Manufacturing Company in Adams County, George B. Smith Color Company in Kane County, AST Company in Madison County, Harcros Pigments in St. Clair County, and Solomon

Grinding Service in Sangamon County. The types of natural iron-oxide pigments produced included black (magnetite), brown iron oxide, red iron oxide (including pyrite and cinder), and yellow iron oxide. Synthetic black, brown, red, and yellow iron oxides were also produced. Illinois continued to rank second nationally in value of finished iron-oxide pigments.

### ***Natural Gas Liquids***

Natural gas liquids include ethane, propane, isobutane, unsplit butane, and a combination of gasoline and liquefied petroleum gas. Natural gas liquids were processed in Douglas County by the U.S. Industrial Chemical Company, a division of Quantum Chemical Corporation. The U.S. Department of Energy reports that the 942 million cubic feet of gas processed in Illinois in 1992 was all produced in Illinois. The total liquids extracted from gas in Illinois amounted to 88,000 barrels.

### ***Expanded Perlite***

Crude perlite mined outside the state was processed to expanded perlite by three companies: Silbrico Corporation in Cook County, Illinois Strong-Lite Products Corporation in La Salle County, and Manville Products Corporation in Will County. (Scheller International Corporation acquired Manville Products in 1992.) Production and value of expanded perlite decreased 6.2% and 15.1%, respectively, but the average price per ton increased 8.4% in 1992. Illinois ranked fifth of 33 states in quantity of expanded perlite sold and used.

Expanded perlite is used primarily in roof insulation board and for horticultural purposes. Other uses include lightweight aggregate for concrete and plaster, insulation, and filters.

### ***Pig Iron and Raw Steel***

The American Iron and Steel Institute in Washington, D.C., ranked Illinois fifth in raw steel production. The state produced 7.24 million tons or 8.6% of the U.S. output in 1992. Although there was a slight gain in raw steel production—less than 1% in 1992—major changes seem to indicate problems.

Acme Steel Company changed its name to Acme Metals Inc. to reflect corporate restructuring—not the company's basic strategy of making steel for niche customers. Acme produces steel, steel strapping and strapping tools, welded steel, pipes and tubes, and automotive jacks. Acme is studying the feasibility of installing a thin slab caster/hot strip mill at its Riverdale facility to replace the present ingot pouring and rolling and narrow hot strip mill facilities. It would use steel produced in Acme's basic oxygen furnace, also at Riverdale in Cook County.

Inland Steel Company has been restructuring to reduce losses and staff. They hope to cut staff by 3,600 to 4,000 workers. Laclede Steel Company is also restructuring. They will close their wire mill in Alton, Illinois, and expand their wire-making facility as well as construct a recovery plant to process hazardous dust in Hammond, Indiana. The Hammond operation is closer to the company's major market. Laclede's mini-mill at Alton will not be affected by the closing. National Steel Corporation will shut down its cold-roll finishing units at their Granite City steel plant. Some employees will be transferred to the Mishawaka plant in Indiana where they are moving their headquarters from Pittsburgh, Pennsylvania.

The St. Anne Foundry plant at Kankakee in Kankakee County was destroyed by fire, but the company has indicated that it will rebuild. USX Corporation closed its southeast Chicago South Works steel mill. They are negotiating with a mini-mill operator, which plans to purchase the plant for manufacture of stainless steel. Civic leaders are also evaluating the site for a housing project to relocate people, if a new airport is located at Lake Calumet.

Several companies have announced new plants or facility upgrades. Amsted Industries of Chicago plans to reopen Am Steel Foundries in Granite City. Birmingham Steel Corporation's Illinois Steel Division at Kankakee has been completely upgraded. Laclede Steel has improved its pipe finishing and shipping facility in Vandalia, Fayette County, and its caster mold and electric arc furnace in Alton, Madison County. National Steel, the nation's fourth largest steelmaker, brought its new slab caster online at its Granite City steel plant.

In the United States, pig iron was produced by 15 companies in approximately 60 blast furnaces, of which 42 to 44 were in continuous operation. Five blast furnaces are in Illinois. At the same site, steel-making furnaces used most of the pig iron in liquid form for refining raw steel.



### ***Slag (Iron and Steel)***

In 1992, Illinois ranked fifth of 28 states in the quantity of iron and steel slag sold or used. Four companies operating eight plants in Clay, Cook, Madison, and Whiteside Counties processed slag from iron and steel furnaces. The slag was used mostly for construction aggregate—road-base material, asphaltic concrete, railroad ballast, and fill—and also for the manufacture of mineral wool.

### ***Recovered Elemental Sulfur***

Illinois ranked seventh nationally of 28 states in quantity and value of recovered elemental sulfur. Four companies in three counties, Crawford, Madison, and Will, recovered elemental sulfur as a byproduct of their oil refinery operations. Although sales of sulfur increased 12.2% from 239,736 tons in 1991 to 269,062 tons in 1992, its total value decreased 29.7% from \$17.5 million in 1991 to \$12.3 million in 1992, indicating a precipitous drop in sulfur prices. Sulfur differs from most other major mineral commodities in its primary use as a chemical reagent rather than as a component of a finished product. The largest use is for agriculture, as a component of phosphatic fertilizers.

### ***Exfoliated Vermiculite***

Illinois ranked third nationally of 20 states in quantity of exfoliated vermiculite sold in 1992. Exfoliated vermiculite processed from crude vermiculite mined outside the state was produced by three companies in Du Page, La Salle, and Macoupin Counties. Sales increased 17.8% and value, 17.4%, in 1992. The average value per ton decreased slightly (0.4%). In Illinois, exfoliated vermiculite has the following uses:

	1991 (%)	1992 (%)
Loose-fill insulation	19.4	17.5
Block insulation	21.8	29.6
Concrete and plastic aggregate	13.8	7.3
Horticulture and agriculture	19.8	42.1
Fireproofing and other uses	25.2	3.5

### ***Primary and Secondary Slab Zinc***

U.S. refined metal production was up slightly from 1991 and the highest since 1981. Only three companies in the United States operated four primary zinc refineries, including one in Illinois: the Big River Zinc Company at Sauget.

U.S. smelter production was near capacity and the highest since 1981. There were ten secondary smelters processing secondary slab zinc in the United States, including one in Illinois: the Illinois Smelting Company in Cook County.

Although production data for individual states are not available, consumption data indicate that Illinois was the top consumer of slab zinc and accounted for more than 15% of the reported U.S. consumption.

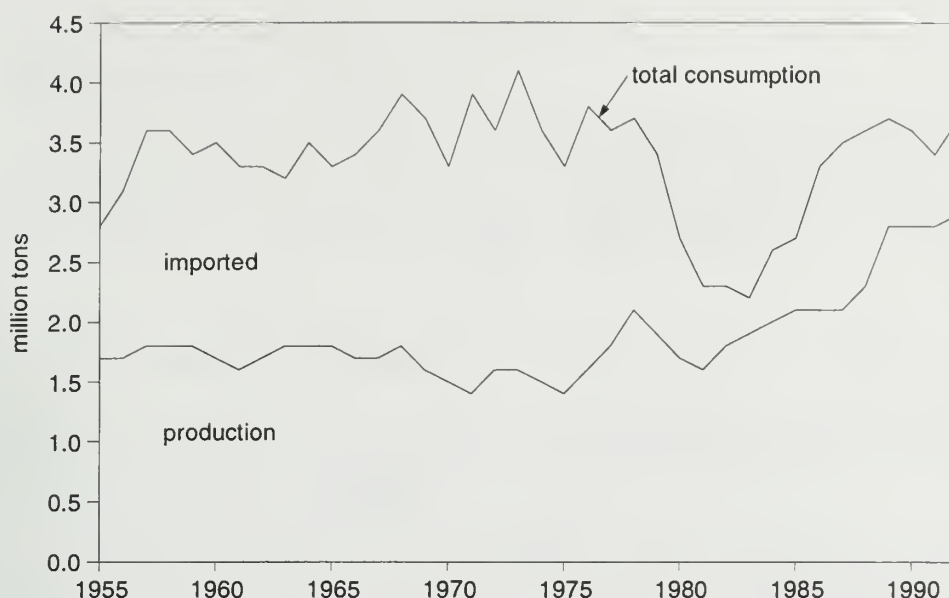
Most of the secondary feed was crude zinc calcine recovered from dust generated by steel-making using electric arc furnaces (EAF). The dust was processed at the Horsehead Resource Development Company (HRD) plants in Illinois, Pennsylvania, and Tennessee. At Alton, Illinois, Laclede Steel Company was constructing a facility that could process 36,000 tons of EAF-generated dust per year. Production was scheduled for early 1992.

Eagle Zinc Company at Hillsboro, Illinois is the only domestic producer of zinc oxide by the American process. This is sold directly for use in animal feed and other agricultural purposes.

## **PRODUCTS MANUFACTURED FROM MINERALS MINED IN AND OUT OF STATE**

### ***Cement***

**Production** In 1992, portland cement manufacturing in Illinois consumed an estimated 4.0 million tons of raw materials. Raw materials may include cement rock (an argillaceous limestone containing calcium, silica, alumina, and magnesia), limestone, clay, shale, sand, fly ash, slag, gypsum, and tripoli. Illinois ranked eighth of 39 states in quantity of portland cement produced. Masonry cement contributed little to the total value of products manufactured, and Illinois ranked last of 36 states producing masonry cement. Cement was produced by the Illinois



**Figure 15** Production and consumption of finished portland cement in Illinois, 1955–1992.

Cement Company, a subsidiary of Centex Corporation, and Lone Star Industries, both in La Salle County; Dixon-Marquette Cement, a subsidiary of Prairie Materials Sales in Lee County; and Missouri Portland Cement Company, a division of Cementia Oldings AG in Massac County. All four companies produced portland cement, and all except Illinois Cement Company produced masonry cement, although in very small quantities.

Sales of portland cement increased 1.3% in 1992, with the value per ton increasing about 1% from \$41.21 in 1991 to \$41.61 in 1992 (table 22). Nearly all the cement was delivered by truck in bulk form, although small amounts were shipped by rail and barge.

**Consumption** Illinois ranked fourth behind California, Texas, and Florida in consumption of cement products in 1992. About 3.3 million tons of portland cement (fig. 15) and 73,452 tons of masonry cement were consumed in Illinois. According to these figures, the use of portland cement decreased by 10.8%, and masonry cement, by 9.8%. Beginning in the late 1970s and 1980s, an increasing portion of the cement consumed in the state was also being manufactured in the state.

### **Clay Products**

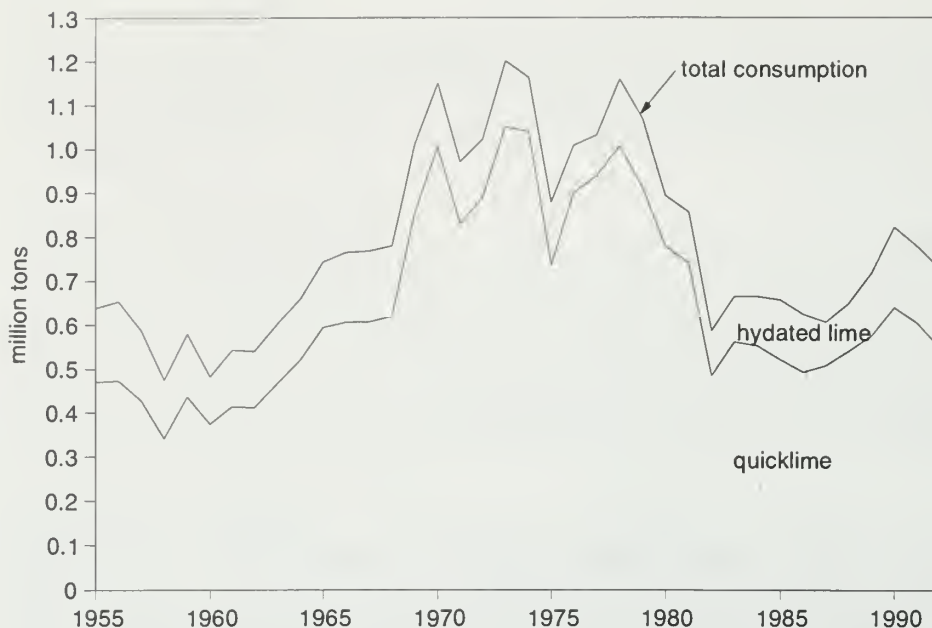
For up-to-date information about the amount and value of clay products manufactured in Illinois, the Illinois State Geological Survey sends questionnaires every year to all in-state producers.

In 1992, clay products were valued at \$54.1 million, 13.6% lower than in 1991. Whiteware and pottery decreased from \$36.1 million in 1991 to \$34.7 million in 1992. All other clay products decreased from \$26.5 million in 1991 to \$19.4 million in 1992. The Regal China Company at Antioch in Lake County closed on June 30, 1992, after showing no production for the year.

### **Coke**

**Production** All data on coke production in Illinois have been withheld. U.S. production decreased about 2.6% from 24.0 million tons in 1991 to 23.4 million tons in 1992. U.S. coke breeze production decreased less than 1%.

**Consumption and uses** Coke is used for pig-iron production, foundry and other industrial purposes, and residential heating. U.S. coke consumption increased 8.9% from 27.5 million tons in 1991 to 30.0 million tons in 1992. The United States imports coke from Japan and smaller amounts from Australia, Canada, and United Kingdom. Coke breeze was used as fuel in steam and agglomerating plants. State-by-state data on coke breeze are no longer available. U.S. breeze distribution increased 9.6% from 2.1 million tons in 1991 to 2.3 million tons in 1992.



**Figure 16** Consumption of quicklime and hydrated lime in Illinois, 1955–1992.

### **Glass**

Glass and/or fiberglass is manufactured in Du Page, Lake, La Salle, Logan, McLean, Macon, Madison, Marion, Montgomery, St. Clair, and Will Counties. Production data are not available. Ball Corporation purchased the assets of Kerr Glass Manufacturing Corporation, which manufactures glass containers mainly for the food processing industry. The Kerr manufacturing facility in Plainfield, Will County, was included in the purchase.

### **Lime**

**Production** Illinois ranked seventh of 33 states in production of lime. The top seven states—Missouri, Ohio, Pennsylvania, Alabama, Kentucky, Texas and Illinois—accounted for 63% (11.3 million tons) of the total U.S. output. Although Illinois lime data cannot be disclosed, both production and value increased about 1% after decreasing about 10% in 1991. Three plants in Cook County supplied the state's entire output. Two plants owned by Marblehead Lime Company, a division of General Dynamics, produced quicklime and hydrated lime; the Vulcan Materials Company plant produced quicklime. Marblehead Lime Company, with two plants in Illinois and one each in Indiana and Michigan, was the third largest company producing lime in the United States in 1992.

**Consumption and uses** In 1992, Illinois consumed 546,000 tons of quicklime, 9.5% less than in 1991, and 182,000 tons of hydrated lime, 3.4% more than in the previous year (fig. 16). The steel industry remains the main consumer of lime, which is used as a flux in steel refining to remove impurities. In recent years, since the steel industry has been in a depressed state, consumption has been relatively low. Steel output is expected to increase modestly, however, as power plants, municipal water plants, and chemical firms showed an increased use of lime. Lime consumption for flue gas desulfurization is expected to show some growth as a result of the passage of the Clean Air Act Amendments (CAAA) of 1990. The phase I compliance deadline is January 1, 1995, which means that utility companies have decided on their compliance strategies by this reporting in mid-1994. If the use of lime is a tactic in the compliance strategies, the consumption data for 1993 and 1994 should show an increase.



## **PRELIMINARY PRODUCTION DATA: 1993**

### **Minerals Extracted**

The total value of minerals mined in 1993 was an estimated \$2.1 billion, a decrease of 20.6% from 1992, according to preliminary data (table 23). This decrease reflects the 30% drop in coal production, mainly due to a strike by the United Mine Workers of America (UMWA). Even then, coal continued to be the leading mineral commodity in Illinois and contributed about 56.4% of the total value. The construction aggregates—stone, sand and gravel—ranked second with 25.4% of the total value, and crude oil came in third with 16.1%.

### **Fuels**

Fossil fuel production was valued at about \$1.5 billion in 1993, 26.4% less than in 1992.

**Coal** The estimated per ton value of coal in 1993 was \$27.66, the same as in 1992. Coal production decreased an estimated 30% to 42.2 million tons in 1993 because of the UMWA strike. This drop will put Illinois in sixth place nationally behind Wyoming, Kentucky, West Virginia, Pennsylvania, and Texas.

Consumption of Illinois coal in the United States during the first 9 months of 1993 dropped 26.6% (table 24). Total coal consumed in Illinois in the first 9 months was up slightly (1.1%) after decreasing about 6% in 1992 (table 25). Some electric utility companies turned to stockpiles to make up for deliveries disrupted by the strike and the severe flooding that closed the Mississippi River to barge traffic for about 6 weeks.

The Illinois Coal Development Board (ICDB) broke ground for a coal gasification plant at the Illinois Coal Development Park in Carterville. The plant will test a process to convert Illinois high-sulfur coal into environmentally safe and economically efficient products. The process will also generate liquid byproducts for use in making plastics and gasoline, and another byproduct that will be used to help operate other commercial mild-gas plants.

**Crude oil and natural gas** Crude oil production in 1993 is estimated to be 19.1 million barrels, a 1.7% decrease from production in 1992 (table 23). Production is estimated to have a value of \$17.50 per barrel, making the total worth \$334.1 million. Oil price per barrel is estimated to have decreased about 9% from 1992.

Natural gas production and value are estimated to have decreased more than 22%. The estimated unit value is \$2.30 per Mcf in 1993.

### **Industrial and Construction Materials**

The major flooding that occurred in the Mississippi and Illinois River valleys during the summer of 1993 had little impact on Illinois mineral producers. Only a few had to shut down. Those affected most were dependent on barges for transportation.

Illinois continued to rank 16th nationally in the value of nonfuel minerals produced in 1993 and accounted for 2.32% of the nation's total. Preliminary data for 1993 show Illinois still leading the nation in production of fluorspar, industrial sand, and tripoli and ranking second in production of crushed stone. Stone and sand and gravel increased slightly, both in production and value; whereas clays dropped significantly in 1993. The industrial minerals sector is expected to rebound slowly, given relatively low interest rates for housing starts and also the support of the Federal highway construction program.

### **Metals and Other Minerals**

Zinc (sphalerite concentrate) and barite were the only byproducts for which production estimates were reported from the Illinois fluorspar mines in 1993. Zinc production was estimated to have decreased 2%, whereas barite was expected to have decreased 75%. Copper and lead were also mined in 1993, but estimates of their production were not available. Production of these metals, byproducts of the fluorspar industry, remained relatively small, adding less than 2% to the state's nonfuel mineral production.

### **Minerals Processed**

Preliminary data for 1993 are not yet available for most of the minerals processed in Illinois. The American Iron and Steel Institute reported that Illinois raw steel production increased to

7,948,655 net tons, up 9.7% from 1992. The steel plants are continuing to restructure and upgrade to be more efficient and economical but less expensive to operate as they try to keep pace with foreign competition.

Gains made by the gypsum industry are expected to continue in 1993 as residential construction, primarily of single family housing, continues to grow. Industry reports indicate that home repairs and remodeling, including "do-it-yourself" projects, constitute the growth sectors.

### **Products Manufactured from Minerals**

Preliminary figures for 1993 show that production and value of portland cement were approximately the same as they were in 1992. Illinois remains a top consumer of portland cement.

Masonry cement production stayed about the same as in 1992; however, its value is expected to decrease. It is expected that lime production and value will increase slightly (less than 1%). As more clay-product plants go out of business, clay production will probably drop.

**Table 1** Production and value of minerals extracted, processed, and manufactured into products in Illinois, 1990–1992<sup>a</sup>

Minerals	Unit	1990			1991			1992		
		Quantity	Value (\$1000)	Average unit <sup>b</sup> value (\$)	Quantity	Value (\$1000)	Average unit <sup>b</sup> value (\$)	Quantity	Value (\$1000)	Average unit <sup>b</sup> value (\$)
EXTRACTED										
FUELS										
Coal	thousand tons	61,657	1,709,750	27.73	60,035	1,702,007	28.35	60,332	1,668,778	27.66
Crude oil	thousand bbl	19,954	406,462	20.37	19,066	384,941	20.19	19,137	368,586	19.26
Natural gas	million cu ft	677	1,428	2.11	466	1,011	2.17	346	743	2.15
TOTAL <sup>d</sup>			2,117,640			2,087,959			2,038,107	
INDUSTRIAL AND CONSTRUCTION MATERIALS										
Clay, common	thousand tons	660	2,516	3.81	568	2,442	4.31	590	2,362	4.00
Sand and gravel										
Common	thousand	32,380	104,728	3.23	26,300 <sup>e</sup>	90,400 <sup>e</sup>	3.44	35,695	123,720	3.47
Industrial	thousand tons	4,486	62,531	13.94	4,146	57,210	13.80	4,410	56,741	12.87
Stone (limestone and dolomite)										
Crushed and broken	thousand tons	62,700 <sup>e</sup>	283,100 <sup>e</sup>	4.52	68,586	295,362	4.31	72,700 <sup>e</sup>	322,800 <sup>e</sup>	4.44
Dimension	thousand tons	W	W	W	W	W	W	W	W	W
TOTAL <sup>d</sup>			452,875			445,414			505,623	
Metals, gemstones, and other undisclosed <sup>c</sup>			54,352			83,811			63,845	
Total value of mineral materials extracted <sup>d</sup>			2,624,867			2,617,184			2,607,575	
PROCESSED										
Sulfur	thousand tons	260	20,894	80.47	240	17,485	72.94	267	12,285	45.66
TOTAL <sup>d</sup>			20,894			17,485			12,285	
Values that cannot be disclosed <sup>c</sup>										
Total value of mineral materials processed <sup>d</sup>			20,894			17,485			12,285	

*continued on p. 24*

Table 1 continued

Minerals	Unit	1990			1991			1992		
		Quantity	Value (\$1000)	Average unit <sup>b</sup> value (\$)	Quantity	Value (\$1000)	Average unit <sup>b</sup> value (\$)	Quantity	Value (\$1000)	Average unit <sup>b</sup> value (\$)
MANUFACTURED INTO PRODUCTS										
Cement (shipments)										
Portland	thousand tons	2,842	116,781	41.10	2,816	116,046	41.21	2,854	118,747	41.61
Clay products, estimated			87,594			62,600			54,106	
TOTAL <sup>d</sup>			204,375			178,646			172,853	
Values that cannot be disclosed <sup>c</sup>			64,866 <sup>g</sup>			94,073 <sup>g</sup>			101,570 <sup>g</sup>	
Total value of mineral products manufactured <sup>d</sup>			269,241			272,598			274,423	
STATE TOTAL <sup>d</sup>			2,915,002 <sup>f</sup>			2,907,388 <sup>f</sup>			2,894,283 <sup>f</sup>	

<sup>a</sup> Sources: U.S. Bureau of Mines (USBM), Illinois Department of Mines and Minerals, Illinois State Geological Survey (ISGS).

<sup>b</sup> Units used for reporting value are 1 barrel for oil, 1000 cubic feet for gas, 1 troy ounce for silver, and 1 ton for all other minerals and materials. Metals are reported in metric tons and other materials in short tons.

<sup>c</sup> Products that cannot be disclosed or are not available:

EXTRACTED, Fuels – natural gas liquids

Industrial and construction materials – absorbent clay, fluorspar, dimension stone, tripoli

Metals – lead, zinc, silver, copper

Other – peat

PROCESSED – natural gas liquids, expanded perlite, ground barite, calcined gypsum, exfoliated vermiculite, iron oxide pigments, primary slab zinc, secondary slab zinc, columbium and tantalum, crude iodine, slag (iron and steel), pig iron

MANUFACTURED INTO PRODUCTS – masonry cement, lime, coke, glass

<sup>d</sup> Data may not add up to totals shown because of independent rounding.

<sup>e</sup> Estimate by USBM; no survey.

<sup>f</sup> Does not include pig iron; ISGS estimated value is approximately \$375 million.

<sup>g</sup> The values of mineral products processed that cannot be disclosed are included in manufactured products.

<sup>W</sup> Withheld to avoid disclosing individual company data.

**Table 2** Illinois mineral production compared with U.S. mineral production, 1991–1992<sup>a</sup>

Commodity	Unit	Illinois		United States		Illinois % of U.S. production	
		Quantity	Value (\$1000)	Quantity	Value (\$1000)	Quantity	Value (\$1000)
<b>1991</b>							
Coal	thousand tons	60,035	1,702,007	993,486	21,350,014	6.04	7.97
Crude oil	thousand bbls	19,066	384,941	2,707,039	44,666,144	0.70	0.86
Natural gas liquids	million cu ft	951	NA	16,229,684	NA	0.005	NA
Natural gas	million cu ft	466	1,011	18,532,439	30,327,779	0.003	0.005
Clays <sup>b</sup>	thousand tons	568	2,442	44,092	1,505,423	1.29	0.16
Sand and gravel <sup>c</sup>	thousand tons	30,446	147,610	805,900	3,195,977	3.78	4.62
Stone (excludes dimension stone)	thousand tons	68,586	295,362	1,102,900	5,186,800	6.22	5.69
Cement shipments (portland)	thousand tons	2,092	97,558	74,032	3,606,714	2.83	2.70
<b>1992</b>							
Coal	thousand tons	60,332	1,668,778	995,281	20,930,759	6.06	7.97
Crude oil	thousand bbls	19,469	374,973	2,618,123	41,863,787	0.74	0.90
Natural gas liquids	million cu ft	942	NA	15,423,113	NA	0.006	NA
Natural gas	million cu ft	346	743	18,711,808	32,570,827	0.002	0.002
Clays <sup>b</sup>	thousand tons	590	2,362	42,151	NA	1.46	—
Sand and gravel <sup>c</sup>	thousand tons	40,105	180,461	945,347	3,740,347	4.24	4.82
Stone (excludes dimension stone)	thousand tons	72,700	322,800	1,161,500	5,593,700	6.26	5.77
Cement shipments (portland)	thousand tons	2,854	118,747	76,829	3,818,401	3.71	3.11

<sup>a</sup> Sources: U.S. Bureau of Mines, Illinois State Geological Survey, Illinois Department of Mines and Minerals, and American Petroleum Institute.

<sup>b</sup> Excluding fuller's earth.

<sup>c</sup> Includes industrial sand.

NA Not available.

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**Table 3** Minerals extracted, processed, and manufactured in Illinois, 1992<sup>a</sup> (listed by county)

County	Approximate rank (based on total value <sup>b</sup> )	Minerals extracted (order of value <sup>c</sup> )	Minerals processed (order of value)	Minerals manufactured (order of value)
Adams	29	Stone, sand/gravel, crude oil	Iron oxide pigments, ground barite	—
Alexander	37	Tripoli	—	—
Bond	67	Crude oil, sand/gravel, clay	—	—
Boone	73	Sand/gravel, stone	—	—
Brown	88	Crude oil	—	—
Bureau	76	Sand/gravel	—	Clay products
Calhoun	95	Stone	—	—
Carroll	91	Stone	—	—
Cass	—	—	—	—
Champaign	61	Sand/gravel	—	—
Christian	15	Coal, crude oil, stone	—	—
Clark	46	Crude oil, stone, sand/gravel	—	—
Clay	35	Crude oil	Slag	—
Clinton	11	Coal, crude oil, natural gas,	—	—
Coles	48	Sand/gravel, crude oil, stone, natural gas	—	—
Cook	5	Stone, sand/gravel	Expanded perlite, slag, pig iron <sup>d</sup> , secondary slab <sup>d</sup> zinc <sup>d</sup> , crude iodine <sup>d</sup>	Lime, coke <sup>d</sup>
Crawford	23	Crude oil, sand/gravel	Sulfur	—
Cumberland	82	Crude oil, sand/gravel	—	—
De Kalb	66	Stone, sand/gravel	Iron-oxide pigments	—
De Witt	84	Crude oil	—	—
Douglas	68	Stone, crude oil	Natural gas liquids <sup>d</sup>	—
Du Page	30	Stone, sand/gravel	Exfoliated vermiculite	Glass <sup>d</sup>
Edgar	77	Crude oil, natural gas	—	—
Edwards	47	Crude oil	—	—
Effingham	50	Crude oil, natural gas,	—	—
Fayette	32	Crude oil, sand/gravel, stone, natural gas	—	—
Ford	94	Sand/gravel	—	—
Franklin	2	Coal, crude oil	—	—
Fulton	41	Coal, sand/gravel	—	—
Gallatin	9	Coal, crude oil, sand/gravel, natural gas	—	—
Greene	89	Stone	—	—
Grundy	65	Sand/gravel	—	—
Hamilton	54	Crude oil	—	—
Hancock	86	Stone, crude oil	—	—
Hardin	19	Stone, fluorspar, zinc, gemstones, barite, silver, germanium <sup>d</sup>	Ground/crushed barite	—
Henderson	78	Stone	—	—
Henry	93	Stone, sand/gravel	—	—
Iroquois	72	Stone	—	—
Jackson	59	Stone, sand/gravel, crude oil	—	—
Jasper	42	Crude oil	—	—
Jefferson	6	Coal, crude oil	—	—
Jersey	92	Stone	—	—
Jo Daviess	90	Stone, sand/gravel	—	—
Johnson	56	Stone	—	—
Kane	22	Stone, sand/gravel, dimension stone	—	Clay products
Kankakee	44	Stone, clay, sand/gravel	Slag	—
Kendall	63	Stone, sand/gravel	—	—
Knox	28	—	—	Clay products
Lake	38	Sand/gravel, peat	Calcined gypsum, crude iodine <sup>d</sup> , columbium <sup>d</sup>	—
La Salle	8	Industrial sand, stone, sand/gravel, clay	Exfoliated vermiculite	Portland cement, clay products, masonry cement, glass <sup>d</sup>



Table 3 *continued*

County	Approximate rank (based on total value <sup>b</sup> )	Minerals extracted (order of value <sup>c</sup> )	Minerals processed, (order of value)	Minerals manufactured (order of value)
Lawrence	17	Crude oil, sand/gravel	—	—
Lee	16	Stone	—	Portland/masonry cement
Livingston	45	Stone, clay, sand/gravel	—	—
Logan	21	Coal, stone, sand/gravel	—	Glass <sup>d</sup>
Macon	71	Sand/gravel, crude oil,	—	Glass <sup>d</sup>
Macoupin	7	Coal, crude oil	Exfoliated vermiculite	—
Madison	33	Stone, crude oil sand/gravel	Sulfur, slag, pig iron <sup>d</sup> , iron-oxide pigments	Clay products, coke <sup>d</sup> , glass <sup>d</sup>
Marion	31	Crude oil	Secondary slab zinc <sup>d</sup>	Glass <sup>d</sup>
Marshall	80	Sand/gravel	—	—
Mason	51	Industrial sand	—	—
Massac	26	Stone	Crude iodine	Portland/ masonry cement
McDonough	40	Coal, stone, crude oil	—	Clay products
McHenry	27	Sand/gravel	—	—
McLean	74	Sand/gravel	—	Fiberglass <sup>d</sup>
Menard	69	Stone	—	—
Mercer	—	—	—	—
Monroe	81	Stone, crude oil	—	—
Montgomery	39	Stone, crude oil	—	Glass <sup>d</sup>
Morgan	98	Crude oil	—	—
Moultrie	97	Crude oil, sand/gravel	—	—
Ogle	36	Industrial sand, stone, sand/gravel	—	—
Peoria	60	Sand/gravel	—	—
Perry	1	Coal, crude oil	—	—
Piatt	96	Sand/gravel	—	—
Pike	70	Stone, sand/gravel	—	—
Pope	—	—	—	—
Pulaski	20	Clay, stone, sand/gravel	—	Clay products
Putnam	83	Sand/gravel	—	—
Randolph	4	Coal, stone, crude oil, sand/gravel	—	—
Richland	43	Crude oil	—	—
Rock Island	64	Stone, sand/gravel	—	—
St. Clair	18	Stone, sand/gravel, crude oil, natural gas	Iron-oxide pigments, ground barite Primary slab zinc <sup>d</sup>	Glass <sup>d</sup>
Saline	3	Coal, crude oil, natural gas sand/gravel	—	—
Sangamon	52	Sand/gravel, crude oil, stone	Iron-oxide pigments	—
Schuyler	34	Coal, crude oil, stone	—	—
Scott	87	Stone	—	—
Shelby	85	Crude oil, sand/gravel, stone	—	—
Stark	—	—	—	—
Stephenson	75	Stone, sand/gravel	—	—
Tazewell	55	Sand/gravel	—	—
Union	53	Stone	—	—
Vermilion	49	Stone, sand/gravel	—	—
Wabash	10	Coal, crude oil	—	—
Warren	79	Stone	—	—
Washington	13	Coal, crude oil	—	—
Wayne	24	Crude oil	—	—
White	12	Coal, crude oil, sand/gravel	—	—
Whiteside	62	Peat, stone, sand/gravel	Slag	—
Will	25	Stone, sand/gravel	Sulfur, expanded perlite	Glass <sup>d</sup>
Williamson	14	Coal, crude oil	—	—
Winnebago	58	Stone, sand/gravel	—	—
Woodford	57	Sand/gravel	—	—
Undistributed		Crude oil	—	—

<sup>a</sup> Sources: U.S. Bureau of Mines, Illinois Department of Mines and Minerals, and Illinois State Geological Survey.<sup>b</sup> Because some values are not available by county, ranking cannot be exact.<sup>c</sup> Stone production; 1992 data were estimated to rank each county.<sup>d</sup> Value unknown.

**Table 4** Employment and wages in the Illinois mineral industry, 1991–1992<sup>a</sup>

Industry	1991				1992			
	No. of employees (1000)	Average weekly earnings (\$)	Average hours worked/week	Average hourly earnings (\$)	No. of employees (1000)	Average weekly earnings (\$)	Average hours worked/week	Average hourly earnings (\$)
Mining	19.2	700.90	41.4	16.93	17.3	679.39	39.8	17.07
Masonry, stonework	16.4	727.50	37.5	19.40	15.5	704.32	35.5	19.84
Stone, clay, glass	19.5	477.60	40.0	11.94	20.0	485.62	40.3	12.05
Primary metal industries	54.6	576.58	42.9	13.40	49.1	583.10	42.5	13.72
Blast furnaces	24.0	589.11	42.2	13.96	20.9	608.52	42.2	14.42
Iron and steel foundries	7.9	642.78	42.4	15.16	6.4	622.91	40.9	15.23
Petroleum and coal products	10.1	695.12	41.9	16.59	10.1	684.75	41.5	16.50
Gas products and distribution	8.2	683.79	45.8	14.93	8.1	692.19	46.3	14.95
Total mineral-related	159.9	613.05	41.8	14.68	147.4	612.21	41.2	14.96
Total nonagricultural	5,220.1				5,234.9			
Goods producing	1,165.1				1,133.5			
Service producing	4,055.1				4,101.4			

<sup>a</sup> Source: Illinois Department of Labor, Bureau of Employment Security.

**Table 5** Minerals consumed in Illinois compared with U.S. consumption, 1991–1992<sup>a</sup>

		1991			1992		
Commodity	Unit	U.S.	Illinois	Illinois % of U.S. consumption	U.S.	Illinois	Illinois % of U.S. consumption
<b>Fuels</b>							
Coal	million tons	887.7	34.7	3.91	892.3	31.6	3.54
Coke	million tons	24.2	NA	—			
Distillate fuel oils	million bbl	1,066.0	36.1	3.39	1,090.0	36.4	3.34
Gasoline	million bbl	3,168.0	110.9	3.50	3,200.0	113.9	3.56
Kerosene	million bbl	17.0	0.2	1.19	15.0	0.1	0.67
LPG and ethane	million bbl	616.0	14.9	2.42	642.0	12.5	1.95
Natural gas	trillion cu ft	19.1	1.0	5.18	19.5	1.0	5.08
Residual fuel oil	million bbl	423.0	3.5	0.82	401.0	2.4	0.60
<b>Metals</b>							
Pig iron	million tons	45.8	2.5	5.51	48.1	2.4	4.93
Lead	thousand tons	1,246.3	71.5	5.74	1,240.0	NA	—
Zinc (slab)	thousand tons	763.8	116.4	15.23	1,005.0	NA	—
<b>Construction materials</b>							
Air-cooled slag	million tons	10.9	—	—			
Asphalt and road oil	million bbl	162.0	7.9	4.89	166.0	9.3	0.06
Cement	million tons	78.1	3.3	4.23	89.7	3.6	4.01
Sand and gravel	million tons	780.3	26.3	3.37	809.1	28.1	3.47
Stone	million tons	1,102.9	68.6	6.22	1,161.5	72.7	6.26
<b>Agricultural and chemical materials</b>							
Feldspar	thousand tons	573.0	NA	—	590.0	NA	—
Fluorspar	thousand tons	483.6	NA	—	365.0	NA	—
Lime <sup>b</sup>	thousand tons	17,300.0	779.0	4.50	17,887.0	728.0	4.07
Salt							
Evaporated	thousand tons	8,546.0	489.0	5.72	NA	NA	—
Rock	thousand tons	15,586.0	1,530.0	9.82	NA	NA	—

<sup>a</sup> Source: U.S. Bureau of Mines, U.S. Department of Energy.

<sup>b</sup> Excludes regenerated lime.

NA Not available.

**Table 6** Fuels and energy consumed in Illinois, 1991–1992<sup>a</sup>

Fuel	Units	1991	1992	Change	Trillion Btu <sup>b</sup>	
				1991–1992 (%)	1991 <sup>c,e</sup>	1992 <sup>d</sup>
Coal	thousand tons	34,677	31,612	-8.8	733.3	668.3
Natural gas	million ft <sup>3</sup>	987,589	993,000	+0.5	1,006.4	1,001.3
Gasoline	thousand bbl	110,960 <sup>e</sup>	113,895	+2.6	585.3 <sup>e</sup>	601.2
Kerosene	thousand bbl	203	142	-30.0	1.2	0.8
Distillate fuel oil	thousand bbl	36,149	36,377	+0.6	210.6	211.9
Residual fuel oil	thousand bbl	3,454	2,354	-31.8	21.7	14.8
Liquid petroleum gases	thousand bbl	14,539 <sup>e</sup>	12,482	-14.1	52.5 <sup>e</sup>	45.2
Nuclear power	million kWh	71,866	73,742	-2.6	771.8	787.4
Hydropower	million kWh	70	69	-1.4	0.7	0.7
<b>TOTAL</b>					<b>3,383.5<sup>e</sup></b>	<b>3,331.6</b>
Illinois percentage of total U.S. energy consumption					4.2	4.1
Percentage of total energy consumed in Illinois						
Coal					21.67	20.06
Natural gas					29.75	30.06
Oil products					25.75	26.23
Nuclear power					22.81	23.63
Hydropower					0.02	0.02
					100.00	100.00

<sup>a</sup> Source: U.S. Department of Energy, Energy Information Administration.

<sup>b</sup> Fuel conversion factors: gasoline—5,253,000 Btu/bbl; kerosene—5,670,000 Btu/bbl; distillate fuel oil—5,825,000 Btu/bbl; residual fuel oil—6,287,000 Btu/bbl.

<sup>c</sup> 1991 fuel conversion factors: coal—21,146,000 Btu/ton; natural gas—1,019 Btu/Mcf; LPG—3,614,000 Btu/bbl; nuclear power—10,740 Btu/kWh; hydropower—10,352 Btu/kWh.

<sup>d</sup> 1992 fuel conversion factors: coal—21,142,000 Btu/ton; natural gas—1,018 Btu/Mcf; LPG—3,624,000 Btu/bbl; nuclear power—10,678 Btu/kWh; hydropower—10,335 Btu/kWh.

<sup>e</sup> Revised.

Table 7 Coal production in Illinois counties, 1991–1992<sup>a</sup>

County	1991 Production				1992 Production					
	No. of mines	Underground (tons)	Surface (tons)	Total (tons)	Value <sup>b</sup>	No. of mines	Underground (tons)	Surface (tons)	Total (tons)	Value <sup>b</sup>
Christian <sup>c</sup>	1	2,365,970	—	2,365,970	67,075,250	1	1,605,304	—	1,605,304	44,402,709
Clinton	1	2,490,794	—	2,490,794	70,614,010	1	3,075,865	—	3,075,865	85,078,426
Douglas	1	626,582	—	626,582	17,763,600	—	—	—	—	—
Franklin	4	6,189,782	—	6,189,782	175,480,320	3	7,577,848	—	7,577,848	209,603,276
Fulton	1	—	474,291	474,291	13,446,150	1	—	405,829	405,829	11,225,230
Gallatin	3	2,694,121	545,600	3,239,721	91,846,090	3	3,080,277	366,164	3,446,441	95,328,558
Jefferson	2	4,278,727	—	4,278,727	121,301,910	2	4,460,571	—	4,460,571	123,379,394
Logan	1	1,458,245	—	1,458,245	41,341,246	1	1,148,287	—	1,148,287	31,761,618
Macoupin	3	3,491,059	—	3,491,059	98,971,523	3	4,241,947	—	4,241,947	117,332,254
McDonough	1	—	402,574	402,574	11,412,973	1	—	316,448	316,448	8,752,952
Perry	8	1,343,159	8,760,261	10,103,420	286,431,957	6	2,577,192	8,057,722	10,634,914	294,161,721
Randolph	4	4,897,741	1,446,676	6,344,417	179,864,222	4	5,507,336	800,019	6,307,355	174,461,439
Saline	6	6,759,114	1,151,960	7,911,074	224,278,948	5	6,997,438	543,829	7,541,267	208,591,445
Schuyler	1	—	637,033	637,033	18,059,886	1	—	629,087	629,087	17,400,546
Wabash	1	3,711,274	—	3,711,274	105,214,618	1	2,913,730	—	2,913,730	80,593,772
Washington	1	1,980,100	—	1,980,100	56,135,835	1	2,194,080	—	2,194,080	60,688,253
White	1	1,736,810	—	1,736,810	49,238,564	1	1,887,824	—	1,887,824	52,217,212
Williamson <sup>d</sup>	4	108,975	2,484,667	2,593,642	73,529,751	4	216,056	1,728,973	1,945,029	53,799,502
TOTAL <sup>e</sup>	44	44,132,453	15,903,062	60,035,515	1,702,006,850	39	47,483,755	12,848,071	60,331,826	1,668,778,307

<sup>a</sup> Production figures from Illinois Department of Mines and Minerals, Annual Coal, Oil and Gas Report.

<sup>b</sup> Value calculated at an average of \$28.35/ton for 1991 and \$27.66/ton for 1992.

<sup>c</sup> One mine operated at the junction of Christian, Montgomery, and Sangamon Counties; all production placed in the county where the tipple is located.

<sup>d</sup> One mine operated at the junction of Williamson and Saline Counties; all production placed in the county where the tipple is located.

<sup>e</sup> Data may not add up to totals shown because of independent rounding.



**Table 8** Coal production in Illinois counties, 1833–1992<sup>a</sup>

County	Cumulative total surface production (tons)	Cumulative total production (tons)	County	Cumulative total surface production (tons)	Cumulative total production (tons)
Adams	338,147	341,924	Macoupin	—	337,161,705
Bond	—	7,355,569	Madison	37,843	164,295,772
Brown	41,761	74,068	Marion	—	39,247,722
Bureau	11,094,808	53,823,055	Marshall	4,779	12,516,141
Calhoun	—	96,247	McDonough	4,961,066	7,569,547
Cass	—	212,477	McLean	—	5,544,139
Christian	—	355,957,930	Menard	—	13,462,005
Clark	4,482	4,482	Mercer	67,080	15,519,862
Clay	801	801	Monroe	—	8,284
Clinton	—	76,562,194	Montgomery	—	141,824,660
Coles	—	210,930	Morgan	13,564	190,787
Crawford	17,315	45,400	Moultrie	—	2,032,236
Douglas	—	44,397,202	Peoria	32,702,938	96,718,740
Edgar	1,587,442	2,295,898	Perry	387,332,001	491,175,248
Effingham	—	796	Pike	2,224	5,081
Franklin	—	701,374,664	Pope	34,704	36,266
Fulton	240,411,533	317,006,919	Putnam	—	10,071,893
Gallatin	11,191,409	53,355,553	Randolph	103,711,596	237,318,163
Greene	71,090	693,191	Richland	35	154
Grundy	1,635,422	40,872,430	Rock Island	—	3,846,169
Hamilton	—	6,172,927	St. Clair	116,444,567	367,370,806
Hancock	459,329	771,281	Saline	65,006,743	319,815,712
Hardin	—	40	Sangamon	—	233,449,607
Henry	9,065,783	22,910,053	Schuyler	11,048,655	12,752,071
Jackson	60,531,911	128,204,823	Scott	3,790	612,476
Jasper	—	23,739	Shelby	925	4,119,763
Jefferson	5,353,358	166,256,683	Stark	8,342,056	9,569,336
Jersey	2,290	120,350	Tazewell	—	17,633,802
Johnson	72,781	314,325	Vermilion	30,651,670	165,878,433
Kankakee	18,284,342	19,192,105	Wabash	12,082	44,394,114
Knox	62,601,174	65,896,605	Warren	132	685,466
La Salle	2,345,878	65,547,638	Washington	—	37,271,317
Livingston	139,091	10,111,437	White	—	14,075,328
Logan	—	25,088,376	Will	29,333,708	37,553,733
Macon	—	11,000,468	Williamson	106,545,871	463,856,056
			Woodford	—	7,810,160
Total cumulative surface production, 1911–1992			Estimated production, all counties, 1833–1881		
1,321,508,176			73,386,123		
Total cumulative production, 1882–1992			Total cumulative production, 1833–1992		
5,491,685,332			5,565,071,455		

<sup>a</sup> Source: Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Reports. This table was revised to place production in the county where the tipple is located.

Table 9 Employment and production by method of coal mining in Illinois, 1981–1992<sup>a</sup>

Year	Underground				Surface			
	No. of mines	No. of employees	Average production/ mine (tons)	Average no. employees/ mine	No. of mines	No. of employees	Average production/ mine (tons)	Average no. employees/ mine
1981	31	13,351	943,081	431	27	4,797	835,672	178
1982	32	10,554	1,115,121	330	28	4,397	919,439	157
1983	31	10,514	1,076,464	339	23	4,245	1,087,096	185
1984	31	10,857	1,288,564	350	21	3,946	1,206,843	188
1985	32	11,386	1,207,769	356	20	3,445	1,091,432	172
1986	31	10,379	1,320,375	335	20	3,170	1,115,084	159
1987	28	9,263	1,399,588	331	19	2,925	1,135,416	154
1988	27	8,830	1,477,178	327	16	2,684	1,248,037	168
1989	27	8,729	1,501,026	323	15	2,376	1,306,890	158
1990	26	7,740	1,654,275	298	16	2,389	1,165,371	149
1991	29	7,844	1,521,809	270	15	1,823	1,060,204	122
1992	27	7,490	1,758,658	277	12	1,442	1,070,673	120

<sup>a</sup> Source: Illinois Department of Mines and Minerals, Annual Coal, Oil and Gas Report.



Table 11 Coal shipped from Illinois to other states, 1988–1992<sup>a</sup>

Consumers	Minnesota										Total
	Wisconsin	and Michigan	Iowa	Missouri	Indiana	Kentucky (1000 tons)	Georgia and Florida	Other states <sup>b</sup>	Exports and miscellaneous	Illinois	
Electric utilities											
1988	2,058	79	2,217	12,871	7,871	136	9,791	2,951	—	14,372	52,344
1989	1,359	57	2,072	13,109	8,247	424	9,055	4,163	—	14,911	53,397
1990	1,062	45	1,340	12,132	9,483	453	9,019	5,210	—	16,021	54,765
1991	667	42	1,407	11,869	8,301	15	8,811	5,135	—	16,239	52,489
1992	761	64	1,130	10,971	8,918	7	10,484	5,292	—	14,953	52,581
Coke and gas plants											
1988	—	—	—	—	1,414	—	—	<sup>e</sup>	—	94	1,508
1989	—	—	—	—	1,116	—	—	—	—	425	1,541
1990	—	—	—	—	937	—	—	—	—	193	1,131
1991	—	—	—	—	696	—	—	—	—	—	696
1992	—	—	—	—	555	—	—	—	—	—	555
Retail dealers											
1988	—	—	<sup>e</sup>	45	<sup>e</sup>	—	—	33	—	197	285
1989	—	—	<sup>e</sup>	228	<sup>e</sup>	—	—	16	—	217	471
1990	—	—	31	155	<sup>e</sup>	—	—	1	4	199	387
1991	—	—	15	114	<sup>e</sup>	—	—	<sup>e</sup>	4	220	350
1992	—	—	—	84	3	—	—	—	—	228	315
Others											
1988	260	7	313	740	223	—	—	120	7	2,587	4,270
1989	290	—	290	619	145	1	—	140	16	2,005	3,510
1990	300	5	221	779	151	—	—	126	—	2,286	3,868
1991	304	3	51	654	189	—	—	223	—	2,327	3,751
1992	292	—	45	571	119	—	—	202	—	2,986	4,215
Totals <sup>c</sup>											
1988	2,317	85	2,530	13,656	9,508	136	9,791	3,104	494 <sup>d</sup>	17,250	58,901 <sup>d</sup>
1989	1,649	57	2,362	13,956	9,508	424	9,055	4,319	488 <sup>d</sup>	17,558	59,464 <sup>d</sup>
1990	1,362	51	1,592	13,067	10,571	453	9,019	5,336	442 <sup>d</sup>	18,700	60,592 <sup>d</sup>
1991	971	45	1,473	12,637	9,185	15	8,811	5,358	1,271 <sup>d</sup>	18,787	58,553 <sup>d</sup>
1992	1,053	64	1,175	11,625	9,595	7	10,484	5,494	1,246 <sup>d</sup>	18,167	58,911 <sup>d</sup>

<sup>a</sup> Sources: U.S. Department of Energy, Coal Distribution, 1988–1991. 1992 information from the Office of Coal, Nuclear, Electric and Alternate Fuels.

<sup>b</sup> Includes Alabama (1988–1992), Mississippi (1988–1992), Tennessee (1988–1992), Louisiana (1988, 1989), Ohio (1988–1989, 1991<sup>e</sup>, 1990), Pennsylvania (1989–1991<sup>e</sup>, 1988), Kansas (1988, 1990–1992), Texas (1988, 1991), California (1988), Arkansas (1988, 1990–1992), Massachusetts (1990<sup>e</sup>), Montana (1990–1991<sup>e</sup>), New York (1990–1992<sup>e</sup>), Wyoming (1990), Connecticut (1991), North Carolina (1991<sup>e</sup>), Virginia (1991<sup>e</sup>), New Jersey (1992<sup>e</sup>), South Carolina (1991).

<sup>c</sup> Data may not add up to totals shown because of independent rounding.

<sup>d</sup> Includes shipments with no breakdown by consuming sector: 487,000 tons foreign in 1988; 472,000 tons foreign in 1989; 370,000 tons foreign and 72,000 U.S. in 1990; 1,259,000 tons foreign and 8,000 tons U.S. in 1991; 1,242,000 tons foreign and 4,000 tons U.S. in 1992.

<sup>e</sup> Quantity is less than 500 tons.



Table 12 Sources of coal consumed in Illinois, 1988–1992<sup>a</sup>

Consumers	Ohio, eastern Pennsylvania, <sup>b</sup> and northern West Virginia			Southern West Virginia, <sup>c</sup> Kentucky, <sup>d</sup> and eastern Kentucky		Western interior <sup>d</sup> states	Western states <sup>e</sup>	Montana <sup>f</sup> and Washington	Pennsylvania	Total coal consumed in Illinois	
	Illinois	Western Kentucky	Indiana	(1000 tons)							
Electric utilities	1988	14,372	1,102	1,150	—	1,630	—	4,777	3,876	9	26,908
	1989	14,911	111	2,012	7	1,716	—	3,555	2,880	—	25,192
	1990	16,021	891	1,892	—	1,823	—	3,662	2,651	—	26,939
	1991	16,239	166	1,186	—	2,008	—	4,068	3,203	—	26,871
	1992	14,953	50	808	9	1,580	—	5,134	3,013	—	25,537
Coke and gas plants	1988	94	—	—	—	1,312	—	—	—	—	1,406
	1989	425	—	—	—	1,288	—	—	—	—	1,714
	1990	193	—	21	15	1,543	—	—	—	—	1,773
	1991	—	—	—	109	1,454	—	—	—	—	1,562
	1992	—	—	—	—	1,644	—	20	—	—	1,663
Retail dealers	1988	197	7	44	—	7	—	—	—	1	256
	1989	217	21	29	—	30	—	—	—	—	298
	1990	199	29	34	—	1	—	—	—	—	265
	1991	220	—	32	3	1	—	—	—	3	257
	1992	228	—	17	—	34	—	2	—	2	283
Others	1988	2,587	387	647	21	659	9	—	—	10	4,311
	1989	2,005	238	234	27	395	6	—	9	8	2,913
	1990	2,286	305	426	49	319	1	93	—	4	3,483
	1991	2,327	304	480	53	379	—	796	—	8	4,340
	1992	2,986	165	196	71	267	—	12	—	6	3,703
Total	1988	17,250	1,496	1,841	21	3,609	9	4,777	3,876	11	32,882
	1989	17,558	370	2,275	34	3,429	6	3,555	2,880	10	30,116
	1990	18,700	1,224	2,373	64	3,687	1	3,756	2,651	5	32,461
	1991	18,787	470	1,698	165	3,843	—	4,864	3,203	11	33,031
	1992	18,167	214	1,021	71	3,525	—	5,168	3,013	8	31,186

<sup>a</sup> Sources: U.S. Department of Energy, Coal Distribution.

<sup>b</sup> Includes Districts 1, 2, 3, 4, and 6 (Maryland, Ohio, eastern Pennsylvania, northern West Virginia).

<sup>c</sup> Includes Districts 7, 8, and 13 (Alabama, Georgia, eastern Kentucky, North Carolina, Tennessee, Virginia, southern West Virginia).

<sup>d</sup> Includes Districts 14 and 15 (Arkansas, Kansas, Missouri, Oklahoma, Texas).

<sup>e</sup> Includes Districts 16, 17, and 19–21 (Colorado, Idaho, North Dakota, New Mexico, South Dakota, Utah, Wyoming).

<sup>f</sup> Includes Districts 22 and 23 (Alaska, Montana, Oregon, Washington).

<sup>g</sup> Quantity is less than 500 tons.

Table 13 Crude oil production in Illinois counties, 1888–1992; value for 1991 and 1992<sup>a</sup>

County	1888–1992 cumulative production (1000 bbl)	1991			1992			1991–1992 production % change
		Production (1000 bbl)	% of total Illinois production	Value <sup>d</sup> (\$1000)	Production (1000 bbl)	% of total Illinois production	Value <sup>d</sup> (\$1000)	
Adams	292	5	0.0	101	3	0.0	53	-4.7
Bond	8,311	63	0.3	1,273	61	0.3	1,171	-3.5
Brown	2,191	37	0.2	755	35	0.2	682	-5.3
Champaign	7	—	—	—	—	—	—	—
Christian	30,741	256	1.3	5,159	251	1.3	4,832	-1.8
Clark–Cumberland	95,277	265	1.4	5,351	299	1.6	5,761	+12.9
Clay	151,437	917	4.8	18,510	880	4.6	16,944	-4.0
Clinton	88,904	215	1.1	4,343	229	1.2	4,401	+6.3
Coles	25,558	159	0.8	3,203	129	0.7	2,476	-19.0
Crawford	257,449	2,089	11.0	42,185	1,764	9.2	33,967	-15.6
De Witt	3,949	54	0.3	1,084	52	0.3	1,006	-2.8
Douglas	3,684	5	0.0	104	6	0.0	123	+23.9
Edgar	4,833	81	0.4	1,629	78	0.4	1,497	-3.6
Edwards	58,244	488	2.6	9,852	423	2.2	8,138	+13.4
Effingham	20,624	253	1.3	5,104	300	1.6	5,784	+18.8
Fayette	413,962	975	5.1	19,691	969	5.1	18,654	-0.7
Franklin	83,154	675	3.5	13,629	598	3.1	11,519	-11.4
Gallatin	56,671	293	1.5	5,917	293	1.5	5,635	-0.2
Hamilton	138,917	309	1.6	6,232	257	1.3	4,945	-16.8
Jackson	115	4	0.0	85	2	0.0	40	-50.8
Jasper	62,620	661	3.5	13,342	616	3.2	11,872	-6.7
Jefferson	96,758	710	3.7	14,342	712	3.7	13,707	+0.2
Lawrence	430,631	2,559	13.4	51,657	2,479	13.0	47,753	-3.1
Macon	2,740	66	0.4	1,343	49	0.3	944	-26.3
Macoupin	415	10	0.1	196	9	0.1	178	-5.0
Madison	18,946	75	0.4	1,521	104	0.5	2,001	+37.9
Marion	437,782	1,209	6.3	24,410	1,225	6.4	23,590	+1.3
McDonough– Hancock <sup>c</sup>	5,703	2	0.0	49	2	0.0	48	+2.1
Monroe	169	20	0.1	399	23	0.1	439	+15.4
Montgomery	165	2	0.0	43	2	0.0	44	+7.1
Morgan	6	1	0.0	20	1	0.0	17	-10.5
Moultrie	140	2	0.0	42	2	0.0	42	+4.5
Perry	970	8	0.1	162	5	0.0	103	-33.2
Piatt	8	f	0.0	3	—	—	—	—
Randolph	5,048	11	0.1	218	34	0.2	649	+211.7
Richland	113,831	611	3.2	12,329	611	3.2	11,770	+0.1
St. Clair	3,699	20	0.1	409	21	0.1	412	+5.4
Saline	25,405	226	1.2	4,571	202	1.1	3,886	-10.9
Sangamon	5,343	79	0.4	1,586	79	0.4	1,512	0.0
Schuyler	248	13	0.1	257	11	0.1	217	-11.8
Shelby	2,364	52	0.3	1,058	46	0.2	877	-13.1
Wabash	123,689	931	4.9	18,806	863	4.5	16,615	-7.4
Washington	36,973	360	1.9	7,266	377	2.0	7,267	+4.8
Wayne	281,060	1,572	8.3	31,744	1,799	9.4	34,640	+14.4
White	321,431	1,728	9.1	34,888	1,628	8.5	31,363	-5.8
Williamson	2,875	39	0.2	785	44	0.2	847	+13.1
Other <sup>b</sup>	20,097	955	5.0	19,288	1,566	8.2	30,165	+63.9
TOTAL <sup>e</sup>	3,443,435	19,066	100.0	384,941	19,137	100.0	368,586	+0.4

<sup>a</sup> Source: Illinois State Geological Survey.

<sup>b</sup> Could not be assigned to individual field or county.

<sup>c</sup> No oil production reported for Hancock County in 1971–1978; 156 bbl was produced in 1991 and 277 bbl in 1992.

<sup>d</sup> Value calculated at an estimated average price of \$20.19/barrel for 1991 and \$19.26/barrel for 1992.

<sup>e</sup> Data may not add up to totals shown because of independent rounding.

<sup>f</sup> Less than 1,000 bbl.

**Table 14** Crude oil production from major fields (more than 200,000 barrels per year) in Illinois, 1991–1992<sup>a</sup>

Field	County	1991		1992		1991–1992 change (%)
		Production (1000 bbl)	% of Illinois total	Production (1000 bbl)	% of Illinois total	
Lawrence	Lawrence Crawford	2,504.5	13.1	2,412.6	12.6	-3.7
Clay City Consolidated	Clay Wayne Richland Jasper	2,114.0	11.1	2,116.8	11.1	+0.1
Main Consolidated	Crawford Lawrence Jasper	1,998.4	10.5	1,667.4	8.7	-16.6
Salem	Marion Jefferson	930.8	4.9	945.7	4.9	+1.6
Louden	Fayette Effingham	858.6	4.5	848.5	4.4	-1.2
New Harmony Consolidated	White Wabash Edwards	811.5	4.3	790.2	4.1	-2.6
Sailor Springs Consolidated	Clay Jasper Effingham	405.8	2.1	374.3	2.0	-7.8
Phillipstown Consolidated	White Edwards	365.5	1.9	392.9	2.1	+7.5
Roland Consolidated	White Gallatin	280.4	1.5	258.2	1.3	-7.9
Albion Consolidated	Edwards White	238.6	1.3	225.8	1.2	-5.4
Allendale	Wabash Lawrence	222.9	1.2	203.8	1.1	-8.6
Johnsonville Consolidated	Wayne	<sup>b</sup>	—	431.4	2.3	—
Herald Consolidated	White Gallatin	214.4	1.1	<sup>b</sup>	—	—
<b>TOTAL</b>		<b>10,945.4</b>	<b>57.4</b>	<b>10,667.5</b>	<b>55.7</b>	<b>-2.5</b>

<sup>a</sup> Source: Illinois State Geological Survey.<sup>b</sup> Less than 200,000 barrels of oil per year.

**Table 15** Petroleum products consumed in Illinois, 1988–1992<sup>a</sup>

	1988	1989 <sup>d</sup>	1990 <sup>d</sup> (1000 bbl)	1991 <sup>d</sup>	1992
Motor gasoline <sup>b</sup>	20,344	120,176	124,538	110,960	113,895
Kerosene	350	367	174	203	142
Distillate fuel oil	33,662	34,565	42,529	36,149	36,377
Residual fuel oil	5,908	4,048	3,622	3,454	2,354
Lubricants	3,369	3,455	3,556	3,181	3,243
Liquefied gases	45,341	12,389	12,471	14,539	12,482
Asphalt and road oil	5,604	8,052	8,339	7,917	9,293
Other <sup>c</sup>	28,278	28,145	30,692	28,797	32,665
TOTAL	242,855	211,199	225,918	205,201	210,451

<sup>a</sup> Source: State Energy Data Report, U.S. DOE/EIA-0214.

<sup>b</sup> Aviation and motor gasoline and jet fuel.

<sup>c</sup> Includes natural gasoline, unfractionated stream, plant condensate, petrochemical feedstocks, special naphthas, nonelectric utility sector use of petroleum coke, still gas, wax, unfinished oils, motor gasoline and aviation gasoline lending components, and miscellaneous products.

<sup>d</sup> Revised.

**Table 16** Natural gas production in Illinois, 1985–1992<sup>a</sup>

Year	Withdrawals (million cu ft)		
	Gas wells	Oil wells	Total
1985	1,228.0	96.0	1,324
1986	1,545.9	341.6	1,888
1987	1,215.2	155.8	1,371
1988	1,289.5	181.2	1,471
1989	1,268.0	209.0	1,477
1990	653.0	24.0	677
1991	453.0	13.0	466
1992	336.0	10.0	346

<sup>a</sup> Source: Illinois State Geological Survey.



**Table 17** Natural gas production from large fields in Illinois counties, 1990–1992<sup>a</sup>

Gas field	County	Production (million cu ft)			Change (%)	
		1990	1991	1992	1990–1991	1991–1992
Liberty	Adams	181.7	41.3	<sup>e</sup>	-77.3	—
Stolletown	Clinton	33.3	18.8	<sup>b</sup>	-43.5	—
Mattoon	Coles	60.6	32.9	41.1	-45.7	+24.9
Ashmore East	Edgar	28.2	21.5	26.7	-23.8	+24.2
Omaha	Gallatin	58.3	81.0	83.0	+38.9	+2.5
St. Libory	St. Clair	104.6	95.1	93.7	-9.1	-1.5
Eldorado West	Saline	38.4	38.5	44.2	+0.3	+14.8
Harco East	Saline	—	<sup>b</sup>	37.7	—	—
Raleigh South	Saline	<sup>b</sup>	<sup>b</sup>	<sup>e</sup>	-2.5	—
Pittsburg	Williamson	133.9	101.5	<sup>e</sup>	-24.2	—
Other <sup>b</sup>		37.9	35.5	19.3	-6.3	-45.6
<b>TOTAL<sup>c</sup></b>		<b>676.9</b>	<b>466.1</b>	<b>345.6</b>	<b>-31.1</b>	<b>-25.9</b>

<sup>a</sup> Source: Illinois State Geological Survey. Fields producing 20 million cu ft or more.

<sup>b</sup> Louden, Fayette, and Effingham Counties (1990, 1991, 1992); Eden, Randolph County; Eldorado Consolidated, Saline County (1990, 1991); Raleigh South, Saline County (1990, 1991); Harco East, Saline County (1991); Stolletown, Clinton County (1992).

<sup>c</sup> Data may not add up to totals shown because of independent rounding.

<sup>d</sup> Depleted.

<sup>e</sup> Idled.

**Table 18** Natural gas consumed in Illinois, 1991–1992<sup>a</sup>

Consumers	1991		1992		1991–1992 change (%)
	Quantity (million cu ft)	% of total consumption	Quantity (million cu ft)	% of total consumption	
Residential	466,970	47.3	475,597	47.9	+1.8
Commercial	193,842	19.6	194,517	19.6	+0.3
Industrial	302,691	30.6	303,146	30.5	+0.2
Electric utilities	12,865	1.4	9,290	0.9	-27.8
Vehicle fuel	7	—	1	—	-85.7
Total delivered to consumers	976,374	98.9	982,551	98.9	+0.6
Other uses <sup>b</sup>	1,215	1.1	10,449	1.1	+760.0
Total consumption	987,589	100.0	993,000	100.0	+0.5

<sup>a</sup> Source: U.S. Department of Energy.

<sup>b</sup> Includes lease and plant fuel, pipeline fuel, and extraction loss.

<sup>c</sup> Not available.

Table 19 Production and value of sand and gravel in districts of Illinois,<sup>a</sup> 1992<sup>b</sup>

County			Companies <sup>c</sup>	Operations	Total quantity (1000 ton)	Value (\$1000)
District 1						
Boone	Jo Davies	Rock Island	51	59	22,405	83,095
Bureau	Kane	Stephenson				
Cook	Lake	Whiteside				
De Kalb	McHenry	Will				
Du Page	Ogle	Winnebago				
Henry						
District 2						
Adams	Peoria	Sangamon	16	18	3,966	12,053
Fulton	Pike	Tazewell				
Logan						
District 3						
Champaign	Kendall	Moultrie	45	52	6,823	21,330
Clark	La Salle	Piatt				
Coles	Livingston	Putnam				
Cumberland	Macon	Shelby				
Ford	Marshall	Vermilion				
Grundy	McLean	Woodford				
Kankakee						
District 4						
Bond	Jackson	Randolph	18	20	2,501	7,242
Crawford	Lawrence	Saline				
Fayette	Madison	St. Clair				
Gallatin	Pulaski	White				
TOTAL			113 <sup>c</sup>	149	35,695	123,720

<sup>a</sup> See figure 9.

<sup>b</sup> Source: U.S. Bureau of Mines.

<sup>c</sup> Column does not add up to the total shown because some companies have operations in more than one county.

Table 20 Illinois sand and gravel production by size of operation, 1990 and 1992<sup>a</sup>

Size of operation (tons/years)	1990			1992		
	No. of operations	Production <sup>a</sup> (1000 tons)	% of total	No. of operations	Production <sup>b</sup> (1000 tons)	% of total
less than 25,000	31	227	0.7	30	264	0.7
25,000 to 49,999	17	628	1.9	11	392	1.1
50,000 to 99,999	28	2,121	6.6	29	2,077	5.8
100,000 to 199,999	32	4,757	14.7	34	5,172	14.5
200,000 to 299,999	14	3,402	10.5	16	3,884	10.9
300,000 to 399,999	6	2,067	6.4	6	1,974	5.5
400,000 to 999,999	6	3,388	10.4	15	8,495	23.8
1,000,000 and more	9	15,790	48.8	8	13,437	37.7
<b>TOTAL</b>	<b>143</b>	<b>32,380</b>	<b>100.0</b>	<b>149</b>	<b>35,696</b>	<b>100.0</b>

<sup>a</sup> Source: U.S. Bureau of Mines. As a result of the canvassing procedure used for sand and gravel production, 1991 information will not be available.

**Table 21** Use of sand and gravel produced in Illinois, 1990 and 1992<sup>a</sup>

	1990		1992		1990-92 change in quantity (%)	1990-92 change in value (%)
	Quantity (1000 tons)	Value (\$1000)	Quantity (1000 tons)	Value (\$1000)		
<b>Sand and gravel</b>						
<b>Construction operations</b>						
Building	16,427	47,969	10,185	31,835	-38.0	-33.6
Paving	7,638	31,525	8,166	35,974	+6.9	+14.1
Fill	3,700	9,354	3,920	11,375	+5.9	+21.6
Other uses <sup>b</sup>	4,616	15,880	13,424	44,536	+190.8	+180.5
Total <sup>c</sup>	32,380	104,728	35,695	123,720	+10.2	+18.1
<b>Industrial sand<sup>d</sup></b>						
Total <sup>c</sup>	4,328	56,142	4,410	56,741	+1.9	+1.1
Total sand and gravel <sup>c</sup>	36,708	160,870	40,105	180,461	+9.3	+12.2

<sup>a</sup> Source: U.S. Bureau of Mines.<sup>b</sup> Includes railroad ballast and other unspecified materials<sup>c</sup> Data may not add up to totals shown because of independent rounding.<sup>d</sup> Data on use for industrial sand are no longer received.

**Table 22** Portland cement manufactured in Illinois, 1991–1992<sup>a</sup>

	1991	1992	Change (%) 1991–1992
Active plants	4	4	—
Production (tons)	2,665,000		
Shipments from mills			
Quantity (tons)	2,815,967	2,854,000	+1.35
Value (\$)	116,046,000	118,747,000	+3.19
Average value/ton	41.21	41.61	+0.97
Stocks at mills, Dec. 31			
(tons)	310,000		

<sup>a</sup> Source: U.S. Bureau of Mines.

**Table 23** Illinois mineral production data for 1992 compared with preliminary data for 1993<sup>a</sup>

		1992		1993		Change (%) 1992–1993	
Minerals extracted	Unit	Quantity	Value (\$ 1000)	Quantity	Value (\$ 1000)	Quantity	Value
Fuels							
Coal	thousand	60,332	1,668,778	42,246	1,168,524 <sup>b</sup>	-30.0	-30.0
Crude oil	thousand bbl	19,137	368,586	19,090 <sup>b</sup>	34,075 <sup>b</sup>	-1.7	-10.7
Natural gas	million cu ft	346	743	250 <sup>b</sup>	575 <sup>b</sup>	-22.7	-22.6
Industrial and construction materials							
Stone <sup>c</sup>	thousand tons	72,700 <sup>f</sup>	332,800 <sup>f</sup>	73,500	338,100	+1.1	+4.7
Sand and gravel	thousand tons	40,105	180,461	41,273 <sup>f</sup>	189,389 <sup>f</sup>	+2.9	+4.9
Clay <sup>d</sup>	thousand tons	590	2,362	188	1,147	-68.1	-51.4
Metals, gemstones and other undisclosed <sup>e</sup>							
			63,845	42,080		-34.1	
Total value of minerals extracted			2,607,575	2,073,895		-20.5	

<sup>a</sup> Source: U.S. Bureau of Mines and Illinois Department of Mines and Minerals.

<sup>b</sup> Estimated by Illinois State Geological Survey.

<sup>c</sup> Dimension stone included with values that cannot be disclosed.

<sup>d</sup> Excludes fuller's earth; included with values that cannot be disclosed.

<sup>e</sup> Includes fluorspar, zinc, barite, peat, gemstones, and fuller's earth for 1992 and 1993, and copper, lead, silver, tripoli for 1992 with no estimate for 1993.

<sup>f</sup> Estimated data.



**Table 24** Illinois coal shipped to consumers in the United States, 1991–1993<sup>a</sup>

Consumers	1991	1992	1993	1991–1992 change (%)	1992–1993 change (%)
	Jan–Sept _____	Jan–Sept (1000 tons)	Jan–Sept _____		
Electric utilities	39,169	40,078	28,559	+ 2.3	-28.7
Coke and gas plant	498	421	240	-15.5	-43.0
Retail dealers	257	209	249	-18.7	+19.2
Industrial plants	2,764	3,005	3,122	+ 8.7	+ 3.9
Used at mine	5	1	—	-80.0	—
Foreign	846	954	629	+12.8	-34.1
Total	43,539	44,668	32,799	+ 2.6	-26.6

<sup>a</sup> Source: U.S. Department of Energy, Coal Distribution, January–September 1991 and 1992, and Quarterly Coal Report, January–September 1993.

**Table 25** Total coal consumed by end-use sectors in Illinois, 1991–1993<sup>a</sup>

Consumers	1991	1992	1993	1991–1992 change (%)	1992–1993 change (%)
	Jan–Sept _____	Jan–Sept (1000 tons)	Jan–Sept _____		
Electric utilities	20,672	19,515	18,782	- 5.6	- 3.8
Coke and gas plant	1,056	1,240	1,594	+17.4	+28.6
Retail dealers	174	203	189	+16.7	- 6.9
Industrial plants	3,185	2,613	3,276	-18.0	+25.4
Total	25,087	23,571	23,842	- 6.0	+ 1.1

<sup>a</sup> Source: U.S. Department of Energy, Quarterly Coal Report, January–September, 1991, 1992 and 1993.





