The Concise Guide to Wyoming Coal

2010

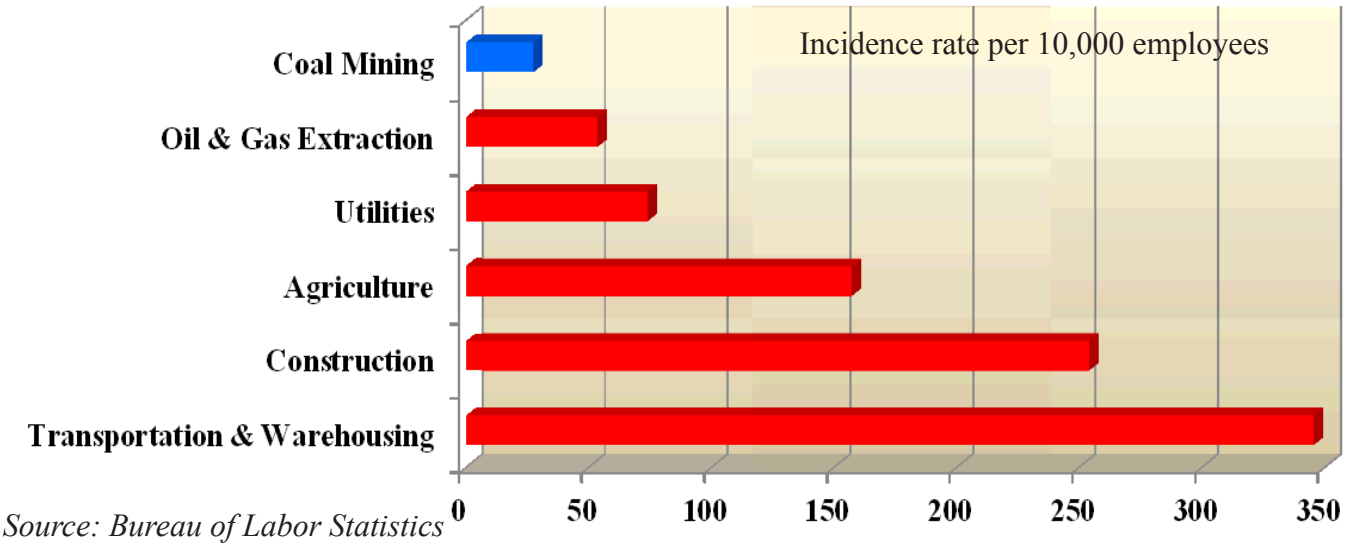
Wyoming Mining Association

Wyoming's coal industry in 2010

Events in the Gulf of Mexico this spring have galvanized the nation and added new emphasis on securing domestic sources of energy. This makes coal, especially from Wyoming, all the more important. Wyoming is the nation's preeminent coal producer, providing a secure source of fuel for America's electrical power generators. Wyoming coal mines provide 40 percent of the nation's coal. Coal accounts for almost 50 percent of the nation's electricity, so Wyoming coal provides fuel for about 20 percent of the nation's electricity. The top ten producing mines in the country are all located in Wyoming's Powder River Basin, and Wyoming has led the nation in coal production since 1986.

coal production is quite simply because this is where the resource is located. Other areas of the country have significant coal reserves, but the electrical power industry has increasingly focused on western coals and particularly Powder River Basin (PRB) coal. There are several reasons for this shift: World-class seams (some more than 80 feet thick); low production costs due to the proximity of the coal to the surface; and a desirable low-sulfur composition. During 2009, more than 416 million tons were shipped out of the PRB on single destination unit-trains, averaging 130 cars in length. On a typical day, 70 to 80 unit trains leave the PRB for energy markets throughout North America.

Rate of non-fatal occupational injuries, selected industries, Wyoming, 2009.



Source: Bureau of Labor Statistics

Safety first

Safe mines are productive mines and safety always comes first in Wyoming coal mines. Wyoming mines have been recognized as some of the safest mining operations in the United States. In fact, information from the Bureau of Labor Statistics shows that coal mining in Wyoming is safer than a number of more common occupations (see figure). There is a culture of safety that exists in the mines, with each miner attending 40 hours of safety training prior to their first day on the job. Every shift starts with a walk around safety inspection. Each mine employs dedicated safety professionals to ensure that safe practices are maintained.

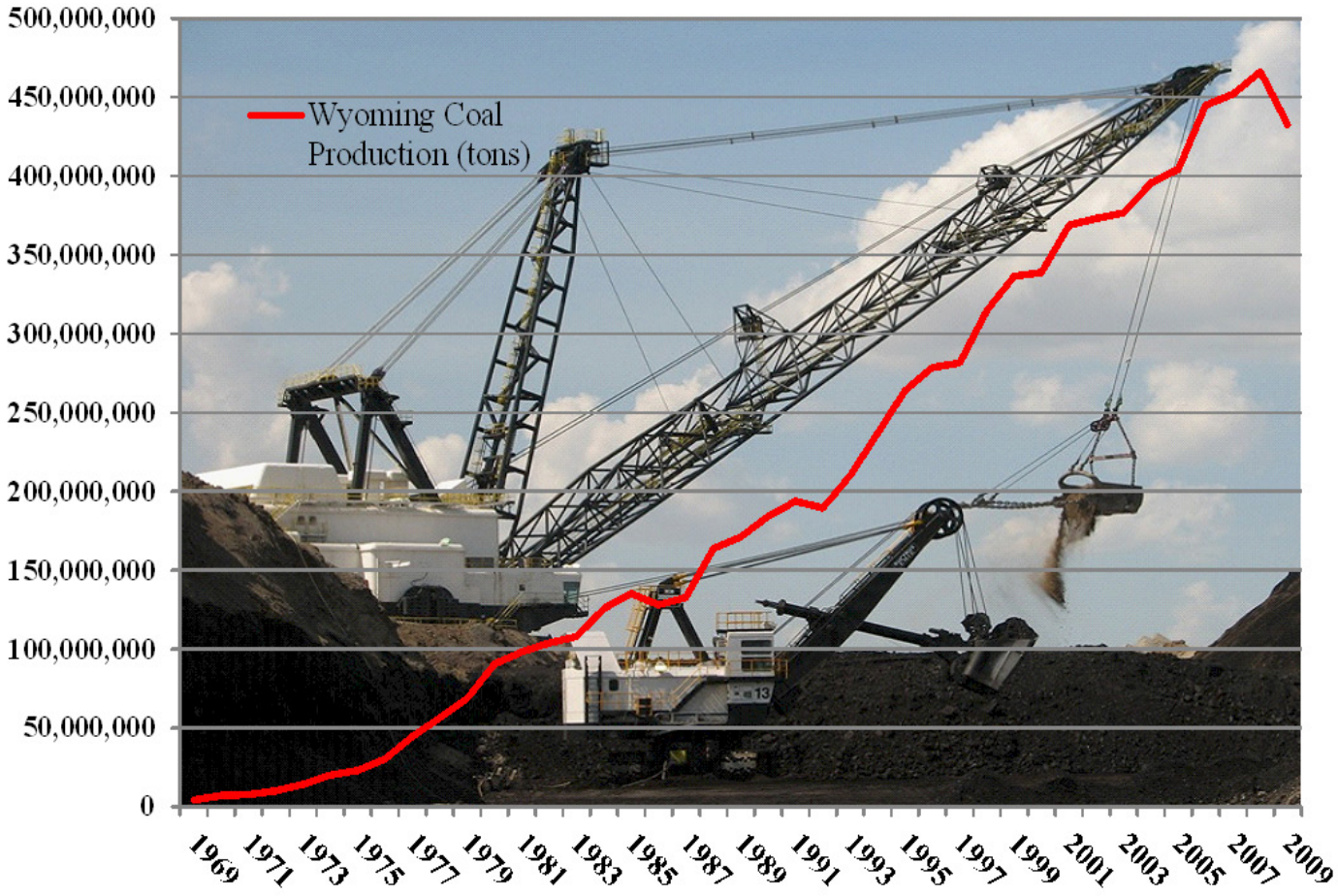
Wyoming's coal resources

The reason Wyoming is the center of the nation's

As with the rest of the country, Wyoming's coal industry has felt the effects of the recent recession. Coal production decreased 33.8 million tons or 7.3 percent from 2008 to 2009 (See figure, next page).

This dragline bucket holds 160 cubic yards.

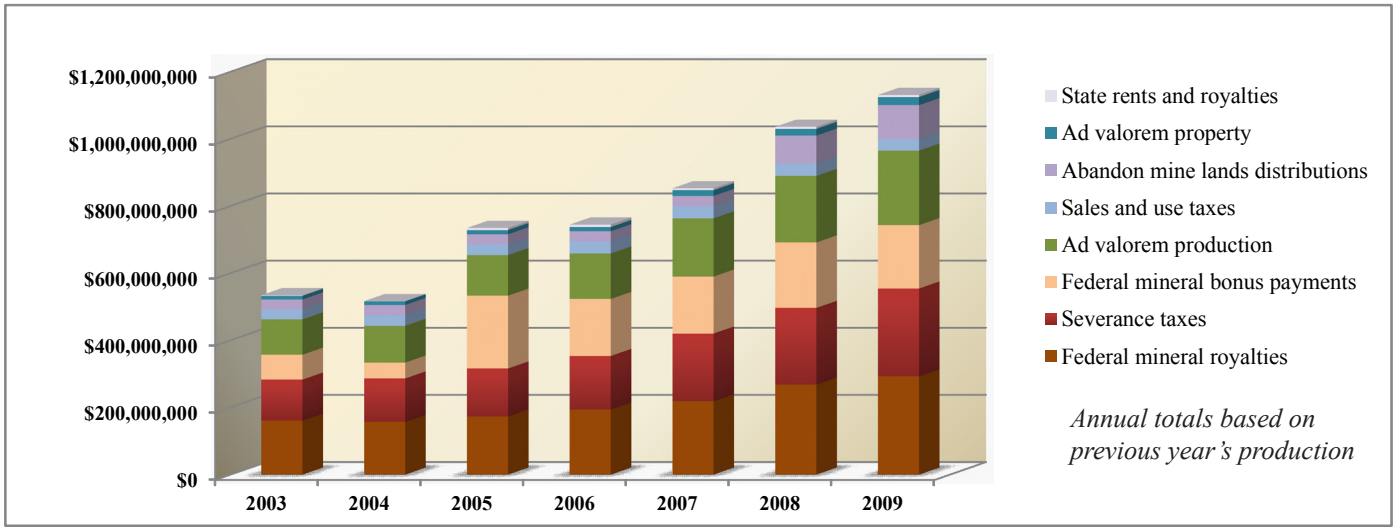
Wyoming coal production, 1969-2009.



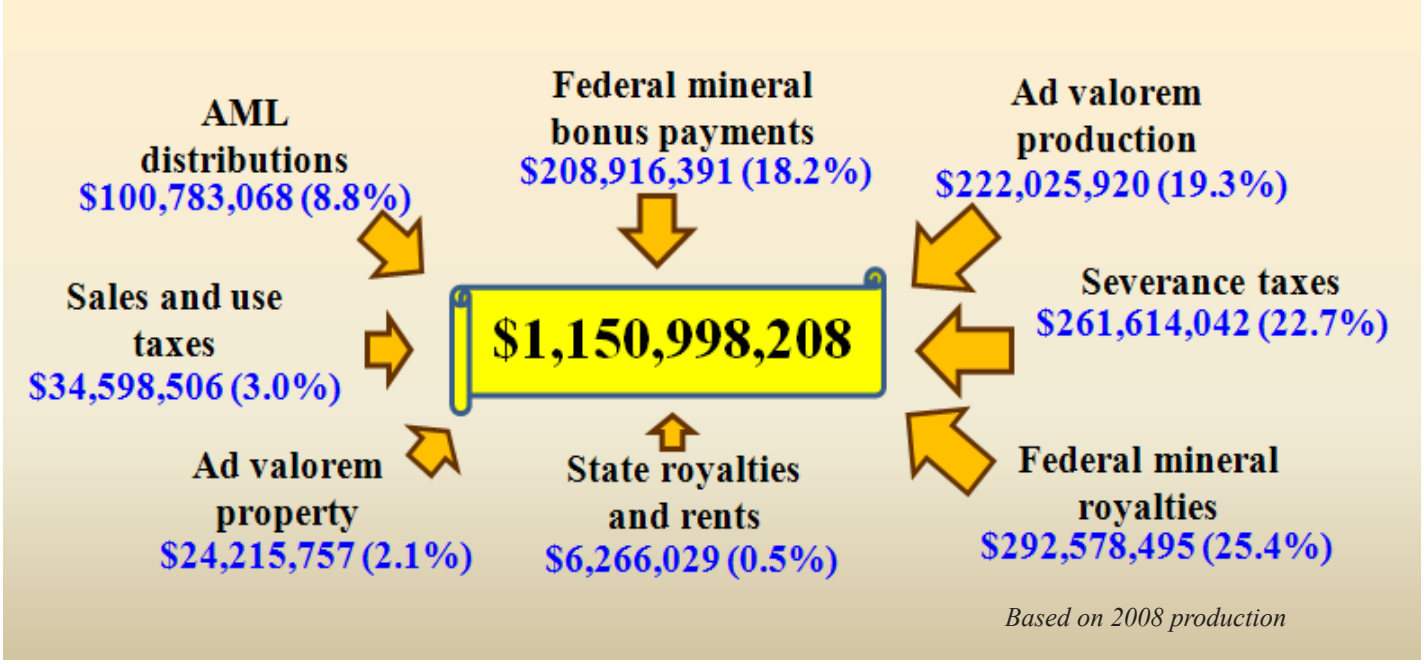
This was mainly due to a reduction in demand for electricity. Other recessions (1985 and 1991) also saw related drops in demand for coal, but this is the most significant decrease since large scale mining came to the PRB in 1969 and reflects the severity of the economic climate.

Despite the fact the demand for coal was lower in 2009, average prices for Wyoming coal increased. The statewide average price for Wyoming coal rose 4.2 percent—from $10.09 per short ton in 2008 to $10.51 per short ton in 2009. Most utilities use long-term contracts to lock in lower prices for coal,

Trend in Wyoming state and local government revenue from coal, 2003-2009.



State and local government revenue from Wyoming coal, 2009.



but in recent years, the duration of these contracts has been shortening, leading to more price movement than has been seen in the past.

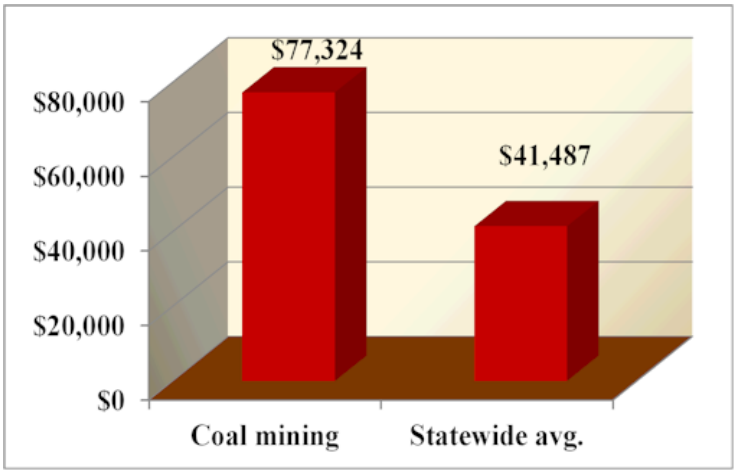
Local benefits

Coal is an important source of revenue for Wyoming's state and local governments. It is the second largest source after natural gas. Coal mining companies pay taxes and royalties that are distributed among federal, state and local governments. The chart above shows that coal's estimated contribution in 2009 was over $1.15 billion to state and local government. This was a $95 million or a 9.1 percent increase from 2008. A settlement between the state and federal government of a dispute over Abandoned Mine Lands (AML) funds is the main reason for the difference. The new settlement allows western states, like Wyoming, to receive a larger share of the redistributed AML monies that the federal government was holding. However, once the backlog of AML funds has been distributed, AML monies received will be lower than their current level. This money will be used for clean coal research and carbon sequestration projects, among other uses.

From 2000 to 2009, total coal industry employment at the 19 mines in the state has increased more than 54 percent to 6,822 employees. This is due in part to the increased depth at which coal in now being mined. Increased overburden removal requires more

400-ton haul truck

Average earnings per job, Wyoming, 2009.



Source: Bureau of Labor Statistics

employees to handle the job.

Coal industry jobs are among the best paying in Wyoming. The chart on page 4 shows that the average income in the Wyoming coal industry in 2009 was $77,324 (not including benefits). This is almost twice the average wage in the state ($41,487). It is estimated that three secondary jobs are created for every direct coal industry job, resulting in significant employement benefits for the state.

Technology and the future

The specter of potential climate change has led many to call for the elimination of coal as a fuel source. However, to paraphrase Mark Twain, rumors of [coal's] demise are greatly exaggerated. The Energy Information Administration (EIA) estimates that Wyoming's recoverable reserves, in seams thicker than 5 feet and less than 1,000 feet deep, total more than 40 billion tons. The total amount of coal within the state is estimated to be more than 1.4 trillion tons.

The EIA's *Annual Energy Outlook 2010* projects coal's share of energy production in 2035 to be 44 percent (compared to about 50 percent today). Electrical power generation is by far the largest consumer of coal in the United States, using about 91 percent of all coal mined.

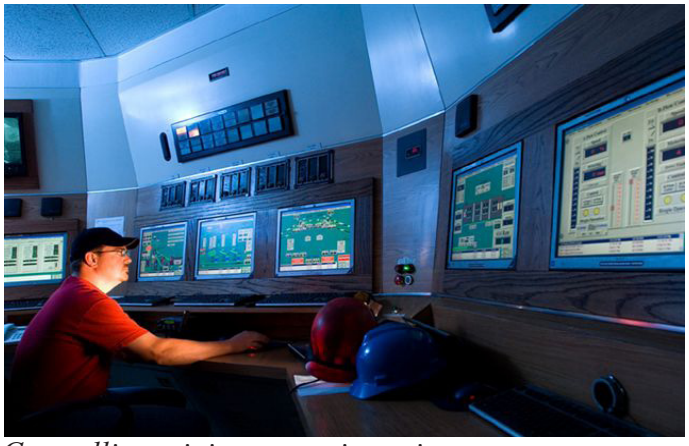
The state's newest power plant is the 110-MW Wygen III Power Plant near Gillette, which began commercial operations on April 1. The plant is majority owned by Black Hills Power. Approximately one-third of the plant's infrastructure is devoted entirely to environmental controls. This state-of-the-art equipment reduces emissions from nitrogen oxide, sulfur dioxide, particulate matter, and volatile organic compounds (VOCs). Mercury is reduced by injecting calcium chloride before the coal is pulverized and then adding powdered-activated carbon to the flue gas stream.

Wygen III's air-cooled condenser technology enables it to conserve an estimated 2,500 to 3,500 gallons of water per minute. The condenser, combined with the plant's low back pressure steam turbine, also provides for higher efficiency.

Efficient mine-mouth operations allows for coal-transport from the neighboring Wyodak Mine via a conveyor system. This eliminates the need for railcar transportation reducing the plant's total carbon footprint.

Lease bonus bids

Before a mining company can obtain new coal reserves on federal lands, the company must nominate lands for lease. The Bureau of Land Management (BLM) then reviews the proposed tract to determine the market value of the coal. It also requires the completion of a detailed environmental assessment or environmental impact statement, before scheduling a competitive sale. The process is known as Lease By Application or LBA.



Controlling mining operations via remote systems

To obtain a lease, the company must submit a sealed bid for the coal. The money is paid over and above any royalties that must be paid when the coal is mined. The successful bidding company must pay one-fifth of the total bonus at the time of sale and then pay another fifth every year for the next four years. The federal government keeps one half of this money and the State of Wyoming receives the other half. Between 2003 and 2009, the State of Wyoming received over one billion dollars in bonus bid money. This money is used, in part, for capital spending projects such as building new schools.

Wyoming received $1,094,694,406 in bonus bid monies between 2003 and 2009.

Wyoming Coal Production by County, 2009

Location/operator	Mine	Employees	Production (tons)
Campbell County			
Alpha Coal West, Inc.	Belle Ayr Mine	352	28,655,953
Alpha Coal West, Inc.	Eagle Butte Mine	280	21,496,124
Buckskin Mining Co.	Buckskin Mine	318	25,430,977
Caballo Coal LLC	Rawhide Mine	226	15,842,274
Cloud Peak Energy LLC	Antelope Coal Mine	488	34,001,562
Cloud Peak Energy LLC	Cordero Rojo Complex	634	39,380,964
Evergreen Energy	KFX plant/Fort Union Mine	5	0
Peabody Powder River Services	Caballo Mine	401	23,252,475
Powder River Coal Co.	North Antelope/Rochelle Complex	1,188	98,279,377
Rio Tinto Energy America	Jacobs Ranch Mine	0	29,264,000
Thunder Basin Coal Co. LLC	Black Thunder Mine	1,651	81,079,043
Thunder Basin Coal Co. LLC	Coal Creek Mine	152	9,766,852
Western Fuels of Wyoming, Inc.	Dry Fork Mine	67	5,232,451
Wyodak Resources Develop. Corp.	Wyodak Mine	121	6,016,063
Carbon County			
Arch of Wyoming, LLC	Elk Mountian Mine	17	237,740
Arch of Wyoming, LLC	Seminoe II Mine	14	0
Hot Springs County			
Grass Creek Coal Co.	Grass Creek Mine	6	12,711
Lincoln County			
Chevron Mining Inc.	Kemmerer Mine	302	4,460,896
Sweetwater County			
Black Butte Coal Co.	Black Butte and Lucite Hills	178	3,876,766
Bridger Coal Co.	Surface operations	190	2,723,250
Bridger Coal Co.	Underground operations	232	3,471,844
	Total	**6,822**	**432,481,322**

Source: State Inspector of Mines of Wyoming, 2010

Reclamation

Reclaimed mining lands represent sustainable development in action. Once the recoverable coal is removed, the reclamation process begins. The reclamation process includes several stages and is overseen by highly trained specialists employed by the mines as well as state and federal personnel to ensure compliance with all applicable laws. Reclamation stages include:

- Backfilling the void with overburden
- Contouring the final filled surface
- Replacing topsoil and preparing the surface
- Preparing the seedbed and sowing approved seed mixtures
- Monitoring plant growth and fauna populations.

Approved seed mixtures promote higher vegetative output than on pre-mined land. This in turn attracts animals and plants to re-establish themselves and promotes a sustainable ecosystem on the once mined land. An example is a reclaimed area on the Jacobs Ranch Mine in the Powder River Basin that now provides crucial winter habitat for elk. This reclaimed site is now part of a conservation easement through the Rocky Mountain Elk Foundation.

Acres of disturbed land, Wyoming*

	Acres	Percent
Disturbed by coal mines	151,799	100%
Reclaimed land	70,527	47%
Active mining sites	41,036	23%
Stockpiles, facilities, other	40,236	30%
*as of August, 2010		

While facilities areas such as mine shops, coal plants and long-term roads and ponds cannot be reclaimed until long-term use is completed, the focus on all other areas in reclamation is demonstrated by comparison of current disturbance and reclamation acres as shown in the table.

Reclamation goes beyond just restoring contours and reseeding native plant species. Rebuilding sustainable natural ecosystems is the goal and innovative methods are constantly being developed to further enhance reclaimed areas. Some examples include:

Monitoring reclamation progress on reclaimed coal mine land.

- Re-establishing water features and storage in reclaimed streams, stock ponds and wetlands
- Replacing sage grouse leks (breeding grounds)
- Establishing mosaic patterns of grassland and shrubland reclamation
- Replacing rock outcrops and providing prey base habitats for eagles and other predators
- Reconstructing prairie dog towns and reclaiming mountain plover habitat.

Minequest

The Wyoming Mining Association has created Minequest, an educational website for young people, covering mining topics. Minequest satisfies Wyoming Teaching Standards for teachers in grades 4 through 12 in areas of Math, Science, Social Studies, Language Arts, Career/Vovational and Technology.

An example activity for younger students is finding items around a classroom and determining if those items are made from animal, vegetable or mineral material. Older students can calculate monthly costs of living and then find employment that will support their intended lifestyle. The Minequest website can be accessed at: www.minquest.org.

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The Concise Guide to Wyoming Coal is produced by the Wyoming Coal Information Committee of the Wyoming Mining Association. Cheyenne, Wyoming, 2010.