

1994 Annual Review and Forecast of

UTAH COAL

Production and Distribution

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Executive Summary

Utah and the U.S. both set new coal production records in 1994. Utah production surged by more than 12 percent, while U.S. production increased by more than nine percent. Utah's 1994 production of 24.4 million tons eclipsed 1993 production of 21.7 million tons by 2.7 million tons. Most major coal producing regions in the U.S. had record production levels. Some coal producing states east of the Mississippi such as Illinois, Pennsylvania, West Virginia and Indiana had considerable increases, while others had small increases or even decreases in production. By contrast all of the states west of the Mississippi (with the exception of New Mexico) had relatively large increases in production. Leading the Western states in percent of year-over-year increased production were Montana (16 percent), Utah (12.4 percent) and Wyoming (12.3 percent) compared with the U.S. total production increase of nine percent.

Utah coal distribution of 23.4 million tons exceeded 1993's record year by 1.5 million tons. This occurred despite a 400,000 ton reduction in coking coal distribution from the Sunnyside mine. The major contributors to this surge in distribution were the electric utilities inside and outside of Utah, as well as industrial and residential/commercial consumption outside of Utah. To a lesser degree

exports outside of the country also contributed.

During 1995, both production and distribution should break through the 25 million ton mark and set new all-time records.

Utah's coal mines remain the most productive underground mines in the United States. Productivity of Utah coal mines, just under two tons per miner-hour (tpmh) in 1980 and 1981, has been on the rise ever since, reaching new highs almost every year. In 1994, Utah's mines achieved a new record of 6.21 tons per miner-hour, 14.6 percent higher than the record year of 1993. In 1995, the industry expects another record (6.42 tpmh) to be established.

This high productivity is largely credited to excellent management skills, capable engineering and geological staff, high degree of mechanization and a highly skilled workforce. These factors have led to more competitive coal prices for Utah's coal mines that, in turn, have enhanced and guaranteed the success of the coal industry in the state.

Electric utilities consumed the bulk of Utah's coal production. The Hunter, Huntington and Carbon plants of Utah Power and Los Angeles Department of Water and Power's (LADWP) Intermountain Power Plant consumed 12.3 million tons. Together these four plants

consumed 51 percent of all coal produced in Utah, making Utah its own best coal customer. In addition we consumed 1.5 million tons of coal from Colorado in Bonanza plant of Deseret Generation and Transmission. Also in 1994, electric utilities and cogeneration plants outside of Utah consumed 4.8 million tons of Utah produced coal. Altogether, electric utilities in the United States consumed 70.2 percent of the coal produced in Utah. Including those volumes of Utah coal exported to the Pacific Rim, electric utilities consumed 81.5 percent of all the coal produced in Utah.

During 1994, Utah purchased and consumed various amounts of coking coal from both inside and outside of Utah. This amounted to 1.2 million tons of which 109,000 tons came from Utah.

In 1994, industrial coal consumption represented Utah's third largest consuming sector. Kennecott consumed half of Utah's industrial coal which was 0.65 million tons. Various cement and lime plants in Utah consumed the balance. The out-of-state industrial consumption of Utah coal amounted to 2.32 million tons in 1994 and was used primarily by chemical and cement plants in California and cement plants in Nevada.

With regard to residential and commercial customers, these consumers used almost 0.47 million tons.

Finally, the Pacific Rim Countries of Japan, Korea and Taiwan consumed some 2.72 million tons of Utah coal, primarily for electric power generation. This market is expanding and should account for more than five million tons per year by the end of the decade.

Utah Coal Production

Production of coal in Utah increased to more than 24.4 million tons, by far the highest production level in 125 years of recorded production. Gross production topped 24,843,000 tons and net production came in at 24,422,000 tons (Appendix, Table 1).

Though 1994, production outpaced the previous year, employment declined by six percent, thus increasing productivity by 14.6 percent. As a result, Utah's miners retained their position as the nation's most productive underground coal miners. Productivity in 1993, already 5.8 percent above 1992, increased another 14.6 percent in 1994.

During 1994, 2,024 miners produced a total of 24,422,000 tons of coal. Working an average of 232 days per year (469,568 miner days), miners produced an average of 6.22 tons per miner hour (Appendix, Table 1), a figure more than 14.6 percent higher than 1993's 5.43 tons per miner hour. These figures are based on net production. On the basis of gross production, productivity was even higher. Such increases in productivity may be expected of a low productivity operation which has been overhauled and streamlined. It must be emphasized that this level of increased productivity is a great achievement for a mining operation already at its peak performance.

The Wasatch Plateau coal field was again the major coal producer in 1994. More than 90 percent of Utah's 1994 coal production, 22.1 million tons, came from this field while the Book Cliffs accounted for the remaining 10 percent, or 2.3 million tons. The Emery coal field, the only other field having experienced any significant production in recent years, did not produce any coal between 1992 and 1994. During 1995, the Wasatch Plateau coal field is expected to produce a record amount, or more than 91.6 percent of total production. In contrast, less than 8.4 percent of Utah's

Emery coal field (Appendix, Table 2).

On a county basis, the majority of Utah's coal production is now shifting from Carbon to Emery County. Sevier County production remains stable and ranks third in production. As Skyline Mine of Coastal States Energy and Starpoint Mine of Cyprus Plateau shift their production from leases in Carbon to those in Emery County, the balance of coal production by county shifts dramatically from Carbon to Emery since these two mines combined account for about 32 percent of total

Utah Coal Industry Production, Employment, Productivity and Prices

	Production Million Short Tons	Employment No. of Employees	Productivity Tons/Miner Hour	Prices \$/Ton
1981	13.80	4,166	1.99	26.87
1982	16.91	4,296	2.05	29.42
1983	11.82	2,707	2.59	28.32
1984	12.25	2,525	2.94	29.20
1985	12.83	2,563	2.80	27.69
1986	14.26	2,881	3.08	27.64
1987	16.52	2,650	3.25	25.67
1988	18.16	2,559	3.69	22.85
1989	20.51	2,471	4.42	22.01
1990	22.01	2,791	4.22	21.78
1991	21.87	2,292	4.79	21.56
1992	21.02	2,106	5.13	21.83
1993	21.72	2,161	5.43	21.17
1994	24.44	2,024	6.22	20.07
1995	25.02	1,926	6.54	21.56

1995 values are forecast

coal production is expected to come from the Book Cliffs coal field. For the fourth year in a row, no production is likely to emanate from the

coal production in Utah. The actual shift by both mines started in 1991, became more pronounced in 1992, and almost completed itself in 1993

(Appendix, Table 3). Skyline Mine production, however, will most likely shift back to Carbon County within three years, resulting in more production from Carbon County leases than Emery County. As compared with the Skyline Mine, the Starpoint Mine shift is expected to be more accelerated. This shift may be even more pronounced as Cyprus Plateau shifts its coal operation from Starpoint mine to Willow Creek mine which is located entirely in Carbon County.

The volume of coal mined from federal leases during 1994 increased to a record high of 22.5 million tons. Its contribution as a percentage of total state production also increased because of a decrease in production from fee lands. Never before has so much coal been produced from federally-owned land on a tonnage basis (22.5 million tons) or as a percent of total production (92.3 percent) than in 1994.

State lands production had not reached the one-million-ton mark since 1980. In 1992, production easily surpassed this mark with 1,384,000 tons of coal lifted and again in 1993 with a record of 1,682,000 tons of production. In 1994, production from state lands decreased to 1,227,000 tons, a figure still higher than at any time in the 1980s. As a percentage of total production, state lands production has accounted for only between one to five percent, which increased to above six and seven percent in 1992 and

1993. During 1994, production fell back to five percent. Production from county land has always been minimal and, at best, erratic. During 1994, county-owned lands produced 243,000 tons, amounting to just one percent of total production.

For the first time in a decade coal production from fee lands slipped below two million tons (1.735 million tons in 1992). In 1993, production decreased again by 50 percent to 826,000 tons and fell yet again in 1994 to 415,000 tons or 1.7 percent of total production. By contrast, coal produced from fee lands in 1983 amounted to almost 40 percent of total production (Appendix, Table 4).

During 1994, seven operating longwall panels accounted for 66 percent of production, or 16,101,000 tons. This amounted to an average of more than 2.3 million tons of coal production per-panel, per-year. Thirty-two continuous miners produced a total of 8,321,000 tons of coal for an average of 260,000 tons per-machine, per-year. In recent years, however, some machines have produced between 400,000 to almost 600,000 tons per year.

Utah Coal Markets: Distribution of Utah Coal

Distribution of Utah coal during the last four years has been relatively unchanged, remaining within a one percent range of 21.6 million tons. Distribution of coal hit an all-time high of 21,935,000 tons in 1993 but 1994 distribution surpassed this level with 23,441,000 tons, an increase of more than 1.5 million tons. Never in the 125 years of Utah's coal industry has so much coal been distributed as in 1994. Distribution of coal to end-users in Utah reached 13,300,000 tons. The distribution to end-users in other states totaled 7.5 million tons, about 1,384,000 tons more than in 1993. Overseas exports amounted to 2,717,000 tons, about 150,000 tons above the 1993 export level.

Electric Utility Markets

It has been more than two decades since electric utility consumption of coal surpassed "other industrial coal" and "coke plant coal" consumption to become the number one market for Utah coal operators. Today, more than 70 percent of Utah's coal production is consumed to generate electricity in Utah and other states. Including exports, about 81.5 percent of Utah's coal production is consumed to generate electricity.

Out-of-State Markets

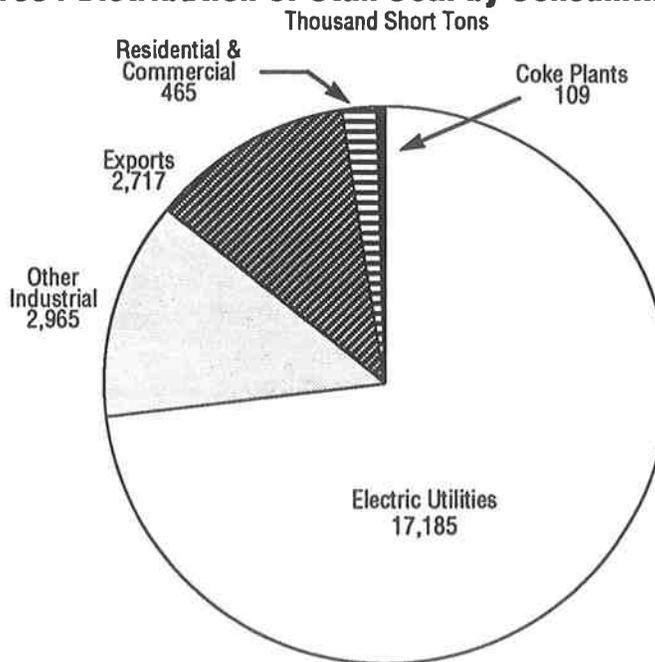
Distribution of Utah coal to out-of-state markets during 1994 increased by 24 percent over the 1993 level. Utah shipped a total of 4.8 million

tons to out-of-state customers and has never before sold this much coal to out-of-state electric utility/cogeneration customers. The majority of this shipment went to coal-fired power plants and cogeneration facilities in Nevada and California. In addition, Washington received 434,000 tons of coal in 1994 from two

contract for this shipment but there is a good possibility that, in the future, shipments such as these might become the standard.

Shipment of Utah coal to Missouri increased by more than nine percent to 418,000 tons. Kentucky also bought 252,000 tons. Indiana's purchase also increased by nearly

1994 Distribution of Utah Coal by Consuming Sector



Utah mines. Less than half of Washington-bound coal was shipped from Utah Power's mines in Huntington Canyon, the remainder from a nearby mine. PacifiCorp consumed this coal in its Centralia plant. This is the first time that companies shipped a substantial amount of Utah coal to an electric utility in Washington state. There was no long-term

15 percent to 234,000 tons and Illinois purchase of 162,000 tons declined 17 percent below the 1993 purchase of 196,000 tons. Florida did not purchase any electric utility coal from Utah in 1994 and shipments to Oregon in 1994 fell 10 percent below the 1993 level. Finally, Iowa is on record as having received a small amount (Appendix, Table 5).

In Nevada, three electric power generation facilities burn bituminous or subbituminous coal. Two of these plants, the Nevada Power Company's Reid Gardner Plant and Sierra Pacific Power Company's North Valmy Plant, burn Utah coal.

Nevada Power's Reid Gardner Plant, with a rated capacity of 636 megawatts (MW) purchased a total of 1.58 million tons of coal and burned 1.6 million tons of coal to generate 3,435 GWh of electricity. Approximately 1.28 million tons of this purchase came from Utah with the remaining 300,000 tons coming from Colorado. Before 1993, Reid Gardner's four units relied almost entirely on Utah coal. One of Nevada Power's four major contracts with Utah coal producers was with Arco, which originally supplied the coal from its Gordon Creek mines and, later, from its Trail Mountain mine. In September 1992, Arco sold Trail Mountain to PacifiCorp but continued to fulfill its contractual obligation to Nevada Power from its stockpile in Utah and through local purchases. However, between 1993 and 1994, Arco fulfilled the major portion of its obligation from its West Elk mine in Colorado.

During 1995, Nevada Power's sale should increase but its own generation should decrease as less costly electricity becomes available to them. These sources will generally consist of gas-fired generation or hydropower.

Nevada Power's decision

to generate less power in the face of rising demand further substantiates our belief that IPP's lower level of coal purchase and electric generation in 1995, as will be discussed later, also stems from similar economic forces and is not related to actions taken by the Utah legislature.

The two units of the Sierra Pacific Power Company's North Valmy Plant have a combined generation capacity of 521 MW. Sierra Pacific Power Company and Washington Water Power Company now have a petition of merger before the Federal Energy Regulatory Commission (FERC). Should this merger be approved by state and federal regulatory bodies, the new company will be called Resources West Energy Corporation. Since the two companies serve customers in five different states the Public Service Commissions of all five states must approve the petition. It is expected that by the fall of 1995 these approvals will be obtained.

The North Valmy plant requires about 1.45 million tons of coal per year. Utah and Wyoming mines share equally in supplying the requirements for this plant on a BTU basis. Since the BTU content of Utah coal is higher than Wyoming coal, the percent-by-weight of the Wyoming coal is somewhat higher. In 1994, Utah coal shipments to the North Valmy Plant totaled 608,000 tons, which represented a decrease of 6.5 percent over 1993. Sierra Pacific purchased

an additional one million tons of coal from Black Butte Coal Company near Rock Springs, Wyoming.

The two units of North Valmy had an average availability of 91.5 percent and a capacity output factor of 75.1 percent in 1994. They burned 1.56 million tons of coal to generate 3,289 GWh of electricity. During 1995, this plant is expected to generate about the same as 1994. Notably, the amount of coal purchased from Utah could increase by about 10 percent.

Utah and Wyoming coal delivered to the North Valmy Plant are similar in price and quality; Wyoming coal is slightly less than Utah coal in price and Utah coal slightly less in sulfur content and higher BTU content than Wyoming coal. The coal fields are of nearly the same geographical distance from the North Valmy plant though Utah's coal is closer by 30 miles. Neither coal has ever demonstrated a large enough competitive advantage to alter the share each supplies to the North Valmy Plant in the near future. However, the gradual accumulation of stock of one coal over the other may affect the relative amount of purchase by a few percentage points.

A third coal-fired electric utility plant, one that does not burn Utah coal, is the Southern California Edison Company Mojave's Power Plant near Laughlin, Nevada. The Mojave Power Plant has a combined nameplate generation capacity of 1,636 MW and

consumes about 4.2 million tons of coal per year. This coal is currently shipped to the Mojave plant through a 273-mile, 16- to 18-inch slurry pipeline from the Black Mesa-Kayenta coal mine complex near Kayenta, Arizona. At this time, Black Mesa coal is probably the plant's only viable coal supply. However, competition for a share of Mojave's coal supply could occur if, and when, coal from Utah's southern fields is developed.

Besides Nevada's electric utilities, more than 1.2 million tons of Utah coal went to cogeneration facilities in California. The Energy Information Administration, in adhering to a more restricted definition of electric utility and other industrial coal consumption, classifies cogeneration consumption under the definition of other industrial coal. For purposes of this report, coal shipped for consumption in cogeneration facilities is considered electric utility consumption, since its main purpose is to generate electricity for sale.

The electric utility market for Utah coal presently includes six coal-fired cogeneration units operating in California. Stockton, California is the site of the first coal-fired cogeneration facility to burn Utah coal. This unit is operated by Air Products & Chemicals, Inc. and began commercial operation in March 1988. This 49.9 MW unit is capable of consuming 220,000 tons of coal per year to generate about 425 GWh of

electricity. In 1994, this plant purchased 251,000 tons of coal, all of which came from Utah. The plant generated a total of 504 GWh of electricity. Some of the electricity and all of the steam by-product were used by an adjacent corn wet milling plant owned by Corn Product Co. International. Pacific Gas and Electric Co. purchased the remainder. During 1995, this plant will have used 25 percent less coal and will have generated about the same percentage less electricity.

In May 1989, a second coal-fired cogeneration facility was commissioned. It is owned by Mt. Poso Cogeneration Co., a consortium of Ahlstrom Development Corp., Pacific Generation Co., and Bechtel Enterprises Inc. This 49.9 MW plant is located in the San Joaquin Valley and is operated by Pyropacific Operating Co. and Pacific Generation Co. During 1994, this unit purchased 240,000 tons of Utah coal and burned 236,000 tons to generate 512 GWh of gross and 453 GWh of net electricity that was sold to Pacific Gas & Electric Co. The operations in the Mt. Poso Field-West used the steam by-product for enhanced oil recovery. During 1995, this unit will consume 10 percent less coal and generate 10 percent less electricity.

The largest coal-fired cogeneration facility in California, with 96 MW of installed electric generation capacity, is owned by ACE Cogeneration Co., which is in-

turn, owned by Ahlstrom Development Corp., Constellation Holding, Inc. and Kerr McGee Chemical Co. This unit is located in Trona, California and started operation in September 1990. North American Chemical Company's two soda ash plants adjacent to the ACE plant use the steam by-product. This unit has the capacity to burn 300,000 to 350,000 tons of coal per year to generate between 650 to 750 GWh of electricity. During 1994, the firm purchased 360,000 tons of Utah coal and burned 355,000 tons to generate 817 GWh of electricity. This was the gross generation. Southern California Edison Co. purchased the net 740 GWh of electricity. This unit is expected to burn about three percent less coal during 1995.

Ultra Power, Constellation and Hadson are the owners of a twin cogeneration plant in Bakersfield named Rio Bravo Poso and Rio Bravo Jasmin. Construction of this twin plant started on December 28, 1987 and was completed on March 23, 1990. The plant started commercial operation on September 27, 1989 and went on-line early in 1990.

During 1994, Rio Bravo Poso purchased 136,000 tons of Utah coal, burning nearly all of it to generate 281 GWh of electricity, which was ultimately sold to Pacific Gas and Electric. Operators in the Rio Bravo oil field used the steam by-product for enhanced oil recovery operations. During 1995, this plant may consume a smaller amount of Utah coal

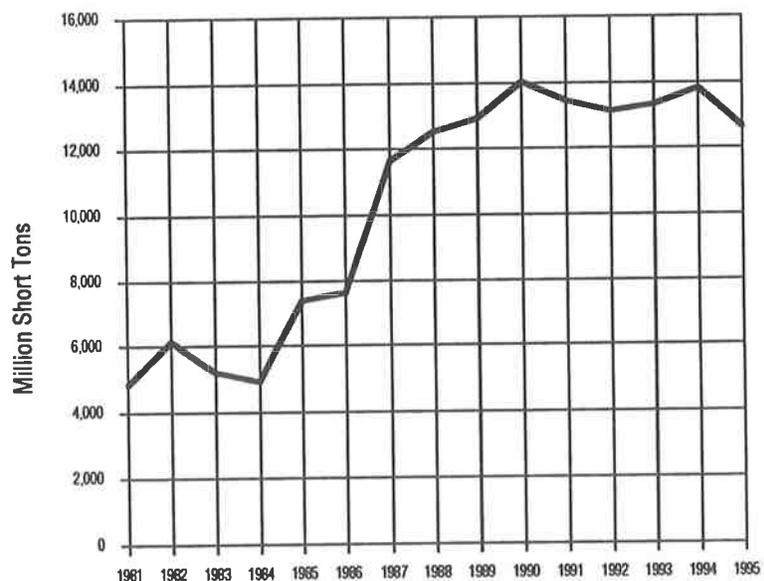
due to scheduled maintenance in the fall. Rio Bravo Jasmin purchased 138,000 tons of Utah coal and burned 137,000 tons to generate 279 GWh of electricity that was sold to Southern California Edison. The Rio Bravo oil field also used the steam by-product of this unit for enhanced oil recovery. During 1995, this plant is expected to purchase and burn a slightly smaller amount of Utah coal, as compared with 1994, and generate close to the same amount of electricity.

Another cogeneration plant, Energy Factor, is located in Stockton. This 45 MW cogeneration plant was first bought by Sithe Energy in 1990 and then sold to a partnership of National Power Company and ESI in 1993. ESI, a wholly owned subsidiary of Florida Power Company, originally backed this transaction, but later decided to take a more active role in the plant's daily operation. This plant is now operating under the name of Port of Stockton District Energy Facility (POS-DEF) Power Company L.P. The steam by-product from this plant goes to three processing facilities within the same industrial complex: California Cedar Products, which manufactures cedar wood products including Dura Flame logs; and Cargil and Liquid Sugar that each import raw sugar from Hawaii and manufacture various food products for human and animal consumption. This cogeneration unit can use about 200,000 tons of coal per year. The coal supply

contract for this company is with Pacific Basin Resources, a division of Oxbow Carbon & Minerals of Colorado. During 1994, this company purchased 166,000 tons of coal, all of which came from Utah. This unit consumed 166,000 tons of coal to generate 364 GWh, of which 315 GWh (of net electric generation) was sold to Pacific Gas & Electric. In all likelihood, for the foreseeable future, all of the requirement of this unit will be supplied solely from Utah.

main users of Utah coal, jumped by nearly 100 percent from 556,000 to 1,087,000 tons. During 1994, this consumption went up to 1,710,000, more than 200 percent over 1992 and about 60 percent over 1993. States receiving electric utility coal from Utah included Washington (434,000 tons), Missouri (418,000 tons), Kentucky (252,000 tons), Indiana (234,000 tons), Illinois (162,000 tons), Tennessee (105,000 tons), Oregon (101,000 tons) and Iowa (4,000

Distribution of Coal to Utah Electric Utilities



1995 values are forecast

Shipments of coal for consumption by electric power plants in Nevada are expected to increase by five percent over 1994's total to well over two million tons per year in 1995. During 1993, the amount of coal sold to electric utilities within the U.S. excluding Utah, Nevada, California, the

tons). During 1995, this consumption should double again and increase from 1,710,000 tons to 3,530,000 tons. As a result, Utah coal distributed to other states for electricity generation is expected to increase from 4.8 million tons in 1994 to 7.3 million tons in 1995.

Utah Markets

Coal consumed in Utah to generate electricity amounted to nearly 14.1 million tons in 1994 and exceeded expectations. Coal shipped to electric utility plants was 13.8 million tons. Utah Power's Hunter I, II, and III, with availability of 90.90 percent and utilized availability of 95.86 percent, consumed 4.27 million tons of coal from PacifiCorp's Cottonwood Mine to generate 9,351 GWh of electricity. During 1995, this plant should be working at about a two percent higher availability, and slightly higher utilized availability than in 1994, resulting in about two percent more coal burned and three percent more generated electricity.

Huntington I and II, with plant availability of about 93.0 percent and utilized availability of over 96.75 percent, consumed 2.82 million tons of coal produced from PacifiCorp's Deer Creek Mine to generate 6,664 GWh of electricity. During 1995, this plant should be working at about the same availability but higher utilized availability than in 1994, resulting in about six percent more coal burn and three percent higher electricity generation. The Carbon Plant, with availability of 91.2 percent and utilized availability of almost 97.8 percent, consumed more than 630,000 tons of coal to generate 1,367 GWh of electricity. Part of the coal for this plant was purchased on the spot market by competitive bids from various companies. It is very likely that the capacity factor for Utah

Power's three plants could be slightly higher in 1995 than in 1994, and coal consumption could increase from 7.72 to 8.01 million tons. The increase in coal production for distribution to Utah electric utilities is likely to be the same as the increase in distribution, which means that Utah Power would reduce its stockpiles by the same amount as it did in 1994.

The Intermountain Power Plant (IPP), of the Los Angeles Department of Water and Power, with availability of 92.19 percent, operated at utilized availability of 94.62 percent during 1994. The two units of this plant, with a total name plate capacity of 1,640 MW, burned 4.9 million tons of coal to generate 13,104 GWh. States outside of Utah consumed all the generated electricity. During 1995, this plant will burn approximately 4.44 million tons of Utah coal to generate 11,525 GWh of electricity, all of which will be sold outside of Utah. The warm winter of 1994/1995 negatively impacted the coal sale of 1995 and it has decreased steadily through the year. The higher than usual snow pack in the Rockies, Cascades and the Sierras and the constant rain between March and May of 1995 bolstered hydropower sales to the detriment of coal use.

The Los Angeles Department of Water and Power curtailed its generation of electricity from the Intermountain Power Plant (IPP) in mid-April to take advantage of the cheaper

hydropower available at that time. This action coincided with Utah's legislative body advancing a \$90 million property tax relief bill. At the same time, the state charged a gross proceeds tax on sales of companies above a certain level of sales volume. Ultimately, these proceeds offset the property tax relief that was afforded them.

As a result of these legislative mandates, many linked lower coal burn by IPP with the result of the compensating gross receipt tax rather than the availability of the cheaper hydropower. In 1993, we experienced the same phenomenon. IPP burned about four million tons of coal instead of the usual five million tons when above average hydro resources became available.

During 1994, Deseret Generation and Transmission's (DG&T) Bonanza Plant with the rated peak capacity of 420 MW, had an availability of 96.19 percent and a capacity factor of 89.9 percent. This plant consumed 1.49 million tons of Colorado coal to generate 3,392 GWh of electricity, 1,790 GWh or 53 percent of which was sold outside of the state. DG&T purchased the coal from the Deserado mine located just 36 miles east of the plant in Colorado. During 1995, the availability will decrease to 82.9 percent due to scheduled maintenance. The capacity factor should increase to 92 percent and the amount of coal consumed will be 1.34 million tons, resulting

in 3,050 GWh of electricity generation, of which 53 percent or 1,615 GWh will be sold outside of Utah.

Utah Coking Coal Markets

The market for Utah-produced coking coal is limited to the Geneva Works Steel Mill in Orem, Utah, owned by Basic Manufacturing and Technology of Utah, Inc. Geneva Steel is the only integrated steel mill operating west of the Mississippi River. Located 45 miles south of Salt Lake City, the Company manufactures hot-rolled steel plate, sheet, and pipe for markets primarily in the western and central United States. Geneva's customers include service centers, distributors, steel processors, and various end users. These include manufacturers of welded tubing, highway guardrail, storage tanks, railcars, ships, and agricultural and industrial equipment. The Company is undergoing an extensive modernization program intended to enhance its competitive position by reducing operating costs, expanding product lines, improving quality, and significantly increasing throughput capacity. With these improvements in place, Geneva Steel will strengthen its position as a low-cost steel producer while becoming one of the industry's more environmentally advanced steel mills. The Company acquired the steel mill and related facilities in a leveraged buy out from USX Corporation in August 1987.

Coal purchased by Geneva Steel to make coke totaled

959,000 tons during 1994. The plant consumed about the same amount of coal to make coke for steel production. As the coke-making battery of Geneva Works ages, its capacity decreases, thus limiting the plant's steel-making capacity. During 1994, Geneva overcame this constraint by directly purchasing 267,000 tons of coke, 86,000 tons from Japan and 181,000 tons from China in addition to its own manufactured supply, to produce steel. Of this tonnage, the producer shipped 1.5 million tons outside of Utah.

To meet its requirement of low- to mid-volatile hard coking coal, Geneva Works has negotiated a long term contract with eastern producers and a five year, 500,000 tons-per-year transportation contract with Southern Pacific railroad.

During 1994, Geneva bought 171,000 tons of low-volatile Pennsylvania coking coal from Cooney Brothers Coal Company of Cresson, Pennsylvania. In addition, Geneva bought 185,000 tons of high-volatile Colorado coking coal from Pacific Basin Resources of Littleton, Colorado. This coal was from the same seam as the coal Geneva purchased from the Bear Coal Co., Inc. of Somerset, Colorado during 1991, but it came from across the valley from San Born Creek mine.

Geneva also bought 207,000 tons of mid-volatile Virginia coal from the United Coal Company of Bristol,

Virginia, mostly from Lady H mine. It also purchased and consumed 227,000 tons from Well More Coal Company of Virginia, and 18,000 tons of mid-volatile Virginia coking coal from Cardinal Coal Company, a division of Pittston Coal. Sunnyside of Utah provided 109,000 tons of high-volatile coking coal.

Geneva consumption is expected to slowly decrease as the units get older. In 1995, Geneva will purchase 173,000 tons of coking coal from Cooney Brothers, about 326,000 tons of coking coal from Pacific Basin Resources' San Born Creek mine, 182,000 tons of mid-volatile coking coal from United Coal Company and 278,000 tons of mid-volatile coal from Well More Company of Virginia.

In February 1994, Geneva's coal purchase contract with Sunnyside Coal company expired and, due to financial considerations, Geneva chose not to renew this contract.

Through the end of March 1994, Geneva purchased 109,000 tons of coal from Sunnyside Coal Company. At the expiration of the contract, Sunnyside -- unable to persuade Geneva to renew its contract -- began closing the mine. By early June operators removed all useable equipment, halted pumping water and stopped ventilation of the mine. Mine portals were later sealed and final clean-up has begun.

Other Industrial Coal Markets

Out-of-state Markets

Since 1989, when shipment of coal to other states for industrial consumption peaked at 2.4 million tons, consumption for this market sector has been on the decline, reaching only 2.0 million tons in 1992. During 1993, shipments increased for the first time in four years and in 1994 this

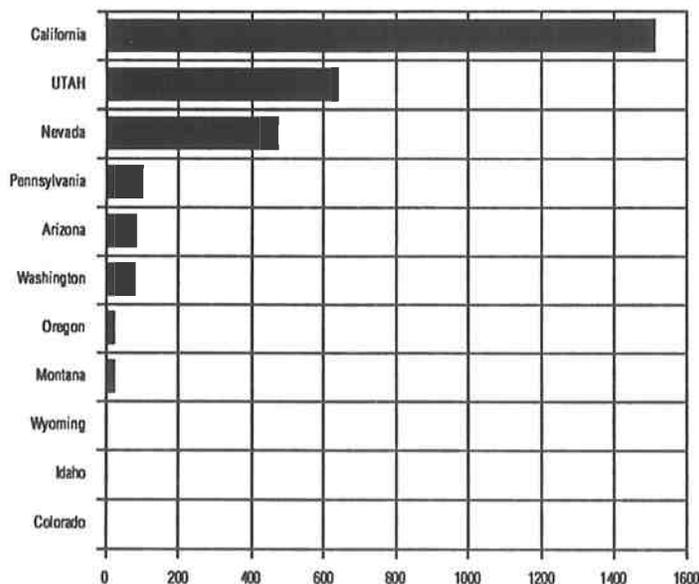
shipment to Pennsylvania amounted to 103,000 tons. Arizona shipments ranked fourth with 86,000 tons. Washington also purchased 82,000 tons, followed by Oregon with 27,000 tons, Montana with 26,000 tons, Wyoming with 2,000 tons, Idaho with 2,000 tons and finally Colorado, with 1,000 tons.

During the other four months, Kennecott consumed a little more than 3.3 billion cubic feet of natural gas to generate 327 GWh of electricity. The coal consumption in 1994 jumped 11.5 percent over the previous year's figure.

In 1995, Kennecott's coal fired generation will increase by seven percent, but the natural gas generated electricity will remain the same resulting in greater coal consumption. Total coal consumption will amount to 364,000 tons and natural gas consumption will remain at 3.3 billion cubic feet.

Distribution of Utah Industrial Coal by State

Thousand Short Tons



trend continued as six operators shipped 2.32 million tons of industrial coal to ten states outside Utah. The largest recipient of industrial coal was California. About two thirds of all the industrial coal from Utah went to chemical and cement manufacturing plants in the Golden State. Nevada received 475,000 tons for use mainly in cement plants. This consumption exceeded that of last year by 100 percent.

Utah Markets

In 1994, industrial consumption of coal in Utah increased by 5.4 percent to 647,000 tons from 614,000 tons the previous year. Kennecott Copper used more than one half of the total to generate electricity. During 1994, Kennecott purchased 336,000 tons of Utah coal and consumed 340,000 tons during an eight month period to generate 712 GWh of electricity.

The Devil's Slide Plant of Ideal Basic Industries has been a part of Holnam since 1986. A series of acquisitions and mergers had established Holnam, Inc. as one of the largest cement companies on the North American continent. Dundee Cement Company, Santee Cement Company, Northwestern States Portland Cement Co., Ideal Basic Industries and United Cement Company have all been brought together under the Holnam banner. Holderbank controls 89.3 percent of Holnam's common stock which is traded on the New York Stock Exchange under the symbol HLN. In the consolidation process Holderbank's share in St. Lawrence cement was brought into Holnam, which thus now holds a 60 percent interest in that company.

In 1986 Holderbank acquired a 66 percent interest in Ideal Basic Industries, Inc. a leading cement producer

based in Denver, Colorado, which had run into some financial difficulties and required financial restructuring. The nine-plant Ideal Basic system fit in well with the Dundee Cement Co. System, offering new markets to the west, southwest, and mid-central regions of the United States. The whole establishment comprising 19 cement plants and 113 distribution terminals in most U.S. states and three provinces of Canada is now referred to as Holnam.

Devil's Slide Plant switched from Wyoming coal to natural gas in 1991 and continued to burn natural gas until August of 1992. In August 1992, the price of natural gas increased to the point where coal consumption became more economically desirable. During the remainder of 1992 Devil's Slide Plant used 27,000 tons of coal. A significant event occurred when this plant converted from natural gas to coal; it did not automatically switch to Wyoming coal as it had in the past, but instead started using Utah coal.

During 1993, Devil's Slide plant purchased 60,000 tons of coal, 40,000 tons of which came from Utah with the remainder coming from Wyoming. In 1994, the coal purchase from Utah increased to 59,000 tons with only 4,000 tons of coal coming from Wyoming. This represented an almost 50 percent increase in Utah coal purchase and an 80 percent decrease in Wyoming

coal purchases. It is a significant development for Utah coal to compete against Wyoming coal. The Devil's Slide Plant does not burn natural gas on a regular basis, as it did prior to mid-1992. The only time natural gas is consumed is when the coal handling apparatus experiences operational problems.

During 1994, Ashgrove's consumption of coal increased by about 17 percent to 91,000 tons. The reasons are three-fold. Cement production increased by about ten percent, the economic benefits of consuming waste oil as a fuel substitute began to diminish as the price per BTU of waste oil approached that of coal. In addition, expenses had to be incurred to bring about the necessary mechanical changes for efficient consumption of waste oil. Finally the consumption of used tires was cut down to 50 percent of the previous year due to operational problems encountered with this use.

Gypsum and Lime plant operators consumed nearly 100,000 tons of coal as well. Industrial coal consumption in Utah should increase by about six percent from 647,000 tons in 1994 to about 686,000 tons in 1995, but the actual increase could be slightly smaller than forecasted.

Residential and Commercial Coal Markets.

Out-of-state Markets

Since the mid-1980s, when consumption stabilized at about 300,000 tons per year,

demand for residential and commercial coal has been on the decline. By 1990, consumption came in at 59,000 tons, its lowest level. In 1991, sales to the residential and commercial sector increased to 76,000 tons and in 1992, to 81,000 tons. During 1993, out-of-state consumption jumped by 63 percent to 134,000 tons. By 1994, this sector consumed 308,000 tons. This unusual jump was due mainly to consumption of 193,000 tons by Illinois, Washington, Colorado and Idaho bought significant quantities. In contrast, California and Nevada purchased relatively small amounts (Appendix, Table 5). Consumption by the residential and commercial sectors in these states will probably increase in the short term though with some fluctuations. For 1995, an increase of about 50 percent is very likely.

Utah Markets

During 1994, residential and commercial coal use in Utah decreased by 31 percent to 157,000 tons. This level of consumption was the lowest in the past 15 years. In some counties such as Emery, Wayne, Millard, Juab, Sanpete, Sevier and Carbon the percentage of homes using coal for heating is between 15 to 20. In comparison, the Wasatch Front counties of Salt Lake, Utah, Weber and Davis use very little coal for home heating. Commercial consumption of coal for space heating in Davis, Weber and Salt Lake counties is also low.

Two elements affect residential and commercial con-

sumption. One includes the environmental standards set by various air quality control agencies; the other is the cost of the fuel. From 1987 to 1992 natural gas declined in price and became very competitive with coal on a cent-per-million-BTU-delivered basis. As a result, many consumers switched to natural gas. However, in late 1992 and during 1993, increases in the spot price of natural gas provided an economic incentive for some consumers to switch back to coal. Therefore, Utah coal producers might see an increase in out-of-state consumption of Utah coal by residential and commercial markets.

This is borne out by our expectations for 1995 where out-of-state consumption will probably increase to 457,000 tons and Utah consumption will increase to 193,000 tons for a total of 650,000 tons.

Coal Imports

Utah imports coal for coking applications, industrial plants and a coal-fired power plant in Uintah County. There are no imports to the residential and commercial sector. In 1994, companies operating in Utah imported 2.6 million tons of coal.

Utah previously imported low- to mid-volatile hard coking coal to mix with its own high volatile coking coal for the Geneva Steel Mill. Since February of 1994, when the coal supply contract between Geneva and Sunnyside Reclamation and Salvage

Company expired, Utah has relied entirely on out-of-state coking coal and coke for steel production. This would account for the major increase in the amount of imported coal to Utah. Imports of industrial coal to Utah is used primarily at Devil's Slide Plant located in Morgan near the Wyoming border. However, this plant's consumption is now being met by Utah coal, and imports to this plant could cease in the near future in favor of Utah coal. The only other coal import to Utah is about 1.5 million tons of electric utility coal of Deseret Generation and Transmission's (DG&T) Bonanza plant. Compared to 1993, coal shipped to Utah from mines in other states increased by 23 percent in 1994. This occurred due to higher consumption of out-of-state coal by the Geneva Steel Mill.

The Bonanza plant purchased 1.495 million tons of coal from Colorado in 1994. In 1995, imports may fall as the Bonanza Plant is expected to decrease its purchases to 1.346 million tons, while Geneva Works coal imports should stay at the 1994 level. Ideal Basic Industries' Devil's Slide Plant purchased a little more than 9,000 tons of Wyoming coal when it switched from natural gas during the second half of 1992. During 1994, this plant purchased 4,000 tons of industrial coal from Wyoming and in 1995 it will purchase an even smaller amount than in 1994.

There is no indication that coal will be imported into

Utah for use by the residential and commercial sector in 1995. Altogether, the imports of coal into Utah are expected to decrease to 2.45 million tons in 1995 from 2.59 million tons in 1994.

Overseas Exports

Utah coal exports to overseas markets during 1994 were quite encouraging, surpassing the impressive export levels of 1993 (Appendix, Table 1). The number of Utah mines exporting coal in 1993 stayed at six, but coal exports increased 150,000 tons to 2.717 million tons. Utah is uniquely situated in the coal export market. Its low cost, low sulfur and high BTU coal is closer to West Coast ports for shipment to Pacific Rim countries than any other U.S. coal source. In the past U.S. coal exceeded the cost of other coals in the Pacific Rim region, though offering several quality advantages of their product. In addition to the quality, U.S. coal producers are considered the most reliable. This remains an attribute of Utah's coal that Pacific Rim countries value very highly.

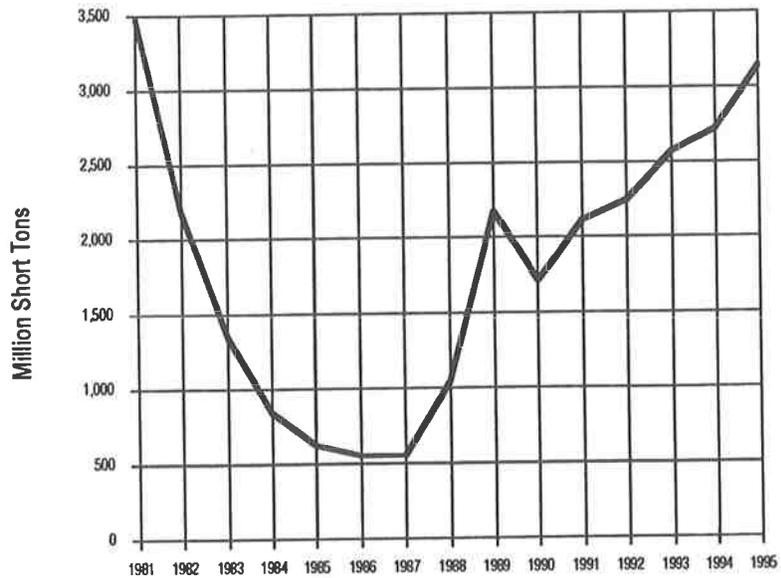
The cost of production and price of Utah coal steadily decreased over the past decade, largely as a result of increased productivity. Because of this productivity, Utah coal is nearly as competitive on a price-per-million BTU basis as coal produced in other countries. Indeed by 1995, Utah coal became quite competitive with Australian and other coals in the Pacific Rim area. For example,

Australian coal producers in negotiations with Japanese traders managed to negotiate a \$5-6 increase for their export coal. Utah coal producers received a \$2 increase. This difference in the amount of adjustment between the Australian and the American coal was large enough to prompt interest in Utah coal. In fact, the increase was enough to yield an FOB mine mouth price for Utah coal of over \$17 per ton.

Utah coal exports are influenced by the world coal market. During the next ten years, steam coal demand is expected to rise in Europe as well as in the Pacific Rim. European coal imports should increase about 80 percent during this period due to greater consumption but, more importantly, because of production curtailment in Europe.

Production in Europe will fall for several reasons. First, Europe has historically used lignite coal but has discontinued its use because of environmental considerations. Second, many European coal mines are unprofitable but have continued to produce with government subsidies. Many of these subsidies no longer exist, making many of these mines practically unprofitable. There are also some deep underground seams that are more difficult to mine. Production from some of these mines has now been halted as well. These curtailments will indirectly affect Utah's coal exports. As major Eastern exporting coal companies with

Utah Coal Exports to Pacific Rim Countries



1995 values are forecast

subsidiaries in Utah start to ship more coal to Europe they may shift more of their Pacific Rim obligations to their Utah subsidiaries and affiliates. However, increased imports in the Asian coal market are basically consumption driven and will continue to be in the five percent range for the next 10 years. In this market, fuel oil competes very strongly with coal.

In 1995, Utah coal exports will surpass the three million ton mark and, by the end of the decade, it will exceed five million tons.

Activities of Utah Coal Operators

PacifiCorp

The Deer Creek and Cottonwood/Trail Mountain Mines, owned by PacifiCorp and operated by Energy West Mining Company had a very successful year in 1994. Collectively, the three produce 7.519 million tons of coal. The Deer Creek Mine produced 3.178 million tons using longwall methods and 0.844 million tons using continuous miner development. Deer Creek coal averaged 9.79 percent ash for the year. The 9.79 percent met PacifiCorp's standard and fueled PacifiCorp's Carbon Plant. In total, PacifiCorp purchased 415,000 tons of this coal which was shipped during the year with an average ash content of 9.35 percent. Coal with a lower ash content was produced by the longwall sections in the northern reserves of the Deer Creek Mine. It is anticipated that the low ash production will continue throughout 1995.

The Cottonwood Mine produced 3.497 millions tons in 1994. Longwall production accounted for 2.717 million tons and continuous miner development for 0.780 million tons. The average ash content of the coal produced in 1994 was 12.77 percent on a raw as received basis. Of this production, operators washed 0.770 million tons at the Hunter prep plant. It is anticipated that the last longwall panels in the Cottonwood Mine will be completed in the last quarter of 1995. Following that pro-

ject, the longwall production will be shifted to the Trail Mountain Mine to the west.

Coastal States Energy Company

In 1984 Coastal States Utah mines produced approximately 2.5 million tons of coal and exported a single Panamax vessel (60,000 tons) of coal. By 1989, Coastal's Utah production reached a level of 6.0 million tons and Coastal exported more than 750,000 tons of Utah coal. For 1994, with the first full year of Soldier Creek Coal Company's production as a Coastal Company, Coastal States production exceeded 9.0 million tons in Utah and Coastal's exports to Taiwan and Japan grew to more than 1.0 million tons.

Utah and Colorado coal mines began to feel the impact of the Clean Air Act Amendments (CAAA) and received some benefit from the favorable backhaul rates offered by Southern Pacific Railroad. Coastal was not an exception to this trend. During 1994, Coastal made shipments related to the CAAA and the backhaul situation. This trend seems likely to continue with potential for increasing tonnages as implementation of Phase II of the CAAA draws closer (January 1, 2000).

Coastal's goal is to increase its Utah production to meet demand growth in domestic and export markets. Higher levels of annual production

should result from continued utilization of state-of-the-art mining techniques, including longwall mining.

White Oak Mining and Construction Company, Inc.

In 1994, White Oak Mining produced approximately 1.15 million tons of clean coal its first year following the purchase of Valley Camp of Utah, Inc. Production presently comes from both the Upper O Connor and Lower O Connor Seams in the No. 2 Mine (formerly Belina No. 2 Mine). The No. 1 Mine (formerly Belina No. 1 Mine/Upper O Connor Seam) will be reopened sometime in 1995. 1995 sales are planned to approach 2.4 million tons with an increase projected again in 1996.

White Oak Mining has increased to nearly 100 employees at the present time.

Environmental evaluation and permit preparation is continuing for the Miller/Gordon Creek leases adjacent to the Utah No. 2 Mine in Pleasant Valley. Exploration drilling is also planned.

Sunnyside Coal Co.

When the coal supply contract between Geneva Steel Mill and Sunnyside ended in February 1994, Sunnyside decided to discontinue operation and turn its attention to its reclamation work.

Andalex Resources, Inc.

The Warm Springs project Environmental Impact Statement (EIS), which is

being prepared jointly by the Bureau of Land Management (BLM) and the Office of Surface Mining (OSM), is now in its fourth year of preparation. The federal government recently held an additional round of scoping meetings to address Andalex's proposal to mine additional areas within its existing federal leases. The draft EIS is tentatively scheduled for release in early 1996. The final EIS may be completed later that year.

Meanwhile, the State of Utah, Division of Oil, Gas and Mining (OGM) is still receiving public comment on the Smoky Hollow mine permit application. The OGM has been processing this application for the past 54 months and does not anticipate issuing the permit until after the EIS has been finalized.

Cyprus Plateau Coal Company

Activities at the Plateau Mining operations remained at a high level on two fronts during 1994. Production at the Starpoint No. 2 Mine equaled over 3.0 million tons during the year. Production focused on developing mains and gates while the longwall recovered coal from east-west panels in wet and variable conditions. Considerable geologic and engineering effort was directed on the installation and monitoring of cable bolts in gate road entries to replace wooden cribs and posts. Efforts were surprisingly successful. Engineers evaluated structural detail from mine encounters and mine mapping

to create a new structural overlay for the western part of the mine. The company undertook several drilling programs during the year to define bounding faults.

At the same time, exploration and permitting activities on the newly formed Willow Creek Property proceeded at a rapid pace. The company completed and submitted a 17 volume Mining and Reclamation Permit Application in the first part of 1995 to OGM. Other permits also being worked on included those on air, water, sedimentation, highway modification and stream relocation. An environmental assessment document also commenced. Cyprus Plateau also participated in an AMR clean-up project of the Price River area near the old Castle Gate works. Efforts resulted in the reception of an OGM Earth Day Award in early 1995.

The last part of 1994 saw an intensive drilling program take place on the property to gather geologic and geotechnical data to establish water monitor wells as dictated by regulatory agencies. Five holes were completed yielding new thickness, quality, gas, and structural data. Additional drilling is planned for 1995. A fast track start-up for the new mine could commence in mid-1995 with actual mining starting in late 1996.

Genwal Resources, Inc.

Genwal Coal Company began mining in the Crandal Canyon area of Utah in 1984. In 1988 Nevada Electric

Investment Company (NEICO), the unregulated affiliate of Nevada Power Company purchased the Crandal Canyon property. During 1991, Intermountain Power Agency (IPA), which is owned by 36 utilities in Utah and California, purchased 50 percent of the Crandal Canyon property from NEICO. In 1995, Andalex Resources purchased the other 50 percent interest and became a partner with IPA in the property. Consequently, Andalex Resources, Inc. established Genwal Resources, Inc. as a wholly-owned subsidiary to operate the Crandal Canyon mine.

During 1995, Genwal purchased a set of Joy 4LS Shearer, a Halbach & Braum face conveyor and Kloeckner and Beconet Shields to change over from continuous miner operation to longwall operation. This will increase the production capacity of Genwal to 2.5 million ton per year. Genwal holds 5,195 acres of federal, state and fee leases in the Crandal Canyon area and is looking at additional leases for its future production.

The mining operation is now carried out in the Hiawatha seam which is between six to 12 feet thick in that area.

Co-op Coal Company

Co-op production in 1994 almost matched 1993 production. Co-op has been quite successful in sending various amounts of coal for test burn to the Eastern sector of the country. This could add to sizable out-of-state Utah coal sales in the near future.

Coal Leasing Activity in Utah

During 1994, there were no federal coal lease sales in Utah. In July 1995, there was only one federal coal lease sale in Utah.

On May 22, 1992, Sage Point Coal Company which is now owned by Coastal States Energy Company, filed an LBA (Lease By Application) for 2,098 acres in Alkali Creek Tract in Township 13S and Range 11E, sections 1, 11, 12, 13, 14, 15, 23 and 24. This new LBA can be used for continuous miner as well as longwall operation. The tract delineation for this lease was made in 1982 which covered all or parts of sections 1, 10, 11, 12, 13, 14, 15, 23 and 24. The new tract delineation was subsequently made and now contains 2,177.32 acres holding 12.7 million tons of recoverable coal. This lease went for public auction in July 1995. Coastal bid the highest with \$2.667 million or \$1,225/acre, which amounted to 215̄/recoverable ton. Five other leases have been applied for and the BLM is presently processing them.

On January 10, 1991, Coastal States Energy Company filed an LBA for 2,020 acres of federal land in Winter Quarters Canyon in the Wasatch Plateau coal field. The application covered sections 2, 3, 10 and 11 in Township 13 South (S) and Range 6 East (E). The tract delineation has been made for 3,351 acres covering all or parts of sections 26, 34 and 35 of

Township 12S and Range 6E and sections 2, 3, 10 and 11 of Township 13S and Range 6E. Environmental Assessment for the tract has been prepared by the Forest Service. The processing of this LBA has been delayed for two reasons. First, BLM and Coastal have arrived at two different figures for the amount of recoverable coal existing in the delineated area. It is possible that the treatment in the vicinity of the faults has given rise to this discrepancy. The other problem deals with the method of mining. Coastal employs longwall in all of its operations except for the development of the mine. The Forest Service in contrast like to allow only fully supported mining operations under the perennial streams. Longwall allows the mined panels to collapse and create a subsidence that may adversely affect the perennial streams. However, it might even be more helpful to create a fish habitat in the perennial stream by creating shallow ponds through which the stream may flow. The Forest Service, however, is not willing to take any chance on the perennial streams. It is more than likely that this federal coal lease will go to sale in 1996. Coastal needs more reserves as it extends the Skyline mine and adequate reserves are essential for long term coal contracts. On the basis of their ongoing volume of sales, coal operators, in general, attempt to keep a 30-year coal reserve on hand.

Mining and Energy Resources, Inc. (MERI) of Golden, Colorado submitted the first LBA for Crandall Canyon on December 29, 1989 covering an area of 3,431 acres in Wasatch Plateau coal field. The BLM had allowed MERI to commence its environmental studies before the conclusion of 1994. This LBA was rejected since MERI took no action.

On March 3, 1991, Genwal Coal Company, which is now a 50/50 subsidiary of Intermountain Power Agency (IPA) and Andalex Resources, filed for an LBA covering an area of 1,974 acres overlapping some of the previously applied for LBA by MERI. Genwal now owns this tract. On February 4, 1993, Genwal Coal Company filed another LBA for 4,051 acres of federal coal leases covering all or parts of sections 1, 10, 11, 12, 13, 14 and 15 of Township 16S and Range 6E and sections 6, 7 and 8 of Township 16S and Range 7E on land adjoining its presently operating mine and the LBA which was previously applied for. This LBA is in the process of delineation and will go out for bid in 1996.

PacifiCorp Electric Operations (Utah Power) of Salt Lake City submitted an LBA on February 26, 1991 for 7,864 acres in the North Trail Mountain/Cottonwood Creek area of the Wasatch Plateau coal field in Emery County covering all or parts of sections 2, 3, 4, 9, 10, 11, 14, 15, 16, 21, 22, 23, 24, 25, 26, 27,

28, 29, 32 and 33 of Township 17S and Range 6E. This application is in full conformity with responsible and prudent coal operation. The BLM is processing this application and a draft delineation has already been prepared. However, expectations of this federal coal lease being offered for competitive bid in 1996 may be on the optimistic side.

On August 16, 1995, Horizon Coal Corporation of Wise, Virginia applied for an LBA covering an area of 1,280 acres in Township 13S and Range 8E.

Outlook for Utah's Coal Industry

Forecast for 1995

Prices

Over the past decade, coal prices in Utah have been on the decline. In 1984, Utah coal, on average, sold for \$29.20 per ton. During 1994, the same coal sold for \$20.07 per ton. This represents a decrease of 31.3 percent in current dollars, but a decrease of almost 55 percent on a constant dollar basis.

For the past four years, the average prices have fluctuated around \$21 per ton and hit a new low of \$20.07 in 1994. This indicates a possible bottoming out. In the near term, the average price will most likely remain stable. For 1995, the average price of coal will probably rise above \$21 per ton. The nominal price will start moving up after 1994, however, the price of coal as measured in constant dollars is expected to continue to fall. In other words, even though the average dollar price per ton will accelerate, the rate of increase should not exceed the rate of inflation.

Utah's coal prices are influenced by the world price of coal. The correlation may not be high, but the existence of strong influence cannot be denied.

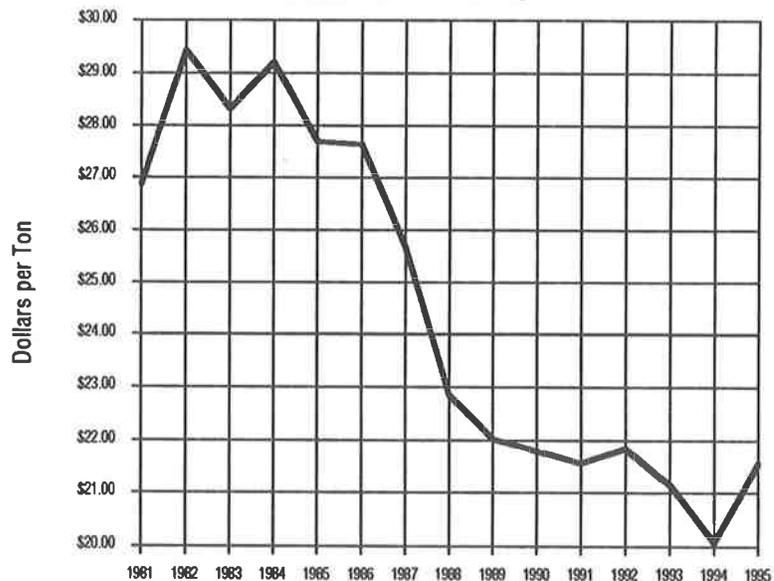
Currently, world coal prices are going up. Coal operators in Utah recently agreed to a two dollar per ton increase in coal prices exported to the Pacific Rim countries

of Taiwan, Korea and Japan. Other countries such as Australia and South Africa have negotiated a much larger price increase, some as high as \$6.0 per ton. Even though export prices for Utah producers are not a determining factor in overall coal prices, and the sale takes place on marginal production, it does affect the spot market and to some extent affects the average coal price.

keep overall profit high. The abundance of coal supply on the international market will continue to exert pressure on Utah coal producers to keep prices competitive.

World recoverable coal reserves stand at 1.146 trillion tons. World coal production and consumption is around five billion tons per year implying that at the present rate of consumption, the world

Utah Coal Prices



1995 values are forecast

Other factors, however, tend to bring coal prices down. Technological developments in coal production and handling continue to lower the break-even point for coal production and to reduce coal prices. Large volume production allows operators to reduce profit margin per ton by lowering prices and still

has an adequate supply of coal for the next 228 years. This, of course, is based on the recoverable reserves that are known and reported at this time. There are many coal reserves that remain undiscovered and some that are discovered but not reported. There is also some question about the "recoverable" fraction of the

recoverable reserves. By "recoverable" we refer to resources that we can mine efficiently with today's technology. However, future technology may yield more recoverable resources, hence a much greater recoverable reserve.

The rate of consumption also directly affects the remaining number of years of supply. As the world's population increases, the demand for energy, including coal, will increase. As developing countries, with high growth rates, grow and add energy-intensive industries, the demand for energy and coal will increase. Presumably, at the same time, new technologies will help us achieve much greater efficiency in our energy conversion. Today, on average, we burn 10,080 BTU (0.84 lb. of 12,000 BTU per pound of coal) to generate one kwh of electricity which has 3,413 BTU. In other words, in the process of conversion we lose 6,667 BTU or 66.1 percent and end up with 33.9 percent of the energy used. By the turn of the century, many of our energy conversion units will have a heat rate of 6,800 BTU/kwh or slightly more than 50 percent. This, in reality, means that by the turn of the century we should be able to use the same amount of coal to generate 50 percent more electricity than we do today, implying that our reserve-to-production ratio will increase; hence we will extend the life of our reserves. This leads to the conclusion that the world has a vast coal reserve and this sup-

ply overhang will ultimately keep the supply up and the price down.

In the face of declining coal prices, there are those companies with strong management, employing newer technology and innovative processes that have managed to post sizable profits in 1994, and may expect even higher profits in 1995.

Production

Utah coal production for 1995 will surpass 25 million tons, reaching an all-time high in the industry's 126-year history. Steam coal use by the electric utilities in the East as well as greater level of exports will account for this record.

Electric utilities in the East will continue using greater amounts of Utah coal in the years to come. In addition, Pacific Rim consumption will increase after the completion of the \$180 million expansion of the Port of Los Angeles Dry Bulk Terminal (POLADBT). Construction has already begun. In June of 1995, the Phase II design and engineering contract was awarded to Jacobs Engineering Group, Inc. of Pasadena. Coal will be unloaded from unit trains by tandem railcar dumper and stockpiled by overhead traveling stacker. Pile activators and belt conveyors will then reclaim the coal and convey it over land to the ocean going vessels. This project which initially would handle seven to eight million tons of coal per year, is expected to be completed and operational by 1997. The success of this ter-

minal is guaranteed in light of the diversity of shareholders representing every facet of the coal market including coal producers, transporters and consumers. Because of the Pacific Rim expansion, industry analysts believe consumption will increase to more than five million tons by the end of the decade.

Distribution

During 1995, distribution as well as production of Utah coal will top 25 million tons. Distribution of electric utility coal to out-of-state customers will increase by as much as 2.5 million tons. In 1995, we are expecting a two-fold increase in consumption by states other than Utah, California and Nevada.

In 1984, the Federal Energy Regulatory Commission (FERC) ordered American Electric Power (AEP), the parent company of Indiana Michigan Power Company, to limit the cost of delivered coal to its Indiana plants. As a result, AEP decided to close its wholly owned subsidiary, the Price River Coal Company in Helper, Utah because the delivered cost of coal to the Indiana utility plant exceeded \$48 per ton. Ten years and 30 percent inflation later, Utah coal is flowing eastward for just over \$30 per ton delivered.

Most analysts presumed that eastern utilities would not purchase Utah coal until the second phase of the CAAA. However, price advantages have since attracted these utilities to our resources.

The first and most important reason behind increased interest in Utah coal is the decrease in cost of coal production. In 1984, the average price of Utah coal stood at \$29.20 per ton. This average price was the combination of term price that was usually \$3 to \$5 per ton more than the average price and the spot price that was \$5 to \$8 per ton less than the average price. This put the average price of term coal at \$32.20 per ton. Today, two Utah coal operators have signed coal contracts with the Tennessee Valley Authority (TVA) one of them for less than half the price of ten years ago. The importance of this cost reduction, however, should be weighed in light of the fact that more than 30 percent inflation has accrued over the past ten years.

The second factor is the merger of the Denver and Rio Grande Western (D&RGW) railroad with the Southern Pacific (SP) railroad in 1989. This merger created a direct line from the coal fields of Utah which were on D&RGW to the outreaches of SP in the east.

The third factor that may be just as important as the first is the Geneva Works decision to bring in taconite from Minnesota, thus creating a significant backhaul opportunity for Utah coal to go eastward. Geneva Steel originally used the iron ore from the mines near Cedar City, Utah. Part of the iron ore still comes from two mines near Cedar City, namely the Comstock and the

Mountain Lion which Geneva owns. Though Geneva considered the 54 percent grade of iron ore satisfactory, some criticized the negative chemical and physical properties associated with this ore that required costly mixing with other ores.

Geneva Steel started buying taconite in 1962 from the Atlantic City mine in Lander, Wyoming. This operation continued until 1983 when Geneva switched to Minnesota taconite. Minnesota operators also pelletized and concentrated the taconite to 64 percent iron instead of the usual 27 percent. Union Pacific (UP) railroad held the original transportation contract which annually brought in 2.4 million tons of taconite from Minnesota to Orem, Utah and then went to Wyoming to pick up Wyoming coal for eastern utilities. UP's contract ran out at the end of August 1994. At the beginning of 1994, Southern Pacific restructured a new transportation contract. The first leg of this package consists of bringing in taconite from Minnesota to Orem. Taconite originates from the U.S.S. Minntac mine located between Virginia City and Hibbing, Minnesota. DM&IR (Duluth, Missabee and Iron Range) takes it over 60 miles to Duluth and Steelton switchyard in Wisconsin. From there, Wisconsin Central takes it over a distance of 473 miles to Chicago where SP moves it to Orem, Utah through Kansas City, Pueblo and Grand Junction, a distance of 1,672 miles for much less than \$20 per ton. The second leg of this package consists of shipping

Utah and Colorado coal to utilities in the East. SP began contacting Utah and Colorado coal producers to ship coal to seven electric utilities in the East. Most of the coal will go from Price, Utah or Grand Junction, Colorado. The backhaul price - amounting to less than the value of the coal - to St. Louis was held constant for both Utah and Colorado coal producers. SP contacted Wisconsin Electric Power (Genwal is now selling to them through Koch Carbon) Illinois Power (Coastal is now selling to them), Detroit Edison, and other electric utilities and major industrial coal consumers. SP's main interest is to have the backhaul going either to Chicago or to St. Louis in order for the coal to be put on the Mississippi river to be barged south or eastward to nearby utilities. To accomplish this, SP allocated 1,400 steel cars carrying one hundred tons each for a turn-around time of seven days each way or a complete turn-around time of 14 days. This would enable SP to send 3,640,000 tons of taconite to Orem, Utah and carry back the same amount of coal to the Chicago/St. Louis area.

The fourth factor was nature. SP had contacted TVA as early as 1992 to create a possible interest in western coal, but TVA was not interested until the flood of 1993. This flood curtailed coal shipment of the TVA electric utility plants. As a result, TVA decided to take a second look into the more secure coal supplies in the West.

The fifth factor creating this environment was the passage of the Clean Air Act Amendments of 1990 whereby electric utilities were given SO₂ emissions credit for producing less SO₂ than the allowable level, which would be saleable to other high emission coal consumers. TVA, by consuming Utah coal, can actually generate emissions credit which it can then sell to offset the slightly higher delivered cost of Utah coal to its Allen plant near Memphis, Tennessee.

The sixth and the final factor is the TVA itself. TVA is a very large electric utility organization with 44 plants in the south, central and south Atlantic region; 29 plants in Tennessee, six in Alabama, two in Georgia, three in Kentucky and four in North Carolina. Two of these plants, one in Alabama and one in Tennessee, with total generating capacity of 5,896 MW are nuclear. Ten plants with total generating capacity of 18,130 MW use bituminous coal, and the remaining 32 are hydroelectric. The ten plants using bituminous coal could consume as much as 50 million tons of coal per year. In 1993, TVA plants burned 37 million tons and by 1999 they may burn up to 42 million tons. TVA is essentially creating a monopsony within its own region and to some extent can dictate the regional price of coal as well as the transportation cost. This, in addition to the concept of backhaul, is exactly why TVA has been able to negotiate a low freight

rate for the haulage of 3.75 million tons per year of coal from Utah and Colorado. TVA coal purchases from Utah and Colorado could soon top five million tons per year in addition to the purchases from other utilities in the East.

To keep its cost down and handle this large volume of coal transportation SP has ordered 920 aluminum cars with 117 tons of carrying capacity. This allows SP to save 17 percent on its cost and offer an attractive rail rate to its electric utility coal customers.

On January 1, 1995, TVA and White Oak Mining and Construction Company, Inc. signed a ten year contract for annual delivery of 1.5 million-tons-of-coal-per-year. Another coal contract for delivery of one half million tons-of-coal-per-year for the duration of ten years was signed on the same date between TVA and Genwal Coal Company. This is the first time in ten years that Utah coal has started to flow to electric utilities in the East on a long term basis even though numerous spot sales have been made to that sector of the country.

This two million tons of additional coal through 2005 is a great boost to Utah's coal production. It will lead to more jobs in Utah's coal industry as well as many indirect jobs in local communities.

Distribution of Utah coal to electric utilities within the state should show very little year-to-year change, unless new facili-

ties are built or some of the older units are retired. Older units experience more downtime due to maintenance and repair, so a slight decrease in distribution is expected. The only unit that could affect the electric utility coal consumption within the state is the Los Angeles Department of Water and Power's IPA plant. During years with higher precipitation in the Pacific Northwest, more hydropower becomes available at costs below those of coal. This will, to some extent, curtail the operation of IPA units resulting in less consumption of Utah coal. For 1995, this unit will purchase and burn almost half a million tons less than it did in 1994. PacifiCorp distribution will also be decreased by another half a million tons while the consumption of coal and generation of electricity at the plants increase.

Consumption of Utah coking coal will cease to exist in 1995. It is doubtful that any more coking coal will come from Utah under present circumstances.

Distribution of Utah industrial coal within and outside the state during 1995 will increase by 250,000 tons, increasing only slightly in the future as out-of-state consumption increases.

Distribution to the residential and commercial sector will increase at a higher rate than the industrial sector. The increase, however, is ultimately tied to the price of natural gas. In addition, some commercial operations may begin

switching from natural gas to coal.

During 1995, distribution to the export market will increase by more than 15 percent, or almost half a million tons.

Long-term Outlook

The general outlook for Utah coal industry is bright despite some coal operators having moved their operations to other states, sold, or otherwise disposed of their Utah coal properties. Still we have seen a number of companies expand operation and double in size within the past three or four years. We also have seen many companies apply for new federal coal leases, indicating continuing interest in Utah's coal reserves. This activity bodes well for the future of Utah coal.

Coal production in Utah has enjoyed steady growth since the mid-1980s and has doubled in size in less than a decade. Despite coal prices that have declined steadily for a decade, coal production in Utah has doubled. This is indicative of a strong and healthy coal industry.

In 1995, we expect electric utility coal consumption outside of Utah to increase substantially over the previous year. This large increase will be more permanent than the spot sale of previous years, for increases will be the result of long term contracts.

Federal, Legislative and other Issues

- In reaction to the 1990 Clean Air Act Amendments, some Mid-Western states (such as Illinois, Indiana and Ohio) legislated provisions to save coal mining jobs in their own states by requiring some of the electric utilities to scrub rather than use low sulfur western coal. These legislations have, to some extent, been challenged successfully by the Alliance for Clean Coal, a coalition of western coal producers and the railroad industry.

- The courts have ruled that the enforcement of the legislation would deny electric utilities the opportunity to utilize out-of-state low sulfur coal as one of the options in achieving the least-cost method of sulfur emissions reduction goals as set forth in the Clean Air Act Amendments. Furthermore, the legislations violate the Inter-State Commerce Clause of the U.S. Constitution. Even though these states have appealed the lower court decision and tried to overturn it, the fact remains that the utilities, and by extension the ratepayers of these electric utilities, must be availed of the option to acquire the least-cost source of electric generation rather than try to seek subsidies for the high sulfur coal mining jobs within their respective states.

- Forecasts by the Department of Energy (DOE) indicate that by the year 2010, there would be 473,000 MW of

existing coal-fired generation capacity which may require retrofit with Clean Coal Technology (CCT) and something in excess of 334,000 MW of new generation capacity world-wide. While this bodes well for the coal industry in general it is also welcome news for CCT advocates. One of the units that would be most used would be pulverized coal with particulate, sulfur dioxide and nitrogen oxides controls, because this unit will cost less than more technologically advanced units and most electric utility generators are more familiar with it. Fluidized bed combustion (FBC) is another great potential in either atmospheric (AFBC) or pressurized (PFBC) configuration. This unit would be particularly useful for low quality coal. It will have a very wide use as a low cost solution to meet current environmental standards. Countries like Pakistan, China, Thailand, Indonesia, Check Republic and Poland are quite interested in this technology.

China consumes more coal for electric generation than any other country in the world and is interested in all kinds of new technology to generate electricity, especially integrated gasification combined cycle (IGCC). This unit maximizes the generation efficiency of the coal and allows less coal to be used for the required amount of generation. In the years beyond 2000 IGCC may prove to be the generation unit of choice and could generate as much as \$400 billion in global market sales.

Appendix

- Table 1 **Historical Production, Distribution and Consumption of Coal in Utah**
- Table 2 **Utah Coal Production by Coal Field**
- Table 3 **Utah Coal Production by County**
- Table 4 **Utah Coal Production by Landownership**
- Table 5 **Distribution of Utah Coal 1994**

Table 1 **Historical Production, Distribution and Consumption of Coal in Utah**
Thousand Short Tons

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
PRODUCTION	13,808	16,912	11,829	12,259	12,831	14,269	16,521	18,164	20,517	22,012	21,875	21,015	21,723	24,422	25,024
DISTRIBUTION	14,627	15,397	12,188	12,074	14,361	13,243	16,989	18,244	20,289	21,680	21,673	21,339	21,935	23,441	25,635
E U OUTSIDE UTAH	2,688	3,643	3,404	3,730	3,746	2,989	3,182	2,797	2,623	3,373	3,608	4,000	3,914	4,841	7,302
E U IN UTAH	4,837	6,153	5,220	4,912	7,385	7,614	11,677	12,533	12,963	14,053	13,472	13,136	13,343	13,839	12,661
C P OUTSIDE UTAH	779	859	0	0	0	0	0	0	0	0	0	0	0	0	0
C P IN UTAH	1,297	831	886	1,392	1,328	868	291	1,259	1,277	1,296	1,310	1,182	1,089	1,198	1,100
IND OUTSIDE UTAH	1,645	1,349	1,091	1,542	1,866	1,745	1,813	1,996	2,401	2,327	2,158	2,006	2,146	2,322	2,542
IND IN UTAH	591	812	664	551	450	374	349	739	810	619	624	497	614	647	686
R/C OUTSIDE UTAH	180	233	292	311	312	81	83	88	84	59	76	81	134	308	457
R/C IN UTAH	197	177	191	258	252	191	204	236	323	382	320	347	228	157	193
OVERSEAS EXPORTS	3,472	2,177	1,346	849	625	551	555	1,044	2,175	1,708	2,112	2,245	2,567	2,717	3,144
TOTAL IMPORTS	1,136	797	937	1,539	1,580	1,145	1,165	2,448	2,367	2,137	2,007	2,155	2,100	2,588	2,450
IMPORTS E U	8	18	0	224	193	659	905	1,300	1,400	1,449	1,310	1,517	1,501	1,495	1,346
IMPORTS C P	1,030	695	854	1,229	1,289	383	160	1,088	922	679	695	629	579	1,089	1,100
IMPORTS IND	98	84	83	85	98	103	100	60	45	7	2	9	20	4	4
IMPORTS R/C	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0
COAL OPERATORS	16	16	15	15	15	16	16	14	14	13	12	12	11	10	9
ACTIVE MINES	28	29	25	21	21	21	18	21	20	18	16	16	15	14	13
EMPLOYEES	4,166	4,296	2,707	2,525	2,563	2,881	2,650	2,559	2,471	2,791	2,292	2,106	2,161	2,024	1,926
PRODUCTIVITY, T/MH	1.99	2.05	2.59	2.94	2.8	3.08	3.25	3.69	4.42	4.22	4.79	5.13	5.43	6.22	6.54
AVERAGE PRICE \$/TON	\$26.87	\$29.42	\$28.32	\$29.20	\$27.69	\$27.64	\$25.67	\$22.85	\$22.01	\$21.78	\$21.56	\$21.83	\$21.17	\$20.07	\$21.56
TOTAL VALUE \$1,000,000	\$371	\$498	\$335	\$358	\$355	\$394	\$417	\$415	\$451	\$479	\$472	\$459	\$460	\$490	\$527

Values for 1995 are forecast.
All distributions include imports. EU=Electric Utilities. CP=Coke Plants. IND=Industrial. R/C=Residential and Commercial.

Table 2

Utah Coal Production by Coal Field

Thousand Short Tons

	Wasatch Plateau	Book Cliffs	Emery	Sego	Coalville	Others	Total
1870-1981	166,404	234,547	5,723	2,654	4,262	2,332	415,922
1982	12,342	3,718	852	0	0	0	16,912
1983	10,173	1,568	88	0	0	0	11,829
1984	10,266	1,993	0	0	0	0	12,259
1985	9,386	2,805	640	0	0	0	12,831
1986	10,906	2,860	503	0	0	0	14,269
1987	13,871	2,348	269	0	33	0	16,521
1988	15,218	2,363	548	0	35	0	18,164
1989	17,146	2,785	586	0	0	0	20,517
1990	18,591	3,085	336	0	0	0	22,012
1991	18,934	2,941	0	0	0	0	21,875
1992	18,631	2,384	0	0	0	0	21,015
1993	19,399	2,324	0	0	0	0	21,723
1994	22,079	2,343	0	0	0	0	24,442
1995	22,932	2,092	0	0	0	0	25,024
Cumulative Production	386,278	270,156	9,545	2,654	4,330	2,332	675,295

1995 values are forecast

Table 3

Utah Coal Production by County

Thousand Short Tons

	Carbon	Emery	Sevier	Summit	Iron	Kane	Others	Total
1870-1959	211,028	49,166	4,046	4,012	521	45	2,846	271,664
1960	3,698	1,137	49	20	50	0	1	4,955
1961	3,916	1,124	47	20	52	0	0	5,159
1962	3,105	1,077	49	20	46	0	0	4,297
1963	3,493	752	47	18	48	1	0	4,359
1964	3,752	848	47	17	54	2	0	4,720
1965	3,779	1,101	61	13	36	2	0	4,992
1966	3,380	1,170	65	15	4	2	0	4,636
1967	2,971	1,113	72	13	3	2	0	4,174
1968	3,062	1,167	70	13	3	2	0	4,317
1969	3,367	1,200	72	12	4	2	0	4,657
1970	3,349	1,292	79	13	0	0	0	4,733
1971	3,347	1,097	158	12	0	12	0	4,626
1972	2,956	1,656	184	6	0	0	0	4,802
1973	2,866	2,445	339	0	0	0	0	5,650
1974	2,754	2,901	391	0	0	0	0	6,046
1975	2,984	3,126	827	0	0	0	0	6,937
1976	3,868	3,057	1,043	0	0	0	0	7,968
1977	4,390	3,107	1,337	0	0	0	4	8,838
1978	4,005	3,640	1,558	0	0	0	50	9,253
1979	5,292	5,147	1,657	0	0	0	0	12,096
1980	5,096	6,319	1,821	0	0	0	0	13,236
1981	6,123	5,609	2,076	0	0	0	0	13,808
1982	8,335	6,329	2,248	0	0	0	0	16,912
1983	4,194	5,404	2,231	0	0	0	0	11,829
1984	5,293	4,825	2,141	0	0	0	0	12,259
1985	6,518	4,516	1,797	0	0	0	0	12,831
1986	6,505	5,404	2,360	0	0	0	0	14,269
1987	7,495	6,765	2,228	33	0	0	0	16,521
1988	7,703	7,801	2,625	35	0	0	0	18,164
1989	8,927	8,531	3,059	0	0	0	0	20,517
1990	8,810	10,315	2,887	0	0	0	0	22,012
1991	5,816	12,980	3,079	0	0	0	0	21,875
1992	3,386	15,049	2,580	0	0	0	0	21,015
1993	2,642	15,528	3,553	0	0	0	0	21,723
1994	4,523	16,330	3,569	0	0	0	0	24,422
1995	5,080	15,999	3,945	0	0	0	0	25,024
Total	377,808	235,027	54,397	4,272	821	70	2,901	675,296

1995 values are forecast

Table 4

Utah Coal Production by Landownership

Thousand Short Tons

	Federal Land		State Land		County Land		Fee Land		Total
	Production	Percentage	Production	Percentage	Production	Percentage	Production	Percentage	
1980	8,663	65.5%	1,105	8.3%	0	0.0%	3,468	26.2%	13,236
1981	8,719	63.1%	929	6.7%	0	0.0%	4,160	30.1%	13,808
1982	10,925	64.6%	998	5.9%	0	0.0%	4,989	29.5%	16,912
1983	6,725	56.9%	419	3.5%	0	0.0%	4,685	39.6%	11,829
1984	8,096	66.0%	285	2.3%	0	0.0%	3,878	31.6%	12,259
1985	9,178	71.5%	510	4.0%	0	0.0%	3,143	24.5%	12,831
1986	11,075	77.6%	502	3.5%	0	0.0%	2,692	18.9%	14,269
1987	13,343	80.8%	488	3.0%	0	0.0%	2,690	16.3%	16,521
1988	15,887	87.5%	263	1.4%	0	0.0%	2,014	11.1%	18,164
1989	16,931	82.5%	375	1.8%	153	0.7%	3,058	14.9%	20,517
1990	17,136	77.8%	794	3.6%	606	2.8%	3,476	15.8%	22,012
1991	18,425	84.2%	942	4.3%	144	0.7%	2,364	10.8%	21,875
1992	17,760	84.5%	1,384	6.6%	136	0.6%	1,735	8.3%	21,015
1993	19,099	87.9%	1,682	7.7%	116	0.5%	826	3.8%	21,723
1994	22,537	92.3%	1,227	5.0%	243	1.0%	415	1.7%	24,422
1995	22,617	90.4%	1,322	5.3%	113	0.5%	972	3.9%	25,024

1995 values are forecast

Table 5

Distribution of Utah Coal 1994

By Destination and End-Use, Thousand Short Tons

Destination	Electric Utilities	Coke Plants	Other Industrial	Residential & Commercial	Total
Arizona	0	0	86	0	86
California	1,219	0	1,518	6	2,743
Colorado	0	0	1	28	29
Iowa	4	0	0	0	4
Idaho	0	0	2	46	48
Illinois	162	0	0	193	355
Indiana	234	0	0	0	234
Kentucky	252	0	0	0	252
Montana	0	0	26	0	26
Missouri	418	0	0	0	418
Nevada	1,1912	0	475	1	2,388
Oregon	101	0	27	0	128
Pennsylvania	0	0	103	0	103
Tennessee	105	0	0	0	105
UTAH	12,344	109	643	157	13,253
Washington	434	0	82	34	550
Wyoming	0	0	2	0	2
Pacific Rim	2,717	0	0	0	2,717
Total	19,902	109	2,965	465	23,441