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*Brent asked me to put a quick summary of Wyoming together for his regional geography class. I have covered the coal industry and county government for a local newspaper in Gillette, Wyo., for the past two-and-a-half years, a path Brent actually helped get me started on that path as my editor at our school newspaper! The next few pages and accompanying links should give you an idea of the phenomenal growth this rural western-midwestern state has seen in recent years due in no small part to the energy industry. I hope it helps! Good luck in your studies!*

*--Peter Gartrell*

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Wyoming is, to say the least, unique among the United States.

With the nation's smallest population (in 2007, the census put the state's population at 522,830)<sup>1</sup> but its tenth-largest land mass (more than 97,000 square miles) it the least dense state in the union, with a similar number of people per square as Mongolia.<sup>2</sup> Its largest cities, Cheyenne<sup>3</sup> and Casper<sup>4</sup>, have fewer than 60,000 people. Its third largest city, Gillette, just recently broke 30,000 people.<sup>5</sup> Dozens of towns have citizens who proudly point out that their population is far less than their elevation, a point advertised on green information signs that inform passer-by of both statistics.

Such isolation is partly bred out of necessity. Wyoming, like many states west of the Missouri River are arid, semi-desert steppes that receive most of their moisture in the late winter and early spring with spates of heavy rain and wet snow. For the rest of the year the spectrum of color are various shades of brown, a familiar site in Wyoming, which is primarily covered in medium-to-tall prairie grasses, sage brush, and occasional pine forests in hills scattered through the state's basins. Near rivers, which run intermittently, cottonwoods dominate. The only exceptions are the Big Horn, Laramie, Wind River and Teton ranges (do not forget Yellowstone!), which in some cases have lush vegetation. This is the exception, not the rule, and a visit to Jackson Hole is no more representative to Wyoming's geography than a visit to the giant Redwoods along Highway 101!

So what drives Wyoming's economy?

Many people would tell you — or at least assume — ranching. If geographic expanse, landmass and historical presence were the only consideration, such people would be correct. But when economic development, jobs, tax revenue and potential for the future are considered they'd be far off. Wyoming is one of the few states without a state income tax for one reason and one reason only: the drilling and mining industries including oil,

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<sup>1</sup> <http://www.census.gov>

<sup>2</sup> <http://www.gillettenewsrecord.com/articles/2007/09/30/news/news02.txt>

<sup>3</sup> 2006 Census estimate: 55,314

<sup>4</sup> 2006 Census estimate: 52,089

<sup>5</sup> <http://www.gillettenewsrecord.com/articles/2008/02/05/news/local%20news/news01.txt>

gas, uranium, bentonite, coal, pipeline development, railroading and associated service industries. The state's governor, two-term Democrat Dave Freudenthal has emerged as a quiet expert on the subject and has spent much of his second term aggressively pushing Wyoming as a source of energy production for the West. California, by far the nation's biggest energy user, has gotten particular focus from state lawmakers,<sup>6</sup> with some initial indications of success<sup>7</sup> but no tangible results of yet. Wind development is slowly being added to the list of energy resources, as well, with several different utilities<sup>8</sup> and independent producers<sup>9</sup> proposing projects in recent months. But like long-standing dreams to replace train shipments of coal with "shipping electricity by wire" to other states, many in state government and utility sector will readily point to a lack of transmission capacity as a reason projects have yet to get off the ground. The Wyoming Infrastructure Authority was created to help push such projects along in the future.<sup>10</sup>

The energy sector has been both a bane and boon to the state throughout its history. Much like West Texas, Bakersfield, Oklahoma and other oil-producing regions, Wyoming's fortunes have come in gone in dramatic booms and busts. Simply put, when energy prices are high, times are good, very, very, very good. When energy prices tank (see the 1980s and 1990s as prime examples), times are bad, very, very, very bad. Many people who lived in Gillette during the 1980s will, without much encouragement, tell you of the way the town emptied when oil prices plummeted in the mid-80s. Ten percent economic growth rates (not unlike the ones seen today in the energy production regions seen around Gillette and in southwestern Wyoming near Rock Springs and Green River) were suddenly reversed. Homes were foreclosed on and in a town that once saw people living in tents, cars, campers, hotels and anywhere else with a semblance of a roof, suddenly had skyrocketing vacancy rates and dirt-cheap rents.

Not so these days.<sup>11</sup>

The state, and its budget,<sup>12</sup> has been insulated for the most part from the economic slump that has hit many areas of the nation, with house construction remaining relatively strong and jobs continuing to grow at a steady pace by percentage if not aggregate numbers.<sup>13</sup> Visitors to such regions are often surprised to hear the rate at which people are moving to Wyoming in search of jobs.<sup>14</sup> With a dearth of money in local government coffers, it's not just energy industry jobs that are attracting people to Gillette. Local teachers start off at \$42,500 a year. Such prosperity has made Gillette very attractive to nearby areas in the

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<sup>6</sup> <http://www.gillettenewsrecord.com/articles/2008/02/03/news/local%20news/news02.txt>

<sup>7</sup> <http://www.gillettenewsrecord.com/articles/2008/02/05/news/local%20news/news02.txt>

<sup>8</sup> [http://www.pacificorp.com/Press\\_Release/Press\\_Release75655.html](http://www.pacificorp.com/Press_Release/Press_Release75655.html)

<sup>9</sup> <http://www.gillettenewsrecord.com/articles/2008/03/30/news/local%20news/news01.txt>

<sup>10</sup> <http://www.wyia.org/>

<sup>11</sup> [http://www.nytimes.com/2006/07/20/opinion/20observer.html?\\_r=1&oref=slogin](http://www.nytimes.com/2006/07/20/opinion/20observer.html?_r=1&oref=slogin)

<sup>12</sup>

<sup>13</sup> [http://eadiv.state.wy.us/wef/Economic\\_Summary0308.pdf](http://eadiv.state.wy.us/wef/Economic_Summary0308.pdf)

<sup>14</sup> <http://www.csmonitor.com/2006/1030/p01s01-usec.html>

region that are more economically depressed.<sup>15</sup> The influx also has driven up real estate and apartment prices to an extent comparable with (and with increasing frequency, beyond) those of major metropolitan areas including places like Denver and Minneapolis-St. Paul.<sup>16</sup> It is, in every sense of the word, a boomtown, with mirror images in many other parts of the west.

But, while the economic dynamics may make Gillette and Campbell County (at 4,801 square miles, big enough to fit Delaware and Rhode Island into it, with space for 17 Districts of Columbia) similar to other oil and gas drilling communities, its massive coal reserves set it apart from the rest of the field.

Within an hour's drive of Gillette, along Highway 59 to the south and Highway 14-16 to the north, are nine of the world's largest coal mines. The 10<sup>th</sup> is one county to the south. Together, the 14 mines produced 436 million tons of coal in 2007,<sup>17</sup> more than the next five states (including West Virginia, Kentucky, Pennsylvania and Texas, Indiana which rank first, second, third, fourth and sixth, respectively) combined.<sup>18</sup> Wyoming as a whole cracked the 450 million ton mark for the first time, accounting for 39 percent of the nation's 1.14 billion tons of coal produced. From the Energy Information Administration:

*"On a state level, production in Montana and Wyoming (which together account for almost half of all U.S. production) increased by almost 10 and 3 percent, respectively, between the fourth quarter of 2006 and 2007. At the same time, production in all other major coal-producing states either decreased (as was the case in Colorado, Kentucky, Pennsylvania and Texas) or remained the same (as was the case in West Virginia). This means that the decrease in U.S. quarterly and annual production would have been much more pronounced if production in Montana and Wyoming, in particular, had not continued to rise."<sup>19</sup>*

All mine what is known as Powder River Basin coal, subbituminous coal that is known for its low sulfur content and relatively high heating value. Measured in British thermal units (Btus), the areas with the highest heating values can reach 8,800 Btu in seams southeast of Wright, a town of 1,500 in the southern part of the county. It might surprise you to know that PRB coal, as it is known by most in the industry, has a lower heating value than that in West Virginia, in some cases almost half. But while a glut of court cases, stricter environmental and safety regulations, increasing costs and decreasing supply make underground, longwall and mountain-top removal mining in the East more and more difficult, strip mining in Wyoming is about as efficient as can be. As such, prices are lower — though transportation costs are higher — and PRB coal continues to make inroads into utilities to the east that once used coal from Appalachia.<sup>20</sup> Another advantage for utilities is that because of PRB's low sulfur content, many can get away without installing sulfur dioxide-removal devices, features that became necessary for

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<sup>15</sup> <http://www.gillettenewsrecord.com/articles/2008/01/13/news/news01.txt>

<sup>16</sup> <http://www.gillettenewsrecord.com/articles/2008/01/10/news/news02.txt>

<sup>17</sup> <http://www.gillettenewsrecord.com/articles/2008/01/06/news/local/news06.txt>

<sup>18</sup> <http://www.eia.doe.gov/cneaf/coal/quarterly/html/t2p01p1.html>

<sup>19</sup> [http://www.eia.doe.gov/cneaf/coal/quarterly/qcr\\_sum.html](http://www.eia.doe.gov/cneaf/coal/quarterly/qcr_sum.html)

<sup>20</sup> <http://www.themountaineagle.com/news/2008/0130/News/062.html>

most coal plants after the Clean Air Act of 1990. Ironically for a sometimes very anti-environmental state, that particular piece of legislation has led to huge job market gains, high tax revenue and well-paid jobs.

One of the things that makes the Powder River Basin so cheap to mine is also what makes it so relatively safe. The seams of coal underneath the rolling prairies can be up to 100 feet thick (even bigger when you consider some Appalachian seams may only be 6 to 12 inches) and under relatively little overburden (rock and dirt that covers such seams). Strip ratios can be 2:1 in some places (2 feet of dirt for every 1 foot of coal mined). Such uniformity allows for huge machinery including shovels, draglines, haultrucks and bulldozers to work with relative ease, increasing the efficiency of miners greatly. The open pits, which in many cases can be seen from highways, interstates and county roads (remember, Wyoming has no trees, so you can see forever) has also meant very low injury rates and only a handful of deaths — less than five — since oil companies opened the mines as side projects in the late 1960s and early 70s. Accidents do happen, though, and when they do, the potential for serious injury is always there, though, thankfully, is rarely fulfilled.<sup>21</sup>

The future of the coal fields is in some ways certain and in other ways anything but. Even without federal greenhouse gas standards, the uncertainty surrounding what Congress will do combined with continued public outcry and an uneven patchwork of state renewable portfolio standards (RPS's) has cast a pale on financing for coal plants.<sup>22</sup> Dozens of coal projects have been cancelled in recent years, leading to fears among many in the utility industry and other sectors of the economy that the price of electricity could skyrocket in mid-term (4 to 8 years) as energy demand continues to grow and more costly gas plants are built. What will be interesting to see is if the coal industry's long sought-after idea of "clean coal" can come to fruition. If it can, the industry may be here for a long, long time.

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<sup>21</sup> <http://www.gillette news record.com/articles/2008/04/08/news/recent%20articles/news15.txt>

<sup>22</sup> [http://newsroom.bankofamerica.com/index.php?s=press\\_releases&item=8124](http://newsroom.bankofamerica.com/index.php?s=press_releases&item=8124)