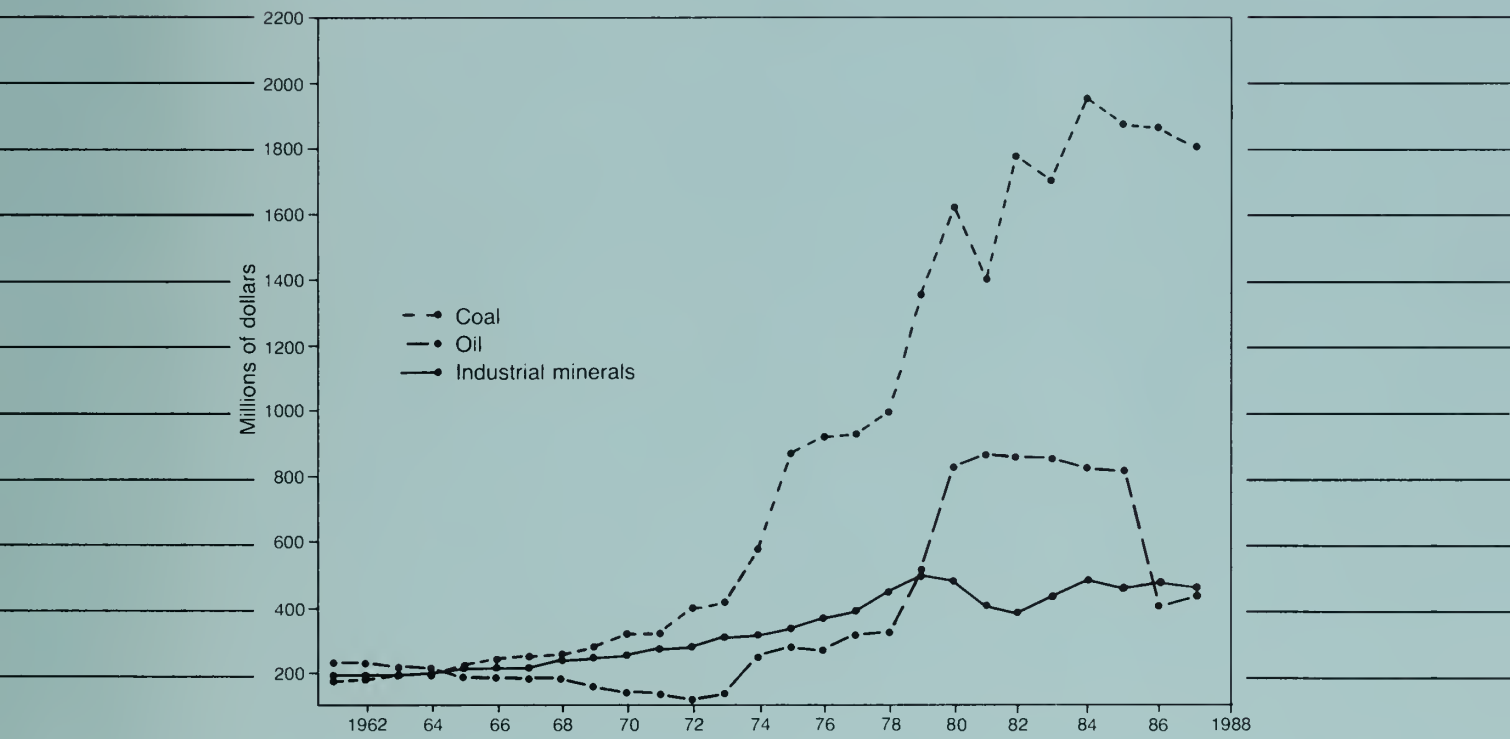
ILLINOIS MINERAL INDUSTRY IN 1986

and review of preliminary mineral production data for 1987

Irma E. Samson



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Front cover: Graph depicts values of Illinois minerals and fuels

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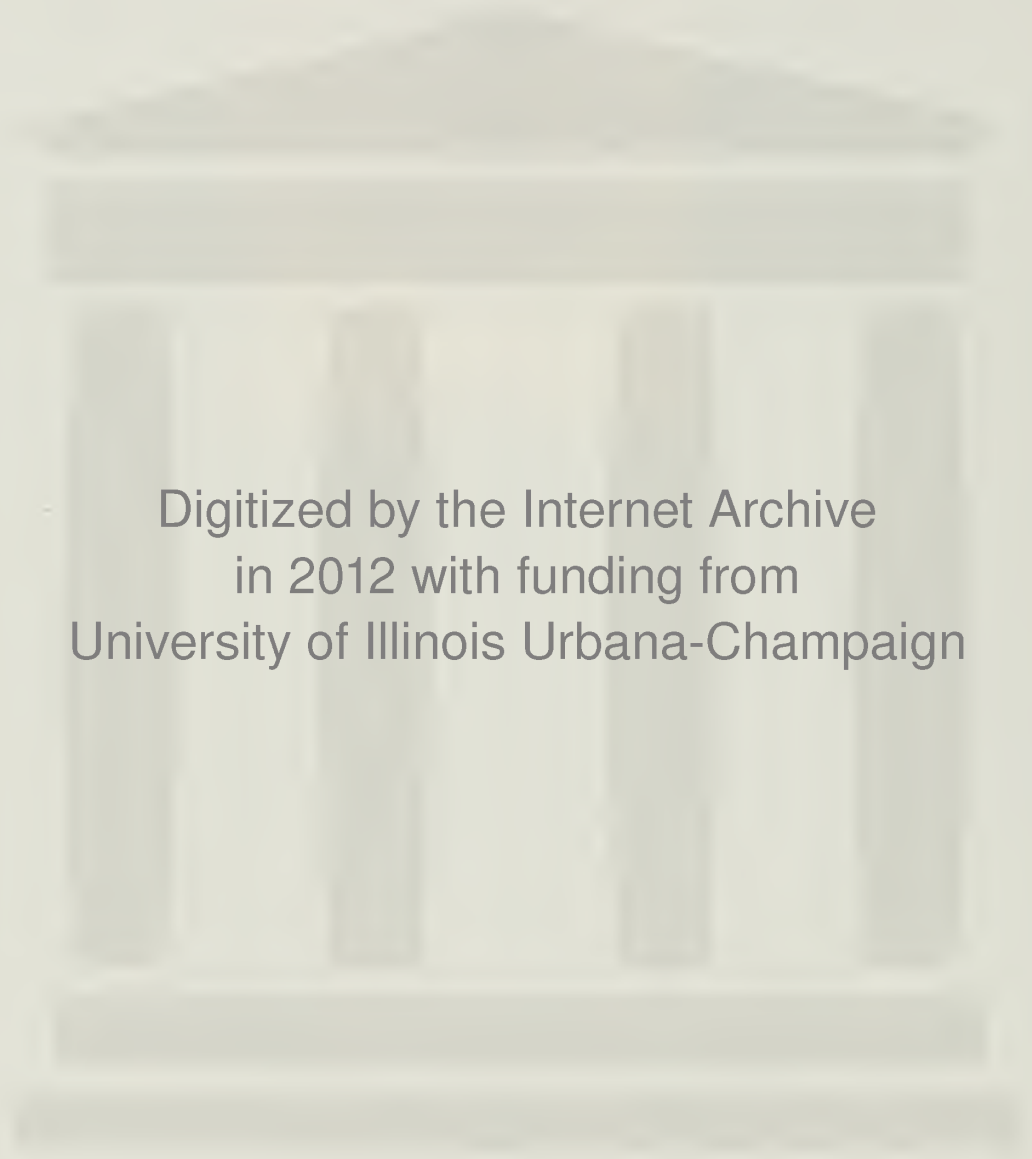

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ABSTRACT

During 1986, the output and value of minerals extracted, processed, and manufactured in Illinois fell sharply to $3,268.1 million--the lowest recorded since 1978 ($3,170.7 million). Coal continued to be the leading commodity. Oil ranked second, followed by stone, sand and gravel, and clays.

Production values ($ million)

Minerals	1984	1985	1986
extracted	3,138.0	3,012.1	2,656.5
processed	577.6	540.4	433.9
extracted	187.9	205.3	177.7
Total	3,903.5	3,757.8	3,268.1

In U.S. production of nonfuels, Illinois advanced its position from seventeenth to sixteenth --leading other U.S. producers in fluorspar, industrial sand, tripoli, and iron-oxide pigments. The state's peat production held at fourth place, stone production rose from ninth to seventh place, lime output also placed seventh, and sand and gravel came up from ninth to eighth place.

Preliminary data for 1987 indicate that the value of extracted minerals was $2,577.7 million, a decrease of 3.0 percent from the level of 1986.

OVERVIEW

The Illinois mineral industry includes three types of operations:

- •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 (fig. 1).

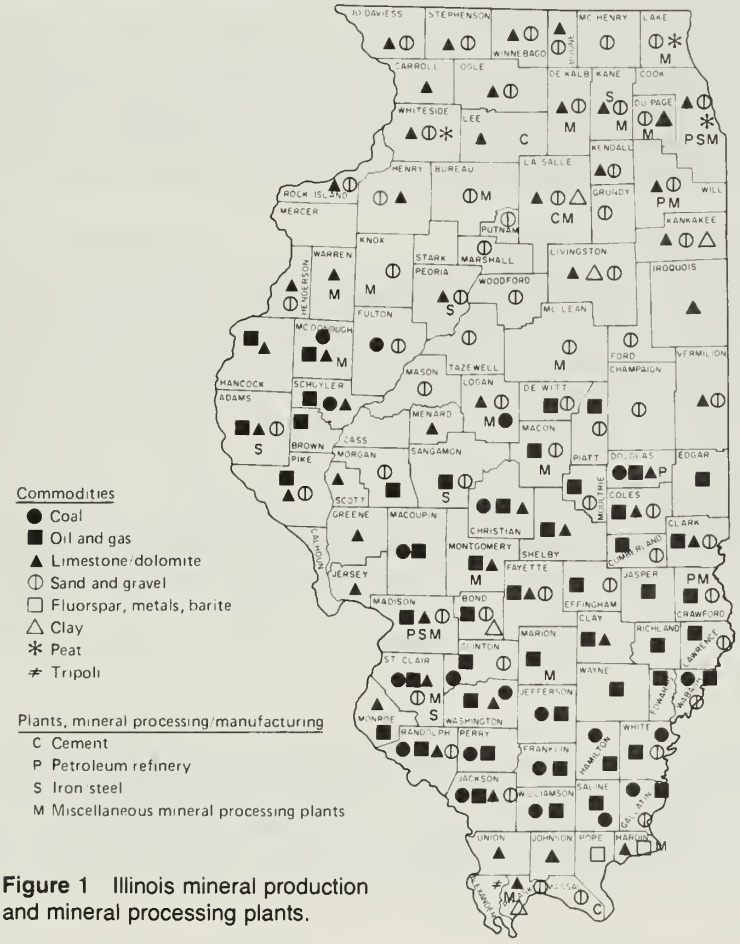

Figure 1 Illinois mineral production and mineral processing plants.

The total value of products from all operations was $3,268.1 million in 1986, a 13.0 percent decrease from 1985 (table 1). Data are unavailable for some commodities, and the true value is actually higher. Table 2 presents production data for each commodity. The quantity and value of each are also shown as percentages of the total national output in 1985 and 1986.

Minerals Extracted

The 1986 value of commodities mined in Illinois was $2,656.5 million, a decrease of 11.8 percent from 1985, primarily caused by the steep decline in average oil prices (table 1). Mineral fuels such as coal, crude oil, and natural gas accounted for 86.6 percent of the 1986 total. Industrial and construction materials such as clay, fluorspar, sand and gravel, stone, and tripoli accounted for 13.2 percent. Metals such as lead, zinc, and silver, and other minerals such as peat, barite, and gemstones accounted for the remaining 0.2 percent.

In 1986, extraction of mineral materials was reported by 98 of the 102 counties in Illinois (table 3). Perry County remained ahead in producing coal and crude oil, which amounted to 12.4 percent of the state's total. Franklin County ranked second in producing coal and crude oil, with 7.8 percent of the state's total output.

Minerals Processed

In 1986, $433.9 million was the total value of processed minerals--pig iron, natural-gas liquids, expanded perlite, sulfur, ground barite, calcined gypsum, exfoliated vermiculite, iron-oxide pigments, crude iodine, bismuth, columbium, tantalum, and primary and secondary slab zinc. Pig iron produced in Cook and Madison Counties accounted for about 82 percent of this total. The 1986 total represented a 20 percent drop from the 1985 level.

In national markets, Illinois ranked first in manufacturing and second in value among 12 states supplying iron-oxide pigments, fifth of 32 states in sales of expanded perlite, and sixth of 11 states in shipments of pig iron.

Economic growth in the country was reflected in increases for some minerals. Sulfur production jumped about 90 percent; value went up 84 percent. Gypsum production grew 28.8 percent and value 13.5 percent. Vermiculite production increased 12.2 percent and value 9.5 percent. Decreases were recorded for other minerals. Iron-oxide pigments were off 6.5 percent in production and 2.4 percent in value. Pig iron production fell 18.6 percent and value 25.9 percent. Perlite production dropped 2.4 percent, but its value rose 9.9 percent.

Products Manufactured from Minerals

In 1986, the value of cement, coke, clay products, lime, and glass manufactured in Illinois (primarily from minerals mined within the state) was $177.7 million, representing a 13.4 percent decrease from 1985. Portland cement production increased slightly in 1986, but its value per ton decreased 3.6 percent. Masonry cement dropped 27 percent in production and 30 percent in value. Lime production was down about 15 percent, but value was up about 18 percent. Clay products fell 23.3 percent. No figures are available for the value of glass or coke.

Employment and Wages

The Illinois Department of Labor reported a 4.7 percent decrease in employment in the state's mineral industries--from 162,300 workers in 1985 to 154,600 workers in 1986. Jobs in mining, quarrying, and oil and gas extraction decreased from 28,600 in 1985 to 25,200 in 1986, an 11.9 percent reduction. In mineral processing, jobs fell from 89,200 in 1985 to 87,500 in 1986, a 1.9 reduction. And jobs also dropped in manufacturing mineral products, from 44,500 in 1985 to 41,900 in 1986, a 5.8 percent reduction (table 4).

Transportation

Mineral shipments are a large part of the Illinois transportation industry. More than 73 million tons (52 percent) of sand and gravel, stone, and coal were shipped by truck. Crushed stone accounted for about 52 percent of this tonnage, sand and gravel for 29 percent, and coal for 18 percent. About 51 million tons were shipped by rail; coal accounted for about 94 percent of the

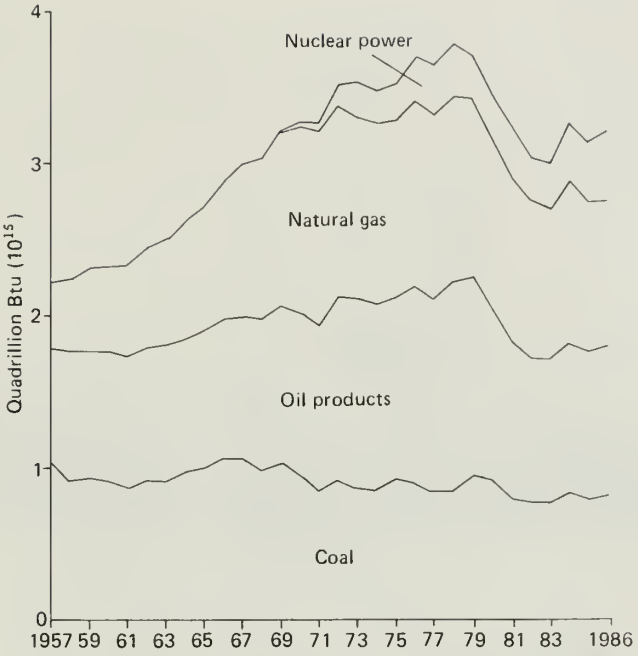

Figure 2 Energy used in Illinois, 1957-1986. Quantities of hydropower and early nuclear power (1960-1969) were too small to show.

tonnage. Barge shipments totaled more than 8 million tons; about 69 percent of this tonnage was coal. Other materials, such as pig iron, fluorspar, coke, and clay products, were shipped by railroad, truck, and barge. Crude oil and natural gas were mainly transported by pipeline, and about 5 percent of the coal was moved to mine-mouth electric-generating plants by conveyor belt.

Mineral and Energy Consumption

Illinois, a leading manufacturing state, consumes large quantities of mineral each year. In 1986, the state's consumption of mineral commodities was about 5 percent of the nation's total, or about the same proportion as Illinois' share of the total U.S. population (table 5).

The state's energy consumption in 1986 was estimated as 3.2 quadrillion Btu, or 4.5 percent of the total U.S. energy consumption (table 6). Fossil fuels provided about 86 percent of Illinois' energy requirements.

During 1986, total energy usage in Illinois increased only slightly from 1985 (fig. 2). Of the factors that influence the amount of energy consumed, such as climate and economic structure, population appears to be the most significant. Illinois ranks fifth behind Texas, California, Ohio, and New York in energy consumption. The demand for fuels in Illinois was filled by oil products (31 percent), natural gas (29 percent), coal (26 percent), and nuclear power (14 percent).

MINERALS EXTRACTED

Fuels

Coal

Production Producing 63.2 million tons of coal in 1986, Illinois maintained fifth place (behind Kentucky, Wyoming, West Virginia, and Pennsylvania) among the nation's coal-producing states. In Illinois, coal production increased 4.6 percent from 1985 (table 7). Several mines that shut down in 1985 reopened in 1986. Coal was produced in 21 counties in 1986 (fig. 3). The counties producing more than 4 million tons--Perry, Franklin, Randolph, Saline, and Macoupin--contributed about 56 percent of total production during 1986. The state's top producer, Perry

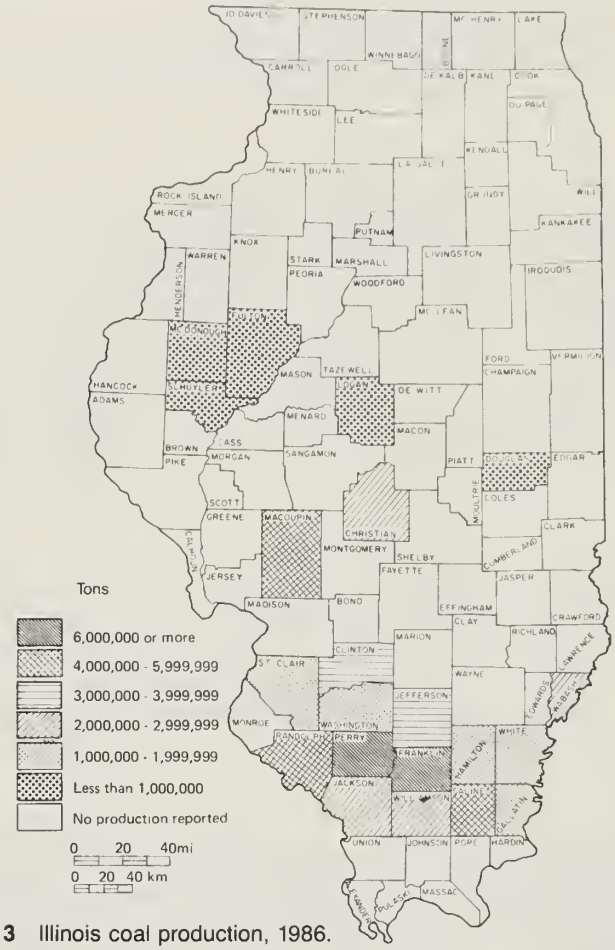

Figure 3 Illinois coal production, 1986.

County, contributed 21 percent of all coal produced in 1986; 98 percent of the county's output came from surface mining operations. Franklin County led in underground mining production--20 percent of all subsurface mining in Illinois. Other counties contributing to underground coal production were Macoupin, 11 percent, Randolph, 10 percent, and Jefferson and Clinton, 9 percent each.

The number of coal mines operating in Illinois has declined steadily since the early 1900s. By the 1950s, approximately 200 mines were in operation--a decrease of more than 60 percent. By 1986, only 51 mines remained in operation: 31 underground mines accounting for 65 percent (40.9 million tons) of the state's total production and 20 surface mine accounting for 35 percent (22.3 million tons) (fig. 4). Zeigler Coal Company's No. 5 mine in Douglas County closed permanently during 1986 after 13 years of operation.

Since 1833, Illinois coal mines have produced about 5.20 billion tons of coal (table 8). Surface mines, which began operating in Illinois in 1911, have supplied 1.21 billion tons or 23.3 percent of this total. The average output per underground mine reached a peak in 1975. Since 1977, output has fluctuated between 1.0 and 1.3 million tons per year. The average surface mine output, which had been rising between 1977 and 1984, declined to about 1.1 million tons per year in 1985 and 1986 (table 9).

In 1986, 24 coal mining companies were operating in Illinois (table 10). The top five companies--Peabody, Consolidation, Old Ben, Arch of Illinois, and Monterey--represented more than 63 percent of the state's production. In 1976, the top five companies in Illinois produced

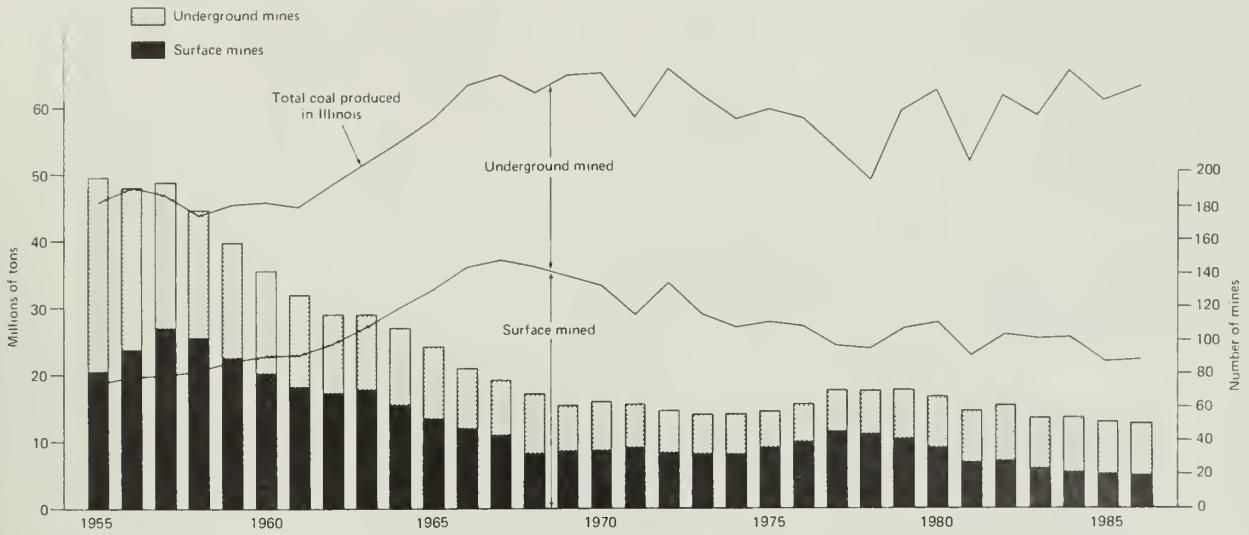

Figure 4 Trends in coal production, 1955-1986.

65.6 percent of the state's production. For comparison, the top five U.S. companies produced 22 percent of the national total.

Employment and wages Employment in Illinois coal mines decreased to 13,549 jobs in 1986 from 14,831 in 1985 (8.6 percent) (table 9). Underground mine employment decreased 8.8 percent in 1986. Surface mine employment, which has been dropping since 1979, fell another 8.0 percent. Average hourly wages rose to $16.35 per hour in 1986, up from $16.05 in 1985 (table 4). The average number of hours worked weekly went up slightly to 40.4 in 1986 from 40.2 in 1985.

Mine productivity Productivity is measured in tons of coal per person per day or the average amount of coal mined by one worker during an 8-hour shift. Gains in subsurface production figures indicate increased labor productivity, which offset cutbacks in jobs. In 1986, the labor productivity of underground operations increased (7.1 percent) to 16.5 tons from the previous year's 15.4 tons. The peak level was 22.9 ton in 1969. Labor productivity increased 20.0 percent from 21.5 to 25.8 tons in surface mines. The peak year was 1967 with 41.6 tons (fig. 5). Although the growth in productivity is encouraging, the gains may not be large enough to improve Illinois coal's competitiveness relative to other coal-producing states. For example, the U.S. underground mine labor productivity in 1986 surpassed the previous all-time high reached in 1969, whereas Illinois underground mines fell 28 percent below their 1969 level of productivity. And while U.S. surface mining productivity also broke records, Illinois surface mines dropped 38 percent below their previous productivity record. Improved productivity will remain a prime concern of the Illinois coal industry.

Prices In 1986, the average price of Illinois coal (f.o.b. mine) dropped 2.6 percent to $29.99 from $30.80 per ton (table 7). The average price of coal mined underground in Illinois was $30.66 per ton and that of surface mine coal was $28.79 per ton.

Shipments Illinois coal is used in 14 states to generate electricity, manufacture coke, and supply the energy for other industrial activities. In 1986, about 91 percent of Illinois coal was

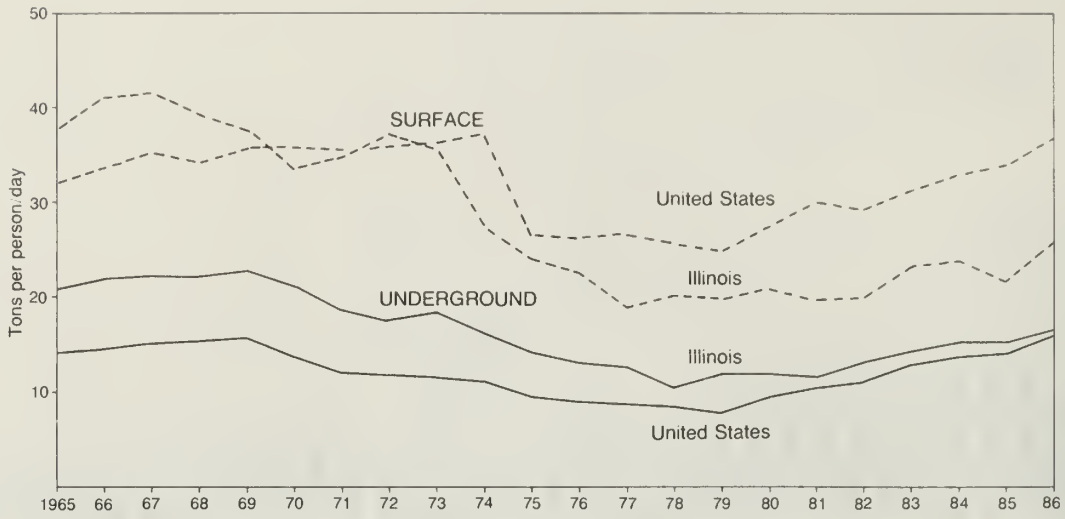

Figure 5 Trends in coal mine productivity, 1965-1986.

sold to electric utility plants, 3 percent to plants manufacturing metallurgical coke, and 6 percent to industrial plants and retail dealers (table 11).

Shipments to electric utilities increased from 52.9 million tons in 1985 to 55.7 million tons in 1986. About 30 percent of the Illinois coal sold to electric utilities was shipped within the state. Out-of-state shipments increased 6.9 percent from the previous year's level: 33.0 percent of the out-of-state shipments went to Missouri, 23.5 percent to Indiana, and 16.3 percent to Georgia and Florida.

About 84 percent of coking coal from Illinois was shipped to coking plants in northwestern Indiana; the remainder was consumed within the state. Of the Illinois coal used for other industrial activities, about 48 percent was consumed within the state, and about 24 percent was shipped to Missouri, 10 percent to Wisconsin, 6 percent to Indiana, and 5 percent to Iowa.

Transportation Coal was shipped from mines to the consumer by rail, barge, and truck (Illinois Department of Mines and Minerals).

	Tonnage		
	1984	1985	1986
Rail*	51,145,961	44,016,187	48,125,328
Barge or rail/barge	4,579,844	8,867,239	5,772,410
Local trade and truck	9,189,465	7,700,515	13,331,084
Rail Lines			
Illinois Central Gulf	17,741,965	18,975,717	18,792,734
Missouri-Pacific Lines	20,052,431	18,037,940	17,500,294
Norfolk-Southern	3,880,144	6,292,837	6,759,101
Chicago Northwestern	2,486,189	1,708,963	1,981,556
Burlington Northern	2,226,578	1,514,763	2,087,902
Others	6,810,966	4,086,674	5,109,837
Total*	53,198,273	50,616,894	52,231,424

* Tonnages do not match because part of the rail tonnage is shown in the combined rail/barge category.

Consumption After a decrease of 5.0 percent in 1985, coal consumption increased about 3.0 percent to 38 million tons in 1986 (table 12). The amount of coal shipped from Illinois mines to Illinois markets has remained nearly unchanged since 1982 (reaching a temporary high in 1984), mostly because Illinois electric utilities have been buying low-sulfur coal from eastern states. In 1975, more than 62 percent of the total demand for coal in Illinois was filled within the state. In 1986 about 50 percent of the demand for coal in Illinois was filled within the state. Illinois continued to consume coal from Indiana and western Kentucky (3.5 million), which shipped coal conveniently and cheaply to utility plants along the state's borders. Consuming 4.5 percent of the nation's coal, Illinois ranks fifth behind Texas, Pennsylvania, Ohio, and Indiana.

Illinois supplied 52 percent of the coal used by its electric utilities: 36 percent came from western states, 4 percent from western Kentucky, 4 percent from Indiana, and 4 percent from southern West Virginia, Virginia, and eastern Kentucky. Coal from within the state accounted for only 14 percent of the coke and gas plants needs; the remaining 86 percent was met with shipments from mines in West Virginia, Virginia, eastern Kentucky, Ohio, and eastern Pennsylvania. Of the coal required for other uses, 46 percent was supplied by in-state sources, 13 percent by Indiana, 15 percent by western Kentucky, and 26 percent by southern West Virginia, Virginia, eastern Kentucky, Pennsylvania, and Ohio.

If Congress passes acid rain legislation, the magnitude of SO_2 emission reduction, economics, and space constraints will determine whether utilities will switch to lower sulfur coal or whether they will scrub more coal. Acid rain legislation will affect Illinois coal consumption. Since 1981, Illinois has spent more than $11 million on basic research and $60 million on 11 demonstration projects designed to prove the effectiveness and reliability of new coal utilization processes. Another $55 million is available in the Coal Development Bond Fund for loans to businesses that want to convert heating systems from oil and gas to coal. The federal government is providing $400 million now in the first phase of a $2.5 billion dollar program for clean coal technology.

Crude Oil

Production Illinois crude oil production fell 9.9 percent from 30.2 million barrels in 1985 to 27.2 million barrels in 1986 (table 13). The lowest production since 1939 was reached in 1979--21.8 million barrels. The 1986 production was valued at $400.5 million, with an average unit value of $14.70 per barrel--a 45 percent drop in per barrel value from $26.90 in 1985. The secondary production method of waterflooding accounted for approximately 11.6 million barrels or about 43 percent of the state total; pressure maintenance operations produced 81,700 barrels or 0.3 percent of the state total.

County	*1985*	*1986*	*County*	*1985*	*1986*
Lawrence	9.1%	10.7%	Clay	6.9%	5.5%
White	8.8	9.6	Jefferson	4.6	4.8
Wayne	9.1	7.9	Wabash	3.4	4.3
Crawford	7.4	7.7	Jasper	4.6	3.7
Marion	9.1	7.0	Franklin	4.0	3.7
Fayette	6.1	6.1			

Illinois ranked thirteenth of 31 oil-producing states. In 1986, 47 counties produced crude oil. In 1986, for the first time, Morgan County produced crude oil (1,049 barrels); the oil was produced from four new wells by Jacksonville Gas. Eleven counties produced more than 1 million barrels each, contributing 71 percent of the state's total oil production.

An oil field producing more than 200,000 barrels is considered a major field; the number decreased from 18 in 1985 to 17 in 1986. The combined production of these 17 major fields amounted to 64 percent of the state's total in 1986 (table 14). But the five largest fields--Southeastern Illinois, Clay City Consolidated, Salem Consolidated, Louden, and New Harmony Consolidated--each produced more than one million barrels during 1986, accounting for more than 48 percent of the state's total.

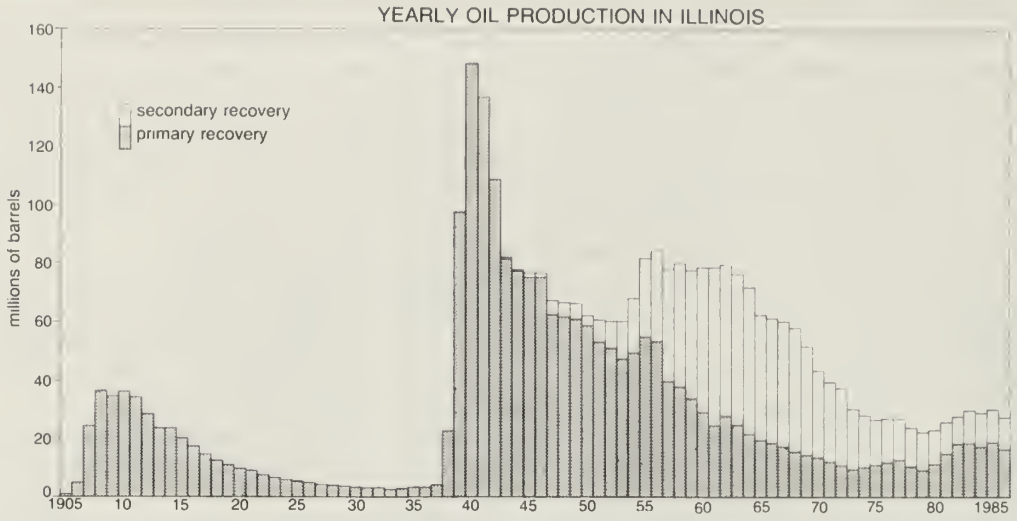

Figure 6 Annual crude oil production, 1905-1986.

Crude oil production reached a peak of 147.6 million barrels in 1940 (fig. 6). From that level, oil production by primary recovery methods declined steadily until 1973, although some years showed small gains. Introduction of the hydraulic rock fracturing method in 1954 and the increased use of waterflooding stabilized oil production around 78 million barrels per year from 1955 to 1962. Production fell steadily after 1962 as reserves were depleted. By December 1986, reserves were 135 million barrels, an 81 percent drop from 700 million barrels in January 1956. The increase in production since 1980 resulting from oil price increases has been mainly in the primary oil production.

Refineries According to the U.S. Department of Energy, seven refineries were operating in Illinois as of January 1, 1987. Total capacity was 929,700 barrels per day, down 3.8 percent from January 1, 1986.

Consumption Consumption of major petroleum products in Illinois increased slightly (1.3 percent) in 1986. Since 1983, gasoline consumption has fallen about 10 percent, falling about 3 percent from 1985 to 1986; kerosene consumption increased in 1985 but fell drastically in 1986; and liquefied petroleum gas consumption grew 35.5 percent from 1983 to 1986 (table 15).

Natural Gas

Production In 1986, the state's production of natural gas increased 42.5 percent after a 13.5 percent decrease in 1985. The withdrawals from gas wells increased about 18 percent and those from oil wells 359 percent (table 16). Wayne County became the top producer in Illinois in 1986 with 17 percent of the state's total production, followed by Coles County (14 percent) and Clinton County (13.7 percent) (table 17). One new field started production in Schuyler County. Three fields--one each in Pike, Saline, and Williamson Counties--that had been producing natural gas did not produce in 1986. The average wellhead value of Illinois gas decreased slightly from $2.77 in 1985 to $2.57 per million cubic feet (Mcf) in 1986.

Consumption Natural gas consumption in Illinois dropped 3.9 percent in 1986 (table 18). The average value of natural gas consumed in Illinois fell 9.8 percent from $5.19 per Mcf in 1985 to $4.68 per Mcf in 1986. Figure 7 shows the natural gas consumption trends in Illinois since 1970. The downward trend in gas consumption continues, apparently because the price is still

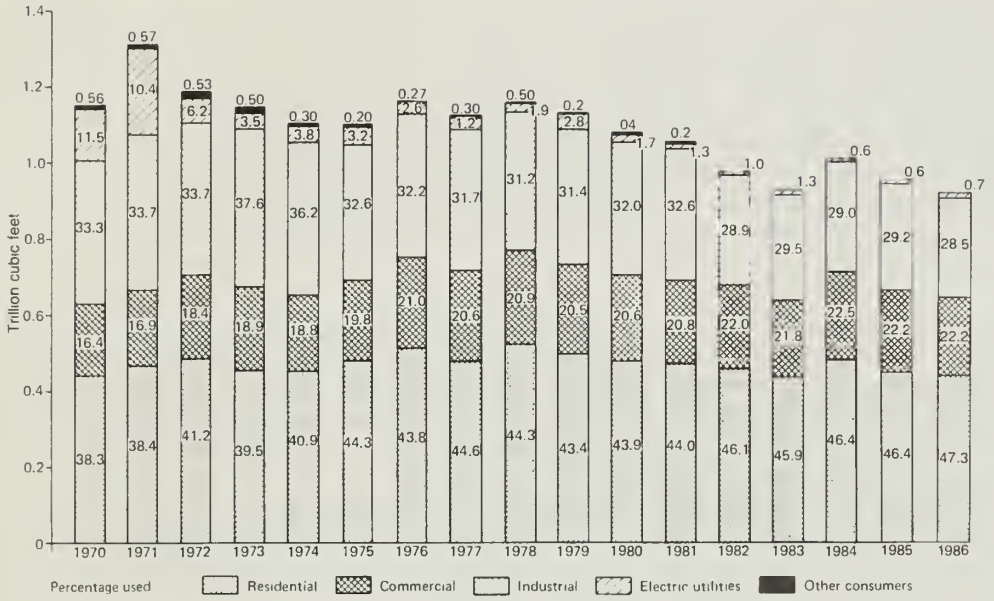

Figure 7 Consumption of natural gas, 1970-1986.

perceived by consumers to be too high and because of the perception of instability of future supplies.

Industrial and Construction Materials

Clays

Production Common clay and absorbent clay (fuller's earth) are mined in Illinois. Common clay is defined as a clay or claylike material that is sufficiently plastic to permit ready molding. Fuller's earth is a clay or claylike material, which has absorbing, decolorizing, and purifying properties. In 1986, clay production (excluding fuller's earth) increased 6.6 percent to 282,993 tons from 265,467 tons in 1985 (fig. 8). Refractory or fire clay production has not been reported since 1982 and has not been revealed since 1978 when A.P. Green Refractories Company, a subsidiary of U.S. Gypsum Company, was the only producer. Illinois clay is used in manufacturing cement, face brick, drain tile, and sewer pipe.

The average unit value of common clay increased from $3.30 per ton in 1985 to $3.86 in 1986. The total value was $1,091,609 in 1986 compared with $876,123 in 1985. Five counties mined clay in Illinois in 1986; Livingston County led production of common clay, with La Salle County running a close second. Bond and Kankakee Counties produced common clay and Pulaski County produced absorbent clay. McDonough County's Western Stoneware plant and clay mine closed, and no production was reported in 1985. Absorbent clay (fuller's earth) continued to be produced by two companies in Pulaski County. Production increased about 3.3 percent in 1986.

Consumption and uses Bricks, sewer pipes, drain tiles, wall tiles, dinnerware, lightweight aggregates, and cement are manufactured from common clays and shales mined in Illinois. Building bricks, which remained the primary product, accounted for 42 percent or 118,675 tons valued at $561,858 of the Illinois clay market in 1986. Overall, clay consumption increased about 6.6 percent in 1986.

About 39 percent of the state's common clay production in 1986 was used for the production of portland cement, structural concrete, concrete blocks, and highway surfacing compared with 40

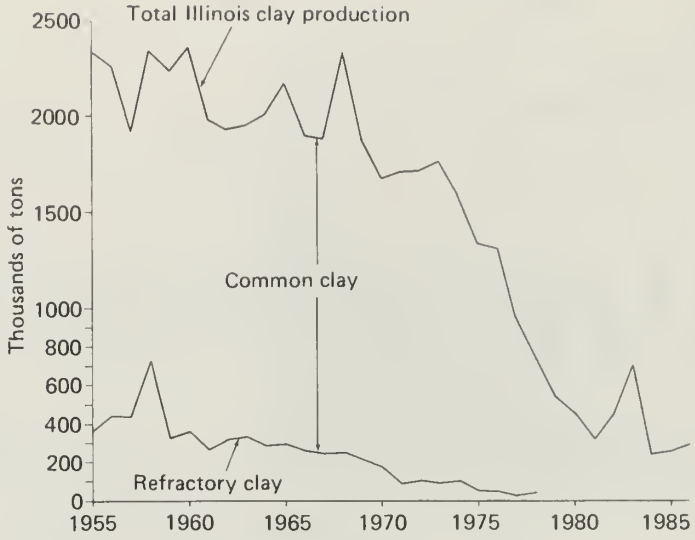

Figure 8 Trends in clay production, 1955-1986.

percent in 1985. Sewer pipe and drain tile manufacturing increased to 19 percent of the state's total in 1986 from 16 percent in 1985. Absorbent clay from Pulaski County is mainly used in the production of animal litter and oil and grease absorbents. Output increased about 3.3 percent in 1986 compared with 1985.

Fluorspar

Production and shipments U.S. shipments of finished fluorspar from domestic mining operations sank to their lowest level in 50 years in 1983, but by 1986 recovered to an estimated 78,000 tons. Illinois continued to lead the nation in the production of fluorspar, contributing more than 90 percent of the U.S. shipments with small shipments from Nevada and Texas accounting for the remaining 10 percent. Fluorspar was mined in Illinois by one major producer and one small producer. In 1986, the state's production increased 17.7 percent from that of 1985. Total value increased 13.8 percent, but average per ton value decreased 3.3 percent. The U.S. depends on foreign sources for more than 90 percent of its fluorspar requirements. (Individual company data are confidential and cannot be released.)

Ozark-Mahoning Company, the nation's leading fluorspar producer, operated two mines and a flotation plant near Rosiclare in Pope and Hardin Counties. Ozark-Mahoning also dried imported fluorspar to supplement its production. Ozark-Mahoning closed its Henson Mine in Pope County during 1986. The company was presented with a certificate of appreciation from the Illinois Department of Mines and Minerals for operating 10 years and 2 million man hours without a fatal accident. The Hastie Trucking and Mining Company, near Cave in Rock in Hardin County, mined very little ore but shipped fluorspar from its stockpile to consumers. The Inverness Mining Company, located near Cave in Rock, dries imported fluorspar at its facilities selling primarily to consumers in the ceramic industry.

Consumption Reported consumption of fluorspar in the United States increased 2 percent from 567,623 tons in 1985 to 578,837 tons in 1986. The use of fluorspar for manufacturing hydrofluoric acid and as flux for refining of iron and steel was essentially unchanged. The hydrofluoric acid industry accounted for 73 percent of the reported consumption and the steel industry for 25 percent.

The apparent U.S. consumption (production + imports - exports ± change in stocks) declined from 682,965 tons in 1985 to 571,288 tons in 1986. Consumption of fluorspar in Illinois rose about 39 percent from 5,827 tons in 1985 to 8,086 tons in 1986. Illinois accounted for about 1.0 percent of the nation's fluorspar consumption in 1985 and 1.4 percent in 1986. Increased steel imports, conversion to basic oxygen instead of open hearth furnaces, and increased recycling of steel scrap all have contributed to large decreases in U.S. consumption of fluorspar for steel-making flux during the past 20 years. Allied Corporation started a commercial-scale plant at Metropolis to produce fluorinated carbon products.

Sand and Gravel

The U.S. Bureau of Mines (USBM), which implemented new data collection procedures in 1981, surveys sand and gravel producers only in even-numbered years. For odd-numbered years, only estimates are published. In 1985, the USBM began compiling sand and gravel production by district (fig. 9). Revealing data by district is intended to preserve the confidentiality of individual producers. Individual county data will no longer be available.

Production Sand and gravel deposits are widely distributed in Illinois. Glacial deposits, chiefly valley trains and outwash plains, are the principal sources of construction sand and gravel. In 1986, production was 27.9 million tons, an increase of 4.8 percent from 1985 (table 19). The combined value of these mineral materials was $82.5 million in 1986 with an average unit value of $2.96 per ton, up 2.4 percent from 1985. Four counties in district 1, McHenry, Kane, Lake, and Du Page, accounted for more than 54 percent of the state's total production. McHenry County ranked first in production in Illinois and Kane County second. District 1 accounted for

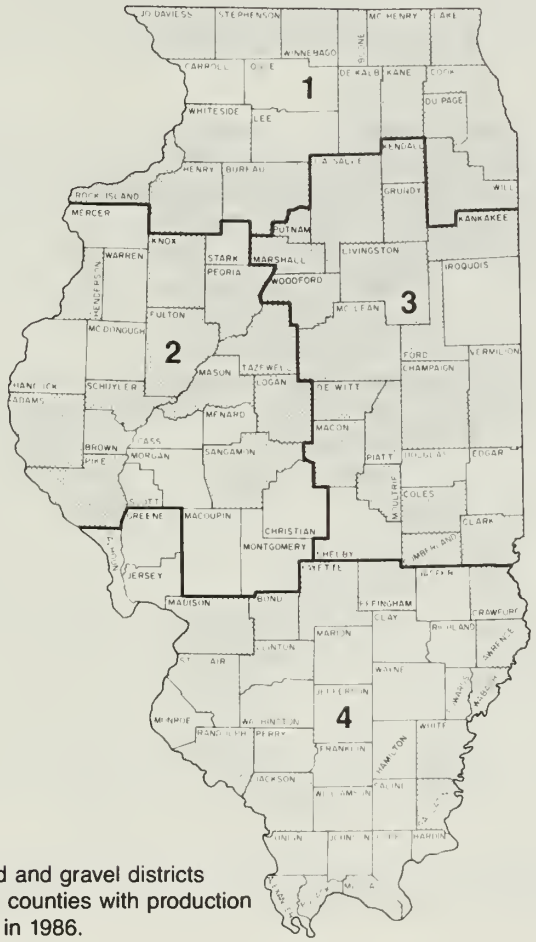

Figure 9 Sand and gravel districts (bold lines) and counties with production (shaded areas) in 1986.

64 percent of the state's total production; district 2, 5 percent; district 3, 20 percent; and district 4, 11 percent. In 1986, Illinois ranked eighth nationally in sand and gravel output. There were 131 companies operating 150 pits at 146 operations in 60 counties of Illinois (fig. 9). About 30 percent of the state's production came from operations of 1 million tons per year and over, and 13 percent came from operations between 200 and 300 thousand tons per year (table 20).

Transportation Because of its low unit price, most construction sand and gravel is shipped no farther than about 50 miles from the pit. About 70 percent of the sand and gravel was shipped by truck in 1986 with the remainder either barged or used at the pit.

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 (table 21). Total consumption of sand and gravel in 1986 was estimated to have increased 4.8 percent over 1985; total value increased about 7.2 percent.

Industrial Sand

Production Illinois ranked first in the nation in 1986, producing 4.04 million tons of industrial sand worth $52.1 million (table 21). Six companies operated nine pits in La Salle, Mason, and Ogle Counties. The unit value decreased from $14.01 in 1985 to $12.91 per ton in 1986; however, prices ranged from $4.19 per ton for unground fiberglass sand to $100.00 per ton for ground filler. During 1986, Ottawa Silica, the fourth largest producer of industrial sand with operations in six states, including Illinois, was acquired by U.S. Borax and Chemical Corporation of Los Angeles. U.S. Borax then merged Ottawa Silica with Pennsylvania Glass Sand Corporation to become U.S. Silica Company, the nation's largest producer of industrial sand.

Transportation About 61 percent of the industrial sand was shipped by truck, the remainder by rail and barge.

Consumption and uses Industrial silica sand was produced in two forms, ground and unground (table 21). Unground sand was used primarily for glass manufacturing. Other uses included molding, sand blasting, grinding and polishing, railroad traction sand, filtration sand, and propping sand for hydrofracturing of oil wells. Ground sand was used in chemicals, abrasives, enamels, pottery, porcelain, tile, and various fillers. Silica sand consumption decreased less than 0.5 percent between 1985 and 1986.

Stone

The U.S. Bureau of Mines canvasses data on stone production every odd-numbered year. Only estimates for 1986 are included in this report. In 1985, similar to sand and gravel, the USBM began compiling stone production by district for Illinois. Individual county data will no longer be available.

Production Total Illinois stone production increased from 41.0 million tons in 1985 to an estimated 44.2 million tons in 1986. The total estimated value was $179.6 million in 1986, compared with $164.1 million in 1985--about a 9.4 percent gain. Illinois was estimated to rank seventh in the nation in total production. Every state except Delaware reported crushed stone production. Missouri Portland Cement Company at Cave in Rock in Hardin County closed its operation, affecting 32 employees.

Shipments About 91 percent of Illinois stone is shipped by truck, the remainder by rail and barge. Stone, a bulk commodity, is used primarily in the areas near the qua.ry. Illinols waterways are put to use by some producers along the river.

Consumption and uses Stone is used as construction aggregate, principally as road-base stone, for chemical, agriculture, and other purposes. The pattern of usage has not changed

much over the years. The small amount of dimension stone mined in Illinois is used as veneer in house construction, rubble, and flagging.

Tripoli (Amorphous Silica)

Production The term "tripoli" refers to several fine-grained, porous, siliceous materials. Tripoli deposits in Alexander County occur in the almost horizontal strata of the Devonian Clear Creek Formation and the Grassy Knob Formation below it. Commercial-grade deposits of tripoli are up to 40 feet thick. Selective mining bypasses large areas of chert and iron-stained material that define the upper and lower limits of commercial-grade tripoli. Two of the nation's leading tripoli producers are located in Alexander County in southern Illinois--Illinois Minerals Company, a division of Georgia Kaolin Co., and Tammsco Inc.

Illinois has been the nation's largest producer of siliceous materials, accounting for more than half the total U.S. production. Although production figures are confidential, it can be revealed that Illinois' crude tripoli production edged higher in 1986; value increased by about 23 percent.

Consumption and uses The amorphous silica processed in Illinois was used for fillers in paint, plastic, and rubber products, and for abrasives in buffing and polishing compounds, soap, and toothpaste. Some iron-stained tripoli is now being used in the manufacture of portland cement. Processed material sales grew about 3 percent over 1985, and value rose 25 percent.

Metals

Zinc, Lead, Silver, and Copper

Production Zinc, lead, silver, and copper were recovered from fluorspar ore mined in Hardin and Pope Counties by Ozark-Mahoning Company. Copper recovered from sulfide concentrate fell 33 percent. Silver dropped 66 percent in 1986. Lead and zinc production went up 40 and 117 percent, respectively. Ozark-Mahoning Company ranked sixteenth of 25 leading zinc-producing mines in the U.S. in 1986.

Other Minerals

Peat

Although peat was formerly classified as a fuel by the U.S. Bureau of Mines, all commercial sales of peat in the United States (excluding imports) are for agricultural and horticultural purposes, specifically for soil improvement. Three major kinds of peat--reed sedge, moss, and peat humus--were produced in Illinois by five companies located in Cook, Lake, and Whiteside Counties. Illinois ranked third after Florida and Michigan among the 22 peat-producing states. Peat production continued a strengthening trend during 1986, going up 12 percent with total value growing 4 percent over 1985. About 95 percent of the state's total peat was sold in packaged form almost entirely for general soil improvement.

Gemstones

Limited to specimen-grade fluorite collected in the fluorspar mines in Illinois, gemstones contributed little to the total value of mineral production. The estimated value was only about $15,000 in 1986.

Primary Barite

An accessory mineral in fluorspar ore, barite has been recovered as a by-product by the fluorspar industry of Hardin County from 1974 to 1985. No barite production was reported in 1986. Ozark-Mahoning, the only producer, shut down the barite circuit at its Rosiclare mill in 1985 because of low demand and foreign imports competition. Barite is used primarily as a weighting agent in drilling muds. Other uses include manufacture of paints, glass, rubber, and barium chemicals.

MINERALS PROCESSED

Minerals produced mainly in other states and in foreign countries but processed in Illinois include ground barite, columbium and tantalum, calcined gypsum, crude iodine, iron-oxide pigments,

natural-gas liquids, expanded perlite, pig iron, sulfur, exfoliated vermiculite, primary slab zinc, and secondary slab zinc.

Ground Barite

Only two Illinois companies process ground barite, Mineral Pigments and Metals Division of Pfizer, Incorporated in St. Clair County and Ozark-Mahoning Company in Hardin County. Ground barite is used almost exclusively as a filler or an extender in paints.

Columbium and Tantalum

Fansteel Incorporated in Cook County reported processing of columbium-tantalum concentrate imported from foreign countries. In 1986, Fansteel also produced tantalum metal. Columbium and tantalum are used primarily to produce various steel alloys. Production figures are not available.

Calcined Gypsum

Calcined gypsum, used primarily for prefabricated housing materials such as wallboard, was processed by the National Gypsum Company in Lake County. The production of calcined gypsum increased 29 percent over 1985, because of the continued demand for wallboard from the construction industry. Production in Illinois, Indiana, and Kansas was 1.5 million tons, valued at $25.7 million--figures were combined to conceal individual company data. Six plants were active in the three states. Gypsum from flue gas desulfurization has not entered Illinois markets due to the absence of plants generating usable gypsum.

Crude Iodine

Crude iodine was processed into inorganic compounds for commercial use at three Illinois plants: Abbott Laboratories in Lake County, Economics Laboratory in Will County, and West Argo-Chemicals in Lake County. Although crude iodine is used primarily as a catalyst or stabilizer, it also is added in animal feed, inks, colorants, pharmaceuticals, salt, and sanitary and industrial disinfectants.

Iron-Oxide Pigments

In 1986, Illinois ranked first in the nation in production and second in value among 12 states of iron-oxide pigments, even though processing of pigments continued to fall. The finished pigments were produced from iron ore imported from other states by the Prince Manufacturing Company in Adams County; the George B. Smith Chemical Works in Kane County; Pfizer, Incorporated in St. Clair County; and Solomon Grinding Service in Sangamon County.

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 National Distillers and Chemical Corporation. The U.S. Department of Energy reports that Illinois processed 555 million cubic feet of gas produced in-state and 145,908 million cubic feet from out-of-state. The total liquids extracted from gas in Illinois were 6.2 million barrels.

Expanded Perlite

Crude perlite mined outside the state was processed by three companies: Silbrico Corporation in Cook County, Strong-Lite Products Corporation of Illinois in De Kalb County, and Johns-Manville Sales Corporation in Will County. In 1986, Illinois ranked fifth out of 32 states in sales of expanded perlite, following Mississippi, Pennsylvania, California, and Georgia. Production in 1986 dropped 2.4 percent, while sales of expanded perlite decreased 3 percent and the price per ton increased 13 percent in 1986.

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

Pig Iron and Raw Steel

Output of pig iron in Illinois decreased 18.6 percent to 2.4 million tons in 1986. The total value of the pig-iron production fell 25.9 percent to $356.5 million in 1986 and the average value per ton decreased 8.9 percent. Several reasons can be cited for this drop. The nation's second largest steel producer, LTV Steel Company, idled approximately one-half of its Chicago Works steel-making capacity early in the year, laying off about 25 percent of their employees. The parent company of LTV Steel, LTV Corporation, filed for bankruptcy and idled several plants nationwide. The nation's largest steelmaker, USX, terminated production at its South Chicago plant as it was faced with a nationwide work stoppage from August through the end of the year. Consumption of pig iron in Illinois decreased 12 percent from 2.7 million tons in 1985 to 2.4 million tons in 1986.

Illinois ranked sixth of 11 states shipping pig iron in 1986. In the U.S. pig iron was produced by 15 companies owning 83 blast furnaces. Five blast furnaces are located in Illinois.

According to the American Iron and Steel Institute in Washington, D.C., production of raw steel in Illinois was 6.41 million tons or 7.9 percent of the U.S. output in 1986--down about 1.0 percent from the 6.48 million tons in 1985. Modernization programs by several steel companies were continued during 1986 to reduce costs and meet foreign competition. Ohio, Pennsylvania, Michigan, and Illinois accounted for about 70 percent of total raw steel production.

Slag (Iron and Steel)

Illinois ranked tenth nationally of 26 states in the sales of processed iron and steel slag. Three companies operating seven plants processed slag from iron and steel furnaces, five companies processed steel slag, and two companies produced air-cooled blast furnace slag. Slag was used mostly for construction aggregate. Sales increased 21 percent and value 40 percent in 1986, partly because of increased use for road construction and the rise in average per ton value from $3.27 to $3.78.

Recovered Elemental Sulfur

Four companies in three counties, Crawford, Madison, and Will, recovered elemental sulfur as a by-product of oil refinery operations. The amount recovered increased from 193,142 tons in 1985 to 368,454 tons in 1986. However, value per ton decreased from $102.63 in 1985 to $99.28 in 1986 for a total value of $36.6 million.

Exfoliated Vermiculite

Two companies in De Kalb and Du Page Counties process exfoliated vermiculite from crude vermiculite mined outside the state. The state's output rose about 2.5 percent in 1986, and the total value increased 9.5 percent. This increase was due to an increase in sales plus an 8.8 percent increase in per ton value. In Illinois, exfoliated vermiculite is used in the following products:

	1985 (%)	*1986 (%)*
Loose-fill insulation	26.7	27.3
Block insulation	14.7	14.6
Concrete aggregate	13.3	16.5
Horticulture and agriculture	16.7	11.2
Plaster aggregates, steel mills, and fireproofing	28.6	30.4

Primary Slab Zinc

Amax Zinc Company in St. Clair County processed special high-grade zinc from domestic and foreign ores and concentrates. Smelters in Illinois, Texas, Idaho, Tennessee, Oklahoma, and Pennsylvania have been producing; however, the Texas plant closed indefinitely in April 1985 and the Idaho plant closed permanently.

Secondary Slab Zinc

During 1986, secondary slab zinc was processed at Illinois Smelting and Refining Company in Cook County. The New Jersey Zinc Company in Bureau County no longer produces secondary slab zinc, but processes zinc dust. Production data for individual states are not available.

PRODUCTS MANUFACTURED FROM MINERALS

Cement, clay products, coke, glass, and lime were manufactured in 1986 from crude mineral materials mined both in and out of state.

Cement

Production Approximately 3.2 million tons of raw materials used to manufacture cement include cement rock (an argillaceous limestone containing lime, silica, alumina, and magnesia), limestone, clay, shale, sand, fly ash, slag, gypsum, and tripoli. In 1986, four companies produced cement in Illinois: Illinois Cement Company, a subsidiary of Centex Corporation, and Lone Star Industries in La Salle County; Dixon-Marquette Cement, a subsidiary of Prairie Materials Sales in Lee County; and Missouri Portland Cement Company, a division of H. K. Porter Company in Massac County. All four companies produced portland cement, and all except Illinois Cement Company produced masonry cement. Missouri Portland Cement Company closed its plant at Joppa at the end of March, affecting 152 employees. The plant is being operated as a distribution center for imported cement and cement from Davenport Cement Company, Davenport, Iowa.

Portland cement production stayed about the same, advancing only about 1 percent in 1986, while value decreased from $41.04 per ton in 1985 to $39.55 per ton in 1986 (table 22). Prepared masonry production dropped 29 percent, and value per ton decreased 1.2 percent.

Nearly all the cement was delivered by truck in bulk form; a small amount was shipped by rail and barge. Ready-mix companies accounted for more than 75 percent of the portland cement sales.

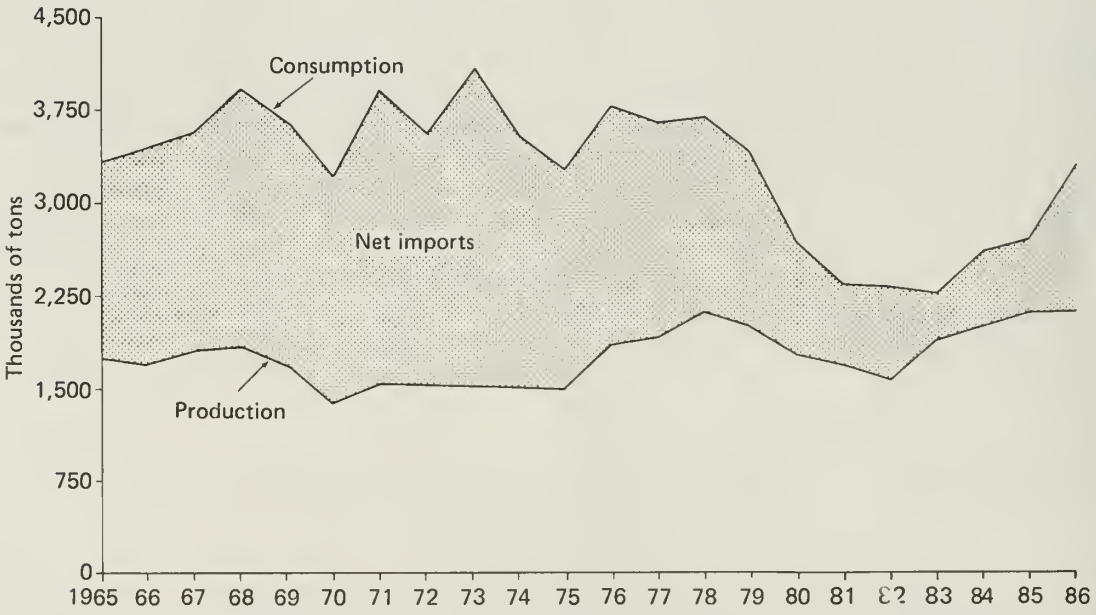

Figure 10 Production and consumption of finished portland cement in Illinois, 1965-1986.

Consumption Illinois consumed about 3.3 million tons of portland cement and 89,000 tons of masonry cement in 1986 (fig. 10). These figures show a growth of 21.7 percent in the use of portland cement and a 21.9 percent gain for masonry cement, indicating an upturn in construction activity. More than 35 percent of this increase was from the Chicago metropolitan area (Cook, Du Page, Kane, Kendall, Lake, McHenry, and Will Counties). The end-use pattern for portland cement shows that about 82 percent of the total was used by ready-mix concrete producers, 10 percent by manufacturers of concrete products and building material dealers, and 8 percent by government agencies and others for highway construction and related purposes.

Clay Products

To obtain accurate current information about the amount and value of clay products manufactured in Illinois, the Illinois State Geological Survey sends questionnaires every year to all producers in the state. Four companies reported mining clay in Illinois in 1986. Two plant closings were reported, and one company with two operations reported no production.

Clay products were valued at $54.7 million in 1986. Whiteware and pottery decreased from $41.7 million in 1985 to $33.2 million in 1986. All other clay products decreased from $29.7 million in 1985 to $21.6 million in 1986.

Coke

Production All 1986 data on coke production for Illinois have been withheld. U.S production declined about 11 percent. The U.S. Department of Energy no longer provides data on by-products on a state-by-state basis. The average U.S. price of U.S. coal receipts at coke plants in 1986 was $50.83 per ton compared with $54.30 per ton in 1985.

Consumption and uses Coke is used for pig iron production, foundry and other industrial purposes, and residential heating. Coke breeze was used for fuel in steam and agglomerating plants. Data on coke breeze on a state-by-state basis are no longer available.

Glass

Glass and/or fiberglass was manufactured in Du Page, Lake, La Salle, Logan, McLean, Macon, Madison, Marion, Montgomery, St. Clair, and Will Counties. Production data are not available.

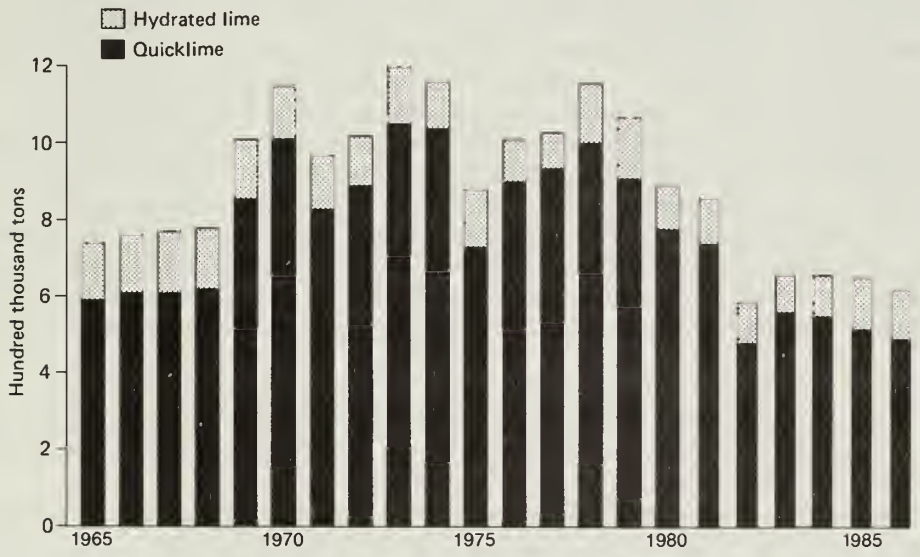

Figure 11 Trends in consumption of quicklime and hydrated lime, 1965-1986.

Lime

Production In 1986, lime production in Illinois ranked seventh of 34 states. Data for lime cannot be disclosed. However, production and value decreased 15 and 18 percent, respectively, because of the decline in demand from the steel industry. Three plants in Cook County supplied the state's entire output: two plants owned by Marblehead Company, a division of General Dynamics, produced quicklime and hydrated lime; and Vulcan Materials Company produced quicklime. Marblehead Company was the second largest company of 73 producing lime in the United States.

Consumption and uses In 1986, Illinois consumed 491,000 tons of quicklime and 133,000 tons of hydrated lime, a drop of 5.4 and 2.9 percent, respectively, from 1985 (fig. 11). Illinois was again one of the nation's leading hydrate consumers, ranking third following Texas and Pennsylvania. The main chemical and industrial use of lime is in the production of basic oxygen furnace (BOF) steel.

PRELIMINARY PRODUCTION DATA: 1987

Minerals Extracted

Data for 1987 indicate that the total value of minerals mined was about $2.6 billion--a 3.0 percent decrease from the 1986 level (table 23). Coal continued to be the leading mineral commodity in Illinois. Total production value of fuels--coal, crude oil, and natural gas--was estimated to be $2.2 billion. An estimate of $351 million was provided by the U.S. Bureau of Mines for nonfuel minerals, which include stone, sand and gravel, clays, fluorspar, tripoli, lead, zinc, silver, peat, gemstones, and barite. Most commodities decreased in value, except crude oil and clay, which increased about 5 percent.

Fuels

Fossil fuels were valued at about $2.2 billion: coal contributed about 81 percent, and crude oil and a small amount of natural gas contributed the remaining 19 percent. The 1987 value of fossil fuel production is expected to be down about 3 percent from the previous year.

Coal The estimated per ton value of coal for 1987 is $30.00, about the same as in 1986. The amount of coal extracted is estimated to decrease 4.9 percent. Illinois coal production dropped in 1987 to 60.1 million tons from 63.2 million tons in 1986. The drop in production was due to the decrease in consumption by electric utilities and coke and gas plants during for the first 9 months of the year (table 24). During the same 9-month period, coal shipments to Georgia almost tripled and those to Missouri went up slightly, and exports to other countries also increased (table 25). Coal exploration continues to drop as the total number of mines operating in Illinois declined from 51 in December 1986 to 48 in the early part of 1987. Later in the year, two surface mines were permanently closed: Will Scarlet by Peabody Coal Company and No. 2 mine by Williamson Coal Company. Two more mines were temporarily closed: No. 3 mine by J. J. Track and Orient No. 4 mine by Freeman United Coal. Coal employment in Franklin, Jackson, Jefferson, Perry, and Williamson Counties combined dropped more than 17 percent in 1987. Williamson County was the hardest hit of the five counties, with Perry and Jefferson close behind.

Crude oil and natural gas Crude-oil production in 1987 is estimated at 23.5 million barrels--a 13.9 percent decrease (table 23). The 1987 production is estimated to be worth about $409.5 million, based on an estimated value of $17.45 per barrel. Oil prices per barrel increased by about 19 percent from 1986 to 1987.

From 1986 to 1987, natural-gas production and value showed losses of about 27 and 37 percent, respectively. The unit value decreased 13 percent to $2.24 per Mcf in 1986. Production from most fields generally decreased. One new field was reported, Rushville Field in Schuyler County. Two fields were abandoned, one in Pike County and one in Williamson County.

Industrial and Construction Materials

Preliminary data for 1987 show a decrease in total value for industrial and construction materials of about 1.2 percent. Losses were registered for stone, fluorspar, and tripoli. A gain is expected in clay.

In June, the Missouri Portland Cement Company plant at Joppa reopened when one of its two kilns was put on stream. The plant had been purchased in late 1985 by MCP Holdings Inc., a Swiss-German joint venture. MCP idled the plant and its Cave in Rock quarry in 1986 because of the unfavorable economy. One of Dravo Corporation's operating units, Dravo Basic Materials Company, Inc., leased the Cave in Rock quarry and began operations in 1987, supplying stone to the Joppa plant. Dravo Basic Materials' location allows them to serve crushed limestone markets to the north via the Ohio River to the Pittsburgh, Pennsylvania, area and to the south via the Mississippi River to the Gulf Coast area.

Metals and Other Minerals

Lead and zinc were recovered as by-products of Illinois fluorspar production in 1987. The total value of extracted metals fell slightly, about 3 percent, from the 1986 level when lead, zinc, silver, and copper were all produced; however, in 1987 only lead and zinc production was reported.

Reynolds Metals Company began installation of an aluminum-lithium casting facility at its McCook, Illinois, sheet and plate plant. Reynolds expects to begin operation in the first half of 1988. The alloys will be used primarily by the aircraft industry to reduce weight. This facility is the first production-sized unit of its type in the country.

Minerals Processed

Preliminary data for 1987 are not yet available for most of the minerals processed in Illinois. The American Iron and Steel Institute reported that Illinois raw steel production rose to 7,141,092 net tons in 1987 after dropping the last 2 years.

A nationwide 6-month work stoppage at USX was resolved on January 31 and employees were called back to work in early February at the South Works in Chicago. The first steel was poured February 16, and by midyear work was back in full production.

Products Manufactured from Minerals

Preliminary figures for 1987 show a 15 percent decrease in portland cement production from 2.1 million tons in 1986 to 1.8 million tons in 1987. Value also fell 15 percent to $71.2 million. Masonry cement fell 75 percent in quantity and about 76 percent in value.

TABLE 1. Illinois minerals extracted, processed, and manufactured into products, 1984-86: production and value[a]

Minerals	Unit	1984 Quantity	1984 Value ($1000)	1984 Average unit value ($)[c]	1985 Quantity	1985 Value ($1000)	1985 Average unit value ($)[c]	1986 Quantity	1986 Value ($1000)	1986 Average unit value ($)[c]
EXTRACTED										
FUELS										
Coal	thousand tons	65,289	$1,951,494	$ 29.89	60,477	$1,862,699	$ 30.80	63,233	1,896,367	29.99
Crude oil	thousand bbl	28,873	830,400	28.76	30,226	813,093	26.90	27,245	400,498	14.70
Natural gas	million cu ft	1,530	4,254	2.78	1,324	3,668	2.77	1,887	4,851	2.57
Natural gas liquids	million bbl	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL[b]			$2,786,148			$2,679,460			2,301,716	
INDUSTRIAL AND CONSTRUCTION MATERIALS										
Clay - common	thousand tons	253	940	3.71	265	876	3.30	283	1,092	3.86
Absorbent	thousand tons	W	W	W	W	W	W	W	W	W
Fluorspar (shipments)	tons	W	W	W	W	W	W	W	W	W
Sand and gravel										
Common	thousand tons	25,969	72,477	2.79	26,600	77,000	NA	27,867	82,523	2.96
Industrial	thousand tons	4,100	52,197	12.73	4,056	56,915	NA	4,037	52,133	12.91
Stone (limestone & dolomite)										
Crushed and broken	thousand tons	48,500[d]	191,600[d]	3.95	41,044	164,117	4.00	44,200[d]	179,600[d]	4.06[d]
Dimension	thousand tons	--	--	--	2	107	61.17	2[d]	107[d]	53.50[d]
Tripoli	thousand tons	W	W	W	W	W	W	W	W	W
TOTAL[b]			$ 317,214			$ 299,015			$ 315,455	
METALS										
Lead	metric tons	W	W	W	W	W	W	W	W	W
Zinc	metric tons	W	W	W	W	W	W	W	W	W
Silver	troy oz	W	W	W	W	W	W	W	W	W
Copper	metric tons	--	--	--	--	--	--	W	W	W
TOTAL[b]			W			W			W	
OTHERS										
Peat	thousand tons	W	W	W	W	W	W	W	W	W
Gem stones		NA	15	-	NA	15	-	NA	15	NA
Barite, primary	thousand tons	W	W	W	W	W	W	NP	NP	--
TOTAL[b]			$ 15			$ 15			$ 15	
Values that cannot be disclosed (W)			34,652			33,589			39,374	
Total value of mineral materials mined[b]			$3,138,029			$3,012,079			$2,656,560	

TABLE 1. continued

Minerals	Unit	1984 Quantity	1984 Value ($1000)	1984 Average unit[c] value ($)	1985 Quantity	1985 Value ($1000)	1985 Average unit[c] value ($)	1986 Quantity	1986 Value ($1000)	1986 Average unit[c] value ($)
PROCESSED										
Natural gas liquids	thousand bbl	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perlite, expanded	short tons	W	W	W	W	W	W	W	W	W
Barite, ground	short tons	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gypsum, calcined	short tons	W	W	W	W	W	W	W	W	W
Vermiculite, exfoliated	short tons	W	W	W	W	W	W	W	W	W
Iron oxide pigments	short tons	29,475	24,920	NA	28,573	24,171	NA	W	W	W
Bismuth		e	e		--	--	--	--	--	--
Primary slab zinc	tons	NA	NA	NA	NA	NA	NA	NA	NA	NA
Secondary slab zinc		NA	NA	NA	NA	NA	NA	NA	NA	NA
Columbium & tantalum		NA	NA	NA	NA	NA	NA	NA	NA	NA
Iodine, crude	lbs	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pig iron	thousand tons	3,042	520,961	171.23	2,921	480,795	164.58	2,379	356,490	149.86
Sulfur	thousand tons	181	15,838	87.37	194	19,895	102.61	368	36,581	99.28
Slag (iron & steel)	thousand tons	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL[b]			$ 561,719			$ 524,861			393,071	
Values that cannot be disclosed (W)			15,890			15,529			40,787	
Total value of mineral materials processed[b]			$ 577,609			$ 540,390			$ 433,858	
MANUFACTURED INTO PRODUCTS										
Cement (shipments)										
Portland	thousand tons	1,997	82,622		2,101	86,211	41.04	2,118	83,783	39.55
Masonry	thousand tons	W	W	W	W	W	W	W	W	W
Clay products, estimated		-	60,454	-	-	71,372	-	-	54,743	-
Lime	thousand tons	W	W	W	W	W	W	W	W	W
Coke	thousand tons	1,643	NA	NA	W	NA	NA	W	NA	NA
Glass	thousand tons	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL[a]			$ 143,076			$ 157,583			$ 138,526	
Values that cannot be disclosed (W)			44,872			47,715			39,196	
Total value of mineral products manufactured[b]			$ 187,948			$ 205,298			$ 177,722	
STATE TOTAL[b]			$3,903,586			$3,757,767			$3,268,140	

[a]Sources: U.S. Bureau of Mines, Illinois Department of Mines and Minerals, Illinois State Geological Survey.

[b]Data may not add up to totals shown because of independent rounding.

[c]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.

[d]Estimate by U.S.B.M., no survey for 1984.

[e]Only one plant in Illinois - closed in 1984.

NA = not available.

W = withheld to avoid disclosing confidential data from individual companies.

TABLE 2. Illinois mineral production compared to U.S. mineral production, 1985-86[a]

Commodity	Unit	Illinois		United States		Illinois % of U.S. production	
		Quantity	Value ($1,000)	Quantity	Value ($1,000)	Quantity	Value
1985							
Fluorspar shipments	thousand tons	W	W	66	11,418	--	--
Peat, commercial sales	"	W	W	839[c]	21,892[c]	--	--
Coal	"	60,477	1,862,699	878,540	22,139,208	6.88	8.41
Pig iron	"	2,921	480,795	50,000	10,650,000	5.84	4.51
Stone (includes dimension stone)	"	41,046	164,224	1,001,121	4,118,572	4.10	3.99
Sand and gravel	"	30,656	133,915	800,100	2,440,305	3.83	5.49
Coke	"	NA	NA	NA	NA	--	--
Clays[b]	"	265	876	44,974	1,011,377	0.59	0.09
Zinc	"	W	W	227	202,012	--	--
Cement shipments (portland)	"	2,101	86,211	83,032	4,286,399	2.53	2.01
Lead	"	W	W	424	178,228	--	--
Crude oil	thousand bbls	30,226	813,093	3,274,553	78,883,982	0.92	1.03
Natural gas liquids	"	NA..	NA	NA	NA	--	--
Natural gas	million cu.ft.	1,324	3,668	17,197,999	43,182,598	0.01	0.01
Lime	thousand tons	W	W	15,690	792,345	--	--
1986							
Fluorspar shipments	thousand tons	W	W	78	13,494	--	--
Peat, commercial sales	"	W	W	886	23,560	--	--
Coal	"	63,233	1,896,367	885,880	21,075,085	7.14	9.00
Pig iron	"	2,379	356,490	44,300	9,435,900	5.37	3.78
Stone (includes dimension stone)	"	46,200	179,707	1,024,175	4,428,680	4.51	4.06
Sand and gravel	"	31,904	134,656	883,000	2,746,130	3.61	4.90
Coke	"	NA	NA	NA	NA	--	--
Clays[b]	"	283	1,092	44,620	1,095,179	0.63	0.10
Zinc	"	W	W	203	170,050	--	--
Cement shipments (portland)	"	2,118	83,783	87,592	4,407,722	2.41	1.90
Lead	"	W	W	353	155,320	--	--
Crude oil	thousand bbls	27,245	400,298	3,168,353	39,634,833	0.86	1.01
Natural gas liquids	"	NA	NA	NA	NA	--	--
Natural gas	million cu ft	1,887	4,851	16,790,910	32,574,365	0.01	0.01
Lime	thousand tons	W	W	14,474	761,188	--	--

[a]Sources: U.S. Bureau of Mines, Illinois State Geological Survey, Illinois Department of Mines and Minerals and American Petroleum Institute.

[b]Excluding fuller's earth.

[c]Estimated.

NA = not available.

W = withheld to avoid disclosing confidential data from individual companies.

TABLE 3. Value of minerals extracted, processed, and manufactured in Illinois counties, 1986[a]

County	Approximate[b] rank based on total value	Minerals extracted in order of value[c]	Mineral processed, in order of value	Mineral products, in order of value	Total value ($1000)
Adams	37	Stone[c], crude oil, sand & gravel	Iron oxide pigments	--	17,663
Alexander	45	Tripoli	--	--	W
Bond	63	Crude oil, sand & gravel, clay	--	--	W
Boone	78	Stone[c], sand & gravel	--	--	W
Brown	71	Crude oil	--	--	1,526
Bureau	76	Sand & gravel	--	Clay products	1,254
Calhoun	99	--	--	--	--
Carroll	87	Stone[c]	--	--	W
Cass	100	--	--	--	--
Champaign	59	Sand & gravel	--	--	W
Christian	11	Coal, crude oil, stone[c]	--	--	W
Clark	48	Crude oil, stone[c], sand & gravel	--	--	W
Clay	30	Crude oil, stone[c]	--	--	W
Clinton	8	Coal, crude oil, natural gas, sand & gravel,	--	--	W
Coles	47	Crude oil, stone[c], sand & gravel, natural gas,	--	--	W
Cook	9	Stone[c], sand & gravel peat	Expanded perlite, slag, pig iron[d] secondary slab zinc[e]	Lime, clay products, coke[e]	98,569
Crawford	21	Crude oil, sand & gravel natural gas	Sulfur	Clay products	32,970
Cumberland	91	Crude oil, sand & gravel	--	--	W
De Kalb	60	Stone[c], sand & gravel	Exfoliated vermiculite,	--	2,557
De Witt	82	Crude oil, sand & gravel	--	--	W
Douglas	23	Coal, stone[c], crude oil	Natural gas liquids[e]	--	W
Du Page	44	Sand & gravel, stone[c]	Exfoliated vermiculite	Glass[e]	11,464
Edgar	79	Crude oil, natural gas	--	--	1,050
Edwards	42	Crude oil	--	--	12,967
Effingham	54	Crude oil, natural gas, sand & gravel	--	--	W
Fayette	27	Crude oil, stone[c], sand & gravel, natural gas	--	--	25,620
Ford	89	Sand & gravel	--	--	W
Franklin	2	Coal, crude oil	--	--	255,694
Fulton	36	Coal, sand & gravel	--	--	W
Gallatin	16	Coal, crude oil, sand & gravel, natural gas	--	--	W
Greene	83	Stone[c]	--	--	W
Grundy	65	Sand & gravel	--	--	W
Hamilton	20	Coal, crude oil	--	--	40,503
Hancock	86	Stone[c], crude oil	--	--	W
Hardin	29	Fluorspar, stone[c], zinc, lead, copper, silver, gemstones, germanium[e]	Ground & crushed barite[e]	--	W
Henderson	81	Stone[c], sand & gravel	--	--	W
Henry	80	Stone[c], sand & gravel	--	--	W
Iroquois	96	Stone[c]	--	--	W
Jackson	14	Coal, stone[c], sand & gravel, crude oil	--	--	W
Jasper	39	Crude oil	--	--	14,928
Jefferson	5	Coal, crude oil	--	--	124,021
Jersey	88	Stone[c]	--	--	W
Jo Daviess	69	Stone[c], sand & gravel	--	--	W
Johnson	61	Stone[c]	--	--	W
Kane	32	Sand & gravel, stone[c,f]	Iron oxide pigments	Clay products	22,544
Kankakee	49	Stone[c], sand & gravel, clay	--	--	W
Kendall	70	Stone[c], sand & gravel	--	--	W
Knox	40	Sand & gravel	--	Clay products	W
Lake	41	Sand & gravel, peat	Calcined gypsum, crude iodine[e], columbium[e]	Clay products	14,057
La Salle	10	Sand & gravel, stone[c] clay	--	Portland cement, clay products, masonry cement, glass[e]	97,559
Lawrence	19	Crude oil, sand & gravel	--	--	W
Lee	35	Stone[c]	--	Portland & masonry cement	W
Livingston	50	Stone[c], clay, sand & gravel	--	--	5,643
Logan	24	Coal, stone[c], sand & gravel	--	Glass[e]	W
McDonough	34	Coal, stone[c], crude oil,	--	Clay products	20,387
McHenry	31	Sand & gravel	--	--	W
McLean	52	Sand & gravel	--	Fiberglass[e]	W
Macon	64	Crude oil, sand & gravel	--	Glass[e]	W
Macoupin	6	Coal, crude oil	--	--	123,031

TABLE 3. continued

County	Approximate[b] rank based on total value	Minerals extracted in order of value[c]	Mineral processed, in order of value	Mineral products, in order of value	Total value ($1000)
Madison	38	Crude oil, stone[c], sand & gravel	Sulfur, slag[e], pig iron[d]	Clay products, coke[e], glass[e]	16,791
Marion	26	Crude oil	Secondary slab zinc[e]	Glass[e]	28,122
Marshall	75	Sand & gravel	--	--	W
Mason	97	Sand & gravel	--	--	W
Massac	25	Sand & gravel	--	Portland & masonry cement	W
Menard	72	Stone[c]	--	--	W
Mercer	101	--	--	--	--
Monroe	58	Stone[c], crude oil	--	--	W
Montgomery	67	Stone[c], crude oil natural gas	--	Glass[e]	W
Morgan	85	Natural gas, crude oil	--	--	556
Moultrie	95	Crude oil, sand & gravel	--	--	W
Ogle	46	Sand & gravel, stone[c]	--	--	W
Peoria	66	Sand & gravel, stone[c]	Slag[e]	--	W
Perry	1	Coal, crude oil	--	--	405,627
Piatt	90	Crude oil, sand & gravel	--	--	W
Pike	57	Stone[c], sand & gravel, natural gas	--	--	W
Pope	98	Fluorspar[g], lead[g] zinc[g], silver[g]	--	--	g
Pulaski	28	Clay, stone[c], sand & gravel	--	Clay products	23,853
Putnam	94	Sand & gravel	--	--	W
Randolph	3	Coal, crude oil, stone[c], sand & gravel, natural gas	--	--	152,967
Richland	43	Crude oil	--	--	12,485
Rock Island	55	Stone[c], sand & gravel	--	--	W
St. Clair	15	Coal, stone[c], sand & gravel, crude oil, natural gas	Iron oxide pigments, ground barite[e], Primary slab zinc[e]	Glass[e]	72,009
Saline	4	Coal, crude oil, natural gas	--	--	144,020
Sangamon	56	Sand & gravel, crude oil	Iron oxide pigments	--	W
Schuyler	33	Coal, natural gas, crude oil, sand & gravel, stone[c]	--	--	W
Scott	92	Stone[c]	--	--	W
Shelby	84	Crude oil, stone[c]	--	--	W
Stark	102	--	--	--	--
Stephenson	73	Stone[c], sand & gravel	--	--	W
Tazewell	93	Sand & gravel	--	--	W
Union	51	Stone[c]	--	--	W
Vermilion	53	Stone[c], sand & gravel	--	--	W
Wabash	7	Coal, crude oil, sand & gravel	--	--	W
Warren	77	Stone[c]	--	Clay products	W
Washington	17	Coal, crude oil, stone[c]	--	--	W
Wayne	22	Crude oil, natural gas	--	--	32,312
White	12	Coal, crude oil, sand & gravel	--	--	W
Whiteside	62	Peat, sand & gravel, stone[c]	--	--	2,375
Will	18	Stone[c], sand & gravel	Sulfur, expanded perlite	Glass[e]	46,749
Williamson	13	Coal, crude oil, natural gas	--	--	80,039
Winnebago	74	Stone[c], sand & gravel	--	--	W
Woodford	68	Sand & gravel	--	--	W
Undistributed		Stone[c], crude oil,	Pig iron	--	564,926
Values that cannot be disclosed (W)					761,302
TOTAL[h]					3,268,140

[a]Sources: U.S. 8ureau of Mines, Illinois Oepartment of Mines and Minerals, and Illinois State Geological Survey.

[b]Since some values are not available by county, ranking cannot be exact.

[c]Stone production - 1985 data were used to rank each county.

[d]Pig iron not available by county.

[e]Value unknown; not included in total.

[f]Including dimension stone.

[g]Pope County fluorspar and metal values included in Hardin County.

[h]Oata may not add up to totals shown because figures have been rounded.

[i]W = Withheld to avoid disclosing confidential data from individual companies.

TABLE 4. Employment and wages in the Illinois mineral industry, 1985-86[a]

	1985				1986			
	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	28.6	589.76	41.3	14.27	25.2	599.13	40.7	14.72
Bituminous coal	16.7	645.57	40.2	16.05	14.6	660.17	40.4	16.35
Oil and gas extraction	6.7	491.75	40.9	12.05	5.2	503.92	39.7	12.71
Other	5.2	503.42	46.3	10.88	5.4	525.79	42.5	12.27
Processing	89.2	533.20	41.1	14.75	87.5	574.86	44.0	13.08
Blast furnaces and basic steel	24.5	555.54	41.4	13.42	25.8	613.74	45.9	13.38
Primary metal industries	57.9	519.97	41.3	12.58	55.4	552.32	43.6	12.67
Petroleum refining	6.8	565.35	37.7	15.00	6.3	614.66	40.0	15.38
Manufacturing	44.5	456.42	40.2	11.37	41.9	483.42	41.0	11.82
Glass and glass products	7.2	494.48	42.9	11.52	6.7	512.33	43.2	11.87
Cement and clay products	3.7	378.30	41.0	9.22	3.6	386.50	38.4	10.07
Stone and other mineral products	24.8	430.34	40.1	10.72	23.3	458.49	41.2	11.13
Petroleum and coal products	8.8	531.64	37.9	14.02	8.3	572.14	39.7	14.43

[a]Source: Illinois Department of Labor, Bureau of Employment Security.

TABLE 5. Minerals consumed in Illinois 1985-86[a]

		1985			1986		
Commodity	Unit	U.S.	Illinois	Illinois % of U.S. consumption	U.S.	Illinois	Illinois % of U.S. consumption
Fuels							
Coal	million tons	788.5	37.0	4.70	804.4	38.1	4.74
Coke	million tons	26.0	NA	--	25.4	NA	--
Distillate fuel oils	million bbl	1,047.0	32.2	3.08	1,064.0	35.1	3.30
Gasoline	million bbl	2,948.0	114.0	3.87	3,056.0	110.9	3.63
Kerosene	million bbl	42.0	1.1	2.62	36.0	0.4	1.14
LPG and ethane	million bbl	584.0	32.0	5.48	552.0	36.6	6.63
Natural Gas	trillion cu ft	17.3	1.0	5.78	16.2	1.0	5.70
Residual fuel oil	million bbl	439.0	7.3	1.66	518.0	9.2	1.77
Metals							
Pig iron	million tons	50.0	2.9	5.80	44.4	2.4	5.40
Lead	thousand tons	1,148.3	70.6	6.15	1,125.0	70.2	6.24
Zinc (slab)	thousand tons	759.1	102.8	13.54	696.9	108.2	15.53
Construction materials							
Air-cooled slag	million tons	14.5	NA	--	13.5	NA	--
Asphalt and road oil	million bbl	155.0	7.5	4.84			
Cement	million tons	88.2	2.8	3.28	92.7	3.4	3.67
Sand and gravel	million tons	800.1	26.6	3.32	883.0	27.9	3.16
Stone	million tons	1,000.8	41.0	4.10	1,023.2	44.2	4.32
Agricultural and chemical materials							
Feldspar	thousand tons	700.0	37.0	5.29	735.0		
Fluorspar	thousand tons	567.6	5.8	1.03	578.8	8.1	1.40
Lime[b]	thousand tons	15,713.0	655.0	4.17	14,498.0	624.0	4.30
Salt							
Evaporated	thousand tons	7,677.0	470.0	6.06	7,429.0	137.0	5.88
Rock	thousand tons	16,502.0	1,200.0	7.65	15,040.0	1,134.0	7.54

[a]Source: U.S. Bureau of Mines, U.S. Department of Energy.

[b]Excludes regenerated lime.

NA = not available.

TABLE 6. Fuels and energy consumed in Illinois, 1985-86[a]

Fuel	Units	1985	1986	Change 1985-86 (%)	Trillion Btu[b] 1985[c,e]	1986[d]
Coal	thousand tons	37,022	38,089	+ 2.9	791.9	817.5
Natural gas	million ft^3	962,039	924,280	- 3.9	1,000.5	943.7
Gasoline	thousand bbl	114,047	110,906	- 2.8	600.0	593.3
Kerosene	thousand bbl	1,148	409	+ 64.4	6.5	2.3
Distillate fuel oil	thousand bbl	32,189	35,132	+ 9.1	187.5	204.6
Residual fuel oil	thousand bbl	7,250	9,156	+ 26.3	45.6	57.6
Liquid petroleum gases	thousand bbl	33,891	36,627	+ 8.1	122.1	133.3
Hydropower	million kWh	136	141	+ 3.7	1.4	1.5
Nuclear power	million kWh	39,106	42,614	+ 9.0	422.7	460.5
TOTAL				+ 0.8	3,177.3	3,204.3
Illinois percentage of total U.S. energy consumption					4.7	4.5
Percentage of total energy consumed in Illinois						
Coal					24.90	25.51
Natural gas					31.49	29.45
Oil products					30.27	30.62
Nuclear power					13.30	14.37
Hydropower					0.04	0.05
					100.00	100.00

[a]Source: U. S. Department of Energy, Energy Information Administration.

[b]Fuel conversion factors: gasoline--5,253,000 Btu/bbl: kerosene--5,670 Btu/bbl; distillate fuel oil--5,825,000 Btu/bbl; residual fuel oil--6,287,000 Btu/bbl.

[c]1985 fuel conversion factors: coal--21,366,000 Btu/ton; natural gas--1,040 Btu/Mcf; LPG--3,603,000 Btu/bbl; nuclear power-- 10,809 Btu/kWh; hydropower--10,294 Btu/kWh.

[d]1986 fuel conversion factors: coal--21,462,000 Btu/ton; natural gas--1,021 Btu/Mcf; LPG--3,640,000 Btu/bbl; nuclear power-- 10,806 Btu/kWh; hydropower--10,638 Btu/kWh.

[e]Revised.

TABLE 7. Coal production in Illinois counties, 1985-86[a]

County	1985 Production No.of mines	Underground (tons)	Surface (tons)	Total (tons)	Value[b]	1986 Production No.of mines	Underground (tons)	Surface (tons)	Total (tons)	Value[b]
Christian[c]	1	2,516,238	--	2,516,238	77,500,130	1	2,733,528	--	2,733,528	81,978,505
Clinton	1	3,027,065	--	3,027,065	93,233,602	1	3,321,591	--	3,321,591	99,614,514
Douglas	2	979,891	--	979,891	30,180,643	2	950,230	--	950,230	28,497,398
Franklin	4	7,360,833	--	7,360,833	226,713,656	4	8,033,315	--	8,033,315	240,919,117
Fulton	1	--	583,322	583,322	17,966,318	1	--	595,952	595,952	17,872,600
Gallatin	4	1,379,582	184,114	1,563,696	48,161,837	3	1,190,002	414,723	1,604,725	48,125,703
Hamilton	1	1,043,032	--	1,043,032	32,125,386	1	1,087,680	--	1,087,680	32,619,523
Jackson	1	--	2,542,724	2,542,724	78,315,899	1	--	2,371,980	2,371,980	71,135,680
Jefferson	2	3,571,055	--	3,571,055	109,988,494	2	3,487,812	--	3,487,812	104,599,482
Logan	1	796,930	--	796,930	24,545,444	1	904,967	--	904,967	27,139,960
McDonough	1	--	532,127	532,127	16,389,512	1	--	480,450	480,450	14,408,696
Macoupin	3	3,568,538	--	3,568,538	109,910,970	3	4,097,045	--	4,097,045	122,870,380
Perry	6	611,900	12,527,008	13,138,908	404,678,366	7	242,198	13,277,797	13,519,995	405,464,650
Randolph	4	3,595,846	506,345	4,102,191	126,347,483	4	3,998,654	1,020,200	5,018,854	150,515,431
St. Clair	2	1,318,020	518,000	1,836,020	56,549,416	2	1,257,468	42,100	1,299,568	38,974,044
Saline	10	2,937,641	1,457,491	4,395,132	135,370,066	9	2,902,752	1,703,978	4,606,730	138,155,833
Schuyler	1	--	296,802	296,802	9,141,502	1	--	685,044	685,044	20,544,470
Wabash	1	2665,930	--	2,665,930	82,110,644	1	2,892,505	--	2,892,505	86,746,225
Washington	1	1,492,400	--	1,492,400	45,965,920	1	1,423,700	--	1,423,700	42,696,763
White	1	690,901	--	690,901	21,279,751	1	1,463,310	--	1,463,310	43,884,667
Williamson[d]	5	1,092,821	2,680,700	3,773,521	116,224,447	4	944,867	1,709,454	2,654,321	79,603,087
TOTAL:	52	38,648,623	21,828,633	60,477,256	1,862,699,485	51	40,931,624	22,301,678	63,233,302	1,896,366,727

[a]Production figures from Illinois Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1985 and 1986.

[b]Value calculated at an average of $30.80/ton for 1985 and $29.99/ton for 1986.

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

[d]One mine operated at junction of Williamson and Saline Counties; all production placed in county where tipple is located.

Table 8. Coal production in Illinois counties, 1833-1986[a]

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	--	317,453,090
Bond	--	7,355,569	McDonough	2,308,090	4,916,571
Brown	41,761	74,068	McLean	--	5,544,139
Bureau	11,094,808	53,823,055	Madison	37,843	164,295,772
Calhoun	--	96,247	Marion	--	39,247,722
Cass	--	212,477	Marshall	4,779	12,516,141
Christian	--	343,565,471	Menard	--	13,462,005
Clark	4,482	4,482	Mercer	67,080	15,519,862
Clay	801	801	Monroe	--	8,284
Clinton	--	59,127,807	Montgomery	--	141,824,660
Coles	--	198,932	Morgan	13,564	190,787
Crawford	17,315	45,400	Moultrie	--	2,032,236
Douglas	--	39,976,628	Peoria	32,702,938	96,718,740
Edgar	207,242	915,698	Perry	327,161,578	425,830,263
Effingham	--	796	Pike	2,224	5,081
Franklin	--	656,724,078	Pope	34,704	36,266
Fulton	237,423,608	314,018,994	Putnam	--	10,071,893
Gallatin	8,092,791	38,051,021	Randolph	96,124,701	200,917,266
Greene	71,090	693,191	Richland	35	154
Grundy	1,635,422	40,872,430	Rock Island	--	3,846,169
Hamilton	--	5,535,337	St. Clair	116,444,567	363,866,908
Hancock	459,329	771,281	Saline	58,102,898	279,787,867
Hardin	--	40	Sangamon	--	233,449,607
Henry	9,065,783	22,910,053	Schuyler	7,026,121	8,729,537
Jackson	52,830,166	120,503,078	Scott	3,790	612,476
Jasper	--	23,739	Shelby	925	4,119,763
Jefferson	5,353,358	142,214,311	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	25,671,375
Knox	62,601,174	65,896,605	Warren	132	685,466
La Salle	2,345,878	65,547,638	Washington	--	25,994,937
Livingston	139,091	10,111,437	White	--	4,088,126
Logan	--	17,693,532	Will	29,333,708	37,553,733
Macon	--	11,000,468	Williamson	94,509,127	451,094,123
			Woodford	--	7,810,160

Total cumulative surface production, 1911-1986	1,212,966,271	Estimated production, all counties, 1833-1881	73,386,123
Total cumulative production, 1882-1986	5,128,916,118	Total cumulative production, 1833-1986	5,202,302,241

[a]Source: Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Reports. This table has been revised with production placed in county where tipple is located.

TABLE 9. Employment and production by method of mining in Illinois, 1975-86[a]

	Underground				Surface			
Year	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
1975	21	9,549	1,518,099	455	36	4,097	768,304	114
1976	23	10,396	1,343,987	452	39	4,392	698,063	113
1977	25	11,375	1,183,559	455	45	4,739	539,810	105
1978	28	12,620	888,914	451	43	5,241	554,757	122
1979	31	13,200	1,054,233	426	40	5,299	671,422	132
1980	31	13,219	1,128,022	426	35	5,065	787,821	145
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

[a]Source: Illinois Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1975-1986.

TABLE 10. Coal production of Illinois companies, 1985-86[a]

		1985					1986				
Rank	Company	Number of mines: Underground	Number of mines: Surface	Production (tons)	Percentage of total production	No. of employees	Rank	Number of mines: Underground	Number of mines: Surface	Production (tons)	Percentage of total production	No. of employees
1	Peabody Coal	5	3	10,117,493	16.73	2,667	1	5	3	10,174,838	16.09	2,740
2	AMAX Coal	1	2	7,448,676	12.32	1,502	7	2	1	4,473,273	7.08	1,123
3	Old Ben Coal	4	0	7,360,833	12.17	1,695	3	4	0	8,033,315	12.71	1,451
4	Consolidation Coal	0	3	6,553,030	10.84	848	2	2	3	9,985,724	15.79	1,688
5	Freeman United Coal Mining	4	2	5,370,586	8.88	1,811	6	4	2	5,123,702	8.10	1,632
6	Arch of Illinois	0	1	5,290,400	8.75	820	4	0	2	6,747,423	10.67	833
7	Monterey Coal	2	0	4,976,902	8.23	1,252	5	2	0	5,321,134	8.42	1,163
8	Inland Steel	2	0	3,322,847	5.49	1,093		Purchased by Consolidation Coal				
9	Zeigler Coal	4	0	2,668,795	4.41	659	8	4	0	2,992,123	4.73	591
10	Sahara Coal	4	0	1,283,392	2.12	574	12	2	1	1,170,219	1.85	450
11	Kerr-McGee Coal	1	0	1,215,813	2.01	444	9	1	0	1,980,163	3.13	504
12	Kenellis Energies	1	0	910,379	1.51	353	19	1	0	234,701	0.37	161
13	Turris Coal	1	0	796,930	1.32	317	13	1	0	904,967	1.43	288
14	White County Coal	1	0	690,901	1.14	218	11	1	0	1,463,310	2.31	236
15	Carter Coal	1	0	611,900	1.01	119	18	1	0	242,198	0.38	7
16	Midland Coal	0	1	583,322	0.96	133	15	0	1	595,952	0.94	140
17	Black Beauty	0	1	296,801	0.49	166	14	0	1	685,044	1.08	123
18	Williamson Coal	0	1	242,978	0.40	49	21	0	1	90,006	0.14	29
19	Jader Coal	1	1	220,729	0.36	33	16	0	1	414,723	0.66	56
20	Equality Mining	0	1	216,251	0.36	26	17	0	1	397,300	0.63	39
21	A & F Coal	1	0	210,610	0.35	47	20	1	0	214,999	0.34	62
22	Ace Diggin, Inc.	0	1	45,581	0.08	--	23	0	1	42,231	0.07	12
23	J. J. Track Mining	0	2	42,106	0.07	5	22	0	1	54,718	0.09	6
24	Pipestone Greek Mining	--	--	--	--	--	10	0	1	1,891,239	2.99	215
	TOTAL	32	20	60,477,256	100.00	14,831		31	20	63,233,302	100.00	13,549

[a]Source: Illinois Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1985-86.

TABLE 11. Coal shipped from Illinois to other states, 1982-86[a]

Consumers	Wisconsin	Minnesota and Michigan	Iowa	Missouri	Indiana	Kentucky	Georgia & Florida	Other states[b]	Exports and miscellaneous	Illinois	Total
	(1,000 tons)										
Electric utilities											
1982	2,774	940	1,691	14,447	7,239	122	4,934	3,304	--	17,260	52,710
1983	2,907	616	1,659	14,428	5,999	53	4,431	2,997	--	16,812	49,903
1984	2,516	328	1,115	16,125	8,522	12	5,423	3,737	--	18,418	56,197
1985	1,216	269	1,959	13,419	7,653	117	6,854	4,840	--	16,541	52,899
1986	1,523	123	2,045	12,824	9,130	847	6,318	6,028	--	16,822	55,659
Coke and gas plants											
1982	--	--	--	--	1,876	--	--	55	--	317	2,248
1983	--	--	--	--	1,979	--	--	200	--	276	2,455
1984	--	--	--	3	2,222	--	--	1	--	272	2,499
1985	--	--	--	--	1,292	--	--	--	--	715	2,006
1986	--	--	--	10	1,536	--	--	--	--	281	1,827
Retail dealers											
1982	13	--	10	16	1	--	--	--	24	236	300
1983	1	11	--	30	--	--	--	--	--	319	382
1984	1	e	e	30	19	--	--	9	--	293	381
1985	--	--	14	89	1	--	--	e	24	186	309
1986	3	e	2	47	1	--	--	e	--	201	273
Others											
1982	651	155	873	972	378	12	--	59	36	1,363	4,499
1983	832	193	888	733	528	--	--	46	35	1,379	4,634
1984	721	169	543	940	290	--	--	46	6	1,852	4,603
1985	624	53	412	780	317	9	--	50	40	1,553	3,838
1986	341	46	177	835	204	--	--	186	7	1,692	3,530
Totals[c]											
1982	3,438	1,095	2,574	15,435	9,494	134	4,934	3,418	395[d]	19,176	60,122[d]
1983	3,739	820	2,547	15,192	8,506	53	4,431	3,243	329[d]	18,786	57,717[d]
1984	3,238	495	1,659	17,098	11,053	12	5,423	3,793	25[d]	20,836	63,707[d]
1985	1,872	322	2,385	14,288	9,262	125	6,854	4,889	117[d]	18,995	59,171[d]
1986	1,867	169	2,224	13,716	10,871	847	6,318	6,213	202[d]	18,996	61,493[d]

[a]Sources: U.S. Department of Energy, Coal Distribution, 1982-1986.

[b]Includes AL (1982-86), MS (1982-86), TN (1982-86), LA (1982-86), OH (1982 + 84[e], 86[e]), PA (1982-84, 86[e]), NY (1982, 84[e]), KS (1982-86), TX (1982-83), CA (1983-86), SD (1984[e]), AR (1985, 86), WV (1985[e]), MA (1986[e]), ND (1986[e]).

[c]Totals may not add up because of independent rounding.

[d]Includes shipments to foreign countries, with no breakdown by consuming sector: 335,000 tons in 1982, and 294,000 tons in 1983, 19,000 tons in 1984, 44,000 tons foreign and 9,000 tons U.S. in 1985, 195,000 tons in 1986.

[e]Quantity is less than 500 tons.

TABLE 12. Coal shipped to Illinois from other states, 1982-86[a]

Consumers	Illinois	Western Kentucky	Indiana	Ohio, eastern Pennsylvania,[b] and northern West Virginia	Southern West Virginia,[c] Virginia, and eastern Kentucky	Western Interior[d] states	Western states[e]	Montana[f] and Washington	Pennsylvania	Total coal consumed in Illinois
					(1,000 tons)					
Electric utilities										
1982	17,260	1,000	1,209	--	802	41	9,109	2,697	--	32,118
1983	16,812	738	1,467	--	1,118	2	8,415	2,848	3	31,404
1984	18,418	1,594	1,581	--	1,683	--	7,422	1,995	g	32,693
1985	16,541	1,116	1,310	--	1,272	--	8,186	3,258	g	31,682
1986	16,822	1,147	1,313	12	1,431	--	7,198	4,277	--	32,200
Coke and gas plants										
1982	317	--	--	470	380	82	--	--	1	1,251
1983	276	--	--	581	639	112	--	--	--	1,608
1984	272	--	--	779	1,003	35	--	--	--	2,089
1985	715	--	4	210	1,139	--	--	--	--	2,068
1986	281	--	--	146	1,527	--	--	--	--	1,954
Retail dealers										
1982	236	16	51	--	7	--	--	--	1	310
1983	319	22	52	--	28	--	--	--	3	423
1984	293	31	66	--	28	--	g	--	1	420
1985	186	12	30	--	8	--	--	--	1	236
1986	201	5	30	g	9	--	--	--	g	245
Others										
1982	1,363	49	655	22	533	5	17	--	20	2,664
1983	1,379	77	787	--	599	--	29	--	24	2,897
1984	1,852	443	482	150	593	16	--	--	61	3,596
1985	1,553	315	499	30	601	--	--	--	36	3,035
1986	1,692	577	499	5	918	--	--	--	33	3,690
Total										
1982	19,176	1,065	1,914	493	1,721	128	9,125	2,697	22	36,342
1983	18,786	838	2,307	581	2,384	114	8,444	2,848	30	36,332
1984	20,836	2,067	2,129	928	3,307	51	7,422	1,995	63	38,799
1985	18,995	1,443	1,843	240	3,020	--	8,186	3,258	37	37,022
1986	18,996	1,738	1,842	162	3,886	--	7,198	4,277	33	38,089

[a]Sources: U.S. Oepartment of Energy, Coal Oistribution, 1982-86.

[b]Includes Oistricts 1, 2, 3, 4, and 6 (MD, OH, eastern PA, northern WV). 1984 Oistricts 2,3, and 6.

[c]Includes Districts 7, 8 and 13 (AL, GA, eastern KY, NC, TN, VA, southern WV).

[d]Includes Districts 14 and 15 (AR, KS, MO, OK, TX).

[e]Includes Oistricts 16, 17, and 19-21 (CO, IO, NO, NM, SO, UT, WY).

[f]Includes Oistricts 22 and 23 (AK, MT, OR, WA).

[g]Quantity is less than 500 tons.

TABLE 13. Crude oil production in Illinois counties between 1888 and 1986; value for 1985 and 1986[a]

County	1888-1986 cumulative production (1000 bbl)	1985 Production (1000 bbl)	1985 % of total Illinois production	1985 Value[d] ($1000)	1986 Production (1000 bbl)	1986 % of total Illinois production	1986 Value[d] ($1000)	1985-86 percent change
Adams	272	3	0.0	68	2	0.0	26	-28.9
Bond	7,931	75	0.2	2,025	74	0.3	1,091	-1.4
Brown	1,856	96	0.3	2,595	104	0.4	1,526	+7.6
Champaign	7	--	--	--	--	--	--	--
Christian	28,939	541	1.8	14,553	519	1.9	7,633	-4.0
Clark-Cumberland	93,775	176	0.6	4,723	278	1.0	4,088	+58.4
Clay	145,269	2,100	6.9	56,483	1,486	5.5	21,851	-29.2
Clinton	87,462	324	1.1	8,703	240	0.9	3,530	-25.8
Coles	24,609	258	0.9	6,928	263	1.0	3,866	+2.1
Crawford	245,353	2,237	7.4	60,165	2,109	7.8	31,001	-2.7
De Witt	3,643	56	0.2	1,519	49	0.2	724	-12.8
Douglas	3,658	2	0.0	62	4	0.0	62	+82.6
Edgar	4,422	62	0.2	1,668	63	0.2	922	+1.2
Edwards	55,052	1,081	3.6	29,085	882	3.2	12,967	-18.4
Effingham	19,035	334	1.1	8,978	278	1.0	4,084	-16.8
Fayette	407,468	1,835	6.1	49,361	1,655	6.1	24,322	-9.8
Franklin	78,537	1,224	4.0	32,917	1,005	3.7	14,775	-17.9
Gallatin	54,791	498	1.7	13,404	391	1.4	5,745	-21.6
Hamilton	137,004	574	1.9	15,449	536	2.0	7,883	-6.6
Jackson	87	11	0.0	286	9	0.0	130	-16.6
Jasper	58,637	1,377	4.6	37,049	1,016	2.0	7,883	-6.6
Jefferson	91,359	1,386	4.6	37,295	1,321	4.9	19,422	-4.7
Lawrence	414,727	2,744	9.1	73,826	2,920	10.7	42,918	+6.4
Macon	2,342	70	0.2	1,885	88	0.3	1,289	+25.2
Macoupin	349	12	0.0	312	11	0.0	161	-5.7
Madison	18,413	130	0.4	3,487	108	0.4	1,594	-16.3
Marion	429,520	2,748	9.1	73,917	1,913	7.0	28,122	-30.4
McDonough-Hancock[c]	5,689	10	0.0	274	4	0.0	62	-58.7
Monroe	71	1	0.0	40	5	0.0	67	+204.1
Montgomery	150	5	0.0	141	8	0.0	110	+43.1
Morgan	1	--	--	--	1	0.0	15	--
Moultrie	125	4	0.0	102	4	0.0	64	+15.2
Perry	924	14	0.1	307	11	0.0	162	-19.7
Piatt	8	1	0.0	26	1	0.0	10	-33.5
Randolph	4,959	82	0.3	2,204	91	0.3	1,332	+10.6
Richland	109,844	1,189	3.9	31,976	849	3.1	12,485	-28.6
St. Clair	3,577	24	0.1	637	22	0.1	324	-6.8
Saline	23,792	255	0.8	6,862	372	1.4	5,464	+45.7
Sangamon	4,891	77	0.3	2,083	82	0.3	1,213	+6.5
Schuyler	172	4	0.0	109	8	0.0	112	+87.9
Shelby	2,054	64	0.2	2,714	44	0.2	654	-30.2
Wabash	117,495	1,019	3.4	27,417	1,183	4.3	17,387	+16.1
Washington	34,767	429	1.4	11,546	503	1.8	7,401	+17.3
Wayne	270,823	2,871	9.5	77,233	2,142	7.9	31,490	-25.4
White	310,022	2,668	8.8	71,767	2,603	9.6	38,271	-2.4
Williamson	2,663	24	0.1	658	26	0.1	376	+4.5
Other[b]	11,775	1,531	5.1	41,192	1,962	7.2	28,836	+11.7
Total[e]	3,318,316	30,226	100.0	813,093	27,245	100.0	400,498	-9.9

[a]Source: Illinois State Geological Survey Oil and Gas Section.

[b]Could not be assigned to individual field or county.

[c]No oil production reported for Hancock County in 1971-1978; 874 bbl was produced in 1985 and 123 bbl in 1986.

[d]Value calculated at an estimated average price of $26.90 per barrel for 1985 and $14.70 per barrel for 1986.

[e]May not add up because of independent rounding.

TABLE 14. Crude oil production from major fields in Illinois 1985-86[a]

Field	County	1985 Production (1000 bbl)	1985 % of Illinois total	1986 Production (1000 bbl)	1986 % of Illinois total	1985-86 Change (%)
Southeastern Illinois	Wabash Lawrence Crawford Clark Cumberland Jasper	5,643.4	18.7	5,548.9	20.4	- 1.7
Clay City Consolidated	Clay Wayne Richland Jasper	4,838.4	16.0	2,963.4	10.9	- 38.8
Salem	Marion Jefferson	2,747.1	9.1	1,831.8	6.7	- 33.3
Louden	Fayette Effingham	1,831.9	6.1	1,695.3	6.2	- 7.5
New Harmony Consolidated	White Wabash Edwards	805.9	2.7	1,086.3	4.0	+ 34.8
Sailor Springs Consolidated	Clay Jasper Effingham	856.6	2.8	765.2	2.8	- 10.7
Phillipstown Consolidated	White Edwards	667.5	2.2	517.6	1.9	- 22.5
Herald Consolidated	White Gallatin	442.7	1.5	441.7	1.6	- 0.2
Roland Consolidated	White Gallatin	441.3	1.5	432.8	1.6	- 1.9
Albion Consolidated	Edwards White	3,931.8	13.0	422.0	1.5	- 89.3
Benton	Franklin	314.1	1.0	311.0	1.1	- 1.0
Dale Consolidated	Franklin Hamilton Saline	346.8	1.1	300.5	1.1	- 13.3
Divide Consolidated	Jefferson	--	--	286.7	1.1	--
Goldengate Consolidated	Wayne White	307.4	1.0	256.5	0.9	- 16.6
Mattoon	Coles	232.8	0.8	240.1	0.9	+ 3.1
Mill Shoals	White Hamilton Wayne	214.4	0.7	228.4	0.8	+ 6.5
Elk Prairie	Jefferson	226.0	0.7	227.6	0.8	+ 0.7
Storms Consolidated	White	211.2	0.7	--	--	--
Hunt City East	Jasper	397.7	1.3	--	--	--
		24,457.0	80.9	17,556.0	64.4	- 28.2

[a]Source: Illinois State Geological Survey Oil and Gas Section. Major fields producing more than 200,000 barrels of oil per year.

TABLE 15. Petroleum products consumed in Illinois, 1983-86[a]

	1983	1984	1985	1986
		(1,000 bbl)		
Motor gasoline[b]	123,133	107,967	114,047	110,906
Kerosene	638	642	1,148	409
Distillate fuel oil	34,788	36,415	32,189	35,132
Residual fuel oil	13,700	11,821	7,250	9,156
Lubricants	3,180	3,391	3,160	3,090
Liquefied gases	27,037	31,310	33,891	36,627
Asphalt & road oil	5,365	5,727	7,500	6,185
Other[c]	20,784	21,107	19,834	20,440
Total	229,274	219,530	216,862	221,944

[a]Source: State Energy Data Report, U. S. DOE/EIA-0214.

[b]Aviation and motor gasoline and jet fuel

[c]Includes natural gasoline, unfractionated stream, plant condensate, petrochemical feedstocks, special naphthas, non-electric utility sector use of petroleum coke, still gas, wax, unfinished oils, motor gasoline and aviation gasoline blending components, and miscellaneous products.

TABLE 16. Natural gas production in Illinois, 1979-86[a]

Year	Withdrawals			Marketed
	Gas wells	Oil wells	Total	
		(million cu ft)		
1979	1,317.6	267.4	1,585	1,585
1980	1,333.6	240.4	1,574	1,574
1981	1,103.6	191.4	1,295	1,295
1982	993.5	168.5	1,162	1,162
1983	858.0	172.0	1,030	1,030
1984	1,399.6	130.4	1,530	1,530
1985	1,228.0	96.0	1,324	1,324
1986	1,446.0	441.0	1,887	1,887

[a]Source: Illinois State Geological Survey Oil and Gas Section.

TABLE 17. Natural gas production from large fields in Illinois counties, 1984-86[a]

Gas field	County	Production (million cu ft) 1984	1985	1986	Change (%) 1984-85	1985-86
Stolletown	Clinton	--	165.2	256.1	--	+ 55.0
Mattoon	Coles	432.2	320.8	266.4	- 25.8	- 16.9
Main Consolidated	Crawford	--	1.7	169.3	--	+9723.0
Prentice	Morgan	--	59.4	210.7	--	+ 254.6
Fishhook	Pike	301.2	215.8	195.6	- 28.4	- 9.4
Griggsville	Pike	168.6	58.6	d	- 65.2	--
Raleigh	Saline	196.9	155.5	99.5	- 21.0	- 36.0
Rushville	Schuyler	--	--	132.5	--	--
Keenville	Wayne	94.0	69.4	319.8	- 26.2	+ 361.0
Pittsburgh	Williamson	85.0	32.6	23.2	- 61.6	- 28.9
Other[b]		169.8	156.8	214.4	- 2.9	- 12.5
TOTAL[c]		1,530.2	1,324.0	1,887.0	- 13.5	+ 42.5

[a]Source: Illinois State Geological Survey. Fields producing 50 million cu ft or more.

[b]Main Consolidated, Crawford Co.; Ashmore East, Edgar Co.; Louden, Fayette and Effingham Cos.; Eldorado East, Gallatin Co.; Waggoner, Montgomery Co.; Eden, Randolph Co.; New Athens, St. Clair Co.; St. Libory, St. Clair Co.; Eldorado Consolidated, Saline Co.; Eldorado West, Saline Co.; Harco South, Saline Co.; Highland, (1984, 1985) Madison Co.; Johnson City East, (1984) Williamson Co.;

[c]Totals may not add up because of rounding.

[d]no production.

TABLE 18. Natural gas consumed in Illinois 1985-86[a]

Consumers	1985 Quantity (million cu ft)	1985 % of total consumption	1986 Quantity (million cu ft)	1986 % of total consumption	1985-86 change (%)
Residential	446,567	46.4	437,081	47.3	- 2.1
Commercial	213,528	22.2	204,979	22.2	- 4.0
Industrial	280,638	29.2	263,847	28.5	- 6.0
Electric utilities	5,881	0.6	6,067	0.7	+ 3.2
Total delivered to consumers	946,614	98.4	911,974	98.7	- 3.7
Other uses[b]	15,425	1.6	12,306	1.3	-20.2
Total consumption	962,039	100.0	924,280	100.0	- 3.9

[a]Source: U.S. Department of Energy.

[b]Includes lease and plant fuel, pipeline fuel, and extraction loss.

TABLE 19. Sand and gravel produced by district[a], 1986[b]

County			No. of companies	No. of operations	Total quantity produced (1000 tons)	Value ($1000)
District 1						
Boone	Henry	Ogle				
Bureau	Jo Daviess	Rock Island				
Cook	Kane	Stephenson	48	57	17,800	51,668
De Kalb	Lake	Whiteside				
Du Page	McHenry	Winnebago				
District 2						
Adams	Logan	Sangamon				
Fulton	Mason	Schuyler				
Henderson	Peoria	Tazewell	15	15	1,335	3,944
Knox	Pike					
District 3						
Champaign	Kankakee	Marshall				
Clark	Kendall	Moultrie				
Coles	La Salle	Piatt				
Cumberland	Livingston	Putnam	42	51	5,608	18,699
De Witt	McLean	Vermilion				
Ford	Macon	Woodford				
Grundy						
District 4						
Bond	Gallatin	Pulaski				
Clinton	Jackson	Randolph				
Crawford	Lawrence	St. Clair	26	27	3,124	8,212
Effingham	Madison	Wabash				
Fayette	Massac	White				
	Total		131	150	27,867	82,523

[a]See figure 9.

[b]Source: U.S. Bureau of Mines.

TABLE 20. Illinois sand and gravel production by size of operation, 1986[a]

Size of operation (tons/year)	No. of operations	% of total operations	Production (tons)	% of total production
less than 25,000	44	30.1	435	1.6
25,000 to 49,999	17	11.7	636	2.3
50,000 to 99,999	27	18.5	2,061	7.4
100,000 to 199,999	18	12.3	2,611	9.4
200,000 to 299,999	15	10.3	3,698	13.2
300,000 to 399,999	7	4.8	2,369	8.5
400,000 to 599,999	5	3.4	2,581	9.3
600,000 to 799,999	4	2.7	2,598	9.3
800,000 to 999,999	3	2.1	2,622	9.4
1,000,000 and over	6	4.1	8,258	29.6
TOTAL	146	100.0	27,867	100.0

[a]Source: U.S. Bureau of Mines.

TABLE 21. Illinois sand and gravel sold or used by producers, by class of operation and use, 1984 and 1986[a]

	1984		1986			
	Quantity (1000 tons)	Value ($1000)	Quantity (1000 tons)	Value ($1000)	1984-86 change in quantity (%)	1984-86 change in value (%)
Construction aggregates						
Sand and gravel						
Construction operations						
Building	4,107	11,480	6,825	21,006	+66.2	+83.0
Paving	7,453	23,239	5,964	20,879	-20.0	-10.2
Fill	2,800	5,805	2,984	6,717	+ 6.6	+15.7
Other uses[b]	11,609	31,952	12,094	33,921	+4.2	+6.2
Total[c]	25,969	72,477	27,867	82,523	+ 7.3	+13.9
Industrial sand						
Sand blasting	276	6,243	200	3,138	-27.5	-49.7
Molding	1,306	17,480	793	10,571	-39.3	39.5
Glass	1,670	15,409	1,476	12,939	-11.6	-16.0
Other uses[d]	848	13,064	1,570	25,485	+85.1	+95.1
Total[c]	4,100	52,197	4,039	52,133	- 1.5	-0.1
Total sand and gravel[c]	30,069	124,673	31,906	134,656	+ 6.1	+ 8.0

[a]Source U.S. Bureau of Mines.

[b]Includes railroad ballast and other unspecified materials.

[c]Numbers are rounded and totals may not add up.

[d]Includes railroad traction, filtration, grinding and polishing, pottery, abrasives, chemicals, enamel, propping sand for hydrofracturing oil wells, and other uses.

TABLE 22. Portland cement manufactured in Illinois, 1985-86[a]

			Change (%)
	1985	1986	1985-86
No. of active plants	4	4	--
Production (tons)	2,073,069	2,139,187	+ 3.2
Shipments from mills			
Quantity (tons)	2,100,724	2,118,385	+ 0.8
Value	86,210,707	83,783,379	- 2.8
Average value/ton	41.04	39.55	- 3.6
Stocks at mills, Dec. 31 (tons)	128,000	145,714	-13.8

[a]Source: U.S. Bureau of Mines.

TABLE 23. Mineral production data for 1986 compared to preliminary data for 1987[a]

Minerals extracted	Unit	1986 Quantity	1986 Value (1000 $)	1987 Quantity	1987 Value (1000 $)	Percentage of change from 1986 to 1987 Quantity	Percentage of change from 1986 to 1987 Value
Fuels							
Coal	thousand tons	63,233	1,896,367	60,121	1,803,630[b]	- 4.9	- 4.9
Crude oil	thousand bbl	27,245	400,498	24,098[b]	420,510[b]	- 11.6	+ 5.0
Natural gas	thousand Mcf	1,887	4,851	1,371[b]	3,071[b]	- 27.3	- 36.7
Industrial and construction materials							
Stone	thousand tons	44,202	179,707	43,602	177,906	- 1.4	- 1.0
Sand and gravel	thousand tons	31,904	134,656	32,500	132,600	+ 1.9	- 1.5
Clay[c]	thousand tons	283	1,092	297	1,146	+ 4.9	+ 4.9
Fluorspar	thousand tons	W	W	W	W	- 4.5	- 4.5
Tripoli	thousand tons	W	W	W	W	+ 4.0	- 5.3
Metals							
Lead	tons	W	W	W	W	- 68.9	- 49.6
Zinc	tons	W	W	W	W	- 8.6	- 0.1
Silver	troy ounce	W	W	--	--	--	--
Copper	tons	W	W	--	--	--	--
Other							
Peat	thousand tons	W	W	W	W	- 1.8	- 0.5
Gem stones		NA	15	--	15	--	--
Barite, primary	thousand tons	W	W	W	W	--	--
Values that cannot be disclosed (W)		--	39,374	--	38,838		- 1.3
Total value of minerals extracted			$2,656,560		$2,577,716		- 3.0

[a]Source: U.S. Bureau of Mines and Illinois Department of Mines and Minerals

[b] Estimated by Illinois State Geological Survey

[c] Excludes fuller's earth; included with value of items indicated by symbol W.

W = Withheld to avoid disclosing individual company confidential data.

TABLE 24. Illinois coal shipped to consumers in the United States, 1985-87[a]

Consumers	1985 Jan-Sept (1000 tons)	1986 Jan-Sept (1000 tons)	1987 Jan-Sept (1000 tons)	1985-1986 change (%)	1986-1987 change (%)
Electric utilities	39,959	42,773	39,946	+7.0	-6.6
Coke and gas plant	1,488	1,573	1,382	+5.7	-12.1
Retail dealers	232	196	207	-15.5	+5.6
Others	2,758	2,604	3,034	-5.6	+16.5
Transportation	--	--	--	--	--
Used at mine	9	2	1	-77.8	-50.0
Mine stock (adjusted)	--	--	--	--	--
Foreign	63	202	207	+220.6	+2.5
Total	44,509	47,350	44,778	+6.4	-5.4

[a]Source: U.S. Department of Energy, Coal Distribution, January-September, 1985, 1986, and 1987.

TABLE 25. Coal shipments from Illinois to other states, 1985-87[a]

Consumers	1985 Jan-Sept	1986 Jan-Sept	1987 Jan-Sept	1985-1986 change (%)	1986-1987 change (%)
	(1000 tons)				
Illinois	14,183	14,652	13,774	+3.3	-6.0
Missouri	10,765	10,368	10,432	-3.7	+0.6
Indiana	7,004	8,352	8,248	+19.2	-1.2
Wisconsin	1,484	1,385	1,348	-6.7	-2.7
Georgia	2,315	1,555	4,307	-32.8	+177.0
Iowa	1,952	1,844	1,698	-5.5	-7.9
Alabama	2,075	2,019	*	-2.7	--
Florida	2,786	3,037	2,654	+9.0	-12.6
Tennessee	877	2,356	934	+168.6	-60.4
Other states[b]	1,005	1,580	1,176	+57.2	-25.6
Exports	63	202	207	+220.6	+ 2.5
Total	44,509	47,350	44,778	+6.4	-5.4

[a]Source: U.S. Department of Energy, Coal Distribution, January-September, 1985, 1986, and 1987.

[b] Arkansas, California, Kansas, Kentucky, Louisiana, Massachusetts (1986, 1987), Michigan, Minnesota, Mississippi, Montana (1987), North Oakota (1986), New York (1984), Ohio, Pennsylvania (1986, 1987), South Carolina (1984), South Dakota (1984), Texas (1987), West Virginia (1985)