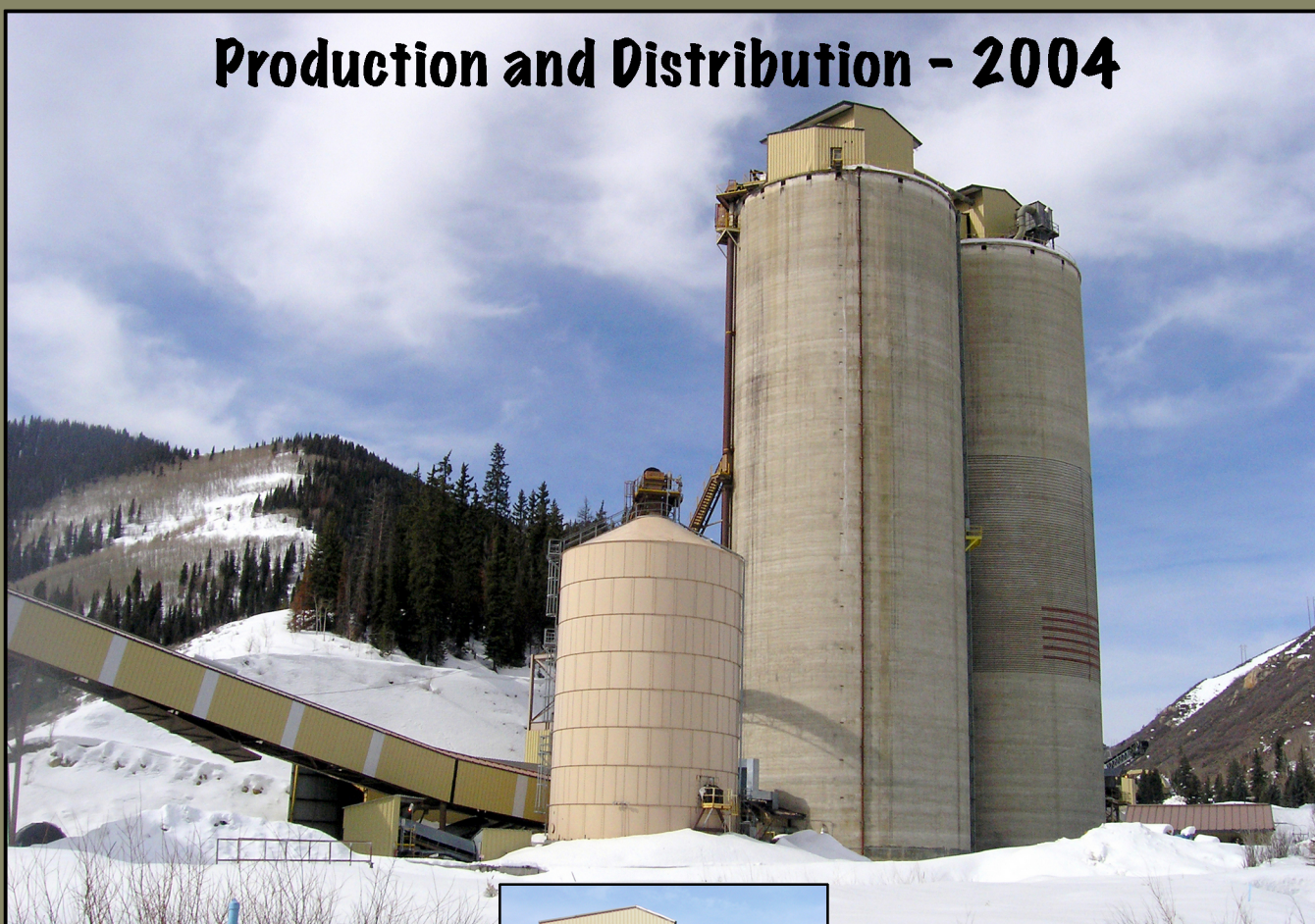


# Annual Review and Forecast of **UTAH COAL**

## Production and Distribution - 2004



Prepared by the Utah Geological Survey  
Department of Natural Resources

<http://geology.utah.gov>  
Published October 2005



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Utah Geological Survey

Cover photographs by Michael D. Vanden Berg, Utah Geological Survey. Clockwise from top: Skyline's storage silos, continuous miner at Crandall Canyon, Dugout Canyon loadout, Intermountain power plant.

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## **PREFACE**

This report was prepared by Michael Vanden Berg under the direction of Dave Tabet, Energy and Minerals Program Manager, and Rick Allis, Director of the Utah Geological Survey, Utah Department of Natural Resources. Specific information about the data in this report can be obtained from Michael Vanden Berg at 801-538-5419, or email at [michaelvandenber@utah.gov](mailto:michaelvandenber@utah.gov).

The annual Utah Coal Report has traditionally been prepared by the Department of Natural Resources' Utah Energy Office; however, with the elimination of the Energy Office in the spring of 2005, the responsibility for the Utah Coal Report has been shifted to the Utah Geological Survey. As in previous years, data for the report were gathered directly from coal producers and consumers, and comparisons were made to national data, news reports, and industry experts.

For more information on Utah coal or other energy-related data, please refer to the new "Utah Energy and Mineral Data" web-based data repository located at [www.geology.utah.gov](http://www.geology.utah.gov).



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## EXECUTIVE SUMMARY

Coal production in Utah dropped for the third straight year to 21.8 million short tons in 2004, the lowest level since 1993. This low production was mainly caused by temporary closures at the Skyline and Emery mines, as well as decreased production at other operations due to labor problems, difficult mining conditions, and multiple longwall shifts with related development work. Consequently, distribution of Utah coal dropped to 22.8 million short tons in 2004, and several Utah coal users had to look to other states for their coal needs. This situation increased the amount of coal imported into Utah to 3.2 million short tons, a new record high. In addition, the number of coal-related employees dropped to 1523, the lowest level in over 25 years, and pro-

ductivity dropped to the lowest level since 1997. The only positive highlight for 2004 was that prices increased to an average of \$17.70 per short ton, up from \$16.64 in 2003, which was the lowest price in nominal dollars recorded in the last 30 years.

Fortunately, 2005 should mark the beginning of a significant resurgence in Utah's coal industry. Operators expect total Utah coal production to increase to 24.4 million short tons in 2005 and increase further to 27.5 million short tons in 2006, which would set a new state production record. This increase will result from the reopening of the Skyline and Emery mines, and from other operations expected to ramp up production. Coal-related employment in 2005 is projected to increase by 236

people to a total of 1759 employees, and the average price of Utah coal is expected to increase to \$18.98 per short ton. Production increases in 2005 will also lead to an increase in Utah coal distribution, expected to total 25.7 million short tons, and result in an associated decrease in coal imports.

Production and employment levels could increase even further in the near future if the proposed Lila Canyon and Columbia mines, both in the Book Cliffs coal field, start operation. The Lila Canyon mine could open as soon as 2006, while the reopening of the Columbia mine is slated for 2007. Operators at both mines hope to produce 2.0 to 5.0 million short tons per year at full capacity, and each expect to employ roughly 200 to 250 employees.

# UTAH COAL PRICES, EMPLOYMENT, AND PRODUCTION

## INTRODUCTION

After a decrease in coal production between 2002 and 2003, the U.S. Energy Information Administration (EIA) indicates that U.S. coal production in 2004 increased by 3.7% to 1111.5 million short tons (table 1). This rebound was significantly helped by sizable production increases in Wyoming, West Virginia, Pennsylvania, Montana, and Colorado. Western states alone increased their production by 4.8% in 2004 and represented 51.8% of total U.S. coal production. Of the nine states in the western region, only three had lower coal production levels in 2004 than in 2003: North Dakota, Utah, and Washington. Utah's coal production declined for the third straight year, from 23.1 million short tons in 2003 to 21.8 million short tons in 2004. This decline of 5.4%, the largest decrease for any state producing more than 10 million short tons a year, brings Utah's annual production to its lowest level since 1993. Utah's 2004 coal production was 19.4% lower than the peak year production of 27.1 million short tons in 1996. However, projections for 2005 exhibit a 11.9% increase in coal production to 24.4 million short tons. This increase assumes that the Skyline and Emery mines, both of which were closed for parts of 2004, will continue to increase production throughout 2005. Operator projections for 2006 are even more impressive, totaling 27.5 million short tons, which would be more coal produced than in any other year. While this estimate is speculative, it is not unreasonable, especially if the Skyline and Emery mines ramp up production as

expected, other mines remain steady, and if the proposed Lila Canyon and Columbia mines begin operation.

## PRICES

Despite such a large decrease in production in 2004, revenue from Utah coal was up slightly,

totaling \$386.2 million, because of an average increase in Free on Board (FOB) coal prices (table 2). Prices increased 6.4%, from an average of \$16.64 per short ton in 2003, the lowest price recorded in the last 30 years, to \$17.70 in 2004. Not many Utah mines can take advantage of the present high spot price for coal, currently at

**Table 1. U.S. Coal Production by State, 2003-2004**  
Thousand short tons

2004 Rank	State	2003	2004	Percent Change
1	Wyoming	376,270	396,493	5.4%
2	West Virginia	139,711	147,871	5.8%
3	Kentucky	112,806	113,748	0.8%
	Eastern Kentucky	91,309	90,578	-0.8%
	Western Kentucky	21,496	23,170	7.8%
4	Pennsylvania	63,708	65,977	3.6%
5	Texas	47,517	45,863	-3.5%
6	Montana	36,994	39,989	8.1%
7	Colorado	35,831	39,870	11.3%
8	Indiana	35,355	35,110	-0.7%
9	Illinois	31,640	31,859	0.7%
10	Virginia	31,596	31,403	-0.6%
11	North Dakota	30,775	29,943	-2.7%
12	New Mexico	26,389	27,250	3.3%
13	Ohio	22,009	23,159	5.2%
14	Alabama	20,118	22,317	10.9%
<b>15</b>	<b>Utah</b>	<b>23,069</b>	<b>21,818</b>	<b>-5.4%</b>
16	Arizona	12,059	12,731	5.6%
17	Washington	6,232	5,653	-9.3%
18	Maryland	5,056	5,117	1.2%
19	Louisiana	4,028	3,805	-5.5%
20	Mississippi	3,695	3,586	-2.9%
21	Tennessee	2,564	2,887	12.6%
22	Oklahoma	1,565	1,792	14.5%
23	Alaska	1,081	1,538	42.3%
24	Missouri	533	539	1.1%
25	Kansas	154	109	-29.2%
26	Arkansas	8	7	-12.5%
	Refuse Recovery	989	1,116	12.8%
	Appalachian	376,071	389,309	3.5%
	Interior	145,991	145,840	-0.1%
	Western	548,700	575,285	4.8%
	East of Mississippi R.	468,258	483,034	3.2%
	West of Mississippi R.	602,505	627,400	4.1%
	U.S. Total	1,071,752	1,111,550	3.7%

Source: U.S. Energy Information Administration and UGS



**Table 2. Utah Coal Industry Production, Employment, Productivity, Prices and Revenue, 1981-2005**

Year	Production	# of operators	# of mines	Employment	Productivity	Average FOB Price		Revenue	
	Thousand short tons			# of employees	Tons/employee hour	\$/Ton (nominal dollars)	\$/Ton (real dollars)	Million \$ (nominal dollars)	Million \$ (real dollars)
1981	13,808	16	28	4,166	1.99	26.87	57.05	371.0	787.8
1982	16,912	16	29	4,296	2.05	29.42	58.84	497.6	995.1
1983	11,829	15	25	2,707	2.59	28.32	54.88	335.0	649.1
1984	12,259	15	24	2,525	2.94	29.20	54.24	358.0	664.9
1985	12,831	15	22	2,563	2.80	27.69	49.67	355.3	637.3
1986	14,269	16	21	2,881	3.08	27.64	48.67	394.4	694.5
1987	16,521	16	20	2,650	3.25	25.67	43.61	424.1	720.5
1988	18,164	14	17	2,559	3.69	22.85	37.28	415.0	677.1
1989	20,517	14	20	2,471	4.42	22.01	34.26	451.6	702.9
1990	22,012	13	18	2,791	4.10	21.78	32.16	479.4	707.9
1991	21,875	11	16	2,292	4.79	21.56	30.55	471.6	668.3
1992	21,015	10	16	2,106	5.13	21.83	30.03	458.8	631.1
1993	21,723	9	15	2,161	5.47	21.17	28.28	459.9	614.2
1994	24,422	8	14	2,024	6.01	20.07	26.14	490.1	638.3
1995	25,051	7	14	1,989	6.41	19.11	24.20	478.7	606.3
1996	27,071	7	13	2,077	5.91	18.50	22.76	500.8	616.0
1997	26,428	8	16	2,091	5.57	18.34	22.05	484.7	582.8
1998	26,600	8	17	1,950	6.19	17.83	21.11	474.3	561.6
1999	26,491	8	15	1,843	6.09	17.36	20.11	459.9	532.8
2000	26,920	8	13	1,672	6.91	16.93	18.97	455.8	510.8
2001	27,024	7	13	1,564	5.98	17.76	19.35	479.9	523.0
2002	25,299	8	13	1,525	6.83	18.47	19.81	467.3	501.3
2003	23,069	9	14	1,583	6.35	16.64	17.45	383.9	402.6
2004	21,818	8	13	1,523	5.99	17.70	18.08	386.2	394.6
2005*	24,406	8	13	1,759	7.05	18.98	18.98	463.2	463.2

Source: UGS coal company questionnaires  
\*Forecast

about \$31.00 per short ton, because their production is committed to lower-priced contracts, thus reducing the overall average FOB mine price. As demand for coal increases and mining becomes more difficult, prices should continue to increase. The FOB price for 2005 is projected to increase by 7.2% to \$18.98 per short ton, substantially increasing coal revenues to \$463.2 million.

## EMPLOYMENT

During 2004, the number of active mines decreased from 14 to 13, as Whisky Creek closed its operation, and the number of coal

employees decreased slightly from 1583 to 1523 (table 2). In last year's report, the fate of the Skyline mine was uncertain, causing concern over reduced production and employment. However, as the Skyline mine dropped employees, the Emery mine was increasing operations, resulting in only a modest overall decline of 60 employees between 2003 and 2004. Coal-related employment totals are projected to increase by an impressive 236 people in 2005 due to the reopening of the Skyline mine and continued hiring at the Emery mine. Employment totals could increase by another 200 to 300 people in 2006 and 2007 if

the proposed Lila Canyon and Columbia mines come online.

## COAL MINING PRODUCTIVITY

Production efficiency at Utah coal mines declined slightly during 2004, from 6.35 short tons of coal produced per employee per hour in 2003 to 5.99 tons per employee hour in 2004 (table 2). This is lower than the 8.33 tons per employee hour recorded by EIA for underground mines in western U.S. states during 2003. Miner productivity was below 5.0 tons per employee hour as recently as 1991. In fact, the 1,523 coal

mine employees working during 2004 is just 66.4% of the work force employed as recently as 1991. On average, each employee produced 14,200 tons during 2004, down only slightly from 14,600 tons in 2003, but still higher than the 1990's average of 11,600 tons per employee and much higher than the 1980's average of 5,300 tons per employee. Mining productivity projections for 2005 suggest a significant increase to 7.05 short tons per employee per hour due to increased production from longwall operations.

## PRODUCTION BY COAL FIELD

As production in the Wasatch Plateau diminished in 2004, Book Cliffs mines had to increase their production to meet growing demand (table 3). Book Cliffs coal accounted for 38.9% of total production in 2004, the largest in at least the last 25 years, as compared to 30.2% in 2003. Overall production from mines in the Book Cliffs increased by 21.9% in 2004 and is predicted to increase by an additional 1.3% in 2005. The ANDALEX Tower Division, which operates the

Aberdeen and Pinnacle mines, more than doubled its production since 2003, while Canyon Fuel's Dugout mine increased production by 30.0% (table 4). The West Ridge mine, however, continued to have problems in 2004 causing its production to fall by 24.2%. Book Cliffs coal production could become even more significant in the future with the proposed opening of the Lila Canyon and Columbia mines.

Mines in the Wasatch Plateau coal field accounted for 60.0% of Utah's coal production in 2004, down from 68.8% the year before. The main reason for this

**Table 3. Coal Production in Utah by Coal Field, 1982-2005**  
Thousand short tons

Year	Wasatch Plateau	Book Cliffs	Emery	Sego	Coalville	Others	Total
1870-1981	166,404	234,547	5,723	2,654	4,262	3,095	416,685
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	24,422
1995	22,631	2,420	0	0	0	0	25,051
1996	23,616	3,455	0	0	0	0	27,071
1997	22,916	3,512	0	0	0	0	26,428
1998	22,708	3,892	0	0	0	0	26,600
1999	23,572	2,919	0	0	0	0	26,491
2000	22,967	3,953	0	0	0	0	26,920
2001	21,919	5,106	0	0	0	0	27,024
2002	19,654	5,619	26	0	0	0	25,299
2003	15,868	6,958	243	0	0	0	23,069
2004	13,082	8,479	256	0	0	0	21,818
2005*	14,649	8,587	1,170	0	0	0	24,406
Cumulative Production	572,279	314,377	10,070	2,654	4,330	3,095	906,805

Source: UGS coal company questionnaires

\*Forecast, 2005 numbers not included in totals

**Table 4. Coal Production and Recoverable Reserves in Utah by Coal Mine, 2001-2004**  
Thousand short tons

Company	Mine	County	Coal Field	2001	2002	2003	2004	Estimated Recoverable Reserves
ANDALEX Resources Inc.	Aberdeen Pinnacle	Carbon Carbon	Book Cliffs Book Cliffs	531 296	37 662	444 584	1,984 419	13,600
Canyon Fuel LLC	Dugout Canyon Skyline #3 Sufco	Carbon Emery/Carbon Sevier	Book Cliffs Wasatch Plateau Wasatch Plateau	1,981 3,822 7,001	2,080 3,477 7,600	2,941 2,771 7,126	3,811 551 7,568	36,100 13,200 82,000
Consolidation Coal Co.	Emery	Emery	Emery	–	26	243	256	34,000
C.W. (Co-op) Mining Co.	Bear Canyon #1 Bear Canyon #3 Bear Canyon #4	Emery Emery Emery	Wasatch Plateau Wasatch Plateau Wasatch Plateau	1,254 – –	953 4 –	403 310 –	– 227 112	23,545
Energy West Mining Co.	Deer Creek Trail Mountain	Emery Emery	Wasatch Plateau Wasatch Plateau	4,338 924	3,984 –	3,938 –	3,356 –	57,070 –
GENWAL Resources Inc.	Crandall Canyon S. Crandall Canyon	Emery Emery	Wasatch Plateau Wasatch Plateau	3,996 –	3,248 –	1,161 26	872 103	16,200
Hidden Splendor Res. Inc.	Horizon <sup>1</sup>	Carbon	Wasatch Plateau	23	110	108	293	5,976
Lodestar Energy Inc.	Whisky Creek #1 White Oak #2	Carbon Carbon	Wasatch Plateau Wasatch Plateau	– 560	278 –	25 –	– –	– –
WEST RIDGE Resources, Inc.	West Ridge	Carbon	Book Cliffs	2,298	2,840	2,989	2,265	37,750
Total				27,024	25,299	23,069	21,818	319,441
Source: UGS coal company questionnaires								
<sup>1</sup> Owned by Lodestar in 2001								

decrease was the temporary closure of the Skyline mine, which dropped from producing 2.8 million short tons in 2003 to just 551,000 short tons in 2004, an 80.1% drop. In addition, production at Co-op's Bear Canyon mines declined by 52.5% in 2004, Crandall Canyon production declined by 17.9%, and Deer Creek production was down by 14.8%. Conversely, production from Sufco, the largest coal mine in Utah, increased by 6.2% in 2004. Also, production at the Horizon mine nearly tripled from 108,000 short tons in 2003 to 292,000 short tons in 2004.

Coal production resumed in the Emery coal field in 2002 with the reopening of the Emery mine. This mine produced 243,000 short tons in 2003 before closing again in August of that year due to contract and ownership issues. The Emery mine reopened in August of 2004, producing 256,000 short tons before the year was finished, and is expected to remain open for the indefinite future.

The remainder of Utah's coal fields are inactive, as they have been for many years. Several fields, such as the Kaiparowits Plateau, which holds an estimated

9.1 billion tons of recoverable coal, cannot be mined because of land-use restrictions and/or the fields are too remote for economical transport to market. However, a new surface mine is being proposed in the Alton coal field in southern Utah. This mine has the potential to produce up to 2.0 million short tons of coal a year.

## PRODUCTION BY COUNTY

Emery County, which has lead all other counties in coal production since 1990, dropped below both Carbon and Sevier

Counties due to the temporary closure of the Skyline mine, as well as decreased production at the Bear Canyon, Deer Creek, and Crandall Canyon mines. The mines in Emery County produced only 5.5 million short tons of coal in 2004, compared to 8.9 million short tons produced in 2003, and peak annual production of 17.3 million tons in 1995 (table 5). However, Emery County could see a resurgence in coal production if the proposed Lila Canyon mine begins operation. Carbon County mines, bolstered by significant production increases at the ANDALEX and Dugout Canyon mines, produced the majority of coal in 2004 at 8.8 million short tons, up from 7.1 million short tons in 2003. Starting in 2005, all new production at the Skyline mine will be in their northern leases located in Carbon County, as opposed to previous mining that occurred in Emery County. Sevier County's only active mine, Sufco, increased production to 7.6 million short tons in 2004, an increase of 6.2% over 2003.

## **PRODUCTION BY LANDOWNERSHIP**

Federal leases continued to dominate Utah's production picture as mines on U.S. Bureau of Land Management (BLM) and

Forest Service land accounted for 20.3 million tons, or 92.9%, of the state's total coal production in 2004 (table 6). Production from the Sufco, West Ridge, Dugout Canyon, Aberdeen, Horizon, and Bear Canyon mines will keep federal leases the primary source of Utah coal for a few more years. Also, the reopened Skyline mine is producing coal from federal land.

Lands owned by the State of Utah supplied just 849,000 short tons of coal in 2004, which is 61.3% less than the 2003 production of 2.2 million tons. State lands accounted for only 3.9% of total state production in 2004, down from 9.5% in 2003. However, production on state lands will significantly increase starting in 2005 to about 3.0 million short tons, and should increase further in 2006. The Deer Creek mine began production on the state-owned Mill Fork tract in June 2005, and Sufco should move into the state-owned Muddy tract by 2006.

Production on private "fee" land decreased from 2.0 million short tons in 2003 to 701,000 short tons in 2004, 3.2% of Utah's total. Fee coal in 2004 mainly came from the Emery mine, the ANDALEX Tower division, and the Crandall Canyon mine. The Deer Creek, Dugout Canyon, Skyline, and Bear Canyon mines

produced a combined 1.6 million short tons from private land in 2003, but none of these mines produced any fee coal in 2004. Coal produced on private land should increase to 1.5 million short tons in 2005 as the Emery mine increases production.

## **PRODUCTION BY MINING METHOD**

During 2004, seven longwall mining machines in seven different mines produced 16.5 million short tons of coal, accounting for 75.5% of total Utah production. Most notably, a new low-profile longwall machine, which can cut coal in a seam only 5.5 feet thick, was installed at the Crandall Canyon mine. Twenty-four continuous miner machines, down from 25 in 2003, produced the remaining 24.5% of state coal production.

The processing of waste coal piles at the old Sunnyside and Star Point mines is not generally considered coal mining, but rather reclamation activity. Fluidized bed combustion allows discarded wash plant waste and other coal refuse to be used as fuel at Utah's Sunnyside Cogeneration power plant. Annual waste coal consumption at the Sunnyside Cogeneration facility averages roughly 450,000 tons.

**Table 5. Coal Production in Utah by County, 1960-2005**  
**Thousand short tons**

Year	Carbon	Emery	Sevier	Summit	Iron	Kane	Others	Total
1870-1959	211,028	49,166	4,046	4,012	521	45	3,608	272,426
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	3,801	17,344	3,906	0	0	0	0	25,051
1996	5,985	16,872	4,214	0	0	0	0	27,071
1997	6,956	14,533	4,939	0	0	0	0	26,428
1998	7,206	13,675	5,719	0	0	0	0	26,600
1999	4,514	16,214	5,763	0	0	0	0	26,491
2000	4,615	16,399	5,906	0	0	0	0	26,920
2001	5,689	14,334	7,001	0	0	0	0	27,024
2002	6,007	11,692	7,600	0	0	0	0	25,299
2003	7,091	8,852	7,126	0	0	0	0	23,069
2004	8,772	5,477	7,568	0	0	0	0	21,818
2005*	9,436	7,364	7,606	0	0	0	0	24,406
Cumulative Production	433,364	354,420	110,194	4,272	821	70	3,663	906,805
Source: UGS coal company questionnaires								
*Forecast, 2005 numbers not included in totals								



**Table 6. Coal Production in Utah by Landownership, 1980-2005.**  
Thousand short tons

Year	Federal Land	% of Total	State Land	% of Total	County Land	% of Total	Fee Land	% of Total	Total
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	23,730	94.7%	571	2.3%	289	1.2%	461	1.8%	25,051
1996	25,996	96.0%	446	1.6%	15	0.1%	614	2.3%	27,071
1997	25,161	95.2%	339	1.3%	0	0.0%	928	3.5%	26,428
1998	24,954	93.8%	297	1.1%	37	0.1%	1,312	4.9%	26,600
1999	21,982	83.0%	3,071	11.6%	65	0.2%	1,373	5.2%	26,491
2000	20,812	77.3%	4,021	14.9%	0	0.0%	2,087	7.8%	26,920
2001	18,369	68.0%	5,386	19.9%	331	1.2%	2,939	10.9%	27,024
2002	18,365	72.6%	4,353	17.2%	278	1.1%	2,303	9.1%	25,299
2003	18,815	81.6%	2,192	9.5%	25	0.1%	2,037	8.8%	23,069
2004	20,268	92.9%	849	3.9%	0	0.0%	701	3.2%	21,818
2005*	19,927	81.6%	3,003	12.3%	0	0.0%	1,476	6.0%	24,406
Source: UGS coal company questionnaires									
*Forecast									

# ACTIVITIES OF UTAH COAL OPERATORS

## INTRODUCTION

In general, Utah coal mines struggled to meet growing demand in 2004. Production totaled only 21.8 million short tons, the lowest level since 1993, mainly due to the temporary closure of the Skyline mine. Other production losses were caused by labor problems, difficult mining conditions, or by extensive development work for future longwall operations. With strong coal demand, some Utah coal users had to look to other states for their coal needs.

Fortunately, things are looking up for Utah in 2005. Coal production is expected to significantly increase to 24.4 million short tons, 236 new coal-related employees are expected to be hired, and prices and revenues are likely to climb. Predictions for 2006 are even more optimistic; operators are suggesting a statewide production of 27.5 million short tons, which would establish a new single-year record. This projection does not include production from proposed mines such as Alton, Columbia, or Lila Canyon.

Utah coal companies report that operations are faced with the soaring costs of fuel, steel, rubber, and general labor. As the cost of mining increases, so does the cost of Utah coal, making it more difficult to compete with cheaper coal from Wyoming and Colorado. In addition, operators are having a hard time finding experienced miners. This could become a significant issue, as much of the current workforce is five to ten years away from retirement.

## ANDALEX RESOURCES, INC.

ANDALEX Resources, Inc. currently has three divisions located in Utah: the Centennial or Tower Division, consisting of the Aberdeen and Pinnacle mines; the GENWAL Resources Division, which manages the Crandall Canyon and South Crandall Canyon mines; and the WEST RIDGE Resources Division, which manages the West Ridge mine. ANDALEX wholly owns the Tower Division, whereas the two other divisions are half-owned by Intermountain Power Agency (IPA). IPA owns and operates the Intermountain Power Plant near Delta, which is the largest single coal consumer in the state. The Wildcat railroad loadout, an ANDALEX facility in Carbon County, serves all three ANDALEX mining divisions.

### Tower Division – Aberdeen and Pinnacle Mines

The Tower Division is located in the Deadman Canyon area about seven miles north of Price. Combined production from both the Aberdeen and Pinnacle mines totaled 2.4 million short tons in 2004, a significant increase from the 1.0 million short tons produced in 2003. The majority of that production, 2.0 million short tons, came from the Aberdeen mine where longwall equipment was installed in February 2004. The remaining 419,000 short tons was produced by retreat mining in the Pinnacle mine. After the completion of mining in the Centennial seam, crews will move back into the Gilson seam before clos-

ing the Pinnacle mine in 2007. As the retreat mining comes to an end, and due to ventilation requirements in the Aberdeen mine, overall production is expected to decrease to 1.8 million short tons in 2005, and then increase to 2.1 million short tons in 2006.

The Aberdeen seam is typically 9 to 10 feet thick, with coal quality averaging 12,200 British thermal units (Btu) per pound and a sulfur content of 0.5%. Currently, equipment is mining at a depth of 2800 feet with plans to approach 3150 feet, which is deeper than any longwall has ever successfully been used in the U.S. Mine operators say that the longwall machine is running well at this depth, but the development work with continuous miners causes delays and concerns. As is typical in gassy Book Cliffs coal, production is also limited by the ability to adequately ventilate the mine. Operators are drilling gob vent gas wells in order to aid in ventilation.

Despite the challenges involved with mining the Aberdeen seam, ANDALEX estimates production on current federal leases to last another 10 to 12 years. In addition, ANDALEX is trying to acquire the Kenilworth federal tract to the west to supplement their current leases. If successful, ANDALEX would mine the Aberdeen seam, which is located stratigraphically below the old mine workings in the Kenilworth seam. This tract could yield 7 to 8 million short tons of coal.

## **GENWAL Resources, Inc. - Crandall Canyon and South Crandall Canyon Mines**

ANDALEX Resources and IPA share equally in ownership of the Crandall Canyon and South Crandall Canyon mines, both of which are located in the Wasatch Plateau. The mines are operated by GENWAL Resources, Inc., a wholly owned subsidiary of ANDALEX Resources.

Production at Crandall Canyon and South Crandall Canyon totaled 975,000 short tons in 2004, down 17.9% from 1.2 million short tons in 2003. However, production is expected to increase to 1.8 million short tons in 2005, and jump again to 2.8 million short tons in 2006 as longwall production commences in the South Crandall mine. After Crandall Canyon's longwall was moved to the Aberdeen mine in 2003, the company installed a low-profile longwall in October of 2004. This specialized longwall is capable of mining seams to a minimum of 5.5 feet thick. With this new equipment, operators were able to mine three more panels in the Crandall Canyon mine as development work continued in South Crandall. These panels should be completed by the fall of 2005, when Crandall Canyon will be closed and the longwall will be moved to the Blind Canyon seam in the South Crandall Canyon mine.

## **WEST RIDGE Resources, Inc. – West Ridge Mine**

The West Ridge mine began operation in 1999, with production from the lower Sunnyside seam in the Book Cliffs coal field. The mine is operated by WEST RIDGE Resources while mine assets are co-owned equally by

the IPA and ANDALEX.

After reaching an all time high production of 3.0 million short tons in 2003, production decreased by 24.2% in 2004 to 2.3 million short tons. This decrease was caused by significant problems with faults and ventilation. Despite these problems, production in 2005 is expected to increase slightly to 2.4 million short tons and remain at this level through 2006. West Ridge coal mostly comes from federal leases, but small areas of private and state coal will be mined in the future. Estimated reserves total roughly 38 million short tons.

## **CANYON FUEL COMPANY – ARCH COAL**

### **Dugout Canyon Mine**

Dugout Canyon produced 3.8 million short tons of coal in 2004, 30.0% more than the 2.9 million short tons produced in 2003. Operators are optimistic for 2005, and expect to increase production to 4.4 million short tons. Production ended in the Rock Canyon seam in February of 2004, after which longwall equipment was moved to the stratigraphically lower Gilson seam. Parts of three longwall panels had to be abandoned in the Rock Canyon seam because of “bounce” problems and in-seam rock partings. Several in-seam partings and a large sand channel in the Gilson seam have caused production slowdowns and coal-quality problems, causing operators to separate out high-ash coal prior to distribution. Also, as with all Book Cliffs mines, production is limited by how fast methane can be vented from the mine. In addition to the venting wells already in place, a second vent fan will be construct-

ed in nearby Pace Canyon to help alleviate this problem. Recoverable reserves at Dugout are estimated at 36 million short tons, most of which are located on federal leases with smaller amounts on state lands.

### **Skyline Mine**

The Canyon Fuel Company's Skyline mine, located in the Wasatch Plateau, was closed in May of 2004 due to substantial water intrusion and the resultant increased cost of operation. Production before the 2004 closure totaled only 551,000 short tons, significantly less than the 3.7 million short tons averaged between 1996 and 2003. The closure of the Skyline mine greatly reduced Utah's overall production total for 2004, creating coal shortages that forced some Utah coal users to look to other states to meet demand.

Fortunately, Canyon Fuel decided to reopen the Skyline mine in February of 2005. Mining has shifted to the Lower O'Connor 'A' seam in the North lease (Winter Quarters lease) in Carbon County, which does not have the water problems found with the previously mined Lower O'Connor 'B' seam, located farther south in Emery County. Production for 2005 is estimated to be 284,000 short tons as development work continues for future longwall mining. Longwall equipment should be in place by June of 2006, which will ramp up production to 1.4 million short tons for that year, and increasing to 2.3 million short tons in 2007. Operators estimate that 13 million short tons of reserves are located in the North Lease area south of the Fish Creek graben, with unknown reserves north of the graben. Exploration drilling is

planned for the area north of the graben on both leased and un-leased land.

The Lower O'Conner 'B' seam, some of which is under lease while the rest has yet to be acquired, is estimated to contain 21 million tons of reserves, but the water problems will have to be dealt with before mining can resume. Meanwhile, employment is back up near 100 people with long-range projections totaling about 150 employees.

### **Sufco Mine**

Sufco is Utah's largest coal producer and the fourth largest underground coal mine in the U.S. It is also the only coal mine in Sevier County. Sufco produced 7.6 million short tons in 2004 from the upper Hiawatha seam and is expected to remain at that level for 2005. The working face is currently 12 miles from the portal, and coal must be promptly trucked to distant load-outs at Levan and the Hunter power plant due to the small surface storage space at this isolated mountain facility.

Current production is from the Pines federal tract with long-wall production expected to continue until the winter of 2007. When longwall panels in the Pines are finished, primary production will likely move to the newly leased, state-owned, Muddy tract, which also contains the upper Hiawatha seam. Operators expect to start development work in this tract in spring of 2006. This state-owned lease is estimated to have 13 million short tons of coal. Canyon Fuel is also pursuing the yet unleased federal Muddy tract, with reserves in the lower Hiawatha seam totaling 25 to 30 million short tons.

Sufco is still pursuing a per-

mit to build the "Quitcupah Creek" access road to the mine that would shorten travel distance to Emery County power plants by more than 25 miles. A final Environmental Impact Statement was released in April of 2005.

## **CONSOLIDATION (CONSOL) COAL COMPANY**

### **Emery Mine**

Consolidation Coal Company (Consol) is one of the nation's largest coal producers. Consol's Emery mine produced intermittently during 2003 and shut down in August of that year after producing 243,000 short tons. The Emery mine reopened in August of 2004 and produced 256,000 short tons before yearend. Consol has short-term contracts to keep the mine in service for the indefinite future and operators plan to produce 1.2 million short tons in both 2005 and 2006.

A new portal was opened in 2003, providing new access to the "I" seam, which is between 20 and 25 feet thick and under just 60 feet of cover. Coal quality averages 12,200 Btu per pound and less than 1.0% sulfur. The majority of production is from private land supplemented with a smaller amount of federal coal leases. Reserves are estimated to be roughly 34 million short tons, and some estimates suggest more than 100 million short tons are available in the surrounding area.

## **C.W. MINING COMPANY (CO-OP)**

### **Bear Canyon Mines**

Coal production at the privately owned Bear Canyon mines peaked in 2001 at 1.3 million short tons before declining to just

339,000 short tons in 2004, primarily due to labor problems. Production is expected to increase slightly in 2005 to 394,000 short tons, with a more substantial increase, to 800,000 short tons, in 2006. Reserves are estimated at more than 23 million short tons, all to be mined using continuous mining equipment. The west side of Bear Canyon (Bear Canyon #1) has been mined-out, and operations have moved to the east side, producing out of the Blind Canyon (Bear Canyon #3) and Tank (Bear Canyon #4) seams. Resolution of labor issues will be required before full production at Bear Canyon can resume.

## **ENERGY WEST MINING COMPANY (PACIFICORP)**

### **Deer Creek Mine**

Coal produced from the Energy West Mining Company's Deer Creek mine moves via conveyer belt to PacifiCorp's Huntington power plant located near the mouth of the mine in Huntington Canyon. In addition, smaller amounts of Deer Creek coal go by truck to PacifiCorp's Hunter power plant, located south of the town of Castle Dale. Production has declined in the last few years, from 4.0 million short tons in 2002 to 3.4 million short tons in 2004, as development work began on the new Mill Fork tract, and as the company recovered coal from smaller, isolated longwall panels on prior leases. Production is expected to increase to about 4 million short tons per year as longwall equipment begins operation in the state-owned Mill Fork tract in mid-2005. Coal quality is also expected to increase as longwall production commences. The Mill Fork tract is estimated to



contain 55 million short tons of coal in two seams, the Blind Canyon and Hiawatha, and mining in the area should continue for the next 15 to 20 years. The two seams are each 7 to 9 feet thick, separated by 80 to 100 feet, and are located under 1800 to 2600 feet of cover.

Energy West is pursuing permits for new entry portals at a site in Rilda Canyon. This will allow more efficient and safer access to the ever more distant working face, while minimizing surface disturbance. Coal production will still exit through existing portals in Deer Creek Canyon. Also, Energy West is planning on placing a bid on the soon-to-be-leased, state-owned Cottonwood tract. If successful, they will use the currently closed Trail Mountain mine as their access to the new reserve.

## **HIDDEN SPLENDOR RESOURCES, INC.**

### **Horizon Mine**

Production at the Horizon mine ceased temporarily in February of 2003, with the sale of assets and lease holdings from Lodestar Resources, Inc. to Hidden Splendor Resources, Inc. Operations resumed in August of that year, resulting in total 2003 production of 108,000 short tons, down only slightly from 2002 production of 110,000 short tons. A full year of production in 2004 with just one continuous miner yielded 293,000 short tons. This total is expected to increase to 565,000 short tons in both 2005 and 2006 as a second continuous miner is put into operation.

Available coal under lease totals roughly 6 million short tons. There are potential leases with another 13 million short tons

of coal on federal land to the northwest. Current production is primarily in lease areas north and west of the portal, in the Hiawatha seam that averages 7 feet thick and is under 900 feet of cover. Coal quality is typical of the Wasatch Plateau and averages 11,950 Btu per pound, 0.5% sulfur, and 7.8% moisture. Water infiltration has been somewhat of a problem, but water quality is good making disposal less of an issue. Longwall production is not feasible at this mine due to faults and other geologic features.

## **UTAHAMERICAN ENERGY, INC.**

### **Lila Canyon Mine**

UtahAmerican Energy's proposed Lila Canyon mine is located south of Horse Canyon in the Book Cliffs coal field in Emery County. UtahAmerican is still working on acquiring the necessary permits, but expects development work to start in late 2005 and continue through 2006. By the time the facility is at full working capacity, it could employ up to 200 people and produce up to 4.5 million short tons of coal a year. Optimistic reserve estimates at Lila Canyon run as high as 100 million short tons.

## **BRONCO COAL COMPANY**

### **Columbia Mine**

In the spring of 2005, Arizona-based Bronco Coal Company bought the land and mineral rights to the old Columbia mine located just south of the town of Sunnyside in the Book Cliffs coal field in Carbon County. The Columbia mine produced coking coal from 1923 to 1966 when it

was operated by US Steel Corp. The new company is in the process of submitting applications for permits and hopes to start rehabilitating the mine in late 2006 or early 2007, producing coal shortly thereafter. For the first few years they hope to produce about 2.0 million short tons of metallurgical coal a year for markets in the U.S., South America, and Pacific Rim. At full production, they hope to produce up to 5.0 to 6.5 million short tons a year with about 250 employees.

The reserves of metallurgical coal average 13,000 to 13,500 Btu per pound with 0.9% sulfur and 8.0% ash. Company officials estimate a proposed reserve base of 121 million short tons occurring in the Upper and Lower Sunnyside seams, where thickness varies from 4 feet in the upper seams to 15 feet in the lower seam.

## **ALTON COAL DEVELOPMENT LLC**

### **Alton Mine**

Alton Coal Development LLC has started the permitting process for a new mine that will be located in the Alton coal field in southern Utah's Kane County. The proposed surface mine will produce sub-bituminous coal that ranges from 9500 to 10,000 Btu per pound, and averages about 1% sulfur and 9% ash. The company would initially mine coal on private property before moving to adjacent, yet-to-be-leased, federal land. This new mine could produce up to 2 million short tons a year from a proposed reserve base of approximately 40 to 45 million short tons. Projected date for start of operations, if permits and leases are acquired as planned, is 3 to 5 years.



# DISTRIBUTION OF UTAH COAL

## INTRODUCTION

The total amount of Utah coal distributed to market is proportional to the amount of Utah coal production. Following the trend of declining production, total distribution of Utah coal decreased from 23.7 million short tons in 2003 to 22.8 million short tons in 2004, a 3.8% decline (table 7). The majority of that decrease occurred in the electric utility sector, where distribution decreased from 19.9 million short tons in

2003 to 18.7 million short tons in 2004. Coal delivered to the industrial sector remained relatively unchanged, while coal going to residential and commercial customers increased from 78,000 short tons in 2003 to 280,000 short tons in 2004. For the first time in over 25 years, no Utah coal was shipped overseas to Asia and there are no plans for overseas exports in the future. With a significant increase in production expected in 2005, distribution of

Utah coal is also expected to increase. Companies plan to deliver a total of 25.7 million short tons of Utah coal, a 12.8% increase, with 21.9 million short tons going to electric utilities, 3.7 million short tons to industry, and 123,000 short tons going to residential and commercial customers. The following sections provide descriptions of electric utility and industrial customers that use Utah coal; however, this is not an exhaustive list.

**Table 7. Distribution of Utah Coal, 1981-2005**  
Thousand short tons

Year	Production	Distribution of Utah Coal													
		Electric Utilities <sup>1</sup>			Coke Plants			Industrial <sup>2</sup>			Residential & Commercial			Exports <sup>3</sup>	Total
		Outside Utah	In Utah	Total	Outside Utah	In Utah	Total	Outside Utah	In Utah	Total	Outside Utah	In Utah	Total		
1981	13,808	2,688	4,829	7,517	779	267	1,046	1,645	493	2,138	180	197	377	3,472	14,627
1982	16,912	3,643	6,135	9,778	859	136	995	1,349	728	2,077	233	177	410	2,177	15,397
1983	11,829	3,404	5,220	8,624	0	32	32	1,091	581	1,672	292	191	483	1,346	12,188
1984	12,259	3,730	4,688	8,418	0	163	163	1,542	466	2,008	311	257	568	849	12,074
1985	12,831	3,746	7,192	10,938	0	39	39	1,866	352	2,218	312	252	564	625	14,361
1986	14,269	2,989	6,955	9,944	0	485	485	1,745	271	2,016	81	191	272	551	13,243
1987	16,521	3,182	10,772	13,954	0	131	131	1,813	249	2,062	83	204	287	555	16,989
1988	18,164	2,797	11,233	14,030	0	171	171	1,996	679	2,675	88	236	324	1,044	18,244
1989	20,517	2,623	11,563	14,186	0	355	355	2,401	765	3,166	84	323	407	2,175	20,289
1990	22,012	3,373	12,604	15,977	0	617	617	2,327	612	2,939	59	380	439	1,708	21,680
1991	21,875	3,608	12,162	15,770	0	615	615	2,158	622	2,780	76	320	396	2,112	21,673
1992	21,015	4,000	11,619	15,619	0	553	553	2,006	488	2,494	81	347	428	2,245	21,339
1993	21,723	3,914	11,842	15,756	0	510	510	2,146	594	2,740	134	228	362	2,567	21,935
1994	24,422	4,841	12,344	17,185	0	109	109	2,322	643	2,965	308	157	465	2,717	23,441
1995	25,051	6,570	11,771	18,341	0	0	0	2,399	642	3,041	68	182	250	3,811	25,443
1996	27,071	7,258	11,923	19,181	0	0	0	2,339	517	2,856	51	260	311	5,468	27,816
1997	26,428	5,638	13,271	18,909	0	0	0	2,164	665	2,829	60	96	156	3,513	25,407
1998	26,600	7,704	12,812	20,516	0	0	0	2,749	680	3,429	82	212	294	2,735	26,974
1999	26,491	6,910	13,162	20,072	0	0	0	2,529	830	3,359	75	107	182	2,567	26,180
2000	26,920	6,639	14,276	20,915	0	5	5	2,892	634	3,526	141	82	223	2,960	27,629
2001	27,024	7,419	12,480	19,899	0	0	0	3,055	792	3,847	254	394	648	2,404	26,798
2002	25,299	5,562	13,009	18,571	0	0	0	3,543	735	4,278	282	372	654	875	24,378
2003	23,069	6,789	13,121	19,910	0	0	0	2,856	633	3,489	28	50	78	222	23,700
2004	21,818	5,798	12,947	18,745	0	0	0	2,902	590	3,492	128	152	280	295	22,811
2005*	24,406	6,876	15,019	21,895	0	0	0	3,150	560	3,710	103	20	123	0	25,727

Source: UGS coal company questionnaires

<sup>1</sup>Includes cogeneration facilities

<sup>2</sup>A large portion of out-of-state industrial deliveries are most likely going to cogeneration plants, which are only required to use 5.0% of their power for industrial use; the remainder typically goes into the consumer power grid.

<sup>3</sup>Exports from 1981 to 2003 went overseas to the Pacific Rim, whereas 2004 exports went to Canada.

\*Forecast

## ELECTRIC UTILITY MARKET

During 2004, 82.2% of Utah coal, 18.7 million short tons, was delivered to the electric utility market in both Utah and other states (table 8). In 2004, burning coal accounted for 94.9% of all electricity generated in Utah, which is substantially more than the U.S. average of 51.2%. If electricity consumption continues to increase, demand for Utah coal at power plants should remain high.

### Out-of-State Electric Utility Market

Electric utility companies outside of Utah received 5.8 million short tons of Utah coal in 2004, a decrease of 14.6% from 2003 and significantly less than peak deliveries of 7.7 million short tons in 1998 (table 7). Nevada received the majority of that coal, 3.2 million short tons, while 726,000 short tons went to electric utility markets in Wisconsin, 620,000 short tons went to California cogeneration plants, and 508,000 short tons went to electric plants in Tennessee (table 8). The remaining 1.0 million short tons went to electric markets in Michigan, Missouri, and Ohio.

### Nevada Plants – Reid Gardner and North Valmy Power Plants

Sierra Pacific and Nevada Power jointly own and operate seven power generation stations that serve Nevada and northeastern California. Nevada Power also owns a minority interest

in two other power plants, and the partnership buys power from other generators. Utah coal is distributed to two plants in this system, the Reid Gardner plant, which serves the Las Vegas area, and the North Valmy plant, which is located near Battle Mountain, Nevada.

Reid Gardner is a conventional power plant, which was originally rated at 580 megawatts (MW), but has since been upgraded to a capacity of 605 MW. The plant purchased 1.7 million tons of Utah coal in 2004, with smaller amounts purchased from Colorado (table 9). Utah coal purchases in 2005 are expected to remain about the same. Net power generation in 2004 was steady at 3995 gigawatthours (GWh) run-

ning at 86.8% of capacity. Plant availability will rise slightly from 79.7% in 2004 to 80.3% in 2005, but net generation is expected to decrease to 3450 GWh.

North Valmy is also a conventional power plant with a capacity rating of 521 MW. In 2004, the plant received 1.4 million short tons of Utah coal and 487,000 short tons of coal from Wyoming, which is much more than the 58,000 short tons purchased from Wyoming in 2003. In 2005, the amount of Utah coal purchased by North Valmy will decrease to 1.0 million tons, and the amount of coal from Wyoming will more than double to 950,000 short tons. In 2004, the North Valmy plant generated a net of 4022 GWh with an availability

**Table 8. Distribution of Utah Coal by State, 2004**  
Thousand short tons

Destination	Residential	Commercial	Industrial	Electric Utility <sup>1</sup>	Total
Arizona	—	—	197	—	197
California	—	—	1,916	620	2,537
Colorado	*	*	*	—	*
Idaho	—	2	105	—	107
Illinois	—	98	—	—	98
Iowa	—	—	11	—	11
Kansas	—	*	—	—	*
Michigan	—	—	—	268	268
Missouri	—	—	—	260	260
Nevada	—	—	277	3,161	3,438
Ohio	—	—	65	16	81
Oregon	—	—	96	—	96
Tennessee	—	—	—	508	508
Utah	1	151	590	12,947	13,689
Virginia	—	4	—	—	4
Washington	—	23	—	—	23
Wisconsin	—	—	—	726	726
Wyoming	—	*	—	—	*
Exports - Canada	—	—	—	—	295
Unknown	—	—	235	239	474
Total	1	279	3,492	19,040	22,811

Source: UGS coal company questionnaires  
<sup>1</sup>Includes cogeneration facilities  
 \*Amounts less than 500 tons

**Table 9. Utah and non-Utah Coal Purchases by Select Companies, 2003-2005**  
Thousand short tons

Company	Plant Location	Coal Purchased in 2003:		Coal Purchased in 2004:		Coal Purchased in 2005:*	
		Utah Coal	non-Utah Coal	Utah Coal	non-Utah Coal	Utah Coal	non-Utah Coal
PacifiCorp - Carbon	UT	657		567		621	
PacifiCorp - Hunter	UT	3,839		4,150		5,420	
PacifiCorp - Huntington	UT	2,891		3,326		3,016	
DG&T - Bonanza	UT		2,036		2,553		2,124
Intermountain Power Project	UT	5,304		5,270	468	6,616	673
Ashgrove Cement	UT	124		123		124	
Graymont	UT	150		166		170	
Holcim	UT	70		79	7	56	
Kennecott Copper	UT	400		207	178	429	
ACE Cogeneration Plant^	CA	222		300		408	
Mt. Poso Cogeneration^	CA	150		114		227	
Rio Bravo Jasmin Cogeneration^	CA	66		41		44	
Rio Bravo Poso Cogeneration^	CA	66		49		38	
Stockton Cogeneration	CA	121	9	135	21	28	112
North Valmy Power Plant	NV	1,220	58	1,356	487	1,000	950
Reid Gardner Power Plant	NV	1,756	48	1,721	187	1,750	220
Total		17,043	2,153	17,626	3,901	19,966	4,079
Source: UGS coal company questionnaires *Forecast ^Only reports coal purchased in Utah Note: This table only includes a sampling of companies that use Utah coal. This is not an exhaustive list.							

of 88.2%. Availability is expected to decrease in 2004 to 82.9%, decreasing net generation to 3747 GWh.

### Utah Electric Utility Market

The amount of Utah coal delivered to electric utilities within the state has averaged 12.9 million short tons over the last 10 years, peaking in 2000 at 14.3 million short tons (table 7). Distribution decreased slightly from 13.1 million short tons in 2003 to 12.9 million short tons in 2004, but is expected to increase substantially in 2005 to a new record of 15.0 million short tons. Demand for coal at Utah power plants is expected to remain high

as electricity needs continues to grow.

### *PacifiCorp - Hunter*

The three units at the Hunter power plant have a combined total capacity of 1320 MW and produced a net of 9958 GWh of power in 2004. Hunter purchased 4.2 million short tons of Utah coal in 2004, up from 3.8 million short tons in 2003, relying mostly on Canyon Fuel mines (table 9). PacifiCorp expects to purchase 5.4 million short tons of Utah coal in 2005. The company estimates net power generation for 2005 to total about 9900 GWh.

Hunter began operation in 1978 with Unit 1; Units 2 and 3

began supplying power in 1980 and 1983, respectively. All three units have been up-rated from an original combined total of 1180 MW and are now typically run at 105% of standard pressure to supply maximum possible base load power. As such, Hunter is one of the most efficient of PacifiCorp's power plants. Hunter Plant Unit 1 is jointly owned by PacifiCorp and Provo City with undivided interest of 93.75% and 6.25%, respectively. Hunter Plant Unit 2 is owned by PacifiCorp, Deseret Generation and Transmission Cooperative, and Utah Associated Municipal Power Systems, each with an undivided interest of 60.31%, 25.11%, and 14.58%, re-

spectively. Hunter Unit 3 is wholly owned by PacifiCorp.

### ***PacifiCorp - Huntington***

Completed in 1977, PacifiCorp's Huntington plant was built in Huntington Canyon, very close to PacifiCorp's Deer Creek mine. As a result, only a conveyor belt is needed to deliver coal for power generation. Huntington's two units have been uprated from 815 MW to 895 MW. In 2004, Huntington generated a net of 6380 GWh, down 11.5% from 7207 GWh in 2003. Power generation is expected to increase in 2005 to about 6500 GWh.

Huntington's coal purchases rose to 3.3 million short tons in 2004, up from 2.9 million short tons the year before (table 9). The Deer Creek mine continues to supply the vast majority of coal used at the Huntington plant, with smaller amounts coming from Canyon Fuel and WEST RIDGE. Coal delivery in 2005 is expected to total 3.0 million short tons.

### ***PacifiCorp - Carbon***

The Carbon power plant, which began operation in 1954, is PacifiCorp's oldest and smallest coal-fired power plant in Utah. Located at the intersection of State Route 6 and 191, just north of Helper, Carbon has two units with a combined capacity of 172 MW. Coal delivered to Carbon decreased from 657,000 short tons in 2003 to 567,000 short tons in 2004 (table 9). The plant generated a net of 1358 GWh in 2004, slightly less than the 1370 GWh generated in 2003. Net generation for 2005 is expected to be near 1368 GWh.

Interestingly, during 2004, the Carbon plant purchased coal from more mines than any other

power plant in Utah. The majority came from Canyon Fuel, Hidden Splendor, and Co-op, with smaller amounts from Deer Creek and West Ridge. Coal purchases are expected to increase to 621,000 short tons in 2005, with increasing amounts coming from Canyon Fuel and the Deer Creek mine.

### ***Intermountain Power Agency***

The Intermountain Power Agency (IPA) and its Intermountain Power Project (IPP), located just north of Delta, were created in 1977 to meet the power needs of some 23 public agencies and municipalities in Utah that were previously supplied primarily from the Colorado River Storage Project. IPP is operated by the Los Angeles Department of Water and Power. California purchasers are entitled to 75% of IPP's generation, with the rest going to several different Utah purchasers.

As of April 2004, IPP increased its capacity rating to 1800 MW, making it the largest power generation facility in Utah. In 2004, IPP generated a net of 14,429 GWh of power, up significantly from the 13,555 GWh produced in 2003. IPP purchased a total of 5.7 million short tons of coal in 2004, 5.3 million short tons from Utah, 379,000 short tons from Wyoming, and 89,000 short tons from Colorado (table 9). This is the first time that IPP has looked out-of-state to meet its coal consumption demands.

For 2005, IPP is expecting power generation to decrease to a net of 13,914 GWh. Coal deliveries are projected to total 7.3 million short tons, a 27.0% increase over 2004, with 9.2% projected to come from Wyoming contracts.

Plans for expanding IPP by adding a third unit would increase

generation capability by another 900 MW. This additional capacity, expected to come online by 2011, is intended to supply power to communities in Utah, New Mexico, and Arizona. Coal consumption would rise almost 40% with such an expansion, with demand expected to be met mostly by Utah and Wyoming coal.

## **COGENERATION MARKET**

### **Out-of-State Cogeneration Plants**

Cogeneration plants ("cogen") in California are major customers of Utah coal. Cogen facilities provide process steam and power for industry, but are primarily devoted to generating electricity for consumer markets, generally providing a maximum allowable 95% of total net capacity to the grid. The increasing stringency of California air quality standards means that conventional stoker power plants, particularly for coal, will eventually give way entirely to cleaner technology. At present, circulating fluidized bed combustion is the most popular technology for cogen facilities due to its low oxide emissions and its ability to burn a variety of fuels, including high-ash coal.

### ***Millennium - Ace Plant***

Located near Bakersfield, California, this 120 MW facility produced a net of 749 GWh of electricity during 2004 using a combination of Utah coal and petroleum coke. In addition to generating electricity, the power plant supplied process steam to an adjacent chemical company as required by its cogeneration status. Plant utilization and availability during 2004 reached



88.7% and 86.5%, respectively, and are expected to increase in 2005 with power generation reaching 792 GWh. Deliveries of Utah coal in 2004 totaled 300,000 short tons, up 35.2% compared with 2003, and are expected to increase again substantially in 2005 to 408,000 short tons (table 9).

### ***Mt. Poso***

Located in the San Joaquin Valley, Mt. Poso is a 58 MW cogeneration plant that is owned by the Millennium Energy Company. The required minimum 5.0% of energy generation is devoted to steam production for enhanced oil recovery at nearby oil wells. As with other cogeneration plants, the remaining generation is supplied to the consumer grid.

In 2004, Mt. Poso generated a net of 423 GWh of electricity, an increase of 1.3% over 2003. Plant utilization and availability were at 97.2% and 90.4%, respectively. Plant utilization and availability, as well as net generated power, are not expected to significantly change in 2005.

During 2004, Mt. Poso purchased 114,000 short tons of Utah coal, 23.8% less than the 150,000 short tons purchased in 2003 (table 9). Utah coal deliveries are expected to nearly double in 2005 to 227,000 short tons.

### ***Rio Bravo Poso***

Rio Bravo Poso uses circulating fluidized-bed combustion to generate power at a rated net capacity of 33 MW. Like Mt. Poso, this Constellation Operating Service plant distributes at least 5.0% of generated energy to steam-based enhanced recovery at nearby oil wells. Remaining power is sold into the California grid.

Rio Bravo Poso generated a net of 269 GWh in 2004 and purchased 49,000 short tons of Utah coal (table 9). In addition, petroleum coke and propane continue to be used in substantial amounts. Plant utilization and availability were 92.7% and 87.6%, respectively. Plant utilization during 2005 is expected to increase to 100.9%, and power generation is expected to increase to 292 GWh. Utah coal deliveries in 2005 are expected to decrease to 38,000 short tons.

### ***Rio Bravo Jasmin***

Rio Bravo Jasmin is a Constellation-owned plant located seven miles from the nearly identical Rio Bravo Poso. Both plants provide roughly the same amount of steam for enhanced oil recovery in the surrounding oil fields. Remaining generation is sold to Southern California Edison.

Plant utilization and availability in 2004 were 94.6% and 95.1%, respectively, producing a net of 274 GWh of electricity. Rio Bravo Jasmin purchased 41,000 short tons of Utah coal, down from 66,000 short tons purchased in 2003 (table 9). For 2005, the Jasmin plant expects to increase utilization and plant availability and produce 290 GWh of electricity. They also expect to purchase 44,000 short tons of Utah coal in 2005.

### ***Stockton Cogeneration Company***

The Stockton Cogeneration facility in California was created to supply process heat for agricultural products. In 2004, the plant generated a net of 427 GWh on a base rating of 55 MW running at 92.5% availability and utilization. Stockton plans to increase power

generation in 2005 to a net of 454 GWh by increasing availability and utilization to 96.2%. Fuel for the year included petroleum coke, tire-derived fuel, and coal. Stockton purchased a total of 157,000 short tons of coal in 2004, of which 135,000 short tons, or 86.3%, was from Utah (table 9). Utah coal deliveries will significantly decrease in 2005 to just 28,000 short tons, while 112,000 short tons will come from Colorado and Oklahoma.

### ***Utah Cogeneration Plant***

#### ***Sunnyside Cogeneration Plant***

The Constellation plant at Sunnyside, Utah was originally designed as a true cogeneration plant, which would have supplied 5.0% of its power to a commercial greenhouse. However, since the plant burns waste coal, it is designated as a “qualifying facility”, which under the Federal Public Utility Regulatory Policy Act, is exempt from the cogeneration requirement, and the proposed commercial greenhouse was never developed. Subsequently, all of Sunnyside’s power goes directly to the grid.

The Sunnyside plant, rated at a net of 51 MW, uses circulating fluidized-bed combustion technology to burn waste coal left from the Kaiser Sunnyside coal wash operation and coal from the old Star Point waste pile. The heating value of the Sunnyside fuel varies from 4000 to 5500 Btu per pound, which is less than half the Btu value for most Utah coal. The sulfur content of the fuel averages about 1.5%.

The Sunnyside power station consumed about 589,000 short tons of waste coal during 2004. At that rate, waste coal “reserves” on site are expected to last 4 to 6



more years. In anticipation of resource depletion, Constellation purchased waste coal from a wash plant associated with the now-closed Cyprus-Plateau Star Point mine. That fuel is of higher quality than that from Sunnyside and averages 5700 to 6000 Btu per pound with 0.7% sulfur. With these additional reserves, Sunnyside Cogen should have enough fuel to last until 2025.

Net power generation in 2004 totaled 466 GWh, up from the 399 GWh generated in 2003. This figure is expected to drop in 2005 to near 400 GWh based on the consumption of 494,000 short tons of waste coal.

In contrast to conventional coal combustion, where high-ash content hampers performance, the use of circulating fluidized bed combustion at the Sunnyside plant requires the addition of non-combustible material. The plant consumes about 48,000 tons of pulverized limestone per year, most of which is purchased from the Graymont lime plant in the Cricket Mountains, in order to achieve proper combustion and eliminate sulfur emission. Bag house technology is used to remove fly ash.

## **INDUSTRIAL MARKET**

### **Out-of-State Industrial Market**

Deliveries of Utah coal to industrial plants in other states have gradually increased during previous decades with a record 3.5 million short tons shipped in 2002 (table 7). Deliveries decreased by 19.4% in 2003 to 2.9 million short tons and remained little changed in 2004. Deliveries for 2005 are expected to increase to 3.2 million short tons as overall

Utah coal production increases.

California is the largest industrial consumer of Utah coal, with delivery of 1.9 million short tons in 2004, down only slightly from 2.0 million short tons in 2003 (table 8). Deliveries to Idaho and Oregon industrial customers also declined in 2004, whereas shipments to Arizona and Nevada increased. Other states receiving Utah coal for industrial use are Colorado, Iowa, and Ohio.

It is important to note that a large portion of out-of-state industrial deliveries could be going to cogeneration plants. These plants are only required to use 5.0% of their power generation for industrial use, with the remainder typically sold to the power grid.

### **Utah Industrial Market**

The amount of coal delivered to industrial users within the state of Utah has decreased in the last few years from peak deliveries of 830,000 short tons in 1999 to only 590,000 short tons in 2004 (table 7). Deliveries in 2005 are expected to further decrease to 560,000 short tons. During 2004, a few companies in Utah had to look elsewhere to meet their coal needs due to lower total production of Utah coal. However, with the expected increase in overall state production in 2005, no out-of-state coal purchases are planned.

### **Ashgrove Cement**

Ashgrove Cement uses a 25 MW conventional boiler to produce steam and electricity for Portland cement production at its remote site about 25 miles west of Nephi. During 2004, this plant purchased about 123,000 short

tons of Utah coal, similar to amounts purchased in 2003 (table 9). Plant availability was rated at 90.0% for 2004, on utilization of 86.8%. Utah coal purchases for 2005 are expected to total 124,000 short tons.

### **Graymont**

Graymont Western U.S., Inc., is an affiliate of Graymont Dolime of Genoa, Ohio, one of the largest producers of limestone products in the United States. The Utah operation is located about 40 miles south of Delta, where limestone from the nearby Cricket Mountains is used to produce calcium oxide and magnesium oxide in a rotary kiln. Graymont purchased 166,000 short tons of Utah coal in 2004 and expects to increase that amount to 170,000 short tons in 2005 (table 9).

### **Holcim, Inc.**

Holcim is one of the world's leading suppliers of cement, sand and gravel, and construction-related services. Holcim has a presence in 70 countries and is one of the leading suppliers of construction materials in the United States, with 70 operations located in 15 states. Holcim's Devil's Slide plant, located in Morgan County, produces cement and washed aggregates. During 2004, this plant purchased 79,000 short tons of Utah coal and 7,000 short tons of coal from Wyoming (table 9). In 2005, Holcim plans to only purchase 56,000 short tons of Utah coal.

In addition to coal, the Devil's Slide plant uses natural gas, coke from Wyoming, rubber tires, and scraps from sanitary diaper production. Coke is not expected to be used in 2005.

## ***Kennecott***

Kennecott Copper uses coal to produce electricity for copper refining at its Salt Lake County facility. During 2004, Kennecott purchased 385,000 short tons of coal, with 207,000 short tons from Utah, 175,000 short tons from Wyoming, and 3,000 short tons from Montana (table 9). In 2005, coal purchases will increase to 429,000 short tons, all of which will be from Utah. Like many coal users, Kennecott is concerned about stability of price and supply, especially since Kennecott keeps very little coal stocked at the refinery.

The Kennecott steam boiler is fed by a conventional stoker rated at 175 MW. In 2004, Kennecott produced a net of 621 GWh of electricity, down from the 730 GWh generated in 2003, based on a plant availability and utilization of 81.5%. Generation is expected to increase substantially to 837 GWh in 2005.

## **UTAH COKING COAL MARKET**

The coking coal market was once a major Utah industry in support of steel-making and other industrial processes. During the early 1990s, an annual average of 1.1 million short tons of coke were consumed in Utah, of which about half was produced in state (table 7). By 1994, as consumption remained near 1.1 million short tons, Utah stopped producing coke and began receiving it all from out-of-state sources, with the exception of a one-time delivery of 5,000 short tons in 2000 from WEST RIDGE Resources. The last recorded substantial use of coke in Utah was in 2001, when some 648,000 short tons

were used before Geneva Steel closed its doors.

## **RESIDENTIAL AND COMMERCIAL MARKETS**

About 280,000 short tons of Utah coal was shipped to businesses and residences during 2004, with 152,000 short tons going to Utah customers and 128,000 short tons going to customers out-of-state (table 7). This is much more than the 78,000 short tons delivered in 2003, but substantially less than the 654,000 short tons delivered in 2002 and 648,000 short tons delivered in 2001. The recent large swings in total residential and commercial coal deliveries is partly due to changing reporting methods and purchases by commercial coal brokers. Commercial brokers buy and sell substantial amounts of coal each year, with most of their volumes going to utilities for power generation. These commercial transactions may be logged as commercial deliveries, but are probably not going to homes or businesses.

There is little market evidence of coal use by businesses and residences in Utah. Approximately 20 wholesale and retail outlets for coal have been identified in the state, but these sources have dwindled in number, and few proprietors report useful customer information, except to say that a few customers, mostly in rural areas, continue to use coal as a backup fuel or for decorative fireplaces. In addition, a few tons of Pennsylvania anthracite coal is distributed in Utah and nearby states as "boutique" fuel. Due to the expansion of natural gas networks, there are only a few remote locations in Utah where

coal still competes favorably with propane, electricity, or renewable sources of energy for residential and commercial applications.

## **EXPORTS**

Demand for Utah coal by foreign countries peaked in the early 1980s and mid-1990s, reaching a record 5.5 million short tons in 1996, matching peaks in both production and total distribution (table 7). Since then, export markets for Utah coal dwindled, totaling just 222,000 short tons in 2003. In 2004, 295,000 short tons of Utah coal was delivered to Canada, with no coal going overseas. No Utah coal is expected to be exported in 2005.

Utah mostly exported coal to Japan, but as coal production continues to grow in Asia, this market has become less reliable. In fact, a significant resurgence in overseas demand for Utah coal is not expected as China is projected to eventually dwarf all world coal exporters once its own production system matures. Meanwhile, ever since the Port of Los Angeles coal terminal was closed, capability for the western United States to export coal has significantly declined.

## **DTE UTAH SYNFUELS LLC**

DTE Energy Services is owner and operator of a synthetic fuel production facility called DTE Utah Synfuels, located near Price. This is the only synfuel plant west of the Mississippi River. The synthetic fuel process begins by combining fine coal with a chemical reagent. This mixture then undergoes a shaping process using heat and pressure to

form the synthetic fuel. The end product is used by customers in electric generating plants and industrial facilities in Utah and other states. DTE Utah sold 750,000 short tons of synthetic fuel in 2003 and anticipates selling up to 1.8 million short tons in 2005. At full production, staffing for the facility totals 24 individuals, including hourly and management personnel.

The DTE Utah Synfuel plant takes coal fines and high-ash coal that would normally be stocked in waste piles and converts it into a useable product. DTE Utah receives waste coal from several Utah mines including Crandall Canyon, Emery, West Ridge, and Dugout. They have also cleaned up waste coal piles near the Savage loadout.

DTE Energy Services is com-

mitted to the Utah marketplace, as evidenced by its \$3 million upgrade to the DTE Utah facility, completed in 2003. The plant benefits from a strong natural resource base as well as access to numerous off-take opportunities. Tax credits associated with synthetic fuel production will likely cease at the end of 2007, and the Utah plant will probably end production at that time.

# COAL IMPORTED INTO UTAH

## INTRODUCTION

The combination of growing demand and decreasing Utah coal production helped push coal imports to record levels in 2004. Utah companies imported 3.2 million short tons of Wyoming and Colorado coal, up 57.5% from 2003 (table 10). The vast majority of imported coal went to the Bonanza power plant in eastern Utah, which has always used Colorado coal, but 2004 also saw several faithful users of Utah coal having to look out-of-state in order to meet their demands. Most out-of-state purchases seemed to be just test batches with no real long-term contracts involved, but if Utah mines cannot keep pace with surging demand, these companies will be forced to explore other options. With the reopening of the Skyline mine, and with Utah production back up near 24 million short tons, imports are expected to decrease to 2.8 million short tons in 2005.

## ELECTRIC UTILITIES

### Deseret Generation and Transmission Co. – Bonanza Plant

Deseret Generation and Transmission Co. (DG&T) is a cooperative of Utah and Colorado municipalities that jointly developed and operate a 458 MW coal-fired power plant located near Bonanza, Utah, a remote area of Uintah County near the Colorado border. During 2004, the Bonanza power plant purchased 2.6 million short tons of coal from the Deserado mine in Colorado, oper-

**Table 10. Utah Coal Imports, 1981-2005**  
Thousand short tons

Year	Electric Utilities	Coke Plants	Industrial	Res./Com.	Total
1981	8	1,030	98	0	1,136
1982	18	695	84	0	797
1983	0	854	83	0	937
1984	224	1,229	85	1	1,539
1985	193	1,289	98	0	1,580
1986	659	383	103	0	1,145
1987	905	160	100	0	1,165
1988	1,300	1,088	60	0	2,448
1989	1,400	922	45	0	2,367
1990	1,449	679	7	2	2,137
1991	1,310	695	2	0	2,007
1992	1,517	629	9	0	2,155
1993	1,501	579	20	0	2,100
1994	1,495	1,089	4	0	2,588
1995	779	1,062	0	0	1,841
1996	805	1,120	0	0	1,925
1997	1,509	1,106	0	0	2,615
1998	1,733	982	0	0	2,715
1999	1,431	728	0	0	2,159
2000	1,531	936	0	0	2,467
2001	2,028	648	0	0	2,676
2002	2,074	0	16	0	2,090
2003	2,036	0	0	0	2,036
2004	3,021	0	185	0	3,206
2005*	2,797	0	0	0	2,797

Source: UGS coal company questionnaires  
\*Forecast

ated by Blue Mountain Energy, a wholly owned subsidiary of DG&T (table 9). The power plant burned 2.0 million short tons of coal to generate a net of 3740 GWh of electricity in 2004, a 6.4% increase from 2003, for distribution to communities in the six cooperative organizations that control the plant.

Power plant availability reached 93.5% in 2004, with plant utilization at 93.0%. Both figures are expected to decrease to 88.3% in 2005, with total net generation of 3541 GWh. Bonanza plans to purchase 2.1 million short tons of coal in 2005, all from Blue Mountain Energy.

### Intermountain Power Plant

The Intermountain power plant imported a total of 468,000 short tons of coal in 2004; 379,000 short tons came from three different companies in Wyoming and 89,000 short tons came from Colorado. This is the first year that Intermountain has purchased significant amounts of out-of-state coal. The company plans to increase this amount in 2005 to 673,000 short tons, all from Wyoming. If Intermountain builds a third unit, it is uncertain if the coal will primarily come from in-state mines or from other sources.

## **INDUSTRIAL PLANTS**

Holcim's Devil's Slide cement plant imported 6,800 short tons of coal from Wyoming in 2004, but plans to only use Utah coal in 2005. The Kennecott Copper Company imported 175,000 short tons of coal from Wyoming and 2500 short tons from Montana in 2004, but like Holcim, does not plan to purchase out-of-state coal in 2005.

## **MINOR COAL IMPORTS**

Small amounts of coal for specialized purposes are imported into Utah from other states. Anthracite coal from Pennsylvania is burned in some residential fireplaces, and coke from Alabama is used by some steel fabricators and foundries. Small amounts of coal are brought to Utah from states to the east and

then distributed with Utah coal to other points in surrounding states. These markets are small, amounting to less than 200 tons per year, and are declining as natural gas replaces coal in nearly all but the most remote areas, and markets for specialized uses in homes and industry are limited.



# OUTLOOK FOR UTAH'S COAL INDUSTRY

## INTRODUCTION

In 2004, the U.S. Energy Information Administration (EIA) reported that U.S. coal production increased by 3.7% to a total of 1111.5 million short tons and is expected to increase even more in 2005. In Utah, coal production hit a 10-year low in 2004, but is expected to significantly increase in 2005 and 2006. The reopening of the Skyline and Emery mines; increased production at other Utah mines; and the proposed opening of the Alton, Columbia, and Lila Canyon mines; all suggest a brighter future for Utah's coal industry.

In the longer term, coal should continue to be the most important fuel produced in the United States for electricity generation. Known reserves of coal are expected to last more than 200 years, much longer than known reserves of petroleum and natural gas. The same is true in Utah where crude oil and natural gas production are in long-term decline.

In 2005, coal-fired power generation is projected to supply more than a third of worldwide electricity demand, more than 50% of the United State's electricity needs, and about 95% of Utah's electricity generation. Thanks to abundant reserves of coal, Utah consumers will continue to enjoy a stable supply of electricity from its coal-fired power plants, and electricity prices will continue to be among the lowest in the nation. Utah will also continue to be a net exporter of electricity.

In recent years, air quality concerns and demand for peaking

capacity have increasingly favored natural gas. However, more recent projections for a growing price differential between natural gas and coal appear to be moderating that outlook, and 1500 MW of new coal-fired power plant capacity is in the planning stage.

Emission standards remain a major issue for coal combustion, and research on clean coal technology is being vigorously pursued around the world, particularly in the United States. The low sulfur content of most Utah coal is an advantage in the current market place. As of 2004, most of Utah's six coal-fired power plants are either using upgraded emission controls or are planning for upgrades in the future.

## PRICES

EIA projects that over the next 20 years coal prices in the United States should decrease from a 2005 price of \$18.61 per short ton to around \$17.00 per short ton by 2010 and remain near this level through 2020. This decrease is expected for several reasons including a predicted moderate growth in demand, improvements in mining productivity, and a continuing shift to low-cost coal from Wyoming's Powder River Basin. After 2020, the price is projected to increase to about \$18.00 per short ton by 2025 as predicted rising natural gas prices and the need for base-load generating capacity result in the construction of new coal-fired generating capacity.

The FOB price for Utah coal decreased from \$18.47 per short ton in 2002 to \$16.64 in 2003, the lowest price in at least the last 25

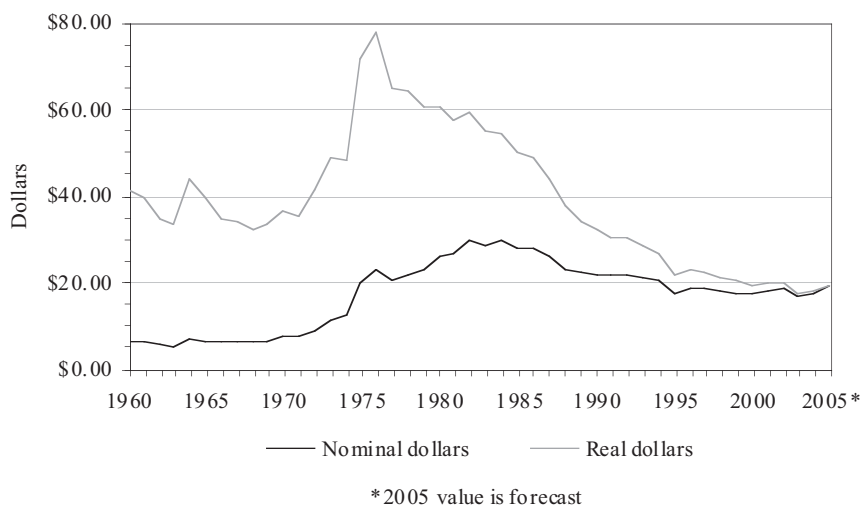
years (all prices in nominal dollars). Prices in 2004 increased 6.4% to \$17.70 per short ton and are expected to increase another 7.2% to \$18.98 in 2005 (table 2; figure 1). The average price of Utah coal is strongly influenced by low-priced long-term contracts; some Utah mines are selling coal for only about \$13.00 per short ton. Conversely, current spot prices for Utah coal range above \$30.00 per short ton and could be an indicator of upward pressure on the price for Utah coal in coming years. However, some coal-using companies have expressed concern over the high price of Utah coal compared with coal from the Powder River Basin. Despite Powder River's lower quality, competition with Wyoming coal does have an effect on Utah's future coal prices.

## PRODUCTION

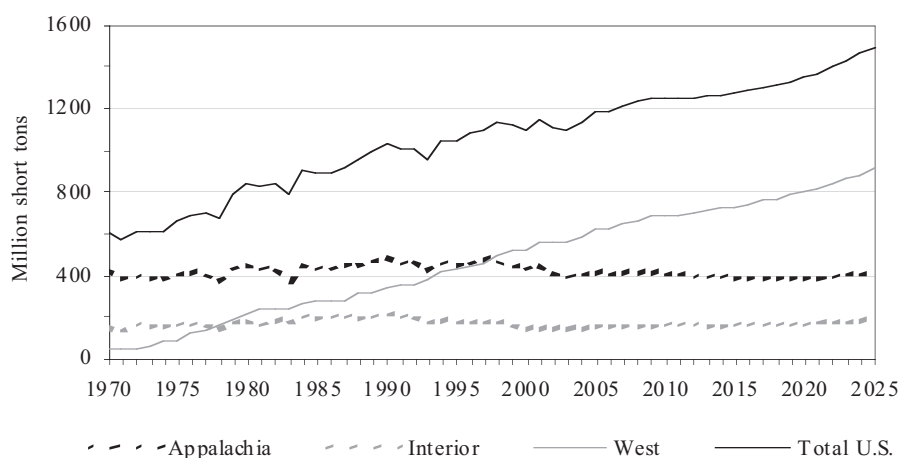
EIA's Annual Energy Outlook predicts that U.S. coal production will steadily increase by an average of 1.3% each year and reach 1487.8 million short tons by 2025. Almost all of this increase is expected to come from western coal mines, especially Wyoming's Powder River Basin, with little change to total Appalachian and Interior region production (figure 2).

Projections for Utah coal production also show a significant increase. Operators predict a production total of 24.4 million short tons in 2005 and 27.5 million short tons in 2006, which would be a new total production record. These increases are dependent on increased production from the newly reopened Skyline and

**Figure 1.** Average price of Utah Coal, 1960-2005.



**Figure 2.** U.S. coal production by region, 1970-2025.



Source: U.S. Energy Information Administration

Emery mines, increased production at Deer Creek as longwall production ramps up on the Mill Fork tract, increased production at the South Crandall Canyon mine as the new low-profile long-wall starts operation, and increased production at Bear Canyon as labor issues are resolved. The projection for 2006 does not include any production from the proposed Lila Canyon or Columbia mines. If these two mines

come online, at full production they could add 3.0 to 6.0 million short tons of coal to the Utah's total, pushing production over 30 million short tons by 2007 or 2008.

## DISTRIBUTION AND CONSUMPTION

In 2005, EIA's projected U.S. domestic consumption of coal for all uses will total 1137.0 million

short tons, an all-time high, of which 1042.0 million short tons will go to electric utilities. EIA predicts that U.S. consumption will increase by an average of 1.4% per year and total 1508.0 million short tons by 2025, with 1425.0 million short tons going to electric utilities.

In Utah, 2004 showed a fourth consecutive year of decreased distribution, totaling 22.8 million short tons, or 18.9% less

than record year 1996 (table 7). This continued decline reflects decreases in production levels rather than a decrease in demand. For example, coal consumption for power generation in Utah totaled 16.2 million short tons in 2004, an all-time high, and accounted for 95.8% of all coal used in the state (see Appendix Table A). For 2005 and beyond, increased distribution of Utah coal is expected to parallel predicted production increases.

Coal demand in Utah is expected to follow demand for electricity, which continues to increase. Proposed expansion of IPP and Hunter power plants, as well as a proposed new plant near Sigurd, could increase demand for Utah coal by 3.0 to 3.5 million short tons a year. Also, recent concerns about the price and availability of natural gas have dampened some enthusiasm for this relatively clean-burning fuel. As a result, there is renewed interest in coal-burning plants as a means to increase base-load generation capacity. If Utah mines cannot meet the growing demand, plants such as IPP, which has the ability to burn lower-rank coals, may opt to import coal from places like Wyoming.

## RESERVES

The Kaiparowits Plateau is estimated to contain about 9.1 billion short tons, or 64.4%, of Utah's remaining recoverable coal reserves, but is unavailable for development due to its location within the Grand Staircase-Escalante National Monument (see Appendix Table B). As a result, Utah coal production will continue to rely heavily on reserves in the Wasatch Plateau coal field, estimated at 1.3 billion short tons; the Book Cliffs coal field, estimated at 0.7 billion short tons; and the Emery coal field, with reserves estimated at 0.4 billion short tons.

Utah mining companies generally have 10 to 15 years worth of ready coal under lease. Beyond that, the Cottonwood and North Horn tracts may represent the last large tracts of good quality, accessible coal, that is not already adjacent to an existing mine, remaining in the Wasatch Plateau. Combined reserves there could exceed 175 million short tons and provide 20 to 30 years of steady production for two long-wall operations. As demand for Utah coal continues to increase, reserves in other coal fields may

become attractive to mine. For example, the newly proposed mine in the Alton coal field could produce up to 2.0 million short tons a year from a projected reserve base of 40 to 45 million short tons.

The gradual depletion of Utah's "easy" coal turns interest toward more difficult and/or lower-quality reserves, some of which were partially mined in the past. In the northern part of the Book Cliffs field, reserves held by the now-closed Willow Creek mine may become attractive if prices and technology combine to make it profitable to deal with gassy conditions and deep cover. In fact, new main entries in ANDALEX's Aberdeen mine could access part of the old Willow Creek reserves, which might eventually yield as much as 80 million short tons.

The Emery mine in the southern portion of the Emery coal field has access to unleased reserves totaling more than 100 million short tons. These reserves may become more attractive if prices increase enough to overcome the transport and coal chemistry concerns.

## GLOSSARY

**Anthracite** - The highest rank of coal, used primarily for residential and commercial space heating. It is a hard, brittle, and black lustrous coal, containing a high percentage of fixed carbon and a low percentage of volatile matter. The moisture content of fresh-mined anthracite generally is less than 15%. The heat content of anthracite ranges from 11,000 to 14,000 Btu per pound.

**Appalachian Region** - Consists of Alabama, Eastern Kentucky, Maryland, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia.

**Ash** - Impurities consisting of silica, iron, alumina, and other incombustible matter that are contained in coal. Ash increases the weight of coal, adds to the cost of handling, and can affect the burning characteristics.

**Bituminous Coal** - A dense coal, usually black, sometimes dark brown, often with well-defined bands of bright and dull material, used primarily as fuel in steam-electric power generation, with substantial quantities also used for heat and power applications in manufacturing and to make coke. Bituminous coal is the most abundant coal in active U.S. mining regions. Its moisture content usually is less than 20%. The heat content of bituminous coal ranges from 10,500 to 15,000 Btu per pound.

**British thermal unit (Btu)** - The amount of heat needed to raise the temperature of 1 pound of water by 1 degree Fahrenheit.

**Cogeneration power plant** - A generating facility that produces electricity and another form of useful thermal energy (such as heat or steam) used for industrial, commercial, heating, and cooling purposes. To receive status as a qualifying facility under the Public Utility Regulatory Policies Act, the facility must produce electric energy and "another form of useful thermal energy through the sequential use of energy," and meet certain ownership, operating, and efficiency criteria established by the Federal Energy Regulatory Commission.

**Coke (coal)** - A solid carbonaceous residue derived from low-ash, low-sulfur bituminous coal from which the volatile constituents are driven off by baking in an oven at temperatures as high as 2,000 degrees Fahrenheit so that the fixed carbon and residual ash are fused together. Coke is used as a fuel and as a reducing agent in smelting iron ore in a blast furnace. Coke from coal is grey, hard, and porous and has a heating value of 12,400 Btu per pound.

**Continuous mining** - A form of room-and-pillar mining in which a continuous mining machine extracts and removes coal from the working face in one operation; no blasting is required.

**Electric Utility Sector** - The electric utility sector consists of privately and publicly owned establishments that generate, transmit, distribute, or sell electricity primarily for use by the public and that meet the definition of an electric utility. Nonutility power producers are not included in the electric utility sector.

**Field** - An area consisting of a single coal deposit or multiple deposits all grouped on, or related to, the same individual geological structural feature and/or stratigraphic condition. There may be two or more deposits in a field that are separated vertically by intervening impervious strata or laterally by local geologic barriers, or by both.

**Fluidized-bed combustion** - A method of burning particulate fuel, such as coal, in which the amount of air required for combustion far exceeds that found in conventional burners. The fuel particles are contin-

ually fed into a bed of mineral ash in the proportions of 1 part fuel to 200 parts ash, while a flow of air passes up through the bed, causing it to act like a turbulent fluid.

**F.O.B. mine price** - The free on board mine price. This is the price paid for coal at the mining operation site. It excludes freight or shipping and insurance costs.

**Generator capacity** - The maximum output, commonly expressed in megawatts (MW), that generating equipment can supply to system load, adjusted for ambient conditions.

**Gob** - Coal leftover from underground mining in the form of cave-ins or waste piles.

**Industrial Sector** - The industrial sector is comprised of manufacturing industries that make up the largest part of the sector, along with mining, construction, agriculture, fisheries, and forestry. Establishments in the sector range from steel mills, to small farms, to companies assembling electronic components.

**Interior Region** - Consists of Arkansas, Illinois, Indiana, Kansas, Louisiana, Mississippi, Missouri, Oklahoma, Texas, and Western Kentucky.

**Longwall Mining** - An automated form of underground coal mining characterized by high recovery and extraction rates, feasible only in relatively flat-lying, thick, and uniform coalbeds. A high-powered cutting machine is passed across the exposed face of coal, shearing away broken coal, which is continuously hauled away by a floor-level conveyor system. Longwall mining extracts all machine-minable coal between the floor and ceiling within a contiguous block of coal, known as a panel, leaving no support pillars within the panel area. Panel dimensions vary over time and with mining conditions but currently average about 900 feet wide (coal face width) and more than 8,000 feet long (the minable extent of the panel, measured in direction of mining). Longwall mining is done under movable roof supports that are advanced as the bed is cut. The roof in the mined-out area is allowed to fall as the mining advances.

**Metallurgical Coal** - Coking coal and pulverized coal consumed in making steel.

**Moisture** - A measure of the coal's natural inherent or bed moisture, but does not include water adhering to the surface.

**Net generation** - The amount of gross generation less the electrical energy consumed at the generating station(s) for station service or auxiliaries.

**Nominal Price** - The price paid for a product or service at the time of the transaction. The nominal price, which is expressed in current dollars, is not inflation adjusted.

**Powder River Basin** - Consists of the Montana counties of Big Horn, Custer, Powder River, Rosebud, and Treasure, and the Wyoming counties of Campbell, Converse, Crook, Johnson, Natrona, Niobrara, Sheridan, and Weston.

**Real Price** - A price that has been adjusted for inflation.

**Reserves** - That portion of the demonstrated reserve base that is estimated to be recoverable at the time of determination. The reserve is derived by applying a recovery factor to that component of the identified resources of coal designated as the demonstrated reserve base.

**Residential and Commercial Sector** - Housing units; wholesale and retail businesses (except coal



wholesale dealers); health institutions (hospitals); social and educational institutions (schools and universities); and Federal, State, and local governments (military installations, prisons, office buildings).

**Seam** - A bed of coal lying between a roof and floor.

**Spot price** - The price for a one-time open market transaction for immediate delivery of a specific quantity of product at a specific location where the commodity is purchased "on the spot" at current market rates.

**Subbituminous Coal** - A coal whose properties range from those of lignite to those of bituminous coal and used primarily as fuel for steam-electric power generation. It may be dull, dark brown to black, soft and crumbly, at the lower end of the range, to bright, jet black, hard, and relatively strong, at the upper end. Subbituminous coal contains 20 to 30% inherent moisture by weight. The heat content of subbituminous coal ranges from 8500 to 12,000 Btu per pound.

**Sulfur** - One of the elements present in varying quantities in coal that contributes to environmental degradation when coal is burned.

**Synfuel** - Coal that has been processed by a coal synfuel plant; and coal-based fuels such as briquettes, pellets, or extrusions, which are formed by binding materials and processes that recycle material.

**Waste coal** - Usable coal material that is a byproduct of previous processing operations or is recaptured from what would otherwise be refuse.

**Western Region** - Consists of Alaska, Arizona, Colorado, Montana, New Mexico, North Dakota, Utah, Washington, and Wyoming.

# APPENDIX

**Table A. Consumption of Coal in Utah by End Use, 1960-2005**  
Thousand Short Tons

Year	Electric Utilities <sup>1</sup>	Coke Plant	Other Industrial	Residential & Commercial	Transportation	Total
1960	515	2,216	424	249	45	3,449
1961	563	1,930	363	243	11	3,110
1962	462	1,416	336	275	7	2,496
1963	447	1,362	331	228	6	2,374
1964	411	1,693	375	204	8	2,691
1965	363	1,917	389	181	8	2,858
1966	440	1,988	382	185	7	3,002
1967	410	1,845	313	180	5	2,753
1968	417	1,917	345	119	5	2,803
1969	375	1,964	483	161	4	2,987
1970	435	1,948	529	109	4	3,025
1971	417	1,859	527	240	3	3,046
1972	571	1,739	551	161	2	3,024
1973	984	1,889	812	199	2	3,886
1974	1,296	1,957	654	355	1	4,263
1975	2,026	1,985	493	131	0	4,635
1976	1,267	2,011	631	208	0	4,117
1977	2,511	1,995	640	282	0	5,428
1978	3,148	1,725	800	281	0	5,954
1979	4,151	1,566	844	542	0	7,103
1980	4,895	1,528	446	237	0	7,106
1981	4,956	1,567	714	196	0	7,433
1982	4,947	841	822	177	0	6,787
1983	5,223	829	629	191	0	6,872
1984	5,712	1,386	548	259	0	7,905
1985	6,325	1,254	472	252	0	8,303
1986	6,756	785	380	191	0	8,112
1987	11,175	231	276	124	0	11,806
1988	12,544	1,184	589	196	0	14,513
1989	12,949	1,179	686	231	0	15,045
1990	13,563	1,231	676	267	0	15,737
1991	12,829	1,192	508	305	0	14,834
1992	13,857	1,114	525	223	0	15,719
1993	13,995	1,005	727	121	0	15,848
1994	14,269	1,007	835	105	0	16,216
1995	13,325	990	915	77	0	15,307
1996	13,585	1,047	512	94	0	15,238
1997	14,252	1,020	709	123	0	16,104
1998	14,664	971	1,304	113	0	17,052
1999	14,590	741	745	114	0	16,190
2000	14,688	985	1,166	59	0	16,898
2001	14,403	873	1,235	60	0	16,571
2002	15,149	0	592	198	0	15,939
2003	15,788	0	611	61	0	16,460
2004	16,170	0	583	128	0	16,881
2005*	16,123	0	779	75	0	16,977

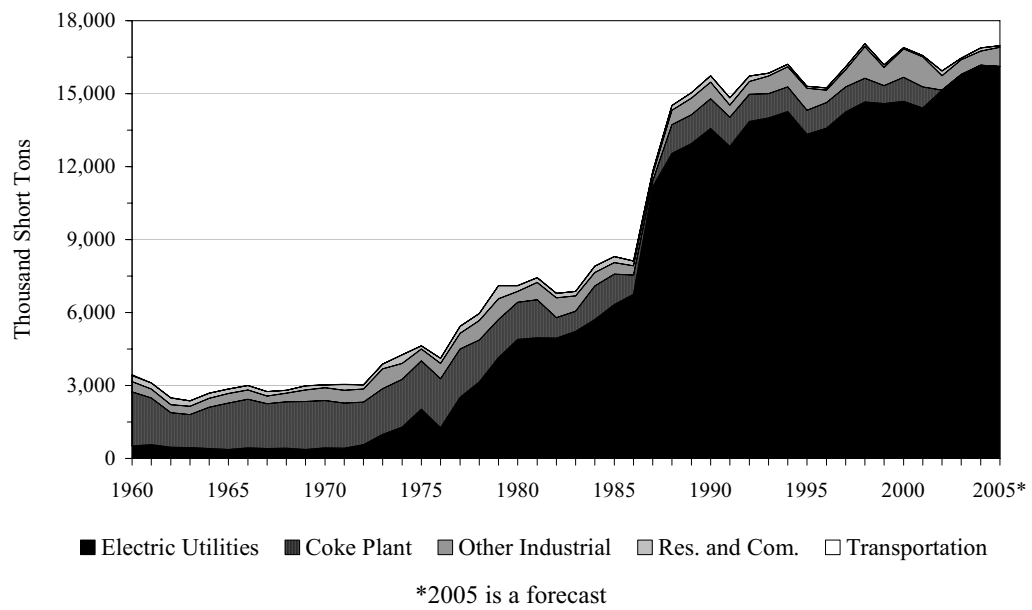
Source: U.S. Energy Information Administration and UGS

Note: Consumption differs from distribution (Table 7) because of additional consumption from consumer stockpiles.

\*Forecast

<sup>1</sup>Does not include the Sunnyside Cogeneration facility, which began operation in 1993. Sunnyside burns waste coal.

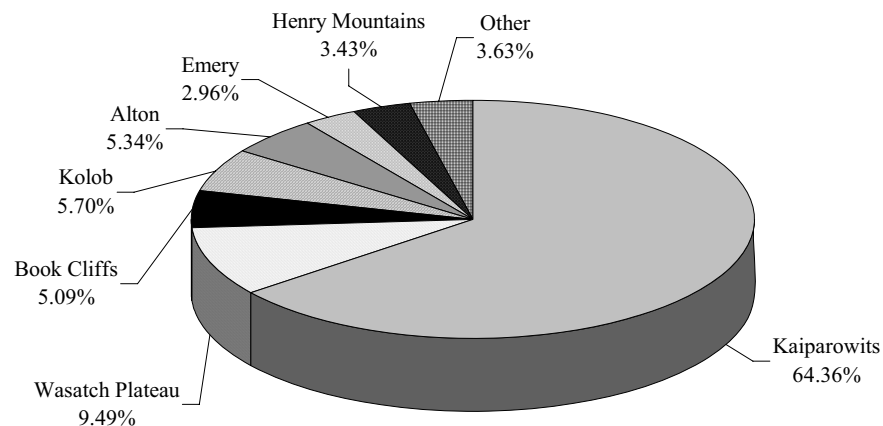
**Figure A - Consumption of Coal in Utah by End Use, 1960-2005**



**Table B. Utah Coal Reserves by Coal Field, 2004**  
Million Short Tons

Coal Field	Original Principal Reserves	Original Recoverable Reserves	Cumulative Production 1870-2004	Remaining Recoverable Reserves	% of Remaining Recoverable Reserves
Kaiparowits	22,740.0	9,096.0	0.1	9,095.9	64.36%
Wasatch Plateau	6,378.9	1,913.7	572.3	1,341.4	9.49%
Book Cliffs	3,527.3	1,033.5	314.4	719.1	5.09%
Kolob	2,014.3	805.9	0.9	805.0	5.70%
Alton	1,509.4	754.7	0.0	754.7	5.34%
Emery	1,430.4	429.1	10.1	419.0	2.96%
Henry Mountains	925.5	484.7	0.0	484.7	3.43%
Sego	696.3	208.9	2.7	206.2	1.46%
Mt. Pleasant	249.1	99.6	0.0	99.6	0.70%
Tabby Mountain	231.7	69.4	0.0	69.4	0.49%
Coalville	186.0	55.8	4.3	51.5	0.36%
Vernal	177.1	53.2	0.5	52.7	0.37%
Salina Canyon	86.4	30.2	0.5	29.7	0.21%
Wales	12.2	3.7	0.8	2.9	*
Sterling	2.0	0.6	0.3	0.3	*
Harmony	1.3	0.4	0.0	0.4	*
Lost Creek	1.1	0.4	0.0	0.4	*
<b>Total</b>	<b>40,169.0</b>	<b>15,039.8</b>	<b>906.8</b>	<b>14,133.0</b>	
Source: modified from Smith and Jahanbani, 1988, Annual Production and distribution of Coal in Utah, 1987, UGMS Circular 80; production data from UGS coal company questionnaires.					
* Value less than 0.1%					

**Figure B - Remaining Recoverable Reserves in Utah by Coal Field, 2004**



**Table C. Utah Coal Reserves by County, 2004**  
**Million Short Tons**

<b>Coal Field</b>	<b>Original Principal Reserves</b>	<b>Original Recoverable Reserves</b>	<b>Cumulative Production 1870-2004</b>	<b>Remaining Recoverable Reserves</b>	<b>% of Remaining Recoverable Reserves</b>
Kane	18,934.0	7,724.6	0.1	7,724.5	54.7%
Garfield	7,493.1	3,106.3	0.0	3,106.3	22.0%
Carbon	4,993.6	1,475.8	433.4	1,042.4	7.4%
Emery	4,130.1	1,236.6	354.4	882.2	6.2%
Sevier	2,073.1	626.2	110.2	516.0	3.7%
Iron	650.8	260.2	0.8	259.4	1.8%
Grand	696.3	208.9	2.7	206.2	1.5%
Sanpete	489.5	171.8	0.7	171.1	1.2%
Wasatch	177.3	53.2	0.0	53.2	0.4%
Uintah	177.1	53.2	0.3	52.9	0.4%
Summit	186.0	55.8	4.3	51.5	0.4%
Washington	86.1	34.4	0.0	34.4	0.2%
Duchesne	53.9	16.2	0.0	16.2	0.1%
Wayne	27.0	16.2	0.0	16.2	0.1%
Morgan	1.1	0.4	0.0	0.4	*
<b>Total</b>	<b>40,169.0</b>	<b>15,039.8</b>	<b>906.8</b>	<b>14,133.0</b>	
Source: modified from Smith and Jahanbani, 1988, Annual Production and distribution of Coal in Utah, 1987, UGMS Circular 80; production data from UGS coal company questionnaires. * Value less than 0.1%					



Table D. Electricity Generation and Coal Consumption at Coal Burning Power Plants in Utah, 1990-2005.

Year	Deseret Generation & Transmission Co.				Intermountain Power Agency				PacifiCorp				PacifiCorp			
	Bonanza				Intermountain (IPP)				Carbon				Hunter			
	Coal Consumption	Net Generation	MWh per Short Ton		Coal Consumption	Net Generation	MWh per Short Ton		Coal Consumption	Net Generation	MWh per Short Ton		Coal Consumption	Net Generation	MWh per Short Ton	
	Short Tons	MWh			Short Tons	MWh			Short Tons	MWh			Short Tons	MWh		
1990	1,237,312	2,577,271	2.08		4,967,883	12,410,005	2.50		582,320	1,260,497	2.16		4,022,009	9,019,470	2.24	
1991	1,309,770	2,764,208	2.11		4,145,585	10,106,144	2.44		547,905	1,192,091	2.18		4,124,260	8,915,149	2.16	
1992	1,511,878	3,201,401	2.12		4,959,568	12,264,308	2.47		623,178	1,307,598	2.10		4,107,391	8,605,835	2.10	
1993	1,414,980	3,132,999	2.21		4,856,527	11,936,833	2.46		631,909	1,358,949	2.15		4,253,731	9,151,459	2.15	
1994	1,533,363	3,242,413	2.11		4,916,555	12,171,664	2.48		622,621	1,366,103	2.19		4,277,130	9,323,744	2.18	
1995	1,125,003	2,344,439	2.08		4,248,623	10,306,059	2.43		605,712	1,351,984	2.23		4,376,632	9,453,500	2.16	
1996	1,341,076	2,831,105	2.11		4,350,752	10,711,308	2.46		622,126	1,410,369	2.27		4,343,571	9,337,663	2.15	
1997	1,532,158	2,947,675	1.92		5,158,831	12,762,721	2.47		653,833	1,403,936	2.15		4,220,568	8,893,113	2.11	
1998	1,734,613	3,456,787	1.99		5,278,344	12,973,101	2.46		600,317	1,286,805	2.14		4,140,205	9,044,084	2.18	
1999	1,598,296	3,227,344	2.02		5,266,047	13,069,535	2.48		552,590	1,217,838	2.20		4,220,721	9,483,957	2.25	
2000	1,510,407	2,931,869	1.94		5,301,096	13,176,578	2.49		628,623	1,371,586	2.18		4,226,218	9,518,367	2.25	
2001	2,013,770	3,932,642	1.95		5,365,021	13,383,601	2.49		632,124	1,371,822	2.17		3,722,062	8,289,465	2.23	
2002	2,092,485	3,921,576	1.87		5,429,620	13,479,234	2.48		612,536	1,322,047	2.16		4,327,402	9,393,626	2.17	
2003	1,893,338	3,512,734	1.86		5,518,129	13,554,882	2.46		657,111	1,369,884	2.08		4,563,686	9,934,622	2.18	
2004	1,996,868	3,734,811	1.87		5,996,797	14,429,288	2.41		629,081	1,357,716	2.16		4,668,586	9,957,531	2.13	
2005*	1,965,583	3,540,963	1.80		6,000,000	13,914,100	2.32		621,000	1,368,000	2.20		4,700,000	9,900,000	2.11	

Year	PacifiCorp				Sunnyside Cogeneration Plant				Total^			
	Huntington											
	Coal Consumption	Net Generation	MWh per Short Ton		Coal Consumption	Net Generation	MWh per Short Ton		Coal Consumption	Net Generation	MWh per Short Ton	
	Short Tons	MWh			Short Tons	MWh			Short Tons	MWh		
1990	2,753,717	6,253,702	2.27		-	-	-		13,563,241	31,520,945	2.32	
1991	2,701,376	5,907,238	2.19		-	-	-		12,828,896	28,884,830	2.25	
1992	2,655,409	6,164,281	2.32		-	-	-		13,857,424	31,543,423	2.28	
1993	2,837,819	6,339,069	2.23		214,580	184,187	0.86		13,994,966	31,919,309	2.28	
1994	2,919,715	6,660,541	2.28		386,800	348,287	0.90		14,269,384	32,764,465	2.30	
1995	2,968,886	6,803,932	2.29		368,550	332,194	0.90		13,324,856	30,259,914	2.27	
1996	2,927,155	6,402,742	2.19		378,230	392,483	1.04		13,584,680	30,693,187	2.26	
1997	2,686,976	6,136,491	2.28		402,040	385,829	0.96		14,252,366	32,143,936	2.26	
1998	2,910,474	6,445,954	2.21		430,000	376,057	0.87		14,663,953	33,206,731	2.26	
1999	2,952,484	7,126,340	2.41		421,230	398,945	0.95		14,590,138	34,125,014	2.34	
2000	3,021,448	7,047,404	2.33		476,170	430,408	0.90		14,687,792	34,045,804	2.32	
2001	2,670,253	6,226,810	2.33		502,490	387,382	0.77		14,403,230	33,204,340	2.31	
2002	2,686,747	5,964,496	2.22		494,715	390,985	0.79		15,148,790	34,080,979	2.25	
2003	3,155,334	7,207,036	2.28		514,564	399,490	0.78		15,787,598	35,579,158	2.25	
2004	2,878,761	6,379,605	2.22		589,366	465,668	0.79		16,170,093	35,858,951	2.22	
2005*	2,836,000	6,500,000	2.29		493,617	402,263	0.81		16,122,583	35,223,063	2.18	

Source: U.S. Energy Information Administration and UGS

^Sunnyside Cogeneration is not included in total because it burns waste coal

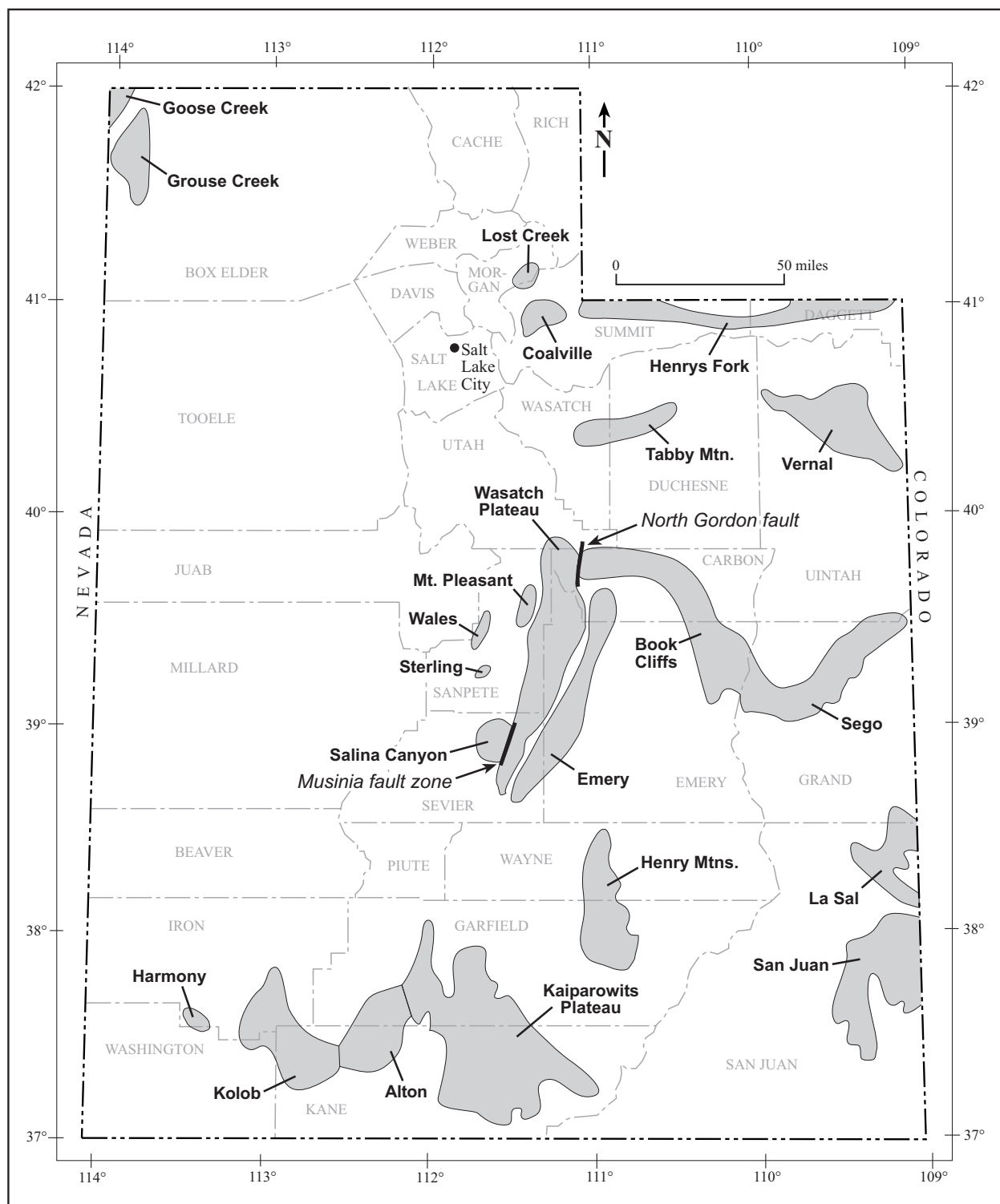
\*Forecast

**Table E. Average Coal Quality at Utah Mines, 2004.**

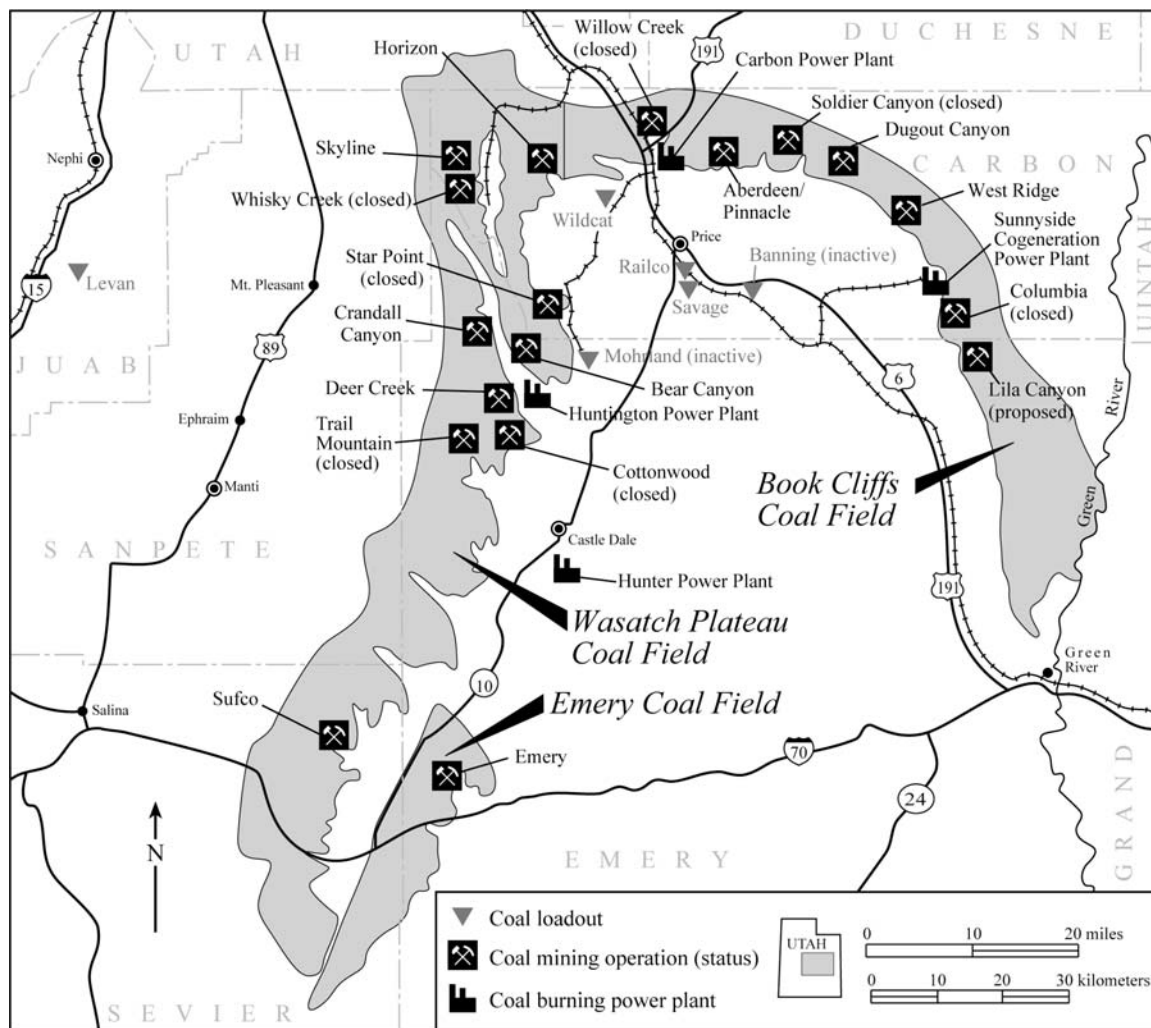
Company	Mine	Coal Field	Seam(s)	Heat Content Btu/lb	% Ash	% Sulfur	% Moisture
ANDALEX Resources Inc.	Aberdeen/Pinnacle	Book Cliffs	Aberdeen/Gilson	12,200	8.5%	0.5%	7.0%
Canyon Fuel Co.	Dugout Canyon	Book Cliffs	Gilson	11,950	10.0%	0.6%	7.3%
WEST RIDGE Resources	West Ridge	Book Cliffs	Lower Sunnyside	12,550	8.5%	1.2%	7.5%
Consolidation Coal Co.	Emery	Emery	I	11,800	na	0.7%	7.0%
Canyon Fuel Co.	Skyline #3	Wasatch	Lower O'Connor 'A'	11,800	9.0%	0.5%	9.0%
Canyon Fuel Co.	Sufco	Wasatch	Upper Hiawatha	11,300	9.0%	0.4%	9.4%
Co-op Mining Co.	Bear Canyon #3	Wasatch	Hiawatha/Blind Canyon	12,400	9.0%	0.5%	7.0%
Energy West Mining Co.	Deer Creek	Wasatch	Hiawatha/Blind Canyon	12,550	10.0%	0.4%	9.0%
GENWAL Resources Inc.	Crandall Canyon and South C.C.	Wasatch	Hiawatha	12,300	9.0%	0.6%	7.5%
Hidden Splendor Resources Inc.	Horizon	Wasatch	Hiawatha	11,950	11.0%	0.5%	7.8%
Source: Utah coal operators							

**Table F. Coalbed Methane Proved Reserves and Production in Utah and the U.S., 1985-2004  
Thousand Cubic Feet**

Year	Reserves in Utah <sup>1</sup>	Reserves in U.S. <sup>1</sup>	Production in Utah <sup>2</sup>			Production in U.S. <sup>1</sup>
			Carbon County	Emery County	Total	
1985	na	na	0	0	0	na
1986	na	na	0	0	0	na
1987	na	na	8,884	0	8,884	na
1988	na	na	37,045	0	37,045	na
1989	na	3,676,000,000	0	0	0	91,000,000
1990	na	5,087,000,000	0	0	0	196,000,000
1991	na	8,163,000,000	76,098	0	76,098	348,000,000
1992	na	10,034,000,000	156,143	0	156,143	539,000,000
1993	na	10,184,000,000	904,731	0	904,731	752,000,000
1994	na	9,712,000,000	4,681,248	0	4,681,248	851,000,000
1995	na	10,499,000,000	12,206,047	561	12,206,608	956,000,000
1996	na	10,566,000,000	16,717,787	220,915	16,938,702	1,003,000,000
1997	na	11,462,000,000	22,527,512	355,831	22,883,343	1,090,000,000
1998	na	12,179,000,000	31,750,179	799,063	32,549,242	1,194,000,000
1999	na	13,229,000,000	49,818,645	1,840,281	51,658,926	1,252,000,000
2000	1,592,000,000	15,708,000,000	71,989,665	3,601,736	75,591,401	1,379,000,000
2001	1,685,000,000	17,531,000,000	85,682,919	7,360,371	93,043,290	1,562,000,000
2002	1,725,000,000	18,491,000,000	88,752,544	13,421,900	102,174,444	1,614,000,000
2003	1,224,000,000	18,743,000,000	81,060,019	16,649,674	97,709,693	1,600,000,000
2004	na	na	72,626,621	16,709,246	89,335,867	na
Source: <sup>1</sup> U.S. Energy Information Administration						
<sup>2</sup> Utah Division of Oil, Gas and Mining						
Note: Coalbed methane wells are classified as gas wells in the state of Utah. The production shown above is included in the state's published gas production volumes.						



*Map 1. Location of Utah coal fields.*



**Map 2.** Location and status (as of printing) of Utah coal mining operations.