

Coal extraction data

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 Climate Mitigation Services
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Arch Coal, USA

www.archcoal.com

St. Louis

yellow column indicates original reported units

Production / Extraction data

Year	Steam coal		Metallurgical Coal		Total Coal	
	Gross production	Gross production	Gross production	Gross production	Gross production	Gross production
	Million tons/yr	Million tons/yr	Million tons/yr	Million tonnes/yr	Million tons/yr	Million tonnes/yr
	Arch Coal	ARCO Coal -1998	Vulcan Coal tk-2002			

USA producer only



Arch Coal acquired International Coal Group in 2011 (to be completed 2Q 2011); 15.5 tons in 2010 USA (NMA 2010 Rpt)

ARCO attrib to Arch

Arch Coal bankruptcy Jan-Oct-2016

Mining Complex	Captive Mined(1)	Contract Mined(1)	Mining Equipment	Railroad	Tons Sold(2)		
					2008	2009	2010
Powder River Basin:							
Black Thunder	S	—	D, S	UP/BN	88.5	81.2	116.2
Coal Creek	S	—	D, S	UP/BN	11.5	9.8	11.4
Western Bituminous:							
Arch of Wyoming	S	—	L	UP	0.2	0.1	0.1
Dugout Canyon	U	—	LW, CM	UP	4.3	3.2	2.3
Skyline	U	—	LW, CM	UP	3.3	2.8	2.9
Sufco	U	—	LW, CM	UP	7.4	6.6	6.1
West Elk	U	—	LW, CM	UP	5.3	4.0	4.8
Central Appalachia:							
Coal-Mac	S	U	L, E	NS/CSX	3.7	2.9	3.2
Cumberland River	S(1), U(3)	U(4)	L, CM, HW	NS	2.4	1.6	1.5
Lone Mountain	U(3)	—	CM	NS/CSX	2.7	2.2	2.1
Mountain Laurel	U	S(2)	L, LW, CM	CSX	4.3	4.4	5.1
Totals					133.6	118.8	155.7

Arch Coal 10-K for 2010, page 9.

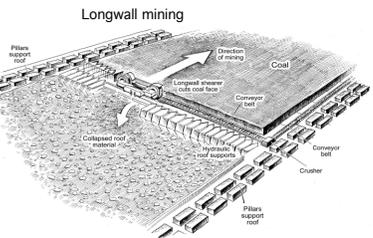
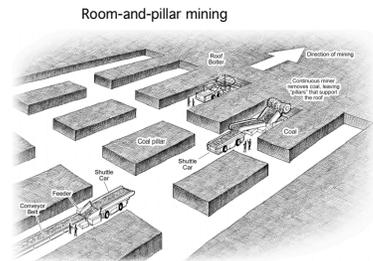
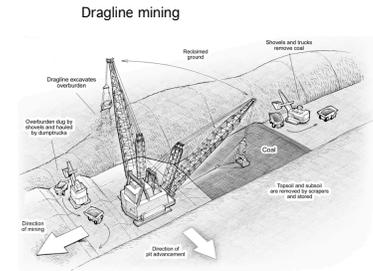
Year	Arch Coal million tons/yr	ARCO coal million tons/yr
1972		Keystone Manual
1973	12.5	
1974	13.9	
1975	13.5	
1976	13.6	
1977	12.6	
1978	12.9	
1979	12.6	
1980	15.8	11.1 Keystone Manual
1981	12.7	15.8
1982	12.8	19.2
1983	12.9	18.8
1984	12.9	26.3
1985	13.0	29.8
1986	13.1	27.2
1987	18.7	26.1
1988	18.5	32.4
1989	18.9	39.4
1990	23.4	38.3
1991	18.6	41.6
1992	20.1	39.8
1993	15.0	47.7
1994	22.9	38.4
1995	24.3	45.7
1996	20.2	51.0
1997	26.1	46.4
1998	88.9	acq by Arch 1998
1999	108.8	
2000	108.7	
2001	116.5	
2002	110.8	
2003	107.7	
2004	123.1	
2005	140.2	
2006	135.0	
2007	135.0	
2008	139.6	
2009	126.1	
2010	162.8	
2011	117.8	20.9
2012	104.4	18.7
2013	111.7	14.2
2014	111.2	14.5
2015	108.5	11.9
2016	21.8	2.4
2017	80.6	8.2
2018	79.5	7.7

Year	Vulcan Coal
2002	17.3
2003	23.8
2004	33.0
2005	43.0
2006	42.2
2007	41.5

EIA Coal Rpt Table 10 Mt (sh)

7.0	
8.8	137.0 EIA
8.4	130.2 EIA
8.7	135.8 EIA
7.2	130.7 EIA
2.5	96.5 EIA
9.2	CAI uses EIA data 2016
9.1	

12.5	11
13.9	13
13.5	12
13.6	12
12.6	11
12.9	12
12.6	11
26.9	24
28.5	26
32.0	29
31.7	29
39.3	36
42.8	39
40.3	37
44.9	41
50.9	46
58.3	53
61.7	56
60.2	55
59.9	54
62.7	57
61.4	56
70.0	63
71.2	65
72.5	66
106.2	96
132.5	120
141.8	129
159.5	145
153.0	139
149.2	135
123.1	112
140.2	127
135.0	122
135.0	122
139.6	127
126.1	114
162.8	148
145.7	132
131.9	120
134.3	122
134.4	122
127.6	116
96.5	88
98.0	89
96.4	87



Arch Coal 10-K for 2010, page 6.

Total	736	99	61	895	3,775	3,425
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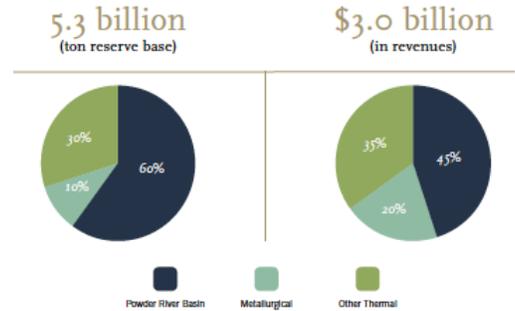
Coal Types:	Sub-bituminous (WY)	82.17%	Metallurgical (Appal.)	11.02%	Thermal (other)	6.81%	100.00% Sum
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		Successor	
		Year Ended December 31, 2017	October 2 through December 31, 2016
Powder River Basin			
Tons sold (in thousands)		80,604	21,824
Coal sales per ton sold	\$	12.49	12.41
Cash cost per ton sold	\$	10.53	9.88
Cash margin per ton sold	\$	1.96	2.53
Adjusted EBITDAR (in thousands)	\$	158,882	55,765
Metallurgical			
Tons sold (in thousands)		8,192	2,442
Coal sales per ton sold	\$	90.17	65.61
Cash cost per ton sold	\$	60.76	52.98
Cash margin per ton sold	\$	29.41	12.63
Adjusted EBITDAR (in thousands)	\$	243,616	30,819
Other Thermal			
Tons sold (in thousands)		9,205	2,510
Coal sales per ton sold	\$	34.85	34.01
Cash cost per ton sold	\$	24.20	21.79
Cash margin per ton sold	\$	10.65	12.22
Adjusted EBITDAR (in thousands)	\$	102,006	31,159

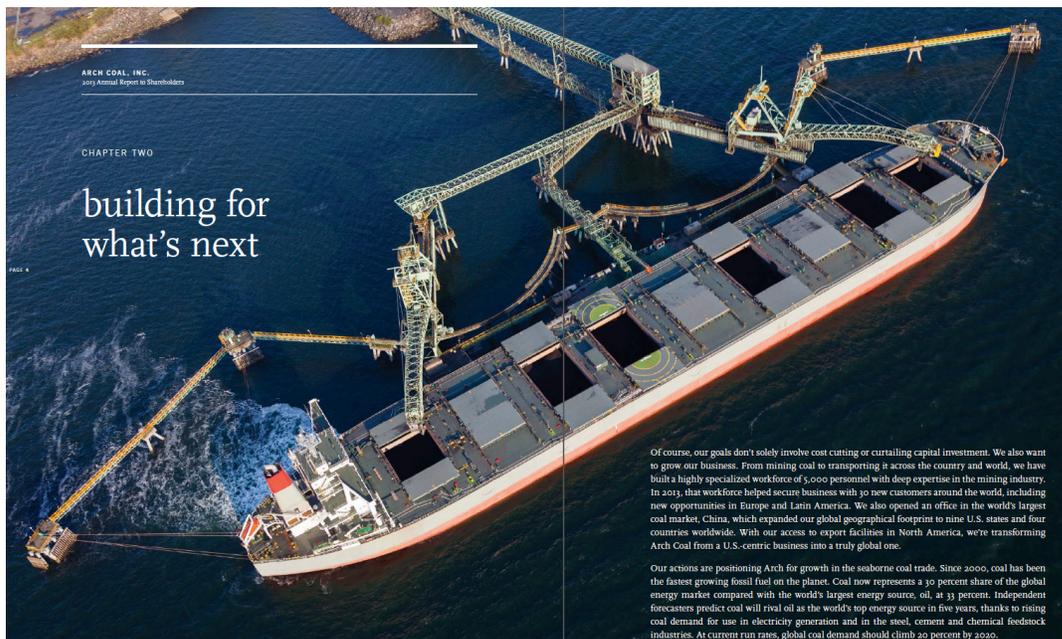
Arch Coal Form 10-K for 2017, page 57.



Arch Coal 2013 Annual Report & Form 10-K, page 7.



Arch Coal 2013 Annual Report & Form 10-K, page 7.



Arch Coal 2013 Annual Report & Form 10-K, page 4

Cell: G11**Comment:** Rick Heede:

Coal production by coal mining companies and state-owned enterprises, including subsidiaries of oil and gas companies. Coal types produced are not ordinarily reported by coal operators (except for metallurgical coal). We distinguish, where possible and reasonably well known, between hard (bituminous and subbituminous) and soft (lignite or peat) coals, especially for the larger companies operating in regions such as Australia and India where soft coals are predominant. Soft coals have lower carbon content per tonne than do hard coals.

Cell: G15**Comment:** Rick Heede:

Arch Coal acquired Vulcan Partners in 2002. Oligopoly Watch, www.oligopolywatch.com/2003/09/21.html

Cell: G19**Comment:** Rick Heede:

ABOUT ARCH COAL: As one of the nation's largest and most efficient coal producers, we contribute roughly 16% of America's coal supply. We have a leading position in all three major low-sulfur coal basins, with mining complexes in Wyoming, Utah, Colorado, West Virginia, Kentucky, and Virginia. www.archcoal.com

Cell: H36**Comment:** Rick Heede:

Arch filed for bankruptcy Jan2016. Wiki: On October 5, 2016, Arch Coal emerged from chapter 11 bankruptcy protection. The company won a court approval allowing them to erase almost \$5 billion in debt and left bankruptcy with \$300 million in cash.

Cell: D40**Comment:** Rick Heede:

Keystone Coal Industry Manual for 1975, p. 498, lists Arch Mineral Group coal production for 1973 and 1974. Various Keystone editions for data 1973-1981, plus 1986 (interpolated 1982-1985).

Cell: E48**Comment:** Rick Heede:

ARCO annual report 1983 shows coal shipments 1981-1983.

Cell: E50**Comment:** Rick Heede:

Coal shipment data (which we take as equivalent to production) for 1984-1987 from ARCO (1988) Annual Report 1987, p. 60.

Cell: E55**Comment:** Rick Heede:

Atlantic Richfield Annual Report for 1992, p. 1, shows "annual coal shipments" for 1988-1992.

Keystone Coal Industry Manual for 1993, p. 372, shows 1991 production data for ARCO at 32.6 million tons, and 26.9 million tons in 1988.

Cell: E60**Comment:** Rick Heede:

ARCO annual report 1993, Highlights, shows "coal shipments" for 1989-1993 in million tons; in 1993, 10.2 million tons foreign and 37.5 million tons domestic.

Cell: E61**Comment:** Rick Heede:

EIA Coal Industry Annual 1994, p. 23.

Cell: E62**Comment:** Rick Heede:

EIA Coal Industry Annual 1995, p. 24.

Cell: E63**Comment:** Rick Heede:

EIA Coal Industry Annual 1997, p. 23, ARCO 51.013 million tons.

Cell: E64**Comment:** Rick Heede:

No data in Keystone Coal Industry Manual. ARCO 1997 coal production from EIA Coal Industry Annual 1997, p. 23.

Cell: E65**Comment:** Rick Heede:

Keystone (1999) states that "during 1998, Arch Coal purchased ARCO Coal Company."

Cell: G65**Comment:** Rick Heede:

Keystone Coal Industry Manual for 2000 (with data for 1998), p. 22: Triton Coal Company.

Cell: D71**Comment:** Rick Heede:

Arch Coal Annual Rpt 2006, "tons sold," in million short tons. No data on coal production, or CO2 or methane emissions. Does mention coal-to-liquids project in southern Wyoming "that plans to capture carbon dioxide for plant use in enhanced oil recovery." (page 16.)

Cell: D73**Comment:** Rick Heede:

Arch Coal Annual rpt 2008, "tons sold," in million short tons. No data on coal production, or CO2 or methane emissions. Provides low-sulfur coal for electricity generation. 2010 report pg 55; adds Arch Coal tons sold from powder River Basin, Western Bituminous, and Central Appalachia.

Cell: D78**Comment:** Rick Heede:

Arch Coal 2013 Annual Report & Form 10-K, page 60. Powder River Basin and Appalachia production 2011-2013, million tons.

Cell: D81**Comment:** Rick Heede:

Arch Coal 2015 Form 10-K, March. Operational Performance on p. 64. "The following table shows operating results of continuing coal operations for the years ended December 31, 2015, 2014 and 2013. The "other" category includes the results of our other bituminous thermal operations, our West Elk mining complex in Colorado and our Viper mining complex in Illinois."

Cell: H83**Comment:** Rick Heede:

EIA Annual Coal report 2016, Dec17, Table 10: Arch Coal production 2016: 96.483 Mt (sh).

Cell: H84**Comment:** Rick Heede:

EIA Annual Coal report for 2017, Table 10, shows Arch Coal production at 100.298 Mt. Arch Coal Form 10-K for 2018, page 56, shows 2017 "tons sold" (including non-quantified "coal purchased from third parties") of 98.218 Mt.

Arch Coal

Cell: D85

Comment: Rick Heede:

Arch Coal Form 10-K for 2018, page 56, shows 2017 "tons sold" (including non-quantified "coal purchased from third parties") of 98.218 Mt.
2018 tons sold totals 96.792 Mt (p. 56), of which 79.542 Mt from Powder River Basin (presumably subbituminous), 7.747 Mt metallurgical coal, 9.089 Mt other thermal.
EIA Coal Report 2018: 100.254 Mt.

Cell: P187

Comment: Rick Heede:

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