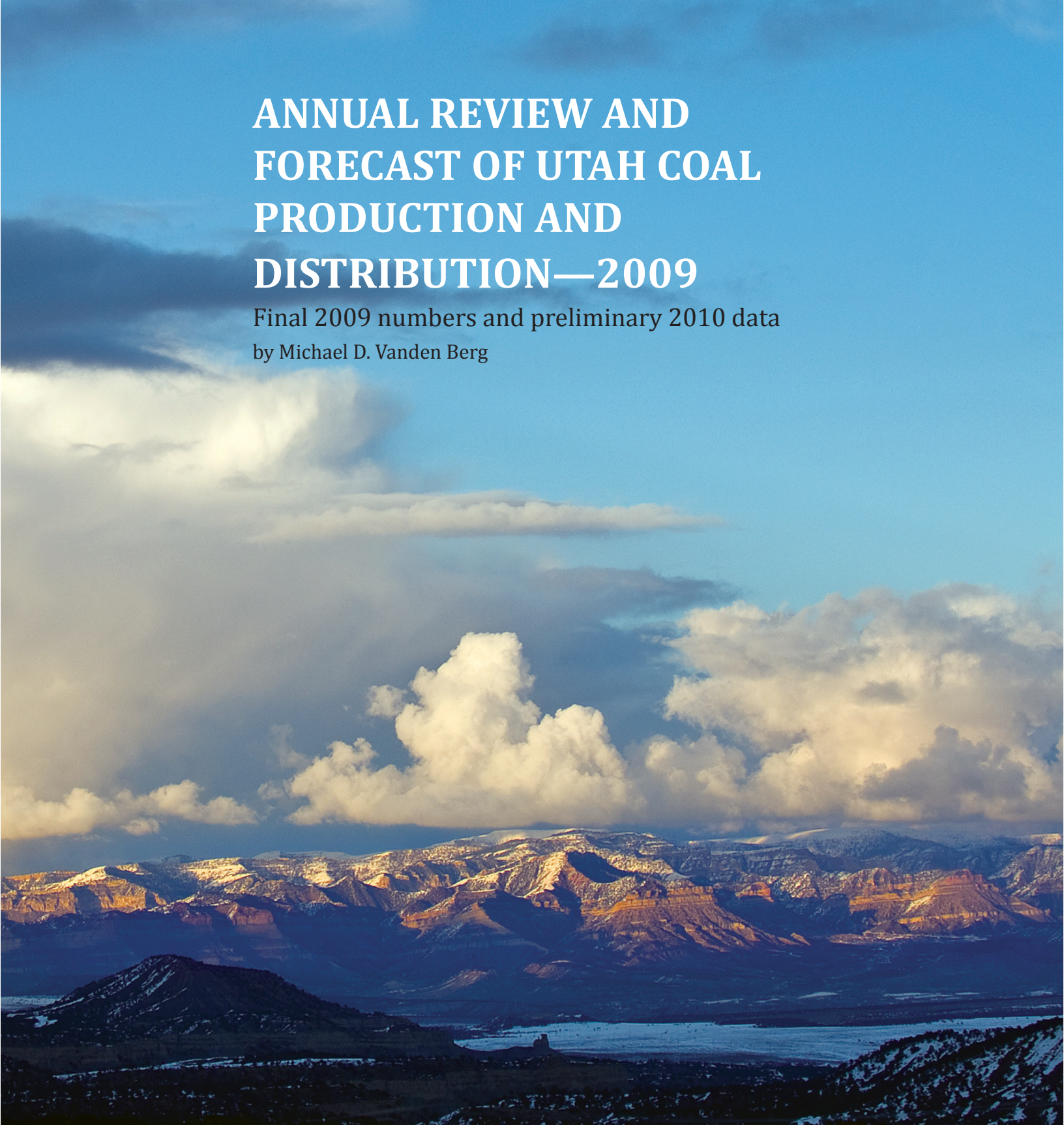


ANNUAL REVIEW AND FORECAST OF UTAH COAL PRODUCTION AND DISTRIBUTION—2009

Final 2009 numbers and preliminary 2010 data

by Michael D. Vanden Berg



CIRCULAR 112
UTAH GEOLOGICAL SURVEY
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2010

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PREFACE

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

Data for the annual Utah Coal Report were gathered directly from coal producers and consumers, and comparisons were made to national data, news and company reports, and data from industry experts.

This will be the last stand-alone annual Utah Coal Report. In the future, similar coal production and distribution information will be prepared as part of the annual UGS Mineral Activity Summary.

For more information on Utah coal or other energy-related data, please refer to the "Utah Energy and Mineral Statistics" Web-based data repository located at <http://geology.utah.gov/emp/energydata>.

CONTENTS

EXECUTIVE SUMMARY	1
UTAH COAL PRICES, EMPLOYMENT, AND PRODUCTION	1
Prices and Revenue	2
Employment	2
Coal Mining Productivity	5
Production By Coalfield	5
Production By County	5
Production By Landownership	5
ACTIVITIES OF UTAH COAL OPERATORS.....	6
UtahAmerican Energy, Inc. –	
Murray Energy Corporation	9
Tower Division – Aberdeen and Pinnacle Mines	9
Dry Canyon Coal Tract.....	10
Lila Canyon Mine	10
GENWAL Resources, Inc. – Crandall Canyon and South Crandall Canyon Mines.....	10
WEST RIDGE Resources, Inc. – West Ridge Mine	10
Canyon Fuel Company – Arch Coal	10
Dugout Canyon Mine.....	10
Skyline Mine	10
SUFCA Mine	10
Greens Hollow Tract	11
Cottonwood Tract.....	11
CONSOL Energy	11
Emery Mine.....	11
C.W. Mining (Co-op)	11
Bear Canyon Mines	11
Energy West Mining Company (PacifiCorp).....	11
Deer Creek Mine	11
America West Resources, Inc.	11
Hidden Splendor Resources, Inc. – Horizon Mine.....	11
Columbia Property	11
Alton Coal Development, LLC	12
Coal Hollow Mine	12
DISTRIBUTION OF UTAH COAL	12
Electric Utility Market.....	12
Utah’s Electric Utility Market.....	12
Out-of-State Electric Utility Market.....	12
Industrial Market	14
Utah’s Industrial Market	14
Out-of-State Industrial Market	14
Cogeneration Market.....	14
Utah’s Coking Coal Market	17
Residential and Commercial Markets.....	17
Foreign Exports.....	19
COAL IMPORTED INTO UTAH.....	19
OUTLOOK FOR UTAH’S COAL INDUSTRY	19
Production.....	20
Prices	20
Distribution and Consumption	23
Reserves	24
REFERENCES	26
APPENDIX	27

FIGURES

Figure 1.	U.S. coal production by region, 1970–2035.....	21
Figure 2.	Average mine-mouth price of U.S. coal by region, 1990–2035	21
Figure 3.	Average mine-mouth price of Rocky Mountain and Powder River Basin coal, 2005–2035	22
Figure 4.	Average mine-mouth price of Utah coal, 1960–2010.....	22
Figure 5.	U.S. coal consumption by sector, 1970–2035.....	23
Figure 6.	Consumption of coal in Utah by end use, 1960–2010.....	24
Figure 7.	Remaining estimated recoverable resources in Utah by coalfield, 2009	25
Figure 8.	Net increase/loss of new coal tonnage leased in Utah compared to cumulative production, 1975–2009	25
Figure A1.	Location and significance of Utah coalfields.....	34
Figure A2.	Location and status (at time of printing) of Utah coal mining operations.....	35

TABLES

Table 1.	U.S. coal production by state, 2008–2009	2
Table 2.	Utah coal industry production, employment, productivity, prices, and revenue, 1960–2010	3
Table 3.	Coal mining employment in Utah by coal mine, 2001–2010.....	4
Table 4.	Coal production in Utah by coalfield, 1870–2010.....	6
Table 5.	Coal production and recoverable reserves in Utah by coal mine, 2001–2010	7
Table 6.	Coal production in Utah by county, 1870–2010.....	8
Table 7.	Coal production in Utah by landownership, 1980–2010	9
Table 8.	Distribution of Utah coal, 1981–2010	13
Table 9.	Distribution of Utah coal by state, 2009.....	14
Table 10.	Utah and non-Utah coal purchases by select companies, 2003–2010	15
Table 11.	Electricity generation and coal consumption at coal burning power plants in Utah, 1990–2010	16
Table 12.	Consumption of coal in Utah by end use, 1960–2010.	18
Table 13.	Utah coal imports, 1981–2010.....	19
Table A1.	U.S. coal production by region, 1970–2035	28
Table A2.	Average mine-mouth price of U.S. coal by region, 1990–2035.....	29
Table A3.	U.S. coal consumption by sector, 1970–2035	30
Table A4.	Utah coal resources by coalfield, 2009.....	31
Table A5.	Utah coal resources by county, 2009	31
Table A6.	Net generation of electricity in Utah by energy source, 1960–2010	32
Table A7.	Average coal quality at Utah mines, 2009.....	33

ANNUAL REVIEW AND FORECAST OF UTAH COAL PRODUCTION AND DISTRIBUTION—2009

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EXECUTIVE SUMMARY

Utah coal production for 2009 dropped 9.7% to 21.9 million tons, mostly due to decreased demand as a result of the world-wide economic downturn. In fact, all Utah coal mines, except the Emery mine, recorded production declines, some quite significant like Dugout Canyon (decline of 20.4%) and West Ridge (decline of 19.5%). Both of these mines are located in the Book Cliffs coalfield and are experiencing difficult mining conditions due to complicated geology and deep cover. In addition, the Bear Canyon mine closed in mid-2009 and is in the process of being sold. Average employment for the year was similar to 2008, holding at 1954 employees, but is expected to decline significantly in 2010 to 1760 workers. The nominal price of coal remained at a 25-year high, averaging \$28.40 per ton, but is significantly below the inflation-adjusted price of \$87.93 per ton recorded in 1976. Distribution of Utah coal in 2009 also decreased with the poor economy, dropping 17.7% to 20.6 million tons, while out-of-state imports reached a record-high of 4.2 million tons, most of which goes to the Bonanza Power Plant in eastern Utah and the Intermountain Power Plant in central Utah.

Forecast data indicate that Utah's coal production may decrease by another 13% in 2010 to a total of 19.1 million tons; the first time Utah production could drop below 20 million tons since 1988. Production declines are again anticipated from all operators except for a small increase at the Horizon mine. On a positive note, after over 10 years of permitting, the Lila Canyon mine produced its first coal in June of 2010. Full production is still several years away, but the added tonnage, even during development, will help offset lower production at other existing mines. Utah coal distribution should follow the production's downward trend and total 17.9 million tons in 2010, with imports decreasing to about 3.4 million tons. Despite 2009/2010's economic downturn, the average price of Utah coal should remain near \$28 per ton.

Existing Utah mines are faced with steady reserve depletion and difficult mining conditions. As a result, operators are increasingly looking to new areas with slightly lower

coal quality or farther from market to replenish their reserve base. As mentioned, UtahAmerican Energy recently began construction and development work on the Lila Canyon mine in the southern part of the Book Cliffs coalfield. Alton Coal Development received a permit (pending legal settlements and reclamation bond posting) to mine on private land in the Alton coalfield in southern Utah's Kane County; an option to lease surrounding federal land is pending completion of an Environmental Impact Statement. Canyon Fuel was recently awarded the state-managed Cottonwood lease located in the Wasatch Plateau coalfield and has nominated for lease the large Greens Hollow tract near the company's SUFCO mine. Production from these new operations and lease tracts could offset declining production from some existing mines and keep Utah's production near 23 to 25 million tons—the norm for the past 15 years.

Increased regulatory concerns over miner safety while extracting deeper coal may lead to changes in mine design (e.g., barrier pillars) that reduce the amount of coal that is permitted to be extracted. In order to maintain a sustainable industry, Utah coal mines are working with state and federal regulators to both maximize miner safety and the amount of recoverable coal.

Another area of concern for coal companies, which could curtail future demand, is the possibility of carbon emission constraints. In fact, all proposed coal-fired power plants in Utah are on hold pending permit challenges or financing concerns. In the meantime, coal demand in Utah will remain relatively steady as established coal plants continue to provide the state with relatively cheap, reliable power.

UTAH COAL PRICES, EMPLOYMENT, AND PRODUCTION

The U.S. Energy Information Administration (EIA) reported that U.S. coal production in 2009 decreased 8.5% to 1073 million tons, down from the record-setting 1172 million tons produced in 2008 (table 1). This downturn re-

Table 1. U.S. coal production by state, 2008–2009.

Thousand short tons

2009 Rank	State	2008	2009	Percent Change
1	Wyoming	467,644	430,669	-7.9%
2	West Virginia	157,778	136,699	-13.4%
3	Kentucky	120,323	106,105	-11.8%
4	Pennsylvania	65,414	58,080	-11.2%
5	Montana	44,786	39,486	-11.8%
6	Indiana	35,893	36,555	1.8%
7	Texas	39,017	35,091	-10.1%
8	Illinois	32,918	33,761	2.6%
9	North Dakota	29,627	29,945	1.1%
10	Colorado	32,028	28,267	-11.7%
11	Ohio	26,251	27,423	4.5%
12	New Mexico	25,645	25,124	-2.0%
13	Utah	24,275	21,927	-9.7%
14	Virginia	24,712	20,516	-17.0%
15	Alabama	20,611	18,772	-8.9%
16	Arizona	8,025	7,474	-6.9%
17	Louisiana	3,843	3,657	-4.8%
18	Mississippi	2,842	3,440	21.0%
19	Maryland	2,860	2,305	-19.4%
20	Tennessee	2,333	2,099	-10.0%
21	Alaska	1,477	1,847	25.1%
22	Oklahoma	1,463	956	-34.7%
23	Missouri	247	452	83.0%
24	Kansas	229	185	-19.2%
25	Arkansas	69	5	-92.8%
	Refuse Recovery	1,408	2,120	50.6%
	Appalachian	390,218	339,300	-13.0%
	Interior	146,586	146,802	0.1%
	Western	633,597	584,530	-7.7%
	East of Mississippi R.	491,935	445,775	-9.4%
	West of Mississippi R.	678,467	624,877	-7.9%
	U.S. Total	1,171,809	1,072,752	-8.5%

Source: U.S. Energy Information Administration, Quarterly Coal Report, October–December 2009; Utah production from UGS coal company questionnaires

Note: Utah production differs from EIA due to different reporting methods, but the overall totals match EIA data.

sulted from 18 of the 25 coal-producing states having decreased production in 2009, including production declines from the top five producing states. Production in the Appalachian and Western Regions decreased by 13.0% and 7.7%, respectively, while production in the Interior Region increased slightly. Lower demand from both industry and electric utilities, related to the economic downturn, is seen

as the major reason for decreases in production.

Utah's coal production followed suit, decreasing 9.7% in 2009, down from 24,275,000 tons produced in 2008 to 21,927,000 tons, ranking Utah as the 13th largest coal-producing state. Forecasts for 2010 indicate another 12.9% decrease in coal production to 19.1 million tons, the lowest total since 1988. Fortunately, the new Lila Canyon mine produced its first coal in spring 2010 while performing longwall development work. Full production is not expected to start until 2014, but even production from development work will help offset lower production rates at other mines.

Prices and Revenue

The average mine-mouth price for Utah coal increased 2.2% in 2009 from \$27.78 per ton in 2008 to \$28.40, the highest nominal price since 1984 (table 2). As recently as 2003, the average Utah coal price was at a 30-year low of \$16.64 per ton in nominal dollars. Many Utah mines are unable to take advantage of the presently high spot price for coal, currently about \$40.00 per ton, because their production is mostly committed to lower-priced contracts, thus reducing the overall average mine-mouth price. The average Utah coal price for 2010 is expected to decrease slightly to about \$28.00 per ton. The recent price of Utah coal is well below the highest inflation-adjusted price reached in 1976 of \$87.93 (table 2).

Revenues from coal produced in Utah decreased 7.7%, from a record-high \$674 million in nominal dollars reached in 2008 to \$623 million in 2009, based solely on the decrease in production. The 2009 value is well below the inflation-adjusted high of \$1.1 billion reached in 1982. Another significant decrease in production in 2010, along with slightly lower prices, will push estimated coal revenues down an additional 14.1% to \$535 million.

Employment

During 2009, the number of active mines dropped from 9 to 8, and the total number of employees decreased from 1973 to 1954 (table 2). All mines increased employment or remained steady, except C.W. Mining, which closed the Bear Canyon mine halfway through 2009 (table 3). During 2010, the average employment at active mines is expected to drop to about 1760 employees, mostly attributed to the closure of the Bear Canyon mine. The Skyline, SUFCO, and Emery mines expect steady employment, but the Deer Creek, West Ridge, and Dugout mines project a decrease in the number of workers. In contrast, the Horizon mine anticipates adding roughly 30 new employees in 2010 and the newly-opened Lila Canyon mine will also be adding workers.

Table 2. Utah coal industry production, employment, productivity, prices, and revenue, 1960–2010.

Year	Production	# of Operators	# of Mines	Employment ¹	Productivity	Average Mine-mouth Price		Revenue	
	Thousand short tons			# of employees	Tons/employee-hour	\$/Ton (nominal dollars)	\$/Ton (real 2010 dollars)	Million \$ (nominal dollars)	Million \$ (real 2010 dollars)
1960	4,955	na	45	2,418	na	6.35	46.81	31.5	231.9
1961	5,159	na	50	2,206	na	6.03	44.00	31.1	227.0
1962	4,297	na	38	2,034	na	5.40	39.02	23.2	167.7
1963	4,359	na	36	1,596	na	5.22	37.22	22.8	162.3
1964	4,720	na	35	1,679	na	7.03	49.48	33.2	233.6
1965	4,992	na	31	1,495	na	6.37	44.12	31.8	220.3
1966	4,636	na	25	1,374	na	5.77	38.86	26.7	180.1
1967	4,174	na	24	1,238	na	5.82	38.02	24.3	158.7
1968	4,317	na	23	1,155	na	5.77	36.18	24.9	156.2
1969	4,657	na	21	1,193	na	6.31	37.52	29.4	174.7
1970	4,733	na	20	1,469	na	7.28	40.94	34.5	193.8
1971	4,626	na	22	1,430	na	7.37	39.71	34.1	183.7
1972	4,802	na	22	1,582	na	8.93	46.62	42.9	223.8
1973	5,650	na	16	1,603	na	11.19	54.99	63.2	310.7
1974	6,046	na	15	1,514	na	12.24	54.17	74.0	327.5
1975	6,937	na	20	2,550	na	19.84	80.47	137.6	558.2
1976	7,968	na	24	2,614	na	22.93	87.93	182.7	700.6
1977	8,838	na	26	2,703	na	20.32	73.17	179.6	646.6
1978	9,253	na	28	3,424	na	21.52	72.02	199.1	666.4
1979	12,096	na	25	3,656	na	22.71	68.26	274.7	825.6
1980	13,236	na	29	3,512	na	25.63	67.87	339.2	898.3
1981	13,808	16	28	4,166	1.99	26.87	64.50	371.0	890.6
1982	16,912	16	29	4,296	2.05	29.42	66.52	497.6	1,125.0
1983	11,829	15	25	2,707	2.30	28.32	62.04	335.0	733.9
1984	12,259	15	24	2,525	2.55	29.20	61.32	358.0	751.8
1985	12,831	15	22	2,563	2.38	27.69	56.15	355.3	720.5
1986	14,269	16	21	2,881	2.59	27.64	55.03	394.4	785.2
1987	16,521	16	20	2,650	3.38	25.67	49.31	424.1	814.6
1988	18,164	14	17	2,559	3.74	22.85	42.15	415.0	765.5
1989	20,517	14	20	2,471	4.25	22.01	38.73	451.6	794.6
1990	22,012	13	18	2,791	4.44	21.78	36.36	479.4	800.4
1991	21,875	11	16	2,292	4.55	21.56	34.54	471.6	755.6
1992	21,015	10	16	2,106	5.09	21.83	33.95	458.8	713.5
1993	21,723	9	15	2,161	5.42	21.17	31.97	459.9	694.4
1994	24,422	8	14	2,024	6.20	20.07	29.55	490.1	721.7
1995	25,051	7	14	1,989	6.54	19.11	27.36	478.7	685.4
1996	27,071	7	13	2,077	6.77	18.50	25.73	500.8	696.5
1997	26,428	8	16	2,091	6.01	18.34	24.93	484.7	658.9
1998	26,600	8	17	1,950	6.23	17.83	23.87	474.3	634.9
1999	26,491	8	15	1,843	6.71	17.36	22.74	459.9	602.3
2000	26,920	8	13	1,672	7.54	16.93	21.45	455.8	577.5
2001	27,024	7	13	1,564	6.50	17.76	21.88	479.9	591.3
2002	25,299	8	13	1,525	7.73	18.47	22.40	467.3	566.8
2003	23,069	9	14	1,595	7.30	16.64	19.73	383.9	455.2
2004	21,818	8	13	1,523	6.78	17.70	20.45	386.2	446.1
2005	24,556	8	13	1,803	6.44	19.34	21.61	474.9	530.6
2006	26,131	8	13	1,994	6.18	22.51	24.36	588.2	636.6
2007	24,288	8	10	1,888	5.88	25.18	26.50	611.6	643.7
2008	24,275	7	9	1,973	5.87	27.78	28.15	674.4	683.5
2009	21,927	6	8	1,954	5.36	28.40	28.89	622.7	633.5
2010*	19,095	6	8	1,760	5.64	28.00	28.00	534.7	534.7

Source: UGS coal company questionnaires

¹Includes only active Utah coal mines and their associated operations

*Forecast

Table 3. Coal mining employment in Utah by coal mine, 2001–2010.

Number of employees												
Company	Mine	County	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010*
UtahAmerican Energy, Inc. - Murray Energy Corp.	Aberdeen/Pinnacle ¹	Carbon	32	116	136	134	166	219	163	58	--	--
	Lila Canyon	Emery	--	--	--	--	--	--	--	--	--	22
Canyon Fuel, LLC - Arch Coal, Inc.	Dugout Canyon	Carbon	77	121	171	206	217	231	229	247	270	237
	Skyline #3	Emery/Carbon	351	234	183	38	120	185	197	210	218	216
	SUFCO	Sevier	273	275	291	295	303	337	368	365	375	370
CONSOL Energy	Emery	Emery	3	61	60	116	130	140	140	144	171	175
C.W. Mining ²	Bear Canyon #1, #3, #4	Emery	134	138	156	45	115	121	76	217	146	4
Energy West Mining Co.	Deer Creek Trail Mountain	Emery	335	331	341	354	362	358	356	358	353	329
		Emery	71	--	--	--	--	--	--	--	--	--
GENWAL Resources, Inc. - Utah American Energy, Inc., Intermountain Power Agency	Crandall Canyon/ South Cran- dall Canyon ³	Emery	124	98	73	141	197	154	54	--	--	--
Hidden Splendor Resources, Inc. - America West Resources, Inc.	Horizon ⁴	Carbon	16	29	45	45	44	60	76	97	100	132
Lodestar Energy, Inc.	Whisky Creek #1 White Oak #2	Carbon	--	21	22	--	--	--	--	--	--	--
		Carbon	48	--	--	--	--	--	--	--	--	--
WEST RIDGE Resources, Inc. - Utah American Energy, Inc., Intermountain Power Agency	West Ridge ³	Carbon	100	101	117	149	149	189	229	277	321	275
Total			1,564	1,525	1,595	1,523	1,803	1,994	1,888	1,973	1,954	1,760

Source: UGS coal company questionnaires

¹Owned by Andalex Resources, Inc. until fall 2006²Currently in bankruptcy and in the process of being sold³Partially owned by Andalex Resources, Inc. until fall 2006⁴Owned by Lodestar in 2001

*Forecast

Coal Mining Productivity

Production efficiency at Utah coal mines decreased in 2009 to 5.36 tons per employee-hour. This decrease was the result of significantly lower production, but near steady employment (table 2). The SUFCO mine remains the state's most productive, producing 8.7 tons per employee-hour, albeit lower than 2006's productivity of 11.9 tons per employee-hour. The Deer Creek and Skyline mines rank second and third in productivity at 6.3 and 5.6 tons per employee-hour, respectively. The Emery mine had the highest productivity, 3.3 tons per employee-hour, among mines that rely only on continuous miner equipment. Utah's 2009 productivity is less than the 2008 average of 6.5 tons per employee-hour for underground mines in the western United States (EIA, 2008 Annual Coal Report). Forecast data indicate that mining productivity in Utah should increase in 2010 to 5.6 tons per employee per hour due to large decreases in employment.

On average, each employee produced 11,200 tons during 2009, down from 12,300 tons in 2008, and lower than the 1990s' average of 11,600 tons per employee, but still much higher than the 1980s' average of 5,300 tons per employee. Employee production was highest in 2002 when productivity reached 7.7 tons per employee-hour and each employee produced an average 16,600 tons.

Production By Coalfield

Coal production from the Wasatch Plateau coalfield decreased by 4.7% in 2009 but still accounted for 65.4% of Utah's total production for the year (table 4). Production declines were recorded at all five Wasatch Plateau mines: Skyline decreased by 6.7%, SUFCO by 2.8%, Deer Creek by 1.2%, Horizon by 15.3%, and the Bear Canyon #4 mine, which closed part way through the year, declined by 25.1% (table 5). Wasatch Plateau production is expected to decrease by an additional 12% in 2010 due to the closure of the Bear Canyon mine and three months of longwall maintenance at Deer Creek.

The Book Cliffs coalfield, with only two actively producing mines in 2009, accounted for 29.0% of total production, down from 33.7% the year before (table 4). Overall, production from these mines decreased by 22.4% to 6.4 million tons and is expected to decrease again in 2010 by another 14.3%. Canyon Fuel's Dugout mine decreased production from 4.1 million tons in 2008 to 3.3 million tons in 2009, and is projected to produce only 2.8 million tons in 2010. West Ridge mine production peaked in 2007 at 4.2 million tons before declining to 3.8 million tons in 2008 and to 3.1 million tons in 2009. Production at the West Ridge mine is expected to decline again in 2010 to 2.6 million tons. On a positive note, the new Lila Canyon mine reached the coal bed in spring of 2010, producing its

first coal. Total coal production at Lila Canyon for 2010 is estimated at 45,000 tons, with first longwall coal scheduled for 2014.

Coal production resumed in the Emery coalfield in 2002 with the reopening of the Emery mine (table 4). This mine produced 243,000 tons in 2003 before closing in August of that year due to contract and ownership issues. The Emery mine reopened in August of 2004 and produced 256,000 tons. Mining has been continuous from 2005 to 2009, with an average annual production of 1.1 million tons. The Emery coalfield produced 5.6% of Utah's coal during 2009.

The remainder of Utah's coalfields are inactive, as they have been for many years (table 4). Several fields, such as the Kaiparowits Plateau, which holds an estimated 9.1 billion tons of recoverable coal (see appendix table A4), 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 has been proposed for the Alton coalfield in southern Utah's Kane County. This mine has the potential to produce up to two million tons of coal per year.

Production By County

Carbon County led all counties in coal production in 2009, reaching 9.5 million tons, 43.1% of Utah's total, down from 11.5 million tons in 2008 (table 6). Across the board production declines at Carbon County mines led to the lower production totals. The mines in Emery County maintained production near 5.7 million tons in 2009, 26.1% of Utah's total, but well below the county's peak production of 17.3 million tons in 1995. Emery County coal production should rebound somewhat with the opening of the Lila Canyon mine. Sevier County's only active mine, SUFCO, decreased production to 6.7 million tons in 2009, accounting for 30.8% of Utah's total coal production. Forecast production data for 2010 estimates a 10% decrease for Carbon County mines to 8.6 million tons, a 31% decrease for Emery County mines to 3.9 million tons, and a 2.2% decrease from Sevier County's SUFCO mine.

Production By Landownership

Federal leases continued to provide the majority share of Utah's production as mines on U.S. Bureau of Land Management (BLM) and U.S. Forest Service land accounted for 10.7 million tons, or 48.7%, of the state's total coal production in 2009 (table 7). This percentage has decreased since 2004 when production from federal leases made up 92.9% of total coal production. The percentage is expected to increase in 2010 to 50.1% even though the federal coal production will continue to decline.

Lands owned by the State of Utah supplied a record-high

Table 4. Coal production in Utah by coalfield, 1870–2010.

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	14,442	8,927	1,187	0	0	0	24,556
2006	15,532	9,545	1,054	0	0	0	26,131
2007	14,241	9,021	1,026	0	0	0	24,288
2008	15,041	8,184	1,050	0	0	0	24,275
2009	14,336	6,354	1,238	0	0	0	21,927
2010*	12,550	5,445	1,100	0	0	0	19,095
Cumulative Production	645,871	356,408	15,625	2,654	4,330	3,095	1,027,983

Source: UGS coal company questionnaires

*Forecast, 2010 values not included in cumulative totals

10.1 million tons of coal in 2009 accounting for 45.9% of total state production, up significantly from just 3.9% in 2004. This increase was the result of steady longwall production from Deer Creek's state-owned Mill Fork tract, as well as significant increases in production on state land at Dugout Canyon, West Ridge, and SUFCO. Production on state lands is expected to decrease in 2010 to about 8.5 million tons, or 44.5% of the state's total, as Dugout, West Ridge, and SUFCO decrease their production.

Production on private (fee) land decreased slightly from 1.2 million tons in 2008 to 1.1 million tons in 2009, 5.2% of Utah's total. Fee coal in 2009 was produced from the Emery, Bear Canyon, SUFCO, and Horizon mines. Coal production on private land is expected to remain steady at 1.0 million tons in 2010.

ACTIVITIES OF UTAH COAL OPERATORS

Utah coal production decreased by 9.7% in 2009 to 21.9 million tons as demand slowed due to the weakened U.S. economy. In fact, all mines except the Emery mine recorded decreased production. With the mid-2009 closure of the Bear Canyon mine and further production losses at most other mines, Utah's 2010 coal production is projected to drop to 19.1 million tons, the first time production has dropped below 20 million tons since 1988.

One positive note to report, following a decade of planning, UtahAmerican has begun development on the Lila Canyon mine in the southern portion of the Book Cliffs coalfield in Emery County. Miners entered the coal seam in June 2010 and are expected to produce about 45,000

Table 5. Coal production and recoverable reserves in Utah by coal mine, 2001–2010.

Thousand short tons														Estimated recoverable reserves currently under lease at active mines
Company	Mine	County	Coalfield	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010*	
UtahAmerican Energy, Inc. - Murray Energy Corp.	Aberdeen ¹	Carbon	Book Cliffs	531	37	444	1,984	1,519	2,103	1,044	242	--	--	--
	Pinnacle ¹	Carbon	Book Cliffs	296	662	584	419	189	8	--	--	--	--	--
	Lila Canyon	Emery	Book Cliffs	--	--	--	--	--	--	--	--	--	45	26,000
Canyon Fuel, LLC - Arch Coal, Inc.	Dugout Canyon	Carbon	Book Cliffs	1,981	2,080	2,941	3,811	4,592	4,335	3,816	4,135	3,291	2,800	19,800
	Skyline #3 ²	Emery/Carbon	Wasatch Plateau	3,822	3,477	2,771	551	405	1,759	2,558	3,120	2,910	2,900	19,200
	SUFCO	Sevier	Wasatch Plateau	7,001	7,600	7,126	7,568	7,567	7,908	6,712	6,946	6,748	6,600	66,200
CONSOL Energy	Emery	Emery	Emery	--	26	243	256	1,187	1,054	1,026	1,050	1,238	1,100	16,900
C.W. Mining ³	Bear Canyon #3	Emery	Wasatch Plateau	--	4	310	227	304	27	--	--	--	--	--
	Bear Canyon #4	Emery	Wasatch Plateau	--	--	--	112	151	462	653	868	651	--	--
	Bear Canyon #1	Emery	Wasatch Plateau	1,254	953	403	--	--	--	--	--	--	--	--
Energy West Mining Co.	Deer Creek	Emery	Wasatch Plateau	4,338	3,984	3,938	3,356	3,910	3,748	3,685	3,878	3,833	2,800	26,600
	Trail Mountain	Emery	Wasatch Plateau	924	--	--	--	--	--	--	--	--	--	--
GENWAL Resources, Inc. - UtahAmerican Energy, Inc., Intermountain Power Agency	Crandall Canyon ⁴	Emery	Wasatch Plateau	3,996	3,248	1,161	872	1,593	613	400	--	--	--	--
	South Crandall Canyon ⁴	Emery	Wasatch Plateau	--	--	26	103	225	759	--	--	--	--	--
Hidden Splendor Resources, Inc. - America West Resources, Inc.	Horizon ⁵	Carbon	Wasatch Plateau	23	110	108	293	286	257	233	229	194	250	13,800
Lodestar Energy, Inc.	Whisky Creek #1	Carbon	Wasatch Plateau	--	278	25	--	--	--	--	--	--	--	--
	White Oak #2	Carbon	Wasatch Plateau	560	--	--	--	--	--	--	--	--	--	--
WEST RIDGE Resources, Inc. - Utah American Energy, Inc., Intermountain Power Agency	West Ridge ⁴	Carbon	Book Cliffs	2,298	2,840	2,989	2,265	2,627	3,098	4,160	3,807	3,063	2,600	14,000
Total				27,024	25,299	23,069	21,818	24,556	26,131	24,288	24,275	21,927	19,095	202,500

Source: UGS coal company questionnaires

¹Owned by Andalex Resources, Inc., until fall 2006²Mined in Emery County in 2004 and before and in Carbon County in 2005 and beyond³Currently in bankruptcy and in the process of being sold⁴Partially owned by Andalex Resources, Inc., until fall 2006⁵Owned by Lodestar in 2001

*Forecast

Table 6. Coal production in Utah by county, 1870–2010.

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	9,618	7,372	7,567	0	0	0	0	24,556
2006	11,560	6,662	7,908	0	0	0	0	26,131
2007	11,811	5,765	6,712	0	0	0	0	24,288
2008	11,533	5,796	6,946	0	0	0	0	24,275
2009	9,457	5,722	6,748	0	0	0	0	21,927
2010*	8,550	3,945	6,600	0	0	0	0	19,095
Cumulative Production	487,344	385,737	146,075	4,272	821	70	3,663	1,027,983

Source: UGS coal company questionnaires

*Forecast, 2010 values not included in cumulative totals

Table 7. Coal production in Utah by landownership, 1980–2010.

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	19,602	79.8%	2,665	10.9%	6	0.0%	2,283	9.3%	24,556
2006	17,478	66.9%	6,995	26.8%	0	0.0%	1,657	6.3%	26,131
2007	12,729	52.4%	9,591	39.5%	0	0.0%	1,968	8.1%	24,288
2008	13,788	56.8%	9,295	38.3%	10	0.0%	1,182	4.9%	24,275
2009	10,668	48.7%	10,069	45.9%	50	0.2%	1,140	5.2%	21,927
2010*	9,571	50.1%	8,495	44.5%	50	0.3%	980	5.1%	19,095

Source: UGS coal company questionnaires

*Forecast

tons of coal for 2010 during longwall development—full production at Lila Canyon is still several years away. In addition, Alton Coal Development has continued its efforts to open a surface mine on private land in southern Utah’s Alton coalfield while work is performed on an Environmental Impact Statement (EIS), which is needed before the company can lease surrounding federal coal.

UtahAmerican Energy, Inc. – Murray Energy Corporation

In August of 2006, Murray Energy Corporation, the largest independent, family-owned coal producer in the United States, acquired ANDALEX Resources and its four subsidiary companies: the Tower Division, consisting of the Aberdeen and Pinnacle mines; GENWAL Resources, Inc., which manages the Crandall Canyon and South Crandall Canyon mines; WEST RIDGE Resources, Inc., which manages the

West Ridge mine; and the Carbon County-based Wildcat loadout. UtahAmerican Energy, a Murray Energy subsidiary, wholly owns and operates the Tower Division and the Wildcat loadout, whereas GENWAL and WEST RIDGE are half-owned by the Intermountain Power Agency (IPA). IPA owns and operates the Intermountain Power Project near Delta, which is the largest single coal consumer in the state. UtahAmerican Energy also owns the Lila Canyon mine, which is currently being developed in the Emery County portion of the Book Cliffs coalfield.

Tower Division – Aberdeen and Pinnacle Mines

The Tower Division is located in Deadman Canyon about 7 miles north of Price. The Aberdeen mine closed indefinitely on March 28, 2008, due to depth-related mining difficulties. Peak production at the Aberdeen mine, which is located in the Aberdeen bed, reached 2.1 million tons in

2006; production during 2008 totaled 242,000 tons before the mine closed. Tower's second operation, the Pinnacle mine, was closed in January of 2006 after producing from both the Gilson and Centennial beds.

Dry Canyon Coal Tract

In mid-2009, UtahAmerican nominated for leasing the federally-owned Dry Canyon Coal tract, which is located on 4325 acres west of the company's Aberdeen mine. This tract has three potentially minable coal beds: the Aberdeen bed, which averages roughly 10 feet thick; the Kenilworth bed, which averages 8 feet thick; and the D bed, which averages about 6 feet thick. Total recoverable coal reserves within the three beds are estimated at 42 million tons.

Lila Canyon Mine

The new Lila Canyon mine is located south of Horse Canyon in the Book Cliffs coalfield in Emery County. In spring of 2010, the company finished construction on 1200-foot long rock slopes and began development work in the Sunnyside coal bed, producing 6600 tons of coal in the second quarter of 2010. Development work will continue until about 2014 when the first longwall mining is scheduled to begin. Coal production during the first few years of development will total about 45,000 tons in 2010 and about 190,000 tons in 2011. By the time the mine is at full capacity, it could employ up to 200 people and produce up to 4.5 million tons of coal per year. Coal will be mined from federal leases where the merged upper and lower Sunnyside bed is about 13 feet thick. Between 26 and 40 million tons of recoverable coal are under lease, with recovery largely dependent on the cutting height of the equipment that will be used. Approximately 50 million tons of additional federal coal is available to the south of current leases.

GENWAL Resources, Inc. – Crandall Canyon and South Crandall Canyon Mines

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

Production from the Hiawatha bed at the Crandall Canyon mine ceased in August 2007 after a major roof collapse. As recently as 2001, annual production at Crandall Canyon totaled nearly 4.0 million tons, but only 400,000 tons were produced in 2007 before the mine closed. The South Crandall Canyon mine, located within the Blind Canyon bed, was closed by UtahAmerican in August of 2006 after producing only 1.1 million tons of coal in four years.

WEST RIDGE Resources, Inc. – West Ridge Mine

The West Ridge mine began operation in 1999 in the Book Cliffs coalfield with production from the lower Sunnyside bed. The mine is operated by WEST RIDGE Resources, while mine assets are co-owned equally by IPA and UtahAmerican Energy. The West Ridge mine produced 3.1 million tons of coal in 2009, down from 3.8 million tons in 2008. Production in 2010 is expected to decline further to 2.6 million tons. UtahAmerican estimates that the West Ridge mine has 14 million tons of recoverable coal under lease.

Canyon Fuel Company – Arch Coal

Dugout Canyon Mine

The Dugout Canyon mine, located in the Book Cliffs coalfield, produced 3.3 million tons of coal from the Gilson bed in 2009, down 20.4% from the 4.1 million tons produced in 2008. Dugout's production is expected to decrease even further in 2009 to roughly 2.8 million tons. Coal production from the Rock Canyon bed ended in February of 2004, after which longwall equipment was moved to the stratigraphically lower Gilson bed. Canyon Fuel estimates that the Dugout mine has 20 million tons of recoverable coal remaining under lease.

Skyline Mine

Canyon Fuel Company's Skyline mine, located in the Wasatch Plateau coalfield, is currently mining in the Lower O'Connor 'A' bed on their North lease (Winter Quarters lease) in Carbon County. Production from this bed decreased slightly in 2009 to 2.9 million tons with 2010 production expected to be about the same. Canyon Fuel estimates that 19 million tons of coal can be recovered from current leases.

SUFCO Mine

SUFCO is Utah's largest coal producer and the seventh-largest underground coal mine in the United States. It is also the only active coal mine in Sevier County. SUFCO produced 6.7 million tons of coal in 2009 from the upper Hiawatha bed, 14.7% less than record high production of 7.9 million tons achieved during 2006. Production at SUFCO is expected to decrease again in 2010 to 6.6 million tons. Canyon Fuel estimates that roughly 66 million tons of reserves remain under lease in the upper and lower Hiawatha beds.

Greens Hollow Tract

Canyon Fuel has nominated for leasing the federal Greens Hollow tract, located northwest of the already acquired Quitcupah lease. A draft EIS was issued in the spring of 2009 and the BLM is currently addressing comments received in preparation for the final EIS, expected to be released during summer 2010. The Greens Hollow tract is thought to contain approximately 73 million tons of reserves within the lower Hiawatha bed.

Cottonwood Tract

On December 31, 2007, the Utah School and Institutional Trust Lands Administration (SITLA) held a sale of the Cottonwood Competitive Coal Leasing Unit. The tract was awarded to Ark Land Company, which is a subsidiary of Arch Coal, Inc., also the owner of the Canyon Fuel Company. Two coal leases were issued, one for 8204 acres covering lands within the 1998 land exchange Cottonwood Coal Tract and the other for 600 acres within an adjacent SITLA section. Total recoverable coal in the Hiawatha bed for the combined leases is estimated to equal 49 million tons.

CONSOL Energy

Emery Mine

CONSOL Energy's Emery mine, its only mine in the western United States, has produced just over one million tons each year from the Ferron Sandstone I bed since being restarted in 2005 (1.2 million tons produced in 2009). Emery coal miners use a combination of three continuous miners to produce the shallow cover coal. CONSOL estimates recoverable reserves under lease to total 17 million tons, but significant unleased reserves can be found adjacent to the mine. In addition, the company owns coal near the undeveloped Hidden Valley mine to the south.

C.W. Mining (Co-op)

Bear Canyon Mines

C.W. Mining Company commenced longwall mining within the Tank bed in November of 2007. Production totaled 868,000 tons in 2008 as difficult mining conditions hampered longwall operation. The mine produced 651,000 tons of coal in 2009 before it closed due to financial and legal problems and is now in the process of being sold. Several million tons of recoverable reserves are still available in the Tank, Blind Canyon, and Hiawatha beds in the surrounding area.

Energy West Mining Company (PacifiCorp)

Deer Creek Mine

Annual production at Energy West Mining Company's Deer Creek mine averaged 3.8 million tons over the past 20 years and produced the same amount in 2009. Operators scheduled longwall maintenance for the second half of 2010, which will result in annual production only reaching 2.8 million tons—production should be back to normal levels in 2011. Energy West estimates that the state-owned Mill Fork tract, where production began in 2005, contains roughly 27 million tons of remaining coal in two beds, the Blind Canyon and the Hiawatha. Five longwall panels were successfully developed within the Hiawatha bed before production shifted in February 2008 to the stratigraphically higher Blind Canyon bed. Production in the Blind Canyon will be completed in mid-2010, when mining will return to the Hiawatha bed.

America West Resources, Inc.

Hidden Splendor Resources, Inc. – Horizon Mine

The Horizon mine, located approximately 11 miles west of Helper in the Wasatch Plateau coalfield, is owned and operated by Hidden Splendor Resources, a fully owned subsidiary of America West Resources. Since Hidden Splendor's acquisition of the mine in 2003, annual production with one continuous miner has averaged 260,000 tons, with 2009 production down slightly to 194,000 tons. Estimates indicate that the Horizon mine will produce 250,000 tons in 2010 from the 14 million tons of coal remaining under lease.

Columbia Property

The Columbia property is south of the town of Sunnyside in the Book Cliffs coalfield in Carbon County. The property was developed by the U.S. Steel Corporation who operated the Columbia mine from 1923 to 1966 to supply metallurgical coal to its steel-making operations. In July of 2008, America West Resources entered a Coal Mining Lease and Option to Purchase Agreement with C&P Coal Resources for the Columbia property, which covers approximately 5200 acres.

Reserves on the Columbia property are east and down dip of the old Columbia mine workings in the merged upper and lower Sunnyside bed, which averages 15 feet thick and is under 1500 to 3500 feet of cover. America West estimates that 35 to 50 million tons of recoverable coal are located on company-owned land.

Alton Coal Development, LLC

Coal Hollow Mine

Alton Coal Development, LLC has proposed opening a new coal mine in the Alton coalfield in southern Utah's Kane County. Alton Coal plans to produce 2 million tons of coal annually from a surface mine on 440 acres of private land and 3600 acres of unleased federal land located south of the town of Alton. The coal would be transported by truck on U.S. Highway 89 to State Route 20 and then on Interstate 15 to a coal loadout facility west of Cedar City. BLM is preparing a draft EIS for the proposed federal leasing action.

In June of 2006, the Utah Division of Oil, Gas, and Mining (DOG M) began processing Alton Coal Development's application to start mining on private land. On October 15, 2009, DOGM declared the company's permit application complete, but subsequent legal challenges have delayed the permit. In early August 2010, the DOGM board upheld the original decision, clearing the way for a permit as soon as the company provides an adequate reclamation bond, and if no other legal challenges are brought forth. After a permit is granted, mine construction and production could start on private land, where reserves are estimated at 5 million tons. Recoverable reserves within the combined private and federal mining area are estimated between 40 and 45 million tons. The proposed surface mine would produce subbituminous Dakota Formation coal from the Smirl bed, which ranges from 9500 to 10,000 Btu per pound, and averages about 1% sulfur and 9% ash.

DISTRIBUTION OF UTAH COAL

The total amount of Utah coal distributed to market is proportional to the amount of Utah coal produced. With production dropping in 2009, distribution of Utah coal also declined to 20.6 million tons (table 8). As a result of the slowed U.S. economy, demand for electricity decreased, resulting in a 16% drop in the demand for coal at electric generating facilities. The economic recession also slowed demand for coal in the industrial sector, with deliveries dropping from 3.2 million tons in 2008 to 2.5 million tons in 2009, the lowest level since 1987. With the effects of the recession lingering into 2010, and a further 13% decrease predicted for Utah coal production, distribution of Utah coal is forecast to drop to 17.9 million tons, a 23-year low.

Over the past 25 years, Utah coal mines sent an average of 40% of their coal to other states and countries. The overseas market dramatically declined in 2002, but the domestic U.S. market remained strong and is a vital source of demand for Utah coal.

Electric Utility Market

During 2009, 87.9% of Utah coal distribution (18.1 million tons) was delivered to the electric utility market in both Utah and other states (table 8, table 9). In 2009, coal fueled 82.5% of the electricity generated in Utah, which is substantially more than the U.S. average of 44.7%. This percentage has significantly decreased since 2005 when coal accounted for 94.2% of Utah's electric generation (see appendix table A6). The decrease in coal's contribution to Utah's electricity mix was due not to a reduction in coal-fired generation, but rather to the addition of 1300 megawatts (MW) of new natural-gas fired electric capacity.

Utah's Electric Utility Market

The amount of coal delivered to electric utilities within Utah totaled 13.3 million tons in 2009, a 9.5% decrease from 14.7 million tons in 2008 (table 8). Utah's three PacifiCorp-owned coal-fired power plants—Hunter, with a net capacity of 1320 MW; Huntington, with a net capacity of 895 MW; and Carbon, with a net capacity of 182 MW—are expected to continue to use only Utah coal, about 8.4 million tons in 2009 (table 10). However, the Intermountain Power Plant (IPP) near Delta, Utah (net capacity of 1800 MW), which burns about 6 million tons of coal a year, has begun purchasing a portion of their coal from Wyoming—405,000 tons in 2008, 1.9 million tons in 2009, and an estimated 1.4 million tons in 2010. With IPP looking elsewhere for 25% of their coal needs, and with the economic slowdown reducing the demand for electricity, in-state coal deliveries to electric utilities are predicted to decrease another 14.2% in 2010 to 11.4 million tons, the lowest level since 1988. Table 11 displays total coal consumption (different than purchases shown in table 10) and net generation at each of Utah's six coal-fired power plants, including the Sunnyside plant that burns waste coal.

Out-of-State Electric Utility Market

Electric utility companies outside of Utah received 4.8 million tons of Utah coal in 2009, 29.2% lower than the 6.8 million tons delivered in 2008 (table 8). Nevada received the majority of that coal, 1.8 million tons, while 808,000 tons went to electric plants in California, 666,000 tons went to electric utility markets in Alabama, and 525,000 tons went to electric plants in Tennessee. The remaining tonnage went to Florida, Kentucky, Missouri, Nebraska, and Wisconsin (table 9).

Table 8. Distribution of Utah coal, 1981–2010.

Thousand short tons

Year	Production	Distribution of Utah Coal														
		Electric Utilities ¹			Coke Plants			Industrial ²			Residential & Commercial			Exports - Domestic	Exports ³ - Foreign	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	5,292	3,472	14,550
1982	16,912	3,643	6,135	9,778	859	136	995	1,349	728	2,077	233	177	410	6,084	2,177	15,437
1983	11,829	3,404	5,220	8,624	0	32	32	1,091	581	1,672	292	191	483	4,787	1,346	12,157
1984	12,259	3,730	4,688	8,418	0	163	163	1,542	466	2,008	311	257	568	5,583	849	12,006
1985	12,831	3,746	7,192	10,938	0	39	39	1,866	352	2,218	312	252	564	5,924	625	14,384
1986	14,269	2,989	6,955	9,944	0	485	485	1,745	271	2,016	81	191	272	4,815	551	13,268
1987	16,521	3,182	10,772	13,954	0	131	131	1,813	249	2,062	83	204	287	5,078	555	16,989
1988	18,164	2,797	11,233	14,030	0	171	171	1,996	679	2,675	88	236	324	4,881	1,044	18,244
1989	20,517	2,623	11,563	14,186	0	355	355	2,401	765	3,166	84	323	407	5,108	2,175	20,289
1990	22,012	3,373	12,604	15,977	0	617	617	2,327	612	2,939	59	380	439	5,759	1,708	21,680
1991	21,875	3,608	12,162	15,770	0	615	615	2,158	622	2,780	76	320	396	5,842	2,112	21,673
1992	21,015	4,000	11,619	15,619	0	553	553	2,006	488	2,494	81	347	428	6,087	2,245	21,339
1993	21,723	3,914	11,842	15,756	0	510	510	2,146	594	2,740	134	228	362	6,194	2,567	21,935
1994	24,422	4,841	12,344	17,185	0	109	109	2,322	643	2,965	308	157	465	7,471	2,717	23,441
1995	25,051	6,570	11,771	18,341	0	0	0	2,399	642	3,041	68	182	250	9,037	3,811	25,443
1996	27,071	7,258	11,923	19,181	0	0	0	2,339	517	2,856	51	260	311	9,648	5,468	27,816
1997	26,428	5,638	13,271	18,909	0	0	0	2,164	665	2,829	60	96	156	7,862	3,513	25,407
1998	26,600	7,704	12,812	20,516	0	0	0	2,749	680	3,429	82	212	294	10,535	2,735	26,974
1999	26,491	6,910	13,162	20,072	0	0	0	2,529	830	3,359	75	107	182	9,514	2,567	26,180
2000	26,920	6,639	14,276	20,915	0	5	5	2,892	634	3,526	141	82	223	9,672	2,960	27,629
2001	27,024	7,419	12,480	19,899	0	0	0	3,055	792	3,847	254	394	648	10,728	2,404	26,798
2002	25,299	5,562	13,009	18,571	0	0	0	3,543	735	4,278	282	372	654	9,387	875	24,378
2003	23,069	6,318	12,691	19,009	0	0	0	3,185	760	3,945	81	61	142	9,584	222	23,318
2004	21,818	6,084	13,313	19,397	0	0	0	3,163	587	3,750	26	213	239	9,273	295	23,681
2005	24,556	5,528	14,136	19,664	0	0	0	2,718	785	3,503	27	45	72	8,273	212	23,451
2006	26,131	6,221	14,382	20,603	0	0	0	2,962	878	3,840	10	35	45	9,193	34	24,522
2007	24,288	6,242	14,999	21,241	0	0	0	2,594	773	3,367	42	22	64	8,878	173	24,845
2008	24,275	6,804	14,724	21,528	0	0	0	2,416	797	3,213	9	0	9	9,229	312	25,062
2009	21,927	4,819	13,330	18,149	0	0	0	1,816	664	2,480	7	0	7	6,642	0	20,636
2010*	19,095	4,023	11,434	15,457	0	0	0	1,545	799	2,344	10	0	10	5,577	100	17,910

Source: EIA, 2008 Annual Coal Distribution and 2009 Quarterly Coal Distribution, UGS coal company questionnaires

¹Includes cogeneration facilities²A 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.³Exports from 1981 to 2003 went overseas to the Pacific Rim; from 2004 to 2006 exports went to Canada; in 2007–2010 exports went to several different countries.

*Forecast

Table 9. Distribution of Utah coal by state, 2009.

Thousand short tons

Destination	Residential & Commercial	Coke Plants	Industrial	Electric Utility	Total
Alabama	--	--	--	666	666
Arizona	--	--	48	--	48
California	--	--	1,352	808	2,160
Colorado	--	--	13	--	13
Florida	--	--	--	238	238
Idaho	7	--	14	--	21
Indiana	--	--	56	--	56
Kentucky	--	--	--	461	461
Michigan	--	--	92	--	92
Minnesota	--	--	*	--	*
Missouri	--	--	--	326	326
Nebraska	--	--	--	12	12
Nevada	--	--	145	1,771	1,917
Oregon	--	--	71	--	71
Tennessee	--	--	--	525	525
Texas	--	--	13	--	13
Utah	--	--	664	13,330	13,994
Wisconsin	--	--	12	12	24
Total	7	--	2,480	18,149	20,637

Source: U.S. Energy Information Administration, Quarterly Coal Distribution, 2009; Utah data from UGS coal company questionnaires

*Amount less than 500 tons

Industrial Market

Utah's Industrial Market

The amount of coal delivered to industrial users within the state of Utah totaled 664,000 tons in 2009, down 16.7% from the 797,000 tons delivered in 2008 (table 8). However, purchases are expected to rebound in 2010, reaching an estimated 799,000 tons. Typically, 60% of industrial-use, in-state coal is purchased by Kennecott Utah Copper and used to generate electricity for copper smelting; the remaining coal is delivered to companies that produce cement, lime, and other construction products (table 10).

Out-of-State Industrial Market

Deliveries of Utah coal to industrial plants in other states declined 24.8% in 2009 to 1.8 million tons, mostly likely due to the reduced demand resulting from the slow economy (table 8). Deliveries for 2009 are expected to decrease even further to 1.5 million tons. California is the largest industrial consumer of Utah coal, with deliveries of 1.4 million tons in 2009 (table 9). Other states receiving significant amounts of Utah coal for industrial use were Arizona, Colorado, Idaho, Indiana, Michigan, Nevada, Oregon, Texas, and Wisconsin. 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.

Cogeneration Market

Typical cogeneration ("cogen") facilities provide process steam and power for industry, but many also generate electricity for consumer markets, providing a maximum allowable 95% of total net capacity to the grid. Many such plants, primarily in California, are major customers of Utah coal (table 10).

Utah's Sunnyside Cogeneration plant was originally designed as a true cogen plant, which would have supplied a minimum of 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 the power from the Sunnyside cogen plant goes directly to the grid.

The Sunnyside plant is rated at 51 net MW and uses circulating fluidized-bed combustion technology to burn about 400,000 tons of waste coal annually supplied from the closed Sunnyside coal washing operation, as well as waste coal from the closed Star Point wash plant (table 11). The heating value of the Sunnyside fuel varies from 4000 to

Table 10. Utah and non-Utah coal purchases by select companies, 2003–2010.

Thousand short tons

Company	Plant Location	Coal purchased in 2003 from:			Coal purchased in 2004 from:				Coal purchased in 2005 from:			Coal purchased in 2006 from:		
		UT	WY	CO	UT	WY	CO	MT	UT	WY	CO	UT	WY	CO
PacifiCorp - Carbon	UT	657	--	--	567	--	--	--	677	--	--	637	--	--
PacifiCorp - Hunter	UT	3,839	--	--	4,150	--	--	--	4,967	--	--	5,186	--	--
PacifiCorp - Huntington	UT	2,891	--	--	3,326	--	--	--	3,035	--	--	2,485	--	--
DG&T - Bonanza	UT	--	--	2,036	--	--	2,553	--	--	--	2,142	--	--	1,723
IPP	UT	5,304	--	--	5,270	468	--	--	5,457	634	--	6,074	167	--
Ash Grove Cement	UT	124	--	--	123	--	--	--	123	--	--	127	--	--
Graymont	UT	150	--	--	166	--	--	--	156	--	--	184	--	--
Holcim	UT	70	--	--	79	7	--	--	84	0.5	--	59	31	--
Kennecott Utah Copper	UT	400	--	--	207	175	--	3	398	--	--	495	--	--
Utelite Corp.	UT	16	0.2	--	12	3	--	--	25	9	--	13	8	--
ACE Cogen. Plant ¹	CA	222			300				351			397		
Mt. Poso Cogen. ¹	CA	150			114				156			126		
Rio Bravo Jasmin Cogen. ¹	CA	66			41				33			60		
Rio Bravo Poso Cogen. ¹	CA	66			49				49			59		
North Valmy Power Plant	NV	1,220	58	--	1,356	487	--	--	1,611	527	10	1,119	645	--
Reid Gardner Power Plant	NV	1,756	--	48	1,721	--	187	--	1,490	--	330	1,510	--	356

Company	Plant Location	Coal purchased in 2007 from:			Coal purchased in 2008 from:			Coal purchased in 2009 from:			Coal purchased in 2010* from:		
		UT	WY	CO	UT	WY	CO	UT	WY	CO	UT	WY	CO
PacifiCorp - Carbon	UT	625	--	--	585	--	--	579	--	--	651	--	--
PacifiCorp - Hunter	UT	4,613	--	--	5,455	--	--	5,162	--	--	4,478	--	--
PacifiCorp - Huntington	UT	3,344	--	--	3,257	--	--	2,637	--	--	2,715	--	--
DG&T - Bonanza	UT	86	--	1,428	11	--	2,059	--	--	2,200	--	--	1,923
IPP	UT	6,331	--	--	5,417	405	--	4,952	1,945	--	3,590	1,410	--
Ash Grove Cement	UT	102	--	--	113	--	--	82	--	--	88	--	--
Graymont	UT	183	--	--	180	--	--	87	--	--	200	--	--
Holcim	UT	37	56	1	27	40	--	16	47	--	29	36	--
Kennecott Utah Copper	UT	441	--	--	466	--	--	469	--	--	470	--	--
Utelite Corp.	UT	10	11	--	10	9	--	10	6	--	13	2	--
ACE Cogen. Plant ¹	CA	291			409			411			333		
Mt. Poso Cogen. ¹	CA	136			192			147			148		
Rio Bravo Jasmin Cogen. ¹	CA	60			74			74			126		
Rio Bravo Poso Cogen. ¹	CA	69			70			74			138		
North Valmy Power Plant	NV	928	855	--	920	750	--	955	1,079	--	1,000	600	--
Reid Gardner Power Plant	NV	1,458	--	313	1,306	--	301	842	129	440	1,070	300	250

Source: UGS coal company questionnaires

Note: This table includes all Utah companies that use coal, but only a sampling of non-Utah companies that use Utah coal.

¹Reports only Utah coal purchases

*Forecast

Table 11. Electricity generation and coal consumption at coal burning power plants in Utah, 1990–2010.

Year	Deseret Generation & Transmission Co.			Intermountain Power Agency		
	Bonanza Plant			Intermountain Power Project (IPP)		
	Coal Consumption	Net Generation	MWh per Ton	Coal Consumption	Net Generation	MWh per Ton
	Short tons	MWh		Short tons	MWh	
1990	1,237,312	2,577,271	2.08	4,967,883	12,410,005	2.50
1991	1,309,770	2,764,208	2.11	4,145,585	10,106,144	2.44
1992	1,511,878	3,201,401	2.12	4,959,568	12,264,308	2.47
1993	1,414,980	3,132,999	2.21	4,856,527	11,936,833	2.46
1994	1,533,363	3,242,413	2.11	4,916,555	12,171,664	2.48
1995	1,125,003	2,344,439	2.08	4,248,623	10,306,059	2.43
1996	1,341,076	2,831,105	2.11	4,350,752	10,711,308	2.46
1997	1,532,158	2,947,675	1.92	5,158,831	12,762,721	2.47
1998	1,734,613	3,456,787	1.99	5,278,344	12,973,101	2.46
1999	1,598,296	3,227,344	2.02	5,266,047	13,069,535	2.48
2000	1,510,407	2,931,869	1.94	5,301,096	13,176,578	2.49
2001	2,013,770	3,932,642	1.95	5,365,021	13,383,601	2.49
2002	2,092,485	3,921,576	1.87	5,429,620	13,479,234	2.48
2003	1,893,338	3,512,734	1.86	5,518,129	13,554,882	2.46
2004	1,996,868	3,734,811	1.87	5,996,797	14,429,288	2.41
2005	1,978,718	3,712,862	1.88	5,689,660	13,657,657	2.40
2006	2,127,658	3,893,733	1.83	5,910,423	14,445,440	2.44
2007	1,860,133	3,446,577	1.85	5,898,096	14,420,805	2.44
2008	2,076,286	3,731,300	1.80	6,097,775	14,444,378	2.37
2009	1,766,082	3,354,006	1.90	5,943,436	13,555,580	2.28
2010*	1,946,020	3,316,522	1.70	6,000,000	13,880,000	2.31

Year	PacifiCorp			Constellation		
	Huntington plant			Sunnyside Cogeneration Plant		
	Coal Consumption	Net Generation	MWh per Ton	Waste Coal Consumption	Net Generation	MWh per Ton
	Short tons	MWh		Short tons	MWh	
1990	2,753,717	6,253,702	2.27	--	--	--
1991	2,701,376	5,907,238	2.19	--	--	--
1992	2,655,409	6,164,281	2.32	--	--	--
1993	2,837,819	6,339,069	2.23	214,580	184,187	0.86
1994	2,919,715	6,660,541	2.28	386,800	348,287	0.90
1995	2,968,886	6,803,932	2.29	368,550	332,194	0.90
1996	2,927,155	6,402,742	2.19	378,230	392,483	1.04
1997	2,686,976	6,136,491	2.28	402,040	385,829	0.96
1998	2,910,474	6,445,954	2.21	430,000	376,057	0.87
1999	2,952,484	7,126,340	2.41	421,230	398,945	0.95
2000	3,021,448	7,047,404	2.33	476,170	430,408	0.90
2001	2,670,253	6,226,810	2.33	502,490	387,382	0.77
2002	2,686,747	5,964,496	2.22	494,715	390,985	0.79
2003	3,155,334	7,207,036	2.28	514,564	399,490	0.78
2004	2,878,761	6,379,605	2.22	508,950	395,307	0.78
2005	2,960,952	6,373,756	2.15	487,854	415,939	0.85
2006	2,793,793	6,131,487	2.19	467,364	386,149	0.83
2007	3,227,226	7,121,757	2.21	417,998	404,184	0.97
2008	3,022,710	7,144,370	2.36	410,209	414,164	1.01
2009	2,743,700	6,753,764	2.46	417,215	410,935	0.98
2010*	2,826,800	6,274,486	2.22	423,189	411,968	0.97

Source: UGS coal company questionnaires

*Forecast

Table 11. continued

PacifiCorp Carbon Plant			PacifiCorp Hunter Plant		
Coal Consumption	Net Generation	MWh per Ton	Coal Consumption	Net Generation	MWh per Ton
Short tons	MWh		Short tons	MWh	
582,320	1,260,497	2.16	4,022,009	9,019,470	2.24
547,905	1,192,091	2.18	4,124,260	8,915,149	2.16
623,178	1,307,598	2.10	4,107,391	8,605,835	2.10
631,909	1,358,949	2.15	4,253,731	9,151,459	2.15
622,621	1,366,103	2.19	4,277,130	9,323,744	2.18
605,712	1,351,984	2.23	4,376,632	9,453,500	2.16
622,126	1,410,369	2.27	4,343,571	9,337,663	2.15
653,833	1,403,936	2.15	4,220,568	8,893,113	2.11
600,317	1,286,805	2.14	4,140,205	9,044,084	2.18
552,590	1,217,838	2.20	4,220,721	9,483,957	2.25
628,623	1,371,586	2.18	4,226,218	9,518,367	2.25
632,124	1,371,822	2.17	3,722,062	8,289,465	2.23
612,539	1,322,047	2.16	4,327,402	9,393,626	2.17
657,111	1,369,884	2.08	4,563,686	9,934,622	2.18
556,458	1,133,139	2.04	4,668,586	9,957,531	2.13
673,436	1,348,569	2.00	4,692,991	9,732,018	2.07
632,468	1,310,932	2.07	4,677,662	9,885,959	2.11
625,970	1,337,783	2.14	4,563,096	9,583,991	2.10
583,859	1,203,437	2.06	4,735,769	10,238,479	2.16
561,400	1,211,875	2.16	4,429,000	9,438,683	2.13
635,700	1,308,211	2.06	4,486,800	9,648,640	2.15
Total					
Coal Consumption	Net Generation	MWh per Ton			
Short tons	MWh				
13,563,241	31,520,945	2.32			
12,828,896	28,884,830	2.25			
13,857,424	31,543,423	2.28			
14,209,546	32,103,496	2.26			
14,656,184	33,112,752	2.26			
13,693,406	30,592,108	2.23			
13,962,910	31,085,670	2.23			
14,654,406	32,529,765	2.22			
15,093,953	33,582,788	2.22			
15,011,368	34,523,959	2.30			
15,163,962	34,476,212	2.27			
14,905,720	33,591,722	2.25			
15,643,508	34,471,964	2.20			
16,302,162	35,978,648	2.21			
16,606,420	36,029,681	2.17			
16,483,611	35,240,801	2.14			
16,609,368	36,053,700	2.17			
16,592,519	36,315,097	2.19			
16,926,608	37,176,128	2.20			
15,860,833	34,724,843	2.19			
16,318,509	34,839,827	2.13			

5500 Btu per pound, which is less than half the heating value of typical Utah coal. The sulfur content of the fuel averages about 1.5%. The Star Point waste coal is of higher quality than that from Sunnyside, and averages 5700 to 6000 Btu per pound with 0.7% sulfur. Total reserves from both sources will be enough to last through 2023 when Sunnyside's power purchase agreement with Rocky Mountain Power expires.

Utah's 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 1980s, an annual average of 1.0 million tons of Utah coking coal was delivered to companies, the majority of which was shipped out-of-state (table 8). By 1983, Utah stopped delivering coking coal to out-of-state customers, and deliveries ceased altogether in 1994, except for a one-time delivery of 5000 tons in 2000. Utah stopped importing coking coal in 2001 when the Geneva Steel plant ceased operation (table 12).

Residential and Commercial Markets

About 7000 tons of Utah coal was shipped to out-of-state businesses and residences during 2009 (table 8). This is substantially less than the 654,000 tons delivered in 2002

Table 12. Consumption of coal in Utah by end use, 1960–2010.

Thousand short tons						
Year	Electric Utilities ¹	Coke Plant	Other Industrial	Residential & Commercial	Transportation	Total
1960	515	2,195	445	249	45	3,449
1961	563	1,910	383	243	10	3,110
1962	462	1,414	338	275	7	2,497
1963	447	1,351	342	228	6	2,374
1964	411	1,676	392	204	8	2,690
1965	363	1,892	414	181	8	2,857
1966	440	1,961	409	185	7	3,003
1967	410	1,829	330	180	5	2,753
1968	417	1,903	359	119	5	2,803
1969	375	1,951	496	161	4	2,988
1970	435	1,959	518	109	4	3,025
1971	417	1,841	545	240	3	3,047
1972	571	1,705	586	161	2	3,024
1973	984	1,890	811	199	2	3,886
1974	1,296	1,984	627	355	1	4,263
1975	2,026	1,932	546	131	0	4,636
1976	1,267	1,959	683	208	0	4,117
1977	2,511	1,991	644	282	0	5,429
1978	3,148	1,700	826	281	0	5,954
1979	4,151	1,569	842	542	0	7,104
1980	4,895	1,473	501	237	0	7,106
1981	4,956	1,477	804	196	0	7,432
1982	4,947	845	818	177	0	6,787
1983	5,223	831	627	191	0	6,873
1984	5,712	1,326	608	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	0	507	124	0	11,807
1988	12,544	1,176	597	196	0	14,513
1989	12,949	1,178	686	231	0	15,044
1990	13,563	1,231	676	267	0	15,738
1991	12,829	1,192	508	305	0	14,834
1992	13,857	1,114	525	223	0	15,719
1993	14,210	1,005	727	121	0	16,063
1994	14,656	1,007	835	105	0	16,603
1995	13,693	990	915	77	0	15,675
1996	13,963	1,047	512	94	0	15,615
1997	14,654	1,020	709	123	0	16,507
1998	15,094	971	1,304	113	0	17,482
1999	15,011	741	744	114	0	16,611
2000	15,164	984	1,166	59	0	17,373
2001	14,906	806	1,235	60	0	17,007
2002	15,644	0	592	198	0	16,434
2003	16,302	0	611	61	0	16,974
2004	16,606	0	795	213	0	17,614
2005	16,484	0	800	45	0	17,329
2006	16,609	0	871	35	0	17,515
2007	16,593	0	870	23	0	17,486
2008	16,927	0	852	0	0	17,779
2009	15,861	0	722	0	0	16,583
2010*	16,319	0	735	0	0	17,054

Source: U.S. Energy Information Administration, Annual Coal Report, 2008; UGS

Note: Consumption differs from distribution (table 8) because of additional consumption from consumer stockpiles.

¹Includes waste coal burned at Sunnyside Cogeneration

*Forecast

and 648,000 tons delivered in 2001. The recent large swings in total residential and commercial coal deliveries are 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 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 pipeline 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.

Foreign Exports

Demand for Utah coal by foreign countries peaked in the early 1980s and again in the mid-1990s, reaching a record 5.5 million tons in 1996, matching peaks in both production and total distribution (table 8). Through 2003, as deliveries dwindled to 222,000 tons, all exported coal went to Asian markets. In 2004, 295,000 tons of Utah coal went to Canadian markets, followed by 212,000 tons in 2005 and only 34,000 tons in 2006. Exports increased again in 2007 and 2008 as companies reported that a total of 173,000 and 312,000 tons of Utah coal went to Canada, Mexico, and Korea. No Utah coal was reported to have been shipped to other countries in 2009.

COAL IMPORTED INTO UTAH

Coal imports into Utah increased 67.0% in 2009 from 2.5 million tons in 2008 to 4.2 million tons in 2009 (table 13). In previous years, the vast majority of imported coal (roughly 2 million tons a year) went to the Bonanza power plant in eastern Utah, which primarily uses coal from a company-owned mine in Colorado. However, the IPP coal-fired power plant imported 1.9 million tons of Wyoming coal in 2009, nearly doubling Utah's total coal imports, and plans to import 1.4 million tons in 2010 (table 10). Holcim and Utelite, two Utah industrial users, also import minor amounts of coal from out-of-state.

Table 13. Utah coal imports, 1981–2010.

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	2,776	0	10	0	2,786
2006	1,890	0	38	0	1,928
2007	1,428	0	68	0	1,496
2008	2,464	0	49	0	2,513
2009	4,145	0	52	0	4,197
2010*	3,333	0	38	0	3,370

Source: UGS coal company questionnaires

*Forecast

OUTLOOK FOR UTAH'S COAL INDUSTRY

After a relatively successful year in 2006, when coal production totaled 26.1 million tons, Utah's coal industry has suffered a few setbacks due to mine closures and difficult mining conditions, dropping production to 24.3 million tons for both 2007 and 2008. With the 2009 closure of the Bear Canyon mine, and low demand due to the economic recession, Utah's total coal production for 2009 dropped to 21.9 million tons, the lowest level since 1993. With demand slow to recover, and with several mines facing difficult conditions, production for 2010 is estimated to drop below 20 million tons (19.1 million tons) for the first time since 1988. On a more positive note, after a 10-year effort to secure the necessary permits, UtahAmerican Energy has finally begun construction on the Lila Canyon mine. The rock slopes were completed in the spring of 2010 and development in the coal bed started shortly thereafter.

ter. Mine development will produce about 45,000 tons in 2010, while full-scale longwall mining is slated to start in 2014. Coal produced from Lila Canyon should help reverse production losses from recent mine closures and increasingly difficult mining conditions at other mines.

Utah's long-term (50+ years) coal future is less certain. As the high-quality reserves are being rapidly depleted in the Book Cliffs and Wasatch Plateau coalfields, coal companies will have to look to other Utah coalfields to meet future demand. The BLM and Utah Geological Survey (UGS) estimate that only 1.2 billion tons of coal reserves are left in the Wasatch Plateau, Book Cliffs, and Emery coalfields, which is sufficient for roughly 45 to 50 years at current production levels. In addition, the long-term use of coal for electric generation remains uncertain as questions of global warming and carbon mitigation, whether through carbon taxes, caps, offsets, or sequestration, receive increased attention.

In 2009, coal-fired power generation satisfied more than a third of global electricity demand, about half of the United States' electricity needs, and about 82% of Utah's electricity generation. In spite of coal's present dominance in electric generation, emission standards remain a major undefined regulatory issue for future coal-fired generation. New legislation and research on clean coal technology, including coal gasification and coal-to-liquid plants, are being vigorously debated and pursued both globally and domestically. Also, research continues on carbon sequestration, including several projects in Utah; for additional information about current local sequestration research, visit the Utah Geological Survey's Web site at geology.utah.gov/emp/co2sequest/.

Production

EIA's Annual Energy Outlook for 2010 predicts that U.S. coal production will increase by an average of 1.1% each year until 2015, when total production will equal 1155 million tons. Coal production growth should slow between 2015 and 2035, averaging only 0.4% per year, reflecting the uncertain future of coal in the electric utility sector. Notably, forecasted coal production growth is anticipated to grow much more slowly than suggested by previous forecasts as future electricity demand is expected to be met by increased renewable, natural gas, and nuclear energy generation. The EIA forecast also assumes that coal-to-liquids plants will begin operating by 2011, a scenario that seems optimistic. Cheap, low-sulfur coal from western mines, especially those in Wyoming's Powder River Basin, is expected to furnish nearly all of the new coal production predicted for the United States. Production from the Powder River Basin is expected to increase from 418 million tons in 2009 to about 551 million tons in 2035. Interior Region coal production is also projected to increase

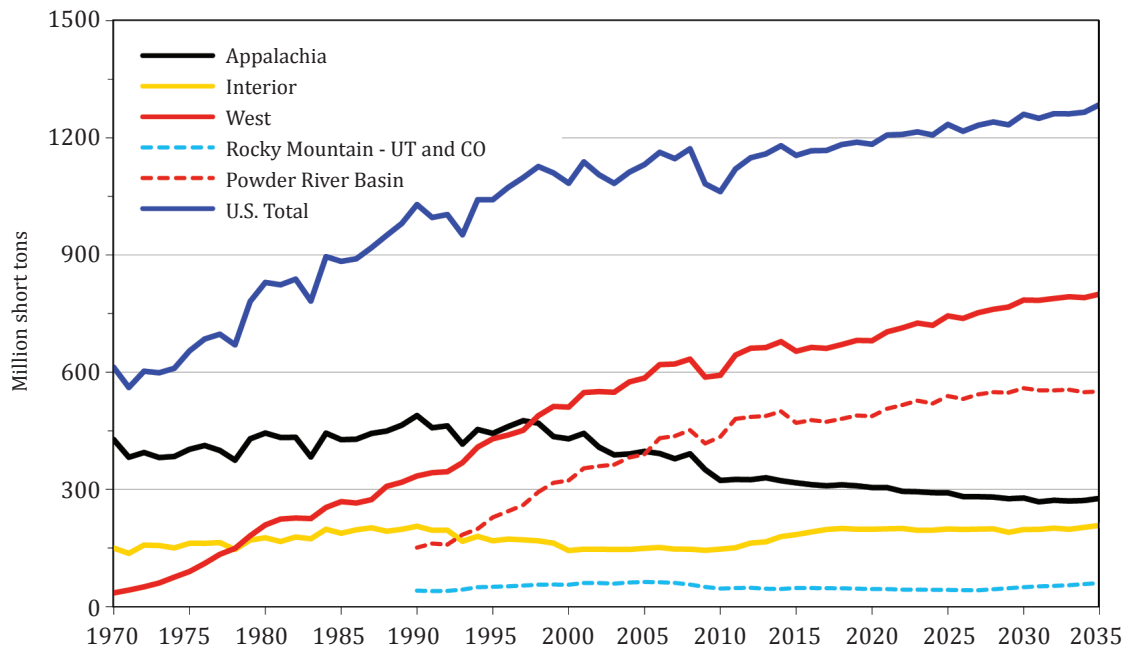
from 144 million tons in 2009 to about 208 million tons in 2035, while Appalachian Region production is expected to decrease from 351 to about 277 million tons over the same period (figure 1). EIA predicts that Rocky Mountain (Utah and Colorado) coal production will remain between 40 and 50 million tons throughout the next two decades, possibly rising over 50 million tons starting in 2030.

The UGS estimates that Utah's coal production for 2010 will decline to 19.1 million tons, the lowest level since 1988. Production should rebound in 2011 to about 22 million tons, assuming full-year longwall operation at Deer Creek (Deer Creek's longwall was refurbished in 2010, eliminating three months of mining) and a return by Dugout and West Ridge to producing closer to their past annual average tonnage. Because of the recent closures of the Crandall Canyon, Aberdeen, and Bear Canyon mines, production will remain in the low 20-millions until at least 2014 when the Lila Canyon mine is expected to begin longwall mining. Declining reserves at many existing mines suggest that the future of Utah coal production will depend on new mines opening in new areas.

Prices

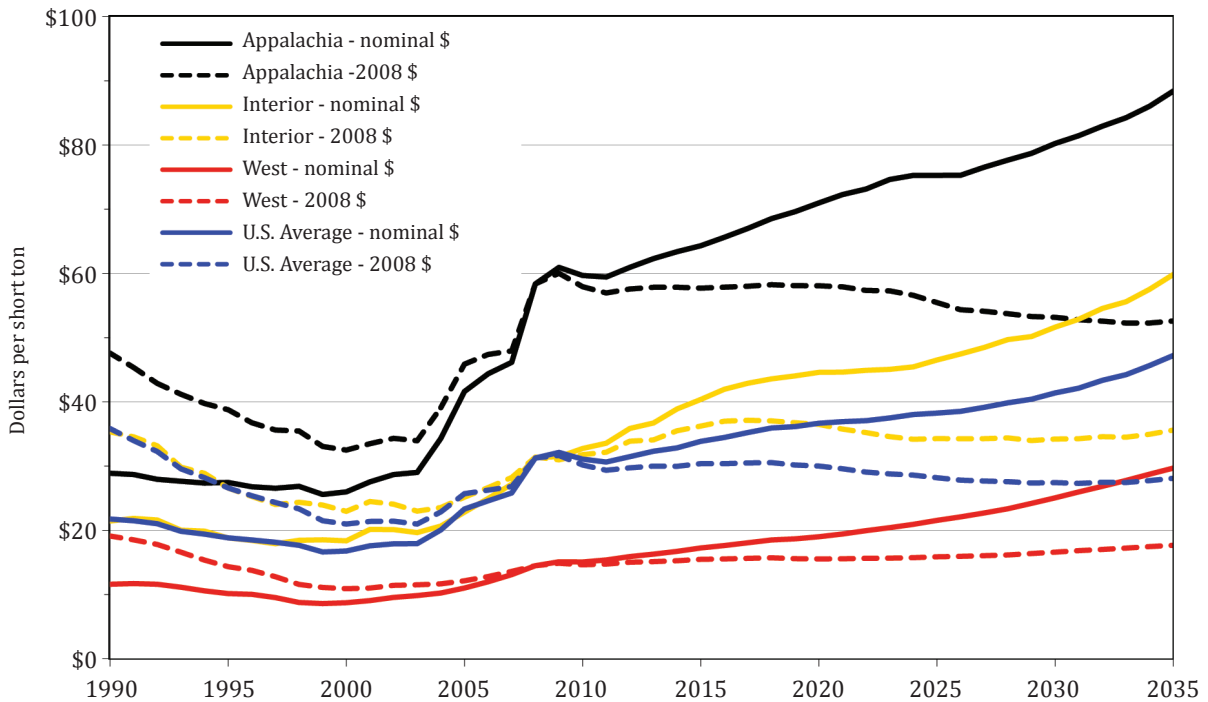
EIA projects that the average U.S. mine-mouth coal price will increase annually by 1.2% from \$32.13 per ton in 2009 to \$33.86 per ton in 2015 (figure 2). Between 2015 and 2035, the average U.S. coal price is projected to increase by 1.7% each year to about \$47 per ton as mining becomes more difficult in many regions of the United States. The average mine-mouth price of Rocky Mountain Region (Utah and Colorado) coal was \$32.96 per ton in 2009 and is predicted to steadily increase at an average rate of 2.7% to roughly \$61 per ton in 2035 (figure 3). In comparison, Powder River Basin coal is predicted to rise from \$11.12 per ton to \$25 at an average rate of 3.1% per year; Appalachian coal should rise from \$60.95 to \$88 at an average rate of 1.6% per year; and Interior coal should rise from \$31.45 to \$60 at an average rate of 2.4% per year.

Responses to UGS questionnaires indicate that the average mine-mouth price for Utah coal decreased from \$18.47 per ton in 2002 to \$16.64 in 2003, the lowest price in the past 30 years. Since 2003, prices have increased by 71% to an average of \$28.40 per ton in 2009 (table 2; figure 4). The average price of Utah coal is strongly influenced by long-term contracts; some Utah mines were selling coal in 2009 for only about \$20.00 per ton. Conversely, current spot prices for Utah coal are as high as \$40.00 per ton, which indicates upward pressure on the price of Utah coal as old, low-priced contracts expire. Available information indicates that the average Utah coal price will remain near \$28 per ton in 2010. As mining moves to thinner beds, the out-of-bed dilution will cause ash contents to rise, which may require operators to wash their coal to meet contract



Source: U.S. Energy Information Administration, Annual Energy Outlook 2010
 Note: Data available in appendix table A1

Figure 1. U.S. coal production by region, 1970–2035.



Source: U.S. Energy Information Administration, Annual Energy Outlook 2010
 Note: Data available in appendix table A2

Figure 2. Average mine-mouth price of U.S. coal by region, 1990–2035.

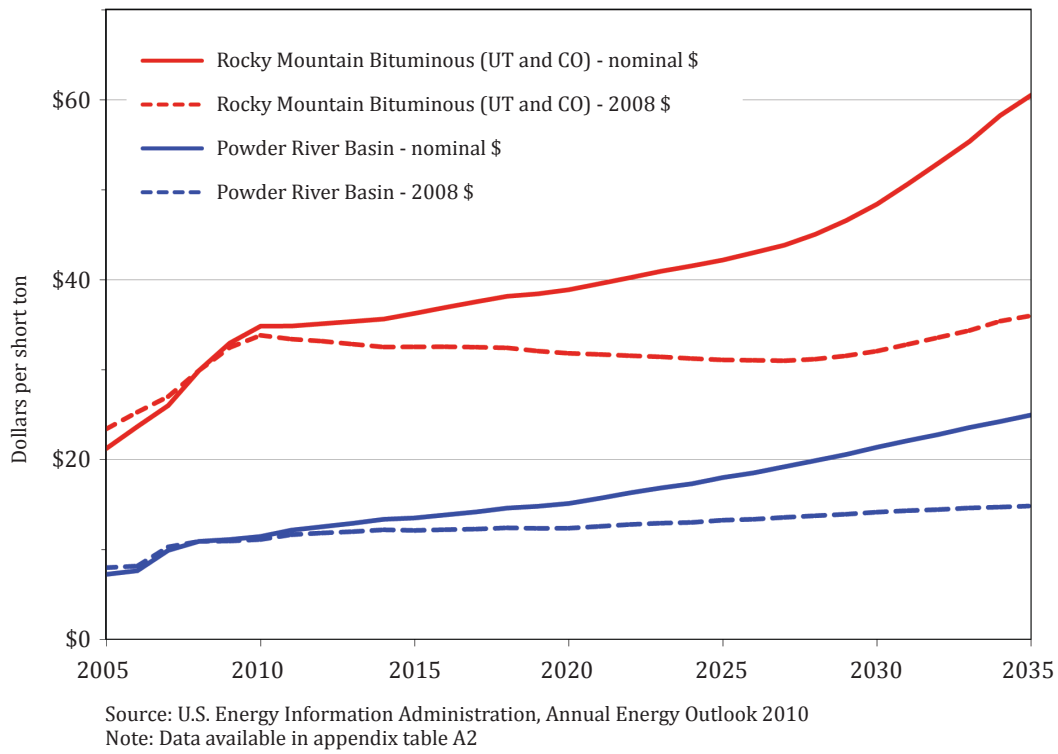


Figure 3. Average mine-mouth price of Rocky Mountain and Powder River Basin coal, 2005–2035.

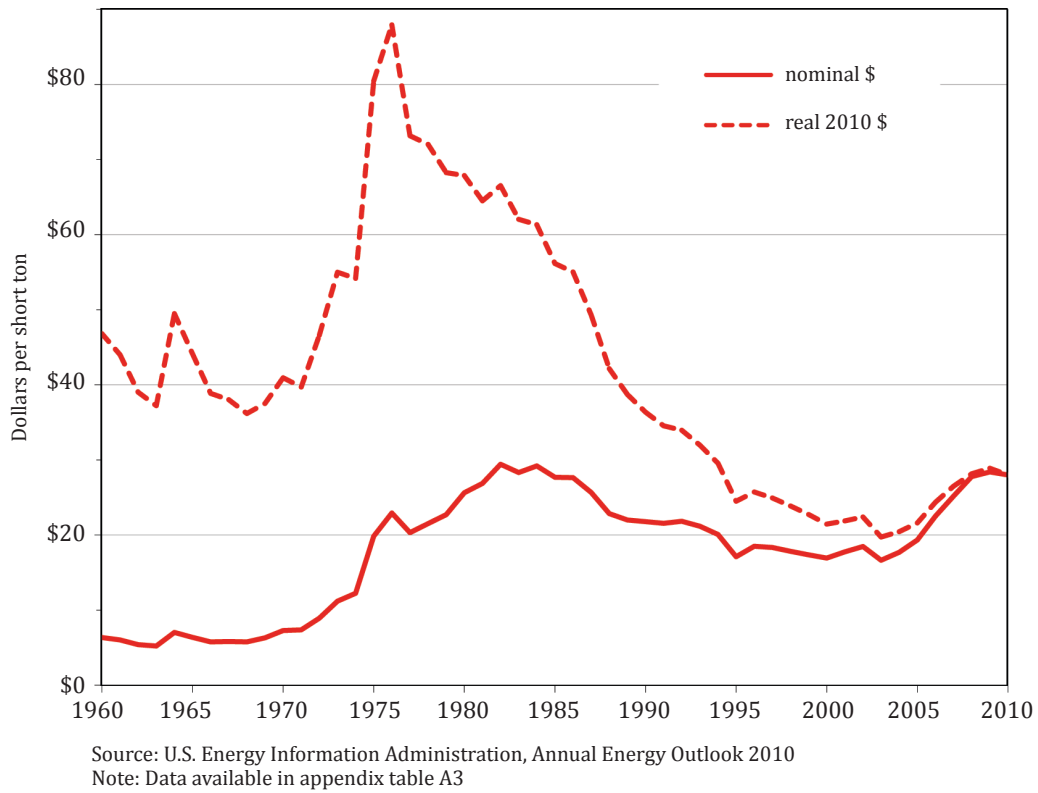


Figure 4. Average mine-mouth price of Utah coal, 1960–2010.

quality specifications. Coal washing in Utah is already underway at the Castle Valley Preparation Plant and at the Wellington Cleaning Facility. Washing coal adds roughly \$2 to \$4 per ton to its delivered price. Nevertheless, Utah coal will always have to compete with lower-cost Powder River Basin coal for market share.

Distribution and Consumption

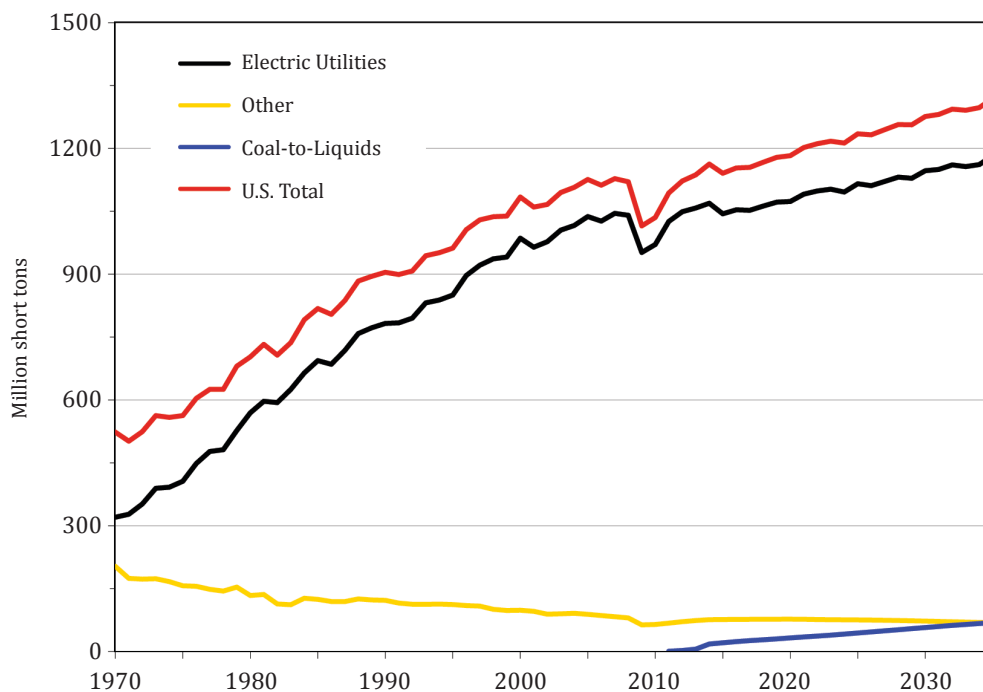
EIA projects that domestic consumption of coal will drop to 1015 million tons in 2009, of which 952 million tons, or 93.8%, will be consumed by electric power plants. This represents a 9.4% drop from 2008 consumption numbers due to lower demand during the recession. However, consumption is expected to rebound and is projected to increase by 0.6% per year and reach 1319 million tons by 2035, with 1183 million tons of coal going to electric utilities (figure 5). Similar to production estimates, these forecasted numbers are less than in previous years as modelers predict a slowdown in the building of coal-fired electric plants. EIA also predicts that U.S. consumption at coal-to-liquids plants will begin in 2011 and total 68 million tons by 2035—an optimistic forecast.

For 2009 and beyond, distribution of Utah coal is expected to parallel predicted rates of production. For example, with production expected to decrease 12.9% in 2010, distribution of Utah coal should decrease commensurately by 13.2% to 17.9 million tons (table 8).

Coal consumption in Utah remained fairly steady from 2004 to 2008, averaging 17.5 million tons each year, with most of this coal (16.6 million tons) burned at electric power plants (table 12, figure 6). However, due to the slow economy in 2009, coal consumption dropped 6.7% to 16.6 million tons, of which 15.9 million tons went to electric utilities, down from the record-high of 16.9 million tons in 2008. Coal consumption is expected to rebound in 2010 to 17.1 million tons as demand for electricity slowly returns. In the past few years, Utah has added over 1300 megawatts of electric capacity from new natural gas-fired power plants. This new gas-fired capacity has reduced coal's contribution to Utah's electric generation from 94.2% in 2005 to 82.5% in 2009, while natural gas' share increased from 3.1% in 2005 to 14.6% in 2009 (see appendix table A6).

Plans for proposed coal plants in Utah have been delayed due to lawsuits and permit problems stemming from uncertainties surrounding regulation of greenhouse gases, as well as other air quality issues. In fact, Rocky Mountain Power has announced that they will not build a new coal-fired power plant until carbon mitigation rules are developed and effective strategies identified. Until then, their Utah coal consumption will likely remain near current levels.

One possible exception to steady future demand will be if a foreign export market develops again. Because Utah is a long distance from coal export terminals, this possibility requires favorable exchange rates or higher coal commodity prices to offset transportation cost.



Source: U.S. Energy Information Administration, Annual Energy Outlook 2010
Note: Data available in appendix table A3

Figure 5. U.S. coal consumption by sector, 1970–2035.

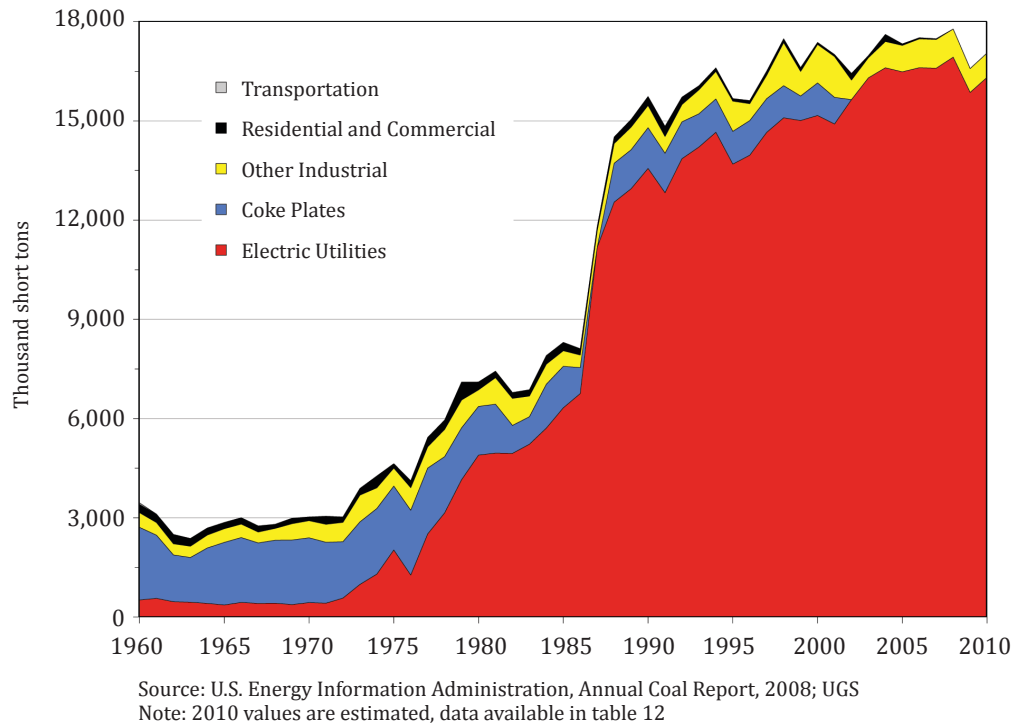


Figure 6. Consumption of coal in Utah by end use, 1960–2010.

Reserves

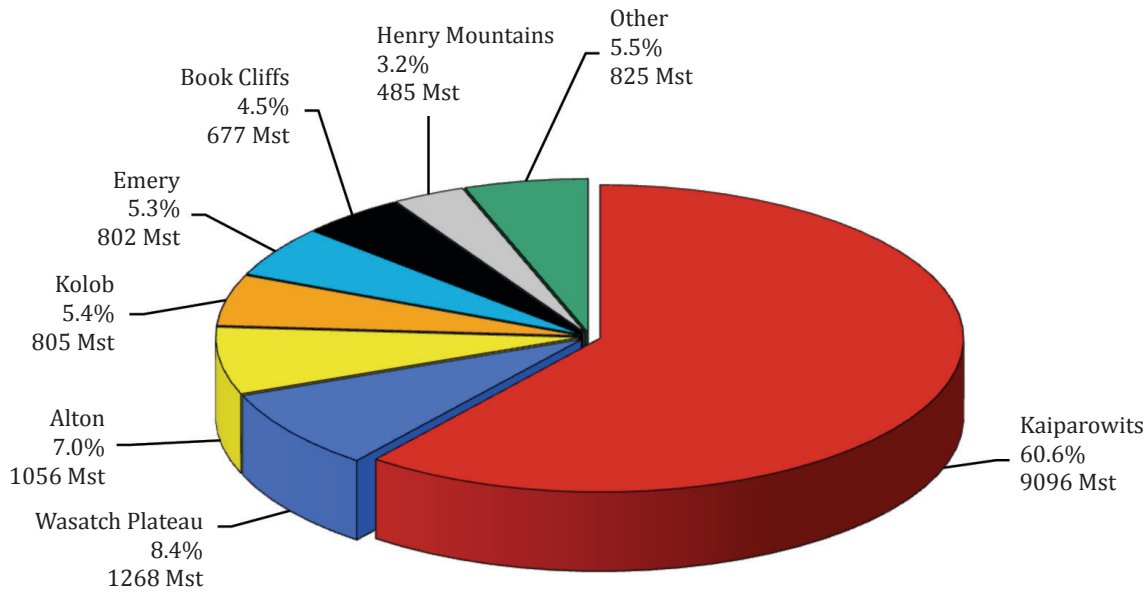
The Kaiparowits Plateau coalfield is estimated to contain about 9.1 billion tons, or 60.6%, of Utah’s remaining potentially recoverable coal (figure 7); however, most of this coal cannot be developed because it lies within the Grand Staircase-Escalante National Monument. Other nonproducing Utah coalfields with good quality resources are far from transportation networks and require higher prices to justify the higher transportation costs. As a result, Utah coal production will continue to rely heavily on resources in the Wasatch Plateau coalfield, estimated at 1.3 billion tons; the Emery coalfield, estimated at 0.8 billion tons; and the Book Cliffs coalfield, with resources estimated at 0.7 billion tons. (Note: resource estimates are only constrained by geologic conditions, whereas reserve estimates are also constrained by economic factors).

Reserves could also be reduced at existing mines if regulators require companies to modify their mine plans (e.g., insertion of barrier pillars between longwall sections) as production gets deeper. Utah coal mines are working with state and federal regulators to both maximize miner safety and the amount of recoverable coal in order to maintain a sustainable industry.

Most Utah mining companies have leased coal reserves sufficient for 10 to 15 years of production. However, mines are having a harder time adding new leases to extend their reserve base. Figure 8 demonstrates this fact; subtracting cumulative production from cumulative tonnage leased

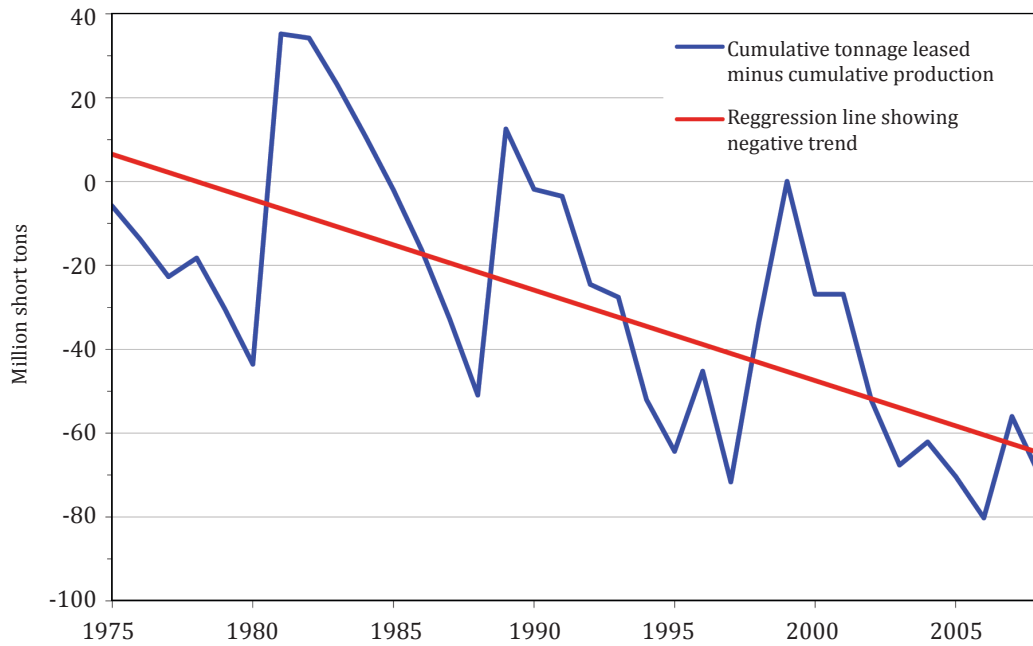
from 1975 to 2009 shows a general negative trend indicating that Utah production is outpacing tonnage leased. In fact, the Cottonwood (recently leased to Canyon Fuel Company) and North Horn tracts, both located in the central Wasatch Plateau, may represent the last large virgin tracts of good quality, accessible coal that are not adjacent to an operating mine. Combined reserves in these two tracts are estimated to exceed 100 million tons and could provide 20 to 30 years of production for two longwall operations. In addition, other reserves exist in the southern Book Cliffs where UtahAmerican has begun development work on the Lila Canyon mine. In total, the UGS estimated in 2002 that roughly 275 million tons of reserves were available in the Wasatch Plateau coalfield, 686 million tons in the Book Cliffs, and 200 million tons in the Emery coalfield, for a total of 1.16 billion tons (as recorded in Appendix 25 of the BLM Price Field Office Draft Resource Management Plan, 2004). From 2003 to 2009, the reserves in the Wasatch Plateau coalfield were diminished by 103 million tons, in the Book Cliffs by 58 million tons, and in the Emery coalfield by 6 million tons. Thus, in 2010, the remaining 993 million tons of reserves in Utah’s three producing fields could support annual production of 25 million tons for about 40 more years. However, factors such as coal quality, access, and other environmental or safety issues were not considered in the 2002 reserve calculation, so the actual recoverable reserves may be less than the in-ground estimate.

The rapid depletion of central Utah coal will require future operators to consider difficult, lower-quality, or remote coal resources. For example, the Emery mine in the



Source: Smith and Jahanbani, 1988; Quick and others, 2004; Bon and others, 2006
 Note: Mst - Million short tons, data available in appendix table A4

Figure 7. Remaining estimated recoverable resources in Utah by coalfield, 2009.



Source: BLM, SITLA, UGS
 Note: The negative trend indicates coal is being produced faster than new tonnage is being leased.

Figure 8. Net increase/loss of new coal tonnage leased in Utah compared to cumulative production, 1975–2009.

southern part of the Emery coalfield is located near unleased resources that could total more than 100 million tons, including resources in the Hidden Valley area, but these resources tend to have higher sulfur contents. Also, the proposed mine in the Alton coalfield could produce up

to 2.0 million tons per year of subbituminous coal from a projected reserve base of 40 to 45 million tons. These resources, and others, may become more attractive if prices keep rising and coal washing becomes more economic.

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APPENDIX

Table A1. U.S. coal production by region, 1970–2035.

Million short tons

Year	Appalachia	Interior	West	Rocky Mountain - UT and CO	Powder River Basin	U.S. Total	Year	Appalachia	Interior	West	Rocky Mountain - UT and CO	Powder River Basin	U.S. Total
1970	427.6	149.9	35.1	na	na	612.6	2003	388.4	146.3	548.7	58.9	363.4	1,083.4
1971	382.3	136.3	42.3	na	na	560.9	2004	390.7	146.3	575.2	61.7	381.7	1,112.1
1972	394.4	157.5	50.6	na	na	602.5	2005	397.3	149.2	585.0	63.0	390.1	1,131.5
1973	381.6	156.4	60.5	na	na	598.5	2006	391.9	151.4	619.4	62.3	431.1	1,162.7
1974	384.3	150.2	75.5	na	na	610.0	2007	378.5	147.1	621.0	60.7	436.5	1,146.6
1975	402.7	162.1	89.8	na	na	654.6	2008	391.2	147.0	633.6	56.4	451.7	1,171.8
1976	412.4	162.0	110.6	na	na	685.0	2009	350.6	144.1	587.4	50.3	417.7	1,082.1
1977	399.7	163.8	133.8	na	na	697.3	2010	323.0	147.1	592.1	46.2	434.9	1,062.2
1978	374.9	146.2	149.0	na	na	670.1	2011	325.6	150.8	643.9	47.6	480.5	1,120.2
1979	429.5	170.2	181.4	na	na	781.1	2012	324.9	162.7	661.4	48.2	485.5	1,148.9
1980	444.3	176.3	209.1	na	na	829.7	2013	329.9	165.8	663.1	45.8	487.9	1,158.8
1981	433.0	166.6	224.1	na	na	823.7	2014	322.2	179.3	678.3	45.2	499.6	1,179.7
1982	433.2	178.2	226.8	na	na	838.2	2015	316.9	184.4	653.6	47.5	470.3	1,154.9
1983	383.1	173.7	225.3	na	na	782.1	2016	312.2	191.1	663.5	47.5	477.3	1,166.8
1984	444.0	198.0	253.8	na	na	895.8	2017	309.3	197.4	661.0	47.1	473.1	1,167.7
1985	427.2	187.8	268.7	na	na	883.7	2018	311.7	200.1	670.8	46.9	480.7	1,182.6
1986	428.5	196.6	265.2	na	na	890.3	2019	309.2	198.1	681.5	46.0	489.1	1,188.7
1987	443.3	201.7	273.8	na	na	918.8	2020	304.8	198.0	680.6	44.9	487.5	1,183.4
1988	449.4	193.0	307.9	na	na	950.3	2021	304.6	199.2	703.3	44.9	506.6	1,207.1
1989	464.5	197.9	318.4	na	na	980.8	2022	295.2	200.1	713.4	43.5	516.0	1,208.6
1990	489.0	205.7	334.4	40.9	151.0	1,029.1	2023	294.1	195.3	725.7	43.3	527.1	1,215.1
1991	457.8	195.4	342.8	39.7	161.9	996.0	2024	291.6	195.6	720.0	43.0	519.9	1,207.2
1992	462.6	195.7	345.3	40.2	158.8	1,003.5	2025	291.4	198.7	744.1	42.8	539.0	1,234.2
1993	416.1	167.2	368.5	43.6	184.2	951.8	2026	281.6	197.5	737.6	42.1	531.5	1,216.8
1994	453.3	179.9	408.3	49.7	199.1	1,041.4	2027	281.5	198.4	752.3	41.8	543.2	1,232.1
1995	443.4	168.5	429.6	50.8	228.6	1,041.5	2028	280.3	199.1	761.1	44.4	548.9	1,240.5
1996	460.7	172.8	439.1	52.0	244.0	1,072.7	2029	276.2	190.2	766.8	47.0	547.7	1,233.2
1997	475.9	170.9	451.3	53.8	260.0	1,098.0	2030	278.0	197.3	784.7	49.7	559.1	1,260.1
1998	469.4	168.4	488.8	56.2	293.4	1,126.5	2031	268.2	197.6	784.0	51.8	553.7	1,249.8
1999	435.2	162.5	512.3	56.5	316.9	1,110.0	2032	272.1	200.9	788.7	53.1	553.5	1,261.8
2000	429.5	143.5	510.7	56.0	323.0	1,083.7	2033	270.3	197.9	793.2	54.8	555.1	1,261.4
2001	443.4	147.0	547.9	60.4	354.0	1,138.3	2034	271.6	203.0	790.8	57.7	548.9	1,265.4
2002	408.1	146.9	550.4	60.4	359.5	1,105.4	2035	277.1	207.8	799.9	60.3	550.7	1,284.8

Source: U.S. Energy Information Administration, Annual Energy Outlook, 2010

Note: The 2009 total is forecast, hence it does not match the actual 2009 total recorded in table 1

Table A2. Average mine-mouth price of U.S. coal by region, 1990–2035.

Dollars per short ton

Year	Appalachia		Interior		West		Rocky Mountain - Utah and Colorado (bituminous)		Powder River Basin		U.S. Average	
	Nominal dollars	Real 2008 dollars	Nominal dollars	Real 2008 dollars	Nominal dollars	Real 2008 dollars	Nominal dollars	Real 2008 dollars	Nominal dollars	Real 2008 dollars	Nominal dollars	Real 2008 dollars
1990	28.89	47.59	21.45	35.33	11.60	19.11	na	na	na	na	21.76	35.84
1991	28.69	45.35	21.86	34.56	11.71	18.51	na	na	na	na	21.49	33.97
1992	27.94	42.88	21.61	33.16	11.60	17.80	na	na	na	na	21.03	32.27
1993	27.64	41.19	20.03	29.84	11.14	16.60	na	na	na	na	19.85	29.58
1994	27.36	39.75	19.87	28.87	10.57	15.36	na	na	na	na	19.41	28.20
1995	27.45	38.78	18.81	26.58	10.15	14.34	na	na	na	na	18.83	26.60
1996	26.79	36.76	18.41	25.27	10.03	13.77	na	na	na	na	18.50	25.39
1997	26.55	35.62	17.91	24.03	9.52	12.78	na	na	na	na	18.14	24.33
1998	26.85	35.46	18.45	24.37	8.76	11.58	na	na	na	na	17.67	23.34
1999	25.58	33.06	18.52	23.94	8.59	11.10	na	na	na	na	16.63	21.49
2000	25.99	32.50	18.37	22.96	8.72	10.91	na	na	na	na	16.78	20.98
2001	27.55	33.49	20.14	24.49	9.06	11.01	na	na	na	na	17.59	21.38
2002	28.68	34.33	20.12	24.07	9.55	11.43	na	na	na	na	17.90	21.42
2003	29.02	33.96	19.65	22.99	9.84	11.52	na	na	na	na	17.93	20.98
2004	34.31	39.11	20.66	23.55	10.24	11.67	18.35	20.92	6.85	7.80	20.07	22.87
2005	41.62	45.88	22.82	25.16	11.01	12.14	21.25	23.43	7.25	8.00	23.32	25.71
2006	44.37	47.39	24.96	26.65	11.99	12.80	23.68	25.28	7.65	8.17	24.59	26.26
2007	46.16	47.94	27.18	28.23	13.10	13.61	26.01	27.02	9.92	10.30	25.82	26.82
2008	58.37	58.37	31.40	31.40	14.49	14.49	29.91	29.91	10.92	10.92	31.26	31.26
2009	60.95	60.03	31.45	30.98	15.10	14.87	32.96	32.47	11.12	10.96	32.13	31.65
2010	59.69	57.94	32.74	31.79	15.07	14.63	34.84	33.82	11.46	11.13	31.08	30.17
2011	59.45	56.96	33.57	32.16	15.38	14.74	34.86	33.40	12.17	11.66	30.64	29.36
2012	60.95	57.58	35.87	33.88	15.91	15.03	35.11	33.17	12.55	11.85	31.47	29.73
2013	62.31	57.85	36.71	34.08	16.29	15.13	35.37	32.84	12.93	12.00	32.31	30.00
2014	63.39	57.85	38.91	35.51	16.73	15.26	35.63	32.52	13.37	12.20	32.84	29.97
2015	64.32	57.72	40.38	36.23	17.25	15.48	36.26	32.54	13.52	12.13	33.86	30.38
2016	65.64	57.86	41.97	37.00	17.63	15.54	36.92	32.55	13.86	12.22	34.46	30.38
2017	67.02	58.01	42.91	37.14	18.07	15.64	37.55	32.51	14.19	12.28	35.23	30.50
2018	68.55	58.25	43.59	37.04	18.50	15.72	38.16	32.43	14.62	12.42	35.94	30.54
2019	69.63	58.10	44.05	36.76	18.68	15.58	38.44	32.07	14.82	12.37	36.16	30.17
2020	70.98	58.08	44.60	36.49	19.00	15.55	38.89	31.82	15.13	12.38	36.67	30.01
2021	72.29	57.92	44.64	35.77	19.43	15.57	39.56	31.70	15.70	12.58	36.92	29.59
2022	73.15	57.36	44.92	35.22	19.95	15.64	40.24	31.55	16.32	12.80	37.07	29.07
2023	74.64	57.29	45.07	34.59	20.42	15.67	40.95	31.43	16.86	12.94	37.50	28.78
2024	75.27	56.60	45.46	34.18	20.93	15.74	41.55	31.24	17.33	13.03	38.03	28.60
2025	75.28	55.47	46.52	34.28	21.55	15.88	42.19	31.09	18.01	13.27	38.25	28.19
2026	75.29	54.35	47.47	34.26	22.10	15.95	43.01	31.05	18.53	13.38	38.53	27.81
2027	76.55	54.12	48.48	34.27	22.71	16.05	43.85	31.00	19.22	13.59	39.16	27.68
2028	77.66	53.73	49.70	34.39	23.36	16.16	45.05	31.18	19.89	13.77	39.86	27.58
2029	78.71	53.30	50.18	33.98	24.20	16.39	46.58	31.55	20.58	13.94	40.42	27.37
2030	80.24	53.17	51.64	34.21	25.06	16.60	48.40	32.07	21.38	14.17	41.40	27.43
2031	81.46	52.79	52.87	34.27	25.98	16.84	50.64	32.82	22.11	14.33	42.14	27.31
2032	82.94	52.58	54.56	34.59	26.85	17.02	52.98	33.59	22.80	14.45	43.36	27.49
2033	84.25	52.28	55.60	34.50	27.77	17.23	55.37	34.36	23.58	14.63	44.24	27.45
2034	86.05	52.29	57.54	34.96	28.75	17.47	58.26	35.40	24.24	14.73	45.67	27.75
2035	88.40	52.60	59.84	35.61	29.69	17.67	60.51	36.01	24.96	14.85	47.23	28.10

Source: U.S. Energy Information Administration, Annual Energy Outlook, 2010

Table A3. U.S. coal consumption by sector, 1970–2035.

Million short tons				
Year	Electric Utilities	Other	Coal-to-Liquids ¹	U.S. Total
1970	320	203	--	523
1971	327	174	--	502
1972	352	172	--	524
1973	389	173	--	563
1974	392	167	--	558
1975	406	157	--	563
1976	448	155	--	604
1977	477	148	--	625
1978	481	144	--	625
1979	527	153	--	681
1980	569	133	--	703
1981	597	136	--	733
1982	594	113	--	707
1983	625	111	--	737
1984	664	127	--	791
1985	694	124	--	818
1986	685	119	--	804
1987	718	119	--	837
1988	758	125	--	884
1989	772	123	--	895
1990	783	122	--	904
1991	784	115	--	899
1992	795	113	--	908
1993	832	112	--	944
1994	838	113	--	951
1995	850	112	--	962
1996	897	109	--	1,006
1997	921	108	--	1,030
1998	937	100	--	1,037
1999	941	98	--	1,039
2000	986	98	--	1,084
2001	964	96	--	1,060
2002	978	89	--	1,066
2003	1,005	90	--	1,095
2004	1,016	91	--	1,107
2005	1,037	88	--	1,126
2006	1,027	86	--	1,112
2007	1,045	83	0	1,128
2008	1,041	80	0	1,121
2009	952	63	0	1,015
2010	971	64	0	1,035
2011	1,026	67	0	1,094
2012	1,049	71	2	1,122
2013	1,058	74	5	1,137
2014	1,069	76	18	1,163
2015	1,044	76	21	1,141
2016	1,054	76	23	1,153
2017	1,052	77	26	1,155
2018	1,063	77	28	1,167
2019	1,072	77	30	1,179
2020	1,073	77	32	1,183
2021	1,091	77	35	1,202
2022	1,099	76	37	1,211
2023	1,103	76	39	1,217
2024	1,096	75	41	1,213
2025	1,116	75	44	1,235
2026	1,111	75	47	1,233
2027	1,121	74	49	1,245
2028	1,132	74	52	1,257
2029	1,129	73	54	1,256
2030	1,147	72	57	1,276
2031	1,150	72	60	1,281
2032	1,161	71	62	1,294
2033	1,157	70	64	1,291
2034	1,161	69	67	1,297
2035	1,183	68	68	1,319

Source: U.S. Energy Information Administration, Annual Energy Outlook, 2010

¹Liquids production and liquids used for heat and power

Table A4. Utah coal resources by coalfield, 2009.

Million short tons					
Coalfield	Original Principal Resource ¹	Original Estimated Recoverable Resource ²	Cumulative Production 1870–2009	Remaining Estimated Recoverable Resource	% of Total Remaining Estimated Recoverable Resource
Kaiparowits	22,740.0	9,096.0	0.1	9,095.9	60.6%
Wasatch Plateau	6,378.9	1,913.7	645.9	1,267.8	8.4%
Alton	2,155.0	1,055.7	0.0	1,055.7	7.0%
Kolob	2,014.3	805.9	0.9	805.0	5.4%
Emery	2,336.0	817.6	15.6	802.0	5.3%
Book Cliffs	3,527.3	1,033.5	356.4	677.1	4.5%
Henry Mountains	925.5	484.7	0.0	484.7	3.2%
Sego	1,144.0	343.2	2.7	340.5	2.3%
Salina Canyon	692.7	207.8	0.5	207.3	1.4%
Mt. Pleasant	249.1	99.6	0.0	99.6	0.7%
Tabby Mountain	231.7	69.4	0.0	69.4	0.5%
Vernal	177.1	53.2	0.5	52.7	0.4%
Coalville	186.0	55.8	4.3	51.5	0.3%
Wales	12.2	3.7	0.8	2.9	*
Harmony	1.3	0.4	0.0	0.4	*
Lost Creek	1.1	0.4	0.0	0.4	*
Sterling	2.0	0.6	0.3	0.3	*
Total	42,774.2	16,041.2	1,028.0	15,013.2	

Source: Smith and Jahanbani, 1988; Quick and others, 2004; Bon and others, 2006; production data from UGS coal company questionnaires

Note: Estimated recoverable resources do not take into account economic or land use constraints.

¹Total coal resource with no economic, land use, or geologic constraints.

²For Wasatch Plateau, Alton, Emery, Book Cliffs, and Henry Mountains; resources were constrained by a seam height minimum of four feet, with no more than 3000 feet of cover. For the remaining fields, resources were constrained by an estimated resource factor ranging from 30% to 40% of principal resources.

* Value less than 0.1%

Table A5. Utah coal resources by county, 2009.

Million short tons					
County	Original Principal Resource ¹	Original Estimated Recoverable Resource ²	Cumulative Production 1870–2009	Remaining Estimated Recoverable Resource	% of Total Remaining Estimated Recoverable Resource
Kane	19,579.6	8,025.6	0.1	8,025.5	53.5%
Garfield	7,493.1	3,106.3	0.0	3,106.3	20.7%
Emery	4,457.7	1,392.9	385.7	1,007.1	6.7%
Carbon	4,993.6	1,475.8	487.3	988.5	6.6%
Sevier	3,257.4	1,036.0	146.1	889.9	5.9%
Grand	1,144.0	343.2	2.7	340.5	2.3%
Iron	650.8	260.2	0.8	259.4	1.7%
Sanpete	489.5	171.8	0.7	171.1	1.1%
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	0.3%
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	*
Total	42,774.2	16,041.2	1,028.0	15,013.2	

Source: Smith and Jahanbani, 1988; Quick and others, 2004; Bon and others, 2006; production data from UGS coal company questionnaires

Note: Estimated recoverable resources do not take into account economic or land use constraints.

¹Total coal resource with no economic, land use, or geologic constraints.

²For Emery, Sevier, Kane, Carbon, and Garfield Counties; resources were constrained by a seam height minimum of four feet, with no more than 3000 feet of cover. For the remaining counties, resources were constrained by an estimated resource factor ranging from 30% to 40% of principal resources.

* Value less than 0.1%

Table A6. Net generation of electricity in Utah by energy source, 1960–2010.

Gigawatthours										
Year	Coal	Petroleum	Natural Gas	Other Gases ¹	Hydroelectric	Geothermal ²	Wind	Landfill Gas	MSW ³	Total
1960	1,130	1,314	290	na	304	0	0	0	0	3,038
1961	1,210	1,236	374	na	231	0	0	0	0	3,051
1962	998	934	433	na	391	0	0	0	0	2,756
1963	923	876	413	na	350	0	0	0	0	2,562
1964	855	824	324	na	762	0	0	0	0	2,765
1965	779	866	392	na	910	0	0	0	0	2,947
1966	1,001	765	700	na	788	0	0	0	0	3,254
1967	909	748	611	na	1,071	0	0	0	0	3,339
1968	931	758	444	na	1,014	0	0	0	0	3,147
1969	806	872	287	na	1,114	0	0	0	0	3,079
1970	948	956	307	na	738	0	0	0	0	2,949
1971	894	905	287	na	981	0	0	0	0	3,067
1972	1,165	657	320	na	1,220	0	0	0	0	3,362
1973	2,007	146	342	na	1,111	0	0	0	0	3,606
1974	2,678	69	312	na	941	0	0	0	0	4,000
1975	4,366	82	283	na	1,074	0	0	0	0	5,805
1976	2,739	32	183	na	1,130	0	0	0	0	4,084
1977	5,533	116	421	na	757	0	0	0	0	6,827
1978	7,238	90	565	na	734	0	0	0	0	8,627
1979	9,408	122	458	na	802	0	0	0	0	10,790
1980	10,870	63	358	na	821	0	0	0	0	12,112
1981	10,869	40	230	na	623	0	0	0	0	11,762
1982	10,635	29	203	na	1,024	0	0	0	0	11,891
1983	10,921	40	69	na	1,394	0	0	0	0	12,424
1984	12,321	30	8	na	1,391	38	0	0	0	13,788
1985	14,229	40	14	na	1,019	110	0	0	0	15,412
1986	15,155	74	6	na	1,413	172	0	0	0	16,820
1987	25,221	92	13	na	856	164	0	0	0	26,346
1988	28,806	59	5	na	593	174	0	0	0	29,637
1989	29,676	48	37	na	562	173	0	0	0	30,496
1990	31,524	52	146	182	508	152	0	0	0	32,564
1991	28,889	51	550	204	627	186	0	0	0	30,507
1992	31,553	34	631	230	602	233	0	0	0	33,283
1993	32,126	37	606	281	860	187	0	0	0	34,097
1994	33,131	33	807	281	750	233	0	0	0	35,235
1995	30,611	36	791	261	969	168	0	0	0	32,836
1996	31,101	47	324	239	1,049	223	0	0	0	32,983
1997	32,544	47	328	281	1,344	203	0	0	0	34,747
1998	33,588	35	528	285	1,315	195	0	0	0	35,946
1999	34,534	31	610	191	1,255	186	0	0	8	36,815
2000	34,491	58	890	258	746	186	0	0	9	36,638
2001	33,679	58	1,446	0	508	186	0	0	10	35,887
2002	34,488	54	1,380	0	458	218	0	0	11	36,609
2003	35,979	33	1,383	0	421	198	0	0	9	38,023
2004	36,618	33	910	0	450	195	0	0	7	38,213
2005	35,970	41	1,178	0	784	185	0	0	7	38,165
2006	36,856	62	3,389	0	747	191	0	9	11	41,265
2007	37,172	39	7,424	0	539	164	0	25	11	45,374
2008	38,020	44	7,366	36	668	254	24	25	142	46,579
2009*	35,653	42	6,324	35	622	264	72	24	191	43,227
2010**	36,156	45	6,059	35	508	285	415	25	152	43,680

Source: EIA, 2008 Electric Power Annual, 2009 Electric Power Monthly

Note: Includes electric utilities; independent power producers; and combined heat and power for commercial, industrial, and electric sectors.

¹Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels

²EIA only records data from the Blundell Geothermal Plant and not the Cove Fort Plant. Cove Fort's generation data have been added to the overall geothermal total for 1992 to 2002 (data obtained from company interviews).

³Municipal solid waste - includes biogenic and non-biogenic

*Preliminary

**Forecast

Table A7. Average coal quality at Utah mines, 2009.

Company	Mine	Coalfield	Bed(s)	Heat Content Btu/lb	% Sulfur	% Ash	% Moisture
Canyon Fuel, LLC	Skyline #3	Wasatch	Lower O'Connor 'A'	11,600	0.4%	9.6%	8.3%
Canyon Fuel, LLC	SUFCA	Wasatch	Upper Hiawatha	10,942	0.4%	11.2%	9.9%
Canyon Fuel, LLC	Dugout Canyon	Book Cliffs	Gilson	12,076	1.0%	na	na
CONSOL Energy	Emery	Emery	I	12,260	na	na	na
C.W. Mining	Bear Canyon #4	Wasatch	Tank	10,737	0.7%	18.3%	7.7%
Energy West Mining Co.	Deer Creek	Wasatch	Hiawatha/Blind Canyon	12,062	0.5%	9.1%	9.0%
Hidden Splendor Resources, Inc.	Horizon	Wasatch	Hiawatha	11,700	0.5%	9.0%	5.0%
WEST RIDGE Resources, Inc.	West Ridge	Book Cliffs	Lower Sunnyside	11,994	1.2%	12.8%	6.3%

Source: UGS coal company questionnaires

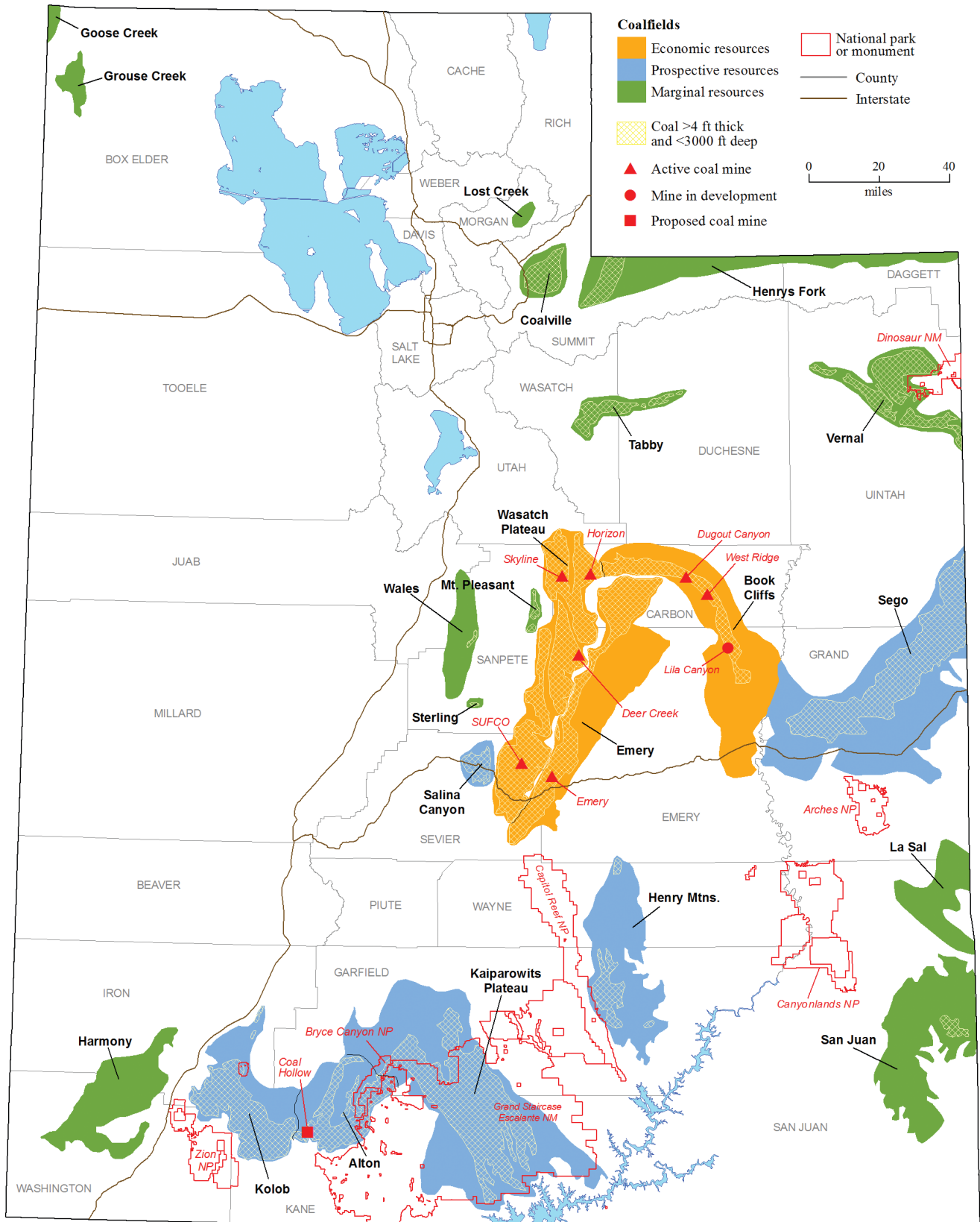


Figure A1. Location and significance of Utah coalfields.

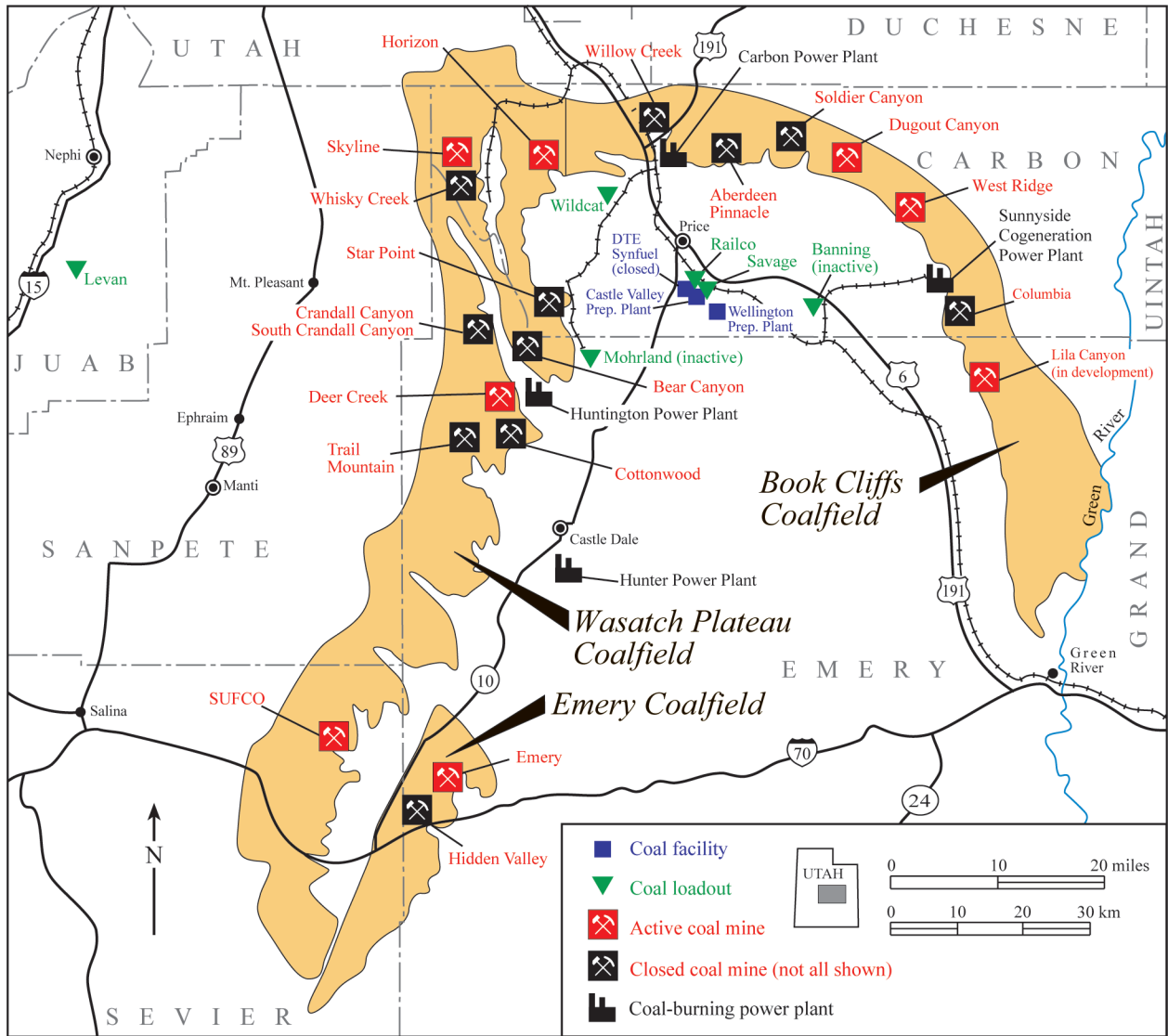


Figure A2. Location and status (at time of printing) of Utah coal mining operations.