THE STRUCTURE AND ECONOMIC IMPACT OF UTAH'S COAL INDUSTRY

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DAVID ECCLES SCHOOL OF BUSINESS | UNIVERSITY OF UTAH

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1 EXECUTIVE SUMMARY

Utah's coal industry has played a significant role in the economic development of the state for well over a century. The future of the industry is dependent upon a constellation of economic, technical, and policy developments. This study of Utah's coal industry is composed of the following sections:

1.) Executive Summary;
2.) Utah's Coal Industry: An overview of the coal industry in Utah, examining characteristics, trends, and policy context over time, as well as future prospects;
3.) Coal Production Impacts: The 2007 economic and demographic impacts of coal production on the coal mining counties of Carbon, Emery, and Sevier, as well as the rest of the state;
4.) Coal Production Scenarios: Specifies the three county-level coal production scenarios for 2008 through 2030;
5.) Impacts of Coal Production Scenarios: Detailed economic, population, and selected government revenue impacts of three future coal production scenarios from 2008 through 2030 for coal counties and the entire state;
6.) County Profiles: Detailed analysis of the economic and demographic characteristics of Utah's coal counties;
7.) Additional Fiscal Impacts: Royalties and property taxes from coal production and coal-fired power plants; and
8.) Methodology: A detailed description of data and methods in the study.

1.1 Overview

By the time Mormon settlers discovered coal near Cedar City in 1850, the "rock that burns" was already well on its way to becoming king in the eastern United States. Though still a few decades shy of overtaking wood as the nation's leading source of energy, coal was rapidly replacing it as the fuel of choice for steam locomotives. In cities like Baltimore, street lamps were burning coal-based gas. Pennsylvania's anthracite coal, having been dismissed as a fuel earlier in the century and once famously relegated to sidewalk gravel in Philadelphia, was beginning to challenge—and would eventually overcome—charcoal as a heat source in iron making.

But Utah's coal boom would have to wait until 1882, when the arrival of the Rio Grande Western Railroad opened the Carbon County coal fields. The immediate and pronounced impact of the railroad is apparent from the fourfold increase in production from 52,000 tons in 1881 to 200,000 tons in 1883—the first full year after the railroad's completion. By 1900, annual production had surpassed 1 million tons and coal mining employed nearly 1,000 persons.

Though annual coal production by the end of the 20th century was about 20 times greater than in 1900, the number of those employed in coal mining had only approximately doubled. The increasing productivity of labor—the average amount of coal produced per worker over some given amount of time (typically, one day)—due to the displacement of labor by machinery is an ongoing feature of Utah coal production, with implications for the future contribution of the coal mining industry to Utah's broader economy. In the earliest days, coal mining was highly labor intensive—typically involving only a miner, hand tools, and a cart. It was soon discovered

that much of the work of chipping at the coal with a pickaxe could be saved with the use of explosives. Production became increasingly capital intensive through the turn of the century, as pneumatic drills, trams, railways, and cutting machines were introduced and quickly deployed. Though 90 percent of Utah coal was hand-mined in 1911, by 1915 hand-mined coal had fallen to 48 percent of total coal produced, with the percent cut by machine rising from 3 percent to 50 percent.[1] Labor productivity naturally paralleled this trend. In 1890, labor productivity was 2.57 tons per employee per day, but by the 1920s this had more than doubled. The trend of increasing capitalization generally continued through the 20th century, with the deployment of continuous and longwall mining machines being particularly important. In spite of productivity declines in recent years, the average amount of coal produced per employee per day had risen to 46 tons by 2008. Figure 1.1 shows the labor productivity of Utah's coal industry since 1963.

Figure 1.1
Productivity of Utah Coal Mining
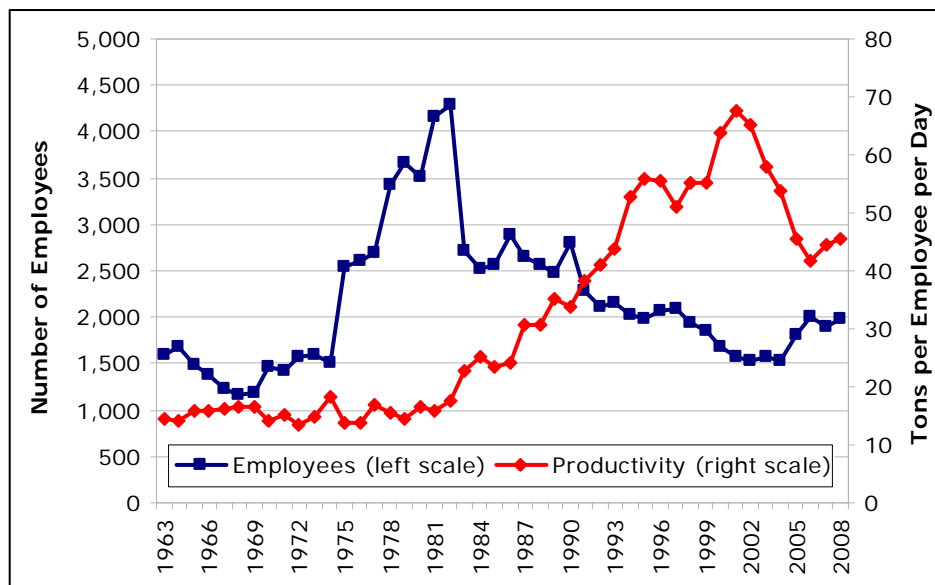
Source: Utah Geological Survey, Utah Energy and Mineral Statistics.

Three features of Utah's coal are particularly important for understanding its past and possible future development. First is its low sulfur content. When coal is burned in an electric power plant, the sulfur it contains combines with oxygen to produce sulfur dioxide. Sulfur dioxide is "considered harmful to public health and the environment" and is regulated by the Environmental Protection Agency pursuant to the Clean Air Act. New coal plants, being subject to more stringent emission standards than plants built decades ago, are required to remove a large fraction of the sulfur dioxide from their exhaust gas before it exits the stack and enters the atmosphere. Removing sulfur dioxide is costly both in that it entails additional capital costs and its operation consumes a part of the power generated (termed "parasitic energy loss"). The more sulfur present in the coal or the larger the fraction that must be removed from the exhaust gas, the higher the equipment costs and the greater the parasitic energy loss. This means that, all else being equal, as low-sulfur coals—like those typically found in Utah and Wyoming—can generate

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[1] "Measures of Economic Changes in Utah: 1847–1947," *Utah Economic and Business Review*, Vol. 7 No. 1, December 1947, p. 78.

power at lower costs, they are also able to command a higher price. If national air quality standards for sulfur dioxide tighten—as EPA has recently proposed—Utah's coal industry would fare better relative to its counterparts mining high-sulfur eastern coals.

Another distinguishing feature of Utah's coal is its "heating value," an expression of the energy released when coal is burned. Coal is a bulky fuel compared with its heating value. Whereas the heating value of a typical ton of oil (about 280 gallons)—a once-popular fuel in electric power generation—is about 38 million British thermal units (BTU), the heating value of a typical ton of coal ranges from approximately 13,000 BTU (about the same as for a ton of firewood) for lignite and the subbituminous coals to 26,000 BTU for bituminous and anthracite coals. For two otherwise equal coals, the one with the higher heating value will ordinarily fetch a higher price. A typical Utah coal is bituminous, with a heating value of 24,000 BTU—about 50 percent higher than that of Wyoming's subbituminous coal. Thus, low sulfur but high energy content are two advantages Utah's coal has relative to most of the country's other coals.

The most conspicuous and important difference between Utah and Wyoming coal is how the deposits at operating mines are situated in the ground. Whereas all of Utah's present coal production takes place in deep underground mines, almost all of Wyoming's coal reserve is close enough to the surface (within a few hundred feet) to make less expensive surface mining techniques applicable. Prior to the early 1970s most of the coal mined in the U.S. was produced in underground mines. That situation began to reverse in the mid-1970s when production from Wyoming's Powder River Basin began in earnest. In 2008, surface-mined coal accounted for 70 percent of U.S. production. Labor productivity from surface-mining operations like those of the Powder River Basin is three times higher than that of Utah's underground mining operations— though a ton of Powder River Basin coal at the mine is worth less (heating value and market value) than a ton of Utah coal. Other factors held fixed, expensive underground mining techniques put Utah coal at a commercial disadvantage compared with surface-mined coal.

1.1.1 Coal Reserves and Production

1.1.1.1 Reserves
As of 2009, Utah's estimated recoverable reserves of coal amounted to 2.7 billion tons (1 percent of U.S.), of which 212 million tons are located in mines that are currently producing. Another 212 million tons of coal suited to surface mining are counted among Utah's total estimated recoverable reserves, though all of Utah's producing reserves are in underground mines. Because the Energy Information Administration's measure of Utah's estimated recoverable reserves includes only resources economically mineable and also located on land that is not off-limits to mining, it does not include the very rich Kaiparowits Plateau field located in Kane and Garfield counties. Before deducting that part of the resource that would be uneconomical to mine at present, the Kaiparowits field contains about 9 billion tons of coal. But the field was effectively put off-limits for development in 1996 when then-President Clinton designated over 1.7 million acres of southern Utah as the Grand Staircase–Escalante National Monument. Figure 1.2 shows the state's major coal seams and active mines.

Figure 1.2
Utah Coal Seams and Active Mines
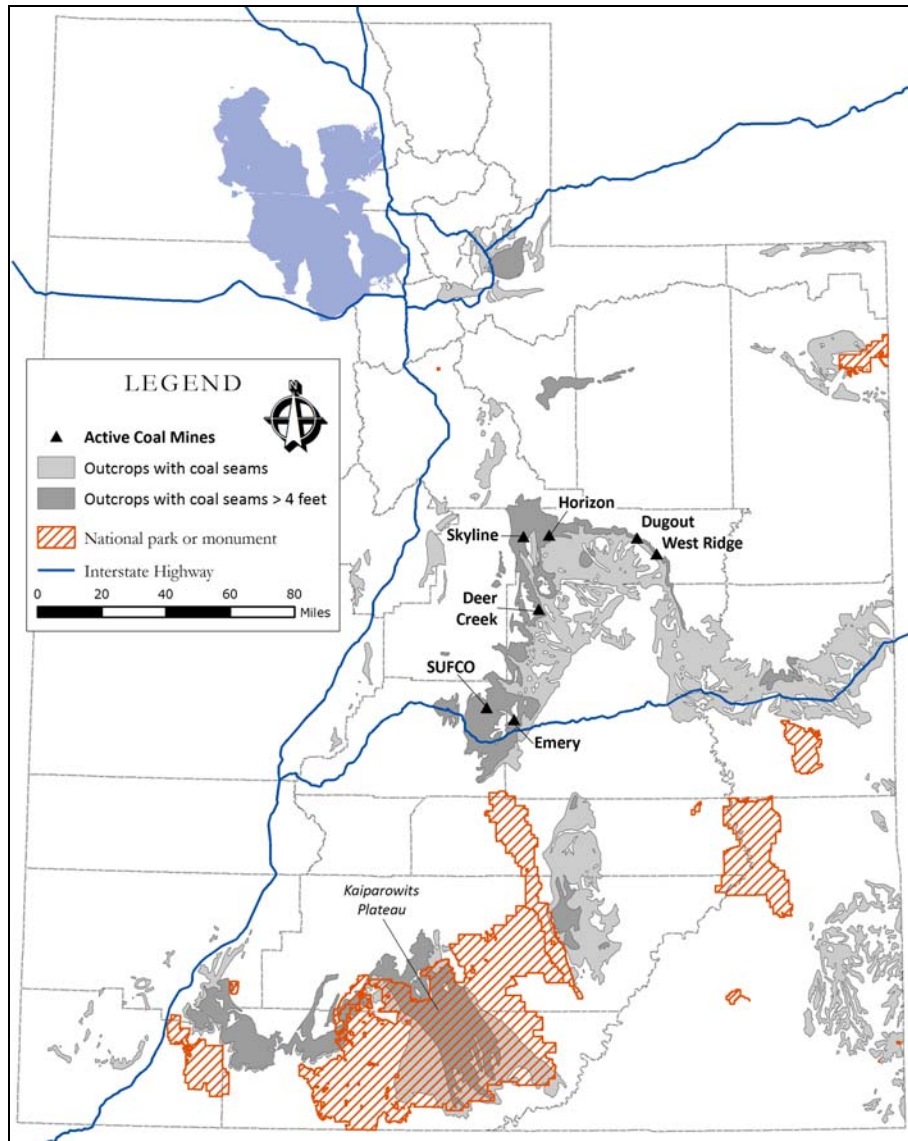
Source: Bureau of Economic and Business Research and Utah Automated Geographic Reference Center.

1.1.1.2 Production

By the end of 2008 cumulative coal production in Utah had surpassed 1 billion tons.[2] To put this in perspective, consider that in 2008 alone the U.S. produced almost 20 percent *more* than Utah's entire historical production through 2008, while Wyoming produced an amount equal to almost half of Utah's cumulative production.

The distribution of Utah's coal production is historically and presently concentrated in Carbon, Emery, and Sevier counties. Between 1870 and 1959, 78 percent of the coal produced in Utah came from Carbon County. Carbon County's share of total coal production since 1960 fell to 27

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[2] "Cumulative coal production" is the sum of all coal produced in Utah since 1870.

percent as production greatly increased in Emery and Sevier counties. There is presently no coal production outside of these three counties, which collectively account for 99 percent of all the coal ever mined in Utah.

Figure 1.3 shows Utah coal production since 1870. A rapid increase in production is seen just prior to World War I, with production levels peaking near the end of the conflict. The subsequent slowdown during the 1920s, given the rapid economic growth taking place in the U.S. at the time, might best be described as a return to peacetime market conditions. Production was tempered during the 1930s by the Great Depression, but strongly spurred on just before and during World War II. In the succeeding 25 years, coal lost ground in every major market except electric power generation. Between the early 1970s and the early 1990s, production growth was interrupted only by national recessions. Production in 2008 was 24.3 million tons—near the most recent 15-year average of 25.3 million tons and well above the most productive year of the 1980s (17.1 million tons in 1989). The rapid growth during this time period has leveled off in recent years.

Figure 1.3
Utah Coal Production Since 1870
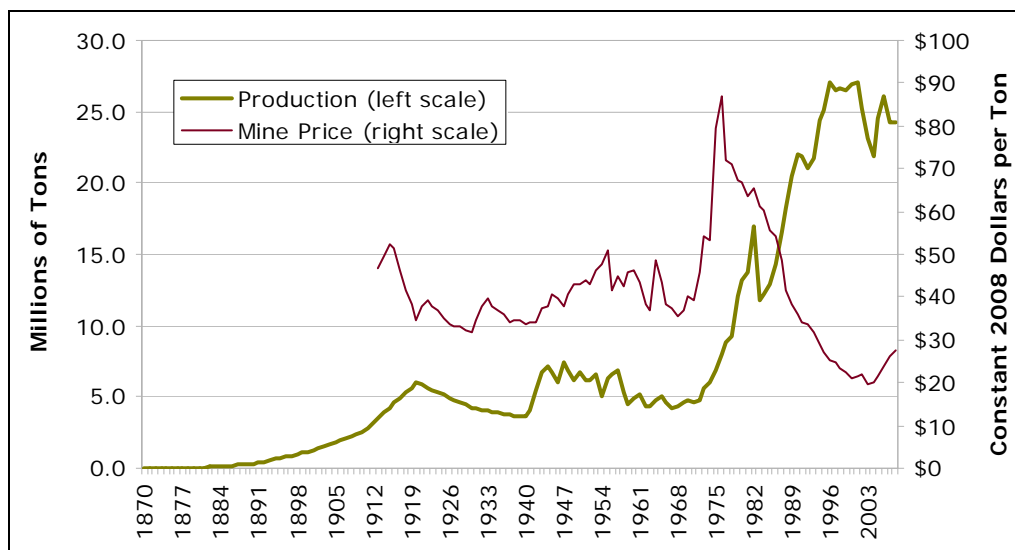
Note: Production figures prior to 1940 are decadal. "Mine Price" is the price of coal at the mine and excludes transportation charges.
Sources: Bureau of Economic and Business Research, A Brief History of the Utah Coal Industry*, 1977 (for data through 1960); Utah Geological Survey,* Utah Energy and Mineral Statistics *(for data since 1960).*

1.1.2 Markets

Coal-fired generation now accounts for 50 percent of U.S. net electricity generation. If coal-fired electricity generation is important nationally, it is much more so in Utah. In 2008, coal-fired generation originating in Utah produced 38 out of a total 46.6 BKWH of net electricity—82 percent of net generation. Though this is well above the U.S. average, it's actually a step down from the period of 1980–2005, when coal averaged 94 percent of generation. This recent departure is not because coal-based generation has decreased, but because the share of gas-fired generation has increased faster than total generation. Between 2005 and 2008, gas-fired generation increased its share from 3 percent (1.2 BKWH) to 16 percent (7.4 BKWH). Figure 1.4 shows the shares by energy source of Utah's electric power generation since 1960.

Figure 1.4
Fuel Source Composition of Utah Electric Power Generation
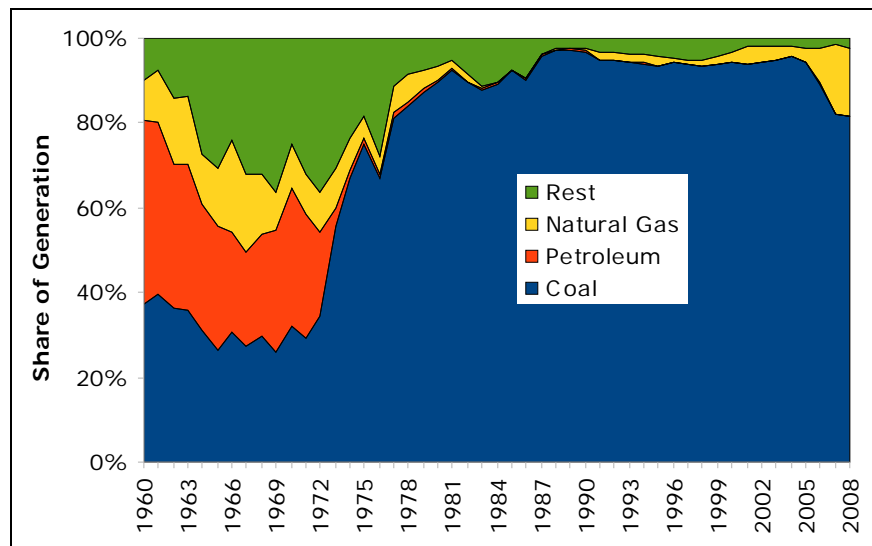
Note: Includes power generated by electric utilities and by non-utilities.
Source: Utah Geological Survey, Utah Energy and Mineral Statistics.

1.1.3 Challenges

Apart from any hidden costs ("negative externalities") arising, for example, from the pollutants emitted as a combustion byproduct, coal-fired generation is among the least expensive means for producing electricity. Of critical importance to Utah's coal industry in the future is the extent to which efforts to internalize some of coal's negative externalities are successful.

Within the last several years there were four new coal-fired power units still planned for construction in Utah: An 86-megawatt addition to Deseret Power's 500 MW Bonanza power plant near Vernal, a 900 MW addition to two existing 900 MW units at the Intermountain Power Agency's (IPA) Intermountain Power Project (IPP) near Delta, a 400 MW addition to PacifiCorp's three-unit Hunter Plant near Castle Dale, and a 270 MW unit at a new plant in Sigurd. These four proposals have been intensely challenged on the basis of their potential environmental impacts—mainly greenhouse gas emissions and traditional air pollution—and the economic uncertainty arising out of a looming but highly unsettled regime for regulating CO_2.

1.1.4 Options for Coal-Based Electricity Generation

The most important barrier to further growth in coal-fired generation is the cost of reducing emissions of those pollutants traditionally regulated by the Clean Air Act and those that might be, under a looming but as yet unknown regime for limiting emissions of greenhouse gases like CO_2. As the challenges to current proposals show, even the possibility of such limits can hold up new coal-fired generation. Provided the demand for coal stays closely tied to the demand for electricity, the prospects for coal mining will be linked to how readily coal-based power generation can adapt, if necessary, to accommodate more stringent emissions requirements.

While a substantial charge for CO_2 would decrease the competitiveness of coal-fired electricity generation, provided carbon capture and sequestration turns out to be a viable process there ap-

pear to be several options available that would allow Utah to continue to lean on coal for a substantial portion of its energy needs.

1.2 Economic Impacts

Coal production in Utah generates economic impacts because it is classified as either export base or import substitution production. Most Utah coal is used by power plants that in turn sell electricity to customers in Utah and other states. Because Utah has coal-fired power plants, it does not have to purchase electricity from out-of-state producers. This means that coal production in Carbon, Emery, and Sevier counties generates economic impacts for the producing counties as well as for the state as a whole. In addition to the jobs and income generated by the coal operators (termed "direct impacts"), other firms supply equipment and services to the coal producers. Some of these firms employ people who reside in the coal counties or elsewhere in Utah, and these are categorized as "indirect impacts." Then, all of the jobs (direct and indirect) generate incomes that support households which in turn demand goods and services, some of which are produced in the coal-producing counties or elsewhere in Utah (termed "induced impacts"). All of these economic impacts generate tax revenues and support a larger population than would otherwise be possible. Of course, a larger population demands more services (police, sanitation, education, etc.) as well as infrastructure (roads, water, sewer, etc.), and these are generally provided by state and local government.

The economic and demographic impacts of coal production for 2007 and for scenarios of production from 2008 through 2030 have been evaluated here using the REMI 29-region, 23-sector model built for Utah. The population and economy of each county in Utah are represented in the model. The sum of the impacts of all counties is equivalent to the state impact. Direct economic activity for 2007 and beyond was imputed to the coal-producing counties according to actual production levels in 2007 and scenarios into the future. For this study, the RIMS II and IMPLAN models were also used to calibrate state-level parameters.

The detailed 2007 employment, population, earnings, and local and state government revenue impacts are shown in the scenario analysis tables, presented later in this document. Note that 2007 impacts are identical in each scenario. This is because they are based on historical data.

The 2007 summary impacts of coal production are shown in Table 1.1. In 2007, 24.3 million tons of coal were produced in Utah. The county distribution, in millions of tons, was 11.8 in Carbon, 5.8 from Emery, and 6.7 from Sevier. Estimated direct employment at the mines and their facilities was 1,888, with employment of 770 in Carbon, 753 in Emery, and 360 in Sevier.

Total employment impacts (direct plus all others) of 2007 coal production are estimated to be 4,703, which includes the above-mentioned 1,888 in direct employment plus 2,815 additional jobs, a ratio of 2.5-to-1. Not surprisingly, most of these employment impacts (4,017, or 85 percent of the total) are concentrated in the coal counties, with 686 in the rest of the state. About half of the employment impacts in the coal counties are estimated to have occurred in Carbon County. On a statewide basis, 42 percent of employment impacts were in Carbon County, 28 percent in Emery County, 16 percent in Sevier County, and 15 percent in the rest of the state.

Table 1.1 Coal Production Summary Impacts, 2007 (Dollar Amounts in Millions of Current Dollars)					
	Employment	**Population**	**Earnings**	**Local Revenue**	**State Revenue**
Carbon County	1,957	2,936	$62.6	$0.3	$4.8
Emery County	1,309	1,964	$47.4	$0.1	$3.5
Sevier County	751	1,127	$18.2	$0.1	$1.4
Coal Counties	4,017	6,026	$128.2	$0.5	$9.8
Rest of State	686	1,029	$68.1	$0.3	$5.3
Total State	4,703	7,055	$196.3	$0.8	$15.0
Share of Total					
	Employment	**Population**	**Earnings**	**Local Revenue**	**State Revenue**
Carbon County	41.6%	41.6%	31.9%	40.6%	31.9%
Emery County	27.8%	27.8%	24.1%	12.3%	23.5%
Sevier County	16.0%	16.0%	9.3%	11.8%	9.4%
Coal Counties	85.4%	85.4%	65.3%	64.7%	64.8%
Rest of State	14.6%	14.6%	34.7%	35.3%	35.2%
Total State	100%	100%	100%	100%	100%

Notes: Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.
Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Population impacts associated with this additional economic activity totaled 7,055 persons in 2007. This is the additional population supported by the economic impact of coal mining in 2007. This includes population impacts of 2,936 in Carbon County, 1,964 in Emery County, 1,127 in Sevier County, and 1,029 in the rest of the state.

Nominal earnings impacts for 2007 are estimated to be $196.3 million for the state. These were distributed within the state as follows: $62.6 million in Carbon County, $47.4 million in Emery County, $18.2 million in Sevier County, and $68.1 million in the rest of the state.

An estimated $0.8 million in local tax revenue in 2007 is associated with these earnings impacts. They are estimated to have been distributed as follows: $0.3 million for Carbon County, $0.1 million for both Emery and Sevier counties, and $0.3 million for the rest of the state. State tax revenues generated by these earnings impacts are an estimated $15.0 million; $4.8 million generated in Carbon County, $3.5 million in Emery County, $1.4 million in Sevier County, and $5.3 million for the rest of the state.

1.3 Production Scenarios

The future of coal mining in Utah is dependent on a complex set of economic, geological, technical, and political factors. Electric utilities consume the largest share of coal produced in Utah, and this should continue to be the case into the foreseeable future. According to the Energy Information Administration, coal will continue to provide the largest share of energy for U.S. electricity generation, even as alternative energy sources are developed.[3] Assuming that Utah mining

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[3] Energy Information Administration. 2009. "Electricity Demand," from *Annual Energy Outlook 2009 with Projections to 2030*, available at http://www.eia.doe.gov/oiaf/aeo/electricity.html.

**Table 1.2a
Utah Coal Production, 2000–2030:
Low Scenario**
(Thousands of Tons)

Year	Carbon	Emery	Sevier	Subtotal	Other	Total
2000	4,615	16,399	5,906	26,920	0	26,920
2001	5,689	14,334	7,001	27,024	0	27,024
2002	6,007	11,692	7,600	25,299	0	25,299
2003	7,091	8,852	7,126	23,069	0	23,069
2004	8,772	5,477	7,568	21,817	0	21,817
2005	9,618	7,372	7,567	24,556	0	24,556
2006	11,560	6,662	7,908	26,131	0	26,131
2007	11,811	5,765	6,712	24,288	0	24,288
2008	11,400	5,700	6,900	24,000	0	24,000
2009	10,500	6,000	7,000	23,500	0	23,500
2010	10,500	6,000	7,000	23,500	0	23,500
2011	10,500	6,000	7,000	23,500	0	23,500
2012	10,500	7,000	7,000	24,500	1,000	25,500
2013	10,500	7,000	7,000	24,500	1,000	25,500
2014	10,500	8,000	7,000	25,500	2,000	27,500
2015	8,500	9,000	6,000	23,500	2,000	25,500
2016	6,500	9,000	6,000	21,500	2,000	23,500
2017	4,500	10,000	6,000	20,500	2,000	22,500
2018	2,500	9,000	6,000	17,500	2,000	19,500
2019	2,500	9,000	6,000	17,500	2,000	19,500
2020	1,500	9,000	6,000	16,500	2,000	18,500
2021	500	8,000	6,000	14,500	2,000	16,500
2022	500	8,000	6,000	14,500	2,000	16,500
2023	500	8,000	5,000	13,500	2,000	15,500
2024	500	8,000	5,000	13,500	2,000	15,500
2025	500	8,000	5,000	13,500	2,000	15,500
2026	500	8,000	5,000	13,500	2,000	15,500
2027	500	7,000	5,000	12,500	2,000	14,500
2028	500	7,000	5,000	12,500	2,000	14,500
2029	500	7,000	5,000	12,500	2,000	14,500
2030	500	7,000	5,000	12,500	2,000	14,500

Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

operations remain competitive relative to other potential coal and alternative energy sources, mines should continue to produce to at least 2030, although there is some uncertainty.

The Utah Geological Survey (UGS) prepared a set of coal projection scenarios to be used in this study: Low, Middle, and High production (Tables 1.2a–1.2c). In all three scenarios, the UGS assumed that there is a continued depletion at existing mines. In the Low Scenario, new mines have difficulty with permitting, and demand declines due to the development of affordable alternative fuels and increased greenhouse gas regulation. Growth is further restricted in this scenario as export markets do not develop. In the Middle Scenario, new mines are permitted and begin to produce coal, but demand growth is slow as older electric generation plants are shut down and not replaced. The High Scenario also assumes the development of new reserves, but, in addition, increasing demand. This increase in demand is from three sources: 1) successful carbon-capture technology and, in consequence, new power plants; 2) successful implementation of coal-to-liquids and coal-to-gas plants; and 3) increasing exports to the Pacific Rim.

All three scenarios follow the same assumed production path from 2008 through 2014, with annual production declining from 24.0 million tons in 2008 to 23.5 million tons each year from 2009 through 2011. Production increases to 25.5 million tons in both 2012 and 2013, and then increases further to 27.5 million tons in 2014. All three scenarios decline from 2015 through 2019, with the Middle and High scenarios taking the same path to reach 23.5 million tons and the Low Scenario declining to 19.5 million tons. From 2020 to 2030, the growth paths diverge, with the Low Scenario continuing to decline to reach 14.5 million tons annually for each year from 2027 through 2030 and the Middle Scenario declining to 20.5 million tons annually over the same period. In the High Scenario, production also declines from 2014 to a level of 22.5 million tons in 2018, but then increases to a constant annual production of 30.5 million tons from 2022 to 2026. In this scenario, annual production drops to 29.5 million tons for the remainder of the projection period (2027–2030) (Figure 1.5).

Table 1.2b
Utah Coal Production, 2000–2030:
Middle Scenario
(Thousands of Tons)

Year	Carbon	Emery	Sevier	Subtotal	Other	Total
2000	4,615	16,399	5,906	26,920	0	26,920
2001	5,689	14,334	7,001	27,024	0	27,024
2002	6,007	11,692	7,600	25,299	0	25,299
2003	7,091	8,852	7,126	23,069	0	23,069
2004	8,772	5,477	7,568	21,817	0	21,817
2005	9,618	7,372	7,567	24,556	0	24,556
2006	11,560	6,662	7,908	26,131	0	26,131
2007	11,811	5,765	6,712	24,288	0	24,288
2008	11,400	5,700	6,900	24,000	0	24,000
2009	10,500	6,000	7,000	23,500	0	23,500
2010	10,500	6,000	7,000	23,500	0	23,500
2011	10,500	6,000	7,000	23,500	0	23,500
2012	10,500	7,000	7,000	24,500	1,000	25,500
2013	10,500	7,000	7,000	24,500	1,000	25,500
2014	10,500	8,000	7,000	25,500	2,000	27,500
2015	9,500	9,000	6,000	24,500	2,000	26,500
2016	8,500	9,000	6,000	23,500	2,000	25,500
2017	6,500	10,000	6,000	22,500	2,000	24,500
2018	4,500	10,000	6,000	20,500	2,000	22,500
2019	4,500	11,000	6,000	21,500	2,000	23,500
2020	3,500	12,000	6,000	21,500	2,000	23,500
2021	2,500	12,000	6,000	20,500	2,000	22,500
2022	2,500	12,000	6,000	20,500	2,000	22,500
2023	2,500	12,000	5,000	19,500	2,000	21,500
2024	2,500	12,000	5,000	19,500	2,000	21,500
2025	2,500	12,000	5,000	19,500	2,000	21,500
2026	2,500	12,000	5,000	19,500	2,000	21,500
2027	2,500	11,000	5,000	18,500	2,000	20,500
2028	2,500	11,000	5,000	18,500	2,000	20,500
2029	2,500	11,000	5,000	18,500	2,000	20,500
2030	2,500	11,000	5,000	18,500	2,000	20,500

Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

Table 1.2c
Utah Coal Production, 2000–2030:
High Scenario
(Thousands of Tons)

Year	Carbon	Emery	Sevier	Subtotal	Other	Total
2000	4,615	16,399	5,906	26,920	0	26,920
2001	5,689	14,334	7,001	27,024	0	27,024
2002	6,007	11,692	7,600	25,299	0	25,299
2003	7,091	8,852	7,126	23,069	0	23,069
2004	8,772	5,477	7,568	21,817	0	21,817
2005	9,618	7,372	7,567	24,556	0	24,556
2006	11,560	6,662	7,908	26,131	0	26,131
2007	11,811	5,765	6,712	24,288	0	24,288
2008	11,400	5,700	6,900	24,000	0	24,000
2009	10,500	6,000	7,000	23,500	0	23,500
2010	10,500	6,000	7,000	23,500	0	23,500
2011	10,500	6,000	7,000	23,500	0	23,500
2012	10,500	7,000	7,000	24,500	1,000	25,500
2013	10,500	7,000	7,000	24,500	1,000	25,500
2014	10,500	8,000	7,000	25,500	2,000	27,500
2015	9,500	9,000	6,000	24,500	2,000	26,500
2016	8,500	9,000	6,000	23,500	2,000	25,500
2017	6,500	10,000	6,000	22,500	2,000	24,500
2018	4,500	10,000	6,000	20,500	2,000	22,500
2019	4,500	11,000	6,000	21,500	2,000	23,500
2020	4,500	15,000	6,000	25,500	2,000	27,500
2021	3,500	15,000	6,000	24,500	2,000	26,500
2022	4,500	18,000	6,000	28,500	2,000	30,500
2023	5,500	18,000	5,000	28,500	2,000	30,500
2024	5,500	18,000	5,000	28,500	2,000	30,500
2025	5,500	18,000	5,000	28,500	2,000	30,500
2026	5,500	18,000	5,000	28,500	2,000	30,500
2027	5,500	17,000	5,000	27,500	2,000	29,500
2028	5,500	17,000	5,000	27,500	2,000	29,500
2029	5,500	17,000	5,000	27,500	2,000	29,500
2030	5,500	17,000	5,000	27,500	2,000	29,500

Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

Figure 1.5
Utah Coal Production, 2000–2030
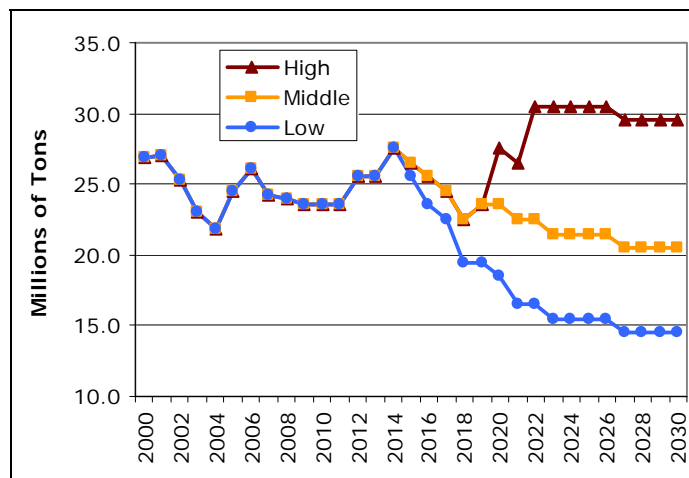
Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

In the last year of historical data (2007), Carbon County accounted for nearly half (49 percent) of the coal produced in the state, with Sevier County accounting for 28 percent and Emery County accounting for 24 percent. In all three scenarios, Carbon County production falls beneath that of Emery and, in two out of three, also below Sevier. In all scenarios, Emery becomes the largest coal-producing county in the state, and a smaller amount of coal production (2.0 million tons annually) is developed outside the current three-county coal region (Figures 1.6a–1.6c).

Figure 1.6a
Utah Coal Production, 2000–2030: Low Scenario
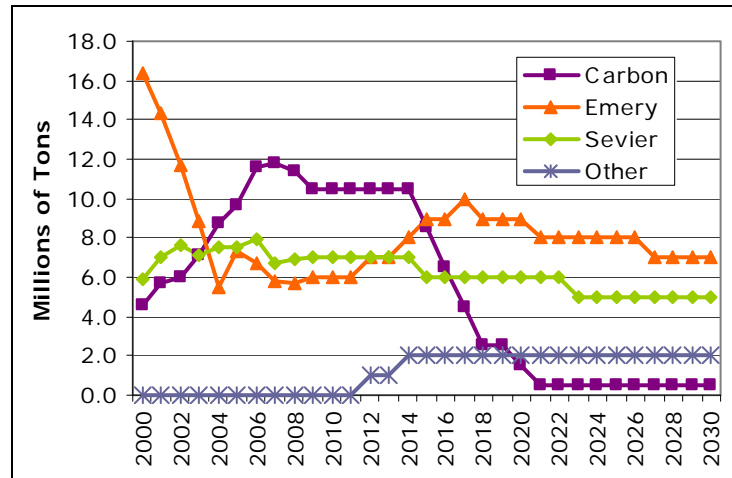
Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

Figure 1.6b
Utah Coal Production, 2000–2030: Middle Scenario
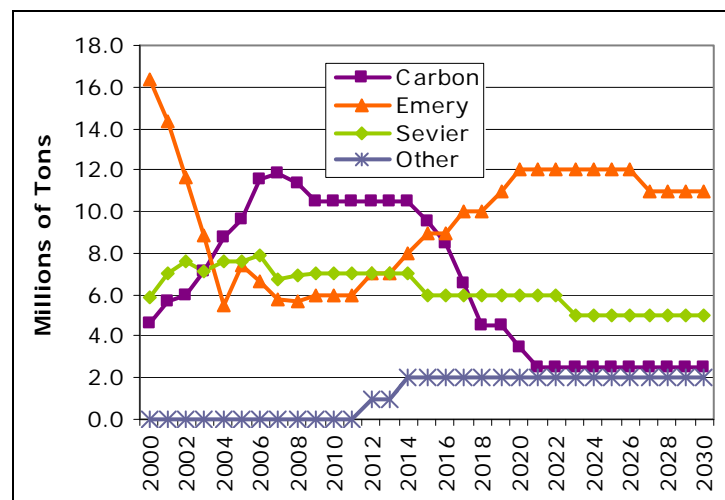
Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

Figure 1.6c
Utah Coal Production, 2000–2030: High Scenario

Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

In all three scenarios, Carbon County coal production is constant at an annual rate of 10.5 million tons from 2009 through 2014. In the Low Scenario, production collapses to 0.5 million tons by 2021 and remains there throughout the rest of the projection period. In the Middle Scenario, Carbon County production also declines, but maintains a steady output at 2.5 million tons annually from 2021 through 2030. In the High Scenario, coal production declines to 3.5 million tons in Carbon County in 2021, then rebounds to a steady annual output of 5.5 million tons from 2023 through 2030 (Figure 1.7).

Figure 1.7
Carbon County Coal Production, 2000–2030

Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

For Emery County, all scenarios follow the same path through 2017 to increase steadily to annual production of 10.0 million tons. In the Low Scenario, production declines to reach 7.0 million tons for each year from 2027 through 2030. The Middle Scenario increases to plateau at 12.0 million tons from 2020 through 2026, then declines to a steady annual production of 11.0 million tons for the duration of the projection. In the High Scenario, Emery County coal production rises to 18.0 million tons in the years 2022 through 2026, then declines to an annual rate of 17.0 million tons from 2027 through 2030 (Figure 1.8).

Figure 1.8
Emery County Coal Production, 2000–2030
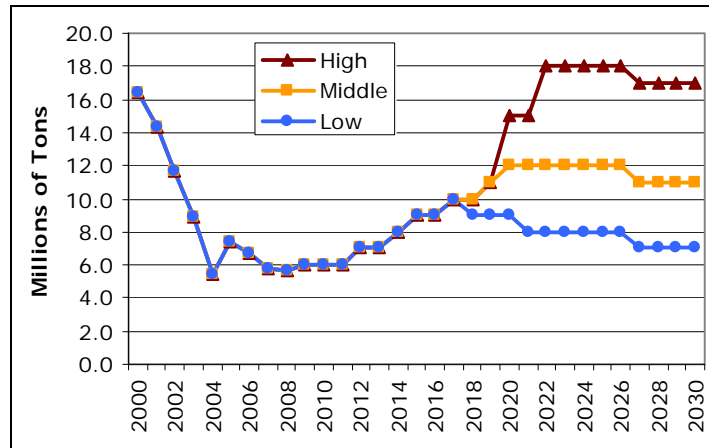
Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

Sevier County has an identical coal production projection in all three scenarios. Production declines in three steps, from 7.0 million tons annually in the years 2009 through 2014, then 6.0 million tons annually from 2015 through 2022, and finally to 5.0 million tons annually from 2023 through the end of the projection period (Figure 1.9).

Figure 1.9
Sevier County Coal Production, 2000–2030
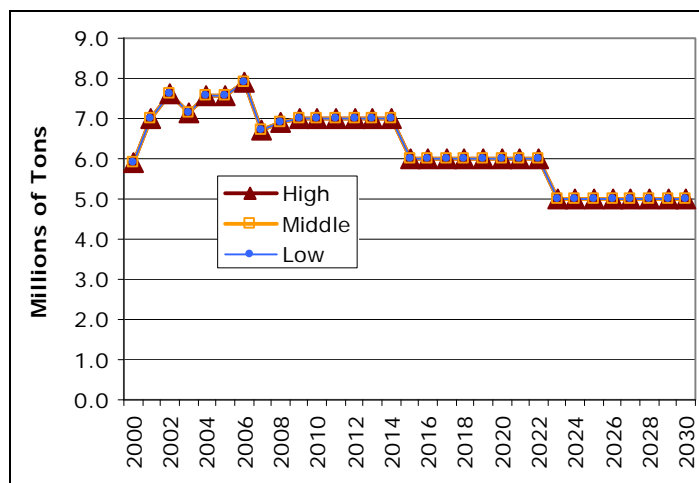
Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

1.4 Impacts of Production Scenarios

Summary impact results for each of the three scenarios for all areas are shown in Tables 1.3a through 1.5b.

Statewide employment impacts rise from 4,703 in 2007 to 6,320 in 2014 for all scenarios. Both the Low and Middle scenarios then turn down to reach 3,524 (Low Scenario) and 4,430 (Middle Scenario) in 2030. The High Scenario increases to a peak of 6,298 in 2022, then declines to reach 5,775 in 2030. These are shown in Figure 1.10.

In the Low Scenario, population impacts follow a path of increase from 7,055 in 2007 to eventually peak at 9,744 in 2020, and then decline to reach 8,524 in 2030. The Middle Scenario generally increases to peak in 2024 at 10,665, then declines to 10,158 in 2030. The High Scenario mostly shows growth throughout the projection period, terminating at 12,316 in 2030.

Nominal earnings, local tax revenue, and state tax revenue impacts are higher in 2030 than in 2007 for all three scenarios. From 2007 to 2030, nominal earnings impacts increase from $196.3 million to $426.6 million in the Low Scenario, $542.8 million in the Middle Scenario, and $719.4 million in the High Scenario. Over the same period, nominal local government revenue impacts increase from $0.8 million to $1.6 million in the Low Scenario, $2.0 million in the Middle Scenario, and $2.6 million in the High Scenario. Nominal state government revenue impacts increase from $15.0 million in 2007 to 2030 levels of $32.7 million in the Low Scenario, $36.5 million in the Middle Scenario, and $55.1 million in the High Scenario.

Figure 1.10
State Employment Impacts, 2007–2030
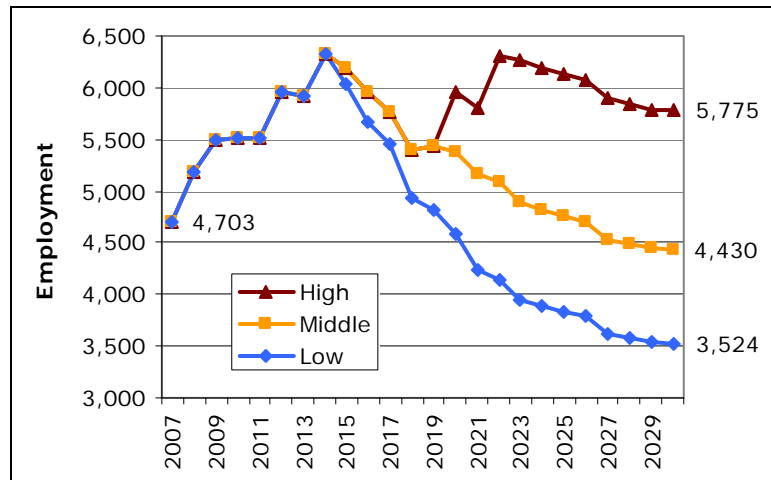
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

1.4.1 Carbon County Scenario Impacts

Summary impact results for each of the three scenarios for Carbon County are also shown in Tables 1.3a through 1.5b.

Impacts follow the general path of the coal production scenarios. In all scenarios, coal production in Carbon County declines from 2007 to 2030. In 2007, Carbon County accounted for nearly half of the coal produced in the state, with Sevier County accounting for 28 percent and Emery County accounting for 24 percent. In all three scenarios, Carbon County production falls beneath that of Emery and, in two out of three, also below Sevier. In all scenarios, Emery becomes the largest coal-producing county in the state, and a smaller amount of coal production is developed outside the current three-county coal region.

Carbon County employment impacts, shown in Figure 1.11, fall from 1,957 in 2007 to reach 701 in the Low Scenario, 977 in the Middle Scenario, and 1,378 in the High Scenario in 2030.

In the Low Scenario, population impacts follow a path of increase from 2,936 in 2007 to eventually peak in 2017 at 3,368, and then decline to 2,344 in 2030. The Middle Scenario generally increases to peak in 2019 at 3,515, then declines to 2,967 in 2030. The High Scenario mostly shows slow growth throughout the projection period, terminating at 3,758 in 2030.

Nominal earnings, local tax revenue, and state tax revenue impacts are higher in 2030 than 2007 for all three scenarios. There is a similar pattern of increasing until 2014, then declining until 2021, then again increasing until 2030. From 2007 to 2030, nominal earnings impacts increase from $62.6 million to $65.5 million in the Low Scenario, $91.9 million in the Middle Scenario, and $130.7 million in the High Scenario. Over the same period, nominal local government revenue impacts remain flat at $0.3 million in the Low Scenario, while increasing to $0.5 million in the Middle Scenario and $0.7 million in the High Scenario. Nominal state government revenue impacts increase from $4.8 million in 2007 to 2030 levels of $5.0 million in the Low Scenario, $7.0 million in the Middle Scenario, and $10.0 million in the High Scenario.

Figure 1.11
Carbon County Employment Impacts, 2007–2030
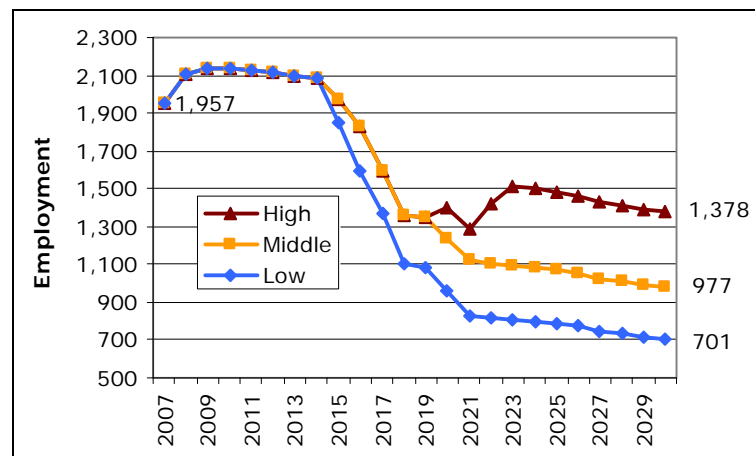
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

1.4.2 Emery County Scenario Impacts

Summary impact results for each of the three scenarios for Emery County are also shown in Tables 1.3a through 1.5b.

The impacts measured here follow the general path of the coal production scenarios. Coal production in Emery County declines from 2007 to 2030 in the Low Scenario, increases somewhat in the Middle Scenario, and increases in the High Scenario. In all scenarios, Emery becomes the largest coal-producing county in the state.

Emery County employment impacts follow a pattern of increasing to a peak and then declining in all scenarios, as shown in Figure 1.12. From an initial employment impact of 1,309 in 2007, employment peaks in 2017 in the Low Scenario at 1,812, in 2020 in the Middle Scenario at 1,940, and in 2022 in the High Scenario at 2,501. While all scenarios decline from these peaks, both the Middle and High Scenarios result in higher employment impacts in 2030 than in 2007. Employment impacts for 2030 are 1,220 in the Low Scenario, 1,616 in the Middle Scenario, and 2,214 in the High Scenario.

Figure 1.12
Emery County Employment Impacts, 2007–2030
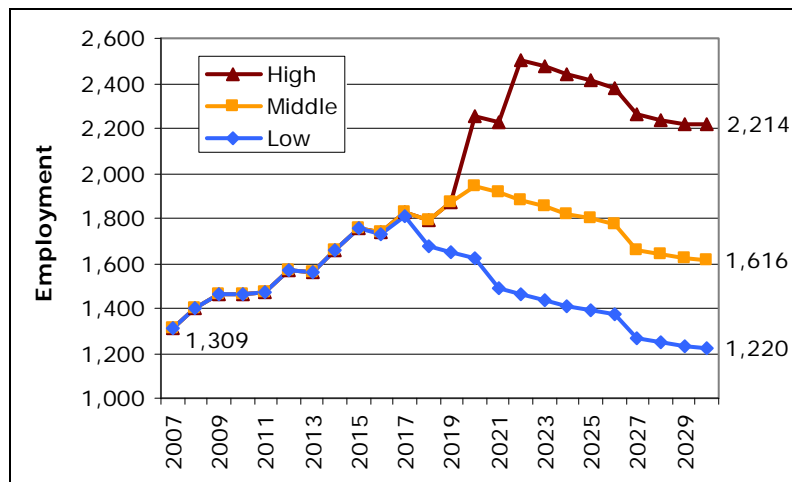
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Population impacts for Emery County are higher in 2030 than in 2007 for all three scenarios. These population impacts generally increase from 2007 to 2019 in all three scenarios, growing from 1,964 in 2007 to 2,475 in the Low Scenario and to 2,804 in both the Middle and High Scenarios. From 2019 to 2030, population impacts decline to reach 2,186 in the Low Scenario, stay mostly flat to reach 2,720 in the Middle Scenario, and increase to 3,457 in the High Scenario.

Nominal earnings, local tax revenue, and state tax revenue impacts are higher in 2030 than 2007 for all three scenarios for Emery County. From 2007 to 2030, nominal earnings impacts increase from $47.4 million to $132.1 million in the Low Scenario, $175.1 million in the Middle Scenario, and $240.2 million in the High Scenario. Over the same period, nominal local government revenue impacts increase from $0.1 million to $0.3 million in the Low Scenario, $0.4 million in the Middle Scenario, and $0.5 million in the High Scenario. Nominal state government revenue impacts increase from $3.5 million in 2007 to 2030 levels of $9.9 million in the Low Scenario, $13.1 million in the Middle Scenario, and $17.9 million in the High Scenario.

1.4.3 Sevier County Scenario Impacts

Summary impact results for each of the three scenarios for Sevier County are also shown in Tables 1.3a through 1.5b.

Coal production drives the impacts measured here. All three scenarios are nearly identical for Sevier County, with coal production declining from 2007 to 2030. Employment impacts rise from 751 in 2007 to 1,006 in 2009, then decline to reach roughly 552 in 2030, as shown in Figure 1.13. Population impacts follow the same general path, increasing from 1,127 in 2007 to 1,509 in 2009, then declining to about 1,208 in 2030. Nominal earnings, local tax revenue, and state tax revenue impacts are all higher in 2030 than in 2007 for all three scenarios, following an uneven path through time. Nominal earnings impacts increase from $18.2 million in 2007 to approximately $43.0 million in 2030. Nominal local government revenue impacts increase from $0.1 million in 2007 to $0.2 million in 2030. Nominal state government revenue impacts increase from $1.4 million in 2007 to about $3.3 million in 2030.

Figure 1.13
Sevier County Employment Impacts, 2007–2030
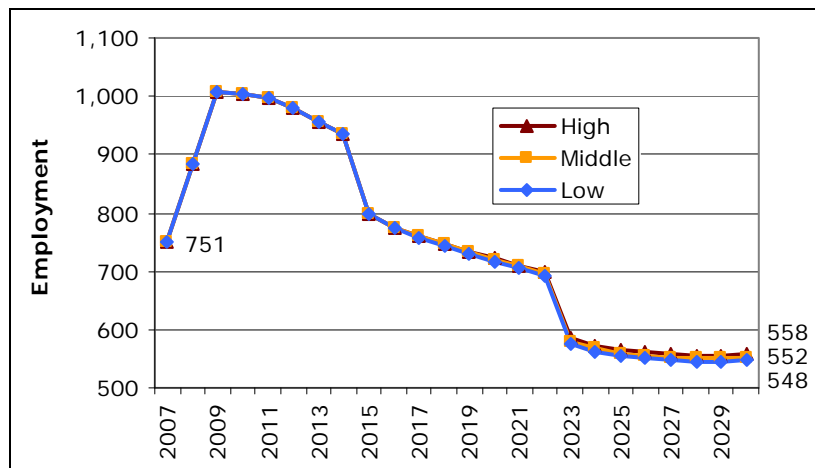
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Table 1.3a
Summary Impacts: Low Scenario
(Dollar Amounts are Millions of Current Dollars)

	2007					2030				
	Employment	Population	Earnings	Local Revenue	State Revenue	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	1,957	2,936	$62.6	$0.31	$4.8	701	2,344	$65.5	$0.33	$5.0
Emery County	1,309	1,964	$47.4	$0.09	$3.5	1,220	2,186	$132.1	$0.26	$9.9
Sevier County	751	1,127	$18.2	$0.09	$1.4	548	1,200	$42.7	$0.21	$3.3
Coal Counties	4,017	6,026	$128.2	$0.50	$9.8	2,469	5,730	$240.3	$0.81	$18.2
Rest of State	686	1,029	$68.1	$0.27	$5.3	1,055	2,794	$186.3	$0.75	$14.5
Total State	4,703	7,055	$196.3	$0.77	$15.0	3,524	8,524	$426.6	$1.55	$32.7

Share of Total	Employment	Population	Earnings	Local Revenue	State Revenue	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	41.6%	41.6%	31.9%	40.6%	31.9%	19.9%	27.5%	15.4%	21.1%	15.3%
Emery County	27.8%	27.8%	24.1%	12.3%	23.5%	34.6%	25.6%	31.0%	17.0%	30.2%
Sevier County	16.0%	16.0%	9.3%	11.8%	9.4%	15.6%	14.1%	10.0%	13.8%	10.2%
Coal Counties	85.4%	85.4%	65.3%	64.7%	64.8%	70.1%	67.2%	56.3%	51.9%	55.7%
Rest of State	14.6%	14.6%	34.7%	35.3%	35.2%	29.9%	32.8%	43.7%	48.1%	44.3%
Total State	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: Pink shading indicates the area's share of the category is projected to be smaller in 2030 than in 2007; green shading indicates it is projected to be larger.
Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Table 1.3b
Summary Impacts—Changes from 2007 to 2030: Low Scenario
(Dollar Amounts are Millions of Current Dollars)

	Levels					Percentages				
	Employment	Population	Earnings	Local Revenue	State Revenue	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	−1,256	−592	$2.9	$0.01	$0.2	−64.2%	−20.1%	4.6%	4.6%	4.6%
Emery County	−89	223	$84.7	$0.17	$6.3	−6.8%	11.3%	178.6%	178.6%	178.6%
Sevier County	−203	74	$24.5	$0.12	$1.9	−27.0%	6.5%	134.3%	134.3%	134.3%
Coal Counties	−1,548	−296	$112.0	$0.31	$8.4	−38.5%	−4.9%	87.4%	61.4%	86.6%
Rest of State	369	1,765	$118.2	$0.47	$9.2	53.8%	171.5%	173.7%	173.7%	173.7%
Total State	−1,179	1,470	$230.2	$0.78	$17.6	−25.1%	20.8%	117.3%	101.0%	117.2%

Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Table 1.4a
Summary Impacts: Middle Scenario
(Dollar Amounts are Millions of Current Dollars)

	2007					2030				
	Employment	Population	Earnings	Local Revenue	State Revenue	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	1,957	2,936	$62.6	$0.31	$4.8	977	2,967	$91.9	$0.46	$7.0
Emery County	1,309	1,964	$47.4	$0.09	$3.5	1,616	2,720	$175.1	$0.35	$13.1
Sevier County	751	1,127	$18.2	$0.09	$1.4	552	1,208	$43.0	$0.21	$3.3
Coal Counties	4,017	6,026	$128.2	$0.50	$9.8	3,145	6,895	$310.0	$1.02	$23.5
Rest of State	686	1,029	$68.1	$0.27	$5.3	1,285	3,263	$232.9	$0.93	$18.1
Total State	4,703	7,055	$196.3	$0.77	$15.0	4,430	10,158	$542.8	$1.96	$41.6
Share of Total	**Employment**	**Population**	**Earnings**	**Local Revenue**	**State Revenue**	**Employment**	**Population**	**Earnings**	**Local Revenue**	**State Revenue**
Carbon County	41.6%	41.6%	31.9%	40.6%	31.9%	22.1%	29.2%	16.9%	23.5%	16.9%
Emery County	27.8%	27.8%	24.1%	12.3%	23.5%	36.5%	26.8%	32.3%	17.9%	31.5%
Sevier County	16.0%	16.0%	9.3%	11.8%	9.4%	12.5%	11.9%	7.9%	11.0%	8.0%
Coal Counties	85.4%	85.4%	65.3%	64.7%	64.8%	71.0%	67.9%	57.1%	52.4%	56.4%
Rest of State	14.6%	14.6%	34.7%	35.3%	35.2%	29.0%	32.1%	42.9%	47.6%	43.6%
Total State	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: Pink shading indicates the area's share of the category is projected to be smaller in 2030 than in 2007; green shading indicates it is projected to be larger.
Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Table 1.4b
Summary Impacts—Changes from 2007 to 2030: Middle Scenario
(Dollar Amounts are Millions of Current Dollars)

	Levels					Percentages				
	Employment	Population	Earnings	Local Revenue	State Revenue	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	−980	32	$29.3	$0.15	$2.2	−50.1%	1.1%	46.7%	46.7%	46.7%
Emery County	307	757	$127.7	$0.26	$9.5	23.5%	38.5%	269.3%	269.3%	269.3%
Sevier County	−199	82	$24.8	$0.12	$1.9	−26.5%	7.2%	135.7%	135.7%	135.7%
Coal Counties	−872	870	$181.7	$0.53	$13.7	−21.7%	14.4%	141.7%	105.3%	140.5%
Rest of State	599	2,234	$164.8	$0.66	$12.8	87.3%	217.1%	242.1%	242.1%	242.1%
Total State	−273	3,104	$346.5	$1.18	$26.5	−5.8%	44.0%	176.5%	153.6%	176.2%

Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Table 1.5a
Summary Impacts: High Scenario
(Dollar Amounts are Millions of Current Dollars)

	2007					2030				
	Employment	Population	Earnings	Local Revenue	State Revenue	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	1,957	2,936	$62.6	$0.31	$4.8	1,378	3,758	$130.7	$0.65	$10.0
Emery County	1,309	1,964	$47.4	$0.09	$3.5	2,214	3,457	$240.2	$0.48	$17.9
Sevier County	751	1,127	$18.2	$0.09	$1.4	558	1,218	$43.4	$0.22	$3.4
Coal Counties	4,017	6,026	$128.2	$0.50	$9.8	4,150	8,433	$414.3	$1.35	$31.3
Rest of State	686	1,029	$68.1	$0.27	$5.3	1,625	3,883	$305.1	$1.22	$23.7
Total State	4,703	7,055	$196.3	$0.77	$15.0	5,775	12,316	$719.4	$2.57	$55.1

Share of Total	Employment	Population	Earnings	Local Revenue	State Revenue	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	41.6%	41.6%	31.9%	40.6%	31.9%	23.9%	30.5%	18.2%	25.4%	18.2%
Emery County	27.8%	27.8%	24.1%	12.3%	23.5%	38.3%	28.1%	33.4%	18.7%	32.6%
Sevier County	16.0%	16.0%	9.3%	11.8%	9.4%	9.7%	9.9%	6.0%	8.4%	6.1%
Coal Counties	85.4%	85.4%	65.3%	64.7%	64.8%	71.9%	68.5%	57.6%	52.5%	56.9%
Rest of State	14.6%	14.6%	34.7%	35.3%	35.2%	28.1%	31.5%	42.4%	47.5%	43.1%
Total State	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: Pink shading indicates the area's share of the category is projected to be smaller in 2030 than in 2007; green shading indicates it is projected to be larger.
Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Table 1.5b
Summary Impacts—Changes from 2007 to 2030: High Scenario
(Dollar Amounts are Millions of Current Dollars)

	Levels					Percentages				
	Employment	Population	Earnings	Local Revenue	State Revenue	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	−579	823	$68.1	$0.34	$5.2	−29.6%	28.0%	108.7%	108.7%	108.7%
Emery County	905	1,494	$192.8	$0.39	$14.4	69.1%	76.1%	406.7%	406.7%	406.7%
Sevier County	−193	92	$25.1	$0.13	$2.0	−25.7%	8.1%	137.9%	137.9%	137.9%
Coal Counties	133	2,408	$286.0	$0.85	$21.6	3.3%	40.0%	223.0%	170.7%	221.1%
Rest of State	939	2,854	$237.0	$0.95	$18.4	136.9%	277.4%	348.2%	348.2%	348.2%
Total State	1,072	5,262	$523.0	$1.80	$40.0	22.8%	74.6%	266.4%	233.3%	265.9%

Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

1.5 Power Plant Impacts

No discussion of the economic impacts of Utah coal production would be complete without consideration of electricity generation from coal plants. Certainly these plants are, at present, the greatest source of demand for Utah coal. In 2007, a record volume of coal was delivered to electric utilities located in Utah. According to Michael Vanden Berg of the Utah Geological Survey, no new plants are expected to be built for the foreseeable future, so the demand should remain relatively flat.[4] Employment in Utah's coal-fired power plants (NAICS 221112) and annual coal production (in millions of tons) are shown in Figure 1.14. Employment in these power plants has remained around 1,100 recently.

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[4] Michael D. Vanden Berg, *Annual Review and Forecast of Utah Coal Production and Distribution—2007*, Circular 107, Utah Geological Survey, 2008.

Figure 1.14
Utah Coal Production and Power Plant Employment,
2000–2008
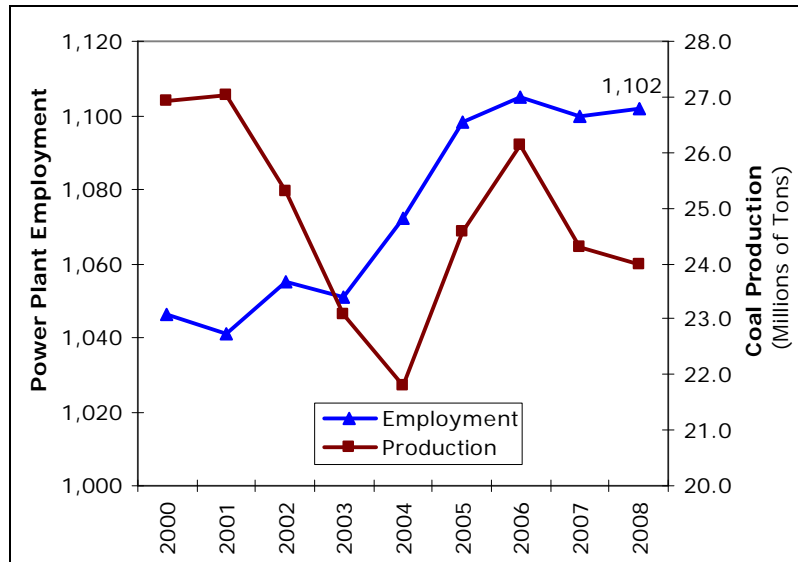
Sources: Utah Department of Workforce Services and Utah Geological Survey.

Average annual employment in 2007 was 1,100. The distribution of employment that was assumed for this analysis is shown in Table 1.6.

1.5.1 State-Level Scenario Impacts

Summary impact results for the middle scenario for the state of Utah are shown in Table 1.7. Statewide employment impacts rise from 8,368 in 2007 to 10,387 in 2030. Given the power plant's direct employment of 1,100, these are very high total employment impacts, a ratio of 7.6 to 1. This is because of the high wages of the industry in combination with the in-state purchases required by the plants. Importantly, the coal purchases are *not* included in these impacts. They are in addition.

In the middle scenario population impacts follow a path of increase from 12,552 in 2007 to reach 28,510 in 2030. Nominal earnings, local tax revenue, and state tax revenue impacts are all higher in 2030 than in 2007. From 2007 to 2030, nominal earnings impacts increase from $346.4 million to $1,179.7 million in 2030. Over the same period, nominal local government revenue impacts increase from $1.4 million to $4.6 million. Nominal state government revenue impacts increase from $24.5 million in 2007 to $83.3 million in 2030.

Table 1.6
2007
Employment in
Coal-Fired
Power Plants by
County

County	Jobs
Carbon	70
Davis	3
Emery	354
Millard	380
Salt Lake	86
Uintah	177
Utah	30
Total	1,100

Source: BEBR estimates from DWS data.

Table 1.7
Power Plants, Middle Scenario:
Summary Impacts
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	8,368	12,552	$346.4	$1.4	$24.5
2008	8,804	13,206	$375.1	$1.5	$26.5
2009	9,120	13,680	$398.7	$1.6	$28.2
2010	9,232	13,848	$410.7	$1.6	$29.0
2011	9,293	13,940	$431.5	$1.7	$30.5
2012	9,333	14,000	$452.7	$1.8	$32.0
2013	9,344	15,256	$474.7	$1.9	$33.5
2014	9,363	16,767	$497.8	$2.0	$35.2
2015	9,386	18,139	$523.6	$2.1	$37.0
2016	9,402	19,367	$548.9	$2.2	$38.8
2017	9,428	20,481	$575.1	$2.3	$40.6
2018	9,489	21,480	$605.6	$2.4	$42.8
2019	9,559	22,410	$638.8	$2.5	$45.1
2020	9,636	23,267	$674.5	$2.7	$47.7
2021	9,738	24,068	$714.1	$2.8	$50.4
2022	9,827	24,797	$755.6	$3.0	$53.4
2023	9,919	25,465	$800.4	$3.1	$56.5
2024	10,010	26,072	$847.4	$3.3	$59.9
2025	10,089	26,616	$896.7	$3.5	$63.4
2026	10,166	27,086	$948.8	$3.7	$67.0
2027	10,236	27,515	$1,003.0	$3.9	$70.9
2028	10,295	27,897	$1,059.6	$4.2	$74.9
2029	10,345	28,227	$1,118.4	$4.4	$79.0
2030	10,387	28,510	$1,179.7	$4.6	$83.3

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.
Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Because of the speculative nature of the specific location and type of power plant construction and closure, the high and low scenarios were not modeled for this part of the study.

1.6 Additional Fiscal Impacts

In addition to employment and wage impacts, the coal industry also has fiscal impacts on the local areas in which it operates. Fiscal impacts refer to impacts on government finances and tax collections. The coal industry is subject to the tax laws common to all businesses; there are also impacts unique to the industry.

Production on federal land is subject to a royalty payment under the Mineral Lands Leasing Act of 1920. This royalty is paid to the Minerals Management Service, an agency within the U.S. Department of Interior. A portion of the federal mineral royalties is returned to the state of origin, generally one-half. Royalties from production on Indian lands are returned to the appropriate tribe, not to the state government. The states have full discretion as to the distribution of federal mineral royalties as long as priority is given to areas with economic and/or social impacts from

leasing activities. The Minerals Management Service does not release federal mineral royalty data at the county level, but statewide data are available.

Federal mineral royalties due to coal production in Utah have decreased in recent years, from $33.2 million in fiscal year 2001 to less than $23.0 million in 2008 (Table 1.8). Coal production accounted for just 5 percent of the royalties paid for mineral production on federal land in Utah in 2008. There was also an additional $905,500 paid in bonuses and rents on federal mineral leases. These are fees associated with awarding federal mineral leases and maintaining the leases until production is initiated. Table 1.8 includes royalties due to coal production, but does not include bonus or rent payments for federal coal leases. Of the $23.0 million paid in federal mineral royalties by the coal industry in Utah, $12.0 million was returned to the state government.

The School and Institutional Trust Lands Administration (SITLA) controls mineral rights on approximately 4.4 million acres in Utah. These lands are held in trust for Utah's public schools and 11 other beneficiaries. They were established at statehood and through land exchanges with the federal government. During fiscal year 2008, royalties paid for coal mining on SITLA lands totaled $10.5 million (Table 1.9). This was 7 percent of total SITLA revenue for the year. These funds are not returned to the county of origin, but are placed in a permanent fund managed by the state treasurer on behalf of the public schools or distributed to the appropriate beneficiary as mandated. Dividends and interest from the Public School Fund are distributed annually to all Utah public schools based on an established formula.

The individual counties levy property taxes on natural resources developed within their borders, including coal, metallic minerals, and oil and gas. The Utah State Tax Commission centrally assesses coal properties based on the discounted cash flow of expected future production. The local county treasurers bill and collect the taxes. Property taxes are levied by numerous units of local government, including county and city governments, school districts, and special service districts. Table 1.10 shows property taxes charged against coal mines in Carbon, Emery, and Sevier counties from 2000 to 2008. These three counties account for more than 99 percent of coal property taxes in the state. Over the period, total taxes paid to the three counties were fairly constant, fluctuating between $4.1 million and $4.6 million, with a spike to $5.6 million in 2006 (all amounts are in constant 2008 dollars). Coal property taxes in Carbon County were only slightly higher in 2008 ($2.1 million) than

Table 1.8
Federal Coal Royalty Payments and Disbursements to Utah, 2001–2008
(Constant 2008 Dollars)

Year	Royalties Paid to U.S.	Disbursed to Utah
2001	$33,205,069	$17,594,615
2002	$25,599,536	$12,957,504
2003	$25,034,853	$10,534,127
2004	$28,196,683	$15,044,196
2005	$30,681,304	$15,347,252
2006	$29,037,311	$14,247,010
2007	$25,595,118	$12,752,867
2008	$22,955,578	$12,006,072

Years are federal fiscal years.
Source: U.S. Department of the Interior, Minerals Management Service.

Table 1.9
Rents and Royalties Paid for Coal Production on SITLA Lands, 2000–2008
(Constant 2008 Dollars)

Year	Revenues	Garfield Co.	Total
2000	$5,269,226	$30,917	$5,300,143
2001	$7,421,084	$181,948	$7,603,032
2002	$7,598,359	$118,340	$7,716,699
2003	$4,750,554	$109,505	$4,860,059
2004	$3,988,161	$113,029	$4,101,189
2005	$1,666,740		$1,666,740
2006	$5,084,333		$5,084,333
2007	$7,069,694		$7,069,694
2008	$10,546,508		$10,546,508

Years are fiscal years, July 1 to June 30. Revenues consist of lease rentals, royalties, and bonus payments from coal mines on trust lands in Carbon, Emery, and Sevier counties. The Garfield County lease was a special business arrangement that terminated in 2004 without any coal production.
Source: School and Institutional Trust Lands Administration.

they were in 2000 ($1.9 million). In Sevier County, coal taxes were essentially unchanged in 2008 compared with 2000, at roughly $1.2 million. However, Emery County saw coal property taxes decline from $1.3 million in 2000 to $824,000 in 2008.

Counties also levy property taxes on power plants, based on their fair market value (Table 1.11). Carbon, Emery, Millard, and Uintah are the only counties in the state with coal-fired power plants according to the U.S. Department of Energy. Emery County cur-

Year	Carbon	Emery	Sevier	Total
2000	$1,919,753	$1,341,346	$1,207,865	$4,468,964
2001	$1,984,907	$1,112,081	$1,214,826	$4,311,814
2002	$1,916,019	$1,107,510	$1,088,523	$4,112,052
2003	$2,319,574	$1,041,682	$1,052,776	$4,414,032
2004	$2,176,454	$1,306,930	$1,131,553	$4,614,936
2005	$1,719,635	$1,018,394	$1,636,483	$4,374,512
2006	$2,690,528	$1,024,162	$1,885,720	$5,600,411
2007	$2,449,053	$605,127	$1,336,949	$4,391,130
2008	$2,121,553	$824,366	$1,241,458	$4,187,377

Table 1.10
Property Taxes Charged Against Coal Mines, 2000–2008
(Constant 2008 Dollars)

Source: Utah State Tax Commission, Property Tax Division Annual Reports.

rently receives the most property taxes from coal-fired plants, charging $13.4 million in 2008. There are two plants in the county, the three-generator Hunter plant and the two-generator Huntington plant. Both are operated by PacifiCorp and have a combined nameplate capacity of 2,468 MW. Millard County charged $10.4 million in taxes in 2008 on the two-generator Inter-mountain Power Project plant, which is operated by the City of Los Angeles with a total name-plate capacity of 1,640 MW. Uintah County's single-generator Bonanza plant paid almost $1.5 million in taxes in 2008. It is operated by the Deseret Generation and Transmission Co-op and has a nameplate capacity of 500 MW. There are two coal-fired power plants in Carbon County: PacifiCorp's two-generator Carbon plant, with a total capacity of 189 MW, and Sunnyside Co-generation Associates' single-generator plant burning waste coal, with a maximum capacity of 58 MW. The county charged $831,000 in property taxes against the two plants in 2008. All told, Utah's coal-fired power plants paid almost $26.2 million in property taxes in 2008.

Table 1.11
Property Taxes Charged Against Coal-Fired Power Plants, 2000–2008
(Constant 2008 Dollars)

Year	Carbon	Emery	Millard	Uintah	Total
2000	$905,623	$17,366,626	$17,758,666	$3,941,820	$39,972,736
2001	$899,785	$17,230,299	$17,333,522	$3,724,173	$39,187,779
2002	$782,137	$14,978,350	$16,357,297	$3,678,422	$35,796,206
2003	$923,649	$13,910,567	$15,433,344	$3,696,689	$33,964,250
2004	$864,711	$13,096,201	$14,582,382	$3,498,665	$32,041,959
2005	$854,149	$12,369,513	$13,541,690	$3,437,457	$30,202,808
2006	$861,243	$13,133,879	$12,243,164	$1,894,125	$28,132,411
2007	$810,946	$13,227,529	$11,419,130	$1,663,557	$27,121,161
2008	$831,042	$13,427,356	$10,443,781	$1,484,168	$26,186,347

Source: Utah State Tax Commission, Property Tax Division Annual Reports.

2 UTAH'S COAL INDUSTRY

2.1 Introduction

By the time Mormon settlers discovered coal near Cedar City[5] in 1850, the "rock that burns" was already well on its way to becoming king in the eastern United States. Though still a few decades shy of overtaking wood as the nation's leading source of energy, coal was rapidly replacing it as the fuel of choice for steam locomotives. In cities like Baltimore, street lamps were burning coal-based gas. Pennsylvania's anthracite coal, having been dismissed as a fuel earlier in the century and once famously relegated to sidewalk gravel in Philadelphia, was beginning to challenge—and would eventually overcome—charcoal as a heat source in iron making.[6]

Production from Utah coal fields did not immediately assume the rapid pace of its eastern counterparts. Lacking viable transportation and a ready market, large-scale production in Utah faced obstacles similar to those which the eastern coal fields were only beginning to overcome. The surge in immigration to Utah after 1850 increased the need for space heating and fuel for rapidly expanding smelting operations. Producing coal coke[7] adequate to the task of iron smelting from the available local coal proved technically difficult initially.[8] There also appears to have been some reluctance among the population to adopt coal in place of wood for space heating.[9] But the growing need for heat of some kind meant that the makings of a market for coal were in place. In 1854, the Utah legislature offered $1,000 "to any resident who would open a vein of coal not less than 18 inches thick within 40 miles of Salt Lake City and where it could be profitably worked."[10] Mormon settlers claimed the reward five years later upon discovering coal in what would become Coalville in Summit County.[11]

But Utah's coal boom would have to wait until 1882, when the arrival of the Rio Grande Western Railroad opened the Carbon County coal fields. The immediate and pronounced impact of the railroad is apparent from the fourfold increase in production from 52,000 tons in 1881 to 200,000 tons in 1883—the first full year after the railroad's completion. By 1900, annual production had surpassed 1 million tons and coal mining employed nearly 1,000 persons.

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[5] See Klaus D. Gurgel, "Utah 'Coal' Place Names," *Utah Geological and Mineral Survey*, 1982.

[6] See Alfred D. Chandler Jr., "Anthracite Coal and the Beginnings of the Industrial Revolution in the United States," *The Business History Review*, 1972.

[7] Coal coke is obtained from coal by baking coal in an oxygen-deprived environment at temperatures up to 2,000 degrees Fahrenheit. This process purges the more volatile compounds, leaving a largely purified, carbon-rich material (because oxygen is withheld, the carbon in the coal does not have the opportunity to react with oxygen to form carbon monoxide) that is practically smokeless upon burning. The advantage coal coke has over coal for smelting iron is that it has few impurities to impart to the iron ore, and its higher carbon content allows it to draw more oxygen out of the ore during heating. The process and objective of making coke from coal is very similar to the process of making charcoal from wood.

[8] The historian Hubert Howe Bancroft, writing around 1889, noted that Utah imported 70,000 tons of coal coke and 50,000 tons of coal from Wyoming at an expense of $1.8 million and $4 million (nominal, i.e. "then-dollars"). Up to the time of Bancroft's writing, coke produced from Utah coal had been more successfully used for lead smelting than for iron smelting. See Hubert Howe Bancroft, *History of Utah, 1540–1886*, 1889.

[9] In an 1855 speech at the Salt Lake Tabernacle, Brigham Young—having recently visited the Sanpete County coal fields—endorsed coal as a replacement for wood in residential heating. Though residents seemed to be put off by its dust, Young argued that this was to him not a worse annoyance than the insect infestations often attending woodpiles. See Gurgel, p. 27.

[10] See Bancroft, p. 319.

[11] See Gurgel, p. 27.

Though annual coal production by the end of the 20th century was about 20 times greater than in 1900, the number of those employed in coal mining had only approximately doubled. The increasing productivity of labor—the average amount of coal produced per worker over some given amount of time (typically, one day)—due to the displacement of labor by machinery is an ongoing feature of Utah coal production, with implications for the future contribution of the coal mining industry to Utah's broader economy. In the earliest days, coal mining was highly labor intensive—typically involving only a miner, hand tools, and a cart. It was soon discovered that much of the work of chipping at the coal with a pickaxe could be saved with the use of explosives. Production became increasingly capital intensive through the turn of the century, as pneumatic drills, trams, railways, and cutting machines were introduced and quickly deployed. Though 90 percent of Utah coal was hand-mined in 1911, by 1915 hand-mined coal had fallen to 48 percent of total coal produced, with the percent cut by machine rising from 3 percent to 50 percent.[12] Labor productivity naturally paralleled this trend. In 1890, labor productivity was 2.57 tons per employee per day, but by the 1920s this had more than doubled. The trend of increasing capitalization generally continued through the 20th century, with the deployment of continuous and longwall mining machines being particularly important. In spite of productivity declines in recent years, the average amount of coal produced per employee per day had risen to 46 tons by 2008. Figure 2.1 shows the labor productivity of Utah's coal industry since 1963.[13]

Three features of Utah's coal are particularly important for understanding its past and possible future development. First is its low sulfur content. When coal is burned in an electric power plant, the sulfur it contains combines with oxygen to produce sulfur dioxide. Sulfur dioxide is "considered harmful to public health and the environment" and is regulated by the Environmental Protection Agency pursuant to the Clean Air Act.[14,15] New coal plants, being subject to more stringent emission standards than plants built decades ago, are required to remove a large fraction of the sulfur dioxide from their exhaust gas before it exits the stack and enters the atmosphere. Removing sulfur dioxide is costly both in that it entails additional capital costs and its operation consumes a part of the power generated (termed "parasitic energy loss"). The more sulfur present in the coal or the larger the fraction that must be removed from the exhaust gas, the higher the equipment costs and the greater the parasitic energy loss. This means that, all else being equal, as low-sulfur coals—like those typically found in Utah and Wyoming—can generate

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[12] "Measures of Economic Changes in Utah: 1847–1947," *Utah Economic and Business Review*, Vol. 7 No. 1, December 1947, p. 78.

[13] In 1963 the definition of "employee" as used in mining productivity statistics changed, with the definition in use before 1963 being more inclusive. See Bureau of Economic and Business Research, *A Brief History of the Utah Coal Industry*, 1977, p. 11. This means that productivity as measured post-1963 is somewhat overstated compared with that measured pre-1963. On the other hand, the overstatement may be at least partially offset if the number of hours in a typical workday has decreased.

[14] Sulfur dioxide is one of six such "criteria pollutants" established by the EPA. The other five are carbon monoxide, lead, nitrogen dioxide, ozone, and particulate matter. In accordance with the Clean Air Act, the maximum density of criteria pollutants in "ambient air" is established for each pollutant by the EPA in consideration of the pollutant's potential impact on human health and welfare. These standards are known as the National Ambient Air Quality Standards. See http://www.epa.gov/air/criteria.html.

[15] These regulations do not directly limit a particular power plant's sulfur dioxide emissions. Instead, they set the maximum allowable concentration of sulfur dioxide, and in most cases leave it to the states to implement a plan to comply with the EPA standard. Subject to their implementation plan, the state issues (or not) operating licenses to power plants that directly set permissible emissions levels for the plant. Typically the states are charged with ensuring that their air quality meets or exceeds the standards issued by EPA. The state issues permits for major emitters whose emissions must collectively satisfy federal air quality standards.

Figure 2.1
Productivity of Utah Coal Mining
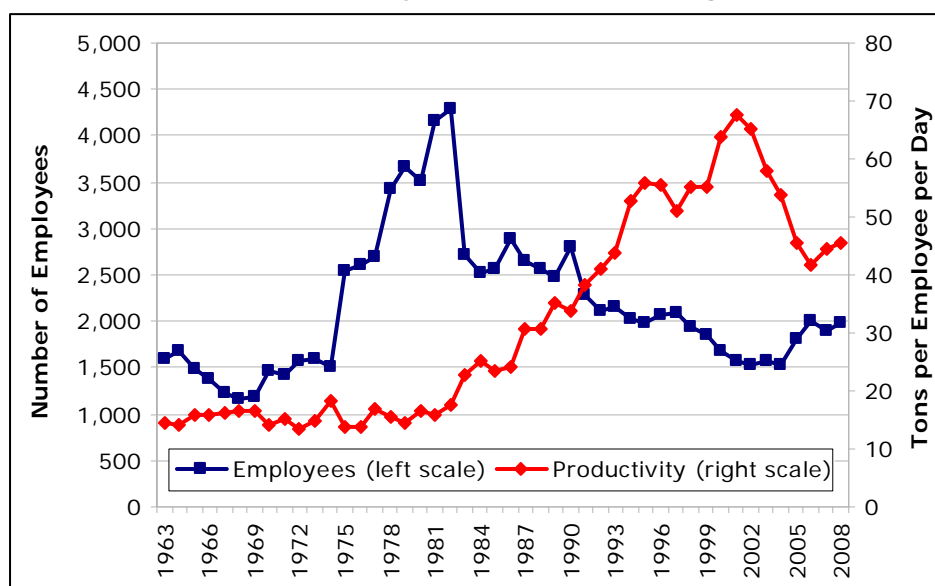
power at lower costs, they are also able to command a higher price.[16,17] If national air quality standards for sulfur dioxide tighten—as EPA has recently proposed—Utah's coal industry would fare better relative to its counterparts mining high-sulfur eastern coals.[18]

Another distinguishing feature of Utah's coal is its "heating value," an expression of the energy released when coal is burned. Coal is a bulky fuel compared with its heating value. Whereas the heating value of a typical ton of oil (about 280 gallons)—a once-popular fuel in electric power generation—is about 38 million British thermal units (BTU), the heating value of a typical ton of coal ranges from approximately 13,000 BTU (about the same as for a ton of firewood) for lignite and the subbituminous coals to 26,000 BTU for bituminous and anthracite coals. For two otherwise equal coals, the one with the higher heating value will ordinarily fetch a higher price. A typical Utah coal is bituminous, with a heating value of 24,000 BTU—about 50 percent higher than that of Wyoming's subbituminous coal. Thus, low sulfur but high energy content are two advantages Utah's coal has relative to most of the country's other coals.

The most conspicuous and important difference between Utah and Wyoming coal is how the deposits at operating mines are situated in the ground. Whereas all of Utah's present coal production takes place in deep underground mines, almost all of Wyoming's coal reserve is close

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[16] Typical coal from the eastern U.S. has approximately three to five times the sulfur content of Utah coal, which consists of between 0.3 and 1 percent sulfur by weight. See Table 2.24 of Chapter 2: "Coal" in Utah Geological Survey's *Utah Energy and Mineral Statistics*, at http://geology.utah.gov/emp/energydata/coaldata.htm.

[17] As will be discussed later, between Wyoming coal and Utah coal not all—other than sulfur content—is equal.

[18] On EPA's proposal, see http://www.epa.gov/air/sulfurdioxide/actions.html#nov09. EPA claims the newly proposed standards—reducing the ambient air density from an allowed maximum 140 parts per billion over a 24-hour period to between 50 and 100 parts per billion—would yield public health benefits valued between 16 billion and 100 billion dollars. "Those benefits would include reduced hospital admissions, emergency room visits, work days lost, cases of aggravated asthma and chronic bronchitis, among others."

enough to the surface (within a few hundred feet) to make less expensive surface mining techniques applicable. Prior to the early 1970s most of the coal mined in the U.S. was produced in underground mines. That situation began to reverse in the mid-1970s when production from Wyoming's Powder River Basin began in earnest. In 2008, surface-mined coal accounted for 70 percent of U.S. production.[19] Labor productivity from surface-mining operations like those of the Powder River Basin is three times higher than that of Utah's underground mining operations—though a ton of Powder River Basin coal at the mine is worth less (heating value and market value) than a ton of Utah coal. Other factors held fixed, expensive underground mining techniques put Utah coal at a commercial disadvantage compared with surface-mined coal.

2.2 Overview of Coal Reserves and Production

2.2.1 Reserves

As of 2005, U.S. coal estimated recoverable reserves stood at 264 billion tons, accounting for 28 percent of the total world reserves and exceeding those of any other country.[20,21,22]

Since its founding in 1977, the Energy Information Administration (EIA) has had the responsibility of publicizing data on reserves, and has been considered the authoritative source of such information.[23] Although 2005 is the most recent year for which worldwide coal reserve data are available from EIA, data on U.S. reserves are current through the end of 2008. As of January 1, 2009, *estimated recoverable reserves* totaled 262 billion tons. This amount is much larger than the 17.9 billion tons of remaining recoverable coal in currently producing mines (termed *recoverable reserves at active mines*), but only a small fraction of the estimated 4 trillion tons of coal in the ground (*total resources* or *in-place resources*). The part of *total resources* which are either in *measured* or *indicated* resource categories of reliability are termed the *demonstrated reserve base.* According to the EIA, the *demonstrated reserve base* represents "100% of the in-place coal that could be mined commercially at a given time considered."[24] As of January 1, 2009, the U.S. coal *demonstrated reserve base* was 487.7 billion tons. Taking the part of *demonstrated reserve base* "that can be mined with today's mining technology, after accessibility constraints and recovery factors are considered," one arrives at 261.6 billion tons of *estimated recoverable reserves.* Figure 2.2 illustrates the foregoing concepts of resource availability.

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[19] See Table 7.2 of the coal section in EIA's *Annual Energy Review.*

[20] A *short ton* equals 2,000 pounds and in the U.S. this unit is what is usually referred to by the abbreviated term *ton.* The *long ton* is a unit whose present-day use is widespread only in shipping, where it originated (then called *tun*) as the weight in pounds of a standardized cask of wine. The metric unit *tonne* equals 1,000 kilograms (about 2,205 lbs.). In this report, whenever the term *ton* is used, it refers to *short ton*, and whenever the term *tonne* is used, it refers to 1,000 kilograms.

[21] Comparing reserves across countries can be problematic since definitions of "reserves" as well as reporting standards may vary across countries (as well as over time within countries). See Gene Whitney, Carl E. Behrens, and Carol Glover, *U.S. Fossil Fuel Resources: Terminology, Reporting, and Summary*, Congressional Research Service, 2009.

[22] International Energy Administration, "Coal Reserves," at http://www.eia.doe.gov/emeu/international/contents.html.

[23] See Whitney, Behrens and Glover, 2009. Note that the data EIA publicizes often originates from state agencies or other federal agencies such as the U.S. Geological Survey and the Minerals Management Service.

[24] EIA, Coal Explained—How Much Coal Is Left? at http://tonto.eia.doe.gov/energyexplained/index.cfm?page=coal_reserves.

Figure 2.2
U.S. Coal Resources and Reserves
(Billions of Tons as of January 1, 2009)
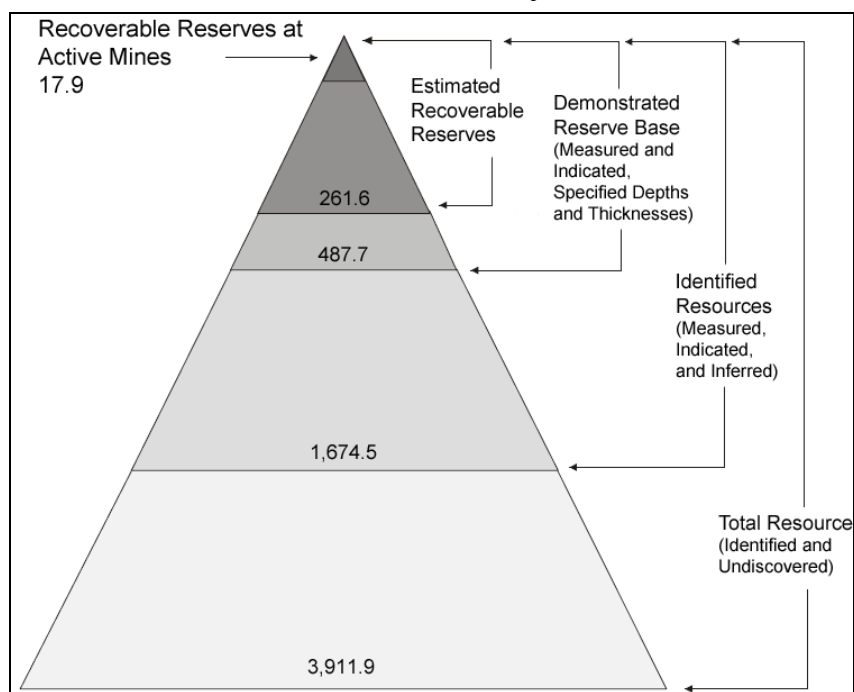
Source: Energy Information Administration, Coal Explained—How Much Coal Is Left?

Of 17.9 billion tons of *recoverable reserves at active mines* in the U.S., 5.8 billion tons are situated in underground mines, with surface mines accounting for the remaining 12.1 billion tons. As producing reserves account for a mere 9 percent of total estimated recoverable reserves, it is apparent that there remain vast coal resources in the U.S. that are economic though not yet mined. Of the total 262 billion tons of estimated recoverable reserves, 149 billion tons are amenable to underground mining, with the remainder (112.5 billion tons) suited to surface mining.

As of 2009, Utah's estimated recoverable reserves of coal amounted to 2.7 billion tons (1 percent of U.S.), of which 212 million tons are located in mines that are currently producing.[25] Another 212 million tons of coal suited to surface mining are counted among Utah's total estimated recoverable reserves, though all of Utah's producing reserves are in underground mines. Because the EIA's measure of Utah's estimated recoverable reserves includes only resources economically mineable and also located on land that is not off-limits to mining, it does not include the very rich Kaiparowits Plateau field located in Kane and Garfield counties. Before deducting that part of the resource that would be uneconomical to mine at present, the Kaiparowits field contains about 9 billion tons of coal.[26] But the field was effectively put off-limits for development in

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[25] See Table 15 of EIA's "U.S. Coal Reserves Tables" at http://www.eia.doe.gov/cneaf/coal/reserves/reserves.html.

[26] See Table 2.3 of Utah Geological Survey's *Utah Energy and Mineral Statistics* at http://geology.utah.gov/emp/energydata/coaldata.htm. Note that Utah Geological Survey's (UGS) "estimated recoverable resource" is a considerably more inclusive measure than that of a similar name used by EIA ("estimated recoverable reserves"), or of EIA's "demonstrated reserve base." The UGS measure does not account for land-use or economic constraints. Without these constraints, UGS puts Utah's estimated recoverable resource at 15 billion tons. The EIA measure, which does account for land-use restrictions and economic viability, gives Utah estimated recoverable reserves of 2.4 billion tons from a demonstrated reserve base of 5.2 billion tons.

1996 when then-President Clinton designated over 1.7 million acres of southern Utah as the Grand Staircase–Escalante National Monument.[27] Figure 2.3 shows the state's major coal seams and active mines.

Figure 2.3
Utah Coal Seams and Active Mines
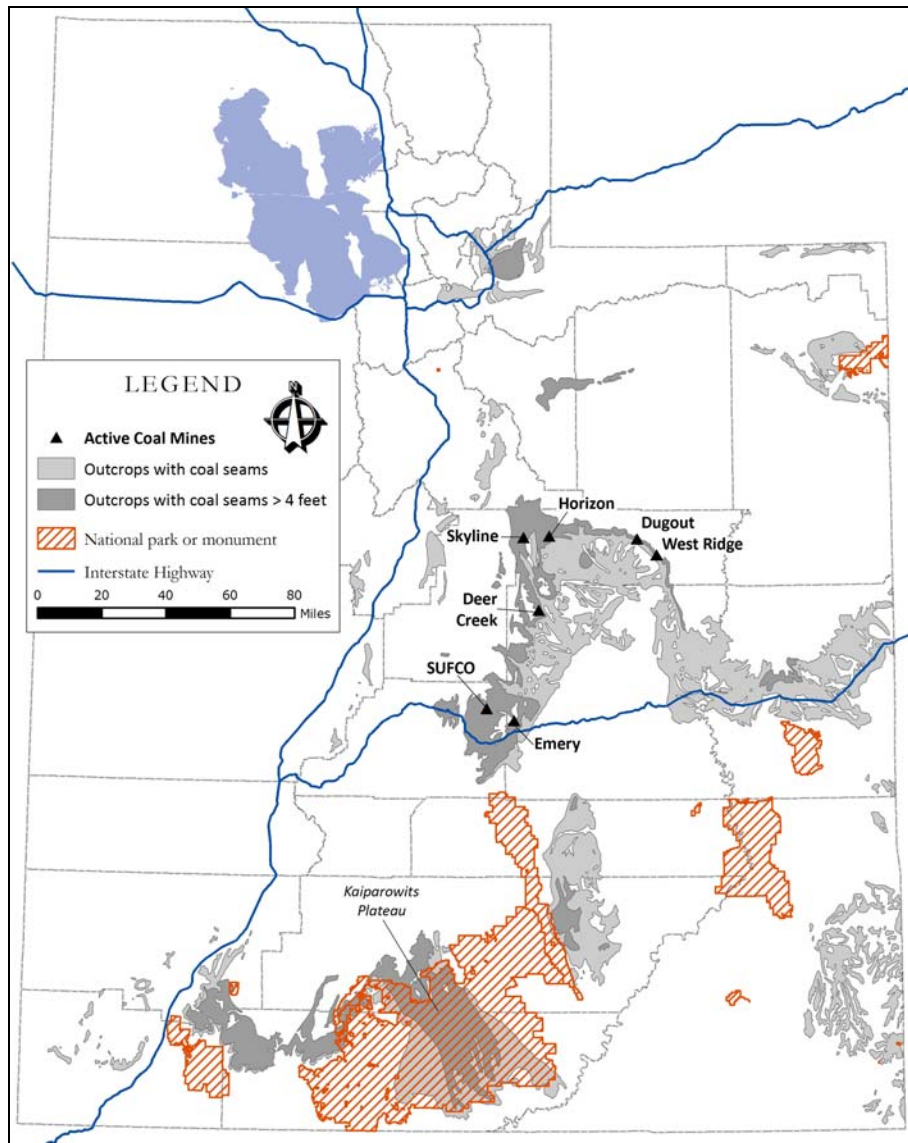
Source: Bureau of Economic and Business Research and Utah Automated Geographic Reference Center.

2.2.2 Production

In 2008 U.S. coal production accounted for 16 percent (1.2 billion tons) of worldwide production (7.3 billion tons). During the period 1994–2008, U.S. production averaged 1.1 billion tons per year. Figure 2.4 shows U.S. coal production since 1949. In spite of having more than twice

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[27] See (also concerning the unrealized Kaiparowits Power Project) David Kent Sproul, "Environmentalism and the Kaiparowits Power Project, 1964–76," *Utah Historical Quarterly*, 2002, v. 70, no. 4, p. 356.

the official coal reserves of the next best-endowed country (China), the U.S. is not the leading producer. The world's leading coal producer in 2008 was China, which produced just over 2.8 billion tons. India and Australia were the third and fourth largest producers, with 568 and 439 million tons, respectively. Figure 2.5 shows the distribution of coal production among the world's top ten producers in 2008.

Figure 2.4
U.S. Coal Production Since 1949
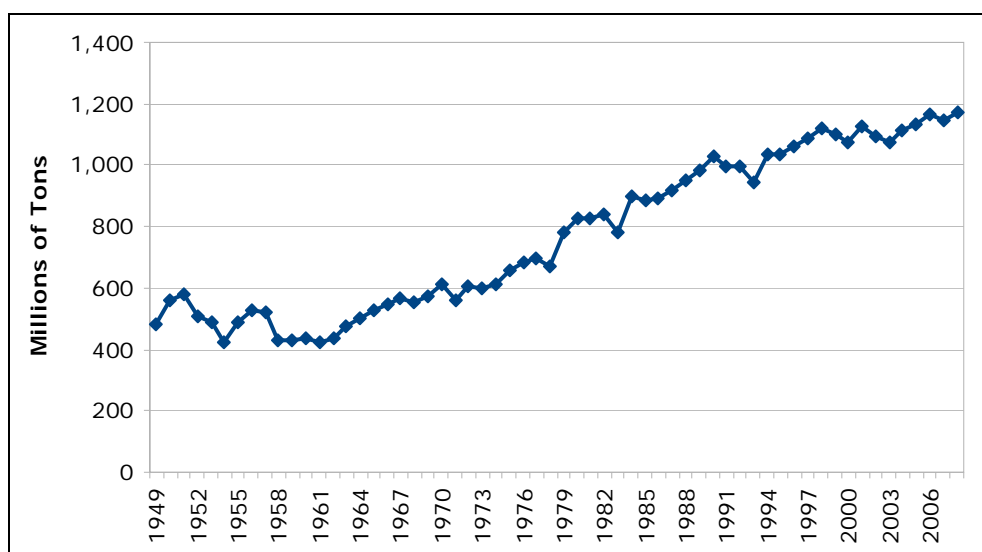
Source: Energy Information Administration, Annual Energy Review 2008.

By the end of 2008 cumulative coal production in Utah had surpassed 1 billion tons.[28,29] To put this in perspective, consider that in 2008 alone the U.S. produced almost 20 percent *more* than Utah's entire historical production through 2008, while Wyoming produced an amount equal to almost half of Utah's cumulative production.[30]

The distribution of Utah's coal production is historically and presently concentrated in Carbon, Emery, and Sevier counties. Between 1870 and 1959, 78 percent of the coal produced in Utah came from Carbon County. Carbon County's share of total coal production since 1960 fell to 27 percent as production greatly increased in Emery and Sevier counties. There is presently no coal production outside of these three counties, which collectively account for 99 percent of all the coal ever mined in Utah.[31]

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[28] "Cumulative coal production" is the sum of all coal produced in Utah since 1870.

[29] See Table 2.3 at http://geology.utah.gov/emp/energydata/coaldata.htm.

[30] U.S. production in 2008 equaled 1.17 billion tons; hence Utah's 2008 production of 24.3 million tons equaled a little over 2 percent of U.S. production. Wyoming's 2008 production measured 467.6 million tons. See *2008 Annual Review and Forecast* at http://geology.utah.gov/utahgeo/energy/coal/index.htm, which was in preliminary form as of March 2010.

[31] For county-level production statistics see Table 2.10 of Chapter 2: "Coal" in Utah Geological Survey's U*tah Energy and Mineral Statistics*; available at http://geology.utah.gov/emp/energydata/coaldata.htm.

Figure 2.5
Distribution of World Coal Production in 2008
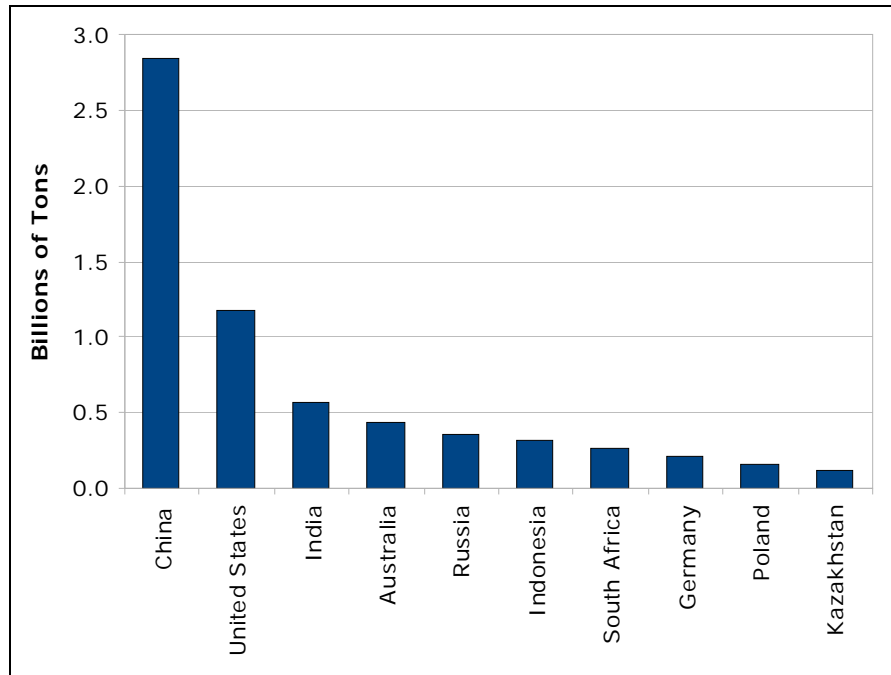
Source: Energy Information Administration.

Figure 2.6 shows Utah coal production since 1870. A rapid increase in production is seen just prior to World War I, with production levels peaking near the end of the conflict. The subsequent slowdown during the 1920s, given the rapid economic growth taking place in the U.S. at the time, might best be described as a return to peacetime market conditions. Production was tempered during the 1930s by the Great Depression, but strongly spurred on just before and during World War II. In the succeeding 25 years, coal lost ground in every major market except electric power generation. Between the early 1970s and the early 1990s, production growth was interrupted only by national recessions. Production in 2008 was 24.3 million tons—near the most recent 15-year average of 25.3 million tons and well above the most productive year of the 1980s (17.1 million tons in 1989). The rapid growth during this time period has leveled off in recent years.

Figure 2.6
Utah Coal Production Since 1870
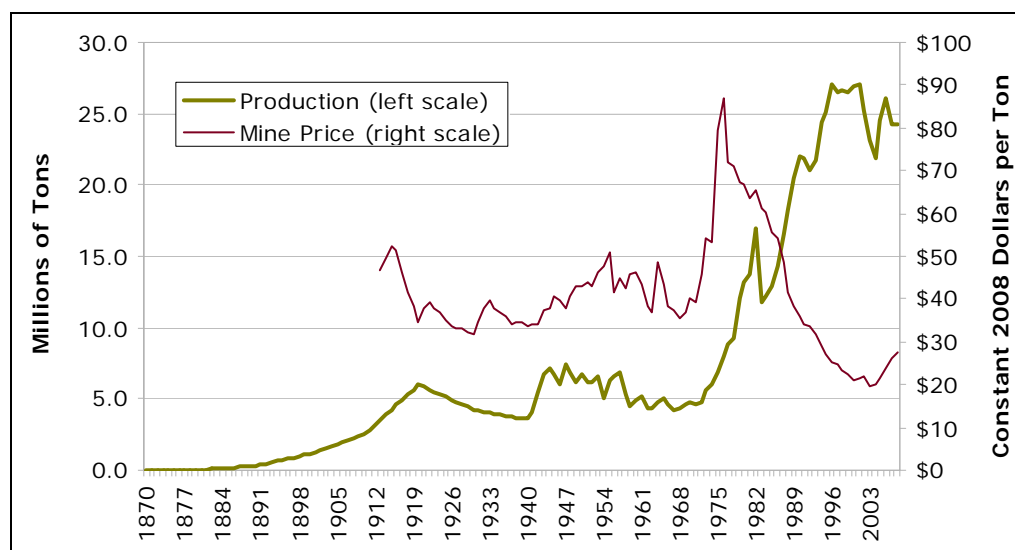
Note: Production figures prior to 1940 are decadal. "Mine Price" is the price of coal at the mine and excludes transportation charges.
Sources: Bureau of Economic and Business Research, A Brief History of the Utah Coal Industry*, 1977 (for production and prices through 1960); Utah Geological Survey,* Utah Energy and Mineral Statistics *(for production and prices since 1960).*

2.3 Markets

U.S. coal consumption was 1.12 billion tons in 2008, second only to China's 2.83 billion tons.[32] Even under the highly conservative assumption that no further additions would be made to its reserve base, the U.S. has enough coal to meet its current level of consumption for about 235 years. If the rate of annual coal consumption continues to grow rather than remain at its present level, then the date is nearer at which cumulative consumption exhausts reserves. For example, if consumption grows in the future as it did between 1949 and 2008, then the U.S. could supply its own consumption for about 100 years.[33] By way of comparison, if the U.S. had to provide for all of its oil consumption with domestic production (again under the clearly false assumption that reserves will not increase in the future), then U.S. oil supplies would be exhausted in about three years.[34] Though such measures of "plenty" are limited, they should nevertheless provide a useful

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[32] See "Coal Consumption" at http://www.eia.doe.gov/emeu/international/contents.html.

[33] What "if consumption grows in the future as it had between 1949 and 2008" means is that the geometric-mean growth rate that prevails in the future is the same as the geometric-mean of the growth rates observed for the period 1949–2008. To determine the time of exhaustion (T) under this assumed pattern of consumption growth, note that the sum of future consumption would be a geometric series, with constant rate of growth g equal to the observed geometric-mean growth, starting-year (2008) cumulative consumption S_0, and terminal-year cumulative consumption S_T, which by assumption of no-reserve-growth has to equal the reserves: $S_T = \frac{S_0(1-g^{T+1})}{1-g}$. Solving this expression for T, one gets: $T = \frac{\ln(1 - S_T(1-g)/S_0)}{\ln(g)} - 1$. From the 1949–2008 consumption data, we find g=1.015 (geometric average growth was about 1.5 percent), from 2008 consumption data S_0=1.172 billion tons, and from reserve data S_T=265 billion tons. Plugging these in, we find T=97.4 years.

[34] In recent years U.S. proved oil reserves averaged about 21 billion barrels while annual consumption has been about 7.5 billion barrels. See http://tonto. eia.doe.gov/dnav/pet/pet_sum_top.asp.

gauge for how important scarcity itself may become as a constraint on the future production of the resource.

Coal became the leading source of energy in the U.S. in about 1885, lost this title during the third quarter of the 20th century, then regained it in the early 1980s as coal became the dominant source of electric power generation. Coal is still the leading source of energy in the U.S. and electric power is by far its most important market. In 2008 about 91 percent of coal consumed in the U.S. was for electricity generation. As Figure 2.7 shows, this contrasts with earlier times in which the market for coal was more diverse. In 1970, coal coke accounted for, on average, 20 of every 100 tons of coal consumed and electric power generation consumed 60 of every 100 tons. Most of the rest was consumed in commercial and residential heating applications. By 2008 the share of coking coal had fallen by an order of magnitude—accounting for only 2 of every 100 tons of coal consumed. Similar declines are observed for residential and commercial heating. Well before 1970, coal was an important transportation fuel, supplying heat for steam locomotives and military ships. By the middle of the 20th century, coal had largely lost this market to diesel and fuel oil. While there is potential to resurrect coal as a transportation fuel through various coal-to-liquids technologies, it appears unlikely that such fuels will become a major driver of coal demand during the horizon considered in the present report.[35] The short- and medium-term prospects for coal are tied to those for coal-based electricity generation, to which we now turn.

Figure 2.7
Composition of U.S. Coal Consumption Since 1949
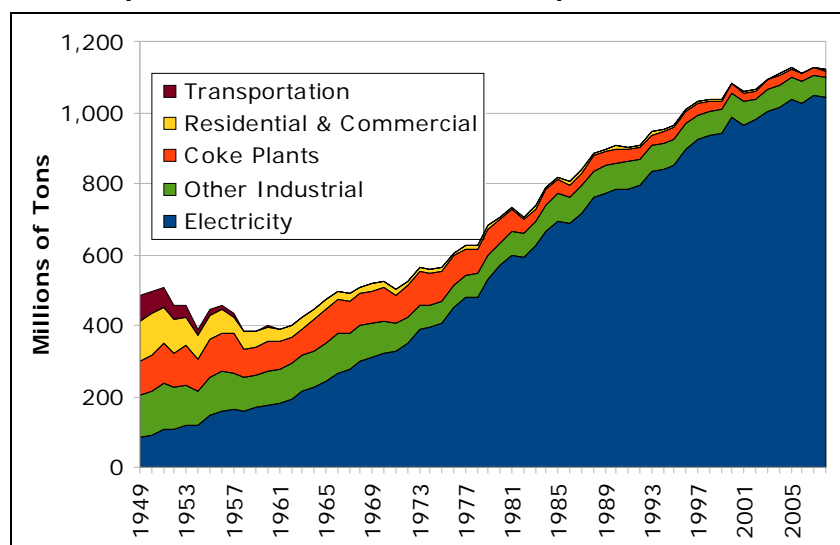
Source: Energy Information Administration, Annual Energy Review 2008.

U.S. net electricity production has increased over tenfold in the last 60 years, from 334 billion kilowatt-hours (BKWH) in 1950 to 4,100 BKWH in 2008.[36] And, as shown in Figure 2.8, the distribution of the shares of generation by fuel source has changed dramatically. The shift was

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[35] For a discussion of coal-to-liquids technologies, see James T. Bartis, Frank Camm, and David S. Ortiz, *Producing Liquid Fuels from Coal: Prospects and Policy Issues*, The RAND Corporation, 2008.

[36] Net electric generation is the amount of electricity a power plant delivers to the grid—the difference between the total amount of electricity generated and the amount which is consumed at the plant-site.

influenced by a combination of policy and economic factors. Hydroelectric power, which had accounted for nearly a third of net electricity generated in 1950, contributed only 5 percent by 2008, owing to declining economic attractiveness of remaining targets and strong public opposition to new projects—whether economic or not.[37] Following the energy shock of 1973, Congress passed the Energy Supply and Environmental Coordination Act (ESECA) of 1974 in which the authority was given to the Federal Energy Administration (FEA) to prohibit combustion of either petroleum or natural gas as the primary fuel in power plants that could viably burn coal instead.[38,39] The idea behind ESECA, and the following Powerplant and Industrial Fuel Use Act of 1978, was to subdue demand for crude oil in order to lessen domestic vulnerability to disruptions in the supply of imported crude. Especially because this regulatory shift occurred at a time of rising and volatile oil prices, it is unclear how important ESECA was in the observed switch to coal from petroleum-fired generation. Whatever the reason, whereas the share of oil-fired generation in total net electricity generation was about 15 percent in the mid-1970s, by 2008 it had fallen to about 1 percent. Coal-fired generation now accounts for 50 percent of U.S. net electricity generation.[40]

Figure 2.8
Fuel Source Composition of U.S. Electric Power Generation
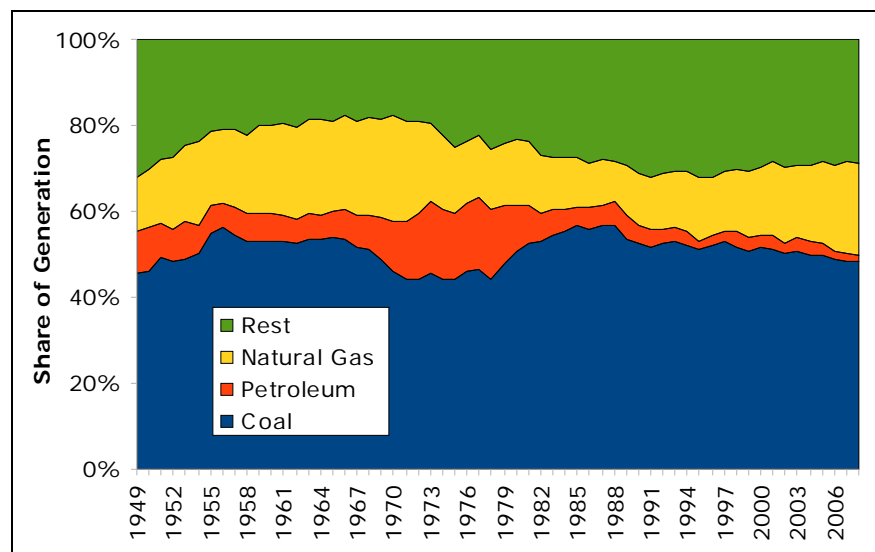
If coal-fired electricity generation is important nationally, it is much more so in Utah. In 2008, coal-fired generation originating in Utah produced 38 out of a total 46.6 BKWH of net electricity—82 percent of net generation. Though this is well above the U.S. average, it's actually a step down from the period of 1980–2005, when coal averaged 94 percent of generation. This recent

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[37] Hydroelectric net generation decreased only in share, not level: generation was 101 BKWH and 248 BKWH in 1950 and 2008, respectively.

[38] The Federal Energy Administration (FEA) is now known as the Energy Information Administration (EIA).

[39] See Daryl Robertson, "The Powerplant and Industrial Fuel Use Act of 1978: Fuel Replacement," *Harvard Environmental Law Review*, 1979, v. 3, no. 214, for a discussion of the conditions under which FEA could act to restrain the use of petroleum and natural gas in power plants.

[40] The share of coal-fired generating *capacity* is substantially less than 50 percent, reflecting the choice to utilize coal for base-load generation.

departure is not because coal-based generation has decreased, but because the share of gas-fired generation has increased faster than total generation. Between 2005 and 2008, gas-fired generation increased its share from 3 percent (1.2 BKWH) to 16 percent (7.4 BKWH). Figures 2.9 and 2.10 show the composition of Utah's coal consumption and the shares by energy source of its electric power generation since 1960.

Figure 2.9
Composition of Utah Coal Consumption Since 1960
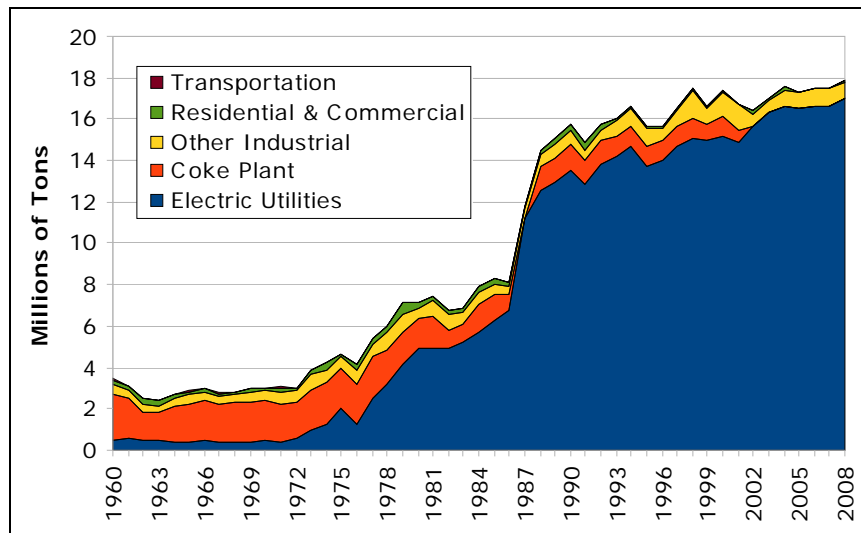
Source: Utah Geological Survey, Utah Energy and Mineral Statistics.

Figure 2.10
Fuel Source Composition of Utah Electric Power Generation
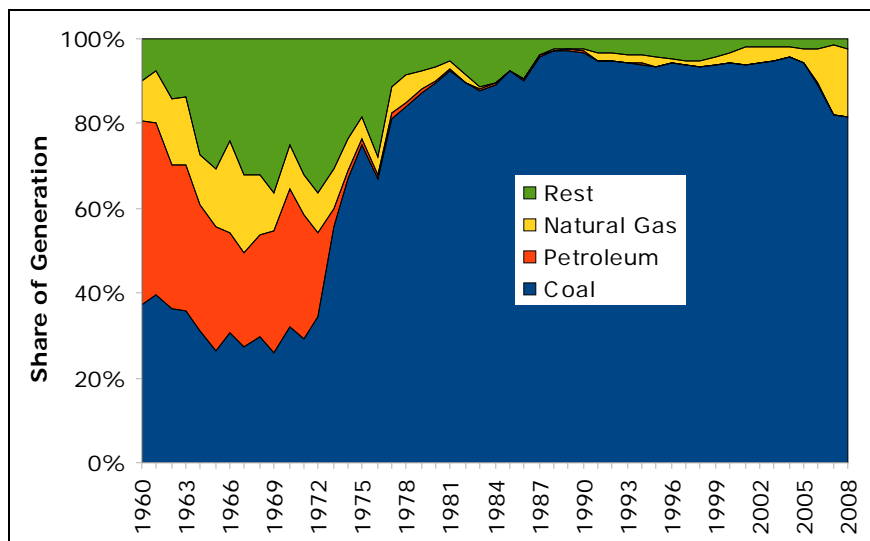
Note: Includes power generated by electric utilities and by non-utilities.
Source: Utah Geological Survey, Utah Energy and Mineral Statistics.

2.4 Challenges

Apart from any hidden costs ("negative externalities") arising, for example, from the pollutants emitted as a combustion byproduct, coal-fired generation is among the least expensive means for producing electricity.[41] Of critical importance to Utah's coal industry in the future is the extent to which efforts to internalize some of coal's negative externalities are successful.

Many current challenges to coal-fired power plant construction are based on recent legal and policy developments concerning CO_2. In April 2007 the U.S. Supreme Court (*Massachusetts v. EPA*) determined that greenhouse gases (GHG)—such as carbon dioxide—are pollutants as defined by the Clean Air Act. Although this ruling did not obligate EPA to regulate CO_2, it did limit the justifications EPA could provide as the basis for a decision not to regulate CO_2. In particular, EPA had to decide whether GHG present a harm either to public health or public welfare, with an affirmative answer likely leading to some form of regulation. An affirmative answer came in December 2009, with EPA announcing that "six greenhouse gases taken in combination endanger both the public health and the public welfare of current and future generations." The EPA is now deliberating possible regulatory regimes, though it's possible the EPA will be preempted by a federal plan for dealing with CO_2 emissions. The challenges, discussed below, to proposed Utah power plants based on CO_2 emissions spring from the April 2007 Supreme Court decision.

Within the last several years there were four new coal-fired power units still planned for construction in Utah: An 86-megawatt addition to Deseret Power's 500 MW Bonanza power plant near Vernal, a 900 MW addition to two existing 900 MW units at the Intermountain Power Agency's (IPA) Intermountain Power Project (IPP) near Delta, a 400 MW addition to Pacifi-Corp's three-unit Hunter Plant near Castle Dale, and a 270 MW unit at a new plant in Sigurd. These four proposals have been intensely challenged on the basis of their potential environmental impacts—mainly greenhouse gas emissions and traditional air pollution—and the economic uncertainty arising out of a looming but highly unsettled regime for regulating CO_2. As they are the focal point of many challenges to new coal-fired plants, a brief review of CO_2 emissions follows.

The EIA reports that in 2007 the U.S. emitted 20 percent of global CO_2 emissions attributed to energy consumption—6 billion of a global 30 billion metric tonnes. This level of global emissions represents a 62 percent increase since 1980. Though perhaps driven in part from a shift of energy-intensive manufacturing industries out of the U.S. and into Asia, U.S. emissions measured in this way have increased by only 26 percent since 1980. Both then and now the transportation and electric power–generation sectors were the source of a majority of U.S. CO_2 emissions—29 and 32 percent in 1980 and 34 and 42 percent in 2007.[42] It is no surprise then that these two sectors are the most heavily targeted by those seeking to curb GHG emissions.

Within the electric power–generation sector, coal is by far the largest contributor, with 1,951 of a total 2,389 million tonnes (82 percent) of CO_2 emissions in 2007. The next largest contributor is

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[41] The U.S. Department of Energy provides the following definition. "Externalities: Benefits or costs, generated as a byproduct of an economic activity, that do not accrue to the parties involved in the activity. Environmental externalities are benefits or costs that manifest themselves through changes in the physical or biological environment." See http://www.eia.doe.gov/glossary/glossary_e.htm.

[42] See Table 12.2 of the EIA's *Annual Energy Review 2008* at http://www.eia.doe.gov/aer/.

natural gas at 371 million tonnes (16 percent). Considering that coal accounted for a net 2 billion megawatt-hours (BMWH) and natural gas a net 900 million MWH, one can see the difference in "net carbon efficiency" between the two sources: On average, each MWH of (net) electricity generated from coal combustion produces 1.2 tonnes of CO_2, while the average MWH of (net) electricity generated from natural gas combustion produces 0.41 tonnes of CO_2.[43,44,45]

In 2007 Utah fossil fuel–based CO_2 emissions totaled 70.4 million tonnes, of which electric power generation accounted for 38.2 (54 percent) and transportation 18.3 (26 percent) million tonnes. Though for the transportation sector this represents no change compared with 1980 as a percentage of total emissions, it is nearly a doubling of the share for Utah's electric power generation sector.[46,47] Thus, the CO_2 footprint of the current configurations for generating electricity from coal is large, and it is practically definitional that a serious effort by policymakers to cut CO_2 emissions will require fairly substantial changes in coal-fired power. A cursory discussion of what some of these changes might be is given in Section 2.5.

In July 2009, IPA announced that it would allow its air-quality permit to expire for a proposed third unit at its Intermountain Power Project north of Delta. The third unit would have added 900 MW to IPP's present 1,800 MW of generation capacity. The IPP is operated by the Los Angeles Department of Water and Power (LADWP), which receives about 45 percent of the power generated by IPP's two existing units, along with 21 percent of the 2,250 MW output of the Arizona-based Navajo Generating Station.[48] IPA's action follows a 2007 decision by LADWP not to purchase power from the proposed third unit of the IPP and is part of a broader effort by the city of Los Angeles to halt all purchases of coal-based generation by 2020.[49,50]

The 400 MW fourth unit at PacifiCorp's Hunter plant near Castle Dale is on indefinite hold, as is PacifiCorp's acquisition of other additional coal-powered units. In its most recent (2008) Integrated Resource Plan PacifiCorp links this decision to uncertainty regarding the future price of CO_2 emissions:

> The single most important scenario risk … facing PacifiCorp continues to be government actions related to CO_2 emissions. This scenario risk relates to the uncertainty in predicting the scope, timing, and cost impact of CO_2 emission compliance rules. [An earlier section of this document] frames this issue in terms of the impacts of CO_2 policy and cost uncertainty on natural gas and wholesale

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[43] See Table 1.1 of the EIA's *Electric Power Monthly* at http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum .html for net generation and Table 12.7b of the EIA's *Annual Energy Review 2008* at http://www.eia.doe.gov/aer/ for CO_2 emissions.

[44] Details: For coal, 2.389 billion tonnes of CO_2 were emitted and 2 billion MWH generated: 2.389/2=1.2. For natural gas, 371 million tonnes of CO_2 were emitted and 900 million MWH generated: 371/900=0.41.

[45] Note that the difference in net carbon efficiency reflects both the greater heating value of methane compared with its carbon content and the generally greater efficiency of natural gas–fired power plants.

[46] In 1980, Utah's transportation sector accounted for 9 out of a total 35 million tonnes of emissions (26 percent), and the electric power sector accounted for 10.8 of the 35 million tonnes (31 percent).

[47] Trade complicates comparisons across political boundaries of CO_2 emissions. For example, electricity produced at IPA's coal-fired plant near Delta is consumed in California, but the CO_2 generated is credited to Utah.

[48] Altogether, about 40 percent of the electricity delivered by LADWP is generated at out-of-state coal-fired power plants. See http://www.reuters.com/article/idUSTRE56165X20090702.

[49] See http://www.reuters.com/article/idUSTRE5684UN20090709.

[50] LADWP is under contract until 2026 to purchase 45 percent of IPP output. Its contract with the Navajo Generating Station expires in 2019. See http://www.reuters.com/article/idUSTRE56165X20090702.

electricity prices, and consequent dramatic cost impacts to consumers. To address this risk, the Company decided in 2007 that acquiring a coal plant was not a viable resource option until regulatory clarity concerning CO_2 costs and technology/fuel policies is obtained.[51]

Deseret Power is awaiting a decision from EPA Region 8 on the requirements that would be part of the Prevention of Significant Deterioration (PSD) license for its proposed 86 MW addition to the Bonanza Power Plant.[52,53] The PSD license initially issued by EPA in August 2007 was challenged by the Sierra Club, who argued to the EPA's Environmental Appeals Board (EAB) that the already authorized monitoring and reporting of power plant CO_2 emissions under the Acid Rain Program, qualified CO_2 as a pollutant "subject to regulation," and therefore—in accordance with the Clean Air Act (CAA)—required a Best Available Control Technology (BACT) review for CO_2 emissions as part of the PSD licensing process.[54] EPA Region 8 countered that "subject to regulation" applied to pollutants with existing emission limits, not to those—including CO_2—without established limits. In its November 2008 decision the EAB did not determine EPA Region 8 *must* include BACT analysis for CO_2 as part of the PSD license. Rather, EAB found that Region 8 could not base their decision not to include BACT analysis on the foregoing interpretation of the CAA (which EAB regarded as a misinterpretation). Although as an isolated event the prospects for an 86 MW unit burning waste coal would not seem to be of substantial importance for the future of Utah coal mining, in fact it could be quite important both in Utah and nationally. The finding that CO_2 is "subject to regulation" triggers BACT-CO_2 requirements, but it is unclear what sort of technologies could be considered. The most commonly mentioned coal-based alternative to prevailing coal-fired generation is Integrated Gasification Combined Cycle.

The Sevier Power Project in Sigurd is a proposed 270 MW coal-fired plant using circulating fluidized bed technology. The Utah Division of Air Quality (UDAQ) issued a PSD permit for the facility in 2004. When the permit was not invalidated upon reaching its 18-month expiration date, two citizens appealed the issue to the Utah Air Quality Board (UAQB). Though the appeal to UAQB failed, the two citizens along with the Utah chapter of the Sierra Club had their case heard by the Utah Supreme Court. The Supreme Court remanded the permit to UDAQ, finding that it contained incorrectly calculated nitrogen oxide emissions; but the finding of potentially greater importance was that UAQB incorrectly failed to consider integrated gasification combined cycle (IGCC) technology as an available method to control emissions. In order to gain the permit, a new review will have to be performed that considers IGCC among the options for controlling emissions. The lawsuit further alleged that UAQB ignored the greenhouse gas impli-

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[51] See PacifiCorp's 2008 Integrated Resource Plan (http://www.pacificorp.com/content/dam/pacificorp/doc/Environment/Environmental_Concerns/Integrated_Resource_Planning_3.pdf), page 277.

[52] PSD is a set of requirements that must be satisfied for major new projects or major additions to existing projects that will occur in areas that are meeting their National Ambient Air Quality Standards ("attainment areas"). In attainment areas, the requirements include, among others, a determination that such a project will use Best Available Control Technology (BACT) for pollutants. A PSD license is issued only if PSD requirements are met.

[53] Since the Bonanza facility would be constructed on Tribal land, EPA Region 8, rather than the Utah Division of Air Quality, is responsible for the permitting.

[54] *Massachusetts v. EPA* had already established CO_2 as a pollutant with regards to the CAA, but this alone didn't trigger BACT requirements for CO_2 because the EPA had not determined that CO_2 was a pollutant which also endangered "the public health or the public welfare."

cations of the Sevier Power Project, but the Utah Supreme Court found that UAQB correctly omitted this implication from consideration.

2.5 Options for Coal-Based Electricity Generation

The most important barrier to further growth in coal-fired generation is the cost of reducing emissions of those pollutants traditionally regulated by the Clean Air Act and those that might be, under a looming but as yet unknown regime for limiting emissions of greenhouse gases like CO_2. As the challenges to current proposals show, even the possibility of such limits can hold up new coal-fired generation. Provided the demand for coal stays closely tied to the demand for electricity, the prospects for coal mining will be linked to how readily coal-based power generation can adapt, if necessary, to accommodate more stringent emissions requirements.

All options for generating power through coal combustion generate CO_2. Significant differences between two coal-fired plants in the amount of CO_2 produced reflect only differences in operating efficiency (defined below). Given the limited options (apart from efficiency improvements) for reducing the CO_2 produced (per unit of electricity generated) by coal-fired plants, if substantial enough limits on CO_2 come into place then the viability of coal as an electric power source will depend on the ability to capture and sequester CO_2. MIT's 2007 report *The Future of Coal* therefore emphasizes the need to prove the viability of carbon capture and sequestration:

> Today, and independent of whatever carbon constraints may be chosen, the priority objective with respect to coal should be the successful large-scale demonstration of the technical, economic, and environmental performance of the technologies that make up all of the major components of a large-scale integrated CCS system—capture, transportation and storage. Such demonstrations are a prerequisite for broad deployment at gigatonne scale in response to the adoption of a future carbon mitigation policy, as well as for easing the trade-off between restraining emissions from fossil resource use and meeting the world's future energy needs.[55]

While it is certain that adopting CCS will add to the cost of power generation, given the immaturity of the technology and various other unknowns, cost estimates for CCS are imprecise at this date. The MIT study estimates that the charge per tonne of CO_2 emitted above which CCS technology becomes economically more attractive than non-CCS generation is about $30—reflecting $25 for capture and $5 for transportation and storage.

No matter the cost of CCS, capturing and storing CO_2 from coal-fired plants would be a very large undertaking. Noting that the coal-fired power industry emits 1.5 billion tons of CO_2 annually, the MIT study states that "[i]f all of this CO_2 is transported for sequestration, the quantity is equivalent to three times the weight and, under typical operating conditions, one-third of the annual volume of natural gas transported by the U.S. gas pipeline system."[56] Even the task of capturing and storing enough CO_2 that coal would be competitive with natural gas in terms of

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[55] *The Future of Coal: Options for a Carbon-Constrained World*, Massachusetts Institute of Technology, 2007, p. xi; available at http://web.mit.edu/coal/.

[56] *ibid.*, p. ix.

CO_2 emissions is daunting.[57] "If 60% of the CO_2 produced from U.S. coal-based power generation were to be captured and compressed to a liquid for geologic sequestration, its volume would about equal the total U.S. oil consumption of 20 million barrels per day."[58]

Economic and technical uncertainties can be partly resolved through research and development efforts. An additional hurdle for commercial CCS deployment is the legal uncertainty due to the absence of an in-place regulatory regime for geological carbon storage (e.g. whose responsibility does the deposit become, and when?).[59] The time needed to resolve CCS issues would make it difficult for the coal industry to quickly ramp down its CO_2 releases in the immediate future. This section now briefly reviews technologies that may allow coal to remain competitive with other generation technologies in the event of significant future emissions constraints.

Traditional coal-fired power plants generate heat by combusting finely ground coal with air. Facilities of this type are often referred to as "air-blown pulverized coal plants" (abbreviated: "air-blown PC"), and make up a large majority of the country's coal-fired plants. The heat from combustion produces steam that is passed through a turbine, which in turn powers an electric generator, producing electricity. Combustion combines oxygen from the air with carbon from the coal, sulfur from the coal, and nitrogen from the coal and air, to produce CO_2, sulfur dioxide (SO_2), and nitrogen dioxide (NO_2), respectively. These compounds are either removed from the exhaust gas or released into the atmosphere. That removal of such compounds from the exhaust gas is done post-combustion in traditional coal-fired plants is a critical distinction between traditional coal-fired plants and integrated gasification combined cycle plants (described below).

The efficiency of a fuel-based power plant is the percent of energy in the fuel that is ultimately delivered to the grid in the form of electricity ("net generation"). A more efficient coal-fired plant therefore requires less coal to deliver a given amount of electricity to the grid. Because the amount of CO_2 released from a given coal-fired facility is a constant proportion of the amount of coal burned, the percentage reduction in CO_2 is the same as the percentage reduction in coal burned. A plant that is 25 percent more efficient, produces 25 percent less CO_2.

One way to classify coal-fired power plants is according to the steam pressure and temperature at which they operate. Moving from lower to higher temperature and pressure the categories are: subcritical (typically 2,400 psi and 1,000° F), supercritical (typically 3,500 psi and 1,050° F), and ultra-supercritical (above 3,500 psi and 1,050° F, with commercially deployed units reaching 4,600 psi and 1,100° F).[60] All else being equal, higher efficiency results from higher steam pressure and temperature. Since higher efficiency means less fuel consumption, high-pressure/high-temperature power plants have lower fuel costs. But they have higher capital costs—the materials necessary for operation at higher pressure and temperature are more expensive. But perhaps more important than their higher capital costs is the concern for reliability, given the limited commercial experience of these systems compared with their subcritical counterparts.

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[57] Natural gas–fired power plants generate about half the CO_2 of similar-output coal-fired plants.

[58] *The Future of Coal*, p. ix.

[59] See Larry Parker, Deborah D. Stine, and Peter Folger, *Capturing CO_2 from Coal-Fired Power Plants: Challenges for a Comprehensive Strategy*, Congressional Research Service, 2009; available at http://www.fas.org/sgp/crs/misc/RL34621.pdf.

[60] *The Future of Coal*, pp. 20–21.

Table 2.1 summarizes performance and cost estimates for subcritical, supercritical, and ultra-supercritical power plants. The estimates are based on newly constructed 500 MW operations, burning a high-BTU high-sulfur coal, with and without carbon capture technology.[61] Total costs are disaggregated into an investment charge for the plant itself—spread over the assumed operating lifetime of 20 years—fuel cost, and operations and maintenance (O&M). The sum of these costs is the (levelized) cost of electricity (COE). In the cases where CO_2 is captured, it is assumed that the rate of capture is 90 percent.

In all cases, capturing CO_2 imposes a penalty on plant efficiency. But because greater efficiency means less fuel is burned for a given amount of electricity generated, the penalty decreases as the plant's (no-capture) efficiency increases: While building (90 percent) capture technology into a new subcritical plant results in a 27 percent loss of efficiency, the loss drops to 24 percent and 21 percent respectively for the inclusion of capture technology to new super- and ultra-supercritical plants. For the same reason, though the cost increases are substantial, the cost penalty is lower for more efficient plants.

	Subcritical PC		**Supercritical PC**		**Ultra-Supercritical**		**SC PC-oxy**	**IGCC**	
	No Capture	Capture	No Capture	Capture	No Capture	Capture	Capture	No Capture	Capture
Performance									
Heat Rate, BTU/kWe-h	9,950	13,600	8,870	11,700	7,880	10,000	11,157	8,891	10,942
Generating Efficiency	34.2%	25.1%	38.5%	29.3%	43.3%	34.1%	30.6%	38.4%	31.2%
Coal Feed, kg/h	208,000	284,000	185,000	243,000	164,000	209,000	232,628	185,376	228,155
CO_2 Emitted, g/kWe-h	931	127	830	109	738	94	104	832	102
Cost									
Total Plant Cost, $kWe	1,280	2,230	1,330	2,140	1,360	2,090	1,900	1,430	1,890
Inv. Charge, c/kWe-h @ 15.1%	2.6	4.52	2.7	4.34	2.76	4.24	3.85	2.9	3.83
Fuel, c/kWe-h @ $1.50/MMBTU	1.49	2.04	1.33	1.75	1.18	1.5	1.67	1.33	1.64
O&M, c/kWe-h	0.75	1.6	0.75	1.6	0.75	1.6	1.45	0.9	1.05
COE, c/kWe-h	4.84	8.16	4.78	7.69	4.69	7.34	6.98	5.13	6.52

Table 2.1
Estimates of Performance and Cost of Coal-Based Electric Power Technologies

Source: Tables 3.1 and 3.5 from The Future of Coal: Options for a Carbon-Constrained World, *Massachusetts Institute of Technology, 2007.*

The cost estimates stated so far are for new plants, not for retrofitting carbon-capture technology to existing plants. Reflecting a lack of optimal matching between carbon-capture equipment and existing plants not designed with carbon capture in mind, the efficiency (and cost) penalty is much larger for retrofits. In the case of an existing subcritical pulverized coal plant—by far the most common type in the U.S.—a carbon-capture retrofit degrades efficiency by about 40 percent. This means that a plant rated at 500 MW (net without carbon capture) would consume 206 MW internally to power the CO_2 scrubbers—degrading the power output to 294 MW. Because there appear to be more attractive options for coal-based generation, the MIT study concludes that "retrofits seem unlikely."[62]

What makes removal of CO_2 from air-blown pulverized coal plants so costly is that in these configurations, CO_2 makes up only about 20 percent of the exhaust gas, with nitrogen compounds

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[61] The capture cost includes only removing CO_2 from the exhaust stream; transportation and storage expenses are not included.
[62] *The Future of Coal*, p. 29.

making up most of the rest of the exhaust gas. This owes to the fact that the air in which the combustion takes place is about 78 percent nitrogen. A more concentrated CO_2 stream is less costly to capture. One way to retain the traditional pulverized coal combustion process—and the benefits of its long operational history—but obtain a concentrated CO_2 stream post-combustion is to burn the coal in nearly pure oxygen. Since little nitrogen would be present at combustion, the exhaust stream would be mostly free of nitrogen compounds (e.g. the criteria pollutant nitrogen oxide), consisting upwards of 90 percent CO_2 (water vapor being most of the rest). Units that combust with near-pure oxygen are termed "oxy-fuel."

Table 2.1 has a column for a representative supercritical oxy-fuel pulverized coal plant with carbon capture. In terms of operating efficiency, oxy-fuel PC is similar to supercritical PC, but with somewhat lower costs. The primary drawback of oxy-fuel PC is the high energy requirements needed to operate the equipment that separates out the oxygen from air (the "air-separation unit"). Though carbon capture is less costly with oxy-fuel PC compared with similar air-fuel PC, air-separation units of existing technology would impose a 15–20 percent efficiency penalty for oxy-fuel PC. The MIT report finds that "[t]here are no practical reasons for applying oxy-fuel except for CO_2 capture."[63,64] Though there is no commercial-scale experience with this process, several pilot projects exist in various states of development.

Whereas traditional coal-fired plants burn coal directly and remove unwanted byproducts after complete combustion has taken place, integrated gasification combined cycle (IGCC) power plants generate electricity through burning a coal-derived gas (referred to as a synthesis gas, or "syngas") after the byproduct-precursors are removed ("pre-combustion removal"). The gas is produced by placing coal in a pressurized vessel (a "gasifier") with steam, but without enough oxygen for complete combustion to take place. Under these conditions, the molecules in the coal break apart and undergo a series of chemical reactions to form hydrogen, carbon monoxide, and other gaseous compounds. The core idea behind gasification is not new. In principle this is how the coal gas was obtained that fired street lamps in Baltimore two centuries ago. With carbon-capture-integrated-IGCC, pollutants such as sulfur, mercury, and particulate matter are then removed from the syngas and the carbon monoxide (a criteria pollutant) is converted to carbon dioxide. Since the gas is still under pressure, pre-combustion cleaning with IGCC is more efficient than the post-combustion cleaning of traditional plants.

The "combined cycle" in IGCC means the following. The syngas is burned in a gas turbine which powers an electric generator. The exhaust heat is then employed to produce steam, which powers a steam turbine—and another generator. This incorporation of waste heat gives combined cycle technologies high thermal efficiencies.[65] Though the commercial experience of IGCC plants is limited, forward of the step in which the coal is gasified, the operation is quite similar to that of widely deployed natural-gas power plants.[66]

The last two columns of Table 2.1 show important performance and cost estimates for a newly constructed IGCC plant. The 19 percent efficiency penalty imposed by carbon-capture equip-

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[63] *The Future of Coal*, p. 30.

[64] A beneficial side-effect of oxy-fuel plants is their inherently low level of nitrogen oxide emissions.

[65] In the sense of the fraction of energy in the fuel that is delivered to the grid (net generation).

[66] PacifiCorp's 534 MW Currant Creek plant in Juab County and 525 MW Lakeside plant in Utah County both employ combined cycle technology.

ment is smaller than for any of the other listed technologies. Based on these estimates, if carbon capture is to take place, IGCC with carbon capture is the least-cost option.[67]

While a substantial charge for CO_2 would decrease the competitiveness of coal-fired electricity generation, provided carbon capture and sequestration turns out to be a viable process there appear to be several options available that would allow Utah to continue to lean on coal for a substantial portion of its energy needs.

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[67] Two additional sources of information on IGCC technology and the risks to ratepayers associated with choosing the combustion technology for long-lived coal-fired plants are *Western Coal at the Crossroads*, Western Resource Advocates, 2006, and *Investment Risk of New Coal-Fired Power Plants*, Western Resource Advocates, 2008; both available at http://www.westernresourceadvocates.org/media/pandp.php#energy.

3 COAL PRODUCTION IMPACTS

Standard economic impact methodology is based on the idea that the economic development and growth of a region depend on exports of local production and/or production that is import substituting. Regional exports occur when goods and services produced in a region are sold to consumers outside the region, sustaining income and jobs inside the region. Import substitution occurs when local producers are able to supply the consumers within a region with goods and services that would otherwise be imported. This keeps purchases in-region and supports jobs and incomes.

Coal production in Utah generates economic impacts because it is classified as either export base or import substitution production. Most Utah coal is used by power plants that in turn sell electricity to customers in Utah and other states. Because Utah has coal-fired power plants, it does not have to purchase electricity from out-of-state producers. This means that coal production in Carbon, Emery, and Sevier counties generates economic impacts for the producing counties as well as for the state as a whole. In addition to the jobs and income generated by the coal operators (termed "direct impacts"), other firms supply equipment and services to the coal producers. Some of these firms employ people who reside in the coal counties or elsewhere in Utah, and these are categorized as "indirect impacts." Then, all of the jobs (direct and indirect) generate incomes that support households which in turn demand goods and services, some of which are produced in the coal-producing counties or elsewhere in Utah (termed "induced impacts"). All of these economic impacts generate tax revenues and support a larger population than would otherwise be possible. Of course, a larger population demands more services (police, sanitation, education, etc.) as well as infrastructure (roads, water, sewer, etc.), and these are generally provided by state and local government.

The economic and demographic impacts of coal production for 2007 and for scenarios of production from 2008 through 2030 have been evaluated here using the REMI 29-region, 23-sector model built for Utah. The population and economy of each county in Utah are represented in the model. The sum of the impacts of all counties is equivalent to the state impact. Direct economic activity for 2007 and beyond was imputed to the coal-producing counties according to actual production levels in 2007 and scenarios into the future. For this study, the RIMS II and IMPLAN models were also used to calibrate state-level parameters.

3.1 Estimated 2007 Impacts

The detailed 2007 employment, population, earnings, and local and state government revenue impacts are shown in the scenario analysis tables, presented later in this document. Note that 2007 impacts are identical in each scenario. This is because they are based on historical data.

The 2007 summary impacts of coal production are shown in Table 3.1. In 2007, 24.3 million tons of coal were produced in Utah. The county distribution, in millions of tons, was 11.8 in Carbon, 5.8 from Emery, and 6.7 from Sevier. Estimated direct employment at the mines and their facilities was 1,888, with employment of 770 in Carbon, 753 in Emery, and 360 in Sevier.

Total employment impacts (direct plus all others) of 2007 coal production are estimated to be 4,703, which includes the above-mentioned 1,888 in direct employment plus 2,815 additional jobs, a ratio of 2.5-to-1. Not surprisingly, most of these employment impacts (4,017, or 85 percent of the total) are concentrated in the coal counties, with 686 in the rest of the state. About half of the employment impacts in the coal counties are estimated to have occurred in Carbon County. On a statewide basis, 42 percent of employment impacts were in Carbon County, 28 percent in Emery County, 16 percent in Sevier County, and 15 percent in the rest of the state.

Table 3.1
Coal Production Summary Impacts, 2007
(Dollar Amounts in Millions of Current Dollars)

	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	1,957	2,936	$62.6	$0.3	$4.8
Emery County	1,309	1,964	$47.4	$0.1	$3.5
Sevier County	751	1,127	$18.2	$0.1	$1.4
Coal Counties	4,017	6,026	$128.2	$0.5	$9.8
Rest of State	686	1,029	$68.1	$0.3	$5.3
Total State	4,703	7,055	$196.3	$0.8	$15.0

Share of Total					
	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	41.6%	41.6%	31.9%	40.6%	31.9%
Emery County	27.8%	27.8%	24.1%	12.3%	23.5%
Sevier County	16.0%	16.0%	9.3%	11.8%	9.4%
Coal Counties	85.4%	85.4%	65.3%	64.7%	64.8%
Rest of State	14.6%	14.6%	34.7%	35.3%	35.2%
Total State	100%	100%	100%	100%	100%

Notes: Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence). State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.
Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Population impacts associated with this additional economic activity totaled 7,055 persons in 2007. This is the additional population supported by the economic impact of coal mining in 2007. This includes population impacts of 2,936 in Carbon County, 1,964 in Emery County, 1,127 in Sevier County, and 1,029 in the rest of the state.

Nominal earnings impacts for 2007 are estimated to be $196.3 million for the state. These were distributed within the state as follows: $62.6 million in Carbon County, $47.4 million in Emery County, $18.2 million in Sevier County, and $68.1 million in the rest of the state.

An estimated $0.8 million in local revenue in 2007 is associated with these earnings impacts. They are estimated to have been distributed as follows: $0.3 million for Carbon County, $0.1 million for both Emery and Sevier counties, and $0.3 million for the rest of the state. State revenues generated by these earnings impacts are an estimated $15.0 million; $4.8 million generated in Carbon County, $3.5 million in Emery County, $1.4 million in Sevier County, and $5.3 million for the rest of the state.

Detailed employment impacts for 2007 are shown in Table 3.2. At the state level 2,245 jobs, or 48 percent of employment impacts, are estimated to be in the natural resources, mining, utilities, and construction sector, with mining accounting for most of these. In the combined coal counties, this sector accounted for 54 percent of employment impacts. Services accounted for the next largest share of employment impacts: 21 percent (991 jobs) at the state level and 18 percent (720 jobs) in the coal counties. These are jobs in the sector that provides services to the local population. Next, state and local government account for a combined 549 jobs (12 percent) of employment impact at the state level and 480 jobs (12 percent) of employment impact in the coal counties. Local government accounts for 366 jobs in the state as a whole and 323 in the coal counties. The trade sector (mostly retail) accounts for an estimated 628 jobs (13 percent of employment impacts) at the state level and 517 jobs (13 percent of employment impacts) in the coal counties in 2007. An estimated 269 jobs (6 percent of the total) at the state level were generated in the transportation, information, finance, and accounting sector, with 225 in the subsectors of finance, insurance, real estate, rental and leasing. In the coal counties, the transportation, information, finance, and accounting sector generated an estimated 137 jobs, representing 3 percent of the total. The remainder of employment impacts were in manufacturing.

Table 3.2
Utah Coal Production: Detailed Employment Impacts, 2007

Employment by Industry	State	Carbon	Emery	Sevier	Coal Counties	Non-Coal Counties	Share of Region State	Coal Counties
Natural Resources, Mining, Utilities, Construction	2,245	868	885	408	2,161	84	47.7%	53.8%
Forestry, Fishing, Other	2	1	0	0	1	1	0.0%	0.0%
Mining	1,948	784	801	360	1,945	3	41.4%	48.4%
Utilities	10	4	1	4	9	1	0.2%	0.2%
Construction	285	79	83	44	206	79	6.1%	5.1%
Manufacturing	22	1	0	1	2	20	0.5%	0.0%
Trade	628	293	159	65	517	111	13.4%	12.9%
Wholesale Trade	55	26	5	5	36	19	1.2%	0.9%
Retail Trade	573	267	154	60	481	92	12.2%	12.0%
Transportation, Information, Finance, Accounting	269	83	16	38	137	132	5.7%	3.4%
Transportation and Warehousing	21	2	0	2	4	17	0.4%	0.1%
Information	23	4	2	1	7	16	0.5%	0.2%
Finance, Insurance	100	30	6	8	44	56	2.1%	1.1%
Real Estate, Rental, Leasing	125	47	8	27	82	43	2.7%	2.0%
Services	991	431	183	106	720	271	21.1%	17.9%
Professional and Technical Services	122	43	8	19	70	52	2.6%	1.7%
Management of Companies / Enterprises	41	14	1	3	18	23	0.9%	0.4%
Administrative and Waste Services	140	56	19	15	90	50	3.0%	2.2%
Educational Services	19	3	1	0	4	15	0.4%	0.1%
Health Care and Social Assistance	321	151	95	27	273	48	6.8%	6.8%
Arts, Entertainment, Recreation	37	16	3	2	21	16	0.8%	0.5%
Accommodation and Food Services	139	65	23	20	108	31	3.0%	2.7%
Other Services (excl Gov)	172	83	33	20	136	36	3.7%	3.4%
Public Administration	549	281	67	132	480	69	11.7%	11.9%
State & Local Government	549	281	67	132	480	69	11.7%	11.9%
State Government	183	117	6	34	157	26	3.9%	3.9%
Local Government	366	164	61	98	323	43	7.8%	8.0%
Federal Civilian	0	0	0	0	0	0	0.0%	0.0%
Federal Military	0	0	0	0	0	0	0.0%	0.0%
Farm	0	0	0	0	0	0	0.0%	0.0%
TOTAL EMPLOYMENT	4,704	1,957	1,310	750	4,017	687	100%	100%

Notes: Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Detailed occupational distributions of the employment impacts for 2007 are shown in Table 3.3. Just over one in five of the total employment impacts were in construction and extraction occupations in both the state as a whole (21 percent) and the coal counties (23 percent). Sales, office, and administrative occupations accounted for 15 percent of employment impacts at the state level and 14 percent within the coal counties. Transportation and material-moving occupations are estimated to account for 8.5 percent of state employment impacts and 9 percent of coal county employment impacts. Management, business, and financial occupations generated an estimated 9 percent of state employment impacts and 8.5 percent of coal county impacts.

Table 3.3								
Utah Coal Production: Detailed Occupational Impacts, 2007								
	Employment						**Share of Region**	
					Coal	**Non-Coal**		**Coal**
Employment by Occupation	**State**	**Carbon**	**Emery**	**Sevier**	**Counties**	**Counties**	**State**	**Counties**
Management, Business, Financial	413	166	106	70	342	71	8.8%	8.5%
Computer, Math, Architect, Engineer	179	71	47	31	149	30	3.8%	3.7%
Life, Physical, Social Sciences	79	33	26	15	74	5	1.7%	1.8%
Community, Social Service	69	34	13	12	59	10	1.5%	1.5%
Legal	34	15	6	7	28	6	0.7%	0.7%
Education, Training, Library	44	17	7	5	29	15	0.9%	0.7%
Arts, Design, Entertainment, Sports, Media	25	10	3	3	16	9	0.5%	0.4%
Healthcare	216	101	57	24	182	34	4.6%	4.5%
Protective Service	144	71	18	32	121	23	3.1%	3.0%
Food Preparation, Serving-Related	143	67	24	20	111	32	3.0%	2.8%
Building, Grounds, Personal Care, Service	190	86	33	26	145	45	4.0%	3.6%
Sales, Office, Administrative	722	292	155	115	562	160	15.3%	14.0%
Farm, Fishing, Forestry	4	2	0	1	3	1	0.1%	0.1%
Construction, Extraction	977	372	367	176	915	62	20.8%	22.8%
Installation, Maintenance, Repair	260	104	81	46	231	29	5.5%	5.8%
Production	228	89	77	39	205	23	4.8%	5.1%
Transportation, Material Moving	402	160	135	70	365	37	8.5%	9.1%
Notes: Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence). Proprietors are not included in this table.								
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.								

4 UTAH COAL PRODUCTION SCENARIOS: 2008–2030

The future of coal mining in Utah is dependent on a complex set of economic, geological, technical, and political factors. Electric utilities consume the largest share of coal produced in Utah, and this should continue to be the case into the foreseeable future. According to the Energy Information Administration, coal will continue to provide the largest share of energy for U.S. electricity generation, even as alternative energy sources are developed.[68] Assuming that Utah mining operations remain competitive relative to other potential coal and alternative energy sources, mines should continue to produce to at least 2030, although there is some uncertainty.

The Utah Geological Survey (UGS) prepared a set of coal projection scenarios to be used in this study: Low, Middle, and High production (Tables 4.1a–4.1c). In all three scenarios, the UGS assumed that there is a continued depletion at existing mines. In the Low Scenario, new mines have difficulty with permitting, and demand declines due to the development of affordable alternative fuels and increased greenhouse gas regulation. Growth is further restricted in this scenario as export markets do not develop. In the Middle Scenario, new mines are permitted and begin to produce coal, but demand growth is slow as older electric generation plants are shut down and not replaced. The High Scenario also assumes the development of new reserves, but, in addition, increasing demand. This increase in demand is from three sources: 1) successful carbon-capture technology and, in consequence, new power plants; 2) successful implementation of coal-to-liquids and coal-to-gas plants; and 3) increasing exports to the Pacific Rim.

All three scenarios follow the same assumed production path from 2008 through 2014, with annual production declining from 24.0 million tons in 2008 to 23.5 million tons each year from 2009 through 2011. Production increases to 25.5 million tons in both 2012 and 2013, and then increases further to 27.5

				Table 4.1a		
			Utah Coal Production, 2000–2030:			
			Low Scenario			
			(Thousands of Tons)			
Year	Carbon	Emery	Sevier	Subtotal	Other	Total
2000	4,615	16,399	5,906	26,920	0	26,920
2001	5,689	14,334	7,001	27,024	0	27,024
2002	6,007	11,692	7,600	25,299	0	25,299
2003	7,091	8,852	7,126	23,069	0	23,069
2004	8,772	5,477	7,568	21,817	0	21,817
2005	9,618	7,372	7,567	24,556	0	24,556
2006	11,560	6,662	7,908	26,131	0	26,131
2007	11,811	5,765	6,712	24,288	0	24,288
2008	11,400	5,700	6,900	24,000	0	24,000
2009	10,500	6,000	7,000	23,500	0	23,500
2010	10,500	6,000	7,000	23,500	0	23,500
2011	10,500	6,000	7,000	23,500	0	23,500
2012	10,500	7,000	7,000	24,500	1,000	25,500
2013	10,500	7,000	7,000	24,500	1,000	25,500
2014	10,500	8,000	7,000	25,500	2,000	27,500
2015	8,500	9,000	6,000	23,500	2,000	25,500
2016	6,500	9,000	6,000	21,500	2,000	23,500
2017	4,500	10,000	6,000	20,500	2,000	22,500
2018	2,500	9,000	6,000	17,500	2,000	19,500
2019	2,500	9,000	6,000	17,500	2,000	19,500
2020	1,500	9,000	6,000	16,500	2,000	18,500
2021	500	8,000	6,000	14,500	2,000	16,500
2022	500	8,000	6,000	14,500	2,000	16,500
2023	500	8,000	5,000	13,500	2,000	15,500
2024	500	8,000	5,000	13,500	2,000	15,500
2025	500	8,000	5,000	13,500	2,000	15,500
2026	500	8,000	5,000	13,500	2,000	15,500
2027	500	7,000	5,000	12,500	2,000	14,500
2028	500	7,000	5,000	12,500	2,000	14,500
2029	500	7,000	5,000	12,500	2,000	14,500
2030	500	7,000	5,000	12,500	2,000	14,500

Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

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[68] Energy Information Administration. 2009. "Electricity Demand," from *Annual Energy Outlook 2009 with Projections to 2030*, available at http://www.eia.doe.gov/oiaf/aeo/electricity.html.

million tons in 2014. All three scenarios decline from 2015 through 2019, with the Middle and High scenarios taking the same path to reach 23.5 million tons and the Low Scenario declining to 19.5 million tons. From 2020 to 2030, the growth paths diverge, with the Low Scenario continuing to decline to reach 14.5 million tons annually for each year from 2027 through 2030 and the Middle Scenario declining to 20.5 million tons annually over the same period. In the High Scenario, production also declines from 2014 to a level of 22.5 million tons in 2018, but then increases to a constant annual production of 30.5 million tons from 2022 to 2026. In this scenario, annual production drops to 29.5 million tons for the remainder of the projection period (2027–2030) (Figure 4.1).

Table 4.1b Utah Coal Production, 2000–2030: Middle Scenario (Thousands of Tons)						
Year	Carbon	Emery	Sevier	Subtotal	Other	Total
2000	4,615	16,399	5,906	26,920	0	26,920
2001	5,689	14,334	7,001	27,024	0	27,024
2002	6,007	11,692	7,600	25,299	0	25,299
2003	7,091	8,852	7,126	23,069	0	23,069
2004	8,772	5,477	7,568	21,817	0	21,817
2005	9,618	7,372	7,567	24,556	0	24,556
2006	11,560	6,662	7,908	26,131	0	26,131
2007	11,811	5,765	6,712	24,288	0	24,288
2008	11,400	5,700	6,900	24,000	0	24,000
2009	10,500	6,000	7,000	23,500	0	23,500
2010	10,500	6,000	7,000	23,500	0	23,500
2011	10,500	6,000	7,000	23,500	0	23,500
2012	10,500	7,000	7,000	24,500	1,000	25,500
2013	10,500	7,000	7,000	24,500	1,000	25,500
2014	10,500	8,000	7,000	25,500	2,000	27,500
2015	9,500	9,000	6,000	24,500	2,000	26,500
2016	8,500	9,000	6,000	23,500	2,000	25,500
2017	6,500	10,000	6,000	22,500	2,000	24,500
2018	4,500	10,000	6,000	20,500	2,000	22,500
2019	4,500	11,000	6,000	21,500	2,000	23,500
2020	3,500	12,000	6,000	21,500	2,000	23,500
2021	2,500	12,000	6,000	20,500	2,000	22,500
2022	2,500	12,000	6,000	20,500	2,000	22,500
2023	2,500	12,000	5,000	19,500	2,000	21,500
2024	2,500	12,000	5,000	19,500	2,000	21,500
2025	2,500	12,000	5,000	19,500	2,000	21,500
2026	2,500	12,000	5,000	19,500	2,000	21,500
2027	2,500	11,000	5,000	18,500	2,000	20,500
2028	2,500	11,000	5,000	18,500	2,000	20,500
2029	2,500	11,000	5,000	18,500	2,000	20,500
2030	2,500	11,000	5,000	18,500	2,000	20,500
Note: Historical data through 2007, projections from 2008 through 2030. *Source: Utah Geological Survey.*						

Table 4.1c Utah Coal Production, 2000–2030: High Scenario (Thousands of Tons)						
Year	Carbon	Emery	Sevier	Subtotal	Other	Total
2000	4,615	16,399	5,906	26,920	0	26,920
2001	5,689	14,334	7,001	27,024	0	27,024
2002	6,007	11,692	7,600	25,299	0	25,299
2003	7,091	8,852	7,126	23,069	0	23,069
2004	8,772	5,477	7,568	21,817	0	21,817
2005	9,618	7,372	7,567	24,556	0	24,556
2006	11,560	6,662	7,908	26,131	0	26,131
2007	11,811	5,765	6,712	24,288	0	24,288
2008	11,400	5,700	6,900	24,000	0	24,000
2009	10,500	6,000	7,000	23,500	0	23,500
2010	10,500	6,000	7,000	23,500	0	23,500
2011	10,500	6,000	7,000	23,500	0	23,500
2012	10,500	7,000	7,000	24,500	1,000	25,500
2013	10,500	7,000	7,000	24,500	1,000	25,500
2014	10,500	8,000	7,000	25,500	2,000	27,500
2015	9,500	9,000	6,000	24,500	2,000	26,500
2016	8,500	9,000	6,000	23,500	2,000	25,500
2017	6,500	10,000	6,000	22,500	2,000	24,500
2018	4,500	10,000	6,000	20,500	2,000	22,500
2019	4,500	11,000	6,000	21,500	2,000	23,500
2020	4,500	15,000	6,000	25,500	2,000	27,500
2021	3,500	15,000	6,000	24,500	2,000	26,500
2022	4,500	18,000	6,000	28,500	2,000	30,500
2023	5,500	18,000	5,000	28,500	2,000	30,500
2024	5,500	18,000	5,000	28,500	2,000	30,500
2025	5,500	18,000	5,000	28,500	2,000	30,500
2026	5,500	18,000	5,000	28,500	2,000	30,500
2027	5,500	17,000	5,000	27,500	2,000	29,500
2028	5,500	17,000	5,000	27,500	2,000	29,500
2029	5,500	17,000	5,000	27,500	2,000	29,500
2030	5,500	17,000	5,000	27,500	2,000	29,500

Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

Figure 4.1
Utah Coal Production, 2000–2030
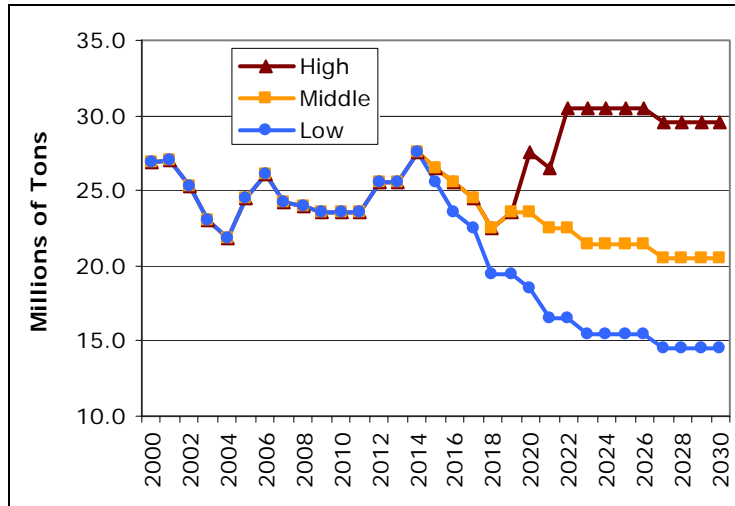
Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

In the last year of historical data (2007), Carbon County accounted for nearly half (49 percent) of the coal produced in the state, with Sevier County accounting for 28 percent and Emery County accounting for 24 percent. In all three scenarios, Carbon County production falls beneath that of Emery and, in two out of three, also below Sevier. In all scenarios, Emery becomes the largest coal-producing county in the state, and a smaller amount of coal production (2.0 million tons annually) is developed outside the current three-county coal region (Figures 4.2a–4.2c).

Figure 4.2a
Utah Coal Production, 2000–2030: Low Scenario
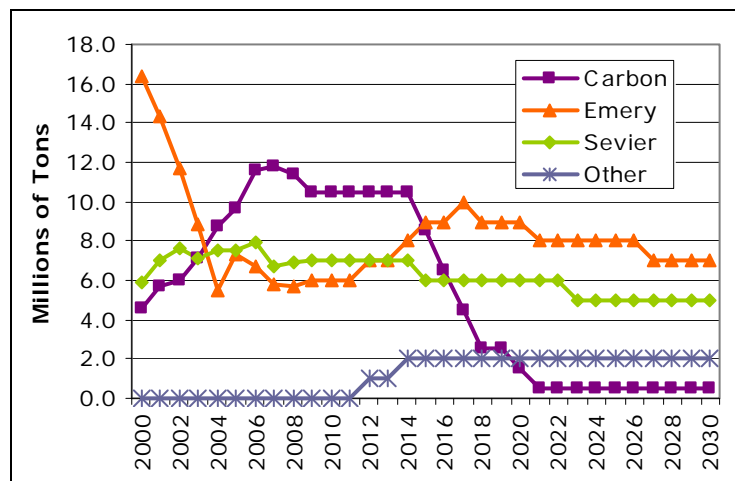
Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

Figure 4.2b
Utah Coal Production, 2000–2030: Middle Scenario
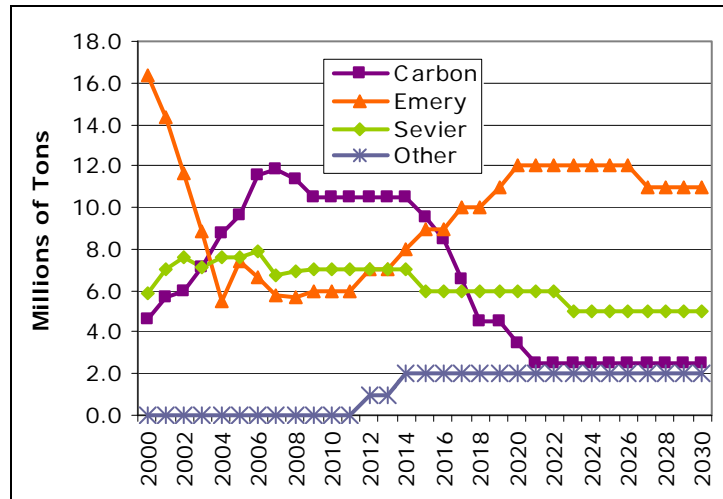
Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

Figure 4.2c
Utah Coal Production, 2000–2030: High Scenario

Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

In all three scenarios, Carbon County coal production is constant at an annual rate of 10.5 million tons from 2009 through 2014. In the Low Scenario, production collapses to 0.5 million tons by 2021 and remains there throughout the rest of the projection period. In the Middle Scenario, Carbon County production also declines, but maintains a steady output at 2.5 million tons annually from 2021 through 2030. In the High Scenario, coal production declines to 3.5 million tons in Carbon County in 2021, then rebounds to a steady annual output of 5.5 million tons from 2023 through 2030 (Figure 4.3a).

Figure 4.3a
Carbon County Coal Production, 2000–2030

Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

For Emery County, all scenarios follow the same path through 2017 to increase steadily to annual production of 10.0 million tons. In the Low Scenario, production declines to reach 7.0 million tons for each year from 2027 through 2030. The Middle Scenario increases to plateau at 12.0 million tons from 2020 through 2026, then declines to a steady annual production of 11.0 million tons for the duration of the projection. In the High Scenario, Emery County coal production rises to 18.0 million tons in the years 2022 through 2026, then declines to an annual rate of 17.0 million tons from 2027 through 2030 (Figure 4.3b).

Figure 4.3b
Emery County Coal Production, 2000–2030
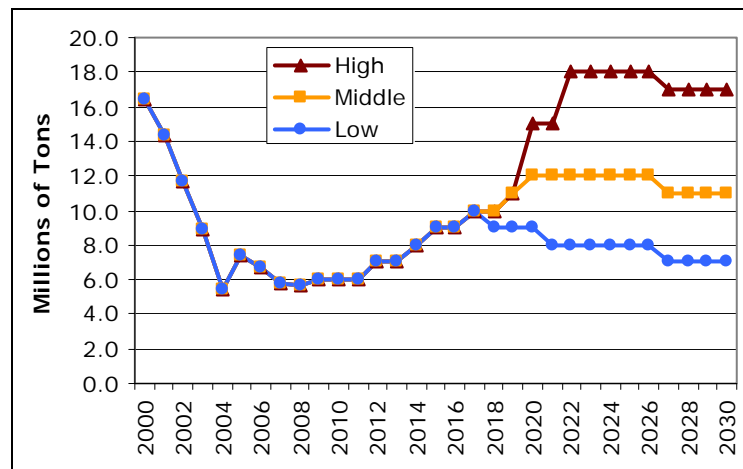
Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

Sevier County has an identical coal production projection in all three scenarios. Production declines in three steps, from 7.0 million tons annually in the years 2009 through 2014, then 6.0 mil-

lion tons annually from 2015 through 2022, and finally to 5.0 million tons annually from 2023 through the end of the projection period (Figure 4.3c).

Figure 4.3c
Sevier County Coal Production, 2000–2030
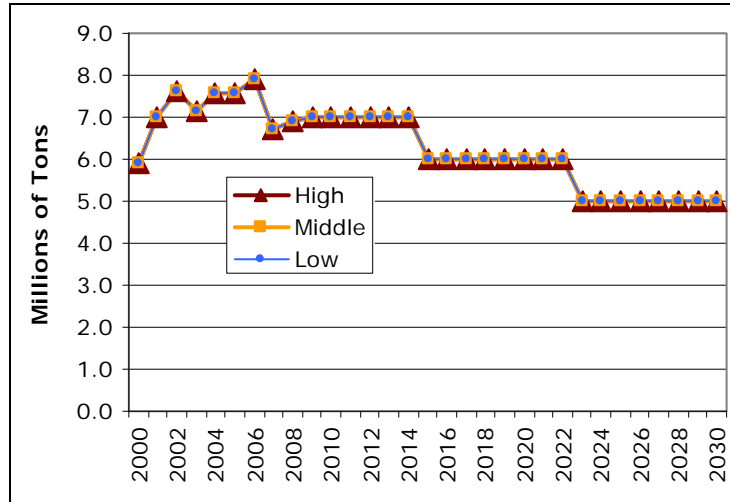
Note: Historical data through 2007, projections from 2008 through 2030.
Source: Utah Geological Survey.

The physical quantity of production is converted to dollar values using the price projections of the Energy Information Administration for Rocky Mountain low-sulfur bituminous coal.[69] In constant 2008 dollars, the price fluctuates near $31.50 between 2009 and 2012. Then it begins a slow and steady decline to $29.80 in 2025, after which it again returns to $31.48 in 2030. These prices are shown in Figure 4.4 and the resulting values of Utah production for each of the scenarios are shown in Tables 4.2a–4.2c.

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[69] Energy Information Administration (2009) "Supplemental Tables to the Annual Energy Outlook 2009, Updated Reference Case with ARRA," Table 122: Coal Prices by Region and Type (2007 constant dollars), available at http://www.eia.doe.gov/oiaf/aeo/supplement/stimulus/arra/excel/sup_ogc.xls.

Figure 4.4
Rocky Mountain Low-Sulfur Bituminous Coal
Projected Price per Ton
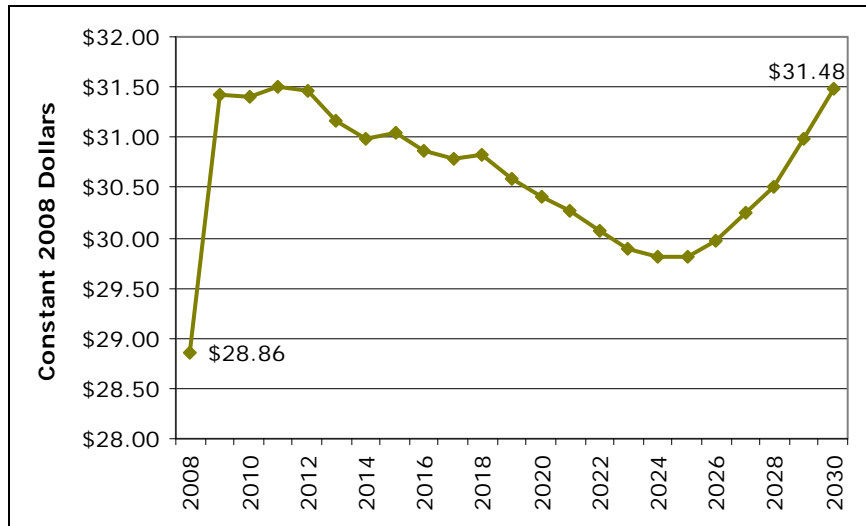
Source: Energy Information Administration, Annual Energy Outlook 2009 with Projections to 2030.

Table 4.2a
Value of Utah Coal Production, 2000–2030:
Low Scenario
(Millions of Constant 2008 Dollars)

Year	Carbon	Emery	Sevier	Subtotal	Other	Total
2007	$308.9	$150.8	$175.6	$635.3	$0.0	$635.3
2008	$329.1	$164.6	$199.2	$692.9	$0.0	$692.9
2009	$330.0	$188.5	$220.0	$738.5	$0.0	$738.5
2010	$329.8	$188.4	$219.8	$738.1	$0.0	$738.1
2011	$331.0	$189.1	$220.7	$740.8	$0.0	$740.8
2012	$330.6	$220.4	$220.4	$771.3	$31.5	$802.8
2013	$327.3	$218.2	$218.2	$763.6	$31.2	$794.8
2014	$325.5	$248.0	$217.0	$790.6	$62.0	$852.6
2015	$264.0	$279.5	$186.4	$729.9	$62.1	$792.0
2016	$200.8	$278.0	$185.3	$664.0	$61.8	$725.8
2017	$138.6	$308.1	$184.8	$631.5	$61.6	$693.1
2018	$77.1	$277.5	$185.0	$539.7	$61.7	$601.4
2019	$76.5	$275.3	$183.5	$535.3	$61.2	$596.5
2020	$45.6	$273.8	$182.5	$501.9	$60.8	$562.7
2021	$15.1	$242.2	$181.7	$439.0	$60.6	$499.6
2022	$15.0	$240.6	$180.4	$436.0	$60.1	$496.2
2023	$15.0	$239.2	$149.5	$403.7	$59.8	$463.5
2024	$14.9	$238.6	$149.1	$402.7	$59.7	$462.4
2025	$14.9	$238.5	$149.1	$402.5	$59.6	$462.1
2026	$15.0	$239.8	$149.9	$404.7	$60.0	$464.6
2027	$15.1	$211.9	$151.3	$378.3	$60.5	$438.9
2028	$15.3	$213.6	$152.6	$381.5	$61.0	$442.6
2029	$15.5	$217.0	$155.0	$387.4	$62.0	$449.4
2030	$15.7	$220.4	$157.4	$393.6	$63.0	$456.6

Note: Historical data for 2007, projections from 2008 through 2030.
Sources: BEBR analysis of data from the Utah Geological Survey and the Energy Information Administration.

Table 4.2b
Value of Utah Coal Production, 2000–2030:
Middle Scenario
(Millions of Constant 2008 Dollars)

Year	Carbon	Emery	Sevier	Subtotal	Other	Total
2007	$308.9	$150.8	$175.6	$635.3	$0.0	$635.3
2008	$329.1	$164.6	$199.2	$692.9	$0.0	$692.9
2009	$330.0	$188.5	$220.0	$738.5	$0.0	$738.5
2010	$329.8	$188.4	$219.8	$738.1	$0.0	$738.1
2011	$331.0	$189.1	$220.7	$740.8	$0.0	$740.8
2012	$330.6	$220.4	$220.4	$771.3	$31.5	$802.8
2013	$327.3	$218.2	$218.2	$763.6	$31.2	$794.8
2014	$325.5	$248.0	$217.0	$790.6	$62.0	$852.6
2015	$295.1	$279.5	$186.4	$760.9	$62.1	$823.1
2016	$262.5	$278.0	$185.3	$725.8	$61.8	$787.6
2017	$200.2	$308.1	$184.8	$693.1	$61.6	$754.7
2018	$138.8	$308.4	$185.0	$632.2	$61.7	$693.9
2019	$137.7	$336.5	$183.5	$657.7	$61.2	$718.8
2020	$106.5	$365.0	$182.5	$654.0	$60.8	$714.8
2021	$75.7	$363.3	$181.7	$620.7	$60.6	$681.2
2022	$75.2	$360.8	$180.4	$616.4	$60.1	$676.6
2023	$74.8	$358.9	$149.5	$583.2	$59.8	$643.0
2024	$74.6	$358.0	$149.1	$581.7	$59.7	$641.3
2025	$74.5	$357.8	$149.1	$581.4	$59.6	$641.0
2026	$74.9	$359.7	$149.9	$584.5	$60.0	$644.5
2027	$75.7	$332.9	$151.3	$559.9	$60.5	$620.4
2028	$76.3	$335.7	$152.6	$564.6	$61.0	$625.7
2029	$77.5	$340.9	$155.0	$573.4	$62.0	$635.4
2030	$78.7	$346.4	$157.4	$582.5	$63.0	$645.5

Note: Historical data for 2007, projections from 2008 through 2030.
Sources: BEBR analysis of data from the Utah Geological Survey and the Energy Information Administration.

Table 4.2c
Value of Utah Coal Production, 2000–2030:
High Scenario
(Millions of Constant 2008 Dollars)

Year	Carbon	Emery	Sevier	Subtotal	Other	Total
2007	$308.9	$150.8	$175.6	$635.3	$0.0	$635.3
2008	$329.1	$164.6	$199.2	$692.9	$0.0	$692.9
2009	$330.0	$188.5	$220.0	$738.5	$0.0	$738.5
2010	$329.8	$188.4	$219.8	$738.1	$0.0	$738.1
2011	$331.0	$189.1	$220.7	$740.8	$0.0	$740.8
2012	$330.6	$220.4	$220.4	$771.3	$31.5	$802.8
2013	$327.3	$218.2	$218.2	$763.6	$31.2	$794.8
2014	$325.5	$248.0	$217.0	$790.6	$62.0	$852.6
2015	$295.1	$279.5	$186.4	$760.9	$62.1	$823.1
2016	$262.5	$278.0	$185.3	$725.8	$61.8	$787.6
2017	$200.2	$308.1	$184.8	$693.1	$61.6	$754.7
2018	$138.8	$308.4	$185.0	$632.2	$61.7	$693.9
2019	$137.7	$336.5	$183.5	$657.7	$61.2	$718.8
2020	$136.9	$456.3	$182.5	$775.7	$60.8	$836.5
2021	$106.0	$454.2	$181.7	$741.8	$60.6	$802.4
2022	$135.3	$541.3	$180.4	$857.0	$60.1	$917.1
2023	$164.5	$538.3	$149.5	$852.3	$59.8	$912.1
2024	$164.1	$536.9	$149.1	$850.1	$59.7	$909.8
2025	$164.0	$536.7	$149.1	$849.7	$59.6	$909.3
2026	$164.9	$539.6	$149.9	$854.3	$60.0	$914.3
2027	$166.5	$514.5	$151.3	$832.3	$60.5	$892.8
2028	$167.9	$518.9	$152.6	$839.3	$61.0	$900.4
2029	$170.5	$526.9	$155.0	$852.4	$62.0	$914.4
2030	$173.2	$535.3	$157.4	$865.9	$63.0	$928.9

Note: Historical data for 2007, projections from 2008 through 2030.
Sources: BEBR analysis of data from the Utah Geological Survey and the Energy Information Administration.

5 IMPACTS OF COAL PRODUCTION SCENARIOS

5.1 Overview

The model used to evaluate impacts of coal production in Utah is the 29-county, 23-sector, REMI PI+ model built for all counties of Utah. Impacts included in this report are employment (a job count), population, earnings (compensation plus proprietors' income), local government revenue, state government revenue, and occupations. These are reported for each of the coal counties: Carbon, Emery, and Sevier, as well as for the combined coal counties, the remainder of the state (the other 26 counties), and the entire state. The scenarios include a relatively small mining operation outside these three coal counties beginning in 2012 and continuing until 2030. This area is *not* included in the coal counties aggregation for reporting purposes. Rather, it is included in the state total and also the "non-coal counties" aggregation.

The essence of economic impact evaluation is the identification of the magnitude and composition of spending in a regional export sector, and the additional spending and income that this generates for a region. In this analysis, each county is considered a region, and all regions in the model are linked through trade flows and commuting patterns. Again, the combined counties of Carbon, Emery, and Sevier are defined as the coal counties, while the other 26 counties are the non-coal counties. The idea of impact analysis is that the export sector generates jobs and spending in the region. These exports support additional business activity (i.e., purchases by the mining operation from in-region firms), and also support additional residential population. This additional population requires goods and services, some of which are provided locally and others that are imported into the region. In this analysis, impacts are analyzed from 2007 (historical data) through 2030 (projected data). The analytical structure of the model is explained in greater detail in Section 9.

In this REMI model, there is a single "mining" sector, which includes all types of mining, including coal. The technical coefficients are based on national input-output models, last calibrated in 2007. In the ideal situation, an analyst would have access to primary data from actual mining operations to determine the payroll and in-region spending of the coal mining operations. This would include purchase of trucking services, rail service, mining service companies, and so forth. In this study, we made requests to firms, but were not able to acquire the primary data. Given the unique nature of Utah's coal mines (i.e., very deep underground mines) and the industry mix of the mining sector in Carbon, Emery, and Sevier counties (i.e., heavily weighted towards coal mining) as compared with the aggregate national mining industry, it was necessary to calibrate the model to generate more accurate impact estimates. For this process, the available data included coal mine employment and associated wages and salaries (from the Utah Department of Workforce Services) for each of the three coal mining counties for 2007 as well as the physical quantity and prices of coal production by county (from the Utah Geological Survey).

The REMI model uses the concept "compensation" rather than wages and salaries alone, which is a subset of the former. Both concepts are measured at the place of work, rather than the place of residence of workers. Compensation includes wages and salaries, as well as benefits and employer contributions to government social insurance. For this analysis, statewide industry-level compensation plus wage and salary data generated by the Bureau of Economic Analysis were used to convert the county-level wage and salary coal mining data to compensation. Next, aver-

age compensation was computed for the known data, and these were compared with the 2007 average compensation estimates in the county-level REMI baseline. An alternative REMI baseline was generated using compensation adjustments that targeted the known average compensation in mining in Carbon, Emery, and Sevier counties in 2007. The observed differences in 2007 were proportionately applied to the REMI average compensations for mining for all years in the projection period (2008–2030).

Next, a series of calibration simulations were developed relative to this new compensation-adjusted baseline in REMI. Known production of coal for 2007 was inputted as final demand to the mining sector in Carbon, Emery, and Sevier. A series of adjustments to factor productivity was made until a combination was found that generated mining employment equal to the known numbers of employees in the mining sectors in 2007 in the coal mining counties. This set of productivity adjustments was applied proportionately throughout the projection period. This same procedure was used to prepare the input files for each of the three coal production scenarios. Local government revenues and state government impacts are based on the historical ratio of these, by county, to earnings. This is also detailed in Section 9. Results of the scenarios are summarized below.

Impact results for the three scenarios are presented in a series of nine tables for these six areas: the State of Utah, Carbon County, Emery County, Sevier County, coal counties (Carbon, Emery, and Sevier combined), and non-coal counties (all counties except Carbon, Emery, and Sevier). For each area, a set of three tables presents summary impacts, detailed employment impacts, and detailed occupational distribution impacts for each of the three scenarios (a total of nine tables). These 54 tables are followed by a set of six tables that compare 2007 and 2030 summary results for all six areas. The tables present the distribution of impacts among areas as well as changes in levels and percentages from 2007 to 2030.

5.2 State-Level Scenario Impacts

Impact results for each of the three scenarios for the state of Utah are shown in nine tables. These include the Low Scenario, shown in Tables 5.1a through 5.1c; the Middle Scenario, shown in Tables 5.2a through 5.2c; and the High Scenario, shown in Tables 5.3a through 5.3c. Figures 5.1a through 5.1e show all three scenarios for each of the major impact categories for the state.

Statewide employment impacts rise from 4,703 in 2007 to 6,320 in 2014 for all scenarios. Both the Low and Middle scenarios then turn down to reach 3,524 (Low Scenario) and 4,430 (Middle Scenario) in 2030. The High Scenario increases to a peak of 6,298 in 2022, then declines to reach 5,775 in 2030.

In the Low Scenario, population impacts follow a path of increase from 7,055 in 2007 to eventually peak at 9,744 in 2020, and then decline to reach 8,524 in 2030. The Middle Scenario generally increases to peak in 2024 at 10,665, then declines to 10,158 in 2030. The High Scenario mostly shows growth throughout the projection period, terminating at 12,316 in 2030.

Nominal earnings, local tax revenue, and state tax revenue impacts are higher in 2030 than in 2007 for all three scenarios. From 2007 to 2030, nominal earnings impacts increase from $196.3 million to $426.6 million in the Low Scenario, $542.8 million in the Middle Scenario, and $719.4

million in the High Scenario. Over the same period, nominal local government revenue impacts increase from $0.8 million to $1.6 million in the Low Scenario, $2.0 million in the Middle Scenario, and $2.6 million in the High Scenario. Nominal state government revenue impacts increase from $15.0 million in 2007 to 2030 levels of $32.7 million in the Low Scenario, $36.5 million in the Middle Scenario, and $55.1 million in the High Scenario.

Table 5.1a
Summary Impacts
State of Utah: Low Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	4,703	7,055	$196.3	$0.8	$15.0
2008	5,192	7,788	$223.4	$0.9	$17.1
2009	5,497	8,246	$242.7	$1.0	$18.6
2010	5,519	8,279	$249.5	$1.0	$19.1
2011	5,508	8,262	$262.0	$1.0	$20.1
2012	5,950	8,925	$299.4	$1.2	$23.0
2013	5,911	8,867	$313.4	$1.2	$24.0
2014	6,320	9,480	$354.9	$1.4	$27.2
2015	6,034	9,051	$359.8	$1.4	$27.6
2016	5,663	8,981	$356.3	$1.3	$27.3
2017	5,451	9,339	$360.4	$1.3	$27.6
2018	4,931	9,514	$341.0	$1.2	$26.1
2019	4,818	9,663	$349.2	$1.3	$26.8
2020	4,586	9,744	$348.4	$1.3	$26.7
2021	4,230	9,720	$335.2	$1.2	$25.7
2022	4,138	9,680	$343.4	$1.2	$26.3
2023	3,945	9,592	$344.0	$1.2	$26.3
2024	3,880	9,497	$354.1	$1.3	$27.1
2025	3,832	9,383	$366.8	$1.3	$28.1
2026	3,791	9,253	$380.6	$1.4	$29.1
2027	3,625	9,074	$379.5	$1.4	$29.1
2028	3,582	8,892	$393.4	$1.4	$30.1
2029	3,547	8,706	$408.8	$1.5	$31.3
2030	3,524	8,524	$426.6	$1.6	$32.7

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.
Sources: Economic and demographic impacts generated using the REMI model.
Revenue impacts generated by BEBR using methods documented in this report.

As was the case in the 2007 impact estimates, the natural resources, mining, utilities, and construction sector is the largest employment sector (dominated by mining) in all scenarios. As it fluctuates in the different scenarios, the service sectors impacted by the multiplier effect fluctuate in response. Similarly, among occupations, construction and extraction occupations numerically dominate and drive changes in the other occupations in all scenarios.

Table 5.1b
Detailed Employment Impacts
State of Utah: Low Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Natural Resources, Mining, Utilities, Construction	2,245	2,642	2,676	1,962	1,487	1,268	−977	−43.5%
Forestry, Fishing, Other	2	0	−2	0	2	4	2	100.0%
Mining	1,948	2,096	2,138	1,676	1,352	1,174	−774	−39.7%
Utilities	10	11	10	8	7	8	−2	−20.0%
Construction	285	535	530	278	126	82	−203	−71.2%
Manufacturing	22	1	6	1	6	13	−9	−40.9%
Trade	628	716	818	654	563	510	−118	−18.8%
Wholesale Trade	55	53	63	46	39	35	−20	−36.4%
Retail Trade	573	663	755	608	524	475	−98	−17.1%
Transportation, Information, Finance, Accounting	269	295	361	257	223	218	−51	−19.0%
Transportation and Warehousing	21	19	26	21	24	29	8	38.1%
Information	23	26	37	30	27	27	4	17.4%
Finance, Insurance	100	98	120	76	62	59	−41	−41.0%
Real Estate, Rental, Leasing	125	152	178	130	110	103	−22	−17.6%
Services	991	1,204	1,509	1,267	1,199	1,190	199	20.1%
Professional and Technical Services	122	149	187	143	127	128	6	4.9%
Management of Companies / Enterprises	41	39	39	22	17	16	−25	−61.0%
Administrative and Waste Services	140	163	192	138	119	113	−27	−19.3%
Educational Services	19	26	43	46	49	52	33	173.7%
Health Care and Social Assistance	321	382	485	424	421	435	114	35.5%
Arts, Entertainment, Recreation	37	47	68	62	62	61	24	64.9%
Accommodation and Food Services	139	198	269	250	237	223	84	60.4%
Other Services (excl Gov)	172	200	226	182	167	162	−10	−5.8%
Public Administration	549	661	663	446	355	326	−223	−40.6%
State & Local Government	549	661	663	446	355	326	−223	−40.6%
State Government	183	212	209	123	96	90	−93	−50.8%
Local Government	366	449	454	323	259	236	−130	−35.5%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	4,704	5,519	6,033	4,587	3,833	3,525	−1,179	−25.1%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.1c
Detailed Occupational Impacts
State of Utah: Low Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	413	474	510	373	306	280	−133	−32.2%
Computer, Math, Architect, Engineer	179	203	226	172	144	135	−44	−24.6%
Life, Physical, Social Science	79	89	95	73	61	55	−24	−30.4%
Community, Social Service	69	83	94	74	67	67	−2	−2.9%
Legal	34	40	43	31	25	24	−10	−29.4%
Education, Training, Library	44	55	71	63	62	64	20	45.5%
Arts, Design, Entertainment, Sports, Media	25	30	37	29	26	26	1	4.0%
Healthcare	216	256	312	263	254	258	42	19.4%
Protective Service	144	174	183	127	104	98	−46	−31.9%
Food Preparation, Serving-Related	143	197	263	240	227	217	74	51.7%
Building, Grounds, Personal Care, Service	190	230	273	219	202	198	8	4.2%
Sales, Office, Administrative	722	826	901	657	547	507	−215	−29.8%
Farm, Fishing, Forestry	4	3	3	2	3	4	0	0.0%
Construction, Extraction	977	1,208	1,223	862	629	530	−447	−45.8%
Installation, Maintenance, Repair	260	306	328	247	200	181	−79	−30.4%
Production	228	241	255	194	161	147	−81	−35.5%
Transportation, Material Moving	402	441	460	350	287	258	−144	−35.8%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).

Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.2a
Summary Impacts
State of Utah: Middle Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	4,703	7,055	$196.3	$0.8	$15.0
2008	5,192	7,788	$223.4	$0.9	$17.1
2009	5,497	8,246	$242.7	$1.0	$18.6
2010	5,519	8,279	$249.5	$1.0	$19.1
2011	5,508	8,262	$262.0	$1.0	$20.1
2012	5,950	8,925	$299.4	$1.2	$23.0
2013	5,911	8,867	$313.4	$1.2	$24.0
2014	6,320	9,480	$354.9	$1.4	$27.2
2015	6,184	9,276	$368.6	$1.4	$28.3
2016	5,964	8,946	$374.3	$1.4	$28.7
2017	5,761	9,516	$380.0	$1.4	$29.1
2018	5,397	9,792	$373.5	$1.4	$28.6
2019	5,442	10,071	$395.6	$1.4	$30.3
2020	5,370	10,311	$410.2	$1.5	$31.4
2021	5,173	10,470	$414.3	$1.5	$31.7
2022	5,087	10,590	$426.8	$1.5	$32.7
2023	4,889	10,640	$431.4	$1.5	$33.0
2024	4,813	10,665	$444.8	$1.6	$34.0
2025	4,754	10,655	$460.5	$1.6	$35.2
2026	4,704	10,616	$477.7	$1.7	$36.6
2027	4,532	10,517	$480.9	$1.7	$36.8
2028	4,484	10,406	$499.1	$1.8	$38.2
2029	4,449	10,283	$519.2	$1.9	$39.8
2030	4,430	10,158	$542.8	$2.0	$41.6

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.

Sources: Economic and demographic impacts generated using the REMI model.

Revenue impacts generated by BEBR using methods documented in this report.

Table 5.2b
Detailed Employment Impacts
State of Utah: Middle Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Natural Resources, Mining, Utilities, Construction	2,245	2,642	2,730	2,288	1,866	1,618	−627	−27.9%
Forestry, Fishing, Other	2	0	−2	0	2	4	2	100.0%
Mining	1,948	2,096	2,183	1,929	1,644	1,465	−483	−24.8%
Utilities	10	11	11	9	9	9	−1	−10.0%
Construction	285	535	538	350	211	140	−145	−50.9%
Manufacturing	22	1	7	6	12	19	−3	−13.6%
Trade	628	716	837	759	689	636	8	1.3%
Wholesale Trade	55	53	65	54	47	43	−12	−21.8%
Retail Trade	573	663	772	705	642	593	20	3.5%
Transportation, Information, Finance, Accounting	269	295	372	304	273	265	−4	−1.5%
Transportation and Warehousing	21	19	27	25	29	34	13	61.9%
Information	23	26	38	35	32	31	8	34.8%
Finance, Insurance	100	98	124	91	76	71	−29	−29.0%
Real Estate, Rental, Leasing	125	152	183	153	136	129	4	3.2%
Services	991	1,204	1,549	1,469	1,444	1,453	462	46.6%
Professional and Technical Services	122	149	193	169	159	160	38	31.1%
Management of Companies / Enterprises	41	39	41	28	23	22	−19	−46.3%
Administrative and Waste Services	140	163	198	167	150	143	3	2.1%
Educational Services	19	26	44	50	56	61	42	221.1%
Health Care and Social Assistance	321	382	497	494	508	531	210	65.4%
Arts, Entertainment, Recreation	37	47	70	71	73	74	37	100.0%
Accommodation and Food Services	139	198	274	278	274	265	126	90.6%
Other Services (excl Gov)	172	200	232	212	201	197	25	14.5%
Public Administration	549	661	688	545	468	438	−111	−20.2%
State & Local Government	549	661	688	545	468	438	−111	−20.2%
State Government	183	212	219	152	127	121	−62	−33.9%
Local Government	366	449	469	393	341	317	−49	−13.4%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	4,704	5,519	6,183	5,371	4,752	4,429	−275	−5.8%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.2c
Detailed Occupational Impacts
State of Utah: Middle Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	413	474	524	441	382	354	−59	−14.3%
Computer, Math, Architect, Engineer	179	203	232	202	180	170	−9	−5.0%
Life, Physical, Social Science	79	89	97	85	75	70	−9	−11.4%
Community, Social Service	69	83	97	87	84	84	15	21.7%
Legal	34	40	44	37	32	30	−4	−11.8%
Education, Training, Library	44	55	73	73	74	78	34	77.3%
Arts, Design, Entertainment, Sports, Media	25	30	38	34	32	32	7	28.0%
Healthcare	216	256	321	308	308	317	101	46.8%
Protective Service	144	174	190	155	136	129	−15	−10.4%
Food Preparation, Serving-Related	143	197	269	269	266	259	116	81.1%
Building, Grounds, Personal Care, Service	190	230	281	257	247	245	55	28.9%
Sales, Office, Administrative	722	826	927	776	682	637	−85	−11.8%
Farm, Fishing, Forestry	4	3	3	3	4	4	0	0.0%
Construction, Extraction	977	1208	1248	1014	807	689	−288	−29.5%
Installation, Maintenance, Repair	260	306	336	289	249	228	−32	−12.3%
Production	228	241	261	228	200	186	−42	−18.4%
Transportation, Material Moving	402	441	471	408	353	323	−79	−19.7%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.3a
Summary Impacts
State of Utah: High Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	4,703	7,055	$196.3	$0.8	$15.0
2008	5,192	7,788	$223.4	$0.9	$17.1
2009	5,497	8,246	$242.7	$1.0	$18.6
2010	5,519	8,279	$249.5	$1.0	$19.1
2011	5,508	8,262	$262.0	$1.0	$20.1
2012	5,950	8,925	$299.4	$1.2	$23.0
2013	5,911	8,867	$313.4	$1.2	$24.0
2014	6,320	9,480	$354.9	$1.4	$27.2
2015	6,184	9,276	$368.6	$1.4	$28.3
2016	5,964	8,946	$374.3	$1.4	$28.7
2017	5,761	9,516	$380.0	$1.4	$29.1
2018	5,397	9,792	$373.5	$1.4	$28.6
2019	5,442	10,071	$395.6	$1.4	$30.3
2020	5,959	10,475	$457.8	$1.6	$35.0
2021	5,797	10,781	$467.4	$1.7	$35.8
2022	6,298	11,191	$535.7	$1.9	$41.0
2023	6,262	11,533	$560.4	$2.0	$42.9
2024	6,197	11,814	$582.0	$2.1	$44.5
2025	6,135	12,030	$604.2	$2.1	$46.2
2026	6,075	12,189	$627.4	$2.2	$48.0
2027	5,892	12,265	$636.5	$2.3	$48.7
2028	5,833	12,307	$660.7	$2.4	$50.6
2029	5,792	12,319	$687.7	$2.5	$52.6
2030	5,775	12,316	$719.4	$2.6	$55.1

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.

Sources: Economic and demographic impacts generated using the REMI model.
Revenue impacts generated by BEBR using methods documented in this report.

Table 5.3b
Detailed Employment Impacts
State of Utah: High Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Natural Resources, Mining, Utilities, Construction	2,245	2,642	2,730	2,541	2,448	2,161	−84	−3.7%
Forestry, Fishing, Other	2	0	−2	0	2	3	1	50.0%
Mining	1,948	2,096	2,183	2,139	2,081	1,903	−45	−2.3%
Utilities	10	11	11	10	11	11	1	10.0%
Construction	285	535	538	392	354	244	−41	−14.4%
Manufacturing	22	1	7	10	20	27	5	22.7%
Trade	628	716	837	838	875	819	191	30.4%
Wholesale Trade	55	53	65	59	59	53	−2	−3.6%
Retail Trade	573	663	772	779	816	766	193	33.7%
Transportation, Information, Finance, Accounting	269	295	372	339	350	336	67	24.9%
Transportation and Warehousing	21	19	27	29	36	41	20	95.2%
Information	23	26	38	38	40	39	16	69.6%
Finance, Insurance	100	98	124	103	100	90	−10	−10.0%
Real Estate, Rental, Leasing	125	152	183	169	174	166	41	32.8%
Services	991	1,204	1,549	1,620	1,808	1,830	839	84.7%
Professional and Technical Services	122	149	193	187	205	207	85	69.7%
Management of Companies / Enterprises	41	39	41	33	33	30	−11	−26.8%
Administrative and Waste Services	140	163	198	188	198	188	48	34.3%
Educational Services	19	26	44	54	65	72	53	278.9%
Health Care and Social Assistance	321	382	497	552	640	670	349	108.7%
Arts, Entertainment, Recreation	37	47	70	76	89	93	56	151.4%
Accommodation and Food Services	139	198	274	295	324	322	183	131.7%
Other Services (excl Gov)	172	200	232	235	254	248	76	44.2%
Public Administration	549	661	688	611	634	602	53	9.7%
State & Local Government	549	661	688	611	634	602	53	9.7%
State Government	183	212	219	169	174	166	−17	−9.3%
Local Government	366	449	469	442	460	436	70	19.1%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	4,704	5,519	6,183	5,959	6,135	5,775	1,071	22.8%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).

Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.3c
Detailed Occupational Impacts
State of Utah: High Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	413	474	524	491	498	465	52	12.6%
Computer, Math, Architect, Engineer	179	203	232	224	232	222	43	24.0%
Life, Physical, Social Science	79	89	97	95	96	91	12	15.2%
Community, Social Service	69	83	97	97	108	109	40	58.0%
Legal	34	40	44	41	42	40	6	17.6%
Education, Training, Library	44	55	73	79	92	97	53	120.5%
Arts, Design, Entertainment, Sports, Media	25	30	38	38	41	40	15	60.0%
Healthcare	216	256	321	344	391	404	188	87.0%
Protective Service	144	174	190	173	182	175	31	21.5%
Food Preparation, Serving-Related	143	197	269	288	318	318	175	122.4%
Building, Grounds, Personal Care, Service	190	230	281	285	314	313	123	64.7%
Sales, Office, Administrative	722	826	927	864	884	829	107	14.8%
Farm, Fishing, Forestry	4	3	3	4	5	5	1	25.0%
Construction, Extraction	977	1208	1248	1128	1082	938	−39	−4.0%
Installation, Maintenance, Repair	260	306	336	321	324	300	40	15.4%
Production	228	241	261	255	259	243	15	6.6%
Transportation, Material Moving	402	441	471	453	452	420	18	4.5%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Figure 5.1a
State Employment Impacts, 2007−2030
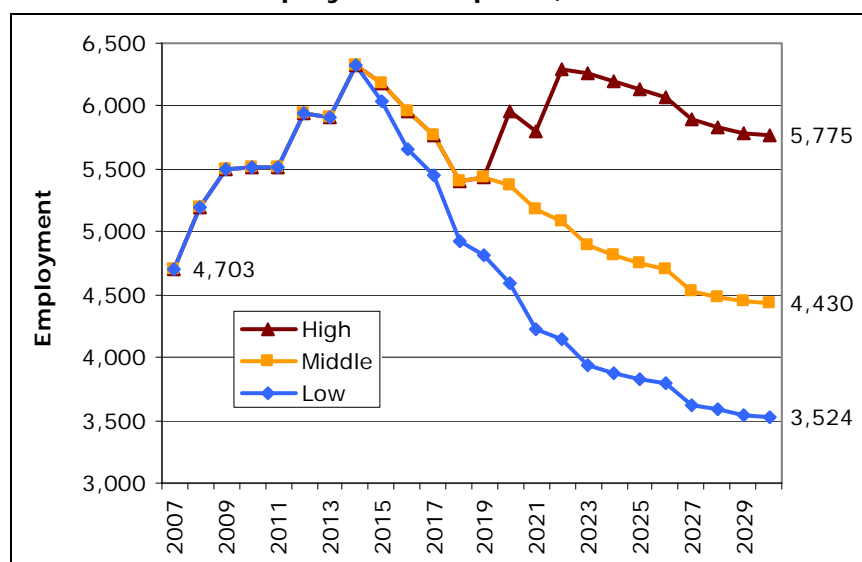
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.1b
State Population Impacts, 2007–2030
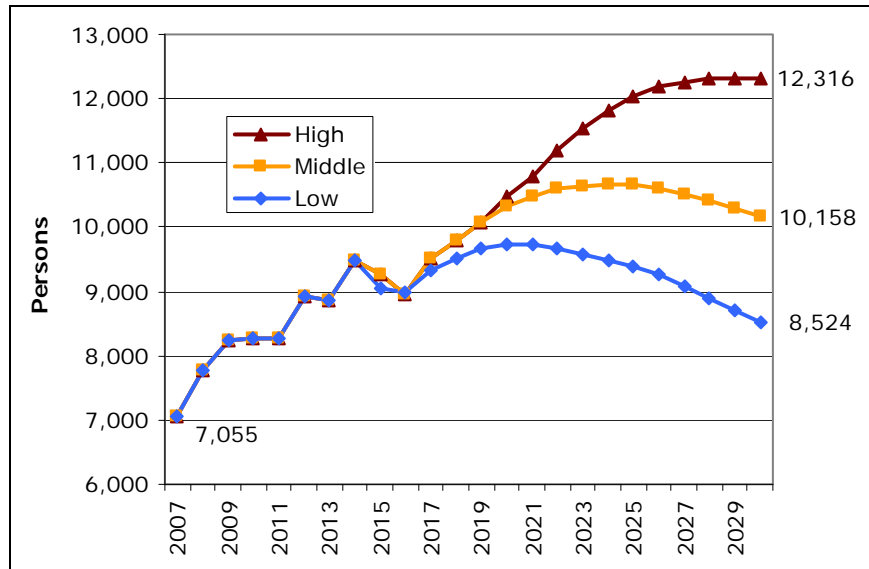
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.1c
State Earnings Impacts, 2007–2030
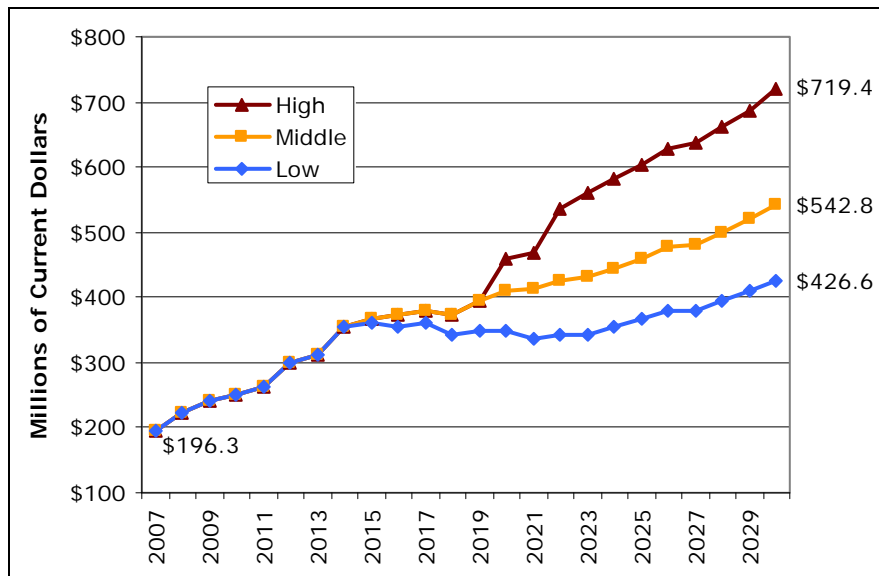
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.1d
Statewide Local Tax Revenue Impacts, 2007–2030
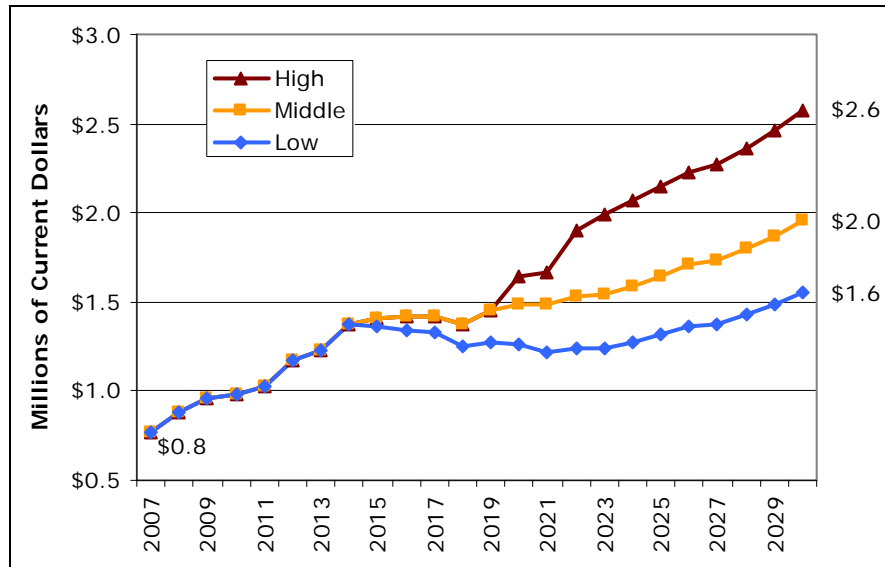
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.1e
Statewide State Tax Revenue Impacts, 2007–2030
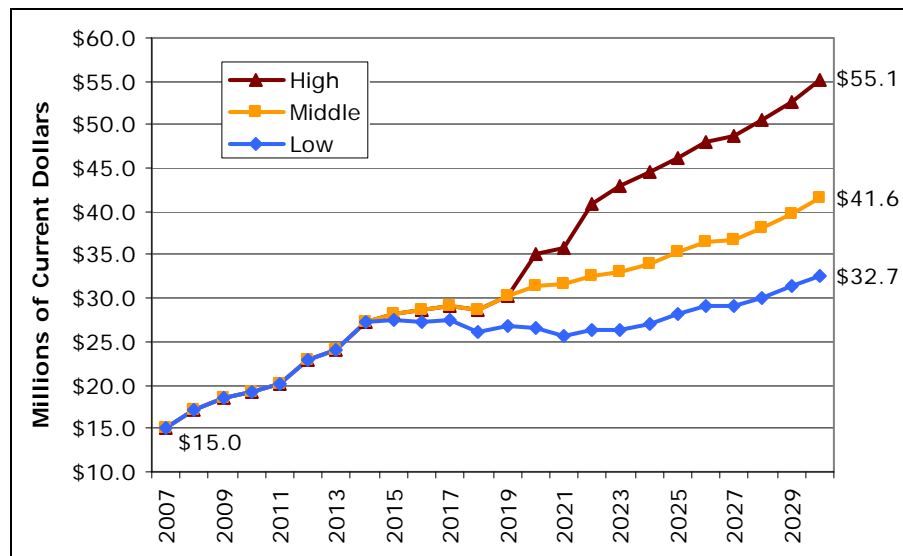
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

5.3 Carbon County Scenario Impacts

Impact results for each of the three scenarios for Carbon County are also shown in nine tables. The Low Scenario is shown in Tables 5.4a through 5.4c, the Middle Scenario in Tables 5.5a through 5.5c, and the High Scenario in Tables 5.6a through 5.6c. Figures 5.2a through 5.2e show all three scenarios for each of the major impact categories for the county.

Impacts follow the general path of the coal production scenarios. In all scenarios, coal production in Carbon County declines from 2007 to 2030. In 2007, Carbon County accounted for nearly half of the coal produced in the state, with Sevier County accounting for 28 percent and Emery County accounting for 24 percent. In all three scenarios, Carbon County production falls beneath that of Emery and, in two out of three, also below Sevier. In all scenarios, Emery becomes the largest coal-producing county in the state, and a smaller amount of coal production is developed outside the current three-county coal region.

Carbon County employment impacts fall from 1,957 in 2007 to reach 701 in the Low Scenario, 977 in the Middle Scenario, and 1,378 in the High Scenario in 2030.

In the Low Scenario, population impacts follow a path of increase from 2,936 in 2007 to eventually peak in 2017 at 3,368, and then decline to 2,344 in 2030. The Middle Scenario generally increases to peak in 2019 at 3,515, then declines to 2,967 in 2030. The High Scenario mostly shows slow growth throughout the projection period, terminating at 3,758 in 2030.

Nominal earnings, local tax revenue, and state tax revenue impacts are higher in 2030 than 2007 for all three scenarios. There is a similar pattern of increasing until 2014, then declining until 2021, then again increasing until 2030. From 2007 to 2030, nominal earnings impacts increase from $62.6 million to $65.5 million in the Low Scenario, $91.9 million in the Middle Scenario, and $130.7 million in the High Scenario. Over the same period, nominal local government revenue impacts remain flat at $0.3 million in the Low Scenario, while increasing to $0.5 million in the Middle Scenario and $0.7 million in the High Scenario. Nominal state government revenue impacts increase from $4.8 million in 2007 to 2030 levels of $5.0 million in the Low Scenario, $7.0 million in the Middle Scenario, and $10.0 million in the High Scenario.

Table 5.4a
Summary Impacts
Carbon County: Low Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	1,957	2,936	$62.6	$0.31	$4.8
2008	2,106	3,159	$70.0	$0.35	$5.4
2009	2,137	3,206	$73.1	$0.37	$5.6
2010	2,133	3,200	$75.1	$0.38	$5.8
2011	2,123	3,185	$79.0	$0.39	$6.1
2012	2,119	3,179	$83.3	$0.42	$6.4
2013	2,092	3,138	$86.9	$0.43	$6.7
2014	2,081	3,122	$91.5	$0.46	$7.0
2015	1,854	3,255	$86.3	$0.43	$6.6
2016	1,597	3,339	$78.1	$0.39	$6.0
2017	1,366	3,368	$69.9	$0.35	$5.4
2018	1,106	3,325	$59.0	$0.30	$4.5
2019	1,083	3,287	$60.7	$0.30	$4.6
2020	960	3,225	$56.1	$0.28	$4.3
2021	829	3,129	$50.6	$0.25	$3.9
2022	816	3,042	$52.2	$0.26	$4.0
2023	806	2,959	$54.0	$0.27	$4.1
2024	797	2,878	$56.0	$0.28	$4.3
2025	788	2,797	$58.2	$0.29	$4.5
2026	777	2,716	$60.2	$0.30	$4.6
2027	750	2,623	$60.9	$0.30	$4.7
2028	734	2,531	$62.4	$0.31	$4.8
2029	717	2,437	$63.9	$0.32	$4.9
2030	701	2,344	$65.5	$0.33	$5.0

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.

Sources: Economic and demographic impacts generated using the REMI model.
Revenue impacts generated by BEBR using methods documented in this report.

Table 5.4b
Detailed Employment Impacts
Carbon County: Low Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Natural Resources, Mining, Utilities, Construction	868	930	770	335	234	194	−674	−77.6%
Forestry, Fishing, Other	1	0	−1	0	1	2	1	100.0%
Mining	784	792	668	313	229	188	−596	−76.0%
Utilities	4	4	3	1	1	2	−2	−50.0%
Construction	79	134	100	21	3	2	−77	−97.5%
Manufacturing	1	−1	−2	0	2	3	2	200.0%
Trade	293	316	299	196	165	142	−151	−51.5%
Wholesale Trade	26	23	18	11	10	9	−17	−65.4%
Retail Trade	267	293	281	185	155	133	−134	−50.2%
Transportation, Information, Finance, Accounting	83	82	60	24	25	25	−58	−69.9%
Transportation and Warehousing	2	1	−1	0	3	4	2	100.0%
Information	4	4	4	3	3	3	−1	−25.0%
Finance, Insurance	30	25	16	6	6	6	−24	−80.0%
Real Estate, Rental, Leasing	47	52	41	15	13	12	−35	−74.5%
Services	431	493	477	319	301	282	−149	−34.6%
Professional and Technical Services	43	47	36	13	11	11	−32	−74.4%
Management of Companies / Enterprises	14	12	7	1	1	1	−13	−92.9%
Administrative and Waste Services	56	60	48	22	19	18	−38	−67.9%
Educational Services	3	3	4	5	6	7	4	133.3%
Health Care and Social Assistance	151	170	169	119	117	114	−37	−24.5%
Arts, Entertainment, Recreation	16	20	22	17	17	15	−1	−6.3%
Accommodation and Food Services	65	90	106	87	79	69	4	6.2%
Other Services (excl Gov)	83	91	85	55	51	47	−36	−43.4%
Public Administration	281	313	249	87	60	54	−227	−80.8%
State & Local Government	281	313	249	87	60	54	−227	−80.8%
State Government	117	126	95	28	18	17	−100	−85.5%
Local Government	164	187	154	59	42	37	−127	−77.4%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	1,957	2,133	1,853	961	787	700	−1,257	−64.2%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.4c
Detailed Occupational Impacts
Carbon County: Low Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	166	176	144	64	51	45	−121	−72.9%
Computer, Math, Architect, Engineer	71	74	62	27	21	19	−52	−73.2%
Life, Physical, Social Science	33	34	29	13	10	9	−24	−72.7%
Community, Social Service	34	38	34	19	17	16	−18	−52.9%
Legal	15	16	12	5	4	3	−12	−80.0%
Education, Training, Library	17	20	18	12	12	12	−5	−29.4%
Arts, Design, Entertainment, Sports, Media	10	11	10	5	5	5	−5	−50.0%
Healthcare	101	113	107	69	66	64	−37	−36.6%
Protective Service	71	80	66	25	18	17	−54	−76.1%
Food Preparation, Serving-Related	67	89	100	79	72	64	−3	−4.5%
Building, Grounds, Personal Care, Service	86	97	90	54	50	47	−39	−45.3%
Sales, Office, Administrative	292	308	251	117	97	88	−204	−69.9%
Farm, Fishing, Forestry	2	1	1	0	1	1	−1	−50.0%
Construction, Extraction	372	414	340	140	94	78	−294	−79.0%
Installation, Maintenance, Repair	104	113	97	45	35	31	−73	−70.2%
Production	89	91	77	37	29	25	−64	−71.9%
Transportation, Material Moving	160	164	136	64	50	44	−116	−72.5%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.5a
Summary Impacts
Carbon County: Middle Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	1,957	2,936	$62.6	$0.31	$4.8
2008	2,106	3,159	$70.0	$0.35	$5.4
2009	2,137	3,206	$73.1	$0.37	$5.6
2010	2,133	3,200	$75.1	$0.38	$5.8
2011	2,123	3,185	$79.0	$0.39	$6.1
2012	2,119	3,179	$83.3	$0.42	$6.4
2013	2,092	3,138	$86.9	$0.43	$6.7
2014	2,081	3,122	$91.5	$0.46	$7.0
2015	1,970	3,282	$91.6	$0.46	$7.0
2016	1,829	3,418	$89.6	$0.45	$6.9
2017	1,599	3,491	$82.1	$0.41	$6.3
2018	1,355	3,498	$72.7	$0.36	$5.6
2019	1,347	3,515	$75.7	$0.38	$5.8
2020	1,240	3,511	$72.9	$0.36	$5.6
2021	1,123	3,477	$68.9	$0.34	$5.3
2022	1,108	3,443	$71.4	$0.36	$5.5
2023	1,094	3,404	$73.9	$0.37	$5.7
2024	1,080	3,361	$76.6	$0.38	$5.9
2025	1,068	3,312	$79.4	$0.40	$6.1
2026	1,055	3,259	$82.3	$0.41	$6.3
2027	1,025	3,190	$83.8	$0.42	$6.4
2028	1,008	3,118	$86.4	$0.43	$6.6
2029	992	3,043	$89.0	$0.45	$6.8
2030	977	2,967	$91.9	$0.46	$7.0

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.
Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Table 5.5b
Detailed Employment Impacts
Carbon County: Middle Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Natural Resources, Mining, Utilities, Construction	868	930	820	438	329	282	−586	−67.5%
Forestry, Fishing, Other	1	0	−1	0	1	2	1	100.0%
Mining	784	792	713	397	307	265	−519	−66.2%
Utilities	4	4	4	2	2	2	−2	−50.0%
Construction	79	134	104	39	19	13	−66	−83.5%
Manufacturing	1	−1	−2	0	2	3	2	200.0%
Trade	293	316	313	238	211	188	−105	−35.8%
Wholesale Trade	26	23	20	14	13	12	−14	−53.8%
Retail Trade	267	293	293	224	198	176	−91	−34.1%
Transportation, Information, Finance, Accounting	83	82	66	37	35	34	−49	−59.0%
Transportation and Warehousing	2	1	0	1	3	4	2	100.0%
Information	4	4	4	3	3	3	−1	−25.0%
Finance, Insurance	30	25	17	9	8	7	−23	−76.7%
Real Estate, Rental, Leasing	47	52	45	24	21	20	−27	−57.4%
Services	431	493	502	392	382	368	−63	−14.6%
Professional and Technical Services	43	47	39	21	18	18	−25	−58.1%
Management of Companies / Enterprises	14	12	8	3	2	2	−12	−85.7%
Administrative and Waste Services	56	60	52	31	28	26	−30	−53.6%
Educational Services	3	3	4	5	7	7	4	133.3%
Health Care and Social Assistance	151	170	178	145	146	147	−4	−2.6%
Arts, Entertainment, Recreation	16	20	23	20	21	20	4	25.0%
Accommodation and Food Services	65	90	109	99	95	87	22	33.8%
Other Services (excl Gov)	83	91	89	68	65	61	−22	−26.5%
Public Administration	281	313	270	135	109	101	−180	−64.1%
State & Local Government	281	313	270	135	109	101	−180	−64.1%
State Government	117	126	104	47	37	35	−82	−70.1%
Local Government	164	187	166	88	72	66	−98	−59.8%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	1,957	2,133	1,969	1,240	1,068	976	−981	−50.1%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.5c
Detailed Occupational Impacts
Carbon County: Middle Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	166	176	154	87	72	66	−100	−60.2%
Computer, Math, Architect, Engineer	71	74	66	37	30	28	−43	−60.6%
Life, Physical, Social Science	33	34	31	17	14	13	−20	−60.6%
Community, Social Service	34	38	36	24	23	23	−11	−32.4%
Legal	15	16	13	7	6	5	−10	−66.7%
Education, Training, Library	17	20	20	15	15	15	−2	−11.8%
Arts, Design, Entertainment, Sports, Media	10	11	10	7	7	6	−4	−40.0%
Healthcare	101	113	113	86	85	84	−17	−16.8%
Protective Service	71	80	71	37	31	30	−41	−57.7%
Food Preparation, Serving-Related	67	89	104	92	88	82	15	22.4%
Building, Grounds, Personal Care, Service	86	97	95	69	66	63	−23	−26.7%
Sales, Office, Administrative	292	308	269	158	136	126	−166	−56.8%
Farm, Fishing, Forestry	2	1	1	1	1	1	−1	−50.0%
Construction, Extraction	372	414	361	188	138	118	−254	−68.3%
Installation, Maintenance, Repair	104	113	103	60	49	45	−59	−56.7%
Production	89	91	82	48	39	35	−54	−60.7%
Transportation, Material Moving	160	164	146	83	68	61	−99	−61.9%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.6a
Summary Impacts
Carbon County: High Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	1,957	2,936	$62.6	$0.31	$4.8
2008	2,106	3,159	$70.0	$0.35	$5.4
2009	2,137	3,206	$73.1	$0.37	$5.6
2010	2,133	3,200	$75.1	$0.38	$5.8
2011	2,123	3,185	$79.0	$0.39	$6.1
2012	2,119	3,179	$83.3	$0.42	$6.4
2013	2,092	3,138	$86.9	$0.43	$6.7
2014	2,081	3,122	$91.5	$0.46	$7.0
2015	1,970	3,282	$91.6	$0.46	$7.0
2016	1,829	3,418	$89.6	$0.45	$6.9
2017	1,599	3,491	$82.1	$0.41	$6.3
2018	1,355	3,498	$72.7	$0.36	$5.6
2019	1,347	3,515	$75.7	$0.38	$5.8
2020	1,396	3,572	$82.1	$0.41	$6.3
2021	1,286	3,591	$79.2	$0.40	$6.1
2022	1,423	3,660	$92.2	$0.46	$7.1
2023	1,513	3,735	$103.2	$0.52	$7.9
2024	1,498	3,788	$107.3	$0.54	$8.2
2025	1,482	3,824	$111.4	$0.56	$8.5
2026	1,464	3,842	$115.3	$0.58	$8.8
2027	1,430	3,836	$118.0	$0.59	$9.0
2028	1,410	3,819	$121.9	$0.61	$9.3
2029	1,392	3,792	$126.0	$0.63	$9.7
2030	1,378	3,758	$130.7	$0.65	$10.0

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.

Sources: Economic and demographic impacts generated using the REMI model.
Revenue impacts generated by BEBR using methods documented in this report.

Table 5.6b
Detailed Employment Impacts
Carbon County: High Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Natural Resources, Mining, Utilities, Construction	868	930	820	488	475	417	−451	−52.0%
Forestry, Fishing, Other	1	0	−1	0	1	1	0	0.0%
Mining	784	792	713	439	422	378	−406	−51.8%
Utilities	4	4	4	2	3	3	−1	−25.0%
Construction	79	134	104	47	49	35	−44	−55.7%
Manufacturing	1	−1	−2	0	2	2	1	100.0%
Trade	293	316	313	264	277	252	−41	−14.0%
Wholesale Trade	26	23	20	16	17	15	−11	−42.3%
Retail Trade	267	293	293	248	260	237	−30	−11.2%
Transportation, Information, Finance, Accounting	83	82	66	44	52	49	−34	−41.0%
Transportation and Warehousing	2	1	0	1	3	4	2	100.0%
Information	4	4	4	3	4	4	0	0.0%
Finance, Insurance	30	25	17	11	12	10	−20	−66.7%
Real Estate, Rental, Leasing	47	52	45	29	33	31	−16	−34.0%
Services	431	493	502	439	498	487	56	13.0%
Professional and Technical Services	43	47	39	25	28	27	−16	−37.2%
Management of Companies / Enterprises	14	12	8	4	5	4	−10	−71.4%
Administrative and Waste Services	56	60	52	37	41	38	−18	−32.1%
Educational Services	3	3	4	5	7	8	5	166.7%
Health Care and Social Assistance	151	170	178	163	191	192	41	27.2%
Arts, Entertainment, Recreation	16	20	23	22	26	26	10	62.5%
Accommodation and Food Services	65	90	109	106	115	111	46	70.8%
Other Services (excl Gov)	83	91	89	77	85	81	−2	−2.4%
Public Administration	281	313	270	159	178	170	−111	−39.5%
State & Local Government	281	313	270	159	178	170	−111	−39.5%
State Government	117	126	104	57	65	62	−55	−47.0%
Local Government	164	187	166	102	113	108	−56	−34.1%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	1,957	2,133	1,969	1,394	1,482	1,377	−580	−29.6%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).

Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.6c
Detailed Occupational Impacts
Carbon County: High Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	166	176	154	99	105	97	−69	−41.6%
Computer, Math, Architect, Engineer	71	74	66	42	44	41	−30	−42.3%
Life, Physical, Social Science	33	34	31	20	20	19	−14	−42.4%
Community, Social Service	34	38	36	28	32	32	−2	−5.9%
Legal	15	16	13	8	9	8	−7	−46.7%
Education, Training, Library	17	20	20	17	20	20	3	17.6%
Arts, Design, Entertainment, Sports, Media	10	11	10	8	9	9	−1	−10.0%
Healthcare	101	113	113	98	113	113	12	11.9%
Protective Service	71	80	71	44	50	48	−23	−32.4%
Food Preparation, Serving-Related	67	89	104	99	109	105	38	56.7%
Building, Grounds, Personal Care, Service	86	97	95	78	89	86	0	0.0%
Sales, Office, Administrative	292	308	269	181	195	181	−111	−38.0%
Farm, Fishing, Forestry	2	1	1	1	1	2	0	0.0%
Construction, Extraction	372	414	361	211	207	180	−192	−51.6%
Installation, Maintenance, Repair	104	113	103	67	70	65	−39	−37.5%
Production	89	91	82	53	54	50	−39	−43.8%
Transportation, Material Moving	160	164	146	93	95	86	−74	−46.3%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Figure 5.2a
Carbon County Employment Impacts, 2007–2030
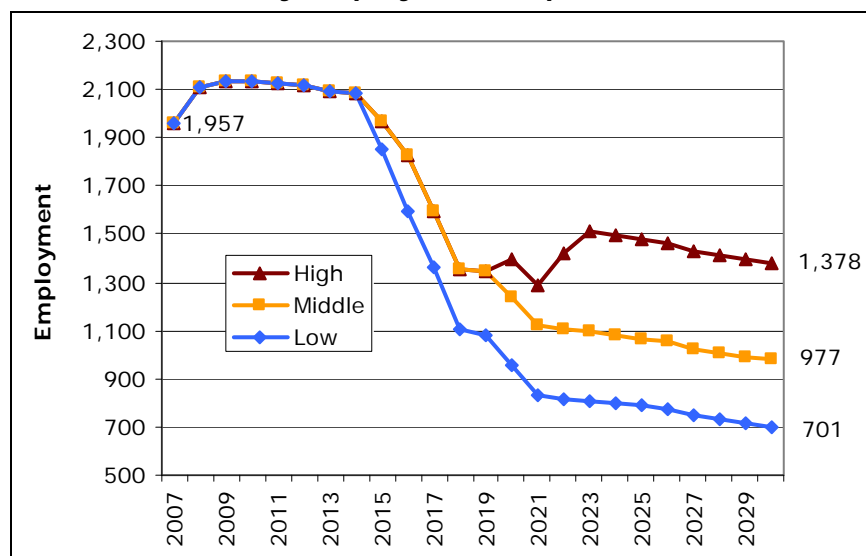
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.2b
Carbon County Population Impacts, 2007–2030
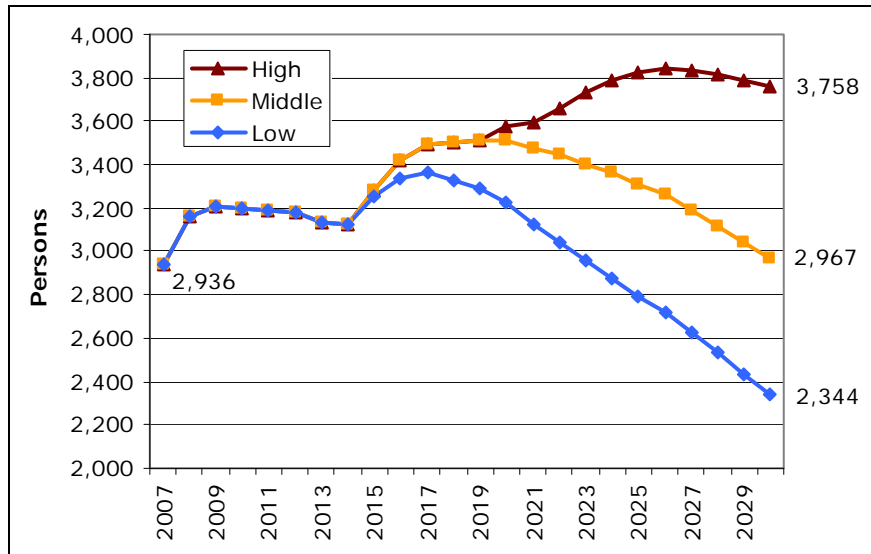
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.2c
Carbon County Earnings Impacts, 2007–2030
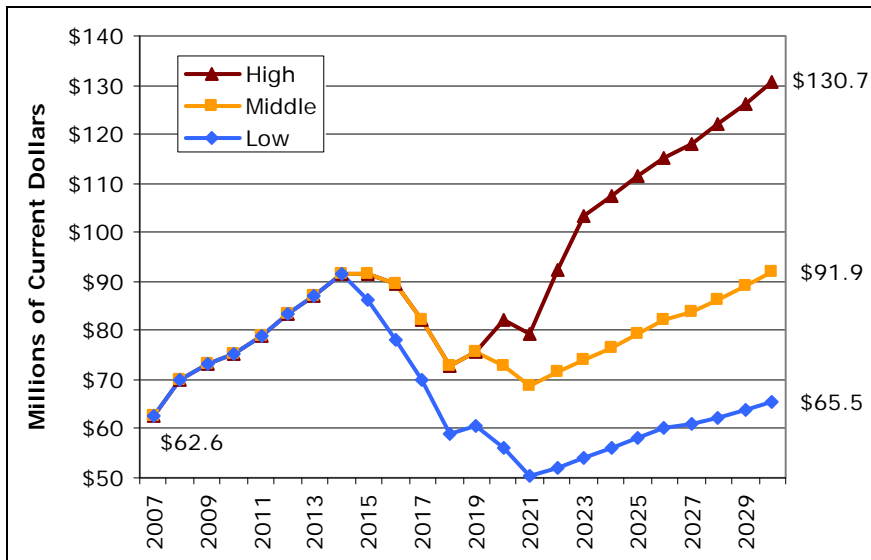
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.2d
Carbon County Local Tax Revenue Impacts, 2007–2030
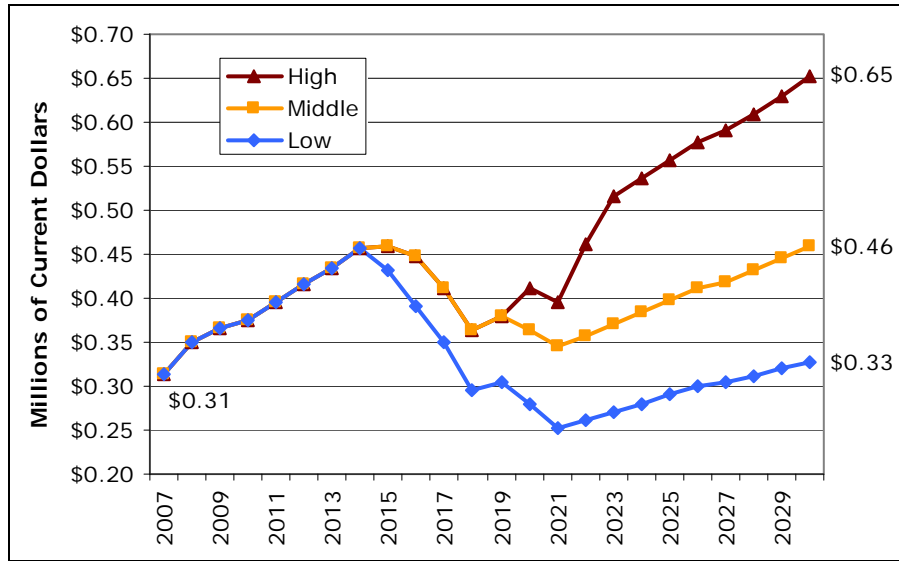
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.2e
Carbon County State Tax Revenue Impacts, 2007–2030
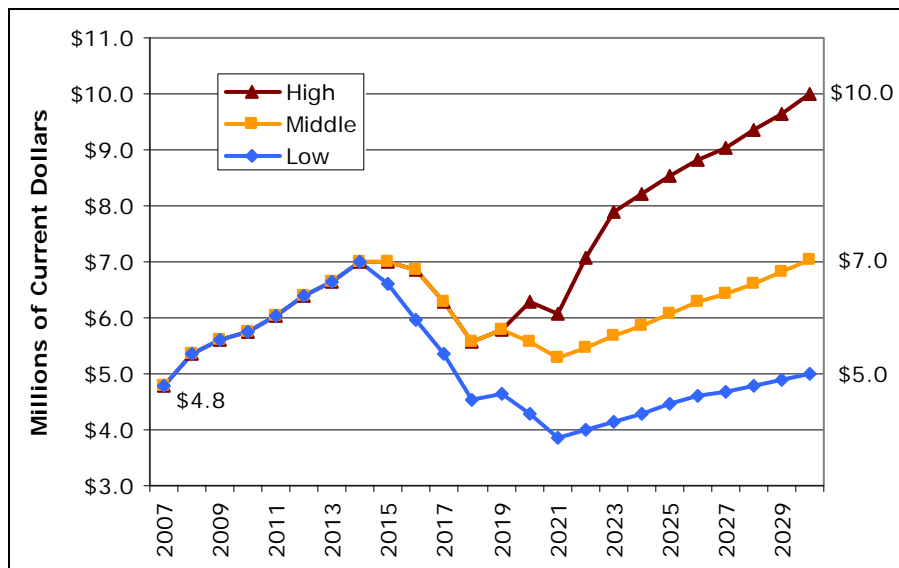
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

5.4 Emery County Scenario Impacts

Impact results for each of the three scenarios for Emery County are also shown in nine tables. The Low Scenario is shown in Tables 5.7a through 5.7c, the Middle Scenario in Tables 5.8a through 5.8c, and the High Scenario in Tables 5.9a through 5.9c. Figures 5.3a through 5.3e show all three scenarios for each of the major impact categories for the county.

The impacts measured here follow the general path of the coal production scenarios. Coal production in Emery County declines from 2007 to 2030 in the Low Scenario, increases somewhat in the Middle Scenario, and increases in the High Scenario. In all scenarios, Emery becomes the largest coal-producing county in the state.

Emery County employment impacts follow a pattern of increasing to a peak and then declining in all scenarios. From an initial employment impact of 1,309 in 2007, employment peaks in 2017 in the Low Scenario at 1,812, in 2020 in the Middle Scenario at 1,940, and in 2022 in the High Scenario at 2,501. While all scenarios decline from these peaks, both the Middle and High Scenarios result in higher employment impacts in 2030 than in 2007. Employment impacts for 2030 are 1,220 in the Low Scenario, 1,616 in the Middle Scenario, and 2,214 in the High Scenario.

Population impacts for Emery County are higher in 2030 than in 2007 for all three scenarios. These population impacts generally increase from 2007 to 2019 in all three scenarios, growing from 1,964 in 2007 to 2,475 in the Low Scenario and to 2,804 in both the Middle and High Scenarios. From 2019 to 2030, population impacts decline to reach 2,186 in the Low Scenario, stay mostly flat to reach 2,720 in the Middle Scenario, and increase to 3,457 in the High Scenario.

Nominal earnings, local tax revenue, and state tax revenue impacts are higher in 2030 than 2007 for all three scenarios for Emery County. From 2007 to 2030, nominal earnings impacts increase from $47.4 million to $132.1 million in the Low Scenario, $175.1 million in the Middle Scenario, and $240.2 million in the High Scenario. Over the same period, nominal local government revenue impacts increase from $0.1 million to $0.3 million in the Low Scenario, $0.4 million in the Middle Scenario, and $0.5 million in the High Scenario. Nominal state government revenue impacts increase from $3.5 million in 2007 to 2030 levels of $9.9 million in the Low Scenario, $13.1 million in the Middle Scenario, and $17.9 million in the High Scenario.

Table 5.7a
Summary Impacts
Emery County: Low Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	1,309	1,964	$47.4	$0.09	$3.5
2008	1,400	2,100	$52.8	$0.11	$3.9
2009	1,461	2,192	$56.4	$0.11	$4.2
2010	1,465	2,198	$58.0	$0.12	$4.3
2011	1,467	2,201	$61.6	$0.12	$4.6
2012	1,566	2,349	$69.4	$0.14	$5.2
2013	1,561	2,342	$73.3	$0.15	$5.5
2014	1,656	2,484	$82.3	$0.16	$6.1
2015	1,754	2,631	$92.4	$0.18	$6.9
2016	1,732	2,598	$96.5	$0.19	$7.2
2017	1,812	2,718	$106.0	$0.21	$7.9
2018	1,678	2,517	$103.1	$0.21	$7.7
2019	1,650	2,475	$106.8	$0.21	$8.0
2020	1,618	2,437	$109.9	$0.22	$8.2
2021	1,490	2,449	$106.3	$0.21	$7.9
2022	1,460	2,454	$109.3	$0.22	$8.2
2023	1,436	2,454	$112.7	$0.23	$8.4
2024	1,412	2,450	$116.1	$0.23	$8.7
2025	1,392	2,435	$120.3	$0.24	$9.0
2026	1,373	2,407	$124.2	$0.25	$9.3
2027	1,265	2,353	$119.6	$0.24	$8.9
2028	1,246	2,298	$123.3	$0.25	$9.2
2029	1,230	2,241	$127.2	$0.25	$9.5
2030	1,220	2,186	$132.1	$0.26	$9.9

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.

Sources: Economic and demographic impacts generated using the REMI model.
Revenue impacts generated by BEBR using methods documented in this report.

Table 5.7b
Detailed Employment Impacts
Emery County: Low Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Natural Resources, Mining, Utilities, Construction	885	991	1,165	1,055	861	710	−175	−19.8%
Forestry, Fishing, Other	0	0	−1	0	1	2	2	N/A
Mining	801	841	1,024	963	813	683	−118	−14.7%
Utilities	1	1	1	1	1	2	1	100.0%
Construction	83	149	141	91	46	23	−60	−72.3%
Manufacturing	0	0	0	0	0	0	0	N/A
Trade	159	175	210	194	176	158	−1	−0.6%
Wholesale Trade	5	4	5	5	6	5	0	0.0%
Retail Trade	154	171	205	189	170	153	−1	−0.6%
Transportation, Information, Finance, Accounting	16	12	13	11	13	12	−4	−25.0%
Transportation and Warehousing	0	−1	−1	0	2	3	3	N/A
Information	2	1	2	2	3	3	1	50.0%
Finance, Insurance	6	4	4	3	3	2	−4	−66.7%
Real Estate, Rental, Leasing	8	8	8	6	5	4	−4	−50.0%
Services	183	211	271	269	270	273	90	49.2%
Professional and Technical Services	8	8	11	11	11	11	3	37.5%
Management of Companies / Enterprises	1	1	1	1	1	1	0	0.0%
Administrative and Waste Services	19	20	23	20	19	18	−1	−5.3%
Educational Services	1	0	1	2	3	4	3	300.0%
Health Care and Social Assistance	95	113	150	150	152	156	61	64.2%
Arts, Entertainment, Recreation	3	4	5	5	5	5	2	66.7%
Accommodation and Food Services	23	29	38	41	42	42	19	82.6%
Other Services (excl Gov)	33	36	42	39	37	36	3	9.1%
Public Administration	67	75	98	90	74	65	−2	−3.0%
State & Local Government	67	75	98	90	74	65	−2	−3.0%
State Government	6	6	8	7	5	5	−1	−16.7%
Local Government	61	69	90	83	69	60	−1	−1.6%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	1,310	1,464	1,757	1,619	1,394	1,218	−92	−7.0%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).

Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.7c
Detailed Occupational Impacts
Emery County: Low Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	106	116	138	126	106	91	−15	−14.2%
Computer, Math, Architect, Engineer	47	51	63	60	52	45	−2	−4.3%
Life, Physical, Social Science	26	28	35	33	29	25	−1	−3.8%
Community, Social Service	13	15	19	19	18	18	5	38.5%
Legal	6	6	8	7	6	5	−1	−16.7%
Education, Training, Library	7	7	10	10	11	11	4	57.1%
Arts, Design, Entertainment, Sports, Media	3	3	4	4	4	4	1	33.3%
Healthcare	57	67	88	87	87	88	31	54.4%
Protective Service	18	21	27	25	21	19	1	5.6%
Food Preparation, Serving-Related	24	29	39	41	42	42	18	75.0%
Building, Grounds, Personal Care, Service	33	37	47	45	44	43	10	30.3%
Sales, Office, Administrative	155	169	198	180	154	136	−19	−12.3%
Farm, Fishing, Forestry	0	0	0	0	1	1	1	N/A
Construction, Extraction	367	427	492	435	346	281	−86	−23.4%
Installation, Maintenance, Repair	81	91	111	103	87	75	−6	−7.4%
Production	77	82	100	93	80	68	−9	−11.7%
Transportation, Material Moving	135	143	171	159	135	115	−20	−14.8%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.8a
Summary Impacts
Emery County: Middle Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	1,309	1,964	$47.4	$0.09	$3.5
2008	1,400	2,100	$52.8	$0.11	$3.9
2009	1,461	2,192	$56.4	$0.11	$4.2
2010	1,465	2,198	$58.0	$0.12	$4.3
2011	1,467	2,201	$61.6	$0.12	$4.6
2012	1,566	2,349	$69.4	$0.14	$5.2
2013	1,561	2,342	$73.3	$0.15	$5.5
2014	1,656	2,484	$82.3	$0.16	$6.1
2015	1,759	2,639	$92.7	$0.19	$6.9
2016	1,742	2,613	$97.1	$0.19	$7.2
2017	1,823	2,735	$106.6	$0.21	$8.0
2018	1,793	2,690	$110.2	$0.22	$8.2
2019	1,869	2,804	$121.0	$0.24	$9.0
2020	1,940	2,576	$131.7	$0.26	$9.8
2021	1,913	2,660	$136.5	$0.27	$10.2
2022	1,882	2,724	$140.9	$0.28	$10.5
2023	1,852	2,775	$145.5	$0.29	$10.9
2024	1,821	2,816	$149.9	$0.30	$11.2
2025	1,796	2,838	$155.3	$0.31	$11.6
2026	1,772	2,842	$160.4	$0.32	$12.0
2027	1,661	2,817	$157.2	$0.31	$11.7
2028	1,641	2,788	$162.5	$0.33	$12.1
2029	1,625	2,754	$168.1	$0.34	$12.6
2030	1,616	2,720	$175.1	$0.35	$13.1

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.
Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Table 5.8b
Detailed Employment Impacts
Emery County: Middle Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Natural Resources, Mining, Utilities, Construction	885	991	1,165	1,251	1,111	947	62	7.0%
Forestry, Fishing, Other	0	0	−1	0	1	1	1	N/A
Mining	801	841	1,024	1,131	1,027	898	97	12.1%
Utilities	1	1	1	1	2	2	1	100.0%
Construction	83	149	141	119	81	46	−37	−44.6%
Manufacturing	0	0	0	0	0	0	0	N/A
Trade	159	175	211	230	220	203	44	27.7%
Wholesale Trade	5	4	5	6	7	6	1	20.0%
Retail Trade	154	171	206	224	213	197	43	27.9%
Transportation, Information, Finance, Accounting	16	12	13	15	14	17	1	6.3%
Transportation and Warehousing	0	−1	−1	0	1	3	3	N/A
Information	2	1	2	2	3	4	2	100.0%
Finance, Insurance	6	4	4	4	3	3	−3	−50.0%
Real Estate, Rental, Leasing	8	8	8	9	7	7	−1	−12.5%
Services	183	211	272	323	337	344	161	88.0%
Professional and Technical Services	8	8	11	14	15	15	7	87.5%
Management of Companies / Enterprises	1	1	1	1	1	1	0	0.0%
Administrative and Waste Services	19	20	23	27	26	25	6	31.6%
Educational Services	1	0	1	2	3	4	3	300.0%
Health Care and Social Assistance	95	113	151	180	190	198	103	108.4%
Arts, Entertainment, Recreation	3	4	5	6	6	6	3	100.0%
Accommodation and Food Services	23	29	38	46	50	50	27	117.4%
Other Services (excl Gov)	33	36	42	47	46	45	12	36.4%
Public Administration	67	75	99	121	115	104	37	55.2%
State & Local Government	67	75	99	121	115	104	37	55.2%
State Government	6	6	8	9	9	8	2	33.3%
Local Government	61	69	91	112	106	96	35	57.4%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	1,310	1,464	1,760	1,940	1,797	1,615	305	23.3%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.8c
Detailed Occupational Impacts
Emery County: Middle Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	106	116	138	152	139	123	17	16.0%
Computer, Math, Architect, Engineer	47	51	63	71	67	60	13	27.7%
Life, Physical, Social Science	26	28	35	39	37	33	7	26.9%
Community, Social Service	13	15	20	24	24	24	11	84.6%
Legal	6	6	8	9	9	8	2	33.3%
Education, Training, Library	7	7	10	13	14	14	7	100.0%
Arts, Design, Entertainment, Sports, Media	3	3	4	5	5	5	2	66.7%
Healthcare	57	67	89	106	110	113	56	98.2%
Protective Service	18	21	27	33	32	30	12	66.7%
Food Preparation, Serving-Related	24	29	39	47	50	51	27	112.5%
Building, Grounds, Personal Care, Service	33	37	47	56	56	56	23	69.7%
Sales, Office, Administrative	155	169	199	219	202	181	26	16.8%
Farm, Fishing, Forestry	0	0	0	0	1	1	1	N/A
Construction, Extraction	367	427	493	519	454	380	13	3.5%
Installation, Maintenance, Repair	81	91	111	123	112	99	18	22.2%
Production	77	82	100	111	101	90	13	16.9%
Transportation, Material Moving	135	143	171	189	172	152	17	12.6%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.9a
Summary Impacts
Emery County: High Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	1,309	1,964	$47.4	$0.09	$3.5
2008	1,400	2,100	$52.8	$0.11	$3.9
2009	1,461	2,192	$56.4	$0.11	$4.2
2010	1,465	2,198	$58.0	$0.12	$4.3
2011	1,467	2,201	$61.6	$0.12	$4.6
2012	1,566	2,349	$69.4	$0.14	$5.2
2013	1,561	2,342	$73.3	$0.15	$5.5
2014	1,656	2,484	$82.3	$0.16	$6.1
2015	1,759	2,639	$92.7	$0.19	$6.9
2016	1,742	2,613	$97.1	$0.19	$7.2
2017	1,823	2,735	$106.6	$0.21	$8.0
2018	1,793	2,690	$110.2	$0.22	$8.2
2019	1,869	2,804	$121.0	$0.24	$9.0
2020	2,249	2,640	$152.7	$0.31	$11.4
2021	2,231	2,779	$159.3	$0.32	$11.9
2022	2,501	2,954	$187.4	$0.37	$14.0
2023	2,479	3,102	$194.9	$0.39	$14.6
2024	2,444	3,227	$201.3	$0.40	$15.0
2025	2,412	3,323	$208.8	$0.42	$15.6
2026	2,380	3,391	$215.7	$0.43	$16.1
2027	2,264	3,422	$214.5	$0.43	$16.0
2028	2,239	3,442	$222.1	$0.44	$16.6
2029	2,220	3,452	$230.1	$0.46	$17.2
2030	2,214	3,457	$240.2	$0.48	$17.9

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.

Sources: Economic and demographic impacts generated using the REMI model.

Revenue impacts generated by BEBR using methods documented in this report.

Table 5.9b
Detailed Employment Impacts
Emery County: High Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Percent
Natural Resources, Mining, Utilities, Construction	885	991	1,165	1,437	1,488	1,310	425	48.0%
Forestry, Fishing, Other	0	0	−1	0	0	1	1	N/A
Mining	801	841	1,024	1,298	1,347	1,221	420	52.4%
Utilities	1	1	1	1	2	3	2	200.0%
Construction	83	149	141	138	139	85	2	2.4%
Manufacturing	0	0	0	0	0	0	0	N/A
Trade	159	175	211	264	287	270	111	69.8%
Wholesale Trade	5	4	5	7	8	8	3	60.0%
Retail Trade	154	171	206	257	279	262	108	70.1%
Transportation, Information, Finance, Accounting	16	12	13	19	22	21	5	31.3%
Transportation and Warehousing	0	−1	−1	0	1	3	3	N/A
Information	2	1	2	3	4	4	2	100.0%
Finance, Insurance	6	4	4	5	5	4	−2	−33.3%
Real Estate, Rental, Leasing	8	8	8	11	12	10	2	25.0%
Services	183	211	272	376	440	449	266	145.4%
Professional and Technical Services	8	8	11	17	21	21	13	162.5%
Management of Companies / Enterprises	1	1	1	2	2	2	1	100.0%
Administrative and Waste Services	19	20	23	33	37	35	16	84.2%
Educational Services	1	0	1	2	3	4	3	300.0%
Health Care and Social Assistance	95	113	151	210	249	259	164	172.6%
Arts, Entertainment, Recreation	3	4	5	6	8	8	5	166.7%
Accommodation and Food Services	23	29	38	51	60	62	39	169.6%
Other Services (excl Gov)	33	36	42	55	60	58	25	75.8%
Public Administration	67	75	99	152	175	163	96	143.3%
State & Local Government	67	75	99	152	175	163	96	143.3%
State Government	6	6	8	12	14	13	7	116.7%
Local Government	61	69	91	140	161	150	89	145.9%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	1,310	1,464	1,760	2,248	2,412	2,213	903	68.9%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.9c
Detailed Occupational Impacts
Emery County: High Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	106	116	138	177	188	170	64	60.4%
Computer, Math, Architect, Engineer	47	51	63	83	89	83	36	76.6%
Life, Physical, Social Science	26	28	35	46	49	45	19	73.1%
Community, Social Service	13	15	20	28	33	33	20	153.8%
Legal	6	6	8	11	12	11	5	83.3%
Education, Training, Library	7	7	10	15	18	19	12	171.4%
Arts, Design, Entertainment, Sports, Media	3	3	4	6	7	7	4	133.3%
Healthcare	57	67	89	124	145	149	92	161.4%
Protective Service	18	21	27	41	48	45	27	150.0%
Food Preparation, Serving-Related	24	29	39	53	62	64	40	166.7%
Building, Grounds, Personal Care, Service	33	37	47	66	76	76	43	130.3%
Sales, Office, Administrative	155	169	199	257	274	250	95	61.3%
Farm, Fishing, Forestry	0	0	0	1	1	1	1	N/A
Construction, Extraction	367	427	493	598	619	534	167	45.5%
Installation, Maintenance, Repair	81	91	111	142	151	137	56	69.1%
Production	77	82	100	128	134	122	45	58.4%
Transportation, Material Moving	135	143	171	218	228	206	71	52.6%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Figure 5.3a
Emery County Employment Impacts, 2007–2030
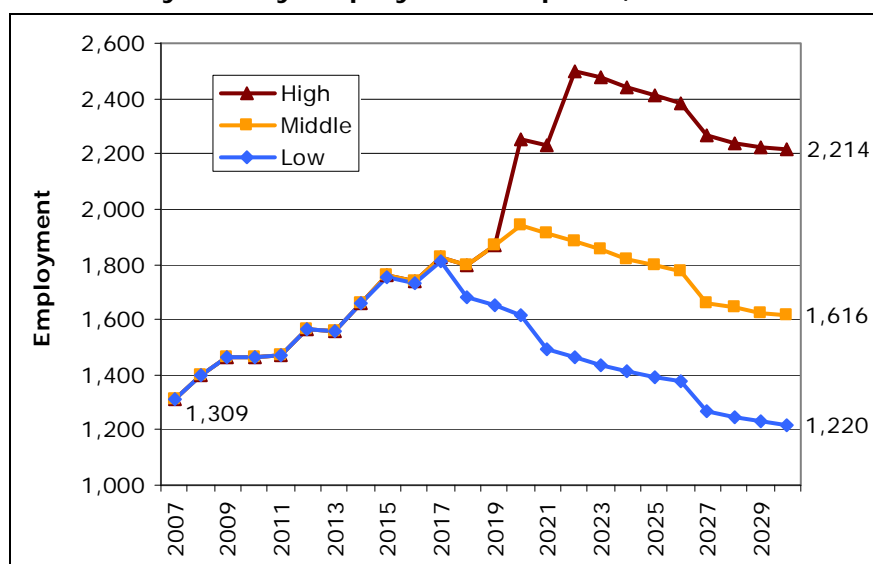
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.3b
Emery County Population Impacts, 2007–2030
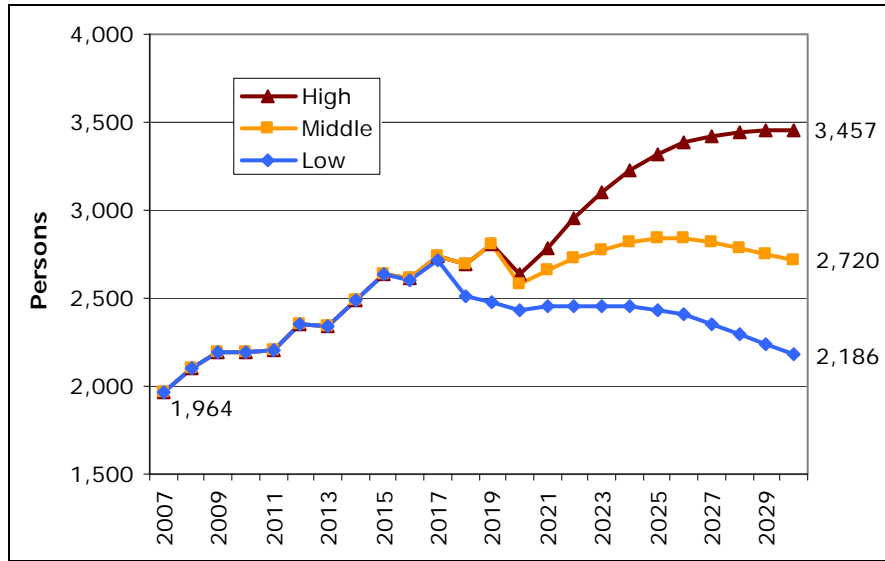
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.3c
Emery County Earnings Impacts, 2007–2030
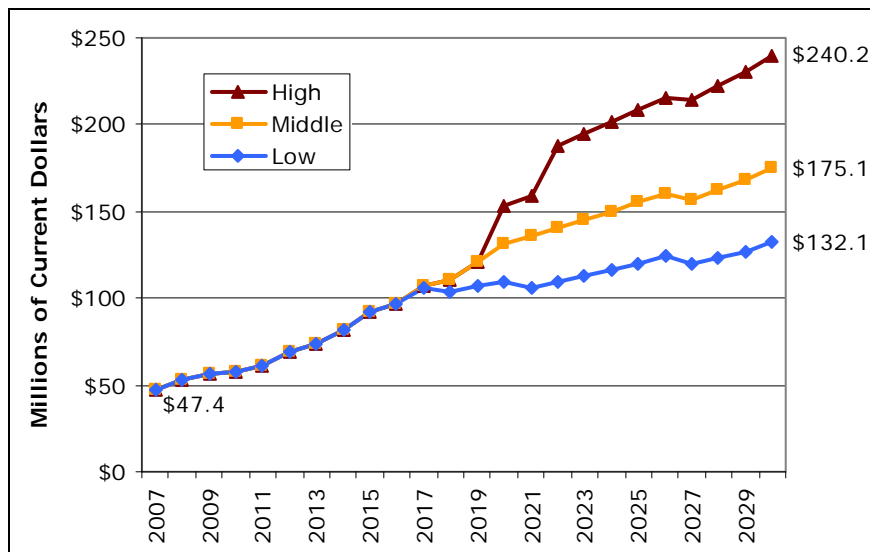
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.3d
Emery County Local Tax Revenue Impacts, 2007–2030
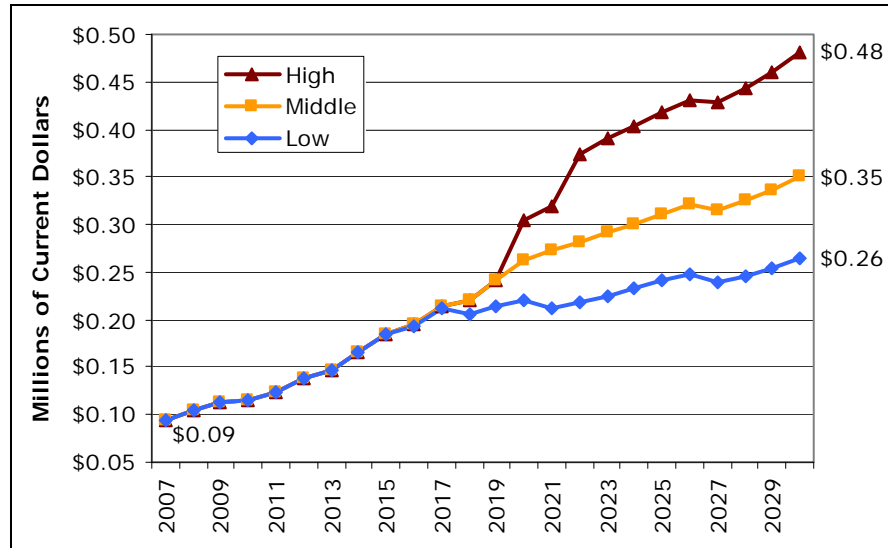
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.3e
Emery County State Tax Revenue Impacts, 2007–2030
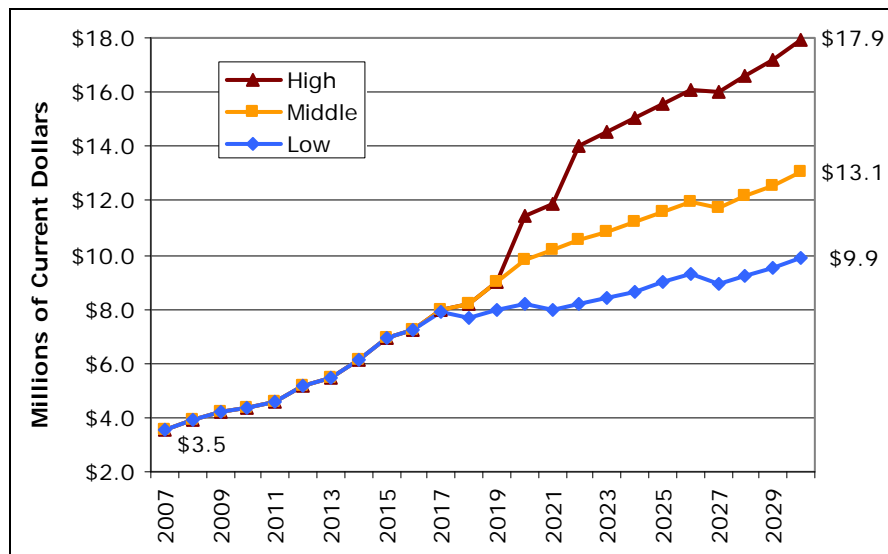
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

5.5 Sevier County Scenario Impacts

Impact results for each of the three scenarios for Sevier County are also shown in nine tables. The Low Scenario is shown in Tables 5.10a through 5.10c, the Middle Scenario in Tables 5.11a through 5.11c, and the High Scenario in Tables 5.12a through 5.12c. Figures 5.4a through 5.4e show all three scenarios for each of the major impact categories for the county.

Coal production drives the impacts measured here. All three scenarios are nearly identical for Sevier County, with coal production declining from 2007 to 2030. Employment impacts rise from 751 in 2007 to 1,006 in 2009, then decline to reach roughly 552 in 2030. Population impacts follow the same general path, increasing from 1,127 in 2007 to 1,509 in 2009, then declining to about 1,208 in 2030. Nominal earnings, local tax revenue, and state tax revenue impacts are all higher in 2030 than in 2007 for all three scenarios, following an uneven path through time. Nominal earnings impacts increase from $18.2 million in 2007 to approximately $43.0 million in 2030. Nominal local government revenue impacts increase from $0.1 million in 2007 to $0.2 million in 2030. Nominal state government revenue impacts increase from $1.4 million in 2007 to about $3.3 million in 2030.

Table 5.10a
Summary Impacts
Sevier County: Low Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	751	1,127	$18.2	$0.09	$1.4
2008	884	1,326	$22.2	$0.11	$1.7
2009	1,006	1,509	$26.2	$0.13	$2.0
2010	1,003	1,505	$26.8	$0.13	$2.1
2011	996	1,494	$28.0	$0.14	$2.2
2012	981	1,472	$29.2	$0.15	$2.3
2013	957	1,436	$30.1	$0.15	$2.3
2014	936	1,404	$31.1	$0.16	$2.4
2015	797	1,196	$28.0	$0.14	$2.2
2016	773	1,223	$28.6	$0.14	$2.2
2017	758	1,258	$29.6	$0.15	$2.3
2018	745	1,288	$30.7	$0.15	$2.4
2019	729	1,311	$31.7	$0.16	$2.5
2020	716	1,330	$32.8	$0.16	$2.6
2021	704	1,345	$34.1	$0.17	$2.7
2022	691	1,355	$35.3	$0.18	$2.7
2023	574	1,334	$30.8	$0.15	$2.4
2024	563	1,314	$31.8	$0.16	$2.5
2025	555	1,294	$33.1	$0.17	$2.6
2026	551	1,274	$34.6	$0.17	$2.7
2027	549	1,255	$36.4	$0.18	$2.8
2028	546	1,236	$38.2	$0.19	$3.0
2029	546	1,218	$40.3	$0.20	$3.1
2030	548	1,200	$42.7	$0.21	$3.3

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.

Sources: Economic and demographic impacts generated using the REMI model.

Revenue impacts generated by BEBR using methods documented in this report.

Table 5.10b
Detailed Employment Impacts
Sevier County: Low Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Percent
Natural Resources, Mining, Utilities, Construction	408	554	425	364	263	259	−149	−36.5%
Forestry, Fishing, Other	0	0	0	0	0	0	0	N/A
Mining	360	459	360	328	247	244	−116	−32.2%
Utilities	4	5	4	3	3	3	−1	−25.0%
Construction	44	90	61	33	13	12	−32	−72.7%
Manufacturing	1	0	−1	−1	0	0	−1	−100.0%
Trade	65	83	71	67	56	55	−10	−15.4%
Wholesale Trade	5	5	4	3	2	2	−3	−60.0%
Retail Trade	60	78	67	64	54	53	−7	−11.7%
Transportation, Information, Finance, Accounting	38	46	33	29	22	21	−17	−44.7%
Transportation and Warehousing	2	1	−1	0	1	2	0	0.0%
Information	1	1	1	1	1	1	0	0.0%
Finance, Insurance	8	9	5	4	3	3	−5	−62.5%
Real Estate, Rental, Leasing	27	35	28	24	17	15	−12	−44.4%
Services	106	149	130	133	119	124	18	17.0%
Professional and Technical Services	19	26	22	21	17	17	−2	−10.5%
Management of Companies / Enterprises	3	4	2	2	2	1	−2	−66.7%
Administrative and Waste Services	15	19	15	13	10	10	−5	−33.3%
Educational Services	0	1	0	1	1	1	1	N/A
Health Care and Social Assistance	27	37	33	36	34	39	12	44.4%
Arts, Entertainment, Recreation	2	3	3	3	3	3	1	50.0%
Accommodation and Food Services	20	32	33	35	33	33	13	65.0%
Other Services (excl Gov)	20	27	22	22	19	20	0	0.0%
Public Administration	132	173	138	123	93	88	−44	−33.3%
State & Local Government	132	173	138	123	93	88	−44	−33.3%
State Government	34	44	34	30	22	21	−13	−38.2%
Local Government	98	129	104	93	71	67	−31	−31.6%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	750	1,005	796	715	553	547	−203	−27.1%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.10c
Detailed Occupational Impacts
Sevier County: Low Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	70	92	72	63	48	47	−23	−32.9%
Computer, Math, Architect, Engineer	31	40	33	30	23	23	−8	−25.8%
Life, Physical, Social Science	15	19	15	14	11	11	−4	−26.7%
Community, Social Service	12	15	13	12	10	10	−2	−16.7%
Legal	7	9	7	6	5	5	−2	−28.6%
Education, Training, Library	5	7	6	6	5	5	0	0.0%
Arts, Design, Entertainment, Sports, Media	3	4	3	3	3	3	0	0.0%
Healthcare	24	32	27	27	25	26	2	8.3%
Protective Service	32	42	35	31	24	23	−9	−28.1%
Food Preparation, Serving-Related	20	31	31	32	30	30	10	50.0%
Building, Grounds, Personal Care, Service	26	35	29	28	23	23	−3	−11.5%
Sales, Office, Administrative	115	150	115	101	77	75	−40	−34.8%
Farm, Fishing, Forestry	1	1	0	0	0	0	−1	−100.0%
Construction, Extraction	176	247	188	156	109	107	−69	−39.2%
Installation, Maintenance, Repair	46	63	50	44	33	33	−13	−28.3%
Production	39	49	38	35	27	27	−12	−30.8%
Transportation, Material Moving	70	90	69	62	47	47	−23	−32.9%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).

Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.11a
Summary Impacts
Sevier County: Middle Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	751	1,127	$18.2	$0.09	$1.4
2008	884	1,326	$22.2	$0.11	$1.7
2009	1,006	1,509	$26.2	$0.13	$2.0
2010	1,003	1,505	$26.8	$0.13	$2.1
2011	996	1,494	$28.0	$0.14	$2.2
2012	981	1,472	$29.2	$0.15	$2.3
2013	957	1,436	$30.1	$0.15	$2.3
2014	936	1,404	$31.1	$0.16	$2.4
2015	797	1,196	$28.0	$0.14	$2.2
2016	773	1,223	$28.6	$0.14	$2.2
2017	759	1,258	$29.7	$0.15	$2.3
2018	747	1,289	$30.8	$0.15	$2.4
2019	732	1,313	$31.8	$0.16	$2.5
2020	719	1,332	$33.1	$0.17	$2.6
2021	708	1,348	$34.3	$0.17	$2.7
2022	695	1,359	$35.4	$0.18	$2.8
2023	579	1,338	$31.0	$0.16	$2.4
2024	567	1,319	$32.0	$0.16	$2.5
2025	559	1,300	$33.4	$0.17	$2.6
2026	555	1,280	$34.8	$0.17	$2.7
2027	553	1,262	$36.7	$0.18	$2.9
2028	550	1,243	$38.5	$0.19	$3.0
2029	550	1,225	$40.6	$0.20	$3.2
2030	552	1,208	$43.0	$0.21	$3.3

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.

Sources: Economic and demographic impacts generated using the REMI model.

Revenue impacts generated by BEBR using methods documented in this report.

Table 5.11b
Detailed Employment Impacts
Sevier County: Middle Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Percent
Natural Resources, Mining, Utilities, Construction	408	554	425	364	264	259	−149	−36.5%
Forestry, Fishing, Other	0	0	0	0	0	0	0	N/A
Mining	360	459	360	328	247	244	−116	−32.2%
Utilities	4	5	4	3	3	3	−1	−25.0%
Construction	44	90	61	33	14	12	−32	−72.7%
Manufacturing	1	0	−1	0	0	0	−1	−100.0%
Trade	65	83	72	68	58	56	−9	−13.8%
Wholesale Trade	5	5	4	3	3	2	−3	−60.0%
Retail Trade	60	78	68	65	55	54	−6	−10.0%
Transportation, Information, Finance, Accounting	38	46	33	30	24	23	−15	−39.5%
Transportation and Warehousing	2	1	−1	0	1	3	1	50.0%
Information	1	1	1	1	1	1	0	0.0%
Finance, Insurance	8	9	5	5	4	4	−4	−50.0%
Real Estate, Rental, Leasing	27	35	28	24	18	15	−12	−44.4%
Services	106	149	131	134	123	125	19	17.9%
Professional and Technical Services	19	26	22	21	18	18	−1	−5.3%
Management of Companies / Enterprises	3	4	3	2	2	1	−2	−66.7%
Administrative and Waste Services	15	19	15	13	11	10	−5	−33.3%
Educational Services	0	1	0	1	1	1	1	N/A
Health Care and Social Assistance	27	37	33	36	35	39	12	44.4%
Arts, Entertainment, Recreation	2	3	3	3	3	3	1	50.0%
Accommodation and Food Services	20	32	33	36	34	33	13	65.0%
Other Services (excl Gov)	20	27	22	22	19	20	0	0.0%
Public Administration	132	173	138	123	94	88	−44	−33.3%
State & Local Government	132	173	138	123	94	88	−44	−33.3%
State Government	34	44	34	30	22	21	−13	−38.2%
Local Government	98	129	104	93	72	67	−31	−31.6%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	750	1,005	798	719	563	551	−199	−26.5%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.11c
Detailed Occupational Impacts
Sevier County: Middle Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	70	92	72	64	48	47	−23	−32.9%
Computer, Math, Architect, Engineer	31	40	33	30	23	23	−8	−25.8%
Life, Physical, Social Science	15	19	15	14	11	11	−4	−26.7%
Community, Social Service	12	15	13	12	10	10	−2	−16.7%
Legal	7	9	7	6	5	5	−2	−28.6%
Education, Training, Library	5	7	6	6	5	5	0	0.0%
Arts, Design, Entertainment, Sports, Media	3	4	3	3	3	3	0	0.0%
Healthcare	24	32	27	28	25	27	3	12.5%
Protective Service	32	42	35	31	24	23	−9	−28.1%
Food Preparation, Serving-Related	20	31	31	33	30	30	10	50.0%
Building, Grounds, Personal Care, Service	26	35	29	28	23	23	−3	−11.5%
Sales, Office, Administrative	115	150	115	102	78	75	−40	−34.8%
Farm, Fishing, Forestry	1	1	0	0	0	0	−1	−100.0%
Construction, Extraction	176	247	188	156	110	107	−69	−39.2%
Installation, Maintenance, Repair	46	63	50	44	34	33	−13	−28.3%
Production	39	49	38	35	27	27	−12	−30.8%
Transportation, Material Moving	70	90	69	62	48	47	−23	−32.9%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.12a
Summary Impacts
Sevier County: High Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	751	1,127	$18.2	$0.09	$1.4
2008	884	1,326	$22.2	$0.11	$1.7
2009	1,006	1,509	$26.2	$0.13	$2.0
2010	1,003	1,505	$26.8	$0.13	$2.1
2011	996	1,494	$28.0	$0.14	$2.2
2012	981	1,472	$29.2	$0.15	$2.3
2013	957	1,436	$30.1	$0.15	$2.3
2014	936	1,404	$31.1	$0.16	$2.4
2015	797	1,196	$28.0	$0.14	$2.2
2016	773	1,223	$28.6	$0.14	$2.2
2017	759	1,258	$29.7	$0.15	$2.3
2018	747	1,289	$30.8	$0.15	$2.4
2019	732	1,313	$31.8	$0.16	$2.5
2020	722	1,333	$33.2	$0.17	$2.6
2021	710	1,349	$34.4	$0.17	$2.7
2022	700	1,361	$35.8	$0.18	$2.8
2023	585	1,342	$31.4	$0.16	$2.4
2024	573	1,324	$32.4	$0.16	$2.5
2025	566	1,306	$33.7	$0.17	$2.6
2026	561	1,288	$35.3	$0.18	$2.7
2027	559	1,270	$37.1	$0.19	$2.9
2028	556	1,252	$38.8	$0.19	$3.0
2029	556	1,235	$41.0	$0.21	$3.2
2030	558	1,218	$43.4	$0.22	$3.4

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.

Sources: Economic and demographic impacts generated using the REMI model.

Revenue impacts generated by BEBR using methods documented in this report.

Table 5.12b
Detailed Employment Impacts
Sevier County: High Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Natural Resources, Mining, Utilities, Construction	408	554	425	365	264	260	−148	−36.3%
Forestry, Fishing, Other	0	0	0	0	0	0	0	N/A
Mining	360	459	360	328	247	244	−116	−32.2%
Utilities	4	5	4	3	3	3	−1	−25.0%
Construction	44	90	61	34	14	13	−31	−70.5%
Manufacturing	1	0	−1	0	0	1	0	0.0%
Trade	65	83	72	69	60	58	−7	−10.8%
Wholesale Trade	5	5	4	3	3	2	−3	−60.0%
Retail Trade	60	78	68	66	57	56	−4	−6.7%
Transportation, Information, Finance, Accounting	38	46	33	30	25	24	−14	−36.8%
Transportation and Warehousing	2	1	−1	0	2	3	1	50.0%
Information	1	1	1	1	1	1	0	0.0%
Finance, Insurance	8	9	5	5	4	4	−4	−50.0%
Real Estate, Rental, Leasing	27	35	28	24	18	16	−11	−40.7%
Services	106	149	131	135	123	126	20	18.9%
Professional and Technical Services	19	26	22	21	18	18	−1	−5.3%
Management of Companies / Enterprises	3	4	3	2	2	1	−2	−66.7%
Administrative and Waste Services	15	19	15	14	11	10	−5	−33.3%
Educational Services	0	1	0	1	1	1	1	N/A
Health Care and Social Assistance	27	37	33	36	35	39	12	44.4%
Arts, Entertainment, Recreation	2	3	3	3	3	3	1	50.0%
Accommodation and Food Services	20	32	33	36	34	34	14	70.0%
Other Services (excl Gov)	20	27	22	22	19	20	0	0.0%
Public Administration	132	173	138	123	95	89	−43	−32.6%
State & Local Government	132	173	138	123	95	89	−43	−32.6%
State Government	34	44	34	30	23	21	−13	−38.2%
Local Government	98	129	104	93	72	68	−30	−30.6%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	750	1,005	798	722	567	558	−192	−25.6%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.12c
Detailed Occupational Impacts
Sevier County: High Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	70	92	72	64	49	48	−22	−31.4%
Computer, Math, Architect, Engineer	31	40	33	30	24	23	−8	−25.8%
Life, Physical, Social Science	15	19	15	14	11	11	−4	−26.7%
Community, Social Service	12	15	13	12	10	10	−2	−16.7%
Legal	7	9	7	6	5	5	−2	−28.6%
Education, Training, Library	5	7	6	6	5	5	0	0.0%
Arts, Design, Entertainment, Sports, Media	3	4	3	3	3	3	0	0.0%
Healthcare	24	32	27	28	25	27	3	12.5%
Protective Service	32	42	35	31	24	23	−9	−28.1%
Food Preparation, Serving-Related	20	31	31	33	31	31	11	55.0%
Building, Grounds, Personal Care, Service	26	35	29	28	24	24	−2	−7.7%
Sales, Office, Administrative	115	150	115	102	79	76	−39	−33.9%
Farm, Fishing, Forestry	1	1	0	0	0	0	−1	−100.0%
Construction, Extraction	176	247	188	156	111	108	−68	−38.6%
Installation, Maintenance, Repair	46	63	50	45	34	33	−13	−28.3%
Production	39	49	38	35	27	27	−12	−30.8%
Transportation, Material Moving	70	90	69	62	48	47	−23	−32.9%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Figure 5.4a
Sevier County Employment Impacts, 2007−2030
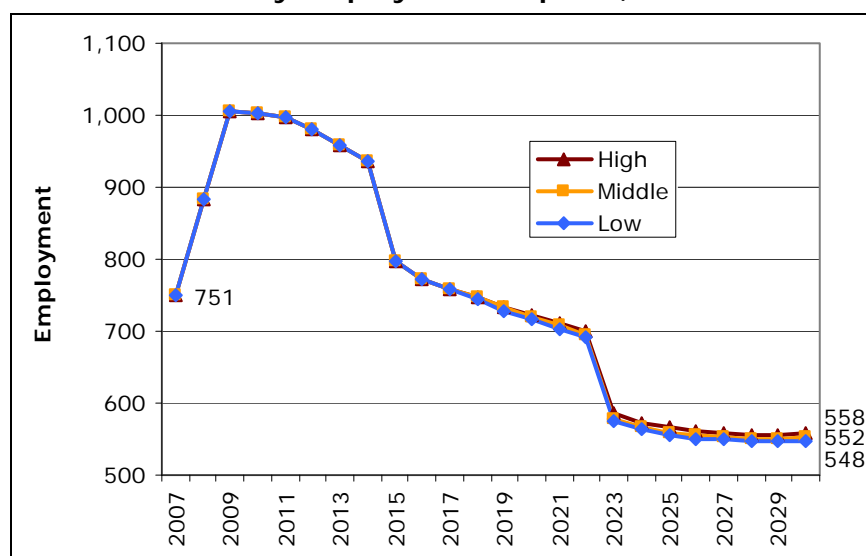
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.4b
Sevier County Population Impacts, 2007–2030
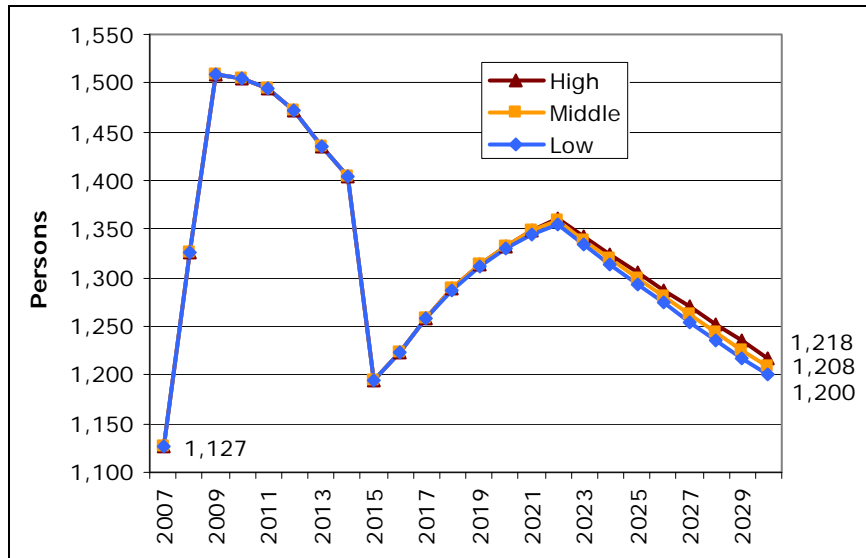
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.4c
Sevier County Earnings Impacts, 2007–2030
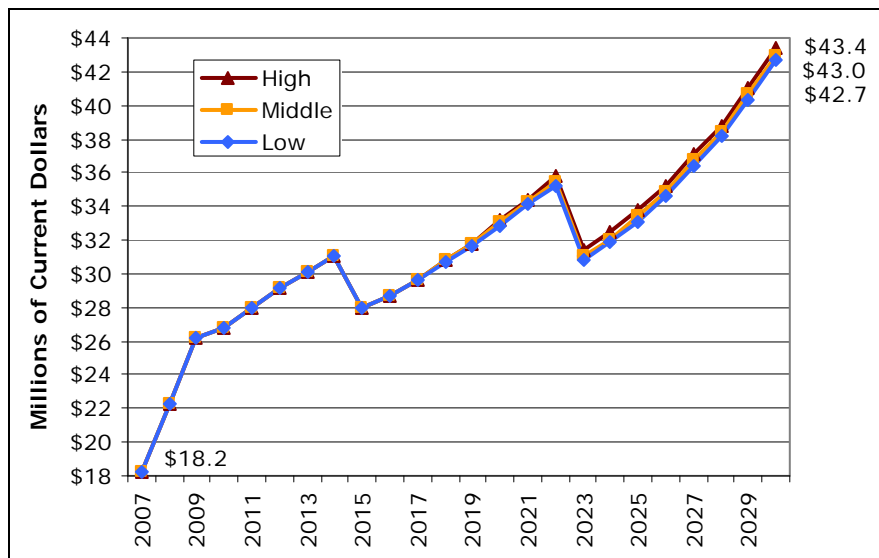
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.4d
Sevier County Local Tax Revenue Impacts, 2007–2030
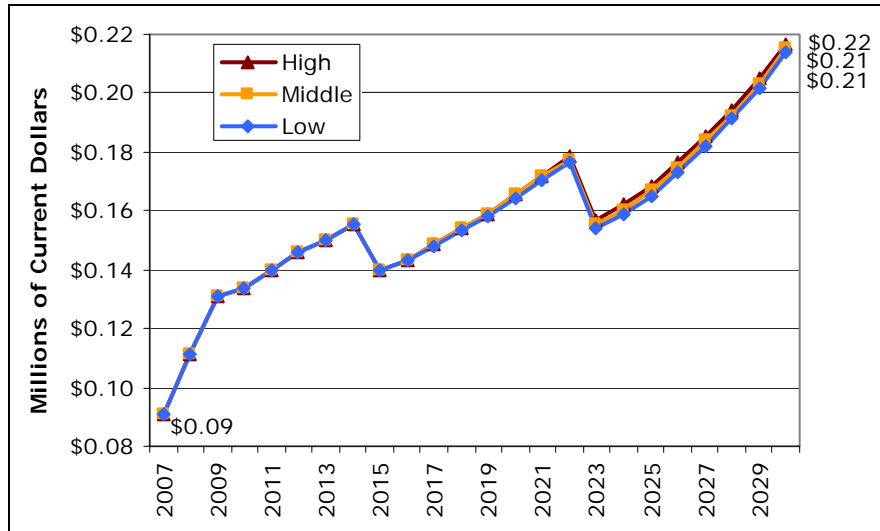
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.4e
Sevier County State Tax Revenue Impacts, 2007–2030
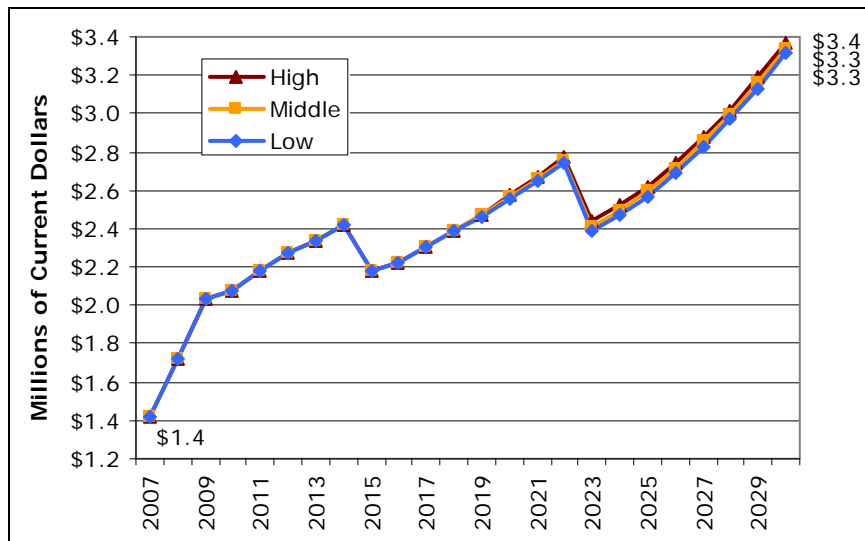
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

5.6 Coal Counties Scenario Impacts

Impact results for each of the three scenarios for the coal counties as a whole (Carbon, Emery, and Sevier combined) are also shown in nine tables. The Low Scenario is shown in Tables 5.13a through 5.13c, the Middle Scenario in Tables 5.14a through 5.14c, and the High Scenario in Tables 5.15a through 5.15c. Figures 5.5a through 5.5e show all three scenarios for each of the major impact categories for the coal counties.

The combined coal county employment impacts rise from 4,017 in 2007 to 4,673 in 2014. Employment impacts then decline and reach 2,469 in the Low Scenario and 3,145 in the Middle Scenario in 2030. In the High Scenario, combined employment impacts decline through 2018, then rise to reach 4,624 in 2022, then fall again to 4,150 in 2030.

In the Low Scenario, the combined coal county population impacts rise from 6,026 in 2007 to reach 7,344 in 2017, then decline to 5,730 in 2030. In the Middle Scenario, population impacts rise from 6,026 in 2007 to reach 7,632 in 2019, then decline to 6,895 in 2030. Although rates of increase fluctuate, the High Scenario population impacts for the coal counties increase from 6,026 to reach 8,433 in 2030.

Nominal earnings, local tax revenue, and state tax revenue impacts are all higher in 2030 than 2007 for all three scenarios for the combined coal counties. From 2007 to 2030, nominal earnings impacts increase from $128.2 million to $240.3 million in the Low Scenario, $310.0 million in the Middle Scenario, and $414.3 million in the High Scenario. Over the same period, nominal local government revenue impacts increase from $0.5 million to $0.8 million in the Low Scenario, $1.0 million in the Middle Scenario, and $1.4 million in the High Scenario. Nominal state government revenue impacts increase from $9.8 million in 2007 to 2030 levels of $18.2 million in the Low Scenario, $23.5 million in the Middle Scenario, and $31.3 million in the High Scenario.

Table 5.13a
Summary Impacts
Coal Counties: Low Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	4,017	6,026	$128.2	$0.50	$9.8
2008	4,390	6,585	$145.0	$0.57	$11.0
2009	4,604	6,906	$155.7	$0.61	$11.8
2010	4,601	6,902	$159.9	$0.63	$12.2
2011	4,586	6,879	$168.6	$0.66	$12.8
2012	4,666	6,999	$181.8	$0.70	$13.8
2013	4,610	6,915	$190.3	$0.73	$14.5
2014	4,673	7,010	$204.9	$0.78	$15.6
2015	4,405	7,082	$206.7	$0.76	$15.7
2016	4,102	7,160	$203.2	$0.73	$15.4
2017	3,936	7,344	$205.5	$0.71	$15.6
2018	3,529	7,130	$192.9	$0.66	$14.6
2019	3,462	7,073	$199.2	$0.68	$15.1
2020	3,294	6,992	$198.8	$0.66	$15.1
2021	3,023	6,923	$191.0	$0.64	$14.5
2022	2,967	6,851	$196.7	$0.66	$14.9
2023	2,816	6,747	$197.5	$0.65	$14.9
2024	2,772	6,642	$203.9	$0.67	$15.4
2025	2,735	6,526	$211.5	$0.70	$16.0
2026	2,701	6,397	$219.0	$0.72	$16.6
2027	2,564	6,231	$216.9	$0.73	$16.4
2028	2,526	6,065	$223.9	$0.75	$17.0
2029	2,493	5,896	$231.3	$0.78	$17.5
2030	2,469	5,730	$240.3	$0.81	$18.2

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.

Sources: Economic and demographic impacts generated using the REMI model.

Revenue impacts generated by BEBR using methods documented in this report.

Table 5.13b
Detailed Employment Impacts
Coal Counties: Low Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Percent
Natural Resources, Mining, Utilities, Construction	2,161	2,475	2,360	1,754	1,358	1,163	−998	−46.2%
Forestry, Fishing, Other	1	0	−2	0	2	4	3	300.0%
Mining	1,945	2,092	2,052	1,604	1,289	1,115	−830	−42.7%
Utilities	9	10	8	5	5	7	−2	−22.2%
Construction	206	373	302	145	62	37	−169	−82.0%
Manufacturing	2	−1	−3	−1	2	3	1	50.0%
Trade	517	574	580	457	397	355	−162	−31.3%
Wholesale Trade	36	32	27	19	18	16	−20	−55.6%
Retail Trade	481	542	553	438	379	339	−142	−29.5%
Transportation, Information, Finance, Accounting	137	140	106	64	60	58	−79	−57.7%
Transportation and Warehousing	4	1	−3	0	6	9	5	125.0%
Information	7	6	7	6	7	7	0	0.0%
Finance, Insurance	44	38	25	13	12	11	−33	−75.0%
Real Estate, Rental, Leasing	82	95	77	45	35	31	−51	−62.2%
Services	720	853	878	721	690	679	−41	−5.7%
Professional and Technical Services	70	81	69	45	39	39	−31	−44.3%
Management of Companies / Enterprises	18	17	10	4	4	3	−15	−83.3%
Administrative and Waste Services	90	99	86	55	48	46	−44	−48.9%
Educational Services	4	4	5	8	10	12	8	200.0%
Health Care and Social Assistance	273	320	352	305	303	309	36	13.2%
Arts, Entertainment, Recreation	21	27	30	25	25	23	2	9.5%
Accommodation and Food Services	108	151	177	163	154	144	36	33.3%
Other Services (excl Gov)	136	154	149	116	107	103	−33	−24.3%
Public Administration	480	561	485	300	227	207	−273	−56.9%
State & Local Government	480	561	485	300	227	207	−273	−56.9%
State Government	157	176	137	65	45	43	−114	−72.6%
Local Government	323	385	348	235	182	164	−159	−49.2%
Federal Civilian	0	0	0	0	0	0	0	NA
Federal Military	0	0	0	0	0	0	0	NA
Farm	0	0	0	0	0	0	0	NA
TOTAL EMPLOYMENT	4,017	4,602	4,406	3,295	2,734	2,465	−1,552	−38.6%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.13c
Detailed Occupational Impacts
Coal Counties: Low Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	342	384	354	253	205	183	−159	−46.5%
Computer, Math, Architect, Engineer	149	165	158	117	96	87	−62	−41.6%
Life, Physical, Social Science	74	81	79	60	50	45	−29	−39.2%
Community, Social Service	59	68	66	50	45	44	−15	−25.4%
Legal	28	31	27	18	15	13	−15	−53.6%
Education, Training, Library	29	34	34	28	28	28	−1	−3.4%
Arts, Design, Entertainment, Sports, Media	16	18	17	12	12	12	−4	−25.0%
Healthcare	182	212	222	183	178	178	−4	−2.2%
Protective Service	121	143	128	81	63	59	−62	−51.2%
Food Preparation, Serving-Related	111	149	170	152	144	136	25	22.5%
Building, Grounds, Personal Care, Service	145	169	166	127	117	113	−32	−22.1%
Sales, Office, Administrative	562	627	564	398	328	299	−263	−46.8%
Farm, Fishing, Forestry	3	2	1	0	2	2	−1	−33.3%
Construction, Extraction	915	1,088	1,020	731	549	466	−449	−49.1%
Installation, Maintenance, Repair	231	267	258	192	155	139	−92	−39.8%
Production	205	222	215	165	136	120	−85	−41.5%
Transportation, Material Moving	365	397	376	285	232	206	−159	−43.6%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).

Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.14a
Summary Impacts
Coal Counties: Middle Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	4,017	6,026	$128.2	$0.50	$9.8
2008	4,390	6,585	$145.0	$0.57	$11.0
2009	4,604	6,906	$155.7	$0.61	$11.8
2010	4,601	6,902	$159.9	$0.63	$12.2
2011	4,586	6,879	$168.6	$0.66	$12.8
2012	4,666	6,999	$181.8	$0.70	$13.8
2013	4,610	6,915	$190.3	$0.73	$14.5
2014	4,673	7,010	$204.9	$0.78	$15.6
2015	4,526	7,116	$212.3	$0.78	$16.1
2016	4,344	7,254	$215.3	$0.79	$16.3
2017	4,181	7,484	$218.4	$0.77	$16.6
2018	3,895	7,477	$213.6	$0.74	$16.2
2019	3,948	7,632	$228.5	$0.78	$17.3
2020	3,899	7,419	$237.7	$0.79	$18.0
2021	3,744	7,485	$239.7	$0.79	$18.1
2022	3,685	7,526	$247.8	$0.82	$18.8
2023	3,525	7,517	$250.4	$0.82	$18.9
2024	3,468	7,496	$258.5	$0.84	$19.6
2025	3,423	7,450	$268.1	$0.87	$20.3
2026	3,382	7,381	$277.5	$0.91	$21.0
2027	3,239	7,269	$277.7	$0.92	$21.0
2028	3,199	7,149	$287.4	$0.95	$21.7
2029	3,167	7,022	$297.8	$0.98	$22.5
2030	3,145	6,895	$310.0	$1.02	$23.5

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.

Sources: Economic and demographic impacts generated using the REMI model.

Revenue impacts generated by BEBR using methods documented in this report.

Table 5.14b
Detailed Employment Impacts
Coal Counties: Middle Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Natural Resources, Mining, Utilities, Construction	2,161	2,475	2,410	2,053	1,704	1,488	−673	−31.1%
Forestry, Fishing, Other	1	0	−2	0	2	3	2	200.0%
Mining	1,945	2,092	2,097	1,856	1,581	1,407	−538	−27.7%
Utilities	9	10	9	6	7	7	−2	−22.2%
Construction	206	373	306	191	114	71	−135	−65.5%
Manufacturing	2	−1	−3	0	2	3	1	50.0%
Trade	517	574	596	536	489	447	−70	−13.5%
Wholesale Trade	36	32	29	23	23	20	−16	−44.4%
Retail Trade	481	542	567	513	466	427	−54	−11.2%
Transportation, Information, Finance, Accounting	137	140	112	82	73	74	−63	−46.0%
Transportation and Warehousing	4	1	−2	1	5	10	6	150.0%
Information	7	6	7	6	7	8	1	14.3%
Finance, Insurance	44	38	26	18	15	14	−30	−68.2%
Real Estate, Rental, Leasing	82	95	81	57	46	42	−40	−48.8%
Services	720	853	905	849	842	837	117	16.3%
Professional and Technical Services	70	81	72	56	51	51	−19	−27.1%
Management of Companies / Enterprises	18	17	12	6	5	4	−14	−77.8%
Administrative and Waste Services	90	99	90	71	65	61	−29	−32.2%
Educational Services	4	4	5	8	11	12	8	200.0%
Health Care and Social Assistance	273	320	362	361	371	384	111	40.7%
Arts, Entertainment, Recreation	21	27	31	29	30	29	8	38.1%
Accommodation and Food Services	108	151	180	181	179	170	62	57.4%
Other Services (excl Gov)	136	154	153	137	130	126	−10	−7.4%
Public Administration	480	561	507	379	318	293	−187	−39.0%
State & Local Government	480	561	507	379	318	293	−187	−39.0%
State Government	157	176	146	86	68	64	−93	−59.2%
Local Government	323	385	361	293	250	229	−94	−29.1%
Federal Civilian	0	0	0	0	0	0	0	NA
Federal Military	0	0	0	0	0	0	0	NA
Farm	0	0	0	0	0	0	0	NA
TOTAL EMPLOYMENT	4,017	4,602	4,527	3,899	3,428	3,142	−875	−21.8%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.14c
Detailed Occupational Impacts
Coal Counties: Middle Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	342	384	364	303	259	236	−106	−31.0%
Computer, Math, Architect, Engineer	149	165	162	138	120	111	−38	−25.5%
Life, Physical, Social Science	74	81	81	70	62	57	−17	−23.0%
Community, Social Service	59	68	69	60	57	57	−2	−3.4%
Legal	28	31	28	22	20	18	−10	−35.7%
Education, Training, Library	29	34	36	34	34	34	5	17.2%
Arts, Design, Entertainment, Sports, Media	16	18	17	15	15	14	−2	−12.5%
Healthcare	182	212	229	220	220	224	42	23.1%
Protective Service	121	143	133	101	87	83	−38	−31.4%
Food Preparation, Serving-Related	111	149	174	172	168	163	52	46.8%
Building, Grounds, Personal Care, Service	145	169	171	153	145	142	−3	−2.1%
Sales, Office, Administrative	562	627	583	479	416	382	−180	−32.0%
Farm, Fishing, Forestry	3	2	1	1	2	2	−1	−33.3%
Construction, Extraction	915	1,088	1,042	863	702	605	−310	−33.9%
Installation, Maintenance, Repair	231	267	264	227	195	177	−54	−23.4%
Production	205	222	220	194	167	152	−53	−25.9%
Transportation, Material Moving	365	397	386	334	288	260	−105	−28.8%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).

Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.15a
Summary Impacts
Coal Counties: High Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	4,017	6,026	$128.2	$0.50	$9.8
2008	4,390	6,585	$145.0	$0.57	$11.0
2009	4,604	6,906	$155.7	$0.61	$11.8
2010	4,601	6,902	$159.9	$0.63	$12.2
2011	4,586	6,879	$168.6	$0.66	$12.8
2012	4,666	6,999	$181.8	$0.70	$13.8
2013	4,610	6,915	$190.3	$0.73	$14.5
2014	4,673	7,010	$204.9	$0.78	$15.6
2015	4,526	7,116	$212.3	$0.78	$16.1
2016	4,344	7,254	$215.3	$0.79	$16.3
2017	4,181	7,484	$218.4	$0.77	$16.6
2018	3,895	7,477	$213.6	$0.74	$16.2
2019	3,948	7,632	$228.5	$0.78	$17.3
2020	4,367	7,545	$268.0	$0.88	$20.3
2021	4,227	7,719	$272.8	$0.89	$20.6
2022	4,624	7,975	$315.3	$1.01	$23.8
2023	4,577	8,179	$329.5	$1.06	$24.9
2024	4,515	8,339	$341.0	$1.10	$25.8
2025	4,460	8,453	$353.9	$1.14	$26.7
2026	4,405	8,521	$366.2	$1.18	$27.7
2027	4,253	8,528	$369.6	$1.20	$27.9
2028	4,205	8,513	$382.8	$1.25	$28.9
2029	4,168	8,479	$397.1	$1.30	$30.0
2030	4,150	8,433	$414.3	$1.35	$31.3

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.

Sources: Economic and demographic impacts generated using the REMI model.

Revenue impacts generated by BEBR using methods documented in this report.

Table 5.15b
Detailed Employment Impacts
Coal Counties: High Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Natural Resources, Mining, Utilities, Construction	2,161	2,475	2,410	2,290	2,227	1,987	−174	−8.1%
Forestry, Fishing, Other	1	0	−2	0	1	2	1	100.0%
Mining	1,945	2,092	2,097	2,065	2,016	1,843	−102	−5.2%
Utilities	9	10	9	6	8	9	0	0.0%
Construction	206	373	306	219	202	133	−73	−35.4%
Manufacturing	2	−1	−3	0	2	3	1	50.0%
Trade	517	574	596	597	624	580	63	12.2%
Wholesale Trade	36	32	29	26	28	25	−11	−30.6%
Retail Trade	481	542	567	571	596	555	74	15.4%
Transportation, Information, Finance, Accounting	137	140	112	93	99	94	−43	−31.4%
Transportation and Warehousing	4	1	−2	1	6	10	6	150.0%
Information	7	6	7	7	9	9	2	28.6%
Finance, Insurance	44	38	26	21	21	18	−26	−59.1%
Real Estate, Rental, Leasing	82	95	81	64	63	57	−25	−30.5%
Services	720	853	905	950	1,061	1,062	342	47.5%
Professional and Technical Services	70	81	72	63	67	66	−4	−5.7%
Management of Companies / Enterprises	18	17	12	8	9	7	−11	−61.1%
Administrative and Waste Services	90	99	90	84	89	83	−7	−7.8%
Educational Services	4	4	5	8	11	13	9	225.0%
Health Care and Social Assistance	273	320	362	409	475	490	217	79.5%
Arts, Entertainment, Recreation	21	27	31	31	37	37	16	76.2%
Accommodation and Food Services	108	151	180	193	209	207	99	91.7%
Other Services (excl Gov)	136	154	153	154	164	159	23	16.9%
Public Administration	480	561	507	434	448	422	−58	−12.1%
State & Local Government	480	561	507	434	448	422	−58	−12.1%
State Government	157	176	146	99	102	96	−61	−38.9%
Local Government	323	385	361	335	346	326	3	0.9%
Federal Civilian	0	0	0	0	0	0	0	NA
Federal Military	0	0	0	0	0	0	0	NA
Farm	0	0	0	0	0	0	0	NA
TOTAL EMPLOYMENT	4,017	4,602	4,527	4,364	4,461	4,148	131	3.3%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).

Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.15c
Detailed Occupational Impacts
Coal Counties: High Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	342	384	364	340	342	315	−27	−7.9%
Computer, Math, Architect, Engineer	149	165	162	155	157	147	−2	−1.3%
Life, Physical, Social Science	74	81	81	80	80	75	1	1.4%
Community, Social Service	59	68	69	68	75	75	16	27.1%
Legal	28	31	28	25	26	24	−4	−14.3%
Education, Training, Library	29	34	36	38	43	44	15	51.7%
Arts, Design, Entertainment, Sports, Media	16	18	17	17	19	19	3	18.8%
Healthcare	182	212	229	250	283	289	107	58.8%
Protective Service	121	143	133	116	122	116	−5	−4.1%
Food Preparation, Serving-Related	111	149	174	185	202	200	89	80.2%
Building, Grounds, Personal Care, Service	145	169	171	172	189	186	41	28.3%
Sales, Office, Administrative	562	627	583	540	548	507	−55	−9.8%
Farm, Fishing, Forestry	3	2	1	2	2	3	0	0.0%
Construction, Extraction	915	1,088	1,042	965	937	822	−93	−10.2%
Installation, Maintenance, Repair	231	267	264	254	255	235	4	1.7%
Production	205	222	220	216	215	199	−6	−2.9%
Transportation, Material Moving	365	397	386	373	371	339	−26	−7.1%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Figure 5.5a
Coal Counties Employment Impacts, 2007–2030
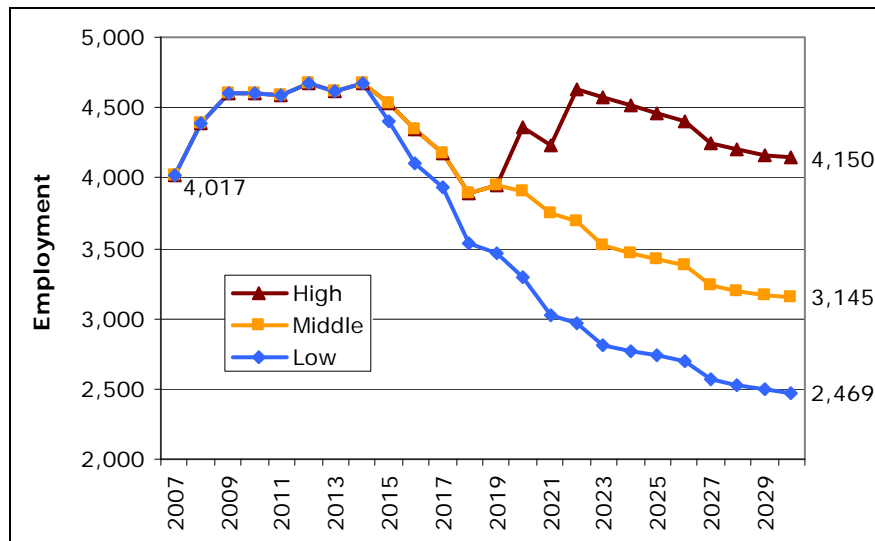
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.5b
Coal Counties Population Impacts, 2007–2030
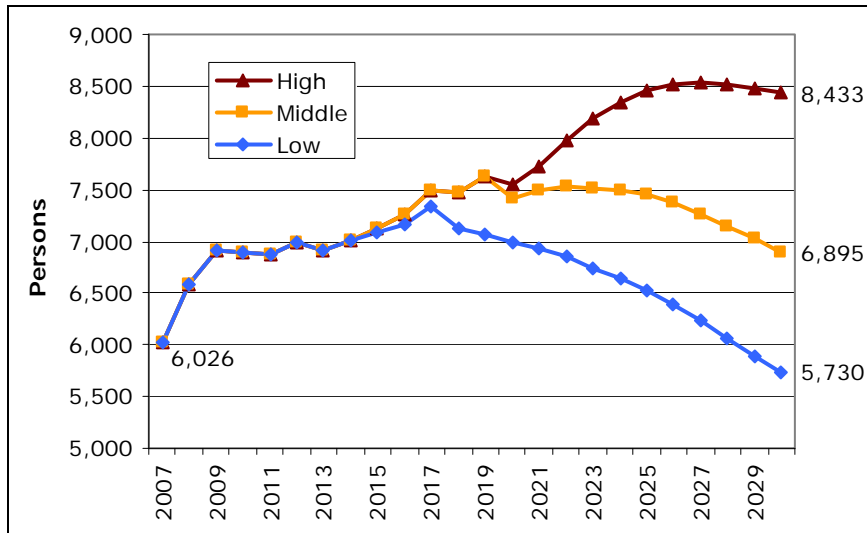
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.5c
Coal Counties Earnings Impacts, 2007–2030
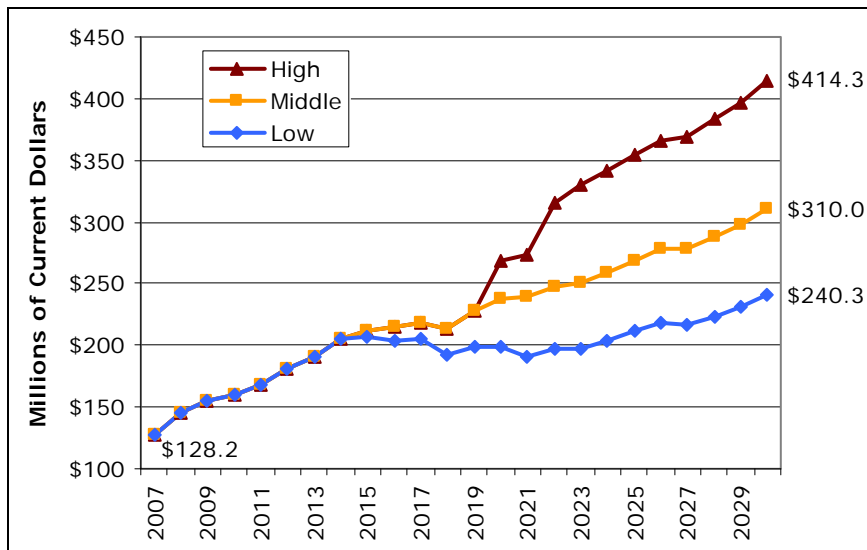
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.5d
Coal Counties Local Tax Revenue Impacts, 2007–2030
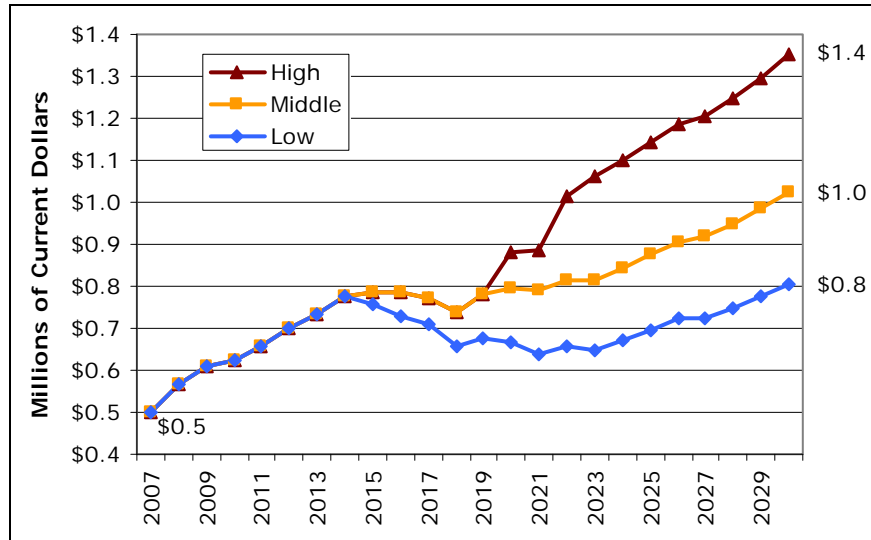
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.5e
Coal Counties State Tax Revenue Impacts, 2007–2030
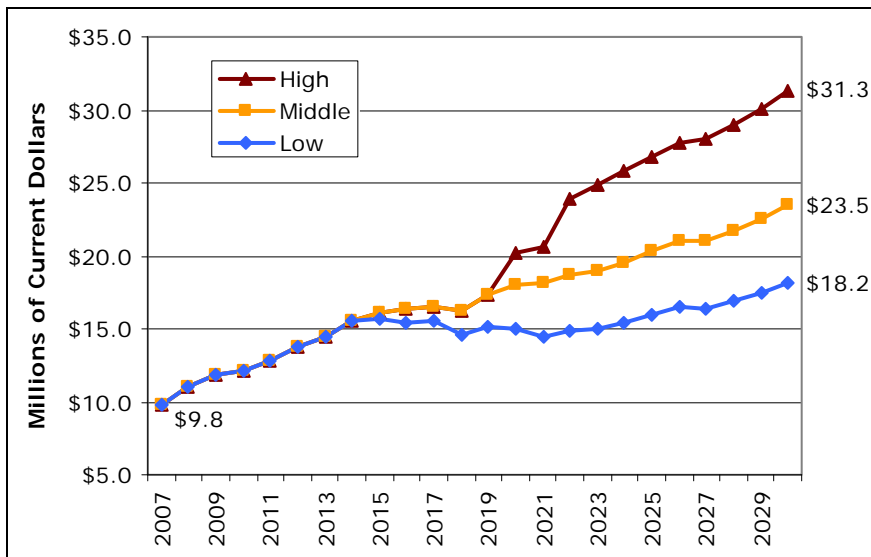
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

5.7 Non-Coal Counties Scenario Impacts

Impact results for each of the three scenarios for the non-coal counties (all counties *except* Carbon, Emery, and Sevier) are also shown in nine tables. The Low Scenario is shown in Tables 5.16a through 5.16c, the Middle Scenario in Tables 5.17a through 5.17c, and the High Scenario in Tables 5.18a through 5.18c. Figures 5.6a through 5.6e show all three scenarios for each of the major impact categories for the region. Finally, Tables 5.19a through 5.21b provide summary results for 2007 compared with 2030 for all areas and for all three scenarios, and Figures 5.7a through 5.7c show employment impacts by county for all three scenarios.

Impacts in Utah outside the coal counties are a small but increasing share of total state impacts from 2007 to 2030. Employment impacts for the non-coal counties increase from 686 in 2007 to reach 1,647 in 2014 in the Low Scenario, and 1,658 in 2015 in both the Middle and High scenarios. Employment impacts decline to 1,055 in the Low Scenario and 1,285 in the Middle Scenario by 2030. While there is some fluctuation, the High Scenario employment impacts remain mostly flat, terminating at 1,625 in 2030.

Population impacts increase from 1,029 in 2007 to 2,471 in 2014 in all scenarios for the non-coal counties. Population impacts decline to 1,821 in the Low Scenario and to 1,692 in the Middle and High Scenarios in 2016. Impacts then increase again in all scenarios to 2030, reaching 2,794 in the Low Scenario, 3,263 in the Middle Scenario, and 3,883 in the High Scenario.

Nominal earnings, local tax revenue, and state tax revenue impacts are all higher in 2030 than in 2007 for all three scenarios for those counties not in coal country. From 2007 to 2030, nominal earnings impacts increase from $68.1 million to $186.3 million in the Low Scenario, $232.9 million in the Middle Scenario, and $305.1 million in the High Scenario. Over the same period, nominal local government revenue impacts increase from $0.3 million to $0.7 million in the Low Scenario, $0.9 million in the Middle Scenario, and $1.2 million in the High Scenario. Nominal state government revenue impacts increase from $5.3 million in 2007 to 2030 levels of $14.5 million in the Low Scenario, $18.1 million in the Middle Scenario, and $23.7 million in the High Scenario.

Table 5.16a
Summary Impacts
Non-Coal Counties: Low Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	686	1,029	$68.1	$0.27	$5.3
2008	802	1,203	$78.4	$0.31	$6.1
2009	893	1,340	$87.0	$0.35	$6.8
2010	918	1,377	$89.6	$0.36	$7.0
2011	922	1,383	$93.5	$0.37	$7.3
2012	1,284	1,926	$117.5	$0.47	$9.1
2013	1,301	1,952	$123.0	$0.49	$9.6
2014	1,647	2,471	$150.1	$0.60	$11.7
2015	1,629	1,970	$153.1	$0.61	$11.9
2016	1,561	1,821	$153.1	$0.61	$11.9
2017	1,515	1,995	$154.8	$0.62	$12.0
2018	1,402	2,384	$148.2	$0.59	$11.5
2019	1,356	2,590	$150.0	$0.60	$11.7
2020	1,292	2,752	$149.6	$0.60	$11.6
2021	1,207	2,797	$144.1	$0.58	$11.2
2022	1,171	2,829	$146.6	$0.59	$11.4
2023	1,129	2,845	$146.5	$0.59	$11.4
2024	1,108	2,855	$150.1	$0.60	$11.7
2025	1,097	2,857	$155.3	$0.62	$12.1
2026	1,090	2,856	$161.6	$0.65	$12.6
2027	1,061	2,843	$162.7	$0.65	$12.7
2028	1,056	2,827	$169.5	$0.68	$13.2
2029	1,054	2,810	$177.5	$0.71	$13.8
2030	1,055	2,794	$186.3	$0.75	$14.5

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.

Sources: Economic and demographic impacts generated using the REMI model.

Revenue impacts generated by BEBR using methods documented in this report.

Table 5.16b
Detailed Employment Impacts
Non-Coal Counties: Low Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Percent
Natural Resources, Mining, Utilities, Construction	84	167	316	208	129	105	21	25.0%
Forestry, Fishing, Other	1	0	0	0	0	0	−1	−100.0%
Mining	3	4	86	72	63	59	56	1866.7%
Utilities	1	1	2	3	2	1	0	0.0%
Construction	79	162	228	133	64	45	−34	−43.0%
Manufacturing	20	2	9	2	4	10	−10	−50.0%
Trade	111	142	238	197	166	155	44	39.6%
Wholesale Trade	19	21	36	27	21	19	0	0.0%
Retail Trade	92	121	202	170	145	136	44	47.8%
Transportation, Information, Finance, Accounting	132	155	255	193	163	160	28	21.2%
Transportation and Warehousing	17	18	29	21	18	20	3	17.6%
Information	16	20	30	24	20	20	4	25.0%
Finance, Insurance	56	60	95	63	50	48	−8	−14.3%
Real Estate, Rental, Leasing	43	57	101	85	75	72	29	67.4%
Services	271	351	631	546	509	511	240	88.6%
Professional and Technical Services	52	68	118	98	88	89	37	71.2%
Management of Companies / Enterprises	23	22	29	18	13	13	−10	−43.5%
Administrative and Waste Services	50	64	106	83	71	67	17	34.0%
Educational Services	15	22	38	38	39	40	25	166.7%
Health Care and Social Assistance	48	62	133	119	118	126	78	162.5%
Arts, Entertainment, Recreation	16	20	38	37	37	38	22	137.5%
Accommodation and Food Services	31	47	92	87	83	79	48	154.8%
Other Services (excl Gov)	36	46	77	66	60	59	23	63.9%
Public Administration	69	100	178	146	128	119	50	72.5%
State & Local Government	69	100	178	146	128	119	50	72.5%
State Government	26	36	72	58	51	47	21	80.8%
Local Government	43	64	106	88	77	72	29	67.4%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	687	917	1,627	1,292	1,099	1,060	373	54.3%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.16c
Detailed Occupational Impacts
Non-Coal Counties: Low Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	71	90	156	120	101	97	26	36.6%
Computer, Math, Architect, Engineer	30	38	68	55	48	48	18	60.0%
Life, Physical, Social Science	5	8	16	13	11	10	5	100.0%
Community, Social Service	10	15	28	24	22	23	13	130.0%
Legal	6	9	16	13	10	11	5	83.3%
Education, Training, Library	15	21	37	35	34	36	21	140.0%
Arts, Design, Entertainment, Sports, Media	9	12	20	17	14	14	5	55.6%
Healthcare	34	44	90	80	76	80	46	135.3%
Protective Service	23	31	55	46	41	39	16	69.6%
Food Preparation, Serving-Related	32	48	93	88	83	81	49	153.1%
Building, Grounds, Personal Care, Service	45	61	107	92	85	85	40	88.9%
Sales, Office, Administrative	160	199	337	259	219	208	48	30.0%
Farm, Fishing, Forestry	1	1	2	2	1	2	1	100.0%
Construction, Extraction	62	120	203	131	80	64	2	3.2%
Installation, Maintenance, Repair	29	39	70	55	45	42	13	44.8%
Production	23	19	40	29	25	27	4	17.4%
Transportation, Material Moving	37	44	84	65	55	52	15	40.5%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
*Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.*

Table 5.17a
Summary Impacts
Non-Coal Counties: Middle Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	686	1,029	$68.1	$0.27	$5.3
2008	802	1,203	$78.4	$0.31	$6.1
2009	893	1,340	$87.0	$0.35	$6.8
2010	918	1,377	$89.6	$0.36	$7.0
2011	922	1,383	$93.5	$0.37	$7.3
2012	1,284	1,926	$117.5	$0.47	$9.1
2013	1,301	1,952	$123.0	$0.49	$9.6
2014	1,647	2,471	$150.1	$0.60	$11.7
2015	1,658	2,160	$156.3	$0.63	$12.2
2016	1,620	1,692	$159.1	$0.64	$12.4
2017	1,580	2,033	$161.6	$0.65	$12.6
2018	1,502	2,316	$159.9	$0.64	$12.4
2019	1,494	2,440	$167.0	$0.67	$13.0
2020	1,471	2,892	$172.5	$0.69	$13.4
2021	1,429	2,985	$174.6	$0.70	$13.6
2022	1,402	3,064	$179.0	$0.72	$13.9
2023	1,364	3,123	$181.0	$0.72	$14.1
2024	1,345	3,169	$186.3	$0.75	$14.5
2025	1,331	3,205	$192.4	$0.77	$15.0
2026	1,322	3,235	$200.3	$0.80	$15.6
2027	1,293	3,248	$203.2	$0.81	$15.8
2028	1,285	3,257	$211.7	$0.85	$16.5
2029	1,282	3,261	$221.3	$0.89	$17.2
2030	1,285	3,263	$232.9	$0.93	$18.1

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.
Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Table 5.17b
Detailed Employment Impacts
Non-Coal Counties: Middle Scenario

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Percent
Natural Resources, Mining, Utilities, Construction	84	167	320	235	162	130	46	54.8%
Forestry, Fishing, Other	1	0	0	0	0	1	0	0.0%
Mining	3	4	86	73	63	58	55	1833.3%
Utilities	1	1	2	3	2	2	1	100.0%
Construction	79	162	232	159	97	69	−10	−12.7%
Manufacturing	20	2	10	6	10	16	−4	−20.0%
Trade	111	142	241	223	200	189	78	70.3%
Wholesale Trade	19	21	36	31	24	23	4	21.1%
Retail Trade	92	121	205	192	176	166	74	80.4%
Transportation, Information, Finance, Accounting	132	155	260	222	200	191	59	44.7%
Transportation and Warehousing	17	18	29	24	24	24	7	41.2%
Information	16	20	31	29	25	23	7	43.8%
Finance, Insurance	56	60	98	73	61	57	1	1.8%
Real Estate, Rental, Leasing	43	57	102	96	90	87	44	102.3%
Services	271	351	644	620	602	616	345	127.3%
Professional and Technical Services	52	68	121	113	108	109	57	109.6%
Management of Companies / Enterprises	23	22	29	22	18	18	−5	−21.7%
Administrative and Waste Services	50	64	108	96	85	82	32	64.0%
Educational Services	15	22	39	42	45	49	34	226.7%
Health Care and Social Assistance	48	62	135	133	137	147	99	206.3%
Arts, Entertainment, Recreation	16	20	39	42	43	45	29	181.3%
Accommodation and Food Services	31	47	94	97	95	95	64	206.5%
Other Services (excl Gov)	36	46	79	75	71	71	35	97.2%
Public Administration	69	100	181	166	150	145	76	110.1%
State & Local Government	69	100	181	166	150	145	76	110.1%
State Government	26	36	73	66	59	57	31	119.2%
Local Government	43	64	108	100	91	88	45	104.7%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	687	917	1,656	1,472	1,324	1,287	600	87.3%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.17c
Detailed Occupational Impacts
Non-Coal Counties: Middle Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	71	90	160	138	123	118	47	66.2%
Computer, Math, Architect, Engineer	30	38	70	64	60	59	29	96.7%
Life, Physical, Social Science	5	8	16	15	13	13	8	160.0%
Community, Social Service	10	15	28	27	27	27	17	170.0%
Legal	6	9	16	15	12	12	6	100.0%
Education, Training, Library	15	21	37	39	40	44	29	193.3%
Arts, Design, Entertainment, Sports, Media	9	12	21	19	17	18	9	100.0%
Healthcare	34	44	92	88	88	93	59	173.5%
Protective Service	23	31	57	54	49	46	23	100.0%
Food Preparation, Serving-Related	32	48	95	97	98	96	64	200.0%
Building, Grounds, Personal Care, Service	45	61	110	104	102	103	58	128.9%
Sales, Office, Administrative	160	199	344	297	266	255	95	59.4%
Farm, Fishing, Forestry	1	1	2	2	2	2	1	100.0%
Construction, Extraction	62	120	206	151	105	84	22	35.5%
Installation, Maintenance, Repair	29	39	72	62	54	51	22	75.9%
Production	23	19	41	34	33	34	11	47.8%
Transportation, Material Moving	37	44	85	74	65	63	26	70.3%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.18a
Summary Impacts
Non-Coal Counties: High Scenario
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	686	1,029	$68.1	$0.27	$5.3
2008	802	1,203	$78.4	$0.31	$6.1
2009	893	1,340	$87.0	$0.35	$6.8
2010	918	1,377	$89.6	$0.36	$7.0
2011	922	1,383	$93.5	$0.37	$7.3
2012	1,284	1,926	$117.5	$0.47	$9.1
2013	1,301	1,952	$123.0	$0.49	$9.6
2014	1,647	2,471	$150.1	$0.60	$11.7
2015	1,658	2,160	$156.3	$0.63	$12.2
2016	1,620	1,692	$159.1	$0.64	$12.4
2017	1,580	2,033	$161.6	$0.65	$12.6
2018	1,502	2,316	$159.9	$0.64	$12.4
2019	1,494	2,440	$167.0	$0.67	$13.0
2020	1,592	2,930	$189.9	$0.76	$14.8
2021	1,570	3,062	$194.6	$0.78	$15.1
2022	1,674	3,216	$220.4	$0.88	$17.1
2023	1,685	3,354	$230.9	$0.92	$18.0
2024	1,682	3,475	$241.0	$0.96	$18.8
2025	1,675	3,577	$250.4	$1.00	$19.5
2026	1,670	3,668	$261.2	$1.04	$20.3
2027	1,639	3,737	$266.8	$1.07	$20.8
2028	1,628	3,794	$277.9	$1.11	$21.6
2029	1,624	3,840	$290.6	$1.16	$22.6
2030	1,625	3,883	$305.1	$1.22	$23.7

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.

Sources: Economic and demographic impacts generated using the REMI model.

Revenue impacts generated by BEBR using methods documented in this report.

							Change	
Employment by Industry	**2007**	**2010**	**2015**	**2020**	**2025**	**2030**	**Level**	**Percent**
Natural Resources, Mining, Utilities, Construction	84	167	320	251	221	174	90	107.1%
Forestry, Fishing, Other	1	0	0	0	1	1	0	0.0%
Mining	3	4	86	74	65	60	57	1900.0%
Utilities	1	1	2	4	3	2	1	100.0%
Construction	79	162	232	173	152	111	32	40.5%
Manufacturing	20	2	10	10	18	24	4	20.0%
Trade	111	142	241	241	251	239	128	115.3%
Wholesale Trade	19	21	36	33	31	28	9	47.4%
Retail Trade	92	121	205	208	220	211	119	129.3%
Transportation, Information, Finance, Accounting	132	155	260	246	251	242	110	83.3%
Transportation and Warehousing	17	18	29	28	30	31	14	82.4%
Information	16	20	31	31	31	30	14	87.5%
Finance, Insurance	56	60	98	82	79	72	16	28.6%
Real Estate, Rental, Leasing	43	57	102	105	111	109	66	153.5%
Services	271	351	644	670	747	768	497	183.4%
Professional and Technical Services	52	68	121	124	138	141	89	171.2%
Management of Companies / Enterprises	23	22	29	25	24	23	0	0.0%
Administrative and Waste Services	50	64	108	104	109	105	55	110.0%
Educational Services	15	22	39	46	54	59	44	293.3%
Health Care and Social Assistance	48	62	135	143	165	180	132	275.0%
Arts, Entertainment, Recreation	16	20	39	45	52	56	40	250.0%
Accommodation and Food Services	31	47	94	102	115	115	84	271.0%
Other Services (excl Gov)	36	46	79	81	90	89	53	147.2%
Public Administration	69	100	181	177	186	180	111	160.9%
State & Local Government	69	100	181	177	186	180	111	160.9%
State Government	26	36	73	70	72	70	44	169.2%
Local Government	43	64	108	107	114	110	67	155.8%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	687	917	1,656	1,595	1,674	1,627	940	136.8%

Table 5.18b
Detailed Employment Impacts
Non-Coal Counties: High Scenario

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).

Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 5.18c
Detailed Occupational Impacts
Non-Coal Counties: High Scenario

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	71	90	160	151	156	150	79	111.3%
Computer, Math, Architect, Engineer	30	38	70	69	75	75	45	150.0%
Life, Physical, Social Science	5	8	16	15	16	16	11	220.0%
Community, Social Service	10	15	28	29	33	34	24	240.0%
Legal	6	9	16	16	16	16	10	166.7%
Education, Training, Library	15	21	37	41	49	53	38	253.3%
Arts, Design, Entertainment, Sports, Media	9	12	21	21	22	21	12	133.3%
Healthcare	34	44	92	94	108	115	81	238.2%
Protective Service	23	31	57	57	60	59	36	156.5%
Food Preparation, Serving-Related	32	48	95	103	116	118	86	268.8%
Building, Grounds, Personal Care, Service	45	61	110	113	125	127	82	182.2%
Sales, Office, Administrative	160	199	344	324	336	322	162	101.3%
Farm, Fishing, Forestry	1	1	2	2	3	2	1	100.0%
Construction, Extraction	62	120	206	163	145	116	54	87.1%
Installation, Maintenance, Repair	29	39	72	67	69	65	36	124.1%
Production	23	19	41	39	44	44	21	91.3%
Transportation, Material Moving	37	44	85	80	81	81	44	118.9%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Figure 5.6a
Non-Coal Counties Employment Impacts, 2007—2030
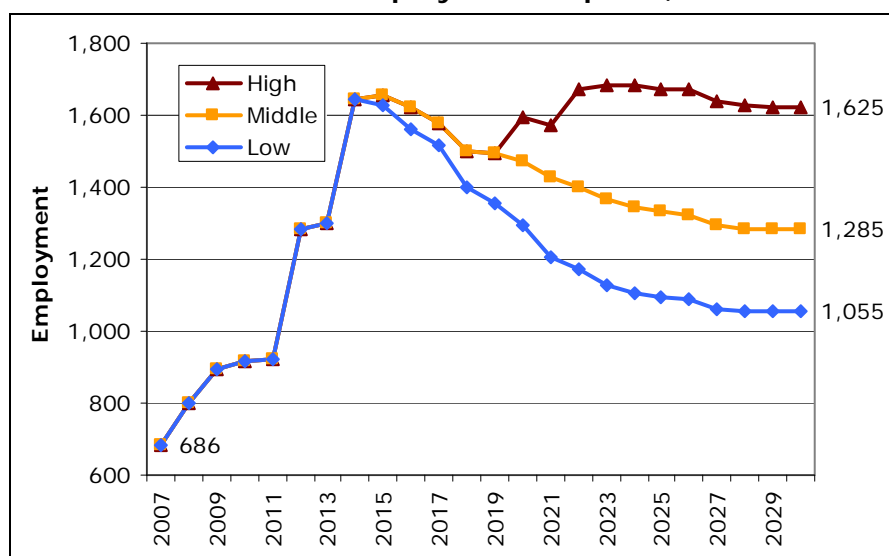
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.6b
Non-Coal Counties Population Impacts, 2007–2030
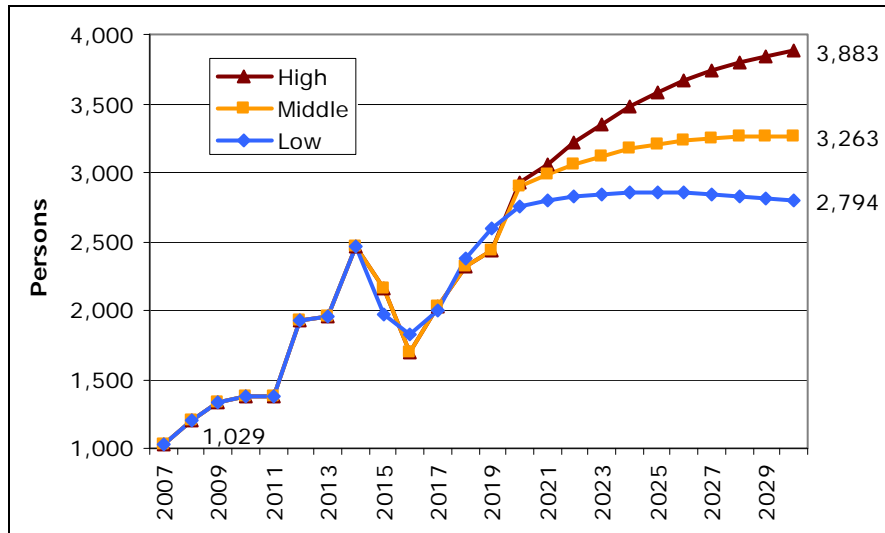
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.6c
Non-Coal Counties Earnings Impacts, 2007–2030
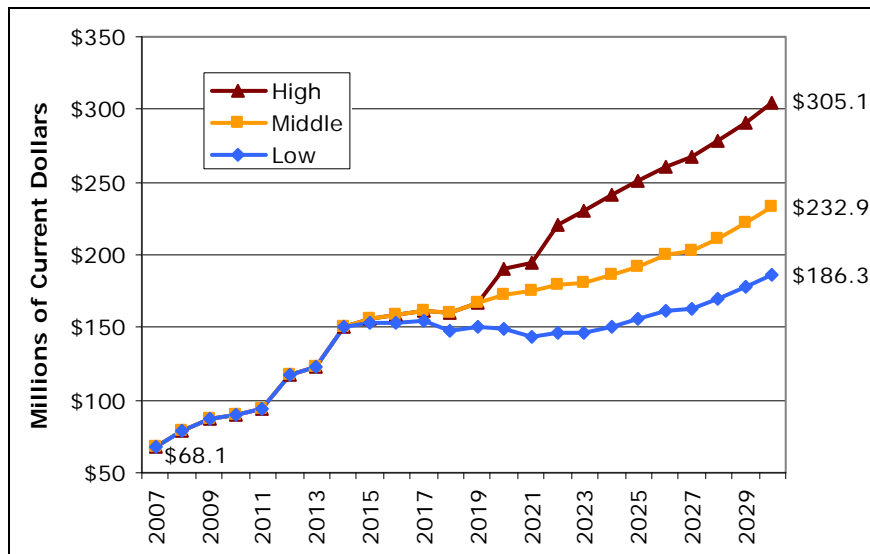
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.6d
Non-Coal Counties Local Tax Revenue Impacts, 2007–2030
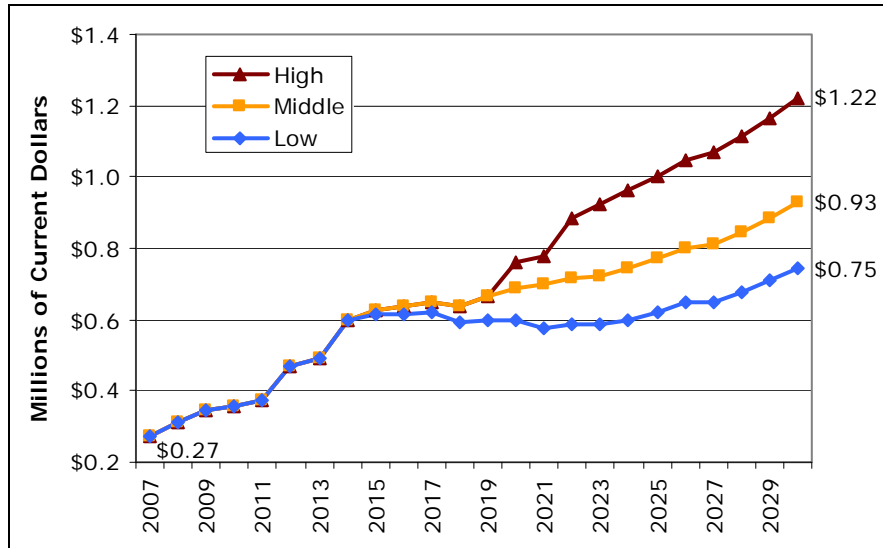
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.6e
Non-Coal Counties State Tax Revenue Impacts, 2007–2030
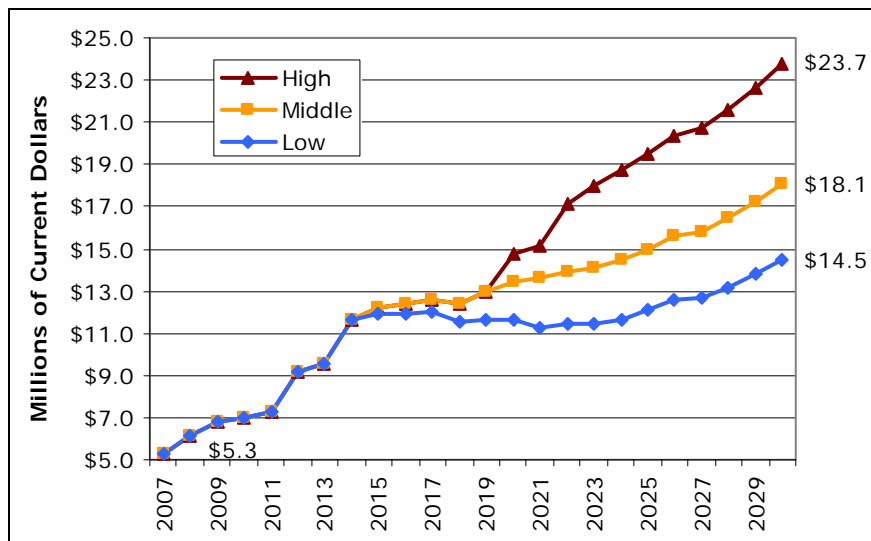
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Table 5.19a
Summary Impacts: Low Scenario
(Dollar Amounts are Millions of Current Dollars)

| | | 2007 | | | | | | 2030 | | | |
	Employment	Population	Earnings	Local Revenue	State Revenue		Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	1,957	2,936	$62.6	$0.31	$4.8		701	2,344	$65.5	$0.33	$5.0
Emery County	1,309	1,964	$47.4	$0.09	$3.5		1,220	2,186	$132.1	$0.26	$9.9
Sevier County	751	1,127	$18.2	$0.09	$1.4		548	1,200	$42.7	$0.21	$3.3
Coal Counties	4,017	6,026	$128.2	$0.50	$9.8		2,469	5,730	$240.3	$0.81	$18.2
Rest of State	686	1,029	$68.1	$0.27	$5.3		1,055	2,794	$186.3	$0.75	$14.5
Total State	4,703	7,055	$196.3	$0.77	$15.0		3,524	8,524	$426.6	$1.55	$32.7

Share of Total	Employment	Population	Earnings	Local Revenue	State Revenue		Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	41.6%	41.6%	31.9%	40.6%	31.9%		19.9%	27.5%	15.4%	21.1%	15.3%
Emery County	27.8%	27.8%	24.1%	12.3%	23.5%		34.6%	25.6%	31.0%	17.0%	30.2%
Sevier County	16.0%	16.0%	9.3%	11.8%	9.4%		15.6%	14.1%	10.0%	13.8%	10.2%
Coal Counties	85.4%	85.4%	65.3%	64.7%	64.8%		70.1%	67.2%	56.3%	51.9%	55.7%
Rest of State	14.6%	14.6%	34.7%	35.3%	35.2%		29.9%	32.8%	43.7%	48.1%	44.3%
Total State	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%

Note: Pink shading indicates the area's share of the category is projected to be smaller in 2030 than in 2007; green shading indicates it is projected to be larger.
Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Table 5.19b
Summary Impacts—Changes from 2007 to 2030: Low Scenario
(Dollar Amounts are Millions of Current Dollars)

| | | Levels | | | | | | Percentages | | | |
	Employment	Population	Earnings	Local Revenue	State Revenue		Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	−1,256	−592	$2.9	$0.01	$0.2		−64.2%	−20.1%	4.6%	4.6%	4.6%
Emery County	−89	223	$84.7	$0.17	$6.3		−6.8%	11.3%	178.6%	178.6%	178.6%
Sevier County	−203	74	$24.5	$0.12	$1.9		−27.0%	6.5%	134.3%	134.3%	134.3%
Coal Counties	−1,548	−296	$112.0	$0.31	$8.4		−38.5%	−4.9%	87.4%	61.4%	86.6%
Rest of State	369	1,765	$118.2	$0.47	$9.2		53.8%	171.5%	173.7%	173.7%	173.7%
Total State	−1,179	1,470	$230.2	$0.78	$17.6		−25.1%	20.8%	117.3%	101.0%	117.2%

Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Table 5.20a
Summary Impacts: Middle Scenario
(Dollar Amounts are Millions of Current Dollars)

	2007					2030				
	Employment	Population	Earnings	Local Revenue	State Revenue	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	1,957	2,936	$62.6	$0.31	$4.8	977	2,967	$91.9	$0.46	$7.0
Emery County	1,309	1,964	$47.4	$0.09	$3.5	1,616	2,720	$175.1	$0.35	$13.1
Sevier County	751	1,127	$18.2	$0.09	$1.4	552	1,208	$43.0	$0.21	$3.3
Coal Counties	4,017	6,026	$128.2	$0.50	$9.8	3,145	6,895	$310.0	$1.02	$23.5
Rest of State	686	1,029	$68.1	$0.27	$5.3	1,285	3,263	$232.9	$0.93	$18.1
Total State	4,703	7,055	$196.3	$0.77	$15.0	4,430	10,158	$542.8	$1.96	$41.6

Share of Total	Employment	Population	Earnings	Local Revenue	State Revenue	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	41.6%	41.6%	31.9%	40.6%	31.9%	22.1%	29.2%	16.9%	23.5%	16.9%
Emery County	27.8%	27.8%	24.1%	12.3%	23.5%	36.5%	26.8%	32.3%	17.9%	31.5%
Sevier County	16.0%	16.0%	9.3%	11.8%	9.4%	12.5%	11.9%	7.9%	11.0%	8.0%
Coal Counties	85.4%	85.4%	65.3%	64.7%	64.8%	71.0%	67.9%	57.1%	52.4%	56.4%
Rest of State	14.6%	14.6%	34.7%	35.3%	35.2%	29.0%	32.1%	42.9%	47.6%	43.6%
Total State	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: Pink shading indicates the area's share of the category is projected to be smaller in 2030 than in 2007; green shading indicates it is projected to be larger.
Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Table 5.20b
Summary Impacts—Changes from 2007 to 2030: Middle Scenario
(Dollar Amounts are Millions of Current Dollars)

	Levels					Percentages				
	Employment	Population	Earnings	Local Revenue	State Revenue	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	−980	32	$29.3	$0.15	$2.2	−50.1%	1.1%	46.7%	46.7%	46.7%
Emery County	307	757	$127.7	$0.26	$9.5	23.5%	38.5%	269.3%	269.3%	269.3%
Sevier County	−199	82	$24.8	$0.12	$1.9	−26.5%	7.2%	135.7%	135.7%	135.7%
Coal Counties	−872	870	$181.7	$0.53	$13.7	−21.7%	14.4%	141.7%	105.3%	140.5%
Rest of State	599	2,234	$164.8	$0.66	$12.8	87.3%	217.1%	242.1%	242.1%	242.1%
Total State	−273	3,104	$346.5	$1.18	$26.5	−5.8%	44.0%	176.5%	153.6%	176.2%

Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Table 5.21a
Summary Impacts: High Scenario
(Dollar Amounts are Millions of Current Dollars)

	2007					2030				
	Employment	Population	Earnings	Local Revenue	State Revenue	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	1,957	2,936	$62.6	$0.31	$4.8	1,378	3,758	$130.7	$0.65	$10.0
Emery County	1,309	1,964	$47.4	$0.09	$3.5	2,214	3,457	$240.2	$0.48	$17.9
Sevier County	751	1,127	$18.2	$0.09	$1.4	558	1,218	$43.4	$0.22	$3.4
Coal Counties	4,017	6,026	$128.2	$0.50	$9.8	4,150	8,433	$414.3	$1.35	$31.3
Rest of State	686	1,029	$68.1	$0.27	$5.3	1,625	3,883	$305.1	$1.22	$23.7
Total State	4,703	7,055	$196.3	$0.77	$15.0	5,775	12,316	$719.4	$2.57	$55.1

Share of Total	Employment	Population	Earnings	Local Revenue	State Revenue	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	41.6%	41.6%	31.9%	40.6%	31.9%	23.9%	30.5%	18.2%	25.4%	18.2%
Emery County	27.8%	27.8%	24.1%	12.3%	23.5%	38.3%	28.1%	33.4%	18.7%	32.6%
Sevier County	16.0%	16.0%	9.3%	11.8%	9.4%	9.7%	9.9%	6.0%	8.4%	6.1%
Coal Counties	85.4%	85.4%	65.3%	64.7%	64.8%	71.9%	68.5%	57.6%	52.5%	56.9%
Rest of State	14.6%	14.6%	34.7%	35.3%	35.2%	28.1%	31.5%	42.4%	47.5%	43.1%
Total State	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: Pink shading indicates the area's share of the category is projected to be smaller in 2030 than in 2007; green shading indicates it is projected to be larger.
Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Table 5.21b
Summary Impacts—Changes from 2007 to 2030: High Scenario
(Dollar Amounts are Millions of Current Dollars)

	Levels					Percentages				
	Employment	Population	Earnings	Local Revenue	State Revenue	Employment	Population	Earnings	Local Revenue	State Revenue
Carbon County	−579	823	$68.1	$0.34	$5.2	−29.6%	28.0%	108.7%	108.7%	108.7%
Emery County	905	1,494	$192.8	$0.39	$14.4	69.1%	76.1%	406.7%	406.7%	406.7%
Sevier County	−193	92	$25.1	$0.13	$2.0	−25.7%	8.1%	137.9%	137.9%	137.9%
Coal Counties	133	2,408	$286.0	$0.85	$21.6	3.3%	40.0%	223.0%	170.7%	221.1%
Rest of State	939	2,854	$237.0	$0.95	$18.4	136.9%	277.4%	348.2%	348.2%	348.2%
Total State	1,072	5,262	$523.0	$1.80	$40.0	22.8%	74.6%	266.4%	233.3%	265.9%

Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.

Figure 5.7a
Low Scenario Employment Impacts
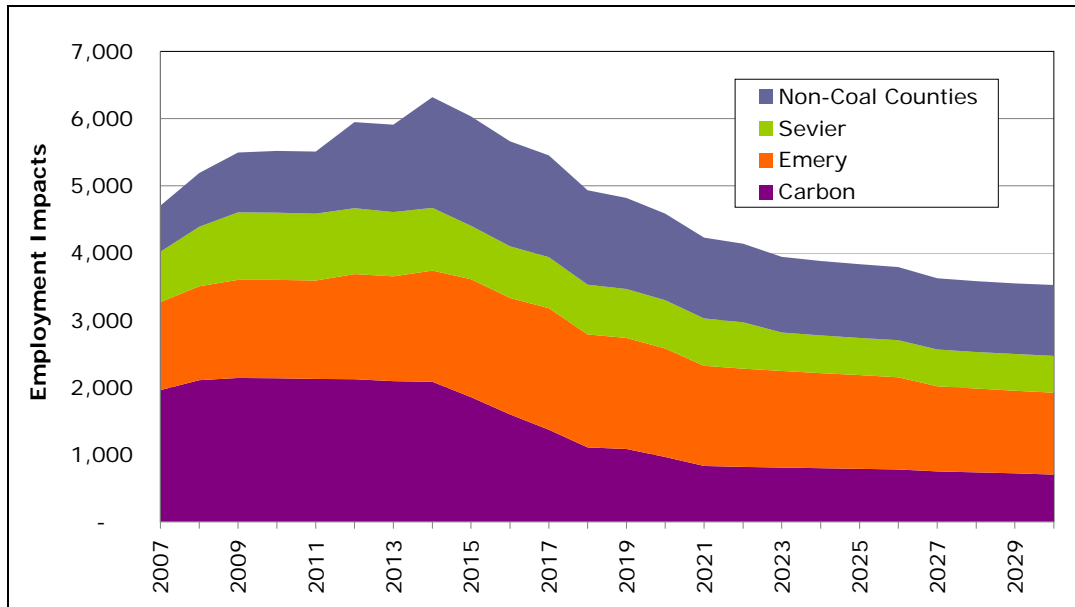
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.7b
Middle Scenario Employment Impacts
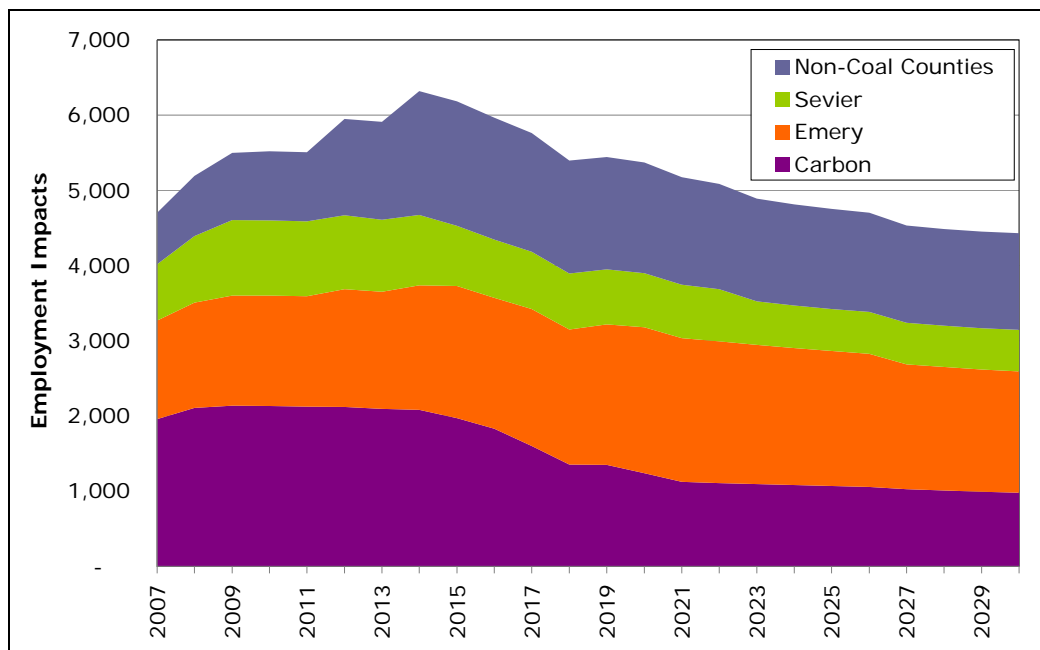
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

Figure 5.7c
High Scenario Employment Impacts
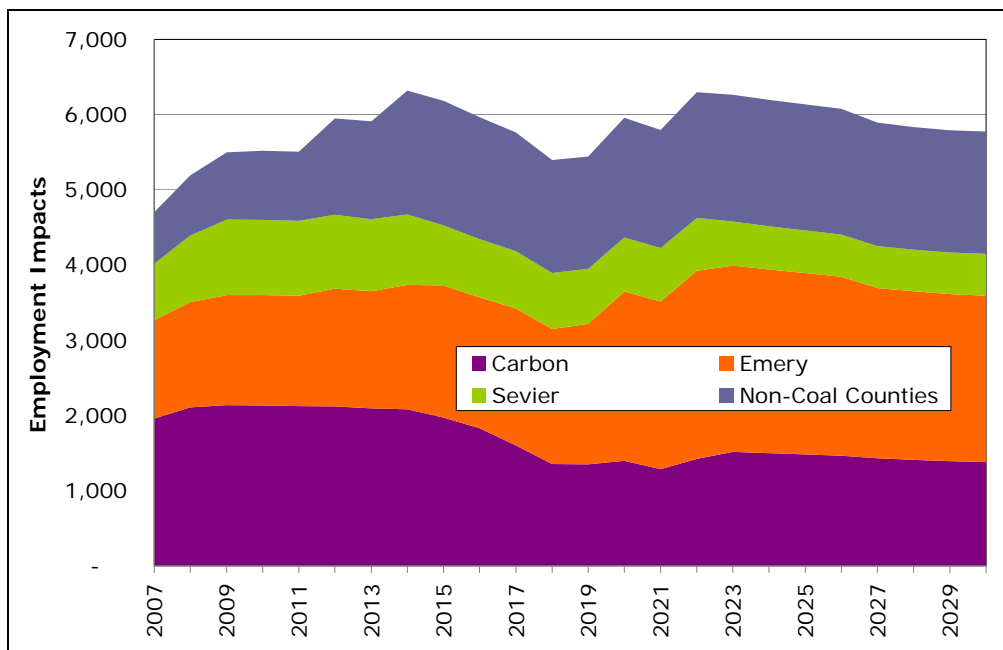
Source: Bureau of Economic and Business Research, University of Utah analysis using the REMI model.

6 POWER PLANT IMPACTS

No discussion of the economic impacts of Utah coal production would be complete without consideration of electricity generation from coal plants. Certainly these plants are, at present, the greatest source of demand for Utah coal. In 2007, a record volume of coal was delivered to electric utilities located in Utah. According to Michael Vanden Berg of the Utah Geological Survey, no new plants are expected to be built for the foreseeable future, so the demand should remain relatively flat.[70] Employment in Utah's coal-fired power plants (NAICS 221112) and annual coal production (in millions of tons) are shown in Figure 6.1. Employment in these power plants has remained around 1,100 recently.

Figure 6.1
Utah Coal Production and Power Plant Employment,
2000—2008
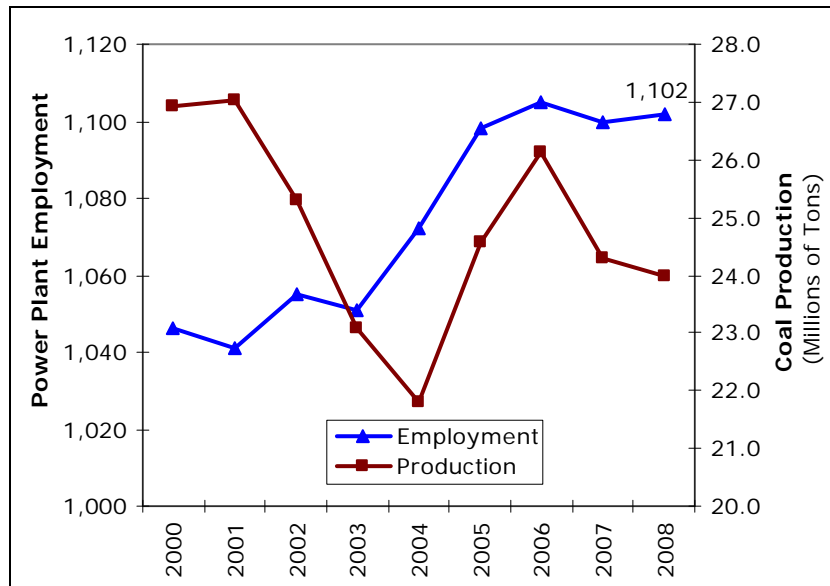
Sources: Utah Department of Workforce Services and Utah Geological Survey.

The operators, locations, 2007 employment, and names of Utah coal-fired power plants are shown in Table 6.1 below.

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[70] Michael D. Vanden Berg, *Annual Review and Forecast of Utah Coal Production and Distribution—2007*, Circular 107, Utah Geological Survey, 2008.

Table 6.1
2007 Employment in Utah's Coal-Fired Power Plants
(NAICS 221112)

Company	Place	County	Employment	Name
COSI Sunnyside Inc.	Sunnyside	Carbon	20–49	Sunnyside
Deseret Generation and Transmission	Vernal	Uintah	100–249	Bonanza
Downtown Plant	Provo	Utah	10–19	
Granger III & Associates, LLC	South Jordan	Salt Lake	1–4	
Intermountain Power Agency	South Jordan	Salt Lake	10–19	
Intermountain Power Service Corp.	Delta	Millard	250–499	IPP
PacifiCorp	Castle Dale	Emery	100–249	Hunter
PacifiCorp	Huntington	Emery	100–249	Huntington
PacifiCorp	Salt Lake City	Salt Lake	20–49	
PacifiCorp	Price	Carbon	20–49	Carbon
Payson City	Payson	Utah	10–19	
Siemens Power Transmission & Distribution	Kaysville	Davis	1–4	
Utah Associated Municipal Power System	Salt Lake City	Salt Lake	20–49	

Source: Utah Department of Workforce Services.

Average annual employment in 2007 was 1,100. The distribution of employment that was assumed for this analysis is shown in Table 6.2.

6.1 Middle Scenario Impacts

The economic and demographic impacts of power plant employment for 2007 and for projections from 2008 through 2030 have been evaluated here using the REMI 29-region, 23-sector model built for Utah. The population and economy of each county in Utah is represented in the model. The sum of the impacts of all counties is equivalent to the state impact. Direct economic activity for 2007 and beyond were imputed to the power plant counties according to actual production employment levels in 2007 and a scenario into the future.

Table 6.2
2007 Employment in Coal-Fired Power Plants by County

County	Jobs
Carbon	70
Davis	3
Emery	354
Millard	380
Salt Lake	86
Uintah	177
Utah	30
Total	1,100

Source: BEBR estimates from DWS data.

Impact models like REMI are built using historical data from the areas that are modeled. Economic impacts depend upon the structure of the local economy and the specific employment and spending patterns associated with the export base activity. The most accurate impact estimates are possible when the producers provide actual in-region spending patterns (including labor and purchases from in-region firms). In this REMI model, there is a single "utilities" sector, which includes all types of utilities, including coal-fired electric generation plants. The technical coefficients are based on national input-output models, last calibrated in 2007. For this analysis, power plant employment estimates by county were entered as an input. The utilities sector compensation in the REMI model was adjusted to match statewide reported wages for the industry (NAICS 221112). Wages per job in 2007 in this sector were reported to be $83,440 by the Department of Workforce Services, significantly higher than Utah average wages.

For the midlevel scenario, analysts at the Utah Geological Survey indicated that no new coal plants would be built, and that employment would remain constant at existing plants. This im-

plies that labor productivity will remain constant. This assumption was made in the utilities industry in the power plant counties. Employment was assumed constant from 2007 through 2030.

6.1.1 State-Level Scenario Impacts

Impact results for the midlevel scenario for the state of Utah are shown in three tables. Statewide employment impacts rise from 8,368 in 2007 to 10,387 in 2030. Given the power plant's direct employment of 1,100, these are very high total employment impacts, a ratio of 7.6 to 1. This is because of the high wages of the industry in combination with the in-state purchases required by the plants. Importantly, the coal purchases are *not* included in these impacts. They are in addition.

In a recent study of the Intermountain Power Plant, the plant operator provided very detailed primary data on its operations to the researcher. That study showed a ratio of 9.9 to 1 between direct employment at the power plant and the total employment generated (excluding coal mining). So the results are quite consistent with the model-based approach used in this study.[71]

In this middle scenario, population impacts increase from 12,552 in 2007 to reach 28,510 in 2030. Nominal earnings, local tax revenue, and state tax revenue impacts are all higher in 2030 than in 2007. From 2007 to 2030, nominal earnings impacts increase from $346.4 million to $1,179.7 million in 2030. Over the same period, nominal local government revenue impacts increase from $1.4 million to $4.6 million. Nominal state government revenue impacts increase from $24.5 million in 2007 to $83.3 million in 2030 (Table 6.3a).

Detailed employment impacts are shown in Table 6.3b. In 2007, services accounts for 27.5 percent of the total employment impact or 2,300 jobs. State and local government account for 25 percent of the employment impact or 2,074 jobs. Natural resources,

Table 6.3a
Power Plants, Middle Scenario:
Summary Impacts
(Dollar Amounts are Millions of Current Dollars)

Year	Employment	Population	Earnings	Local Revenue	State Revenue
2007	8,368	12,552	$346.4	$1.4	$24.5
2008	8,804	13,206	$375.1	$1.5	$26.5
2009	9,120	13,680	$398.7	$1.6	$28.2
2010	9,232	13,848	$410.7	$1.6	$29.0
2011	9,293	13,940	$431.5	$1.7	$30.5
2012	9,333	14,000	$452.7	$1.8	$32.0
2013	9,344	15,256	$474.7	$1.9	$33.5
2014	9,363	16,767	$497.8	$2.0	$35.2
2015	9,386	18,139	$523.6	$2.1	$37.0
2016	9,402	19,367	$548.9	$2.2	$38.8
2017	9,428	20,481	$575.1	$2.3	$40.6
2018	9,489	21,480	$605.6	$2.4	$42.8
2019	9,559	22,410	$638.8	$2.5	$45.1
2020	9,636	23,267	$674.5	$2.7	$47.7
2021	9,738	24,068	$714.1	$2.8	$50.4
2022	9,827	24,797	$755.6	$3.0	$53.4
2023	9,919	25,465	$800.4	$3.1	$56.5
2024	10,010	26,072	$847.4	$3.3	$59.9
2025	10,089	26,616	$896.7	$3.5	$63.4
2026	10,166	27,086	$948.8	$3.7	$67.0
2027	10,236	27,515	$1,003.0	$3.9	$70.9
2028	10,295	27,897	$1,059.6	$4.2	$74.9
2029	10,345	28,227	$1,118.4	$4.4	$79.0
2030	10,387	28,510	$1,179.7	$4.6	$83.3

Notes: Historical data for 2007, projections from 2008 through 2030. Earnings is by place of work, not place of residence. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and also measured at the place of work. State revenue impacts are income taxes, sales taxes, and other taxes. Local revenue impacts are total general sales and use taxes and restaurant taxes.
*Sources: Economic and demographic impacts generated using the REMI model. Revenue impacts generated by BEBR using methods documented in this report.*

[71] Jan Crispin-Little, "The Economic and Fiscal Impacts of Expanding the Intermountain Power Project," *Utah Economic and Business Review,* September/October 2003.

mining, construction and utilities (especially utilities) account for 22.5 percent of the total employment impacts or 1,881 jobs. The balance of the impact is in trade (16 percent), transportation, finance, information, and accounting (8 percent), and manufacturing (less than 2 percent). Over the projection period, services accounts for nearly 70 percent of the 2,020-job increase in employment impacts, with 1,389 additional jobs. The projected occupational distribution of these impacts across time is shown in Table 6.3c.

Because of the speculative nature of the specific location and type of power plant construction and closure, the high and low scenarios were not modeled for this part of the study.

Table 6.3b
Power Plants, Middle Scenario: Detailed Employment Impacts

Employment by Industry	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Natural Resources, Mining, Utilities, Construction	1,881	2,257	2,076	1,895	1,831	1,794	−87	−4.6%
Forestry, Fishing, Other	3	1	0	1	3	5	2	66.7%
Mining	39	35	34	35	34	30	−9	−23.1%
Utilities	1,105	1,108	1,109	1,111	1,114	1,116	11	1.0%
Construction	734	1,113	933	748	680	643	−91	−12.4%
Manufacturing	110	96	83	90	101	109	−1	−0.9%
Trade	1,330	1,328	1,359	1,419	1,492	1,532	202	15.2%
Wholesale Trade	124	119	111	108	105	99	−25	−20.2%
Retail Trade	1,206	1,209	1,248	1,311	1,387	1,433	227	18.8%
Transportation, Information, Finance, Accounting	672	687	639	635	657	664	−8	−1.2%
Transportation and Warehousing	137	131	118	117	124	130	−7	−5.1%
Information	66	70	70	72	74	74	8	12.1%
Finance, Insurance	317	287	235	216	210	201	−116	−36.6%
Real Estate, Rental, Leasing	152	199	216	230	249	259	107	70.4%
Services	2,300	2,557	2,788	3,082	3,429	3,689	1,389	60.4%
Professional and Technical Services	336	382	392	412	441	460	124	36.9%
Management of Companies / Enterprises	32	31	28	29	31	30	−2	−6.3%
Administrative and Waste Services	451	474	461	453	455	445	−6	−1.3%
Educational Services	58	74	92	114	137	156	98	169.0%
Health Care and Social Assistance	604	633	698	808	951	1,081	477	79.0%
Arts, Entertainment, Recreation	72	90	110	132	155	171	99	137.5%
Accommodation and Food Services	364	477	604	699	781	836	472	129.7%
Other Services (excl Gov)	383	396	403	435	478	510	127	33.2%
Public Administration	2,074	2,308	2,440	2,516	2,577	2,599	525	25.3%
State & Local Government	2,074	2,308	2,440	2,516	2,577	2,599	525	25.3%
State Government	399	443	454	460	469	472	73	18.3%
Local Government	1,675	1,865	1,986	2,056	2,108	2,127	452	27.0%
Federal Civilian	0	0	0	0	0	0	0	N/A
Federal Military	0	0	0	0	0	0	0	N/A
Farm	0	0	0	0	0	0	0	N/A
TOTAL EMPLOYMENT	8,367	9,233	9,385	9,637	10,087	10,387	2,020	24.1%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).
Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

Table 6.3c
Power Plants, Middle Scenario: Detailed Occupational Impacts

Employment by Occupation	2007	2010	2015	2020	2025	2030	Change Level	Change Percent
Management, Business, Financial	761	831	826	834	860	873	112	14.7%
Computer, Math, Architect, Engineer	375	403	412	424	440	450	75	20.0%
Life, Physical, Social Science	89	96	100	103	107	110	21	23.6%
Community, Social Service	199	218	232	248	267	282	83	41.7%
Legal	85	94	98	101	105	107	22	25.9%
Education, Training, Library	124	142	161	182	206	226	102	82.3%
Arts, Design, Entertainment, Sports, Media	66	73	76	81	87	90	24	36.4%
Healthcare	458	487	525	587	665	733	275	60.0%
Protective Service	523	587	629	655	679	691	168	32.1%
Food Preparation, Serving-Related	368	466	577	663	741	795	427	116.0%
Building, Grounds, Personal Care, Service	488	538	573	617	670	708	220	45.1%
Sales, Office, Administrative	1,618	1,728	1,692	1,699	1,745	1,760	142	8.8%
Farm, Fishing, Forestry	11	11	11	12	14	15	4	36.4%
Construction, Extraction	715	983	871	754	714	690	−25	−3.5%
Installation, Maintenance, Repair	554	603	605	608	621	630	76	13.7%
Production	350	359	357	365	378	386	36	10.3%
Transportation, Material Moving	378	404	392	392	403	407	29	7.7%

Notes: Historical data for 2007, projections from 2008 through 2030. Columns may not sum to totals due to rounding. Employment is a jobs count consistent with the Bureau of Economic Analysis definition and measured at the place of work (rather than residence).

Source: Analysis generated by the Bureau of Economic and Business Research, University of Utah, using the REMI Model.

7 ADDITIONAL FISCAL IMPACTS

In addition to employment and wage impacts, the coal industry also has fiscal impacts on the local areas in which it operates. Fiscal impacts refer to impacts on government finances and tax collections. The coal industry is subject to the tax laws common to all businesses; there are also impacts unique to the industry.

Production on federal land is subject to a royalty payment under the Mineral Lands Leasing Act of 1920. This royalty is paid to the Minerals Management Service, an agency within the U.S. Department of Interior. A portion of the federal mineral royalties is returned to the state of origin, generally one-half. Royalties from production on Indian lands are returned to the appropriate tribe, not to the state government. The states have full discretion as to the distribution of federal mineral royalties as long as priority is given to areas with economic and/or social impacts from leasing activities. The Minerals Management Service does not release federal mineral royalty data at the county level, but statewide data are available.

Federal mineral royalties due to coal production in Utah have decreased in recent years, from $33.2 million in fiscal year 2001 to less than $23.0 million in 2008 (Table 7.1). Coal production accounted for just 5 percent of the royalties paid for mineral production on federal land in Utah in 2008. There was also an additional $905,500 paid in bonuses and rents on federal mineral leases. These are fees associated with awarding federal mineral leases and maintaining the leases until production is initiated. Table 7.1 includes royalties due to coal production, but does not include bonus or rent payments for federal coal leases. Of the $23.0 million paid in federal mineral royalties by the coal industry in Utah, $12.0 million was returned to the state government.

**Table 7.1
Federal Coal Royalty Payments and Disbursements to Utah, 2001–2008**
(Constant 2008 Dollars)

Year	Royalties Paid to U.S.	Disbursed to Utah
2001	$33,205,069	$17,594,615
2002	$25,599,536	$12,957,504
2003	$25,034,853	$10,534,127
2004	$28,196,683	$15,044,196
2005	$30,681,304	$15,347,252
2006	$29,037,311	$14,247,010
2007	$25,595,118	$12,752,867
2008	$22,955,578	$12,006,072

Years are federal fiscal years.
Source: U.S. Department of the Interior, Minerals Management Service.

In Utah, federal mineral royalties are distributed to several different accounts according to state law (Table 7.2). The largest recipients of federal mineral royalties in Utah are the Utah Department of Transportation and the Permanent Community Impact Fund. The funds distributed to UDOT are then distributed to local governments to fund local highways in proportion to the amount of mineral lease money generated by each county. The Permanent Community Impact Fund makes loans and grants to state agencies and subdivisions of the state impacted by mineral resource development. Unlike the funds administered by UDOT, which are distributed in proportion to royalties generated in the county, the Permanent Community Impact Fund is distributed by a state-appointed

**Table 7.2
Distribution of Federal Mineral Royalties in Utah**

Recipient	Share
Department of Transportation	40.0%
Permanent Community Impact Fund	32.5%
Department of Community and Culture	5.0%
State Board of Education	2.25%
Utah Geological Survey	2.25%
Water Research Laboratory	2.25%
Payments in Lieu of Taxes	52¢ per acre
Permanent Community Impact Fund	Remainder

Note: The amount paid for Payments in Lieu of Taxes has been adjusted annually since 1994 according to the Consumer Price Index.
Source: Utah State Code, Title 59, Chapter 21.

board in response to proposals submitted by county and municipal governments, taxing districts, and other authorities. Therefore, the distribution of funds by the Permanent Community Impact Fund to the various counties may vary from the amount of royalty generated. The payments in lieu of taxes cited in Table 7.2 are not those made by the federal government for federal land in Utah but are payments made by the state government to counties for lands controlled by the School and Institutional Trust Lands Administration, the Division of Parks and Recreation, and the Division of Wildlife Resources.

The School and Institutional Trust Lands Administration (SITLA) controls mineral rights on approximately 4.4 million acres in Utah. These lands are held in trust for Utah's public schools and 11 other beneficiaries. They were established at statehood and through land exchanges with the federal government. During fiscal year 2008, royalties paid for coal mining on SITLA lands totaled $10.5 million (Table 7.3). This was 7 percent of total SITLA revenue for the year. These funds are not returned to the county of origin, but are placed in a permanent fund managed by the state treasurer on behalf of the public schools or distributed to the appropriate beneficiary as mandated. Dividends and interest from the Public School Fund are distributed annually to all Utah public schools based on an established formula.

Table 7.3 Rents and Royalties Paid for Coal Production on SITLA Lands, 2000–2008 (Constant 2008 Dollars)			
Year	Revenues	Garfield Co.	Total
2000	$5,269,226	$30,917	$5,300,143
2001	$7,421,084	$181,948	$7,603,032
2002	$7,598,359	$118,340	$7,716,699
2003	$4,750,554	$109,505	$4,860,059
2004	$3,988,161	$113,029	$4,101,189
2005	$1,666,740		$1,666,740
2006	$5,084,333		$5,084,333
2007	$7,069,694		$7,069,694
2008	$10,546,508		$10,546,508

Years are fiscal years, July 1 to June 30. Revenues consist of lease rentals, royalties, and bonus payments from coal mines on trust lands in Carbon, Emery, and Sevier counties. The Garfield County lease was a special business arrangement that terminated in 2004 without any coal production.
Source: School and Institutional Trust Lands Administration.

The individual counties levy property taxes on natural resources developed within their borders, including coal, metallic minerals, and oil and gas. The Utah State Tax Commission centrally assesses coal properties based on the discounted cash flow of expected future production. The local county treasurers bill and collect the taxes. Property taxes are levied by numerous units of local government, including county and city governments, school districts, and special service districts. Table 7.4 shows property taxes charged against coal mines in Carbon, Emery, and Sevier counties from 2000 to 2008. These three counties account for more than 99 percent of coal property taxes in the state. Over the period, total taxes paid to the three counties were fairly constant, fluctuating between $4.1 million and $4.6 million, with a spike to $5.6 million in 2006 (all amounts are in constant 2008 dollars). Coal property taxes in Carbon County were only slightly higher in 2008 ($2.1 million) than they were in 2000 ($1.9 million). In Sevier County, coal taxes were essentially unchanged in 2008 compared with 2000, at roughly $1.2 million. However, Emery County saw coal property taxes decline from $1.3 million in 2000 to $824,000 in 2008.

Table 7.4 Property Taxes Charged Against Coal Mines, 2000–2008 (Constant 2008 Dollars)				
Year	Carbon	Emery	Sevier	Total
2000	$1,919,753	$1,341,346	$1,207,865	$4,468,964
2001	$1,984,907	$1,112,081	$1,214,826	$4,311,814
2002	$1,916,019	$1,107,510	$1,088,523	$4,112,052
2003	$2,319,574	$1,041,682	$1,052,776	$4,414,032
2004	$2,176,454	$1,306,930	$1,131,553	$4,614,936
2005	$1,719,635	$1,018,394	$1,636,483	$4,374,512
2006	$2,690,528	$1,024,162	$1,885,720	$5,600,411
2007	$2,449,053	$605,127	$1,336,949	$4,391,130
2008	$2,121,553	$824,366	$1,241,458	$4,187,377

Source: Utah State Tax Commission, Property Tax Division Annual Reports.

Counties also levy property taxes on power plants, based on their fair market value (Table 7.5). Carbon, Emery, Millard, and Uintah are the only counties in the state with coal-fired power plants according to the U.S. Department of Energy. Emery County currently receives the most property taxes from coal-fired plants, charging $13.4 million in 2008. There are two plants in the county, the three-generator Hunter plant and the two-generator Huntington plant. Both are operated by PacifiCorp and have a combined nameplate capacity of 2,468 MW. Millard County charged $10.4 million in taxes in 2008 on the two-generator Intermountain Power Project plant, which is operated by the City of Los Angeles with a total nameplate capacity of 1,640 MW. Uintah County's single-generator Bonanza plant paid almost $1.5 million in taxes in 2008. It is operated by the Deseret Generation and Transmission Co-op and has a nameplate capacity of 500 MW. There are two coal-fired power plants in Carbon County: PacifiCorp's two-generator Carbon plant, with a total capacity of 189 MW, and Sunnyside Cogeneration Associates' single-generator plant burning waste coal, with a maximum capacity of 58 MW. The county charged $831,000 in property taxes against the two plants in 2008. All told, Utah's coal-fired power plants paid almost $26.2 million in property taxes in 2008.

Table 7.5
Property Taxes Charged Against Coal-Fired
Power Plants, 2000–2008
(Constant 2008 Dollars)

Year	Carbon	Emery	Millard	Uintah	Total
2000	$905,623	$17,366,626	$17,758,666	$3,941,820	$39,972,736
2001	$899,785	$17,230,299	$17,333,522	$3,724,173	$39,187,779
2002	$782,137	$14,978,350	$16,357,297	$3,678,422	$35,796,206
2003	$923,649	$13,910,567	$15,433,344	$3,696,689	$33,964,250
2004	$864,711	$13,096,201	$14,582,382	$3,498,665	$32,041,959
2005	$854,149	$12,369,513	$13,541,690	$3,437,457	$30,202,808
2006	$861,243	$13,133,879	$12,243,164	$1,894,125	$28,132,411
2007	$810,946	$13,227,529	$11,419,130	$1,663,557	$27,121,161
2008	$831,042	$13,427,356	$10,443,781	$1,484,168	$26,186,347

Source: Utah State Tax Commission, Property Tax Division Annual Reports.

8 SOCIOECONOMIC PROFILES

8.1 Demographic Overview

8.1.1 Carbon County

8.1.1.1 Population Growth: Trends and Components of Change

The Carbon County resident population has fluctuated with the booms and busts of the coal industry (Exhibit 8.1). Considering the period since 1940, population peaked at 24,800 in 1950, declined to a low of 15,750 in 1970, again increased until it peaked at 24,300 in 1982, declined to 20,169 in 1990, and has remained essentially flat since then. Population was estimated to be 19,841 in 2008. The rate of population decline averaged a negative 0.1 percent from 1990 through 2008, while cumulative net out-migration since 1990 totaled 2,485 and cumulative natural increase was 2,157. With the exception of the period of sustained net in-migration from 1971 through 1982, Carbon County has experienced nearly continuous net out-migration since 1940. From 2006 through 2008, net migration has turned slightly positive and the growth rate in the county has accelerated to average 0.9 percent annually over this most recent three-year period.

8.1.1.2 Age Structure

The age structure of Carbon County is one that is common to many rural communities (Exhibit 8.2). There is a smaller share of the population in the ages after high school graduation and through the young prime working ages, as compared with the state. This is consistent with out-migration from the county for educational and economic opportunities. Unlike many rural counties in Utah, the share of school-age persons in the population is lower than in the state in general. The county has a greater share of persons in all five-year age groups from 40 years old and older. In the 2000 enumeration, the median age was 33.6, which is higher than 27.1 for the state. The share of the county population 60 years and older was 16.8 percent, as compared with 11.3 percent for the state. The male-to-female ratio is particularly high for five-year age groups 40 through 54 years old. A drop in the male-to-female ratio in the 15-through-19-year-old age group is evidence of males having left the county, possibly for reasons of religious service.

8.1.1.3 Race and Ethnicity

The estimated population of Carbon County for July 1, 2006 was 19,504, which was a decline of 918 persons or 4.5 percent since April 1, 2000 (versus a 17.1 percent increase for the state over the same period) (Table 8.1). The minority population (defined as Hispanics or Latinos and all non-Whites) was estimated in 2006 to be 2,846, or 14.6 percent of the population (compared with 17.4 percent for the state), ranking it fifth among all 29 counties for minority share. The 2006 estimated minority population represented an increase of 3.5 percent from 2000 to 2006, while the White Alone, Not Hispanic population declined by 5.7 percent. The largest minority group is the population of those identifying themselves as Hispanic or Latino, which was estimated in 2006 to be 2,079 persons, or 10.7 percent of the population. From 2000 to 2006, the Hispanic population in Carbon County is estimated to have decreased slightly.

Exhibit 8.1
Carbon County Population Estimates and Components of Population Change, 1940–2008

	Population	FY Births	FY Deaths	Natural Increase	Net In-Migration
1940	18,700	437	118	319	0
1941	17,800	420	137	283	−1,183
1942	18,100	446	136	310	−10
1943	19,100	505	152	353	647
1944	21,000	560	143	417	1,483
1945	22,600	594	205	389	1,211
1946	22,100	617	142	475	−975
1947	20,700	796	167	629	−2,029
1948	22,700	784	181	603	1,397
1949	24,000	797	164	633	667
1950	24,800	835	185	650	150
1951	24,400	743	155	588	−988
1952	23,100	639	132	507	−1,807
1953	23,000	650	138	512	−612
1954	22,900	653	153	500	−600
1955	22,800	612	155	457	−557
1956	22,500	632	156	476	−776
1957	22,400	621	137	484	−584
1958	22,000	616	170	446	−846
1959	21,800	597	142	455	−655
1960	21,200	479	168	311	−911
1961	20,400	453	141	312	−1,112
1962	19,700	393	140	253	−953
1963	18,700	373	137	236	−1,236
1964	17,700	321	166	155	−1,155
1965	17,300	264	189	75	−475
1966	16,900	256	181	75	−475
1967	16,800	234	161	73	−173
1968	16,400	270	140	130	−530
1969	16,100	254	125	129	−429
1970	15,750	244	152	92	−442
1971	16,650	288	166	122	778
1972	17,200	278	156	122	428
1973	17,550	312	181	131	219
1974	17,900	359	182	177	173
1975	18,750	373	163	210	640
1976	19,450	447	177	270	430
1977	20,150	501	184	317	383
1978	20,750	522	191	331	269
1979	21,350	588	152	436	164
1980	22,400	615	188	427	623
1981	23,000	580	170	410	190
1982	24,300	595	173	422	878
1983	24,100	591	199	392	−592
1984	23,100	501	159	342	−1,342
1985	22,800	425	166	259	−559
1986	22,300	409	172	237	−737
1987	21,700	400	144	256	−856
1988	21,100	344	158	186	−786
1989	20,400	287	166	121	−821
1990	20,169	310	157	153	−384
1991	20,186	319	156	163	−146
1992	20,361	305	176	129	46
1993	19,771	292	174	118	−708
1994	20,119	291	175	116	232
1995	19,965	286	163	123	−277
1996	20,286	295	193	102	219
1997	20,654	314	183	131	237
1998	20,695	338	208	130	−89
1999	20,500	330	175	155	−350
2000	20,396	329	201	128	−232
2001	19,858	291	179	112	−650
2002	19,858	303	190	113	−113
2003	19,558	303	221	82	−382
2004	19,385	344	214	130	−303
2005	19,338	300	194	106	−153
2006	19,504	268	163	105	61
2007	19,730	324	202	122	104
2008	19,841	306	214	92	19
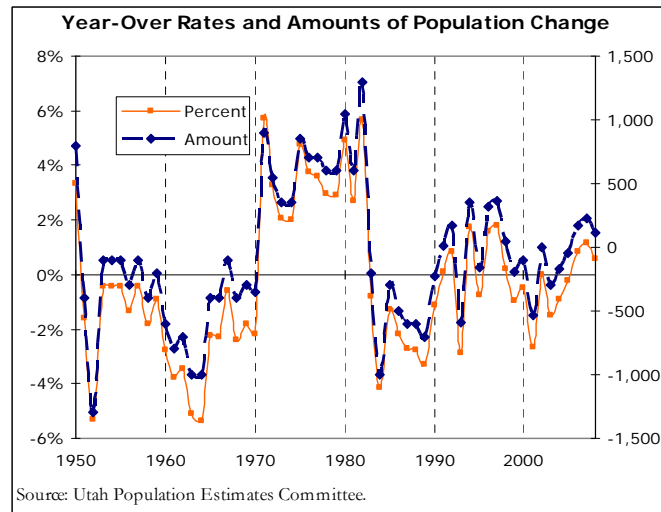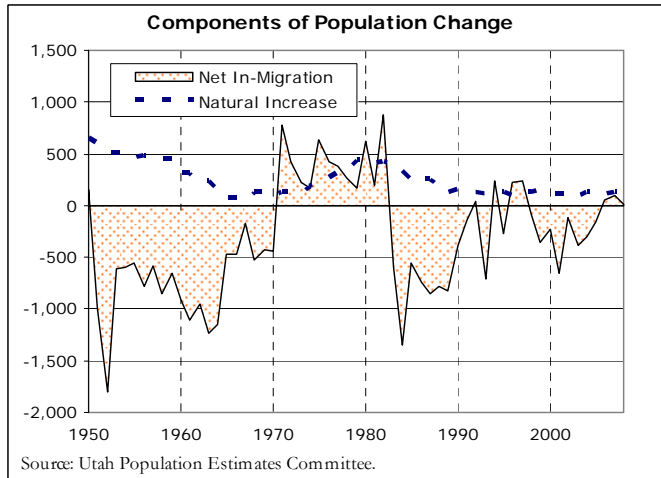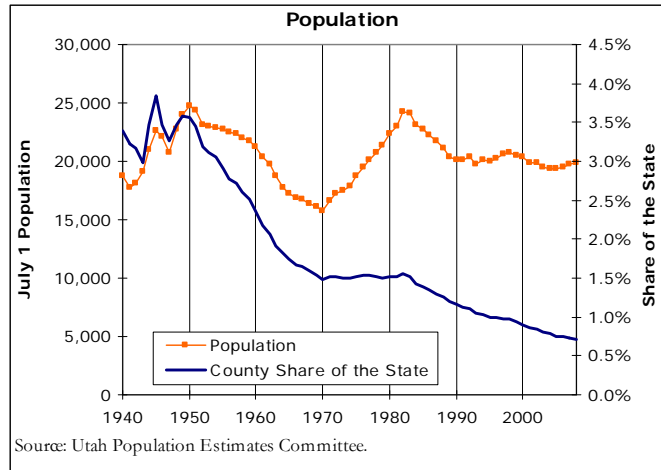
Population

Source: Utah Population Estimates Committee.

Components of Population Change

Source: Utah Population Estimates Committee.

Year-Over Rates and Amounts of Population Change

Source: Utah Population Estimates Committee.

Notes: Population estimates for July 1 were produced by the Utah Population Estimates Committee (UPEC). UPEC changed its rounding convention. Estimates before 1990 are rounded while those for 1990 and beyond are not rounded. Birth and death data are from the Utah Bureau of Health Statistics.

Source: Downloaded from http://www.governor.state.ut.us/dea on August 27, 2009.

Exhibit 8.2
Carbon County Population by Age and Sex, Race, and Ethnicity: 2000

Population by 5-Year Age Groups and Sex

Minority Population Composition
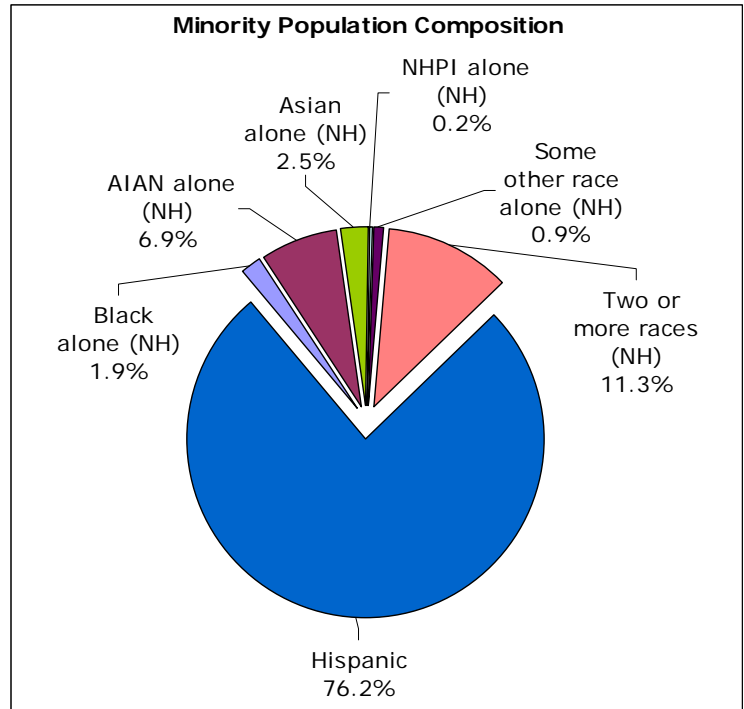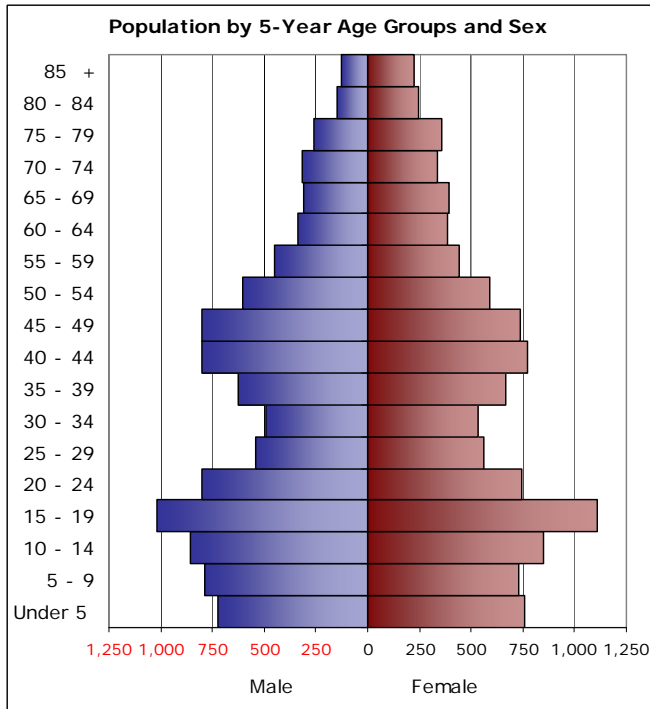
Age Distribution of the Carbon County Population					
	Male	Female	Sex Ratio	Share	Share of State
Under 5	721	758	0.95	7.2%	0.7%
5–9	789	731	1.08	7.4%	0.8%
10–14	857	849	1.01	8.4%	0.9%
15–19	1,016	1,112	0.91	10.4%	1.0%
20–24	801	744	1.08	7.6%	0.7%
25–29	538	565	0.95	5.4%	0.6%
30–34	491	537	0.91	5.0%	0.7%
35–39	623	665	0.94	6.3%	0.9%
40–44	803	771	1.04	7.7%	1.1%
45–49	799	739	1.08	7.5%	1.2%
50–54	605	588	1.03	5.8%	1.1%
55–59	448	442	1.01	4.4%	1.1%
60–64	337	387	0.87	3.5%	1.2%
65–69	309	390	0.79	3.4%	1.3%
70–74	315	336	0.94	3.2%	1.4%
75–79	259	355	0.73	3.0%	1.5%
80–84	147	244	0.60	1.9%	1.4%
85 +	123	228	0.54	1.7%	1.6%
Total	9,981	10,441	0.96	100%	0.9%
Share 60 years+	**16.8%**				**1.4%**
Median Age	**33.6**				

Race and Ethnicity of the Carbon County Population			
	Population	Share	Share of State
Total	*20,422*	*100%*	*0.9%*
Not Hispanic or Latino	18,325	89.7%	0.9%
White alone	17,671	86.5%	0.9%
Black or African American alone	52	0.3%	0.3%
American Indian and Alaska Native alone	190	0.9%	0.7%
Asian alone	70	0.3%	0.2%
Native Hawaiian and Other Pacific Islander alone	6	0.0%	0.0%
Some other race alone	24	0.1%	1.2%
Two or more races	312	1.5%	1.0%
Ethnicity			
Hispanic or Latino	2,097	10.3%	1.0%
Minority	2,751	13.5%	0.8%

Note: NH is Not Hispanic. If a cell is shaded yellow and has bold red type, this indicates that the county's share of the state for the given category exceeds the county's share of total population in the state. Blue shading indicates a male-to-female ratio greater than one.
Source: Bureau of the Census, Census 2000, *SF1.*

Table 8.1
Carbon County Population by Race and Ethnicity: 2000 Census and 2006 Estimates

	Total Population	Hispanic or Latino Total	Not Hispanic or Latino White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Minority Total	Share	Rank Among Utah Counties
Population												
July 1, 2006 Estimate	19,504	2,079	16,658	55	219	100	7	23	363	2,846	14.6%	5
April 1, 2000 Enumeration	20,422	2,097	17,671	52	190	70	6	24	312	2,751	13.5%	6
Shares of Total Population												
July 1, 2006 Estimate	100%	10.7%	85.4%	0.3%	1.1%	0.5%	0.0%	0.1%	1.9%	14.6%		
April 1, 2000 Enumeration	100%	10.3%	86.5%	0.3%	0.9%	0.3%	0.0%	0.1%	1.5%	13.5%		
Share of State Population Group												
July 1, 2006 Estimate	0.7%	0.7%	0.8%	0.3%	0.7%	0.2%	0.0%	1.0%	0.9%	0.6%		
April 1, 2000 Enumeration	0.9%	1.0%	0.9%	0.3%	0.7%	0.2%	0.0%	1.2%	1.0%	0.8%		
Change from 2000 to 2006												
Amount	−918	−18	−1,013	3	29	30	1	−1	51	95		
Percentage	−4.5%	−0.8%	−5.7%	5.0%	15.1%	43.2%	20.9%	−4.9%	16.5%	3.5%		
Share of County Population Increase	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

Note: Minority is computed as total population minus White Alone, Not Hispanic.

Sources: Bureau of Economic and Business Research, University of Utah analysis using data from U.S. Bureau of the Census (2000 Census and 2006 estimates) and Utah Population Estimates Committee (2006 estimates). The 2006 minority estimates are BEBR estimates controlled to UPEC totals.

8.1.2 Emery County

8.1.2.1 Population Growth: Trends and Components of Change

Emery County's resident population has fluctuated with the booms and busts of the energy industry (Exhibit 8.3). Considering the period since 1940, population peaked at 7,000 in 1940, then declined to a low of 5,100 in 1969 (with some fluctuation in the intervening years). Beginning in 1970, Emery County experienced a 13-year run of net in-migration and population peaked at 12,700 in 1982. With few exceptions, there has been annual net out-migration since then. Population declined to reach 10,262 in 1991, and has since remained essentially flat. Population was estimated to be 10,610 in 2008. Cumulative net out-migration since 1990 totaled 1,601 and cumulative natural increase was 1,882.

8.1.2.2 Age Structure

The age structure of Emery County is one that is common to many rural communities (Exhibit 8.4). There is a smaller share of the population in the ages after high school graduation and through the young prime working ages, as compared with the state. This is consistent with out-migration from the county for educational and economic opportunities. There are more youth and more older persons as a share of the population, versus the state. The county has a greater share of persons in all five-year age groups from 40 years old and older, as compared with the state. In the 2000 census enumeration, the median age was 30.1, which is higher than 27.1 for the state. The share of the county population 60 years and older was 13.8 percent, versus 11.3 percent for the state. A drop in the male-to-female ratio in the 15-through-19-year-old age group is evidence of males having left the county, possibly for reasons of religious service.

8.1.2.3 Race and Ethnicity

The estimated population of Emery County for July 1, 2006 was 10,438, which was a decline of 422, or 3.9 percent, since April 1, 2000 (as compared with a 17.1 percent increase for the state over the same period) (Table 8.2). The minority population (defined as Hispanics or Latinos and all non-Whites) was estimated in 2006 to be 977, or 9.4 percent of the population (versus 17.4 percent for the state), ranking it 20th among all 29 counties for minority share. The 2006 estimated minority population represented an increase of 20.6 percent from 2000, while the White Alone, Not Hispanic population declined by 5.9 percent in Emery County. The largest minority group is the population of those identifying themselves as Hispanic or Latino, which was estimated in 2006 to be 668 persons, or 6.4 percent of the population. From 2000 to 2006, this population increased by 100, or 17.7 percent.

Exhibit 8.3
Emery County Population Estimates and Components of Population Change, 1940–2008

	Population	FY Births	FY Deaths	Natural Increase	Net In-Migration
1940	7,000	189	70	119	0
1941	6,900	173	46	127	−227
1942	6,600	167	58	109	−409
1943	6,000	161	59	102	−702
1944	5,600	155	61	94	−494
1945	5,300	140	40	100	−400
1946	5,200	126	42	84	−184
1947	5,200	145	41	104	−104
1948	5,600	135	35	100	300
1949	5,800	142	49	93	107
1950	6,300	138	40	98	402
1951	6,100	149	46	103	−303
1952	5,900	141	56	85	−285
1953	5,800	159	57	102	−202
1954	5,700	153	49	104	−204
1955	5,700	160	46	114	−114
1956	5,700	148	37	111	−111
1957	5,700	128	41	87	−87
1958	5,600	151	47	104	−204
1959	5,600	147	56	91	−91
1960	5,500	139	50	89	−189
1961	5,500	124	48	76	−76
1962	5,400	119	49	70	−170
1963	5,400	97	39	58	−58
1964	5,400	120	60	60	−60
1965	5,400	104	44	60	−60
1966	5,300	111	56	55	−155
1967	5,200	93	62	31	−131
1968	5,200	79	44	35	−35
1969	5,100	84	44	40	−140
1970	5,150	82	47	35	15
1971	5,600	100	50	50	400
1972	6,100	96	61	35	465
1973	6,700	106	76	30	570
1974	6,800	115	45	70	30
1975	7,600	154	53	101	699
1976	8,850	209	56	153	1,097
1977	9,700	295	56	239	611
1978	10,300	293	54	239	361
1979	11,000	365	65	300	400
1980	11,600	401	58	343	257
1981	12,000	404	73	331	69
1982	12,700	448	74	374	326
1983	12,700	440	58	382	−382
1984	11,900	322	71	251	−1,051
1985	11,100	275	71	204	−1,004
1986	11,100	236	51	185	−185
1987	10,900	232	74	158	−358
1988	10,500	209	70	139	−539
1989	10,400	192	59	133	−233
1990	10,329	173	58	115	−186
1991	10,262	185	69	116	−183
1992	10,298	197	59	138	−102
1993	10,661	174	53	121	242
1994	10,620	142	56	86	−127
1995	10,683	169	65	104	−41
1996	11,056	154	66	88	285
1997	11,089	194	71	123	−90
1998	11,059	191	61	130	−160
1999	11,095	152	61	91	−55
2000	10,782	180	72	108	−421
2001	10,473	166	65	101	−410
2002	10,540	166	78	88	−21
2003	10,477	162	73	89	−152
2004	10,493	165	83	82	−66
2005	10,491	169	71	98	−100
2006	10,438	182	76	106	−159
2007	10,461	185	76	109	−86
2008	10,610	194	90	104	45
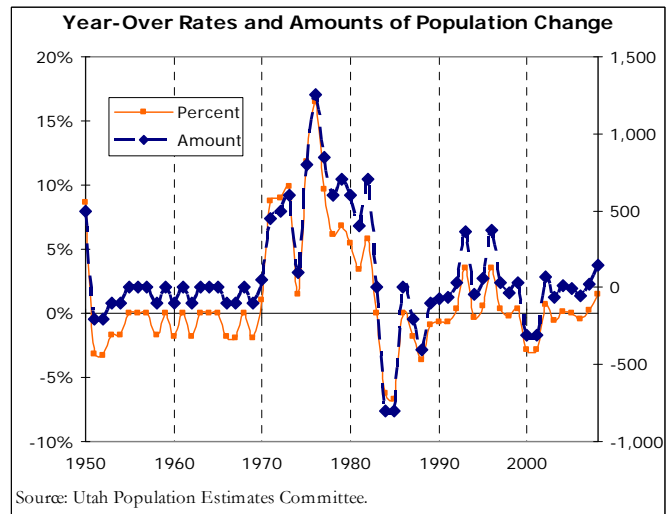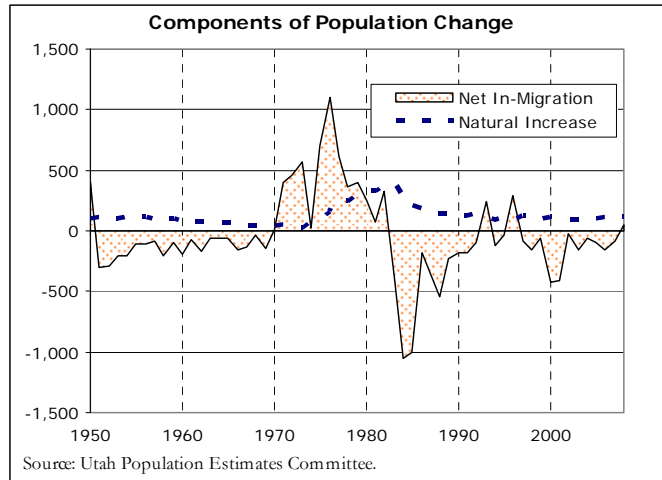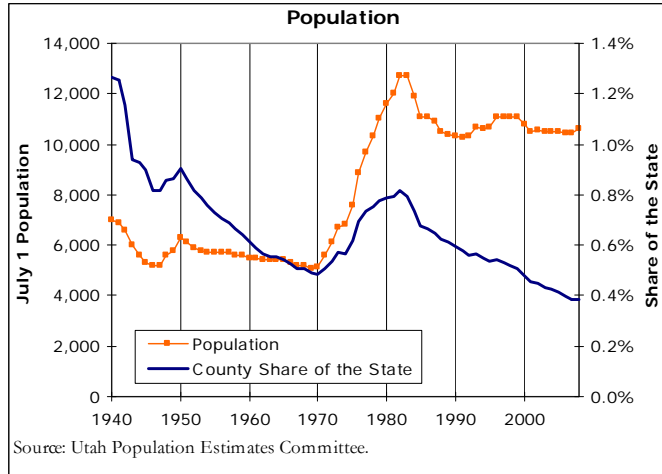
Population

Source: Utah Population Estimates Committee.

Components of Population Change

Source: Utah Population Estimates Committee.

Year-Over Rates and Amounts of Population Change

Source: Utah Population Estimates Committee.

Notes: Population estimates for July 1 were produced by the Utah Population Estimates Committee (UPEC). UPEC changed its rounding convention. Estimates before 1990 are rounded while those for 1990 and beyond are not rounded. Birth and death data are from the Utah Bureau of Health Statistics.

Source: Downloaded from http://www.governor.state.ut.us/dea on August 27, 2009.

Exhibit 8.4
Emery County Population by Age and Sex, Race, and Ethnicity: 2000

Population by 5-Year Age Groups and Sex

Minority Population Composition
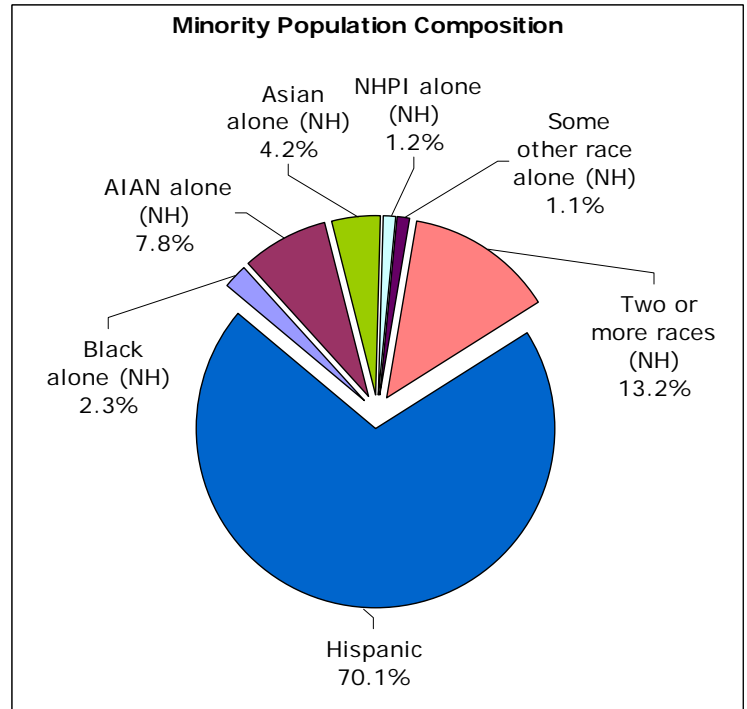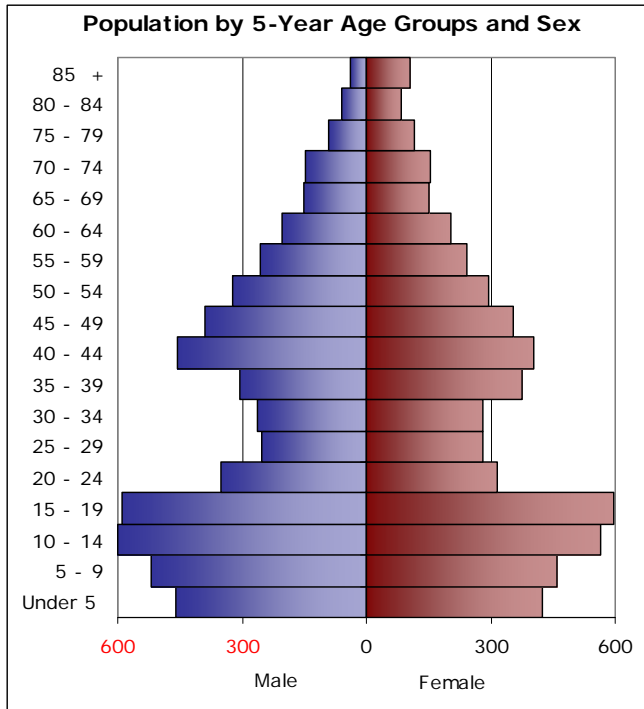
Age Distribution of the Emery County Population

	Male	Female	Sex Ratio	Share	Share of State
Under 5	460	424	1.08	8.1%	0.4%
5–9	519	461	1.13	9.0%	0.5%
10–14	599	566	1.06	10.7%	0.6%
15–19	589	595	0.99	10.9%	0.5%
20–24	352	317	1.11	6.2%	0.3%
25–29	253	280	0.90	4.9%	0.3%
30–34	264	281	0.94	5.0%	0.4%
35–39	307	374	0.82	6.3%	0.5%
40–44	455	404	1.13	7.9%	0.6%
45–49	388	354	1.10	6.8%	0.6%
50–54	322	294	1.10	5.7%	0.6%
55–59	257	243	1.06	4.6%	0.6%
60–64	203	205	0.99	3.8%	0.7%
65–69	150	150	1.00	2.8%	0.6%
70–74	146	154	0.95	2.8%	0.6%
75–79	91	116	0.78	1.9%	0.5%
80–84	60	84	0.71	1.3%	0.5%
85 +	37	106	0.35	1.3%	0.7%
Total	5,452	5,408	1.01	100%	0.5%
Share 60 years+	**13.8%**				**0.6%**
Median Age	**30.1**				

Race and Ethnicity of the Emery County Population

	Population	Share	Share of State
Total	*10,860*	*100%*	*0.5%*
Not Hispanic or Latino	10,292	94.8%	**0.5%**
White alone	10,050	92.5%	**0.5%**
Black or African American alone	19	0.2%	0.1%
American Indian and Alaska Native alone	63	0.6%	0.2%
Asian alone	34	0.3%	0.1%
Native Hawaiian and Other Pacific Islander alone	10	0.1%	0.1%
Some other race alone	9	0.1%	0.5%
Two or more races	107	1.0%	0.3%
Ethnicity			
Hispanic or Latino	568	5.2%	0.3%
Minority	810	7.5%	0.2%

Note: NH is Not Hispanic. If a cell is shaded yellow and has bold red type, this indicates that the county's share of the state for the given category exceeds the county's share of total population in the state. Blue shading indicates a male-to-female ratio greater than one.
Source: Bureau of the Census, Census 2000, SF1.

Table 8.2
Emery County Population by Race and Ethnicity: 2000 Census and 2006 Estimates

	Total Population	Hispanic or Latino Total	Not Hispanic or Latino White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Minority Total	Share	Rank Among Utah Counties
Population												
July 1, 2006 Estimate	10,438	668	9,461	31	85	39	11	10	133	977	9.4%	20
April 1, 2000 Enumeration	10,860	568	10,050	19	63	34	10	9	107	810	7.5%	19
Shares of Total Population												
July 1, 2006 Estimate	100.0%	6.4%	90.6%	0.3%	0.8%	0.4%	0.1%	0.1%	1.3%	9.4%		
April 1, 2000 Enumeration	100.0%	5.2%	92.5%	0.2%	0.6%	0.3%	0.1%	0.1%	1.0%	7.5%		
Share of State Population Group												
July 1, 2006 Estimate	0.4%	0.2%	0.4%	0.2%	0.3%	0.1%	0.1%	0.4%	0.3%	0.2%		
April 1, 2000 Enumeration	0.5%	0.3%	0.5%	0.1%	0.2%	0.1%	0.1%	0.5%	0.3%	0.2%		
Change from 2000 to 2006												
Amount	−422	100	−589	12	22	5	1	1	26	167		
Percentage	−3.9%	17.7%	−5.9%	62.7%	35.3%	15.4%	8.6%	5.7%	24.1%	20.6%		
Share of County Population Increase	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

Note: Minority is computed as total population minus White Alone, Not Hispanic.
Sources: Bureau of Economic and Business Research, University of Utah analysis using data from U.S. Bureau of the Census (2000 Census and 2006 estimates) and Utah Population Estimates Committee (2006 estimates). The 2006 minority estimates are BEBR estimates controlled to UPEC totals.

8.1.3 Sevier County

8.1.3.1 Population Growth: Trends and Components of Change

The population of Sevier County was 12,000 in 1950 and declined slowly to reach 9,600 by 1966 (Exhibit 8.5). The county experienced net out-migration over this period as well. From 1968 through 1980, net migration turned positive, and population eventually rose to a peak of 15,900 by 1985. There was a significant decline in population in 1986 (to 15,300), possibly the result of the completion of the Interstate 70 construction project. By 1990, growth was reestablished as the population grew at an average annual rate of 1.6 percent until 2008, when population reached a record 20,619. Over this 18-year period, cumulative net in-migration was 2,300 and accounted for 44.4 percent of the county's population growth, while cumulative natural increase of 2,885 provided the rest of the growth.

8.1.3.2 Age Structure

The age structure of Sevier County is one that is common to many rural communities (Exhibit 8.6). There is a smaller share of the population in the ages after high school graduation and through the young prime working ages, as compared with the state. This is consistent with out-migration from Sevier County for educational and economic opportunities. As a result, there are more young persons and more retirement-age persons per capita than in the state as a whole. In the 2000 census enumeration the median age was 30.3, which is higher than 27.1 for the state. The share of the county population 60 years and older was 17.3 percent, also higher than 11.3 percent for the state. The male-to-female ratio is particularly high for five-year age groups 15 to 30, probably because of the presence of the correctional facility population.

8.1.3.3 Race and Ethnicity

The estimated population of Sevier County for July 1, 2006 was 19,984, which was an increase of 1,142 or 6.1 percent since April 1, 2000 (as compared with 17.1 percent for the state over the same period) (Table 8.3). The minority population (defined as Hispanics or Latinos and all non-Whites) was estimated in 2006 to be 1,282, or 6.4 percent of the population (compared with 17.4 percent for the state), ranking it 24th among all 29 counties for minority share. The 2006 estimated minority population represented an increase of 17.6 percent from 2000, and accounted for 16.8 percent of the total population increase of Sevier County to 2006. The largest minority group is the population of those identifying themselves as Hispanic or Latino, which was estimated in 2006 to be 622 persons, or 3.1 percent of the population. From 2000 to 2006, this population increased by 141, or 29.4 percent.

Exhibit 8.5
Sevier County Population Estimates and Components of Population Change, 1940–2008

	Population	FY Births	FY Deaths	Natural Increase	Net In-Migration
1940	12,300	311	99	212	0
1941	11,800	316	97	219	−719
1942	11,300	289	103	186	−686
1943	10,400	287	87	200	−1,100
1944	10,000	293	101	192	−592
1945	10,300	290	85	205	95
1946	11,400	327	90	237	863
1947	11,700	378	103	275	25
1948	12,300	380	117	263	337
1949	12,300	373	78	295	−295
1950	12,000	379	109	270	−570
1951	11,700	371	100	271	−571
1952	11,500	403	92	311	−511
1953	11,300	357	108	249	−449
1954	11,100	363	111	252	−452
1955	11,200	325	86	239	−139
1956	11,100	311	76	235	−335
1957	10,700	266	90	176	−576
1958	10,600	246	93	153	−253
1959	10,500	263	97	166	−266
1960	10,600	236	97	139	−39
1961	10,500	227	83	144	−244
1962	10,400	208	107	101	−201
1963	10,100	171	86	85	−385
1964	9,900	178	107	71	−271
1965	9,800	167	97	70	−170
1966	9,600	151	98	53	−253
1967	9,600	147	91	56	−56
1968	9,800	153	111	42	158
1969	9,900	177	94	83	17
1970	10,150	178	97	81	169
1971	10,850	213	97	116	584
1972	11,350	212	96	116	384
1973	11,750	230	125	105	295
1974	11,950	272	109	163	37
1975	12,550	281	111	170	430
1976	13,050	280	107	173	327
1977	13,400	386	116	270	80
1978	14,000	394	102	292	308
1979	14,450	418	114	304	146
1980	14,900	433	128	305	145
1981	15,100	422	115	307	−107
1982	15,300	435	119	316	−116
1983	15,600	351	131	220	80
1984	15,800	367	126	241	−41
1985	15,900	339	143	196	−96
1986	15,300	308	123	185	−785
1987	15,400	286	111	175	−75
1988	15,400	264	126	138	−138
1989	15,400	276	125	151	−151
1990	15,434	262	144	118	−84
1991	15,627	256	121	135	58
1992	15,923	290	113	177	119
1993	16,292	253	133	120	249
1994	16,572	265	135	130	150
1995	16,936	261	142	119	245
1996	17,258	277	145	132	190
1997	17,902	321	144	177	467
1998	18,294	306	140	166	226
1999	18,555	334	180	154	107
2000	18,938	309	158	151	232
2001	19,180	357	157	200	42
2002	19,232	327	155	172	−120
2003	19,318	325	144	181	−95
2004	19,415	360	177	183	−86
2005	19,649	330	168	162	72
2006	19,984	365	170	195	140
2007	20,442	373	197	176	282
2008	20,619	341	186	155	22
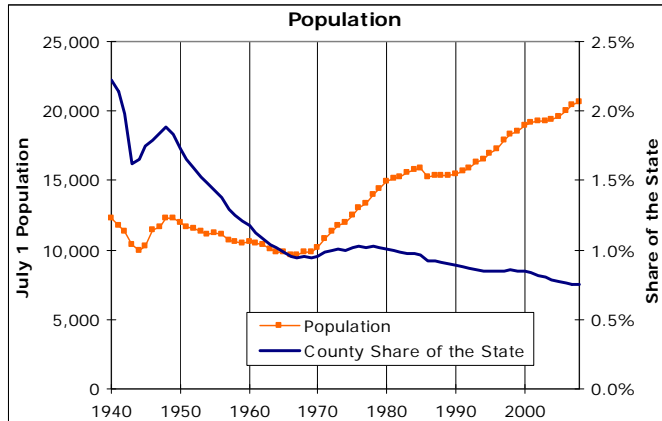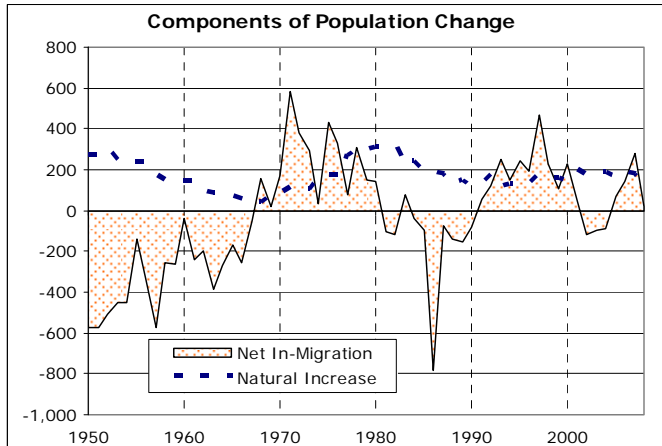
Population

Source: Utah Population Estimates Committee.

Components of Population Change

Source: Utah Population Estimates Committee.

Year-Over Rates and Amounts of Population Change

Source: Utah Population Estimates Committee.

Notes: Population estimates for July 1 were produced by the Utah Population Estimates Committee (UPEC). UPEC changed its rounding convention. Estimates before 1990 are rounded while those for 1990 and beyond are not rounded. Birth and death data are from the Utah Bureau of Health Statistics.

Source: Downloaded from http://www.governor.state.ut.us/dea on August 27, 2009.

Exhibit 8.6
Sevier County Population by Age and Sex, Race, and Ethnicity: 2000

Population by 5-Year Age Groups and Sex

Minority Population Composition
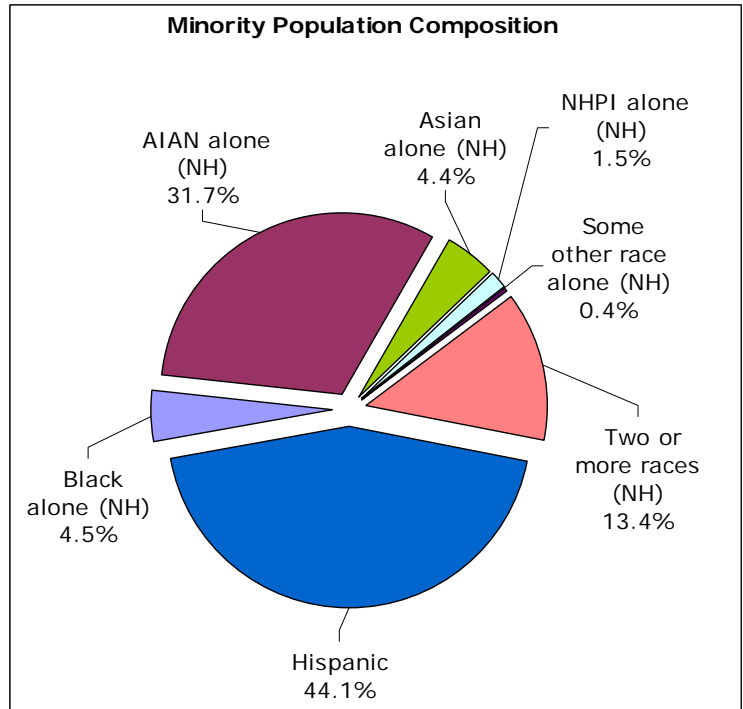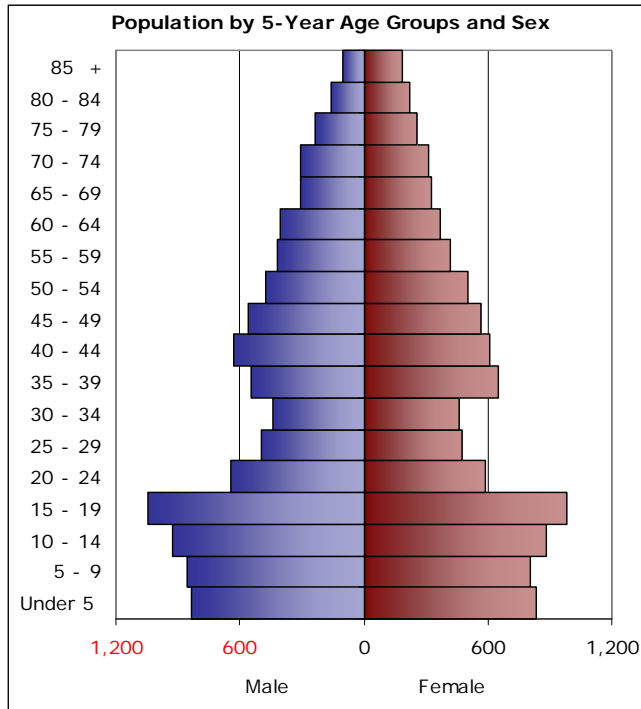
Age Distribution of the Sevier County Population				
	Male	Female	Sex Ratio	Share	Share of State
Under 5	834	833	1.00	8.8%	0.8%
5–9	857	808	1.06	8.8%	0.9%
10–14	923	880	1.05	9.6%	0.9%
15–19	1,047	982	1.07	10.8%	0.9%
20–24	644	587	1.10	6.5%	0.5%
25–29	497	475	1.05	5.2%	0.5%
30–34	440	461	0.95	4.8%	0.6%
35–39	548	648	0.85	6.3%	0.8%
40–44	627	612	1.02	6.6%	0.8%
45–49	558	566	0.99	6.0%	0.9%
50–54	474	504	0.94	5.2%	0.9%
55–59	420	422	1.00	4.5%	1.1%
60–64	403	366	1.10	4.1%	1.2%
65–69	308	330	0.93	3.4%	1.2%
70–74	308	316	0.97	3.3%	1.3%
75–79	233	258	0.90	2.6%	1.2%
80–84	160	225	0.71	2.0%	1.4%
85 +	103	185	0.56	1.5%	1.3%
Total	9,384	9,458	0.99	100%	0.8%
Share 60 years+	**17.0%**				**1.3%**
Median Age	**30.3**				

Race and Ethnicity of the Sevier County Population			
	Population	Share	Share of State
Total	*18,842*	*100%*	*0.8%*
Not Hispanic or Latino	18,361	97.4%	**0.9%**
White alone	17,752	94.2%	**0.9%**
Black or African American alone	49	0.3%	0.3%
American Indian and Alaska Native alone	346	1.8%	**1.3%**
Asian alone	48	0.3%	0.1%
Native Hawaiian and Other Pacific Islander alone	16	0.1%	0.1%
Some other race alone	4	0.0%	0.2%
Two or more races	146	0.8%	0.5%
Ethnicity			
Hispanic or Latino	481	2.6%	0.2%
Minority	1,090	5.8%	0.3%

Note: NH is Not Hispanic. If a cell is shaded yellow and has bold red type, this indicates that the county's share of the state for the given category exceeds the county's share of total population in the state. Blue shading indicates a male-to-female ratio greater than one.
Source: Bureau of the Census, Census 2000, *SF1.*

Table 8.3
Sevier County Population by Race and Ethnicity: 2000 Census and 2006 Estimates

	Total Population	Hispanic or Latino Total	Not Hispanic or Latino White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Minority Total	Share	Rank Among Utah Counties
Population												
July 1, 2006 Estimate	19,984	622	18,702	59	344	57	19	4	177	1,282	6.4%	24
April 1, 2000 Enumeration	18,842	481	17,752	49	346	48	16	4	146	1,090	5.8%	24
Shares of Total Population												
July 1, 2006 Estimate	100%	3.1%	93.6%	0.3%	1.7%	0.3%	0.1%	0.0%	0.9%	6.4%		
April 1, 2000 Enumeration	100%	2.6%	94.2%	0.3%	1.8%	0.3%	0.1%	0.0%	0.8%	5.8%		
Share of State Population Group												
July 1, 2006 Estimate	0.8%	0.2%	0.9%	0.3%	1.2%	0.1%	0.1%	0.2%	0.4%	0.3%		
April 1, 2000 Enumeration	0.8%	0.2%	0.9%	0.3%	1.3%	0.1%	0.1%	0.2%	0.5%	0.3%		
Change from 2000 to 2006												
Amount	1,142	141	950	10	−2	9	3	0	31	192		
Percentage	6.1%	29.4%	5.4%	19.5%	−0.7%	19.5%	16.0%	3.8%	21.3%	17.6%		
Share of County Population Increase	100%	12.4%	83.2%	0.8%	−0.2%	0.8%	0.2%	0.0%	2.7%	16.8%		

Note: Minority is computed as total population minus White Alone, Not Hispanic.

Sources: Bureau of Economic and Business Research, University of Utah analysis using data from U.S. Bureau of the Census (2000 Census and 2006 estimates) and Utah Population Estimates Committee (2006 estimates). The 2006 minority estimates are BEBR estimates controlled to UPEC totals.

8.2 Economic Profiles

Over the years, the system has changed by which nonfarm businesses are classified for purposes of employment and earnings statistics. The Standard Industrial Classification (SIC) was developed in the 1930s "to classify establishments by the type of activity in which they are primarily engaged." It was revised periodically to reflect changes in the composition and organization of the economy, with the last update in 1987. Due to significant and rapid structural changes in the U.S. economy, the SIC system was replaced by the North American Industrial Classification System (NAICS) in 1997, which was subsequently updated in 2002 and again 2007. Whereas the SIC had classified businesses into 10 major divisions with two subsequent layers of detail, NAICS uses 20 broad sectors, each with four layers of subcategories. While this complicates comparisons of economic activity over time, the broad mining sector has remained fairly consistent.

For this phase of the study, the BEBR used employment, income, and earnings data from the U.S. Department of Commerce's Bureau of Economic Analysis. The BEA provides county-level data on employment and earnings by type, i.e. proprietors or wage and salary, and by industry, i.e. farm and nonfarm. Nonfarm figures are further classified by SIC sector from 1970 through 2000 and by NAICS sector from 2001 on. In addition, total nonfarm payrolls and average annual nonfarm wages are included from the Utah Department of Workforce Services.

To compare counties' changing economic structure to that of the country, BEBR calculated location quotients for 1970 through 2007. Location quotients are the ratio of an industry's share of employment or earnings in a study area (in this case each county) to its share in a reference area (the United States as a whole). Therefore, values greater than 1.00 indicate relative specialization and the possible existence of a "basic" or exporting industry in the study area, where basic refers to activities that bring in money from outside the region and so drive regional growth.

8.2.1 Carbon County

8.2.1.1 Employment
From 1970 through 2007, total employment[72] in Carbon County grew at an average annual rate of 2.0 percent, from 5,823 to 12,246. This was the slowest growth of the three coal counties, although Carbon does have the largest employment base. Exhibit 8.7 shows the boom and bust cycles of an economy dependent on natural resources, particularly those related to energy. Over the study period employment peaked at 10,981 in 1982, declined to 9,002 in 1987, peaked again at 11,965 in 1999, dipped to 11,188 in 2004, then rose to 12,287 in 2006.

The fastest-growing type of employment was nonfarm proprietors' employment, which grew at an average annual rate of 3.2 percent between 1970 and 2007, from 760 to 2,421. Nonfarm proprietors' share of total employment increased over the period from 13 percent to nearly 20 percent. Wage and salary employment grew 1.8 percent annually, almost doubling from 4,925 to 9,607. However, its share shrank from 85 percent to 78.5 percent. Proprietors' employment has the benefit of being less subject to the vicissitude of wage and salary jobs.

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[72] Total employment covers farm and nonfarm employment, and proprietors' and wage and salary employment, and counts full- and part-time jobs equally.

Exhibit 8.7
Carbon County Employment Summary, 1970–2007

	1970	1980	1990	2000	2001	2002	2003	2004	2005	2006	2007	Change	AARC
Total Employment	5,823	10,175	9,608	11,722	11,277	11,402	11,228	11,188	11,638	12,287	12,246	110.3%	2.0%
Employment by Type													
Wage and Salary Employment	4,925	8,822	8,027	9,188	8,975	9,223	8,911	8,866	9,212	9,736	9,607	95.1%	1.8%
Proprietors' Employment	898	1,353	1,581	2,534	2,302	2,179	2,317	2,322	2,426	2,551	2,639	193.9%	3.0%
Farm Proprietors' Employment	138	201	195	227	226	227	222	221	222	220	218	58.0%	1.2%
Nonfarm Proprietors' Employment	760	1,152	1,386	2,307	2,076	1,952	2,095	2,101	2,204	2,331	2,421	218.6%	3.2%
Employment by Industry													
Farm Employment	243	233	231	251	250	247	246	244	246	243	238	–2.1%	–0.1%
Nonfarm Employment	5,580	9,942	9,377	11,471	11,027	11,155	10,982	10,944	11,392	12,044	12,008	115.2%	2.1%
Private Employment	4,170	8,104	7,274	9,081	8,657	8,844	8,707	8,687	9,134	9,793	9,750	133.8%	2.3%
Government Employment	1,410	1,838	2,103	2,390	2,370	2,311	2,275	2,257	2,258	2,251	2,258	60.1%	1.3%
Shares by Type													
Wage and Salary Employment	84.6%	86.7%	83.5%	78.4%	79.6%	80.9%	79.4%	79.2%	79.2%	79.2%	78.5%		
Proprietors' Employment	15.4%	13.3%	16.5%	21.6%	20.4%	19.1%	20.6%	20.8%	20.8%	20.8%	21.5%		
Farm Proprietors' Employment	2.4%	2.0%	2.0%	1.9%	2.0%	2.0%	2.0%	2.0%	1.9%	1.8%	1.8%		
Nonfarm Proprietors' Employment	13.1%	11.3%	14.4%	19.7%	18.4%	17.1%	18.7%	18.8%	18.9%	19.0%	19.8%		
Shares by Industry													
Farm Employment	4.2%	2.3%	2.4%	2.1%	2.2%	2.2%	2.2%	2.2%	2.1%	2.0%	1.9%		
Nonfarm Employment	95.8%	97.7%	97.6%	97.9%	97.8%	97.8%	97.8%	97.8%	97.9%	98.0%	98.1%		
Private Employment	71.6%	79.6%	75.7%	77.5%	76.8%	77.6%	77.5%	77.6%	78.5%	79.7%	79.6%		
Government Employment	24.2%	18.1%	21.9%	20.4%	21.0%	20.3%	20.3%	20.2%	19.4%	18.3%	18.4%		
Location Quotients by Type													
Wage and Salary Employment	0.98	1.01	0.99	0.94	0.96	0.98	0.97	0.97	0.98	0.99	0.98	0.0%	0.0%
Proprietors' Employment	1.13	0.93	1.05	1.30	1.21	1.10	1.15	1.12	1.09	1.06	1.08	–4.3%	–0.1%
Farm Proprietors' Employment	0.80	0.90	1.27	1.45	1.53	1.50	1.54	1.59	1.56	1.51	1.54	93.2%	1.8%
Nonfarm Proprietors' Employment	1.22	0.93	1.03	1.29	1.18	1.07	1.12	1.08	1.06	1.03	1.05	–13.8%	–0.4%
Location Quotients by Industry													
Farm Employment	0.96	0.69	1.06	1.15	1.21	1.17	1.21	1.26	1.26	1.23	1.24	28.7%	0.7%
Nonfarm Employment	1.00	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	–0.6%	0.0%
Private Employment	0.92	0.99	0.92	0.92	0.91	0.92	0.92	0.92	0.93	0.94	0.94	2.1%	0.1%
Government Employment	1.37	1.10	1.44	1.48	1.51	1.44	1.43	1.45	1.42	1.36	1.38	0.1%	0.0%

Note: Location quotient values greater than 1.00 indicate concentrations relative to the country.

Employment by Type and Industry, 1970-2007
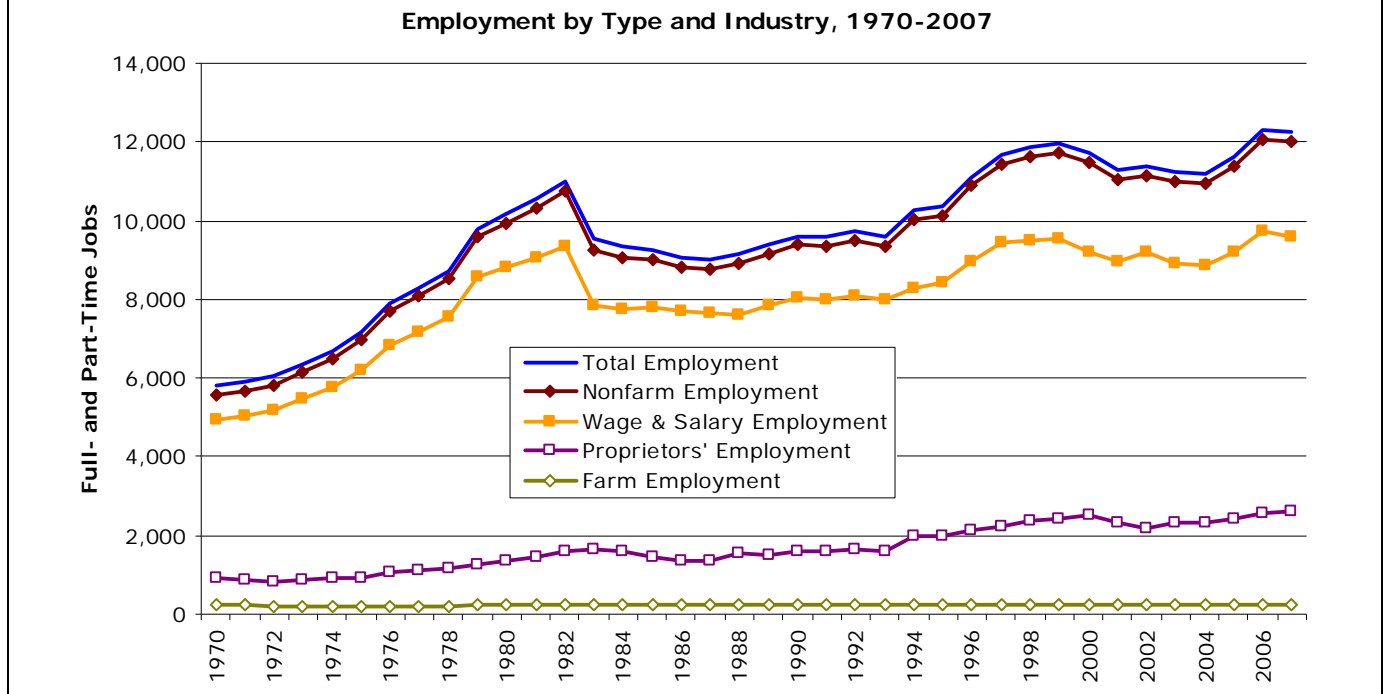
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System and Bureau of Economic and Business Research, University of Utah.

Looking at employment by broad industry, farm jobs shrank 2 percent from 243 in 1970 to 238 in 2007 while nonfarm employment more than doubled from 5,580 to 12,008. Because it's a rural county, Carbon County has a higher concentration of famers than the national average. Farm employment's 1.9 percent share of total employment in the county is about 25 percent larger than the nation's 1.6 percent share. Carbon also has an above-average concentration of public-sector employment. In 2007 the county's 2,258 government jobs accounted for 18 percent of total employment, down from 24 percent in 1970. This is about 40 percent larger than the public sector's share nationwide, which is 13 percent.

Turning to nonfarm employment by industry, in 1970 state and local government, retail trade, and mining were the largest sectors, providing 1,074, 1,044, and 996 jobs respectively (Table 8.4). Together, these three sectors accounted for more than half of all employment, farm and nonfarm (Table 8.5). Other significant sectors were services (650 jobs) and transportation and utilities (592 jobs, many with the Carbon Power Plant), each providing roughly 10 percent of total employment. By 2000, mining jobs had shrunk to 7 percent of total employment—from 17 percent in 1970—and services (28 percent), retail trade (18 percent), and local government (11.5 percent) were the largest employers. As of 2007, under the NAICS classification system, mining employment was not disclosed to protect firm confidentiality, though 827 mining jobs were reported in 2005. Of the sectors for which figures were reported, government provided 2,258 jobs,

Table 8.4
Carbon County Nonfarm Employment by Industry, 1970–2007

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Ag Services, Forestry, and Fishing	21	35	32	31	36	29	43	37	42	64	55	N/A	N/A
Mining	996	2,346	1,393	1,346	1,134	1,119	1,055	1,050	1,109	1,174	1,099	966	870
Construction	181	433	261	268	508	320	357	367	392	397	408	487	417
Manufacturing	199	297	327	343	340	328	388	425	461	497	494	459	455
Transportation and Public Utilities	592	709	489	442	436	482	551	496	555	540	539	545	577
Wholesale Trade	175	464	362	414	464	426	454	505	538	586	599	581	570
Retail Trade	1,044	1,713	1,752	1,879	1,805	1,804	1,920	1,866	1,968	2,100	2,103	2,166	2,130
Finance, Insurance, and Real Estate	312	394	416	383	362	405	411	455	474	498	653	N/A	N/A
Services	650	1,713	2,242	2,178	2,332	2,337	2,722	2,712	2,984	3,219	3,358	3,480	3,289
Government	1,410	1,838	2,103	2,089	2,093	2,099	2,135	2,233	2,358	2,370	2,328	2,326	2,390
Federal, Civilian	170	158	173	168	171	166	169	170	172	172	166	163	186
Military	166	133	158	150	144	137	127	116	117	112	109	106	104
State	N/A	475	539	580	592	604	615	653	703	749	719	739	755
Local	N/A	1,072	1,233	1,191	1,186	1,192	1,224	1,294	1,366	1,337	1,334	1,318	1,345

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	N/A	N/A	N/A	28	N/A	N/A
Mining	N/A	N/A	N/A	N/A	827	N/A	N/A
Construction	568	462	455	457	469	585	599
Manufacturing	419	430	327	356	457	478	418
Transportation and Utilities	465	436	423	430	548	587	617
Wholesale Trade	383	391	410	430	468	493	485
Retail Trade	1,573	1,661	1,673	1,593	1,663	1,713	1,743
Information	120	107	109	132	128	149	132
Financial Activity	662	575	650	641	654	695	721
Professional & Business Services	1,065	1,078	N/A	N/A	N/A	1,026	N/A
Education & Health Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	910	933	887	890	889	967	970
Other Services	844	881	870	889	869	929	897
Government	2,370	2,311	2,275	2,257	2,258	2,251	2,258
Federal, Civilian	166	172	180	180	183	175	166
Military	102	102	103	97	96	93	87
State	758	719	715	741	751	773	775
Local	1,344	1,318	1,277	1,239	1,228	1,210	1,230

N/A: Data not shown to avoid disclosure of confidential information or because the data were not available.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

1,230 of which were at the local level, leisure and hospitality services and other services combined provided 1,867 jobs, and retail trade provided 1,743. These represented 18 percent, 14 percent, and 15 percent, respectively, of total employment in the county.

Figure 8.1a
Carbon County Nonfarm Employment by SIC Industry, 1970–2000
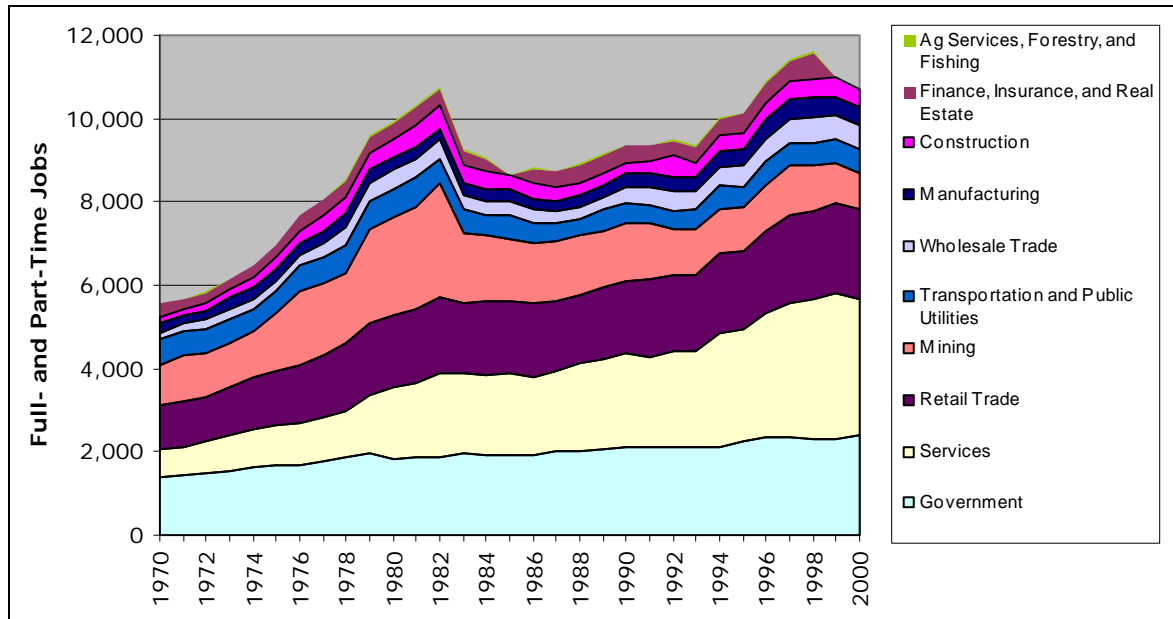
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Figure 8.1b
Carbon County Nonfarm Employment by NAICS Industry, 2001–2007
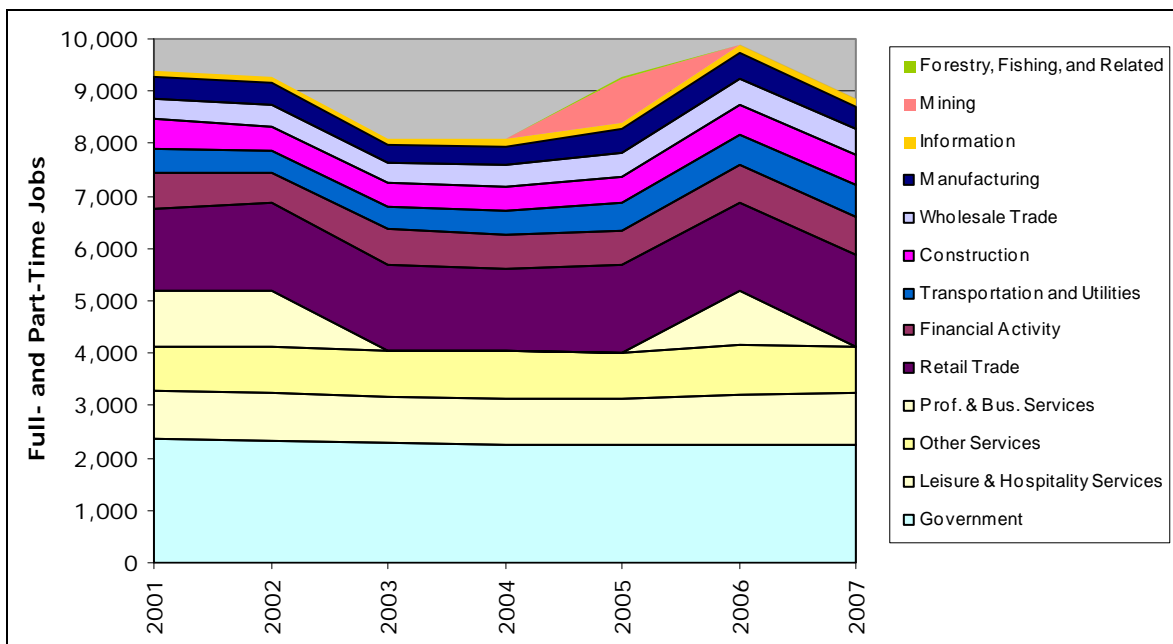
Note: Total employment appears much lower in 2001 than in 2000 because figures were not reported for several industries.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Table 8.5
Carbon County Nonfarm Employment Shares by Industry, 1970–2007

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Ag Services, Forestry, and Fishing	0.4%	0.3%	0.3%	0.3%	0.4%	0.3%	0.4%	0.4%	0.4%	0.5%	0.5%	N/A	N/A
Mining	17.1%	23.1%	14.5%	14.0%	11.7%	11.7%	10.3%	10.1%	10.0%	10.0%	9.3%	8.1%	7.4%
Construction	3.1%	4.3%	2.7%	2.8%	5.2%	3.3%	3.5%	3.5%	3.5%	3.4%	3.4%	4.1%	3.6%
Manufacturing	3.4%	2.9%	3.4%	3.6%	3.5%	3.8%	3.8%	4.1%	4.1%	4.3%	4.2%	3.8%	3.9%
Transportation and Public Utilities	10.2%	7.0%	5.1%	4.6%	4.5%	5.0%	5.4%	4.8%	5.0%	4.6%	4.5%	4.6%	4.9%
Wholesale Trade	3.0%	4.6%	3.8%	4.3%	4.8%	4.4%	4.4%	4.9%	4.8%	5.0%	5.0%	4.9%	4.9%
Retail Trade	17.9%	16.8%	18.2%	19.6%	18.6%	18.8%	18.7%	18.0%	17.7%	18.0%	17.7%	18.1%	18.2%
Finance, Insurance, and Real Estate	5.4%	3.9%	4.3%	4.0%	3.7%	4.2%	4.0%	4.4%	4.3%	4.3%	5.5%	N/A	N/A
Services	11.2%	16.8%	23.3%	22.7%	24.0%	24.4%	26.5%	26.1%	26.8%	27.5%	28.3%	29.1%	28.1%
Government	24.2%	18.1%	21.9%	21.8%	21.5%	21.9%	20.8%	21.5%	21.2%	20.3%	19.6%	19.4%	20.4%
Federal, Civilian	2.9%	1.6%	1.8%	1.8%	1.8%	1.7%	1.6%	1.6%	1.5%	1.5%	1.4%	1.4%	1.6%
Military	2.9%	1.3%	1.6%	1.6%	1.5%	1.4%	1.2%	1.1%	1.1%	1.0%	0.9%	0.9%	0.9%
State	N/A	4.7%	5.6%	6.0%	6.1%	6.3%	6.0%	6.3%	6.3%	6.4%	6.1%	6.2%	6.4%
Local	N/A	10.5%	12.8%	12.4%	12.2%	12.4%	11.9%	12.5%	12.3%	11.4%	11.2%	11.0%	11.5%

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	N/A	N/A	N/A	0.2%	N/A	N/A
Mining	N/A	N/A	N/A	N/A	7.1%	N/A	N/A
Construction	5.0%	4.1%	4.1%	4.1%	4.0%	4.8%	4.9%
Manufacturing	3.7%	3.8%	2.9%	3.2%	3.9%	3.9%	3.4%
Transportation and Utilities	4.1%	3.8%	3.8%	3.8%	4.7%	4.8%	5.0%
Wholesale Trade	3.4%	3.4%	3.7%	3.8%	4.0%	4.0%	4.0%
Retail Trade	13.9%	14.6%	14.9%	14.2%	14.3%	13.9%	14.2%
Information	1.1%	0.9%	1.0%	1.2%	1.1%	1.2%	1.1%
Financial Activity	5.9%	5.0%	5.8%	5.7%	5.6%	5.7%	5.9%
Professional & Business Services	9.4%	9.5%	N/A	N/A	N/A	8.4%	N/A
Education & Health Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	8.1%	8.2%	7.9%	8.0%	7.6%	7.9%	7.9%
Other Services	7.5%	7.7%	7.7%	7.9%	7.5%	7.6%	7.3%
Government	21.0%	20.3%	20.3%	20.2%	19.4%	18.3%	18.4%
Federal, Civilian	1.5%	1.5%	1.6%	1.6%	1.6%	1.4%	1.4%
Military	0.9%	0.9%	0.9%	0.9%	0.8%	0.8%	0.7%
State	6.7%	6.3%	6.4%	6.6%	6.5%	6.3%	6.3%
Local	11.9%	11.6%	11.4%	11.1%	10.6%	9.8%	10.0%

Shares are of total farm and nonfarm employment.
N/A: Data not shown to avoid disclosure of confidential information or because the data were not available.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Comparing Carbon County's economy to that of the country as a whole, in 1970 mining's share of total employment in the county was 21 times the national average (Exhibit 8.8). The next most significant concentration in the county was in transportation and utilities, whose local share was 90 percent larger than its national share. The public sector also had a larger-than-normal presence, with a local employment share more than one-third greater than in the country as a whole. Retail trade also had a modest relative concentration, with a share one-fifth larger than the national average. By 2000, Carbon County's lopsided concentration in mining had shrunk to "only" 16 times the national share. The transportation and utilities sector's share of local employment was on a par with the country, while the county's concentration in government employment had increased to a share 50 percent larger than the national share—and state government's share was more than twice the national share. Retail trade's share of local jobs was about 10 percent larger than its national share, and wholesale trade's share was 7 percent larger. In 2007, under the NAICS system, mining employment was not disclosed. However, in 2005 mining's share of employment in Carbon County was almost 15 times its national share. In 2007 the industries with the most significant concentrations relative to the country as a whole were state government, with a share more than twice the national average, transportation and utilities (41 percent larger), retail trade (34 percent larger), and local government (28 percent larger). The county also had an above-average concentration in wholesale trade, though the sector's local employment share was only 8 percent greater than its national share.

Exhibit 8.8
Carbon County Nonfarm Employment Location Quotients by Industry, 1970–2007

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Ag Services, Forestry, and Fishing	0.63	0.43	0.32	0.30	0.35	0.26	0.35	0.30	0.31	0.44	0.38	N/A	N/A
Mining	20.99	20.62	19.35	19.00	17.32	17.73	15.96	17.01	18.43	18.02	17.39	16.38	15.78
Construction	0.65	0.86	0.52	0.57	1.07	0.68	0.68	0.68	0.67	0.63	0.63	0.72	0.63
Manufacturing	0.16	0.16	0.24	0.26	0.26	0.26	0.29	0.32	0.33	0.34	0.34	0.33	0.34
Transportation and Public Utilities	1.91	1.40	1.08	0.97	0.96	1.06	1.13	1.01	1.05	0.97	0.94	0.93	1.00
Wholesale Trade	0.66	0.91	0.78	0.90	0.99	0.96	0.96	1.05	1.05	1.09	1.09	1.06	1.07
Retail Trade	1.19	1.08	1.11	1.19	1.12	1.14	1.12	1.07	1.05	1.07	1.08	1.10	1.11
Finance, Insurance, and Real Estate	0.80	0.51	0.56	0.53	0.50	0.57	0.54	0.59	0.57	0.57	0.70	N/A	N/A
Services	0.60	0.77	0.84	0.80	0.83	0.83	0.90	0.88	0.89	0.90	0.91	0.92	0.88
Government	1.37	1.10	1.44	1.42	1.39	1.44	1.39	1.47	1.48	1.44	1.41	1.41	1.48
Federal, Civilian	0.92	0.59	0.78	0.78	0.79	0.80	0.80	0.83	0.82	0.81	0.79	0.80	0.91
Military	0.81	0.60	0.84	0.82	0.78	0.80	0.75	0.73	0.72	0.69	0.69	0.70	0.71
State	N/A	1.42	1.78	1.88	1.87	1.93	1.85	1.97	2.03	2.10	2.01	2.07	2.17
Local	N/A	1.26	1.64	1.56	1.52	1.55	1.49	1.58	1.57	1.46	1.44	1.41	1.47

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	N/A	N/A	N/A	0.42	N/A	N/A
Mining	N/A	N/A	N/A	N/A	14.76	N/A	N/A
Construction	0.85	0.70	0.69	0.67	0.64	0.73	0.76
Manufacturing	0.37	0.40	0.32	0.36	0.46	0.47	0.43
Transportation and Utilities	1.13	1.07	1.07	1.10	1.33	1.34	1.41
Wholesale Trade	0.90	0.93	1.00	1.05	1.10	1.09	1.08
Retail Trade	1.26	1.31	1.35	1.30	1.31	1.29	1.34
Information	0.44	0.42	0.45	0.56	0.54	0.60	0.55
Financial Activity	0.73	0.62	0.69	0.67	0.64	0.62	0.64
Professional & Business Services	0.72	0.72	N/A	N/A	N/A	0.61	N/A
Education & Health Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	0.96	0.96	0.91	0.91	0.87	0.90	0.90
Other Services	1.38	1.37	1.36	1.40	1.32	1.33	1.31
Government	1.51	1.44	1.43	1.45	1.42	1.36	1.38
Federal, Civilian	0.90	0.92	0.95	0.98	0.98	0.91	0.88
Military	0.72	0.71	0.73	0.71	0.71	0.66	0.63
State	2.23	2.07	2.11	2.22	2.19	2.18	2.20
Local	1.49	1.41	1.39	1.37	1.32	1.25	1.28

Note: Values greater than 1.00 indicate concentrations relative to the country.

Basic Industries' Location Quotients, 2001-2007
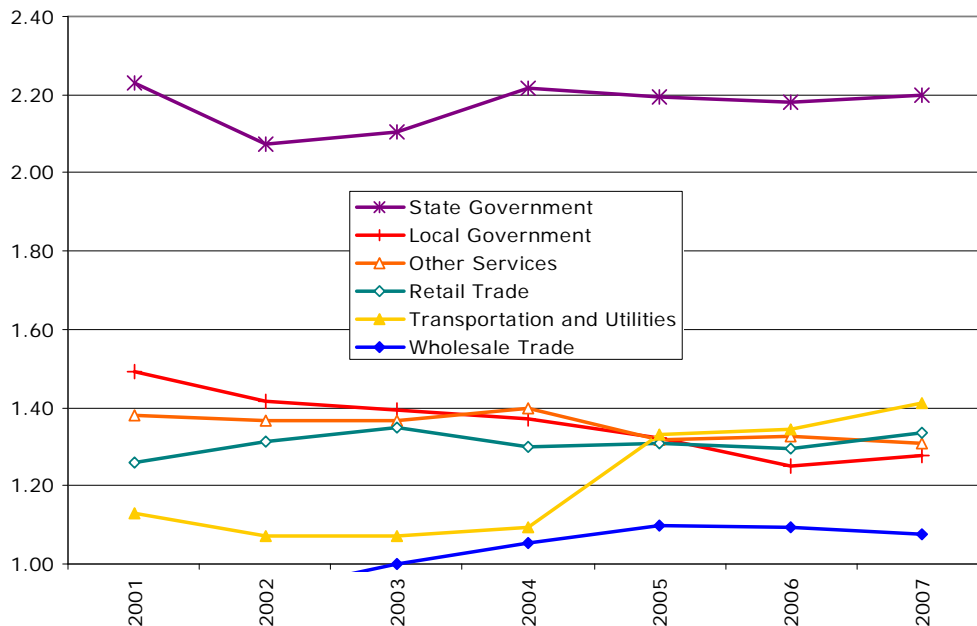
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System and Bureau of Economic and Business Research, University of Utah.

8.2.1.2 Personal Income and Earnings

Total personal income[73] in Carbon County doubled, adjusting for inflation, between 1970 and 2007 from $280.3 million to $563.3 million. (All amounts are in constant 2007 dollars.) However, it remained well below its 1982 peak of $663.2 million. Due to population growth, per capita personal income grew more slowly, by 60 percent, from $17,797 to $28,552. It too peaked in 1982, at $27,292, and did not regain this level until 2005. Real average annual wages in Carbon County fell by 1.5 percent over the study period, from $34,523 to $34,022, and in fact in 2007 they were almost 17 percent below their 1978 peak of $40,794 (Table 8.6 and Figure 8.2).

Personal transfer receipts, which include government social benefits and retirement income, averaged 3.6 percent annual growth between 1970 and 2007, from $34.9 million to $128.5 million. This indicates a growing elderly population in the county.

Wage and salary disbursements increased 1.8 percent annually over the period, from $170.0 million to $326.9 million, and supplements to wages and salaries grew at an average 3.4 percent annually from $24.9 million to $84.4 million. In contrast, proprietors' income shrank 0.6 percent annually, from $27.7 million in 1970 to $22.0 million in 2007, despite an almost tripling of proprietors' employment. This decline was driven by farm proprietors' income, which fell from $2.1 million in 1970 to a loss of $6.6 million in 2007. Nonfarm proprietors' income grew only slightly over the period, from $25.6 million to $28.6 million.

Like farm proprietors' income, total farm earnings in Carbon County saw a drastic decline from 1970 to 2007. Earnings were $3.4 million in 1970, but from 1982 through 2007 there were losses in all but three years, with 2007's totaling $6.0 million. Nonfarm earnings, however, doubled over the period, from $219.2 million to $439.2 million. Within nonfarm earnings, government earnings grew slightly faster than private earnings, but they represent less than one-quarter of all nonfarm earnings.

In 2007, three-quarters of total earnings in Carbon County came from wages and salaries, one-fifth was due to supplements to wages and salaries (employer contributions for pensions, insurance, and government social insurance), and the remaining 5 percent was proprietors' income. Proprietors' share of earnings in the county was less than half (43 percent) of the national average. Part of this was due to the losses among farm proprietors, but even nonfarm proprietors' share of earnings was less than 60 percent of the average. In contrast, supplements to wages and salaries, particularly employer contributions for pensions and insurance, contributed shares about 20 percent larger than average.

Since farm earnings in Carbon County were negative for the last several years, we cannot compare their local share of earnings to the national share. Within nonfarm earnings, government's share of total earnings (22 percent) is about one-third larger than the national average (16 percent) while private earnings' local share (79 percent) is slightly smaller than average (83 percent).

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[73] Note that the sum of wage and salary disbursements plus supplements to wages and salaries plus proprietors' income equals the sum of farm and nonfarm earnings. Both are ways of measuring earnings by place of work. Subtracting employer and employee contributions for government social insurance and adding personal transfer receipts, income from dividends, interest, and rent, and a residence adjustment that covers the effects of interarea commuters, yields total personal income, which is by place of residence.

Table 8.6
Carbon County Income Summary, 1970–2007
(Millions of Constant 2007 Dollars)

	1970	1980	1990	2000	2001	2002	2003	2004	2005	2006	2007	Change	AARC
Total Personal Income	$280.3	$566.7	$470.5	$528.3	$526.8	$518.5	$508.4	$523.7	$557.6	$569.4	$563.3	101.0%	1.9%
Per Capita Personal Income (dollars)	$17,797	$25,300	$23,329	$25,900	$26,527	$26,110	$25,992	$27,013	$28,834	$29,195	$28,552	60.4%	1.3%
Average Annual Wage per Job (dollars)	$34,523	$37,322	$32,871	$32,433	$32,296	$31,625	$31,496	$32,432	$32,663	$33,596	$34,022	−1.5%	0.0%
Personal Transfer Receipts	$34.9	$70.4	$81.5	$110.8	$111.6	$117.7	$120.6	$122.7	$134.7	$127.2	$128.5	268.4%	3.6%
Components of Earnings													
Wage and salary disbursements	$170.0	$329.3	$263.9	$298.0	$289.9	$291.7	$280.7	$287.5	$300.9	$327.8	$326.9	92.2%	1.8%
Supplements to wages and salaries	$24.9	$72.0	$57.0	$67.2	$66.1	$69.3	$72.6	$77.9	$81.7	$85.2	$84.4	239.4%	3.4%
Employer contribs for pensions and insurance	$16.6	$50.7	$36.0	$43.9	$43.3	$45.9	$49.6	$53.9	$56.0	$57.2	$57.7	247.5%	3.4%
Employer contribs for gov't social insurance	$8.3	$21.4	$21.0	$23.2	$22.8	$23.4	$23.0	$24.0	$25.7	$28.0	$26.7	223.0%	3.2%
Proprietors' income	$27.7	$28.5	$26.9	$21.0	$20.1	$18.2	$18.9	$20.5	$24.8	$24.9	$22.0	−20.7%	−0.6%
Farm proprietors' income	$2.1	−$0.4	$0.4	−$3.6	−$3.7	−$4.5	−$3.5	−$3.1	−$3.0	−$5.3	−$6.6	−418.9%	N/A
Nonfarm proprietors' income	$25.6	$28.9	$26.5	$24.6	$23.8	$22.7	$22.4	$23.6	$27.8	$30.2	$28.6	11.7%	0.3%
Farm earnings	$3.4	$0.4	$0.8	−$3.0	−$3.1	−$3.9	−$3.0	−$2.5	−$2.3	−$4.7	−$6.0	−276.4%	N/A
Nonfarm earnings	$219.2	$429.4	$346.9	$389.2	$379.2	$383.1	$375.2	$388.5	$409.8	$442.7	$439.2	100.4%	1.9%
Private earnings	$174.3	$370.1	$276.3	$300.4	$289.1	$292.5	$283.6	$295.2	$315.7	$349.1	$343.9	97.3%	1.9%
Government earnings	$44.8	$59.4	$70.6	$88.8	$90.1	$90.6	$91.5	$93.2	$94.0	$93.6	$95.3	112.6%	2.1%
Components' Shares of Total Earnings													
Wage and salary disbursements	76.4%	76.6%	75.9%	77.2%	77.1%	76.9%	75.4%	74.5%	73.9%	74.9%	75.5%		
Supplements to wages and salaries	11.2%	16.8%	16.4%	17.4%	17.6%	18.3%	19.5%	20.2%	20.1%	19.5%	19.5%		
Employer contribs for pensions and insurance	7.5%	11.8%	10.4%	11.4%	11.5%	12.1%	13.3%	14.0%	13.7%	13.1%	13.3%		
Employer contribs for gov't social insurance	3.7%	5.0%	6.0%	6.0%	6.1%	6.2%	6.2%	6.2%	6.3%	6.4%	6.2%		
Proprietors' income	12.4%	6.6%	7.7%	5.4%	5.3%	4.8%	5.1%	5.3%	6.1%	5.7%	5.1%		
Farm proprietors' income	0.9%	−0.1%	0.1%	−0.9%	−1.0%	−1.2%	−0.9%	−0.8%	−0.7%	−1.2%	−1.5%		
Nonfarm proprietors' income	11.5%	6.7%	7.6%	6.4%	6.3%	6.0%	6.0%	6.1%	6.8%	6.9%	6.6%		
Farm earnings	1.5%	0.1%	0.2%	−0.8%	−0.8%	−1.0%	−0.8%	−0.6%	−0.6%	−1.1%	−1.4%		
Nonfarm earnings	98.5%	99.9%	99.8%	100.8%	100.8%	101.0%	100.8%	100.6%	100.6%	101.1%	101.4%		
Private earnings	78.3%	86.1%	79.5%	77.8%	76.9%	77.1%	76.2%	76.5%	77.5%	79.7%	79.4%		
Government earnings	20.1%	13.8%	20.3%	23.0%	24.0%	23.9%	24.6%	24.1%	23.1%	21.4%	22.0%		
Location Quotients of Earnings Components													
Wage and salary disbursements	0.96	1.01	1.02	1.04	1.05	1.06	1.05	1.05	1.04	1.05	1.05	8.9%	0.2%
Supplements to wages and salaries	1.19	1.12	1.05	1.19	1.19	1.13	1.16	1.20	1.19	1.18	1.19	−0.1%	0.0%
Employer contribs for pensions and insurance	1.26	1.17	1.03	1.22	1.21	1.12	1.17	1.23	1.19	1.16	1.20	−4.6%	−0.1%
Employer contribs for gov't social insurance	1.08	1.02	1.08	1.14	1.14	1.16	1.15	1.16	1.18	1.21	1.17	8.5%	0.2%
Proprietors' income	1.09	0.69	0.75	0.48	0.46	0.43	0.45	0.44	0.51	0.47	0.43	−60.4%	−2.5%
Farm proprietors' income	0.49	N/A	0.13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Nonfarm proprietors' income	1.21	0.75	0.81	0.59	0.56	0.54	0.55	0.53	0.59	0.58	0.58	−52.2%	−2.0%
Farm earnings	0.60	0.08	0.18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Nonfarm earnings	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.01	1.01	1.02	1.02	1.0%	0.0%
Private earnings	0.99	1.06	0.98	0.93	0.92	0.93	0.92	0.93	0.94	0.96	0.96	−3.1%	−0.1%
Government earnings	1.11	0.78	1.14	1.50	1.53	1.46	1.47	1.45	1.39	1.30	1.34	20.6%	0.5%

Note: Average wage per job is wage and salary disbursements divided by wage and salary employment. Location quotient values greater than 1.00 indicate concentrations relative to the country.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System; Utah Department of Workforce Services; and Bureau of Economic and Business Research, University of Utah.

Figure 8.2
Carbon County Components of Personal Income, 1970–2007
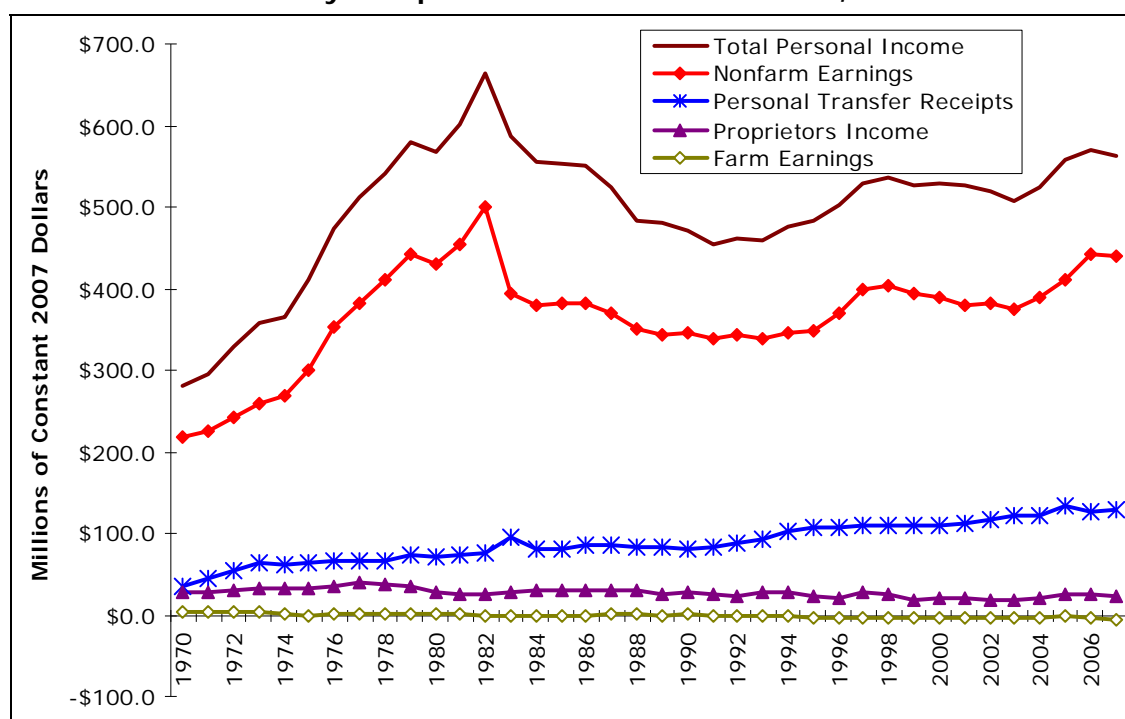
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

The main sources of nonfarm earnings in Carbon County in 1970 were coal mining, which paid $67.3 million (in constant 2007 dollars); transportation and public utilities, including the Carbon Power Plant, which paid $34.5 million; state and local government, which paid $34.2 million; retail trade, which paid $24.2 million; and services, which paid $20.3 million (Table 8.7 and Figure 8.3a). Together these sectors accounted for 81 percent of total nonfarm earnings, with coal mining alone representing 30 percent (Table 8.8). By 2000, service sector earnings had almost quadrupled to $78.4 million, state and local government earnings had more than doubled to $73.2 million, retail trade earnings had grown 40 percent to $33.8 million, and transportation and public utilities and coal mining had grown more modestly to $38.7 million and $80.3 million respectively. These sectors accounted for 77 percent of total nonfarm earnings, but coal mining's share had shrunk to 19 percent while that of services had doubled to 20 percent. There was significant growth in some of the smaller industries. Manufacturing earnings quadrupled from $5.2 million in 1970 to $21.3 million in 2000, and earnings from wholesale trade more than tripled from $6.7 million to $22.7 million. However, both sectors accounted for less than 6 percent of total earnings each in 2000.

In 2007, under the NAICS classification system, mining (except oil and gas) paid $81 million in earnings, which represented almost 19 percent of total nonfarm earnings. This sector includes coal mining, but also covers metals and nonmetallic minerals. From 1999 SIC data we see that metal mining and nonmetallic minerals accounted for just 2 percent of total mining earnings, so it's probably safe to assume that most of the $81 million of earnings in mining (except oil and gas) in 2007 were from coal mining. State and local government jobs paid $77.2 million in 2007, slightly more than in 2000, and represented 18 percent of total earnings. The next largest sector
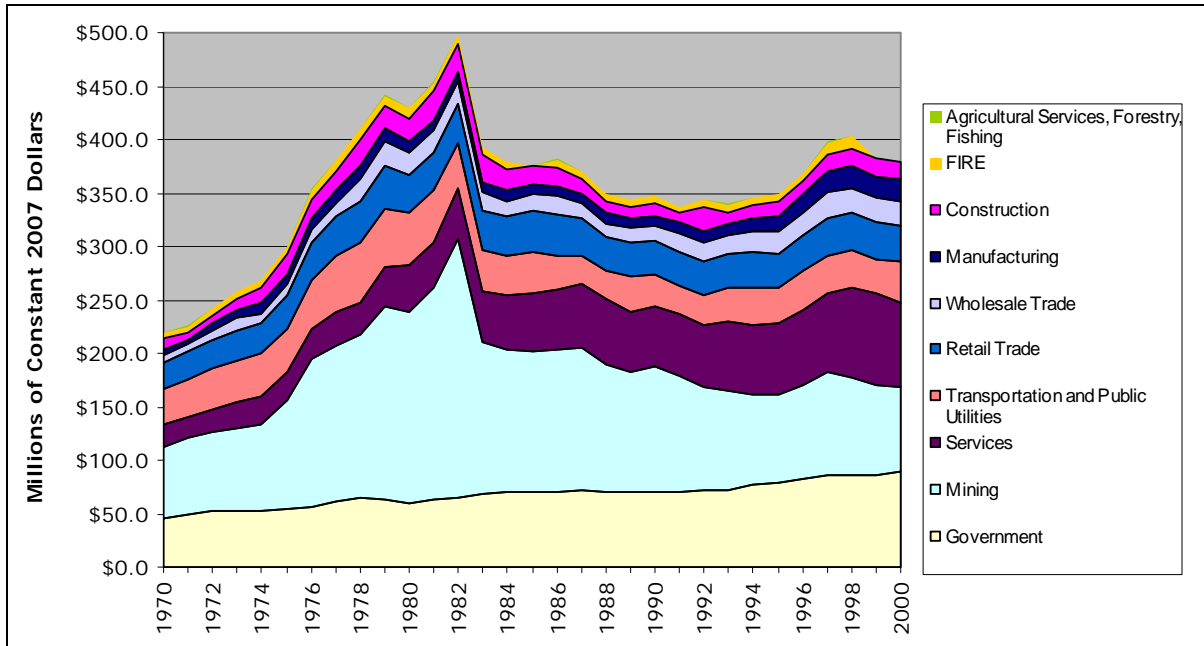
Table 8.7
Carbon County Nonfarm Earnings by Industry, 1970–2007
(Millions of Constant 2007 Dollars)

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Agricultural Services, Forestry, Fishing	$0.4	$0.4	$0.3	$0.3	$0.4	$0.5	$0.4	$0.4	$0.3	$0.7	$0.7	N/A	N/A
Mining	$67.3	$180.1	$116.2	$108.5	$95.8	$93.5	$83.7	$82.5	$87.7	$96.2	$91.3	$83.3	$80.3
Metal mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$0.00	N/A	N/A	N/A	N/A
Coal mining	$67.3	$172.1	$113.0	$107.8	$94.9	$90.0	$82.8	$80.8	N/A	$93.3	$87.1	$78.7	$73.4
Oil and gas extraction	N/A	N/A	$0.00	$0.00	$0.00	N/A	N/A	N/A	N/A	N/A	$2.10	$2.77	N/A
Nonmetallic minerals, except fuels	$0.00	$0.00	N/A	N/A	N/A	$0.20	$0.12	$0.12	N/A	N/A	N/A	N/A	N/A
Construction	$10.6	$22.4	$11.6	$9.9	$24.1	$11.4	$12.0	$13.8	$13.5	$16.4	$15.0	$18.0	$15.4
Manufacturing	$5.2	$9.0	$9.1	$9.7	$9.7	$9.7	$12.2	$14.2	$17.4	$19.0	$21.5	$20.0	$21.3
Petroleum and coal products	$0.0	$0.0	$0.0	$0.0	N/A	$0.2	N/A	N/A	$2.3	$3.0	N/A	N/A	N/A
Transportation and Public Utilities	$34.5	$50.2	$30.7	$27.2	$28.1	$32.3	$35.0	$33.8	$36.5	$36.1	$34.8	$31.6	$38.7
Wholesale Trade	$6.7	$21.8	$15.0	$17.4	$18.0	$17.5	$19.3	$20.7	$21.6	$23.2	$22.4	$22.3	$22.7
Retail Trade	$24.2	$34.8	$30.3	$31.6	$31.6	$32.1	$34.0	$31.0	$32.7	$35.4	$36.3	$35.7	$33.8
Building materials and garden equipment	$1.09	$3.16	$1.35	$1.41	N/A	$1.58	$1.51	$1.41	$1.52	$1.63	$1.67	$1.41	$1.69
General merchandise stores	$3.80	$4.37	$2.67	$4.36	N/A	$5.01	$4.69	$4.77	$4.98	$5.00	$5.36	$5.95	$5.74
Food stores	$3.59	$7.53	$7.64	$7.31	$7.40	$7.02	$7.23	$7.08	$7.31	$7.49	$8.38	$8.00	$7.12
Automotive dealers and service stations	$8.11	$8.00	$6.11	$6.26	$6.35	$7.40	$8.45	$7.43	$7.68	$8.29	$7.95	$7.85	$7.60
Apparel and accessory stores	$0.87	$1.23	$0.46	$0.51	$0.46	$0.48	$0.62	$0.46	$0.41	$0.34	$0.36	$0.34	$0.27
Home furniture and furnishings stores	$1.16	$1.69	$2.63	$2.50	$2.11	$1.79	$1.74	$1.73	$1.94	$2.08	$1.58	$1.52	$1.40
Eating and drinking places	$3.54	$5.49	$5.89	$6.06	$5.72	$5.82	$6.29	$5.82	$5.98	$6.13	$6.25	$6.09	$6.20
Miscellaneous retail	$2.02	$3.35	$3.54	$3.18	$3.23	$3.04	$3.45	$2.31	$2.87	$4.40	$4.75	$4.58	$3.84
Finance, Insurance, and Real Estate	$5.1	$9.0	$6.1	$4.9	$6.0	$7.0	$6.5	$6.8	$6.8	$11.5	$12.2	N/A	N/A
Services	$20.3	$42.3	$56.9	$57.2	$58.0	$63.4	$65.3	$66.5	$69.5	$73.7	$83.8	$85.9	$78.4
Government	$44.8	$59.4	$70.6	$70.9	$72.0	$72.1	$77.1	$79.3	$83.3	$85.8	$86.1	$86.3	$88.8
Federal, Civilian	$9.4	$9.7	$12.2	$12.4	$12.5	$12.0	$13.1	$12.1	$12.4	$13.2	$13.0	$12.5	$13.7
Military	$1.2	$1.4	$2.5	$2.3	$2.3	$2.2	$2.2	$1.9	$2.0	$1.9	$1.9	$1.9	$1.9
State	N/A	$15.9	$19.1	$20.5	$21.2	$21.5	$23.0	$25.0	$25.9	$27.5	$26.3	$27.1	$27.8
Local	N/A	$32.4	$36.7	$35.6	$36.1	$36.4	$38.7	$40.3	$42.9	$43.2	$44.9	$44.8	$45.4

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	N/A	N/A	N/A	$0.3	N/A	N/A
Mining	N/A	N/A	N/A	N/A	$76.6	N/A	N/A
Oil and gas extraction	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mining (except oil and gas)	$53.9	$60.2	$60.3	$65.2	$67.6	$76.6	$81.0
Support activities for mining	$1.8	$3.4	$2.9	$2.1	N/A	$3.9	N/A
Construction	$26.6	$19.6	$16.4	$16.4	$18.7	$31.9	$24.0
Manufacturing	$21.0	$16.7	$12.3	$14.8	$22.1	$25.6	$22.8
Petroleum and coal products	N/A	$0.0	$0.0	N/A	N/A	N/A	N/A
Transportation and Utilities	$31.8	$32.3	$30.8	$33.1	$38.7	$38.2	$39.8
Wholesale Trade	$20.0	$20.4	$21.7	$24.6	$26.3	$28.1	$27.8
Retail Trade	$33.1	$33.3	$33.1	$30.9	$33.0	$34.6	$34.4
Motor vehicle and parts dealers	$5.6	$5.6	$5.9	$5.7	$6.4	$6.9	$7.5
Furniture and home furnishings stores	$1.0	$0.8	$0.6	$0.8	$0.9	$0.8	$0.8
Electronics and appliance stores	$0.5	$0.4	$0.4	N/A	N/A	$0.3	$0.3
Building material and garden supply stores	$2.2	$2.2	$2.0	$1.4	$2.0	$2.0	$1.9
Food and beverage stores	$6.9	$6.2	$5.8	$5.8	$5.7	$5.6	$5.7
Health and personal care stores	$0.9	$1.0	$1.0	$1.0	$0.7	$0.7	$0.7
Gasoline stations	$4.7	$4.4	$4.3	$4.3	$4.6	$4.5	$4.5
Clothing and clothing accessories stores	N/A	N/A	N/A	$0.3	$0.4	$0.3	$0.3
Sporting goods, hobby, book & music stores	$0.7	$0.4	$0.5	$0.4	$0.4	$0.4	$0.3
General merchandise stores	$5.8	$8.4	$8.8	$8.5	$8.6	$8.9	$9.0
Miscellaneous store retailers	$1.2	$0.9	$0.9	$0.8	$0.8	$1.0	$1.1
Nonstore retailers	N/A	N/A	N/A	N/A	N/A	$3.2	$2.3
Information	$3.4	$3.1	$2.8	$3.2	$3.0	$3.6	$3.2
Financial Activity	$8.6	$9.6	$10.0	$9.1	$9.9	$10.7	$11.1
Professional & Business Services	$24.4	$24.7	N/A	N/A	N/A	$22.6	N/A
Education & Health Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	$10.0	$10.5	$9.8	$9.8	$10.2	$11.4	$11.4
Other Services	$22.8	$24.7	$25.5	$25.2	$20.6	$21.6	$21.8
Government	$90.1	$90.6	$91.5	$93.2	$94.0	$93.6	$95.3
Federal, Civilian	$13.2	$13.7	$13.5	$14.6	$15.2	$15.0	$14.8
Military	$2.0	$2.6	$3.6	$3.7	$4.0	$3.5	$3.3
State	$29.1	$29.5	$28.5	$31.8	$32.2	$33.2	$34.5
Local	$45.8	$44.8	$45.9	$43.1	$42.7	$41.9	$42.7

N/A: Data not shown to avoid disclosure of confidential information or because the data were not available.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Figure 8.3a
Carbon County Nonfarm Earnings by SIC Industry, 1970–2000
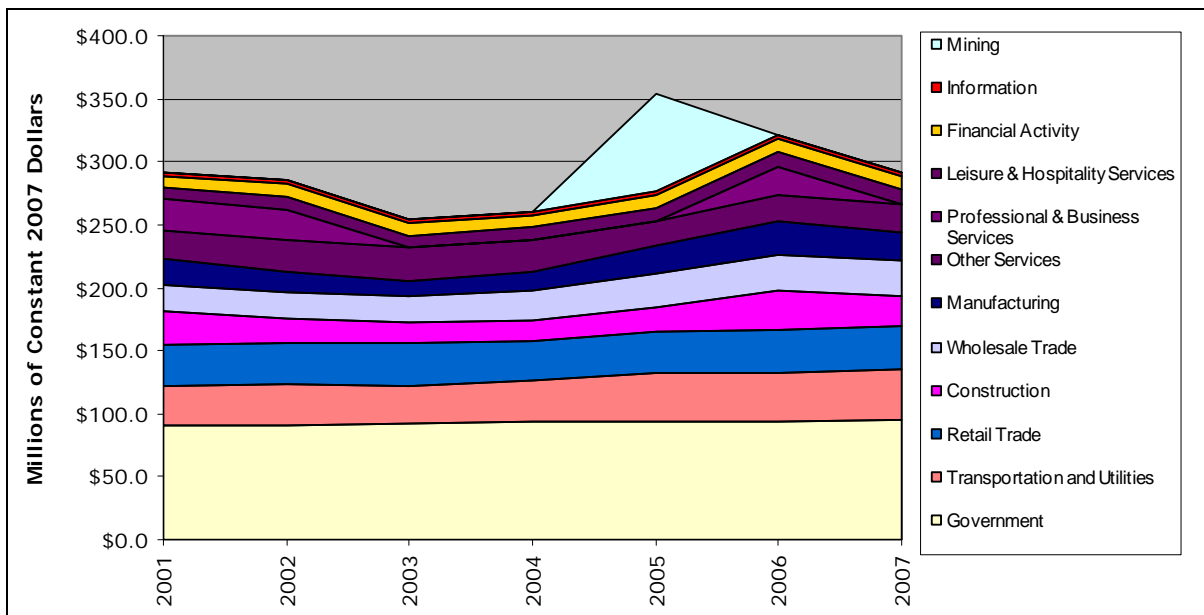

Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Figure 8.3b
Carbon County Nonfarm Earnings by NAICS Industry, 2001–2007

Note: Total earnings appear much lower in 2001 than in 2000 because figures were not reported for several industries.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Table 8.8
Carbon County Nonfarm Earnings Shares by Industry, 1970–2007

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Agricultural Services, Forestry, Fishing	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	N/A	N/A
Mining	30.3%	41.9%	33.4%	32.2%	27.9%	27.6%	24.4%	23.8%	24.0%	24.4%	22.8%	21.4%	20.8%
Metal mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0%	N/A	N/A	N/A	N/A
Coal mining	30.2%	40.0%	32.5%	32.0%	27.6%	26.5%	24.1%	23.3%	N/A	23.7%	21.7%	20.2%	19.0%
Oil and gas extraction	N/A	N/A	0.0%	0.0%	0.0%	N/A	N/A	N/A	N/A	N/A	0.5%	0.7%	N/A
Nonmetallic minerals, except fuels	0.0%	0.0%	N/A	N/A	N/A	0.1%	0.0%	0.0%	N/A	N/A	N/A	N/A	N/A
Construction	4.7%	5.2%	3.3%	2.9%	7.0%	3.4%	3.5%	4.0%	3.7%	4.2%	3.8%	4.6%	4.0%
Manufacturing	2.3%	2.1%	2.6%	2.9%	2.8%	2.9%	3.6%	4.1%	4.7%	4.8%	5.4%	5.1%	5.5%
Petroleum and coal products	0.0%	0.0%	0.0%	0.0%	N/A	0.1%	N/A	N/A	0.6%	0.8%	N/A	N/A	N/A
Transportation and Public Utilities	15.5%	11.7%	8.8%	8.1%	8.2%	9.5%	10.2%	9.8%	10.0%	9.1%	8.7%	8.1%	10.0%
Wholesale Trade	3.0%	5.1%	4.3%	5.2%	5.2%	5.2%	5.6%	6.0%	5.9%	5.9%	5.6%	5.7%	5.9%
Retail Trade	10.9%	8.1%	8.7%	9.4%	9.2%	9.5%	9.9%	9.0%	8.9%	9.0%	9.1%	9.2%	8.8%
Building materials and garden equipment	0.5%	0.7%	0.4%	0.4%	N/A	0.5%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
General merchandise stores	1.7%	1.0%	0.8%	1.3%	N/A	1.5%	1.4%	1.4%	1.4%	1.3%	1.3%	1.5%	1.5%
Food stores	1.6%	1.8%	2.2%	2.2%	2.2%	2.1%	2.1%	2.0%	2.0%	1.9%	2.1%	2.1%	1.8%
Automotive dealers and service stations	3.6%	1.9%	1.8%	1.9%	1.8%	2.2%	2.5%	2.1%	2.1%	2.1%	2.0%	2.0%	2.0%
Apparel and accessory stores	0.4%	0.3%	0.1%	0.2%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Home furniture and furnishings stores	0.5%	0.4%	0.8%	0.7%	0.6%	0.5%	0.5%	0.5%	0.5%	0.5%	0.4%	0.4%	0.4%
Eating and drinking places	1.6%	1.3%	1.7%	1.8%	1.7%	1.7%	1.8%	1.7%	1.6%	1.6%	1.6%	1.6%	1.6%
Miscellaneous retail	0.9%	0.8%	1.0%	0.9%	0.9%	0.9%	1.0%	0.7%	0.8%	1.1%	1.2%	1.2%	1.0%
Finance, Insurance, and Real Estate	2.3%	2.1%	1.7%	1.4%	1.7%	2.1%	1.9%	2.0%	1.9%	2.9%	3.1%	N/A	N/A
Services	9.1%	9.9%	16.4%	17.0%	16.9%	18.7%	19.0%	19.2%	19.0%	18.7%	20.9%	22.0%	20.3%
Government	20.1%	13.8%	20.3%	21.0%	21.0%	21.3%	22.5%	22.9%	22.8%	21.8%	21.5%	22.1%	23.0%
Federal, Civilian	4.2%	2.3%	3.5%	3.7%	3.6%	3.5%	3.8%	3.5%	3.4%	3.4%	3.2%	3.2%	3.5%
Military	0.5%	0.3%	0.7%	0.7%	0.7%	0.7%	0.6%	0.6%	0.5%	0.5%	0.5%	0.5%	0.5%
State	N/A	3.7%	5.5%	6.1%	6.2%	6.3%	6.7%	7.2%	7.1%	7.0%	6.6%	7.0%	7.2%
Local	N/A	7.5%	10.5%	10.6%	10.5%	10.7%	11.3%	11.6%	11.7%	11.0%	11.2%	11.5%	11.8%

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	N/A	N/A	N/A	0.1%	N/A	N/A
Mining	N/A	N/A	N/A	N/A	18.8%	N/A	N/A
Oil and gas extraction	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mining (except oil and gas)	14.3%	15.9%	16.2%	16.9%	16.6%	17.5%	18.7%
Support activities for mining	0.5%	0.9%	0.8%	0.6%	N/A	0.9%	N/A
Construction	7.1%	5.2%	4.4%	4.2%	4.6%	7.3%	5.5%
Manufacturing	5.6%	4.4%	3.3%	3.8%	5.4%	5.9%	5.3%
Petroleum and coal products	N/A	0.0%	0.0%	N/A	N/A	N/A	N/A
Transportation and Utilities	8.5%	8.5%	8.3%	8.6%	9.5%	8.7%	9.2%
Wholesale Trade	5.3%	5.4%	5.8%	6.4%	6.5%	6.4%	6.4%
Retail Trade	8.8%	8.8%	8.9%	8.0%	8.1%	7.9%	7.9%
Motor vehicle and parts dealers	1.5%	1.5%	1.6%	1.5%	1.6%	1.6%	1.7%
Furniture and home furnishings stores	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Electronics and appliance stores	0.1%	0.1%	0.1%	N/A	N/A	0.1%	0.1%
Building material and garden supply stores	0.6%	0.6%	0.5%	0.4%	0.5%	0.5%	0.4%
Food and beverage stores	1.8%	1.6%	1.6%	1.5%	1.4%	1.3%	1.3%
Health and personal care stores	0.2%	0.3%	0.3%	0.3%	0.2%	0.2%	0.2%
Gasoline stations	1.2%	1.2%	1.2%	1.1%	1.1%	1.0%	1.0%
Clothing and clothing accessories stores	N/A	N/A	N/A	0.1%	0.1%	0.1%	0.1%
Sporting goods, hobby, book & music stores	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
General merchandise stores	1.5%	2.2%	2.4%	2.2%	2.1%	2.0%	2.1%
Miscellaneous store retailers	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Nonstore retailers	N/A	N/A	N/A	N/A	N/A	0.7%	0.5%
Information	0.9%	0.8%	0.7%	0.8%	0.7%	0.8%	0.7%
Financial Activity	2.3%	2.5%	2.7%	2.4%	2.4%	2.4%	2.6%
Professional & Business Services	6.5%	6.5%	N/A	N/A	N/A	5.2%	N/A
Education & Health Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	2.7%	2.8%	2.6%	2.6%	2.5%	2.6%	2.6%
Other Services	6.1%	6.5%	6.9%	6.5%	5.1%	4.9%	5.0%
Government	24.0%	23.9%	24.6%	24.1%	23.1%	21.4%	22.0%
Federal, Civilian	3.5%	3.6%	3.6%	3.8%	3.7%	3.4%	3.4%
Military	0.5%	0.7%	1.0%	0.9%	1.0%	0.8%	0.8%
State	7.7%	7.8%	7.7%	8.2%	7.9%	7.6%	8.0%
Local	12.2%	11.8%	12.3%	11.2%	10.5%	9.6%	9.9%

N/A: Data not shown to avoid disclosure of confidential information or because the data were not available.

Source: U.S. Bureau of Economic Analysis, Regional Economic Information System and Bureau of Economic and Business Research, University of Utah.

was transportation and utilities, paying $39.8 million, also only slightly more than in 2000 though its share slipped to 9 percent. Earnings from retail sales were $34.4 million. Note that the NAICS retail trade sector does not match the SIC retail trade sector; for example, eating and drinking places in the SIC system were moved to leisure and hospitality services under the NAICS system. This points to another major difference between SIC and NAICS. Under SIC there was a single service sector; under NAICS services were divided into several sectors which are frequently aggregated into professional and business services, education and health services, leisure and hospitality services, and other services. Because of the increased number of sectors, each sector has fewer firms than the single service sector. Thus, in smaller counties, data may not be disclosed in some sectors to protect firm confidentiality. So in Carbon County in 2007 the only service sectors for which earnings were reported were leisure and hospitality services ($11.4 million) and other services ($21.8 million), which together represented less than 8 percent of total earnings. Together these major sectors—mining (except oil and gas), transportation and utilities, state and local government, retail trade, and services—accounted for 61 percent of the county's nonfarm earnings in 2007.

Using location quotients to compare the distribution of earnings by industry in Carbon County with the country as a whole reveals the importance of coal mining to the county's economy (Table 8.9 and Figure 8.4). In 1970 coal mining's share of nonfarm earnings in the county was more than 110 times its national share. The next highest concentration was in transportation and public utilities, whose local earnings share was just over twice its national share. By 2000 coal mining's share had grown to 182 times the national average and the next highest concentration was in state government, whose local earnings share was 2.3 times the average. Transportation and public utilities' share had fallen to just 50 percent above average. In 2007, under the NAICS classification system, mining (except oil and gas) had a share of county earnings that was more than 75 times the national average. There was still a significant concentration in state government, at 2.5 times the average, and transportation and utilities was back up to a share more than twice the average. Note also that Carbon County has above-average earnings shares in several retail trade categories, including general merchandise stores, food stores, car dealers, and gas stations.

Table 8.9
Carbon County Nonfarm Earnings Location Quotients by Industry, 1970–2007

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Agricultural Services, Forestry, Fishing	0.41	0.21	0.12	0.14	0.16	0.20	0.17	0.17	0.15	0.27	0.26	N/A	N/A
Mining	28.65	20.14	30.60	32.96	29.67	30.14	27.65	28.17	26.77	25.24	24.12	24.87	21.85
Metal mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	N/A	N/A	N/A	N/A
Coal mining	110.63	74.22	138.93	145.50	135.18	144.70	135.63	141.40	N/A	162.46	153.86	154.23	182.14
Oil and gas extraction	N/A	N/A	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A	0.84	1.27	N/A
Nonmetallic minerals, except fuels	0.00	0.00	N/A	N/A	N/A	0.54	0.31	0.30	N/A	N/A	N/A	N/A	N/A
Construction	0.74	0.84	0.57	0.55	1.38	0.66	0.65	0.75	0.68	0.76	0.67	0.79	0.68
Manufacturing	0.09	0.09	0.14	0.15	0.15	0.16	0.19	0.22	0.27	0.28	0.31	0.31	0.33
Petroleum and coal products	0.00	0.00	0.00	0.00	N/A	0.30	N/A	N/A	3.03	3.68	N/A	N/A	N/A
Transportation and Public Utilities	2.15	1.56	1.35	1.22	1.24	1.40	1.48	1.42	1.44	1.36	1.30	1.19	1.48
Wholesale Trade	0.51	0.77	0.68	0.82	0.85	0.86	0.92	0.97	0.96	0.95	0.89	0.91	0.94
Retail Trade	1.00	0.82	0.95	1.03	1.02	1.06	1.10	1.00	1.01	1.02	1.04	1.05	1.02
Building materials and garden equipment	0.72	1.29	0.80	0.87	N/A	0.97	0.89	0.81	0.84	0.82	0.83	0.70	0.87
General merchandise stores	0.90	0.80	0.72	1.24	N/A	1.45	1.36	1.37	1.41	1.34	1.43	1.63	1.59
Food stores	0.94	1.00	1.46	1.43	1.45	1.43	1.49	1.46	1.46	1.40	1.60	1.61	1.51
Automotive dealers and service stations	1.75	1.10	1.18	1.26	1.30	1.50	1.63	1.42	1.38	1.41	1.36	1.35	1.37
Apparel and accessory stores	0.59	0.53	0.27	0.30	0.28	0.31	0.41	0.31	0.27	0.21	0.22	0.22	0.17
Home furniture and furnishings stores	0.87	0.72	1.26	1.33	1.20	1.04	0.97	0.92	0.99	0.97	0.70	0.66	0.60
Eating and drinking places	0.89	0.64	0.83	0.86	0.79	0.82	0.87	0.80	0.78	0.75	0.76	0.76	0.80
Miscellaneous retail	0.65	0.52	0.67	0.64	0.63	0.62	0.69	0.46	0.55	0.77	0.83	0.80	0.68
Finance, Insurance, and Real Estate	0.43	0.36	0.26	0.21	0.23	0.26	0.25	0.25	0.22	0.33	0.32	N/A	N/A
Services	0.59	0.54	0.65	0.66	0.65	0.71	0.73	0.72	0.71	0.69	0.75	0.79	0.71
Government	1.11	0.78	1.14	1.14	1.16	1.18	1.26	1.31	1.34	1.31	1.34	1.42	1.50
Federal, Civilian	0.94	0.52	0.91	0.92	0.92	0.90	1.00	0.95	0.96	0.99	1.01	1.03	1.16
Military	0.20	0.16	0.37	0.34	0.34	0.36	0.38	0.36	0.36	0.34	0.36	0.38	0.40
State	N/A	1.12	1.55	1.66	1.73	1.77	1.87	2.03	2.04	2.06	2.02	2.19	2.31
Local	N/A	0.93	1.24	1.21	1.21	1.23	1.29	1.34	1.37	1.30	1.36	1.42	1.49

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	N/A	N/A	N/A	0.19	N/A	N/A
Mining	N/A	N/A	N/A	N/A	16.92	N/A	N/A
Oil and gas extraction	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mining (except oil and gas)	63.00	71.23	75.31	73.55	70.61	71.72	75.62
Support activities for mining	2.53	5.11	4.46	2.95	3.24	N/A	
Construction	1.16	0.85	0.73	0.69	0.72	1.12	0.90
Manufacturing	0.40	0.32	0.25	0.30	0.44	0.47	0.44
Petroleum and coal products	N/A	0.00	0.00	N/A	N/A	N/A	N/A
Transportation and Utilities	1.86	1.93	1.91	1.93	2.19	2.03	2.12
Wholesale Trade	1.02	1.05	1.14	1.24	1.24	1.22	1.21
Retail Trade	1.29	1.28	1.32	1.23	1.25	1.25	1.28
Motor vehicle and parts dealers	1.09	1.06	1.14	1.11	1.18	1.23	1.40
Furniture and home furnishings stores	0.88	0.72	0.58	0.78	0.78	0.65	0.70
Electronics and appliance stores	0.34	0.27	0.30	N/A	N/A	0.21	0.20
Building material and garden supply stores	1.04	1.01	0.93	0.62	0.84	0.78	0.79
Food and beverage stores	1.71	1.51	1.48	1.47	1.42	1.34	1.42
Health and personal care stores	0.56	0.59	0.57	0.57	0.38	0.37	0.33
Gasoline stations	3.56	3.49	3.57	3.61	3.69	3.54	3.63
Clothing and clothing accessories stores	N/A	N/A	N/A	0.17	0.19	0.17	0.18
Sporting goods, hobby, book & music stores	0.86	0.48	0.60	0.50	0.47	0.43	0.41
General merchandise stores	1.80	2.44	2.60	2.48	2.36	2.31	2.38
Miscellaneous store retailers	0.68	0.55	0.59	0.56	0.50	0.62	0.70
Nonstore retailers	N/A	N/A	N/A	N/A	N/A	2.31	1.62
Information	0.21	0.20	0.20	0.22	0.21	0.23	0.21
Financial Activity	0.23	0.26	0.27	0.24	0.24	0.24	0.26
Professional & Business Services	0.43	0.44	N/A	N/A	N/A	0.33	N/A
Education & Health Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	0.72	0.73	0.68	0.66	0.65	0.68	0.68
Other Services	2.10	2.17	2.27	2.22	1.74	1.73	1.76
Government	1.53	1.46	1.47	1.45	1.39	1.30	1.34
Federal, Civilian	1.17	1.15	1.16	1.18	1.17	1.10	1.10
Military	0.42	0.48	0.62	0.59	0.59	0.49	0.46
State	2.42	2.35	2.23	2.52	2.45	2.38	2.49
Local	1.49	1.39	1.43	1.31	1.23	1.13	1.16

Note: Values greater than 1.00 indicate concentrations relative to the country.

Source: U.S. Bureau of Economic Analysis, Regional Economic Information System and Bureau of Economic and Business Research, University of Utah.

Figure 8.4
Carbon County Basic Industries' Location Quotients, 2001–2007
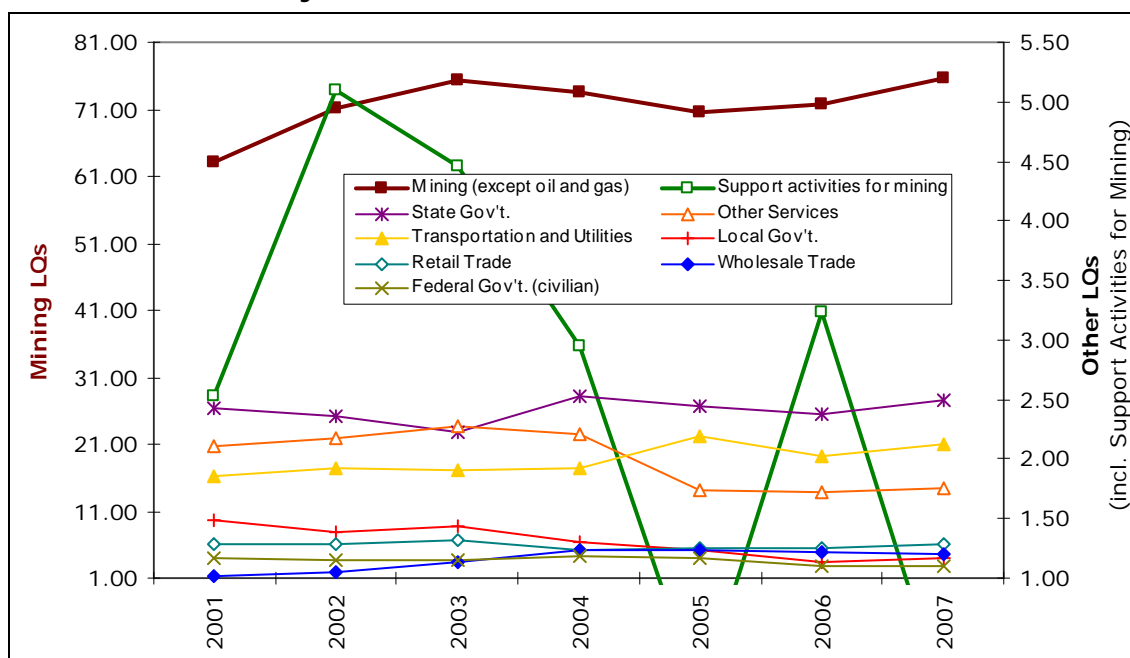
Source: U.S. Bureau of Economic Analysis and Bureau of Economic and Business Research, University of Utah.

8.2.1.3 Retail Sales

<table>
<tr><td colspan="9">**Table 8.10**
Carbon County Retail Sales by Category, 1978–2008
(Thousands of Constant 2008 Dollars)</td></tr>
<tr>
<th>Year</th>
<th>Building & Garden</th>
<th>General Merchandise</th>
<th>Food Stores</th>
<th>Motor Vehicle Dealers</th>
<th>Apparel & Accessory</th>
<th>Furniture</th>
<th>Eating & Drinking</th>
<th>Miscellaneous</th>
</tr>
<tr><td>1978</td><td>$19,792.8</td><td>$62,582.2</td><td>N/A</td><td>$57,803.3</td><td>$7,340.6</td><td>$8,987.8</td><td>$15,982.0</td><td>$25,072.3</td></tr>
<tr><td>1979</td><td>$25,578.1</td><td>$68,915.1</td><td>N/A</td><td>$54,793.0</td><td>$6,975.5</td><td>$9,523.4</td><td>$16,981.5</td><td>$22,026.0</td></tr>
<tr><td>1980</td><td>$23,772.4</td><td>$68,718.2</td><td>N/A</td><td>$39,466.4</td><td>$6,844.9</td><td>$10,149.2</td><td>$14,870.0</td><td>$18,949.0</td></tr>
<tr><td>1990</td><td>$11,439.0</td><td>$54,172.0</td><td>N/A</td><td>$29,331.2</td><td>$4,536.6</td><td>$7,580.8</td><td>$16,380.6</td><td>$38,301.9</td></tr>
<tr><td>1991</td><td>$10,712.8</td><td>$49,812.8</td><td>N/A</td><td>$25,048.3</td><td>$2,435.7</td><td>$4,758.4</td><td>$15,367.4</td><td>$25,252.9</td></tr>
<tr><td>1992</td><td>$10,426.5</td><td>$52,324.1</td><td>N/A</td><td>$31,080.6</td><td>$2,611.4</td><td>$5,080.1</td><td>$16,074.5</td><td>$13,301.5</td></tr>
<tr><td>1993</td><td>$6,009.8</td><td>$49,533.0</td><td>N/A</td><td>$37,085.3</td><td>$2,798.3</td><td>$6,670.3</td><td>$16,745.6</td><td>$11,431.6</td></tr>
<tr><td>1994</td><td>$6,491.6</td><td>$51,335.1</td><td>N/A</td><td>$41,561.8</td><td>$3,270.7</td><td>$7,217.7</td><td>$17,222.8</td><td>$12,468.5</td></tr>
<tr><td>1995</td><td>$6,993.9</td><td>$52,471.0</td><td>N/A</td><td>$48,647.8</td><td>$2,609.2</td><td>$7,173.3</td><td>$16,869.4</td><td>$11,301.0</td></tr>
<tr><td>1996</td><td>$8,333.6</td><td>$55,196.6</td><td>N/A</td><td>$45,360.7</td><td>$2,843.8</td><td>$6,772.4</td><td>$17,136.5</td><td>$9,848.8</td></tr>
<tr><td>1997</td><td>$8,599.0</td><td>$56,294.6</td><td>N/A</td><td>$44,656.4</td><td>$1,931.9</td><td>$7,150.1</td><td>$17,947.3</td><td>$10,889.5</td></tr>
<tr><td>1998</td><td>$11,173.4</td><td>$57,133.8</td><td>N/A</td><td>$40,640.7</td><td>$1,917.1</td><td>$7,223.6</td><td>$16,815.1</td><td>$13,537.5</td></tr>
<tr><td>1999</td><td>$12,353.4</td><td>$55,009.7</td><td>N/A</td><td>$38,259.2</td><td>$1,661.4</td><td>$7,070.6</td><td>$18,344.0</td><td>$14,602.7</td></tr>
<tr><td>2000</td><td>$9,579.0</td><td>$53,915.9</td><td>N/A</td><td>$37,262.4</td><td>$1,140.3</td><td>$6,603.6</td><td>$18,064.6</td><td>$15,466.8</td></tr>
<tr><td>2001</td><td>$10,336.3</td><td>$50,828.5</td><td>$46,592.1</td><td>$40,943.0</td><td>$1,061.3</td><td>$6,076.8</td><td>$17,303.0</td><td>$15,696.3</td></tr>
<tr><td>2002</td><td>$11,195.4</td><td>$66,765.0</td><td>$37,758.2</td><td>$46,921.8</td><td>$892.4</td><td>$6,238.6</td><td>$17,592.9</td><td>$15,100.8</td></tr>
<tr><td>2003</td><td>$8,268.6</td><td>$68,744.6</td><td>$30,848.3</td><td>$44,485.7</td><td>$760.6</td><td>$6,054.8</td><td>$16,486.9</td><td>$15,479.5</td></tr>
<tr><td>2004</td><td>$7,344.3</td><td>$68,615.3</td><td>$31,389.7</td><td>$48,709.0</td><td>$673.2</td><td>$5,147.3</td><td>$17,335.5</td><td>$20,980.4</td></tr>
<tr><td>2005</td><td>$13,426.5</td><td>$71,476.8</td><td>$32,742.2</td><td>$51,189.2</td><td>$1,547.9</td><td>$6,227.4</td><td>$19,890.8</td><td>$22,301.2</td></tr>
<tr><td>2006</td><td>$12,906.9</td><td>$74,277.2</td><td>$37,651.0</td><td>$51,509.7</td><td>$1,578.6</td><td>$6,126.3</td><td>$21,222.6</td><td>$25,825.7</td></tr>
<tr><td>2007</td><td>$14,653.9</td><td>$74,133.4</td><td>$31,643.5</td><td>$65,122.3</td><td>$1,675.7</td><td>$5,955.4</td><td>$20,184.1</td><td>$23,298.1</td></tr>
<tr><td>2008</td><td>$12,886.6</td><td>$77,395.7</td><td>$30,164.3</td><td>$60,225.4</td><td>$2,150.2</td><td>$11,329.3</td><td>$20,206.0</td><td>$19,348.2</td></tr>
<tr><td>Change</td><td>−34.9%</td><td>23.7%</td><td></td><td>4.2%</td><td>−70.7%</td><td>26.1%</td><td>26.4%</td><td>−22.8%</td></tr>
<tr><td>AARC</td><td>−1.4%</td><td>0.7%</td><td>−6.0%</td><td>0.1%</td><td>−4.0%</td><td>0.8%</td><td>0.8%</td><td>−0.9%</td></tr>
</table>

NA: Not available; amounts for this category were not reported. The Tax Commission did not publish sales figures for Food Stores prior to 2002. In the quarterly sales data for 2001-06 there are two General Merchandise categories; the second of these generally corresponds to the Food Stores figures from the 2002-06 *annual* sales data. In several counties the amounts for General Merchandise sales in 1978 through 2000 matched up with the 2001-06 Food Stores sales and so have been reclassified into the latter category.
Source: Utah State Tax Commission.

<table>
<tr><td colspan="3">**Table 8.11**
2008 Retail Sales in Carbon County</td></tr>
<tr><th>Category</th><th>Amount</th><th>Share</th></tr>
<tr><td>Building & Garden</td><td>$12,886,582</td><td>5.5%</td></tr>
<tr><td>General Merchandise</td><td>$77,395,689</td><td>33.1%</td></tr>
<tr><td>Food Stores</td><td>$30,164,267</td><td>12.9%</td></tr>
<tr><td>Motor Vehicle Dealers</td><td>$60,225,377</td><td>25.8%</td></tr>
<tr><td>Apparel & Accessory</td><td>$2,150,167</td><td>0.9%</td></tr>
<tr><td>Furniture</td><td>$11,329,317</td><td>4.8%</td></tr>
<tr><td>Eating & Drinking</td><td>$20,205,998</td><td>8.6%</td></tr>
<tr><td>Miscellaneous</td><td>$19,348,165</td><td>8.3%</td></tr>
<tr><td>Total</td><td>$233,705,562</td><td>100%</td></tr>
<tr><td colspan="3">*Source: Utah State Tax Commission.*</td></tr>
</table>

8.2.1.4 Residential Construction

Exhibit 8.9
Permit-Authorized New Dwelling Units and Value of Residential Construction in Carbon County, 1975–2008

Year	Single-Family Homes	Duplexes and Twin Homes	Condominiums	Apartments (3 or more units)	Cabins	Manufactured / Mobile Homes	Total	Value (thousands of constant 2008 dollars)
1975	107	12	0	0	0	0	119	$12,808.0
1980	128	4	0	4	0	50	186	$16,167.1
1990	17	0	0	0	0	0	17	$2,370.7
1991	17	0	0	0	2	21	40	$2,583.4
1992	18	0	0	0	2	19	39	$2,496.1
1993	24	0	0	0	0	12	36	$2,873.3
1994	33	0	0	0	0	29	62	$4,337.4
1995	26	4	0	0	1	35	66	$3,770.5
1996	26	0	0	0	2	65	93	$3,765.3
1997	22	2	0	0	2	62	88	$3,452.4
1998	35	0	0	0	7	128	170	$16,689.2
1999	37	0	0	72	8	100	217	$19,441.5
2000	19	0	0	0	9	64	92	$4,740.4
2001	18	0	0	0	13	36	67	$5,378.9
2002	27	0	0	0	10	44	81	$5,202.9
2003	29	2	0	0	8	40	79	$7,434.2
2004	23	0	0	0	11	36	70	$8,552.4
2005	32	0	0	0	6	22	60	$6,500.5
2006	47	0	0	0	2	23	72	$10,054.0
2007	52	0	0	0	18	40	110	$17,557.9
2008	29	0	4	0	7	17	57	$9,177.4

New Single-Family Homes and Total Residential Construction Value

Note: Prior to 1994, condos and other multifamily units were grouped together.
Source: Bureau of Economic and Business Research, University of Utah.

8.2.1.5 Nonresidential Construction

Exhibit 8.10
Value of Nonresidential Construction in Carbon County, 1975–2008
(Thousands of Constant 2008 Dollars)

Year	Hotels & Motels	Churches & Other Religious	Industrial / Warehouse / Manufacturing	Hospital & Institutional	Office, Bank, Professional	Retail, Mercantile, Restaurant	Public Buildings & Projects	Other*	Additions and Alterations	Total
1975	$0.0	$0.0	$0.0	$0.0	$1,311.2	$3,198.6	$0.0	$603.4	$0.0	$5,113.2
1980	$0.0	$3,612.4	$2,308.5	$1,235.3	$482.3	$2,877.8	$886.2	$2,593.3	$1,322.1	$15,318.0
1990	$0.0	$0.0	$7,111.2	$0.0	$0.0	$2,954.6	$1,852.4	$630.9	$582.6	$13,131.7
1991	$0.0	$0.0	$974.1	$0.0	$31.5	$78.7	$0.0	$695.9	$1,507.9	$3,288.1
1992	$0.0	$1.5	$7.7	$1.5	$0.0	$1.5	$0.0	$10,421.6	$92.8	$10,526.8
1993	$0.0	$1,021.6	$539.8	$614.5	$0.0	$300.5	$0.0	$1,082.3	$2,013.2	$5,571.8
1994	$0.0	$904.7	$959.9	$0.0	$114.5	$0.0	$2,605.9	$1,569.1	$1,066.8	$7,221.0
1995	$0.0	$0.0	$1,910.1	$926.7	$2.9	$7.2	$0.0	$1,121.8	$1,597.8	$5,566.4
1996	$0.0	$0.0	$11,350.7	$0.0	$150.5	$83.2	$2,708.8	$717.1	$2,789.6	$17,799.8
1997	$0.0	$189.4	$1,953.8	$0.0	$467.5	$1,633.1	$0.0	$1,220.7	$2,253.2	$7,717.7
1998	$0.0	$0.0	$14,896.5	$0.0	$0.0	$1,272.7	$0.0	$1,155.7	$2,450.6	$19,775.5
1999	$0.0	$0.0	$7,281.6	$0.0	$47.5	$1,362.9	$0.0	$2,163.8	$1,295.0	$12,150.8
2000	$0.0	$8.4	$2,127.0	$0.0	$377.0	$345.6	$0.0	$479.5	$6,075.8	$9,413.2
2001	$0.0	$1,169.1	$1,963.0	$8.0	$92.7	$7,730.5	$0.0	$351.7	$608.8	$11,923.8
2002	$0.0	$0.0	$2,823.8	$356.8	$1,453.1	$570.8	$0.0	$908.1	$2,587.4	$8,699.9
2003	$0.0	$164.9	$383.3	$774.0	$387.2	$409.1	$0.0	$345.2	$1,784.7	$4,248.4
2004	$0.0	$0.0	$6,689.0	$271.4	$455.2	$261.8	$0.0	$620.5	$975.9	$9,273.7
2005	$0.0	$0.0	$297.9	$0.0	$545.6	$60.5	$29.7	$1,326.6	$1,845.2	$4,105.6
2006	$0.0	$0.0	$1,344.7	$0.0	$0.0	$31.9	$1,601.7	$356.1	$966.9	$4,301.3
2007	$0.0	$1,948.9	$1,263.6	$258.8	$1,549.5	$1,583.2	$414.0	$834.9	$853.4	$8,706.3
2008	$0.0	$0.0	$1,328.9	$0.0	$1,074.9	$1,400.0	$4,895.1	$1,007.3	$2,045.0	$11,751.2
1990–2008 Total	$0.0	$5,408.7	$65,206.5	$3,211.7	$6,749.6	$20,087.7	$14,107.6	$27,008.6	$33,392.4	$175,172.9

* Other includes school and educational buildings, service stations and repair garages, agricultural buildings, and structures other than buildings.

Total Value of Nonresidential Construction
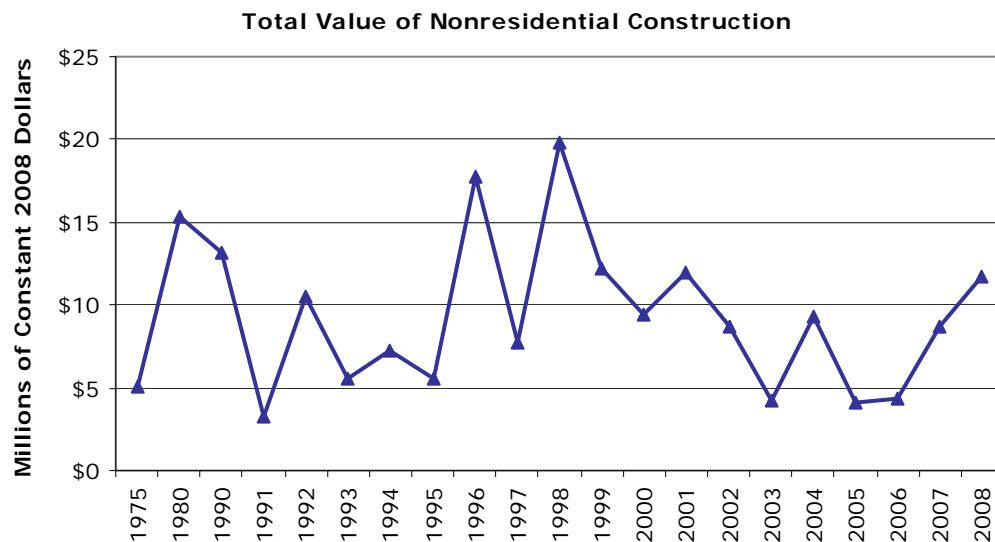
Source: Bureau of Economic and Business Research, University of Utah.

8.2.2 Emery County

8.2.2.1 Employment

Emery County's total employment[74] grew 2.8 percent annually from 2,083 in 1970 to 5,814 in 2007. This was the fastest growth of the three coal counties, though Emery has the smallest employment base, about half that of Carbon and Sevier. However, as Exhibit 8.11 shows, Emery's current employment remains well below its 1982 peak of 7,031. The county's economy boomed from 1971 to 1982, with total employment growing 260 percent. Mining alone contributed more than one-third of the total job growth over this period, expanding by more than 500 percent. Then employment dropped almost 30 percent in just two years to 5,074. It was essentially flat for the next decade and has grown slowly since 1995, up 16 percent in the 12 years to 2007.

As in Carbon County, nonfarm proprietors' employment was the fastest-growing type of employment in Emery County, growing 3.6 percent annually between 1970 and 2007 from 326 to 1,196. Nonfarm proprietors' share of total employment increased over the period—after a dip to 7 percent in 1980—from almost 16 percent to almost 21 percent. Wage and salary employment grew 3 percent annually, almost tripling from 1,404 in 1970 to 4,121 in 2007. However, this was subject to the boom, bust, and subsequent slow growth noted above; in fact, 2007 wage and salary employment was essentially unchanged from its 1984 level of 4,108. Proprietors' employment did not experience the boom and bust of the 1970s and early '80s but grew more steadily over the study period.

Looking at employment by broad industry, Emery was unique among the three study counties in that it was the only one in which there were more farm jobs in 2007 than in 1970. Although farm employment grew 31 percent from 409 to 536 over the period, it has been slowly declining since reaching a high of 566 jobs in 2000. It currently represents 9 percent of total employment, down from nearly 20 percent in 1970. Nonfarm employment more than tripled between 1970 and 2007, from 1,674 to 5,278. However, this closely followed the boom and bust noted above, and 2007's nonfarm jobs were still below the county's 1982 peak of 6,531.

Within nonfarm employment, in 1970 mining, state and local government, and retail trade were the largest sectors, providing 397, 365, and 248 jobs respectively (Table 8.12). Together they accounted for nearly half of all farm and nonfarm employment, with mining alone capturing almost 20 percent (Table 8.13). After peaking at nearly 40 percent of total employment in 1980, mining had shrunk to 15 percent by 2000, with 816 jobs. However, it was second only to services (18.5 percent), and was followed by local government and retail trade (each about 14 percent) and transportation and utilities (12 percent). As of 2007 mining employment was not disclosed to protect firm confidentiality. The largest known sectors were retail trade (13 percent), local government (12 percent), and construction (10 percent).

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[74] Total employment covers farm and nonfarm employment, and proprietors' and wage and salary employment, and counts full- and part-time jobs equally.

Exhibit 8.11
Emery County Employment Summary, 1970–2007

	1970	1980	1990	2000	2001	2002	2003	2004	2005	2006	2007	Change	AARC
Total Employment	2,083	5,508	5,063	5,377	5,333	5,259	5,408	5,625	5,680	5,843	5,814	179.1%	2.8%
Employment by Type													
Wage and Salary Employment	1,404	4,709	3,873	3,826	3,819	3,773	3,869	3,992	4,050	4,158	4,121	193.5%	3.0%
Proprietors' Employment	679	799	1,190	1,551	1,514	1,486	1,539	1,633	1,630	1,685	1,693	149.3%	2.5%
Farm Proprietors' Employment	353	406	431	519	516	519	507	505	507	502	497	40.8%	0.9%
Nonfarm Proprietors' Employment	326	393	759	1,032	998	967	1,032	1,128	1,123	1,183	1,196	266.9%	3.6%
Employment by Industry													
Farm Employment	409	471	498	566	564	559	555	550	554	547	536	31.1%	0.7%
Nonfarm Employment	1,674	5,037	4,565	4,811	4,769	4,700	4,853	5,075	5,126	5,296	5,278	215.3%	3.2%
Private Employment	1,194	4,334	3,698	3,895	3,855	3,802	3,972	4,165	4,244	4,413	4,397	268.3%	3.6%
Government Employment	480	703	867	916	914	898	881	910	882	883	881	83.5%	1.7%
Shares by Type													
Wage and Salary Employment	67.4%	85.5%	76.5%	71.2%	71.6%	71.7%	71.5%	71.0%	71.3%	71.2%	70.9%		
Proprietors' Employment	32.6%	14.5%	23.5%	28.8%	28.4%	28.3%	28.5%	29.0%	28.7%	28.8%	29.1%		
Farm Proprietors' Employment	16.9%	7.4%	8.5%	9.7%	9.7%	9.9%	9.4%	9.0%	8.9%	8.6%	8.5%		
Nonfarm Proprietors' Employment	15.7%	7.1%	15.0%	19.2%	18.7%	18.4%	19.1%	20.1%	19.8%	20.2%	20.6%		
Shares by Industry													
Farm Employment	19.6%	8.6%	9.8%	10.5%	10.6%	10.6%	10.3%	9.8%	9.8%	9.4%	9.2%		
Nonfarm Employment	80.4%	91.4%	90.2%	89.5%	89.4%	89.4%	89.7%	90.2%	90.2%	90.6%	90.8%		
Private Employment	57.3%	78.7%	73.0%	72.4%	72.3%	72.3%	73.4%	74.0%	74.7%	75.5%	75.6%		
Government Employment	23.0%	12.8%	17.1%	17.0%	17.1%	17.1%	16.3%	16.2%	15.5%	15.1%	15.2%		
Location Quotients by Type													
Wage and Salary Employment	0.78	1.00	0.91	0.85	0.86	0.87	0.87	0.87	0.88	0.89	0.89	13.4%	0.3%
Proprietors' Employment	2.38	1.01	1.50	1.73	1.68	1.63	1.58	1.56	1.50	1.47	1.46	−38.8%	−1.3%
Farm Proprietors' Employment	5.69	3.37	5.31	7.25	7.39	7.45	7.32	7.21	7.29	7.24	7.39	29.7%	0.7%
Nonfarm Proprietors' Employment	1.46	0.59	1.07	1.25	1.20	1.14	1.14	1.16	1.11	1.10	1.09	−25.2%	−0.8%
Location Quotients by Industry													
Farm Employment	4.52	2.57	4.35	5.64	5.78	5.76	5.67	5.65	5.83	5.82	5.87	29.8%	0.7%
Nonfarm Employment	0.84	0.95	0.92	0.91	0.91	0.91	0.91	0.92	0.92	0.92	0.92	9.8%	0.3%
Private Employment	0.73	0.98	0.89	0.86	0.86	0.86	0.87	0.88	0.88	0.89	0.89	21.1%	0.5%
Government Employment	1.31	0.78	1.12	1.24	1.23	1.21	1.15	1.16	1.13	1.12	1.13	−13.6%	−0.4%

Note: Location quotient values greater than 1.00 indicate concentrations relative to the country.

Employment by Type and Industry, 1970-2007
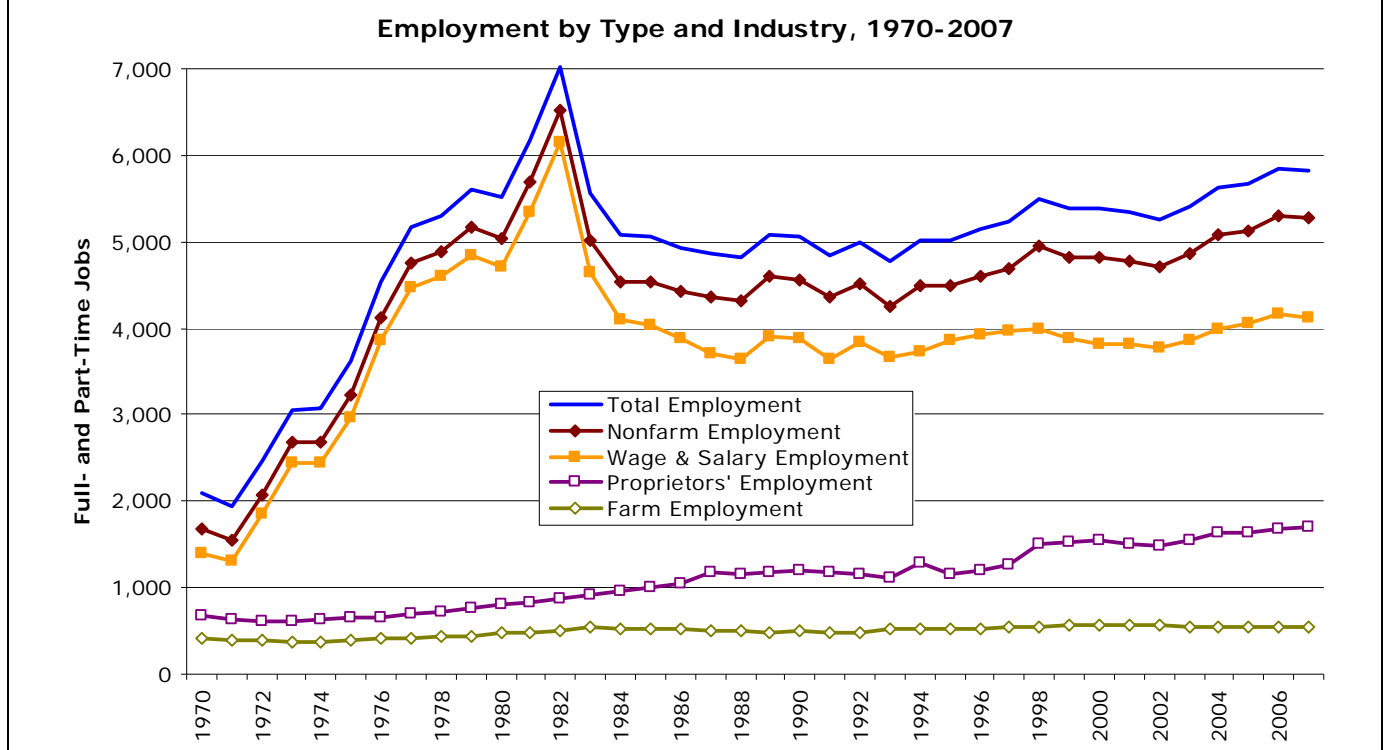
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System and Bureau of Economic and Business Research, University of Utah.

Table 8.12
Emery County Nonfarm Employment by Industry, 1970–2007

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Ag Services, Forestry, and Fishing	N/A	15	45	35	42	53	74	55	65	58	N/A	N/A	N/A
Mining	397	2,144	1,027	778	913	923	912	885	862	926	878	858	816
Construction	161	602	353	365	429	258	287	320	366	393	490	424	407
Manufacturing	43	29	35	36	37	38	62	50	35	35	35	37	31
Transportation and Public Utilities	N/A	N/A	801	813	N/A	N/A	N/A	N/A	N/A	N/A	716	676	663
Wholesale Trade	16	39	32	33	49	36	46	38	49	43	N/A	N/A	N/A
Retail Trade	248	435	637	645	613	564	617	590	662	641	697	729	732
Finance, Insurance, and Real Estate	56	94	84	69	68	79	70	90	105	105	156	144	158
Services	N/A	N/A	684	693	N/A	N/A	N/A	N/A	N/A	N/A	918	964	993
Government	480	703	867	884	882	880	911	916	945	987	968	918	916
Federal, Civilian	60	49	52	49	52	49	50	49	48	43	47	50	61
Military	55	70	81	77	73	71	66	60	60	59	58	56	56
State	N/A	27	68	70	73	76	73	73	74	75	78	53	54
Local	N/A	557	666	688	684	684	722	734	763	810	785	759	745

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Construction	386	437	458	446	406	492	600
Manufacturing	62	63	75	76	70	67	80
Transportation and Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wholesale Trade	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail Trade	618	592	604	668	683	703	748
Information	169	151	163	161	149	144	148
Financial Activity	N/A	N/A	N/A	N/A	N/A	207	N/A
Professional & Business Services	269	235	272	N/A	N/A	N/A	N/A
Education & Health Services	151	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	292	301	324	363	361	356	N/A
Other Services	386	405	410	421	416	428	408
Government	914	898	881	910	882	883	881
Federal, Civilian	56	66	60	62	61	57	59
Military	55	55	55	52	53	51	46
State	56	57	56	57	58	64	64
Local	747	720	710	739	710	711	712

N/A: Data not shown to avoid disclosure of confidential information or because the data were not available.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Figure 8.5a
Emery County Nonfarm Employment by SIC Industry, 1970–2000

Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Figure 8.5b
Emery County Nonfarm Employment by NAICS Industry, 2001–2007

Note: Total employment appears much lower in 2001 than in 2000 because figures were not reported for several industries.
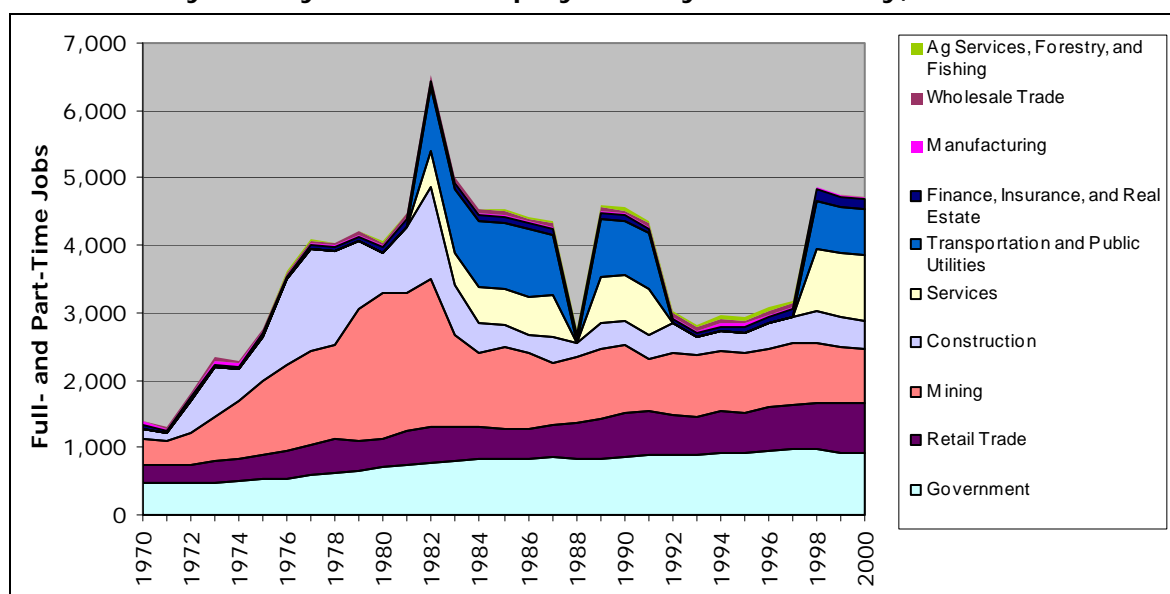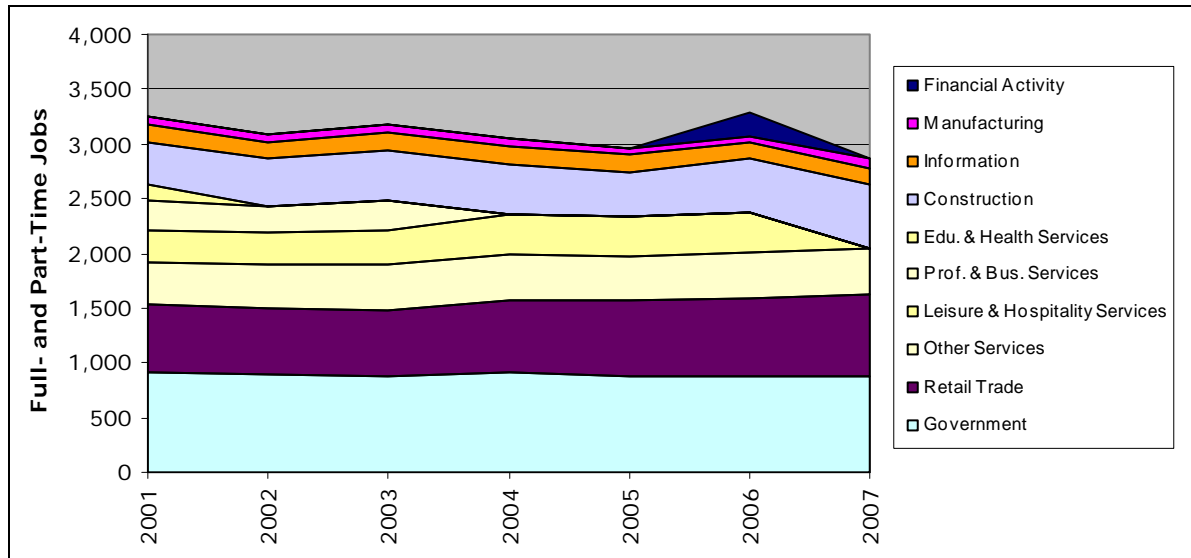*Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.*

Table 8.13
Emery County Nonfarm Employment Shares by Industry, 1970–2007

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Ag Services, Forestry, and Fishing	N/A	0.3%	0.9%	0.7%	0.8%	1.1%	1.5%	1.1%	1.3%	1.1%	N/A	N/A	N/A
Mining	19.1%	38.9%	20.3%	16.1%	18.3%	19.3%	18.2%	17.7%	16.8%	17.7%	15.9%	15.9%	15.2%
Construction	7.7%	10.9%	7.0%	7.5%	8.6%	5.4%	5.7%	6.4%	7.1%	7.5%	8.9%	7.9%	7.6%
Manufacturing	2.1%	0.5%	0.7%	0.7%	0.7%	0.8%	1.2%	1.0%	0.7%	0.7%	0.6%	0.7%	0.6%
Transportation and Public Utilities	N/A	N/A	15.8%	16.8%	N/A	N/A	N/A	N/A	N/A	N/A	13.0%	12.5%	12.3%
Wholesale Trade	0.8%	0.7%	0.6%	0.7%	1.0%	0.8%	0.9%	0.8%	1.0%	0.8%	N/A	N/A	N/A
Retail Trade	11.9%	7.9%	12.6%	13.3%	12.3%	11.8%	12.3%	11.8%	12.9%	12.2%	12.7%	13.5%	13.6%
Finance, Insurance, and Real Estate	2.7%	1.7%	1.7%	1.4%	1.4%	1.7%	1.4%	1.8%	2.0%	2.0%	2.8%	2.7%	2.9%
Services	N/A	N/A	13.5%	14.3%	N/A	N/A	N/A	N/A	N/A	N/A	16.7%	17.9%	18.5%
Government	23.0%	12.8%	17.1%	18.3%	17.7%	18.4%	18.2%	18.3%	18.4%	18.8%	17.6%	17.0%	17.0%
Federal, Civilian	2.9%	0.9%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.9%	0.8%	0.9%	0.9%	1.1%
Military	2.6%	1.3%	1.6%	1.6%	1.5%	1.5%	1.3%	1.2%	1.2%	1.1%	1.1%	1.0%	1.0%
State	N/A	0.5%	1.3%	1.4%	1.5%	1.6%	1.5%	1.5%	1.4%	1.4%	1.4%	1.0%	1.0%
Local	N/A	10.1%	13.2%	14.2%	13.7%	14.3%	14.4%	14.6%	14.9%	15.5%	14.3%	14.1%	13.9%

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Construction	7.2%	8.3%	8.5%	7.9%	7.1%	8.4%	10.3%
Manufacturing	1.2%	1.2%	1.4%	1.4%	1.2%	1.1%	1.4%
Transportation and Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wholesale Trade	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail Trade	11.6%	11.3%	11.2%	11.9%	12.0%	12.0%	12.9%
Information	3.2%	2.9%	3.0%	2.9%	2.6%	2.5%	2.5%
Financial Activity	N/A	N/A	N/A	N/A	N/A	3.5%	N/A
Professional & Business Services	5.0%	4.5%	5.0%	N/A	N/A	N/A	N/A
Education & Health Services	2.8%	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	5.5%	5.7%	6.0%	6.5%	6.4%	6.1%	N/A
Other Services	7.2%	7.7%	7.6%	7.5%	7.3%	7.3%	7.0%
Government	17.1%	17.1%	16.3%	16.2%	15.5%	15.1%	15.2%
Federal, Civilian	1.1%	1.3%	1.1%	1.1%	1.1%	1.0%	1.0%
Military	1.0%	1.0%	1.0%	0.9%	0.9%	0.9%	0.8%
State	1.1%	1.1%	1.0%	1.0%	1.0%	1.1%	1.1%
Local	14.0%	13.7%	13.1%	13.1%	12.5%	12.2%	12.2%

Shares are of total farm and nonfarm employment.
N/A: Data not shown to avoid disclosure of confidential information or because the data were not available.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Comparing Emery County's economy to that of the country as a whole, in 1970 mining's share of total employment was more than 23 times the national average (Exhibit 8.12). State and local government and construction both had local employment shares about 60 percent greater than their national shares. By 2000 Emery's mining specialization was more than 32 times the national rate, after peaking at almost 35 times in 1980. The county's share of employment in transportation and utilities was two-and-a-half times the national average; and it maintained concentrations in local government (77 percent above average) and construction (34 percent above average). In 2007, of those sectors for which employment was reported, most had above-average employment shares. Concentrations ranged from 21 percent greater than the national rate for retail trade jobs to 60 percent greater for construction. Only manufacturing, the federal government, and state government had smaller employment shares than in the country as a whole.

Exhibit 8.12
Emery County Nonfarm Employment Location Quotients by Industry, 1970–2007

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Ag Services, Forestry, and Fishing	N/A	0.34	0.85	0.67	0.79	0.96	1.25	0.92	1.02	0.89	N/A	N/A	N/A
Mining	23.39	34.80	27.08	21.78	27.17	29.32	28.25	29.69	31.00	31.70	29.98	32.27	32.27
Construction	1.60	2.21	1.34	1.54	1.76	1.09	1.13	1.23	1.36	1.40	1.63	1.39	1.34
Manufacturing	0.10	0.03	0.05	0.05	0.06	0.06	0.09	0.08	0.05	0.05	0.05	0.06	0.05
Transportation and Public Utilities	N/A	N/A	3.37	3.55	N/A	N/A	N/A	N/A	N/A	N/A	2.69	2.56	2.49
Wholesale Trade	0.17	0.14	0.13	0.14	0.20	0.16	0.20	0.16	0.21	0.18	N/A	N/A	N/A
Retail Trade	0.79	0.50	0.77	0.81	0.74	0.72	0.74	0.70	0.76	0.73	0.77	0.82	0.83
Finance, Insurance, and Real Estate	0.40	0.22	0.22	0.19	0.18	0.22	0.19	0.24	0.27	0.27	0.36	0.35	0.37
Services	N/A	N/A	0.49	0.50	N/A	N/A	N/A	N/A	N/A	N/A	0.54	0.57	0.58
Government	1.31	0.78	1.12	1.19	1.14	1.21	1.22	1.25	1.29	1.34	1.27	1.24	1.24
Federal, Civilian	0.91	0.34	0.44	0.45	0.47	0.48	0.48	0.49	0.49	0.45	0.49	0.54	0.65
Military	0.75	0.58	0.82	0.83	0.77	0.83	0.79	0.78	0.80	0.81	0.80	0.82	0.84
State	N/A	0.15	0.43	0.45	0.45	0.49	0.45	0.46	0.46	0.47	0.47	0.33	0.34
Local	N/A	1.21	1.69	1.79	1.70	1.78	1.80	1.86	1.89	1.97	1.83	1.80	1.77

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Construction	1.23	1.43	1.43	1.31	1.13	1.30	1.60
Manufacturing	0.11	0.13	0.15	0.15	0.14	0.14	0.17
Transportation and Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wholesale Trade	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail Trade	1.04	1.02	1.01	1.09	1.10	1.12	1.21
Information	1.31	1.29	1.40	1.37	1.28	1.22	1.30
Financial Activity	N/A	N/A	N/A	N/A	N/A	0.39	N/A
Professional & Business Services	0.38	0.34	0.38	N/A	N/A	N/A	N/A
Education & Health Services	0.25	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	0.65	0.67	0.69	0.74	0.73	0.70	N/A
Other Services	1.34	1.36	1.34	1.32	1.29	1.29	1.25
Government	1.23	1.21	1.15	1.16	1.13	1.12	1.13
Federal, Civilian	0.64	0.76	0.66	0.67	0.67	0.63	0.66
Military	0.82	0.83	0.81	0.76	0.80	0.76	0.70
State	0.35	0.36	0.34	0.34	0.35	0.38	0.38
Local	1.76	1.68	1.61	1.63	1.57	1.55	1.56

Note: Values greater than 1.00 indicate concentrations relative to the country.
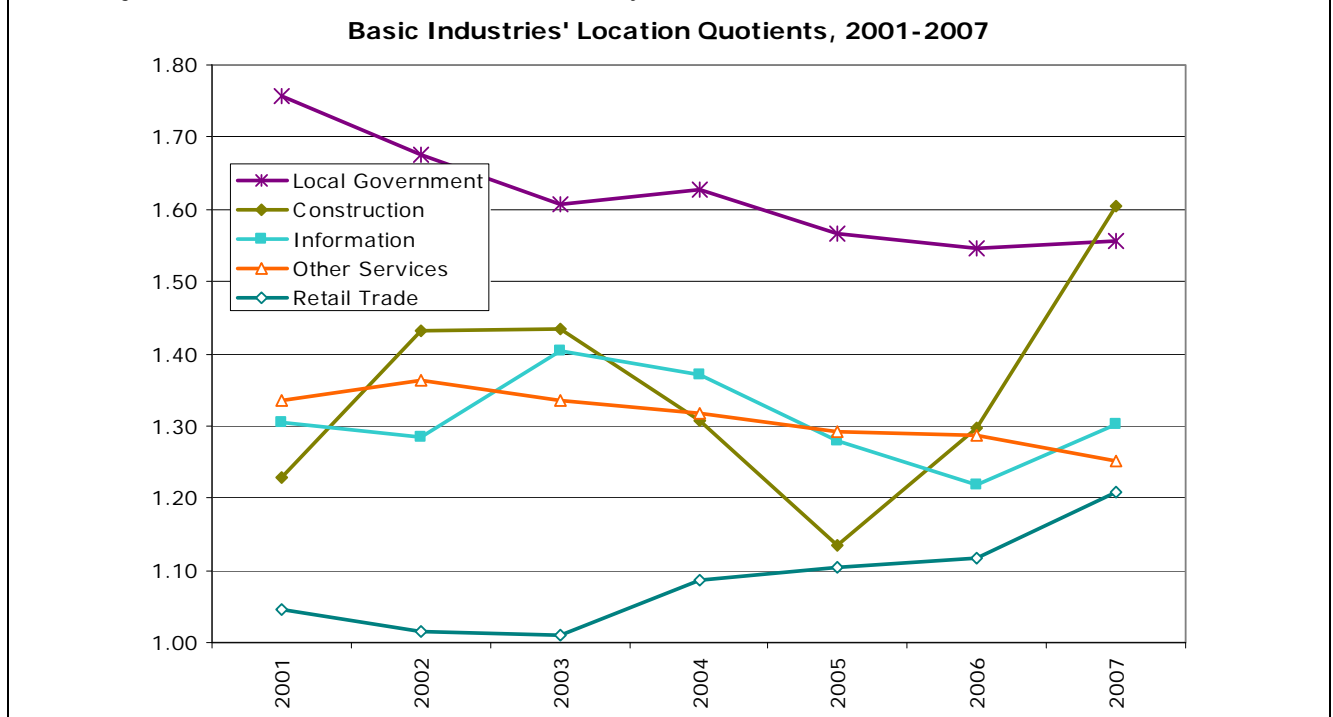
Basic Industries' Location Quotients, 2001-2007

Source: U.S. Bureau of Economic Analysis, Regional Economic Information System and Bureau of Economic and Business Research, University of Utah.

8.2.2.2 Personal Income and Earnings

Total personal income[75] in Emery County more than tripled, adjusting for inflation, between 1970 and 2007 from $76.6 million to $244.4 million. (All amounts are in constant 2007 dollars.) However, after generally rapid growth from 1970 to a high of $264.2 million in 1982, personal income growth has been flat such that it is still below its 1982 peak (Table 8.14 and Figure 8.6). Per capita personal income grew more slowly, by 57 percent, from $14,874 in 1970 to $23,364 in 2007. In fact, it was essentially flat from 1973 until 2003, fluctuating around $20,000. Emery County saw the greatest growth in real average annual wages, with a 20 percent increase over the study period in spite of a 31 percent decline from their 1977 peak. The county has also had the highest wages of the three coal counties since hitting $42,009 in 1972. In 2007 they were $39,685, more than $5,600 above those in Carbon County and over $11,000 above those in Sevier.

Personal transfer receipts, which include government social benefits and retirement income, averaged 4.3 percent annual growth between 1970 and 2007, almost quintupling from $10.1 million to $48.2 million. This was in spite of flat periods from 1983 to 1992 and 2003 to 2007, and indicates a growing elderly population in the county.

Wage and salary disbursements increased 3.5 percent annually over the period, from $46.3 million to $163.5 million, and supplements to wages and salaries grew at an average 5.2 percent annually from $6.6 million to $42.9 million. In contrast, proprietors' income shrank 1.4 percent annually, from $16.4 million in 1970 to $9.6 million in 2007, despite proprietors' employment growing 2.5 percent annually. Unlike in Carbon and Sevier counties, both farm and nonfarm proprietors' income fell over the period.

Total farm earnings in Emery County were rather volatile over the study period. They began at $5.1 million in 1970, fell to $1.4 million in 1980, were back up to $4.5 million in 1990, then saw a loss of $0.1 million in 2000, climbed to $4.8 million in 2004, and ended with a loss of $2.0 million in 2007. Nonfarm earnings, however, saw a net gain over the period, more than tripling from $64.2 million to $216.6 million, although they finished well below their 1982 high of $418.7 million. As Figure 8.6 makes clear, from 1972 through 1989 nonfarm earnings exceeded total personal income in the county. This is because earnings are measured by place of work while personal income is measured by place of residence. During this period workers commuted from other counties to jobs in the mining and construction boom, but took their earnings home out of the county, reducing Emery's total personal income.

In 2007, about three-quarters of total earnings in Emery County came from wages and salaries, one-fifth was due to supplements to wages and salaries (employer contributions for pensions, insurance, and government social insurance), and the remaining 5 percent was proprietors' income. Proprietors' share of earnings in the county was just 38 percent of the national average, down from twice the average in 1970 (three times the average for farm proprietors). The share from supplements to wages and salaries was about 20 percent larger than average in 2007.

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[75] Note that the sum of wage and salary disbursements plus supplements to wages and salaries plus proprietors' income equals the sum of farm and nonfarm earnings. Both are ways of measuring earnings by place of work. Subtracting employer and employee contributions for government social insurance and adding personal transfer receipts, income from dividends, interest, and rent, and a residence adjustment that covers the effects of interarea commuters, yields total personal income, which is by place of residence.

Table 8.14
Emery County Income Summary, 1970–2007
(Millions of Constant 2007 Dollars)

	1970	1980	1990	2000	2001	2002	2003	2004	2005	2006	2007	Change	AARC
Total Personal Income	$76.6	$226.6	$211.7	$239.2	$232.3	$230.2	$234.0	$241.2	$245.3	$251.3	$244.4	219.1%	3.2%
Per Capita Personal Income (dollars)	$14,874	$19,539	$20,499	$22,189	$22,179	$21,840	$22,336	$22,986	$23,377	$24,076	$23,364	57.1%	1.2%
Average Annual Wage per Job (dollars)	$32,996	$48,706	$41,786	$41,143	$40,967	$39,618	$37,721	$38,282	$39,654	$40,748	$39,685	20.3%	0.5%
Personal Transfer Receipts	$10.1	$20.6	$27.3	$41.7	$42.9	$45.3	$47.5	$46.6	$48.0	$48.9	$48.2	380.0%	4.3%
Components of Earnings													
Wage and salary disbursements	$46.3	$229.4	$161.8	$157.4	$156.5	$149.5	$145.9	$152.8	$160.5	$169.5	$163.5	253.0%	3.5%
Supplements to wages and salaries	$6.6	$54.7	$34.6	$36.1	$35.9	$37.5	$40.5	$46.1	$45.6	$44.5	$42.9	551.0%	5.2%
Employer contribs for pensions and insurance	$4.5	$39.8	$21.8	$23.5	$23.8	$25.7	$28.7	$33.5	$31.8	$30.2	$29.6	558.7%	5.2%
Employer contribs for gov't social insurance	$2.1	$14.9	$12.8	$12.6	$12.1	$11.9	$11.8	$12.6	$13.8	$14.4	$13.3	534.4%	5.1%
Proprietors income	$16.4	$13.6	$18.8	$13.0	$9.1	$9.6	$13.5	$14.3	$14.6	$13.3	$9.6	−41.3%	−1.4%
Farm proprietors income	$4.1	$0.3	$3.6	−$1.4	−$0.4	$0.9	$3.1	$3.5	$2.7	$0.7	−$2.0	−149.9%	N/A
Nonfarm proprietors income	$12.3	$13.3	$15.2	$14.3	$9.6	$8.7	$10.4	$10.8	$11.8	$12.6	$11.7	−5.1%	−0.1%
Farm earnings	$5.1	$1.4	$4.5	−$0.1	$0.8	$2.3	$4.4	$4.8	$4.2	$2.1	−$0.6	−111.8%	N/A
Nonfarm earnings	$64.2	$296.2	$210.7	$206.6	$200.6	$194.3	$195.5	$208.4	$216.5	$225.2	$216.6	237.5%	3.3%
Private earnings	$50.7	$273.7	$181.8	$169.8	$166.5	$159.9	$162.0	$174.6	$183.8	$192.1	$183.3	261.5%	3.5%
Government earnings	$13.5	$22.5	$28.9	$36.8	$34.2	$34.4	$33.5	$33.8	$32.6	$33.2	$33.3	147.2%	2.5%
Components' Shares of Total Earnings													
Wage and salary disbursements	66.8%	77.1%	75.2%	76.2%	77.7%	76.0%	73.0%	71.7%	72.7%	74.6%	75.7%		
Supplements to wages and salaries	9.5%	18.4%	16.1%	17.5%	17.8%	19.1%	20.3%	21.6%	20.7%	19.6%	19.8%		
Employer contribs for pensions and insurance	6.5%	13.4%	10.1%	11.4%	11.8%	13.1%	14.4%	15.7%	14.4%	13.3%	13.7%		
Employer contribs for gov't social insurance	3.0%	5.0%	6.0%	6.1%	6.0%	6.0%	5.9%	5.9%	6.3%	6.3%	6.1%		
Proprietors income	23.7%	4.6%	8.7%	6.3%	4.5%	4.9%	6.8%	6.7%	6.6%	5.8%	4.5%		
Farm proprietors income	5.9%	0.1%	1.7%	−0.7%	−0.2%	0.5%	1.6%	1.6%	1.2%	0.3%	−0.9%		
Nonfarm proprietors income	17.7%	4.5%	7.1%	6.9%	4.7%	4.4%	5.2%	5.1%	5.4%	5.5%	5.4%		
Farm earnings	7.4%	0.5%	2.1%	−0.03%	0.4%	1.2%	2.2%	2.3%	1.9%	0.9%	−0.3%		
Nonfarm earnings	92.6%	99.5%	97.9%	100.0%	99.6%	98.8%	97.8%	97.7%	98.1%	99.1%	100.3%		
Private earnings	73.2%	92.0%	84.5%	82.2%	82.6%	81.3%	81.0%	81.9%	83.3%	84.5%	84.8%		
Government earnings	19.5%	7.6%	13.4%	17.8%	17.0%	17.5%	16.8%	15.8%	14.8%	14.6%	15.4%		
Location Quotients of Earnings Components													
Wage and salary disbursements	0.84	1.02	1.01	1.03	1.05	1.05	1.02	1.01	1.02	1.04	1.05	24.8%	0.6%
Supplements to wages and salaries	1.01	1.23	1.03	1.20	1.20	1.18	1.21	1.29	1.22	1.18	1.21	19.6%	0.5%
Employer contribs for pensions and insurance	1.09	1.33	1.01	1.22	1.24	1.21	1.26	1.38	1.25	1.18	1.23	12.9%	0.3%
Employer contribs for gov't social insurance	0.88	1.03	1.07	1.16	1.13	1.13	1.09	1.10	1.19	1.19	1.17	33.1%	0.8%
Proprietors income	2.06	0.48	0.85	0.56	0.39	0.44	0.59	0.56	0.55	0.48	0.38	−81.7%	−4.5%
Farm proprietors income	3.07	0.14	1.86	N/A	N/A	2.47	3.90	3.48	2.99	1.47	N/A		
Nonfarm proprietors income	1.86	0.50	0.75	0.64	0.42	0.40	0.47	0.44	0.46	0.47	0.47	−74.6%	−3.6%
Farm earnings	2.92	0.43	1.66	N/A	0.65	2.44	3.23	2.97	2.76	1.99	N/A		
Nonfarm earnings	0.95	1.01	0.99	1.01	1.00	0.99	0.98	0.98	0.99	1.00	1.01	6.2%	0.2%
Private earnings	0.92	1.13	1.04	0.98	0.99	0.98	0.98	0.99	1.01	1.02	1.02	10.9%	0.3%
Government earnings	1.07	0.43	0.75	1.16	1.08	1.07	1.00	0.95	0.89	0.89	0.94	−12.4%	−0.4%

Note: Average wage per job is wage and salary disbursements divided by wage and salary employment. Location quotient values greater than 1.00 indicate concentrations relative to the country.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System; Utah Department of Workforce Services; and Bureau of Economic and Business Research, University of Utah.

Figure 8.6
Emery County Components of Personal Income, 1970–2007
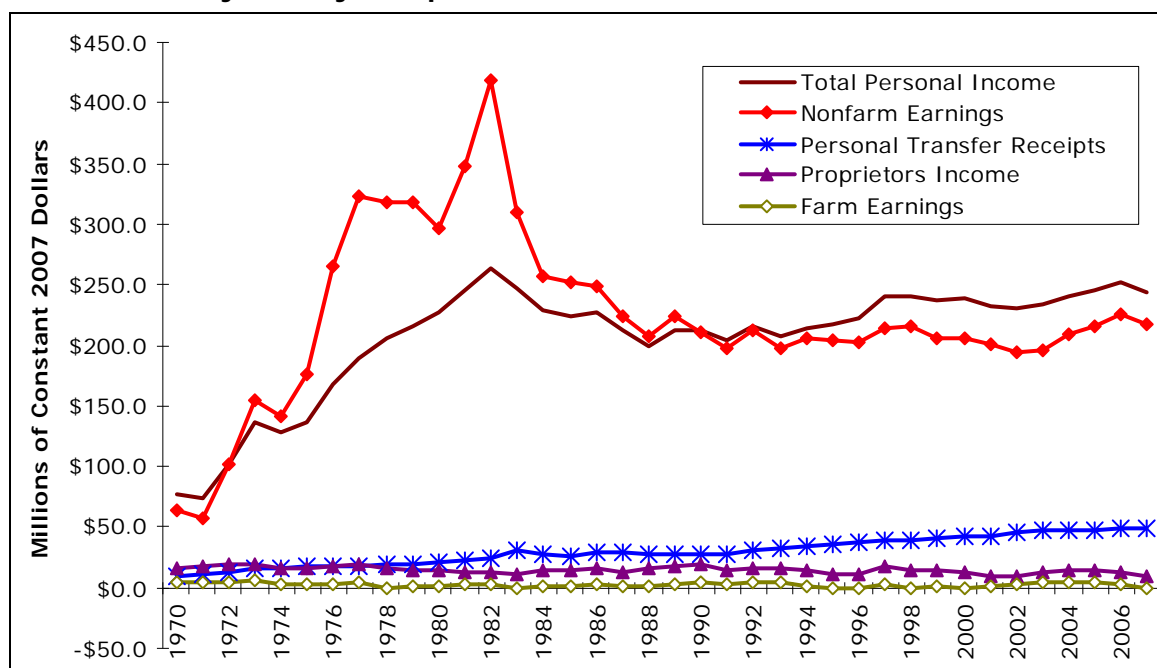
Note: Nonfarm earnings exceed total personal income from 1972 to 1989 due to large negative residence adjustments reflecting in-commuters during the mining and construction booms taking earnings out of the county.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Since farm earnings in Emery County were negative in 2007, we cannot compare their local share of earnings to the national share. However, in 2006 farm earnings' local share was twice the national average and was recently as high as three times the average in 2003 and 2004. Nonfarm earnings' share is on par with the country as a whole, while the government's portion has been slightly below average since 2004.

The main sources of (disclosed) nonfarm earnings in Emery County in 1970 were mining, which paid $20.4 million (in constant 2007 dollars); construction, which paid $12.9 million; and state and local government, which together paid $10.3 million (Table 8.15 and Figure 8.7a). Together these sectors accounted for 63 percent of total (farm and nonfarm) earnings, with mining alone representing nearly 30 percent (Table 8.16). By 2000, mining earnings had more than tripled to $64.1 million, and the data reveal that most of this ($62.4 million) was from coal mining. Construction earnings were only modestly higher in 2000 at $16.2 million, after peaking at more than $149 million in 1977. State and local government earnings tripled to $32.1 million, and transportation and public utilities had emerged as a significant source of income with $59.5 million in earnings. In 2000, coal mining, transportation and public utilities, and state and local government accounted for three-quarters of total earnings. Construction's share had shrunk from almost 19 percent to less than 8 percent.

In 2007, under the NAICS classification system, mining (except oil and gas) paid $56 million in earnings, which represented 26 percent of total earnings. This sector includes coal mining, but also covers metals and nonmetallic minerals. From available SIC data we know that the lion's share of total mining earnings is from coal mining. State and local government jobs paid $27.8
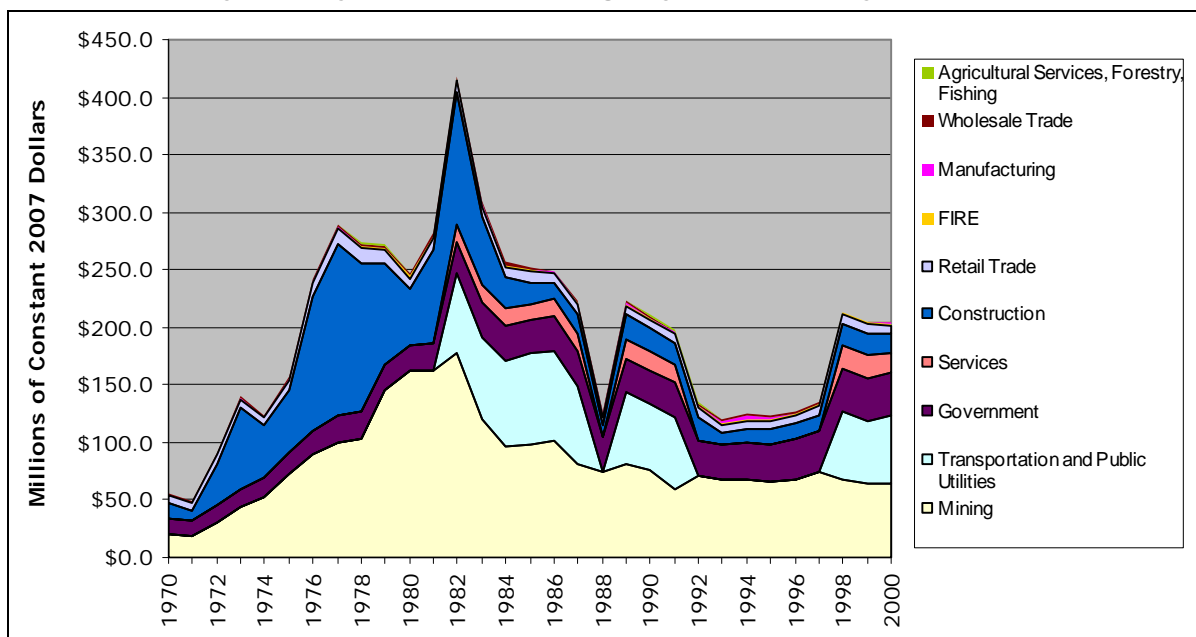
Table 8.15
Emery County Nonfarm Earnings by Industry, 1970–2007
(Millions of Constant 2007 Dollars)

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Agricultural Services, Forestry, Fishing	N/A	$0.2	$0.2	$0.2	$0.4	$0.6	$0.5	$0.4	$0.5	$0.3	N/A	N/A	N/A
Mining	$20.4	$161.8	$76.2	$58.4	$71.1	$67.0	$67.9	$66.2	$68.2	$73.8	$68.3	$63.6	$64.1
Metal mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$0.00	$0.00	$0.00	$0.00	$0.00
Coal mining	N/A	N/A	N/A	N/A	$70.4	$66.4	$67.1	$65.6	$67.5	$72.4	$66.5	$62.1	$62.4
Oil and gas extraction	N/A	N/A	N/A	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	N/A	N/A	N/A	N/A
Nonmetallic minerals, except fuels	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$0.65	N/A	N/A	N/A	N/A
Construction	$12.9	$49.4	$18.9	$17.9	$20.0	$9.1	$10.9	$12.6	$13.8	$14.2	$18.1	$19.3	$16.2
Manufacturing	$0.7	$0.7	$0.8	$0.8	$0.9	$1.5	$2.9	$2.2	$1.4	$1.2	$1.2	$1.2	$1.1
Petroleum and coal products	$0.0	$0.0	$0.0	$0.0	$0.0	N/A	N/A	N/A	$0.0	N/A	$0.0	$0.0	$0.0
Transportation and Public Utilities	N/A	N/A	$57.2	$63.8	N/A	N/A	N/A	N/A	N/A	N/A	$58.1	$55.4	$59.5
Wholesale Trade	$0.7	$1.5	$1.8	$1.4	$1.5	$1.4	$1.5	$0.9	$0.8	$0.8	N/A	N/A	N/A
Retail Trade	$6.6	$9.0	$8.1	$8.5	$8.1	$8.1	$8.1	$7.3	$7.2	$7.7	$7.8	$7.6	$7.2
Building materials and garden equipment	$0.51	$1.05	$0.84	$1.02	$0.94	$0.63	$0.70	$0.65	$0.65	$0.80	N/A	N/A	N/A
General merchandise stores	$0.37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Food stores	$0.63	$2.59	$2.04	$2.09	$2.34	$2.43	$2.09	$1.94	$1.96	$2.16	$2.53	$2.43	$2.19
Automotive dealers and service stations	$1.70	$1.46	$1.43	$1.87	$1.66	$2.08	$2.43	$2.36	$2.36	$2.49	$2.22	$2.22	$2.12
Apparel and accessory stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Home furniture and furnishings stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Eating and drinking places	$1.74	$1.91	$2.09	$2.21	$2.04	$1.34	$1.25	$0.89	$0.85	$0.84	$0.75	$0.81	$0.78
Miscellaneous retail	$1.63	$1.82	$1.26	$1.06	$1.03	$1.22	$1.24	$1.09	$0.94	$1.02	$1.07	$0.99	N/A
Finance, Insurance, and Real Estate	$0.4	$2.2	$1.1	$1.0	$1.4	$1.5	$1.0	$1.1	$1.1	$1.7	$2.0	$1.7	$1.6
Services	N/A	N/A	$17.5	$15.2	N/A	N/A	N/A	N/A	N/A	N/A	$21.0	$19.3	$18.0
Government	$13.5	$22.5	$28.9	$29.9	$31.2	$31.4	$32.3	$32.6	$34.2	$35.7	$37.4	$37.2	$36.8
Federal, Civilian	$2.8	$2.6	$2.3	$2.5	$3.0	$2.8	$3.1	$2.8	$2.8	$2.7	$2.8	$3.3	$3.7
Military	$0.4	$0.7	$1.3	$1.2	$1.2	$1.1	$1.1	$1.0	$1.0	$1.0	$1.0	$1.0	$1.0
State	N/A	$1.1	$2.8	$3.0	$3.1	$3.1	$3.2	$3.3	$3.4	$3.5	$3.6	$2.6	$2.7
Local	N/A	$18.2	$22.5	$23.3	$23.9	$24.3	$24.8	$25.5	$27.0	$28.5	$30.0	$30.3	$29.4

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil and gas extraction	N/A	$0.0	N/A	N/A	N/A	N/A	N/A
Mining (except oil and gas)	$58.0	$49.2	$45.9	$53.5	$64.6	$64.7	$56.0
Support activities for mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Construction	$15.3	$17.9	$18.6	$17.0	$17.5	$22.3	$26.2
Manufacturing	$1.3	$1.1	$1.6	$1.3	$1.1	$0.9	$1.0
Petroleum and coal products	N/A	N/A	$0.0	$0.0	$0.0	$0.0	N/A
Transportation and Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wholesale Trade	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail Trade	$8.4	$7.7	$7.5	$8.3	$8.5	$8.8	$9.1
Motor vehicle and parts dealers	$0.5	$0.4	$0.4	$0.4	$0.4	$0.4	$0.4
Furniture and home furnishings stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Electronics and appliance stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Building material and garden supply stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Food and beverage stores	$1.5	$1.4	$1.3	$1.4	$1.3	$1.3	$1.4
Health and personal care stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gasoline stations	$4.2	$4.2	$4.0	$4.2	$4.4	$4.6	$4.7
Clothing and clothing accessories stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sporting goods, hobby, book & music stores	$0.1	N/A	N/A	N/A	N/A	N/A	N/A
General merchandise stores	N/A	N/A	N/A	N/A	$0.4	$0.4	$0.4
Miscellaneous store retailers	N/A	$0.1	N/A	$0.1	$0.2	N/A	$0.2
Nonstore retailers	$0.1	N/A	N/A	N/A	N/A	N/A	N/A
Information	$5.7	$5.5	$5.8	$5.6	$5.4	$5.3	$5.3
Financial Activity	N/A	N/A	N/A	N/A	N/A	$2.0	N/A
Professional & Business Services	$4.0	$4.0	$6.0	N/A	N/A	N/A	N/A
Education & Health Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	N/A	$2.7	$3.1	$4.1	$4.2	$4.3	N/A
Other Services	$12.0	$13.3	$13.4	$12.4	$12.2	$13.0	$13.6
Government	$34.2	$34.4	$33.5	$33.8	$32.6	$33.2	$33.3
Federal, Civilian	$3.7	$4.3	$3.6	$4.1	$4.1	$3.7	$3.8
Military	$1.1	$1.3	$1.9	$1.9	$2.2	$1.9	$1.7
State	$2.8	$2.9	$2.8	$3.2	$3.1	$3.6	$3.7
Local	$26.5	$25.9	$25.2	$24.6	$23.2	$23.9	$24.1

N/A: Data not shown to avoid disclosure of confidential information or because the data were not available.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Figure 8.7a
Emery County Nonfarm Earnings by SIC Industry, 1970–2000
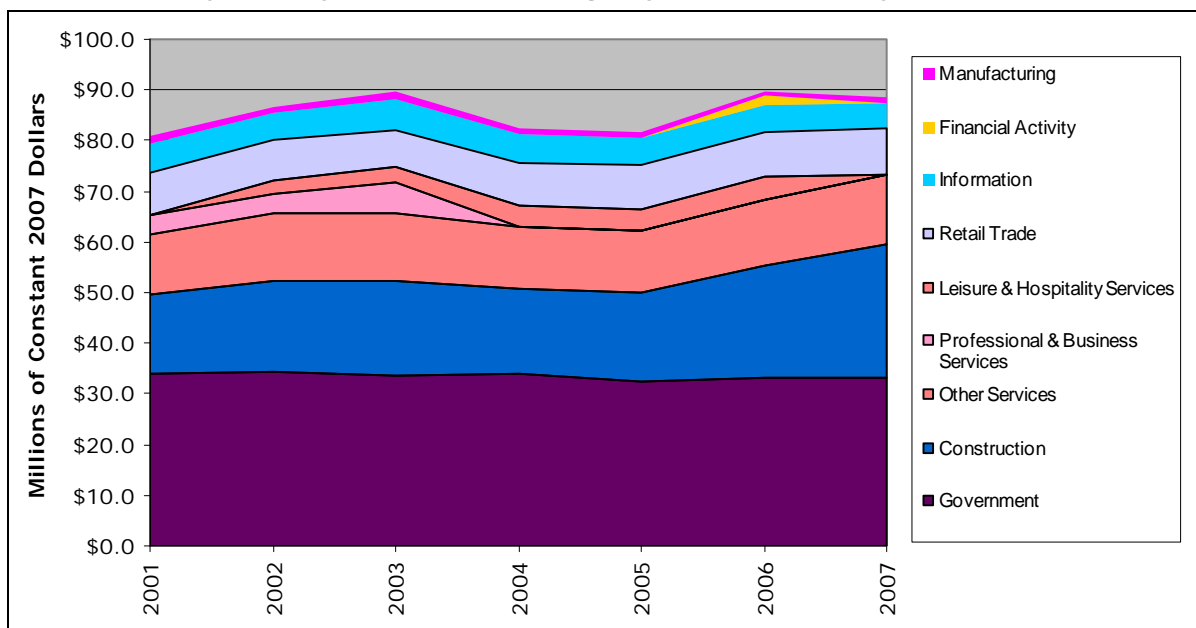

Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Figure 8.7b
Emery County Nonfarm Earnings by NAICS Industry, 2001–2007

Note: Total earnings appear much lower in 2001 than in 2000 because figures were not reported for several industries.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Table 8.16
Emery County Nonfarm Earnings Shares by Industry, 1970–2007

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Agricultural Services, Forestry, Fishing	N/A	0.1%	0.1%	0.1%	0.2%	0.3%	0.2%	0.2%	0.3%	0.1%	N/A	N/A	N/A
Mining	29.4%	54.3%	35.4%	29.2%	32.8%	33.3%	32.7%	32.4%	33.6%	33.9%	31.8%	30.6%	31.1%
Metal mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0%	0.0%	0.0%	0.0%	0.0%
Coal mining	N/A	N/A	N/A	N/A	32.4%	33.0%	32.3%	32.1%	33.2%	33.2%	30.9%	29.8%	30.2%
Oil and gas extraction	N/A	N/A	N/A	N/A	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	N/A	N/A	N/A
Nonmetallic minerals, except fuels	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.3%	N/A	N/A	N/A	N/A
Construction	18.7%	16.6%	8.8%	9.0%	9.2%	4.5%	5.2%	6.2%	6.8%	6.5%	8.4%	9.3%	7.8%
Manufacturing	1.0%	0.2%	0.4%	0.4%	0.4%	0.7%	1.4%	1.1%	0.7%	0.6%	0.5%	0.6%	0.5%
Petroleum and coal products	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	N/A	N/A	0.0%	N/A	0.0%	0.0%	0.0%
Transportation and Public Utilities	N/A	N/A	26.6%	31.9%	N/A	N/A	N/A	N/A	N/A	N/A	27.0%	26.6%	28.8%
Wholesale Trade	1.0%	0.5%	0.8%	0.7%	0.7%	0.7%	0.7%	0.5%	0.4%	0.3%	N/A	N/A	N/A
Retail Trade	9.6%	3.0%	3.7%	4.3%	3.8%	4.0%	3.9%	3.6%	3.5%	3.5%	3.6%	3.7%	3.5%
Building materials and garden equipment	0.7%	0.4%	0.4%	0.5%	0.4%	0.3%	0.3%	0.3%	0.3%	0.4%	N/A	N/A	N/A
General merchandise stores	0.5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Food stores	0.9%	0.9%	0.9%	1.0%	1.1%	1.2%	1.0%	0.9%	1.0%	1.0%	1.2%	1.2%	1.1%
Automotive dealers and service stations	2.5%	0.5%	0.7%	0.9%	0.8%	1.0%	1.2%	1.2%	1.2%	1.1%	1.0%	1.1%	1.0%
Apparel and accessory stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Home furniture and furnishings stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Eating and drinking places	2.5%	0.6%	1.0%	1.1%	0.9%	0.7%	0.6%	0.4%	0.4%	0.4%	0.3%	0.4%	0.4%
Miscellaneous retail	2.3%	0.6%	0.6%	0.5%	0.5%	0.6%	0.6%	0.5%	0.5%	0.5%	0.5%	0.5%	N/A
Finance, Insurance, and Real Estate	0.6%	0.7%	0.5%	0.5%	0.7%	0.8%	0.5%	0.6%	0.5%	0.8%	0.9%	0.8%	0.8%
Services	N/A	N/A	8.1%	7.6%	N/A	N/A	N/A	N/A	N/A	N/A	9.8%	9.3%	8.7%
Government	19.5%	7.6%	13.4%	15.0%	14.4%	15.6%	15.5%	16.0%	16.9%	16.4%	17.4%	17.9%	17.8%
Federal, Civilian	4.1%	0.9%	1.1%	1.3%	1.4%	1.4%	1.5%	1.4%	1.4%	1.2%	1.3%	1.6%	1.8%
Military	0.6%	0.2%	0.6%	0.6%	0.5%	0.6%	0.6%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
State	N/A	0.4%	1.3%	1.5%	1.4%	1.5%	1.6%	1.6%	1.7%	1.6%	1.7%	1.2%	1.3%
Local	N/A	6.1%	10.5%	11.6%	11.0%	12.1%	11.9%	12.5%	13.3%	13.1%	13.9%	14.6%	14.2%

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil and gas extraction	N/A	0.0%	N/A	N/A	N/A	N/A	N/A
Mining (except oil and gas)	28.8%	25.0%	23.0%	25.1%	29.3%	28.4%	25.9%
Support activities for mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Construction	7.6%	9.1%	9.3%	8.0%	7.9%	9.8%	12.1%
Manufacturing	0.6%	0.6%	0.8%	0.6%	0.5%	0.4%	0.5%
Petroleum and coal products	N/A	N/A	0.0%	0.0%	0.0%	0.0%	N/A
Transportation and Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wholesale Trade	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail Trade	4.2%	3.9%	3.8%	3.9%	3.8%	3.9%	4.2%
Motor vehicle and parts dealers	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Furniture and home furnishings stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Electronics and appliance stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Building material and garden supply stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Food and beverage stores	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%	0.6%
Health and personal care stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gasoline stations	2.1%	2.1%	2.0%	2.0%	2.0%	2.0%	2.2%
Clothing and clothing accessories stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sporting goods, hobby, book & music stores	0.0%	N/A	N/A	N/A	N/A	N/A	N/A
General merchandise stores	N/A	N/A	N/A	N/A	0.2%	0.2%	0.2%
Miscellaneous store retailers	N/A	0.1%	N/A	0.1%	0.1%	N/A	0.1%
Nonstore retailers	0.1%	N/A	N/A	N/A	N/A	N/A	N/A
Information	2.9%	2.8%	2.9%	2.6%	2.4%	2.3%	2.5%
Financial Activity	N/A	N/A	N/A	N/A	N/A	0.9%	N/A
Professional & Business Services	2.0%	2.0%	3.0%	N/A	N/A	N/A	N/A
Education & Health Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	N/A	1.4%	1.6%	1.9%	1.9%	1.9%	N/A
Other Services	5.9%	6.7%	6.7%	5.8%	5.5%	5.7%	6.3%
Government	17.0%	17.5%	16.8%	15.8%	14.8%	14.6%	15.4%
Federal, Civilian	1.9%	2.2%	1.8%	1.9%	1.9%	1.6%	1.7%
Military	0.5%	0.7%	1.0%	0.9%	1.0%	0.8%	0.8%
State	1.4%	1.5%	1.4%	1.5%	1.4%	1.6%	1.7%
Local	13.2%	13.2%	12.6%	11.5%	10.5%	10.5%	11.2%

N/A: Data not shown to avoid disclosure of confidential information or because the data were not available.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System and Bureau of Economic and Business Research, University of Utah.

Table 8.17
Emery County Nonfarm Earnings Location Quotients by Industry, 1970–2007

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Agricultural Services, Forestry, Fishing	N/A	0.18	0.13	0.14	0.26	0.40	0.39	0.30	0.44	0.18	N/A	N/A	N/A
Mining	27.83	26.12	32.43	29.87	34.83	36.41	37.06	38.32	37.43	35.03	33.68	35.59	32.65
Metal mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00
Coal mining	N/A	N/A	N/A	N/A	158.61	180.18	181.77	194.81	217.05	227.98	219.02	228.23	289.50
Oil and gas extraction	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	N/A	N/A	N/A	N/A
Nonmetallic minerals, except fuels	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.81	N/A	N/A	N/A	N/A
Construction	2.89	2.67	1.49	1.67	1.82	0.88	0.98	1.16	1.26	1.19	1.49	1.58	1.34
Manufacturing	0.04	0.01	0.02	0.02	0.02	0.04	0.08	0.06	0.04	0.03	0.03	0.04	0.03
Petroleum and coal products	0.00	0.00	0.00	0.00	0.00	N/A	N/A	N/A	0.00	N/A	0.00	0.00	0.00
Transportation and Public Utilities	N/A	N/A	4.06	4.83	N/A	N/A	N/A	N/A	N/A	N/A	4.05	3.91	4.25
Wholesale Trade	0.17	0.08	0.13	0.11	0.11	0.12	0.12	0.07	0.06	0.06	N/A	N/A	N/A
Retail Trade	0.88	0.31	0.41	0.47	0.42	0.45	0.44	0.40	0.40	0.40	0.42	0.42	0.40
Building materials and garden equipment	1.08	0.62	0.80	1.06	0.90	0.65	0.68	0.64	0.64	0.73	N/A	N/A	N/A
General merchandise stores	0.28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Food stores	0.53	0.49	0.63	0.69	0.73	0.83	0.71	0.68	0.71	0.73	0.90	0.92	0.87
Automotive dealers and service stations	1.18	0.29	0.45	0.63	0.54	0.71	0.77	0.76	0.76	0.77	0.71	0.72	0.71
Apparel and accessory stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Home furniture and furnishings stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Eating and drinking places	1.40	0.32	0.48	0.53	0.45	0.32	0.29	0.21	0.20	0.19	0.17	0.19	0.19
Miscellaneous retail	1.67	0.41	0.38	0.36	0.32	0.42	0.41	0.36	0.32	0.32	0.35	0.33	N/A
Finance, Insurance, and Real Estate	0.12	0.13	0.08	0.07	0.09	0.10	0.06	0.07	0.06	0.08	0.10	0.08	0.08
Services	N/A	N/A	0.32	0.30	N/A	N/A	N/A	N/A	N/A	N/A	0.35	0.33	0.31
Government	1.07	0.43	0.75	0.81	0.79	0.87	0.87	0.91	0.99	0.99	1.09	1.15	1.16
Federal, Civilian	0.91	0.20	0.28	0.32	0.35	0.36	0.39	0.37	0.39	0.37	0.40	0.51	0.59
Military	0.21	0.12	0.31	0.30	0.27	0.31	0.33	0.31	0.34	0.32	0.35	0.38	0.40
State	N/A	0.11	0.37	0.40	0.41	0.43	0.43	0.46	0.48	0.48	0.52	0.39	0.42
Local	N/A	0.76	1.23	1.33	1.27	1.39	1.37	1.44	1.55	1.55	1.70	1.80	1.80

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil and gas extraction	N/A	0.00	N/A	N/A	N/A	N/A	N/A
Mining (except oil and gas)	126.64	112.26	106.77	109.29	124.47	116.59	104.86
Support activities for mining	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Construction	1.25	1.50	1.54	1.30	1.24	1.51	1.97
Manufacturing	0.05	0.04	0.06	0.05	0.04	0.03	0.04
Petroleum and coal products	N/A	N/A	0.00	0.00	0.00	0.00	N/A
Transportation and Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wholesale Trade	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail Trade	0.61	0.57	0.56	0.60	0.59	0.61	0.68
Motor vehicle and parts dealers	0.17	0.16	0.15	0.15	0.15	0.15	0.16
Furniture and home furnishings stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Electronics and appliance stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Building material and garden supply stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Food and beverage stores	0.70	0.64	0.62	0.63	0.62	0.61	0.69
Health and personal care stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gasoline stations	6.05	6.35	6.15	6.50	6.59	7.00	7.66
Clothing and clothing accessories stores	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sporting goods, hobby, book & music stores	0.19	N/A	N/A	N/A	N/A	N/A	N/A
General merchandise stores	N/A	N/A	N/A	N/A	0.18	0.20	0.23
Miscellaneous store retailers	N/A	0.17	N/A	0.17	0.20	N/A	0.21
Nonstore retailers	0.18	N/A	N/A	N/A	N/A	N/A	N/A
Information	0.67	0.70	0.76	0.71	0.67	0.65	0.69
Financial Activity	N/A	N/A	N/A	N/A	N/A	0.09	N/A
Professional & Business Services	0.13	0.14	0.21	N/A	N/A	N/A	N/A
Education & Health Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	N/A	0.36	0.40	0.50	0.50	0.49	N/A
Other Services	2.06	2.25	2.23	1.96	1.90	2.01	2.20
Government	1.08	1.07	1.00	0.95	0.89	0.89	0.94
Federal, Civilian	0.62	0.69	0.57	0.60	0.59	0.53	0.56
Military	0.42	0.48	0.61	0.57	0.59	0.50	0.49
State	0.43	0.45	0.41	0.46	0.44	0.50	0.54
Local	1.61	1.55	1.46	1.35	1.23	1.25	1.32

Note: Values greater than 1.00 indicate concentrations relative to the country.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System and Bureau of Economic and Business Research, University of Utah.
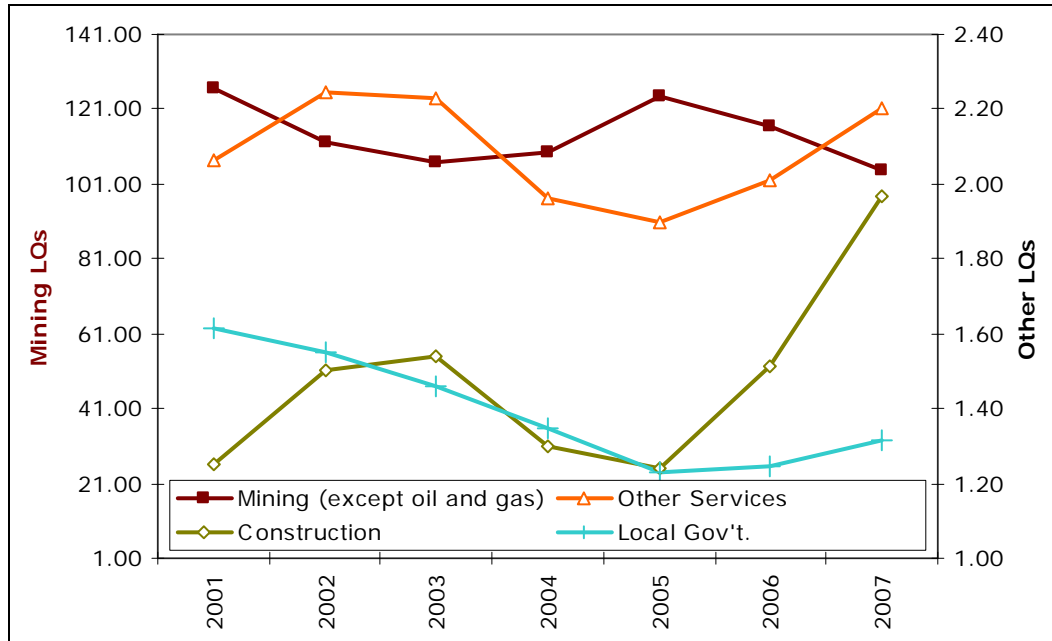
Figure 8.8
Emery County Basic Industries' Location Quotients, 2001–2007

Source: U.S. Bureau of Economic Analysis and Bureau of Economic and Business Research, University of Utah.

million in 2007, down slightly from 2000, and representing 13 percent of total earnings. The next largest disclosed sector was construction, which paid $26.2 million and represented 12 percent of total earnings. These sectors together accounted for just over half of all earnings in 2007.

Using location quotients to compare the distribution of earnings by industry in Emery County with the country as a whole reveals the importance of coal mining to the county's economy (Table 8.17 and Figure 8.8). In 1970 the entire mining industry's share of earnings in the county was almost 29 times its national share. The next highest concentration was in construction, whose local earnings share was 2.9 times its national share. In 2000 mining's share was 2.6 times the national average. However, figures for coal mining were now available and its share of county earnings was almost 290 times the national average. The next highest concentration was in transportation and public utilities, whose local share was 4.25 times the average, while construction's share was just 34 percent above average. In 2007, under the NAICS classification system, mining (except oil and gas) had a share of county earnings that was 105 times the national average. Construction was back near twice the national share, but data for transportation and utilities was not disclosed. Other services, which includes repair and maintenance, personal services, and religious and civic organizations, had a local share of earnings more than twice the national average. Note also that Emery County has had above-average earnings shares in some retail trade categories, particularly gas stations.

8.2.2.3 Retail Sales

Table 8.18 Emery County Retail Sales by Category, 1978–2008 (Thousands of Constant 2008 Dollars)							
Year	Building & Garden	General Merchandise	Food Stores	Motor Vehicle Dealers	Apparel & Accessory	Furniture	Eating & Drinking	Miscellaneous
1978	$4,742.0	N/A	$18,054.3	$7,054.3	$246.7	$1,437.8	$8,427.1	$4,073.0
1979	$4,774.3	N/A	$17,756.8	$6,941.1	$1,085.0	$1,317.7	$6,895.6	$3,748.6
1980	$5,786.3	N/A	$17,299.3	$6,263.4	$1,160.0	$1,288.6	$6,377.2	$3,407.0
1990	$4,548.9	N/A	$16,648.3	$3,675.5	$175.5	$1,565.7	$4,170.2	$3,816.3
1991	$4,081.8	N/A	$14,089.4	$3,702.0	$159.5	$635.1	$3,939.8	$3,643.0
1992	$3,892.8	N/A	$14,499.6	$3,316.0	$237.9	$572.0	$4,135.6	$3,829.3
1993	$5,459.2	N/A	$13,629.6	$2,744.9	$354.9	$687.0	$3,869.1	$3,978.2
1994	$6,144.0	N/A	$12,868.9	$2,649.4	$277.0	$1,005.9	$3,672.9	$4,785.0
1995	$6,565.1	N/A	$13,443.5	$3,371.9	$148.5	$1,006.7	$3,771.6	$4,447.6
1996	$5,615.8	N/A	$15,905.3	$3,341.0	$39.0	$950.4	$5,299.5	$3,523.4
1997	$5,311.3	N/A	$17,557.1	$1,631.4	$49.2	$1,095.6	$5,789.8	$3,287.2
1998	$5,414.8	N/A	$18,168.8	$1,859.4	$233.5	$1,640.4	$3,038.1	$3,535.1
1999	$5,355.0	N/A	$18,825.8	$2,567.8	$132.1	$1,637.0	$2,474.3	$2,695.5
2000	$4,658.9	N/A	$19,500.6	$4,529.6	$111.3	$875.5	$2,668.3	$3,664.9
2001	$4,702.9	$1,502.5	$20,258.4	$7,128.3	$160.9	$771.6	$2,185.1	$3,574.8
2002	$5,046.2	$1,482.4	$20,001.2	$7,736.2	$141.4	$863.9	$2,122.6	$4,014.4
2003	$4,182.9	$1,415.8	$18,944.0	$10,346.1	$152.2	$1,011.3	$4,484.0	$5,466.4
2004	$4,301.9	$2,762.5	$17,072.0	$11,305.8	$142.2	$850.9	$5,651.9	$6,636.7
2005	$2,965.3	$3,575.4	$20,575.4	$11,305.0	$210.1	$1,007.0	$5,663.3	$8,076.7
2006	$15,097.7	$4,863.0	$22,024.9	$9,475.7	$199.6	$1,133.9	$4,737.3	$24,979.2
2007	$4,283.2	$4,568.3	$19,879.8	$12,374.7	$315.0	$893.2	$5,363.9	$17,323.2
2008	$5,051.3	$3,889.9	$17,498.8	$11,046.4	$275.8	$1,677.9	$5,450.6	$11,457.5
Change	6.5%		−3.1%	56.6%	11.8%	16.7%	−35.3%	181.3%
AARC	0.2%	14.6%	−0.1%	1.5%	0.4%	0.5%	−1.4%	3.5%

NA: Not available; amounts for this category were not reported. The Tax Commission did not publish sales figures for Food Stores prior to 2002. In the quarterly sales data for 2001-06 there are two General Merchandise categories; the second of these generally corresponds to the Food Stores figures from the 2002-06 *annual* sales data. In several counties the amounts for General Merchandise sales in 1978 through 2000 matched up with the 2001-06 Food Stores sales and so have been reclassified into the latter category.
Source: Utah State Tax Commission.

Table 8.19 2008 Retail Sales in Emery County		
Category	Amount	Share
Building & Garden	$5,051,293	9.0%
General Merchandise	$3,889,943	6.9%
Food Stores	$17,498,846	31.1%
Motor Vehicle Dealers	$11,046,394	19.6%
Apparel & Accessory	$275,781	0.5%
Furniture	$1,677,895	3.0%
Eating & Drinking	$5,450,626	9.7%
Miscellaneous	$11,457,527	20.3%
Total	$56,348,306	100%
Source: Utah State Tax Commission.		

8.2.2.4 Residential Construction

Exhibit 8.13
Permit-Authorized New Dwelling Units and Value of Residential Construction in Emery County, 1975–2008

Year	Single-Family Homes	Duplexes and Twin Homes	Condominiums	Apartments (3 or more units)	Cabins	Manufactured / Mobile Homes	Total	Value (thousands of constant 2008 dollars)
1975	1	0	0	0	0	0	1	$41.8
1980	94	20	0	20	0	30	164	$10,850.2
1990	0	0	0	0	0	0	0	$0.0
1991	1	0	0	0	0	3	4	$292.0
1992	6	0	0	0	0	7	13	$731.2
1993	19	0	0	0	2	10	31	$2,073.6
1994	7	0	0	0	0	2	9	$679.1
1995	9	0	0	0	0	9	18	$1,130.9
1996	8	0	0	0	0	7	15	$964.6
1997	43	0	0	0	1	23	67	$5,123.2
1998	26	2	0	0	0	51	79	$7,454.7
1999	16	0	0	0	0	46	62	$5,348.8
2000	16	0	0	0	0	34	50	$4,322.7
2001	9	0	0	0	2	21	32	$2,748.8
2002	11	0	0	0	1	24	36	$2,513.9
2003	15	0	0	0	3	18	36	$3,224.9
2004	12	0	0	0	1	15	28	$3,248.0
2005	13	0	0	0	0	16	29	$4,049.3
2006	18	0	0	0	2	23	43	$5,625.6
2007	29	0	0	0	1	10	40	$6,361.3
2008	23	0	0	0	0	21	44	$5,716.5

New Single-Family Homes and Total Residential Construction Value

Note: Prior to 1994, condos and other multifamily units were grouped together.
Source: Bureau of Economic and Business Research, University of Utah.

8.2.2.5 Nonresidential Construction

Exhibit 8.14
Value of Nonresidential Construction in Emery County, 1975–2008
(Thousands of Constant 2008 Dollars)

| Year	Hotels & Motels	Churches & Other Religious	Industrial / Warehouse / Manufacturing	Hospital & Institutional	Office, Bank, Professional	Retail, Mercantile, Restaurant	Public Buildings & Projects	Other*	Additions and Alterations	Total
1975	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
1980	$0.0	$527.4	$1,023.1	$0.0	$105.5	$158.2	$250.5	$1,811.2	$393.4	$4,269.3
1990	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$23.7	$40.1	$63.8
1991	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$408.9	$246.0	$654.9
1992	$0.0	$0.0	$1.5	$0.0	$0.0	$1.5	$1.5	$135.8	$9.3	$149.7
1993	$0.0	$0.0	$75.1	$0.0	$0.0	$16.7	$1.5	$481.5	$165.9	$740.7
1994	$0.0	$1,573.9	$0.0	$0.0	$0.0	$0.0	$0.0	$57.7	$522.7	$2,154.3
1995	$3,261.1	$242.0	$0.0	$0.0	$536.6	$0.0	$0.0	$237.4	$576.7	$4,853.7
1996	$0.0	$13.9	$844.9	$0.0	$0.0	$0.0	$0.0	$151.8	$118.2	$1,128.8
1997	$95.1	$0.0	$342.9	$2,027.4	$46.7	$0.0	$0.0	$1,087.3	$473.2	$4,072.7
1998	$0.0	$0.0	$410.4	$0.0	$649.2	$0.0	$0.0	$253.6	$273.5	$1,586.7
1999	$0.0	$270.5	$245.8	$0.0	$0.0	$0.0	$0.0	$187.1	$158.1	$861.5
2000	$1,068.1	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$936.0	$1,274.7	$3,278.7
2001	$0.0	$375.8	$74.2	$0.0	$229.3	$409.7	$5,525.1	$739.1	$67.4	$7,420.6
2002	$2,299.3	$0.0	$284.3	$0.0	$507.6	$1.2	$2,973.0	$346.8	$196.8	$6,609.0
2003	$0.0	$0.0	$349.4	$0.0	$390.5	$0.0	$0.0	$384.2	$246.9	$1,371.0
2004	$0.0	$0.0	$1,319.2	$0.0	$437.9	$12.7	$0.0	$399.7	$160.5	$2,330.1
2005	$399.4	$0.0	$81.7	$0.0	$0.0	$483.6	$984.3	$1,895.9	$1,425.0	$5,269.8
2006	$0.0	$38.4	$2,558.4	$0.0	$793.7	$1,064.8	$2,879.0	$405.8	$305.0	$8,045.1
2007	$21.1	$0.0	$1,137.0	$0.0	$0.0	$0.0	$1,550.1	$1,071.6	$1,043.3	$4,823.1
2008	$40.0	$124.1	$1,665.9	$0.0	$40.0	$0.0	$125.0	$865.3	$149.6	$3,009.9
1990–2008 Total	$7,184.1	$2,638.6	$9,390.9	$2,027.4	$3,631.5	$1,990.3	$14,039.6	$10,069.1	$7,452.7	$58,424.2

* Other includes school and educational buildings, service stations and repair garages, agricultural buildings, and structures other than buildings.

Total Value of Nonresidential Construction
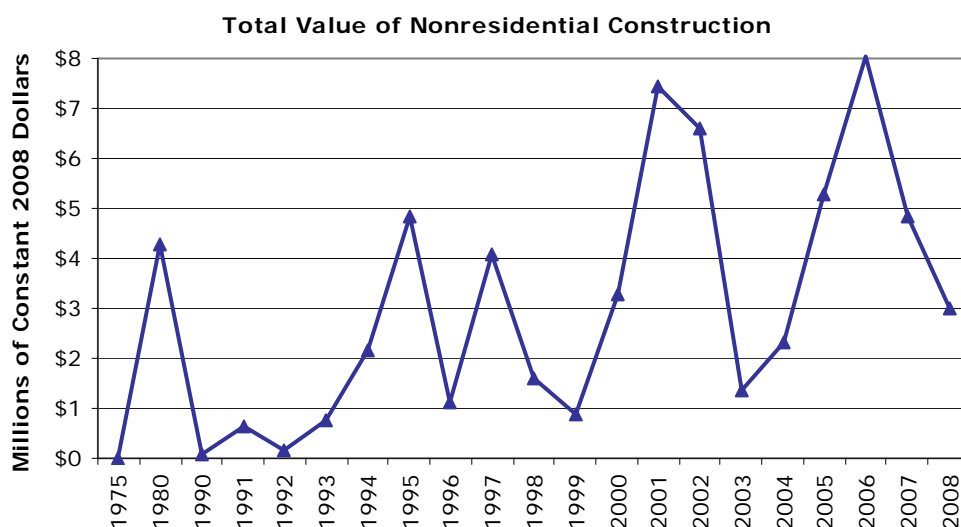
8.2.3 Sevier County

8.2.3.1 Employment

Sevier County's economy is similar in size to that of Carbon County. Between 1970 and 2007 total employment[76] grew 2.5 percent annually, from 4,495 to 11,353. Sevier had the most consistent growth of the three coal counties, interrupted by only a couple of flat periods from 1984 to 1992 and 2000 to 2003 (Exhibit 8.15). This was due to its lower dependence on the mining sector, which is subject to boom and bust periods.

As in Carbon and Emery counties, nonfarm proprietors' employment was the fastest-growing type of employment in Sevier County, increasing 3.2 percent annually from 735 jobs in 1970 to 2,321 in 2007. Farm proprietors' employment declined slowly over the period, as did total farm employment, but its current level is above what prevailed from the early 1970s through most of the 1990s, and represents a share of total employment about 3.9 times the national rate. All proprietors' employment has shrunk as a share of total employment in the county, from 29 percent in 1970 to 25 percent in 2007, but this is still 1.25 times the national average. The growth in nonfarm proprietors' share from 16 percent to 20 percent was outweighed by the decline in farm proprietors' share from 13 percent to just 4.5 percent. As a result, wage and salary employment has grown from almost 71 percent to 75 percent of all jobs.

The three main nonfarm employment sectors in Sevier County have been and continue to be government, retail trade, and services (Tables 8.20 and 8.21). In 1970, these sectors combined accounted for more than half of all jobs in the county. There were 878 government jobs (20 percent), 823 retail jobs (19 percent), and 609 service jobs (14 percent). In 2007, under the NAICS system, government (mostly at the local level) provided 1,724 jobs (15 percent of total jobs), the retail trade sector provided 1,661 jobs (15 percent), and the service sector provided at least 2,389 jobs (21 percent). This latter figure represents employment in professional and business services, leisure and hospitality services, and in other services; employment data were not disclosed for education and health services.

Although mining's share of county employment has ranged from 1 percent to about 7 percent, less than that of manufacturing or construction, it is currently almost nine times the national share. In 2007 there were 533 mining jobs in Sevier County: 6 percent more than in 2006, 10 percent more than 1981's peak of 486, and more than ten times the number in 1970. Most of these are coal mining jobs, but there has been growing oil production in the county since 2004.

As noted above, Sevier County does not have the large employment concentration in mining that Carbon and Emery do. However it is significantly above the national average. While in 1970 mining's share of local employment was only about one-third larger than its national share, by 1980 it was six times larger and in 2007 was more than eight times larger (Exhibit 8.16). In 1970 the county was relatively specialized in agricultural services, forestry, and fishing, with an employment share more than twice the national average. By 2000, the largest relative concentration was in transportation and utilities, with a share three-quarters larger than the national share. Local government's share of employment was about one-third greater than the national average, while federal (civilian) and state government each had shares about 10 percent larger. Retail

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[76] Total employment covers farm and nonfarm employment, and proprietors' and wage and salary employment, and counts full- and part-time jobs equally.

Exhibit 8.15
Sevier County Employment Summary, 1970–2007

	1970	1980	1990	2000	2001	2002	2003	2004	2005	2006	2007	Change	AARC
Total Employment	4,495	6,407	7,091	10,140	10,004	10,157	10,245	10,673	10,743	11,152	11,353	152.6%	2.5%
Employment by Type													
Wage and Salary Employment	3,178	4,901	5,398	7,635	7,565	7,673	7,698	8,076	8,039	8,318	8,521	168.1%	2.7%
Proprietors' Employment	1,317	1,506	1,693	2,505	2,439	2,484	2,547	2,597	2,704	2,834	2,832	115.0%	2.1%
Farm Proprietors' Employment	582	479	420	534	532	533	520	519	521	516	511	−12.2%	−0.4%
Nonfarm Proprietors' Employment	735	1,027	1,273	1,971	1,907	1,951	2,027	2,078	2,183	2,318	2,321	215.8%	3.2%
Employment by Industry													
Farm Employment	814	665	576	639	640	623	628	620	627	618	599	−26.4%	−0.8%
Nonfarm Employment	3,681	5,742	6,515	9,501	9,364	9,534	9,617	10,053	10,116	10,534	10,754	192.1%	2.9%
Private Employment	2,769	4,489	5,167	7,790	7,715	7,853	7,913	8,342	8,422	8,808	9,030	226.1%	3.2%
Government Employment	912	1,253	1,348	1,711	1,649	1,681	1,704	1,711	1,694	1,726	1,724	89.0%	1.7%
Shares by Type													
Wage and Salary Employment	70.7%	76.5%	76.1%	75.3%	75.6%	75.5%	75.1%	75.7%	74.8%	74.6%	75.1%		
Proprietors' Employment	29.3%	23.5%	23.9%	24.7%	24.4%	24.5%	24.9%	24.3%	25.2%	25.4%	24.9%		
Farm Proprietors' Employment	12.9%	7.5%	5.9%	5.3%	5.3%	5.2%	5.1%	4.9%	4.8%	4.6%	4.5%		
Nonfarm Proprietors' Employment	16.4%	16.0%	18.0%	19.4%	19.1%	19.2%	19.8%	19.5%	20.3%	20.8%	20.4%		
Shares by Industry													
Farm Employment	18.1%	10.4%	8.1%	6.3%	6.4%	6.1%	6.1%	5.8%	5.8%	5.5%	5.3%		
Nonfarm Employment	81.9%	89.6%	91.9%	93.7%	93.6%	93.9%	93.9%	94.2%	94.2%	94.5%	94.7%		
Private Employment	61.6%	70.1%	72.9%	76.8%	77.1%	77.3%	77.2%	78.2%	78.4%	79.0%	79.5%		
Government Employment	20.3%	19.6%	19.0%	16.9%	16.5%	16.6%	16.6%	16.0%	15.8%	15.5%	15.2%		
Location Quotients by Type													
Wage and Salary Employment	0.82	0.89	0.90	0.90	0.91	0.91	0.92	0.93	0.92	0.93	0.94	14.5%	0.4%
Proprietors' Employment	2.14	1.64	1.53	1.48	1.44	1.41	1.38	1.31	1.32	1.29	1.25	−41.7%	−1.4%
Farm Proprietors' Employment	4.35	3.42	3.70	3.96	4.06	3.96	3.96	3.90	3.96	3.90	3.89	−10.6%	−0.3%
Nonfarm Proprietors' Employment	1.53	1.32	1.28	1.27	1.22	1.20	1.18	1.12	1.14	1.12	1.09	−28.9%	−0.9%
Location Quotients by Industry													
Farm Employment	4.17	3.12	3.59	3.38	3.50	3.32	3.39	3.36	3.49	3.45	3.36	−19.5%	−0.6%
Nonfarm Employment	0.86	0.93	0.94	0.95	0.95	0.96	0.96	0.96	0.96	0.96	0.96	12.4%	0.3%
Private Employment	0.79	0.87	0.88	0.91	0.91	0.92	0.92	0.93	0.93	0.93	0.94	18.5%	0.5%
Government Employment	1.15	1.19	1.25	1.23	1.19	1.17	1.18	1.15	1.15	1.15	1.13	−1.6%	0.0%

Note: Location quotient values greater than 1.00 indicate concentrations relative to the country.

Employment by Type and Industry, 1970-2007
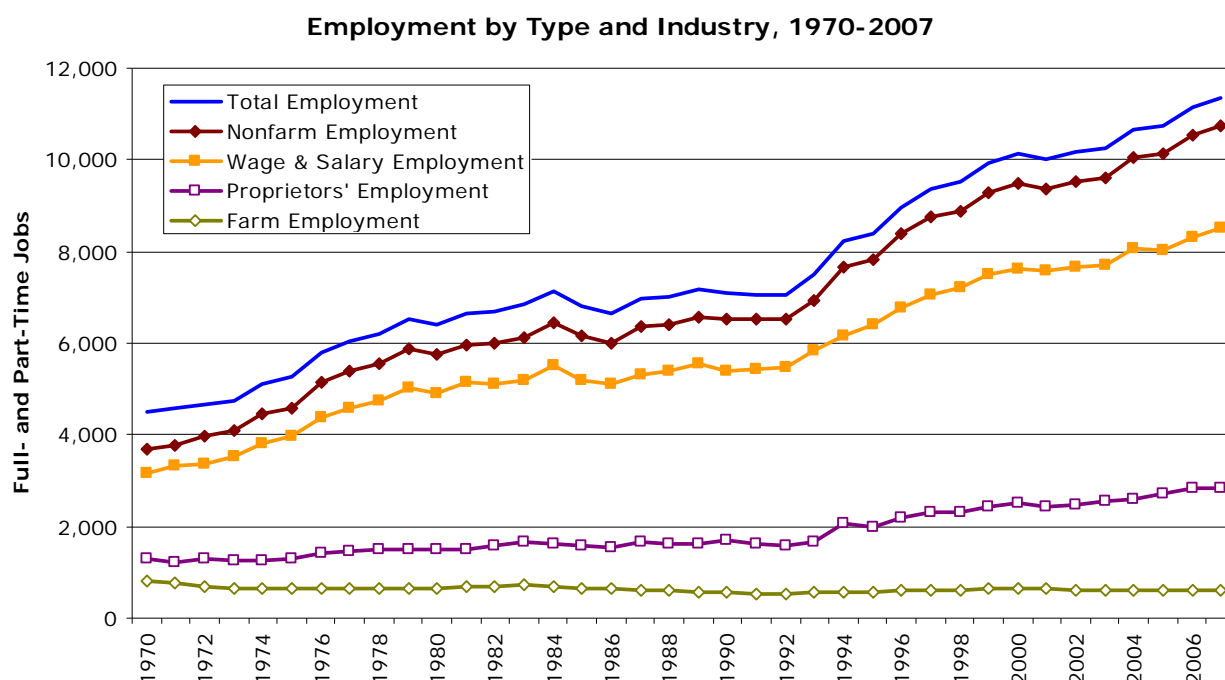
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System and Bureau of Economic and Business Research, University of Utah.
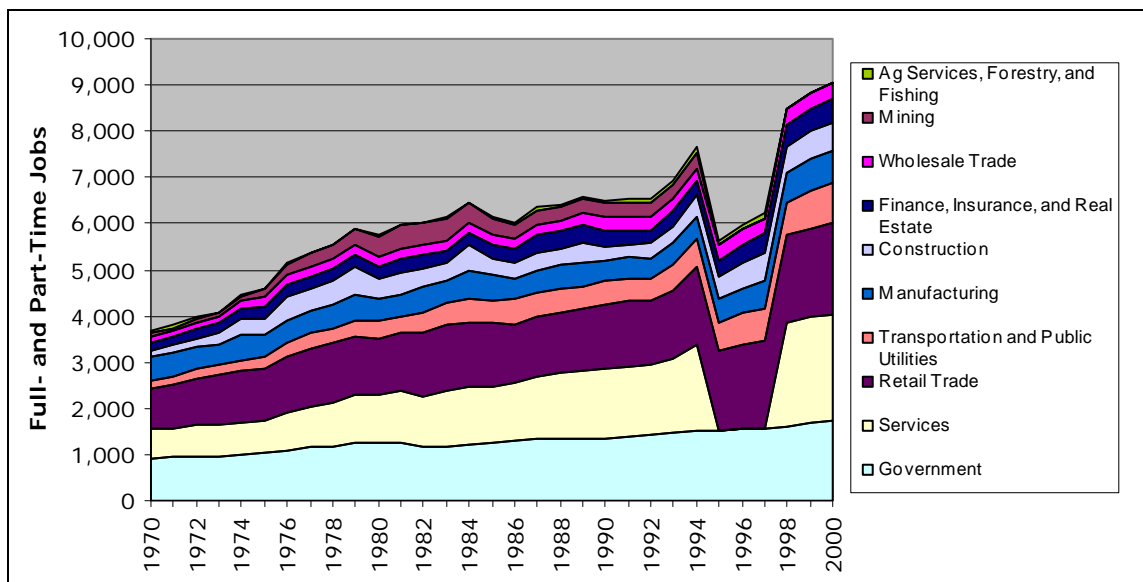
Table 8.20
Sevier County Nonfarm Employment by Industry, 1970–2007

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Ag Services, Forestry, and Fishing	63	14	55	61	65	89	119	102	105	96	N/A	N/A	N/A
Mining	49	435	332	337	333	313	337	N/A	N/A	N/A	N/A	N/A	N/A
Construction	142	448	279	279	321	356	441	482	547	591	581	624	608
Manufacturing	517	489	455	445	450	483	490	506	551	602	632	685	696
Transportation and Public Utilities	164	372	507	498	468	534	603	623	668	699	733	822	883
Wholesale Trade	152	232	292	276	285	267	292	308	328	320	329	351	354
Retail Trade	877	1,191	1,402	1,412	1,392	1,480	1,683	1,720	1,828	1,902	1,873	1,933	1,958
Finance, Insurance, and Real Estate	175	247	356	310	269	319	303	361	399	430	457	470	514
Services	630	1,061	1,489	1,540	1,508	1,596	1,888	N/A	N/A	N/A	2,260	2,288	2,333
Government	912	1,253	1,348	1,367	1,438	1,488	1,500	1,523	1,557	1,576	1,604	1,675	1,711
Federal, Civilian	165	298	197	192	182	183	183	182	180	171	166	173	193
Military	107	89	121	116	114	111	105	98	101	98	98	96	97
State	N/A	179	227	232	252	252	248	253	234	250	265	317	335
Local	N/A	687	803	827	890	942	964	990	1,042	1,057	1,075	1,089	1,086

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	63	69	N/A	N/A	N/A	66
Mining	359	411	409	414	437	504	533
Construction	626	587	588	640	635	691	657
Manufacturing	662	599	580	532	536	552	544
Transportation and Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wholesale Trade	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail Trade	1,420	1,410	1,402	1,588	1,489	1,564	1,661
Information	89	98	96	114	109	116	106
Financial Activity	468	492	532	549	584	623	636
Professional & Business Services	554	N/A	N/A	N/A	N/A	N/A	697
Education & Health Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	893	930	931	1,003	1,031	1,038	1,049
Other Services	601	591	596	623	629	661	643
Government	1,649	1,681	1,704	1,711	1,694	1,726	1,724
Federal, Civilian	203	209	215	227	225	215	212
Military	98	98	98	95	95	94	87
State	340	335	327	332	336	333	331
Local	1,008	1,039	1,064	1,057	1,038	1,084	1,094

N/A: Data not shown to avoid disclosure of confidential information or because the data were not available.
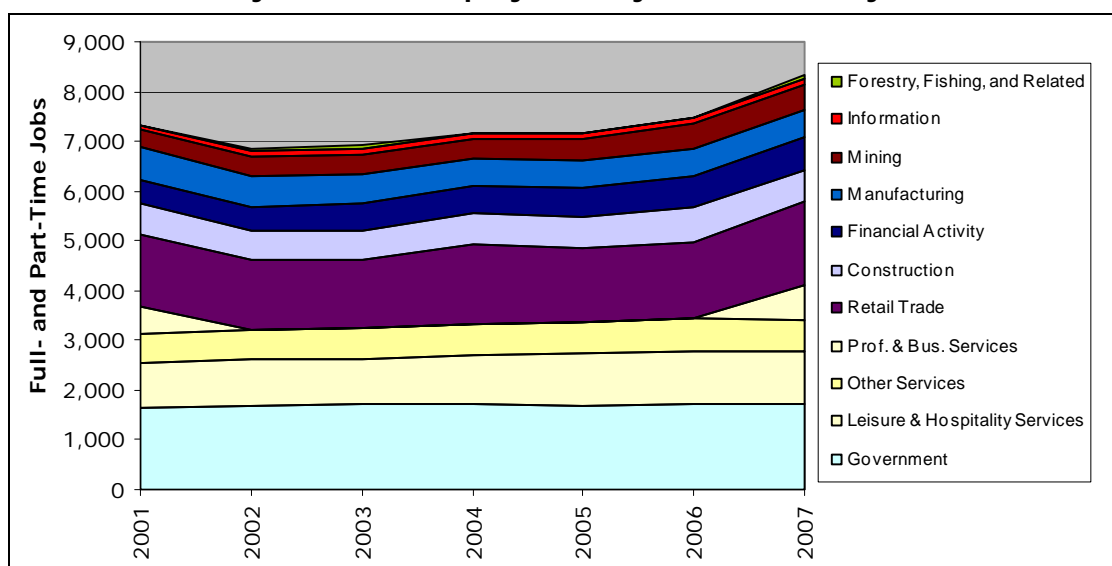*Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.*

Figure 8.9a
Sevier County Nonfarm Employment by SIC Industry, 1970–2000

Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Figure 8.9b
Sevier County Nonfarm Employment by NAICS Industry, 2001–2007

Note: Total employment appears much lower in 2001 than in 2000 because figures were not reported for several industries.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Table 8.21
Sevier County Nonfarm Employment Shares by Industry, 1970–2007

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Ag Services, Forestry, and Fishing	1.4%	0.2%	0.8%	0.9%	0.9%	1.2%	1.4%	1.2%	1.2%	1.0%	N/A	N/A	N/A
Mining	1.1%	6.8%	4.7%	4.8%	4.7%	4.2%	4.1%	N/A	N/A	N/A	N/A	N/A	N/A
Construction	3.2%	7.0%	3.9%	4.0%	4.6%	4.8%	5.4%	5.7%	6.1%	6.3%	6.1%	6.3%	6.0%
Manufacturing	11.5%	7.6%	6.4%	6.3%	6.4%	6.4%	6.0%	6.0%	6.1%	6.4%	6.6%	6.9%	6.9%
Transportation and Public Utilities	3.6%	5.8%	7.1%	7.1%	6.6%	7.1%	7.3%	7.4%	7.4%	7.5%	7.7%	8.3%	8.7%
Wholesale Trade	3.4%	3.6%	4.1%	3.9%	4.0%	3.6%	3.5%	3.7%	3.7%	3.4%	3.5%	3.5%	3.5%
Retail Trade	19.5%	18.6%	19.8%	20.0%	19.7%	19.8%	20.5%	20.5%	20.4%	20.3%	19.7%	19.5%	19.3%
Finance, Insurance, and Real Estate	3.9%	3.9%	5.0%	4.4%	3.8%	4.3%	3.7%	4.3%	4.4%	4.6%	4.8%	4.7%	5.1%
Services	14.0%	16.6%	21.0%	21.8%	21.4%	21.3%	22.9%	N/A	N/A	N/A	23.8%	23.0%	23.0%
Government	20.3%	19.6%	19.0%	19.4%	20.4%	19.9%	18.2%	18.1%	17.4%	16.8%	16.9%	16.9%	16.9%
Federal, Civilian	3.7%	4.7%	2.8%	2.7%	2.6%	2.4%	2.2%	2.2%	2.0%	1.8%	1.7%	1.7%	1.9%
Military	2.4%	1.4%	1.7%	1.6%	1.6%	1.5%	1.3%	1.2%	1.1%	1.0%	1.0%	1.0%	1.0%
State	N/A	2.8%	3.2%	3.3%	3.6%	3.4%	3.0%	3.0%	2.6%	2.7%	2.8%	3.2%	3.3%
Local	N/A	10.7%	11.3%	11.7%	12.6%	12.6%	11.7%	11.8%	11.6%	11.3%	11.3%	11.0%	10.7%

| By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	0.6%	0.7%	N/A	N/A	N/A	0.6%
Mining	3.6%	4.0%	4.0%	3.9%	4.1%	4.5%	4.7%
Construction	6.3%	5.8%	5.7%	6.0%	5.9%	6.2%	5.8%
Manufacturing	6.6%	5.9%	5.7%	5.0%	5.0%	4.9%	4.8%
Transportation and Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wholesale Trade	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail Trade	14.2%	13.9%	13.7%	14.9%	13.9%	14.0%	14.6%
Information	0.9%	1.0%	0.9%	1.1%	1.0%	1.0%	0.9%
Financial Activity	4.7%	4.8%	5.2%	5.1%	5.4%	5.6%	5.6%
Professional & Business Services	5.5%	N/A	N/A	N/A	N/A	N/A	6.1%
Education & Health Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	8.9%	9.2%	9.1%	9.4%	9.6%	9.3%	9.2%
Other Services	6.0%	5.8%	5.8%	5.8%	5.9%	5.9%	5.7%
Government	16.5%	16.6%	16.6%	16.0%	15.8%	15.5%	15.2%
Federal, Civilian	2.0%	2.1%	2.1%	2.1%	2.1%	1.9%	1.9%
Military	1.0%	1.0%	1.0%	0.9%	0.9%	0.8%	0.8%
State	3.4%	3.3%	3.2%	3.1%	3.1%	3.0%	2.9%
Local	10.1%	10.2%	10.4%	9.9%	9.7%	9.7%	9.6%

Shares are of total farm and nonfarm employment.
N/A: Data not shown to avoid disclosure of confidential information or because the data were not available.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Exhibit 8.16
Sevier County Nonfarm Employment Location Quotients by Industry, 1970–2007

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Ag Services, Forestry, and Fishing	2.44	0.27	0.74	0.80	0.86	1.03	1.22	1.02	0.95	0.82	N/A	N/A	N/A
Mining	1.34	6.07	6.25	6.47	7.02	6.35	6.36	N/A	N/A	N/A	N/A	N/A	N/A
Construction	0.66	1.41	0.76	0.81	0.93	0.96	1.05	1.11	1.16	1.18	1.12	1.11	1.06
Manufacturing	0.53	0.42	0.45	0.46	0.47	0.49	0.45	0.47	0.49	0.52	0.54	0.58	0.60
Transportation and Public Utilities	0.68	1.17	1.52	1.49	1.43	1.51	1.54	1.56	1.56	1.56	1.59	1.69	1.76
Wholesale Trade	0.74	0.72	0.85	0.82	0.84	0.77	0.77	0.79	0.79	0.74	0.75	0.77	0.77
Retail Trade	1.30	1.19	1.20	1.22	1.19	1.20	1.23	1.22	1.21	1.21	1.20	1.19	1.18
Finance, Insurance, and Real Estate	0.58	0.50	0.65	0.58	0.52	0.58	0.50	0.58	0.60	0.61	0.62	0.61	0.64
Services	0.75	0.76	0.76	0.77	0.74	0.73	0.78	N/A	N/A	N/A	0.76	0.73	0.72
Government	1.15	1.19	1.25	1.26	1.32	1.31	1.22	1.24	1.21	1.19	1.21	1.22	1.23
Federal, Civilian	1.15	1.77	1.20	1.21	1.16	1.14	1.08	1.10	1.06	1.01	0.99	1.02	1.10
Military	0.67	0.63	0.88	0.86	0.85	0.83	0.77	0.76	0.77	0.75	0.78	0.76	0.77
State	N/A	0.85	1.01	1.02	1.10	1.03	0.93	0.94	0.84	0.87	0.93	1.07	1.11
Local	N/A	1.28	1.45	1.47	1.57	1.57	1.47	1.49	1.48	1.44	1.45	1.40	1.37

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	0.98	1.14	N/A	N/A	N/A	1.04
Mining	7.39	8.98	8.32	8.44	8.45	9.08	8.63
Construction	1.06	1.00	0.97	0.99	0.94	0.95	0.90
Manufacturing	0.65	0.62	0.63	0.57	0.59	0.60	0.60
Transportation and Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wholesale Trade	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail Trade	1.28	1.25	1.24	1.36	1.27	1.30	1.37
Information	0.37	0.43	0.44	0.51	0.49	0.51	0.48
Financial Activity	0.58	0.59	0.62	0.60	0.62	0.62	0.61
Professional & Business Services	0.42	N/A	N/A	N/A	N/A	N/A	0.44
Education & Health Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	1.06	1.07	1.05	1.07	1.10	1.07	1.05
Other Services	1.11	1.03	1.02	1.03	1.03	1.04	1.01
Government	1.19	1.17	1.18	1.15	1.15	1.15	1.13
Federal, Civilian	1.24	1.25	1.25	1.30	1.31	1.24	1.21
Military	0.78	0.77	0.76	0.73	0.76	0.74	0.68
State	1.13	1.08	1.06	1.04	1.06	1.03	1.01
Local	1.26	1.25	1.27	1.23	1.21	1.23	1.23

Note: Values greater than 1.00 indicate concentrations relative to the country.
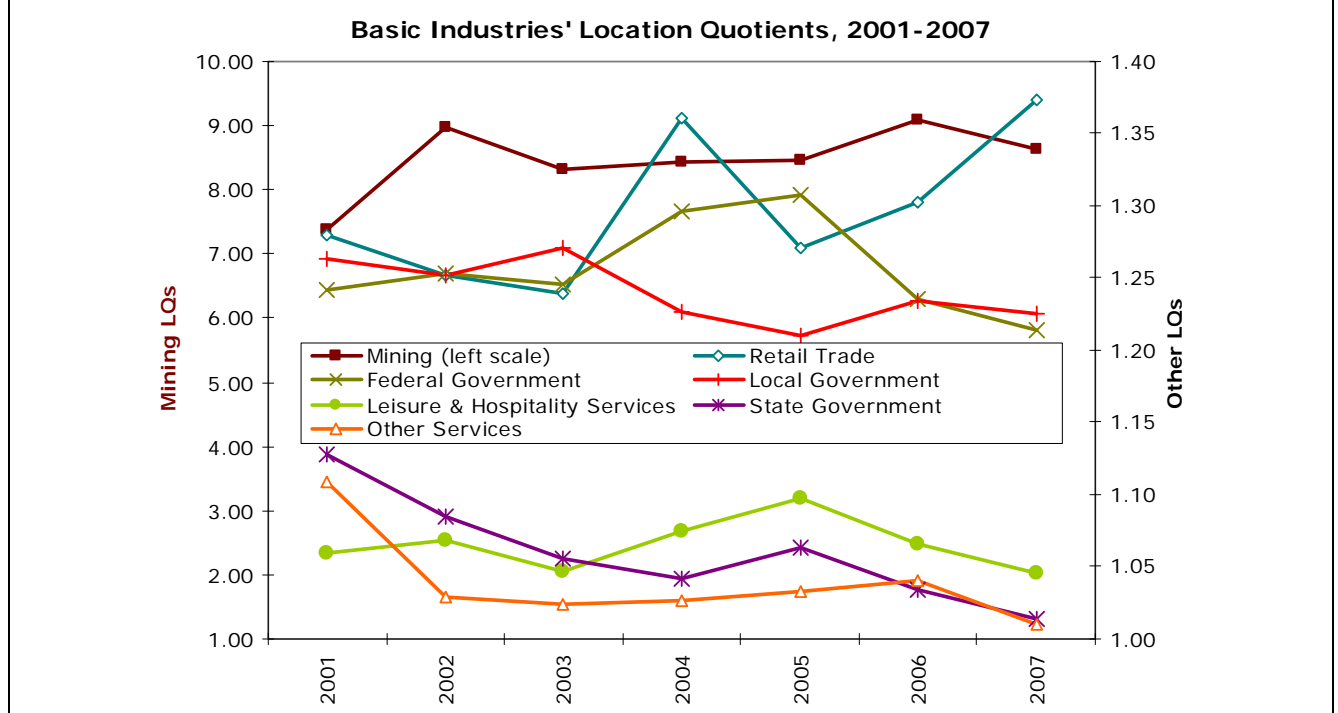
Basic Industries' Location Quotients, 2001-2007

Source: U.S. Bureau of Economic Analysis, Regional Economic Information System and Bureau of Economic and Business Research, University of Utah.

trade's share was about one-fifth above average. Figures for mining and ag services, forestry, and fishing were not available. In 2007, retail trade, local government, and federal civilian government continued to represent above-average employment shares, ranging from 21 percent larger for the federal government to 37 percent larger for retail trade. Several sectors—forestry, fishing, and related activities, leisure and hospitality services, other services, and state government—had employment shares between 1 and 5 percent above average.

8.2.3.2 Personal Income and Earnings

Total personal income[77] in Sevier County grew 2.8 percent annually between 1970 and 2007 from $162.0 million to $453.4 million. (All amounts are in constant 2007 dollars.) The only extended downturn or "bust" was from 1984 to 1991, when personal income shrank from $353.8 million to $306.8 million (Table 8.22 and Figure 8.10). Per capita personal income grew more slowly, just 0.9 percent per year, from $15,957 in 1970 to $22,179 in 2007. In fact, it has been essentially flat since reaching $21,186 in 1978. Real average annual wages have also been stagnant, growing only 0.4 percent annually from $24,451 in 1970 to $28,425 in 2007, and peaking at just $31,148 in 1984. Sevier County has the lowest average wages of the three coal counties, trailing those in Carbon County by $5,600 and those in Emery by more than $11,200 in 2007.

In contrast, personal transfer receipts, which include government social benefits and retirement income, averaged 4.5 percent annual growth between 1970 and 2007, increasing fivefold from $19.6 million to $100.3 million. This indicates a growing elderly population in the county.

Wage and salary disbursements increased 3.1 percent annually over the period, from $77.7 million to $242.2 million, and supplements to wages and salaries grew at an average 5.7 percent annually from $8.1 million to $61.7 million. In contrast, proprietors' income shrank 1.1 percent annually, from $38.4 million in 1970 to $25.7 million in 2007, despite proprietors' employment growing 2.1 percent annually. This decline was driven by farm proprietors' income, which fell from $16.4 million in 1970 to a loss of $0.8 million in 2007. Nonfarm proprietors' income grew only slightly over the period, from $22.0 million to $26.4 million.

Total farm earnings in Sevier County were rather volatile over the study period. They began at $19.9 million in 1970, reached $28.6 million in 1973, fell to $4.1 million in 1981, climbed back to $18.3 million in 1986 where they more or less remained through 2001, then slid to $12.5 million in 2002, and finally dropped to $2.2 million in 2006 and $3.0 million in 2007. Despite the recent decline, Sevier has by far the highest farm earnings of the three coal counties and was the only county with positive farm earnings in 2007.

Sevier's nonfarm earnings saw a net gain over the study period, more than tripling from $104.2 million to $326.6 million. Sevier County is the only one of the three coal counties in which total personal income and nonfarm earnings in 2007 were at their highest levels of the study period; Carbon and Emery both ended below earlier peaks.

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[77] Note that the sum of wage and salary disbursements plus supplements to wages and salaries plus proprietors' income equals the sum of farm and nonfarm earnings. Both are ways of measuring earnings by place of work. Subtracting employer and employee contributions for government social insurance and adding personal transfer receipts, income from dividends, interest, and rent, and a residence adjustment that covers the effects of interarea commuters, yields total personal income, which is by place of residence.

Table 8.22
Sevier County Income Summary, 1970–2007
(Millions of Constant 2007 Dollars)

	1970	1980	1990	2000	2001	2002	2003	2004	2005	2006	2007	Change	AARC
Total Personal Income	$162.0	$290.5	$309.6	$405.4	$409.4	$407.0	$400.7	$414.4	$429.3	$444.1	$453.4	179.9%	2.8%
Per Capita Personal Income (dollars)	$15,957	$19,498	$20,062	$21,407	$21,347	$21,162	$20,741	$21,343	$21,847	$22,221	$22,179	39.0%	0.9%
Average Annual Wage per Job (dollars)	$24,451	$29,949	$27,251	$26,418	$26,785	$27,190	$26,689	$26,520	$26,939	$28,015	$28,425	16.3%	0.4%
Personal Transfer Receipts	$19.6	$36.7	$55.9	$81.2	$82.4	$86.4	$88.7	$88.5	$93.4	$99.4	$100.3	412.2%	4.5%
Components of Earnings													
Wage and salary disbursements	$77.7	$146.8	$147.1	$201.7	$202.6	$208.6	$205.4	$214.2	$215.1	$231.5	$242.2	211.7%	3.1%
Supplements to wages and salaries	$8.1	$29.9	$33.0	$46.2	$46.9	$51.1	$53.3	$59.2	$58.6	$60.7	$61.7	666.2%	5.7%
Employer contribs for pensions and insurance	$4.8	$20.8	$21.5	$31.0	$31.6	$35.1	$36.8	$41.7	$41.0	$41.9	$42.8	793.0%	6.1%
Employer contribs for gov't social insurance	$3.3	$9.1	$11.5	$15.2	$15.3	$16.0	$16.5	$17.5	$17.7	$18.9	$19.0	480.3%	4.9%
Proprietors income	$38.4	$36.2	$40.3	$30.0	$35.5	$27.6	$27.2	$31.8	$34.6	$27.3	$25.7	−33.2%	−1.1%
Farm proprietors income	$16.4	$5.8	$15.4	$11.1	$15.6	$8.7	$7.4	$8.5	$7.7	−$1.4	−$0.8	−104.7%	N/A
Nonfarm proprietors income	$22.0	$30.4	$25.0	$18.8	$19.8	$18.9	$19.8	$23.3	$27.0	$28.7	$26.4	20.0%	0.5%
Farm earnings	$19.9	$10.4	$18.3	$14.5	$18.9	$12.5	$10.8	$12.0	$11.5	$2.2	$3.0	−85.0%	−5.0%
Nonfarm earnings	$104.2	$202.5	$202.2	$263.3	$266.1	$274.9	$275.2	$293.2	$296.9	$317.3	$326.6	213.4%	3.1%
Private earnings	$75.7	$155.2	$152.2	$195.5	$198.9	$206.1	$204.5	$221.8	$224.6	$244.6	$253.4	234.6%	3.3%
Government earnings	$28.5	$47.3	$49.9	$67.8	$67.2	$68.8	$70.6	$71.4	$72.3	$72.7	$73.2	157.0%	2.6%
Components' Shares of Total Earnings													
Wage and salary disbursements	62.6%	68.9%	66.7%	72.6%	71.1%	72.6%	71.9%	70.2%	69.8%	72.4%	73.5%		
Supplements to wages and salaries	6.5%	14.1%	15.0%	16.6%	16.5%	17.8%	18.6%	19.4%	19.0%	19.0%	18.7%		
Employer contribs for pensions and insurance	3.9%	9.8%	9.8%	11.2%	11.1%	12.2%	12.9%	13.7%	13.3%	13.1%	13.0%		
Employer contribs for gov't social insurance	2.6%	4.3%	5.2%	5.5%	5.4%	5.6%	5.8%	5.7%	5.7%	5.9%	5.8%		
Proprietors income	30.9%	17.0%	18.3%	10.8%	12.4%	9.6%	9.5%	10.4%	11.2%	8.5%	7.8%		
Farm proprietors income	13.2%	2.7%	7.0%	4.0%	5.5%	3.0%	2.6%	2.8%	2.5%	−0.4%	−0.2%		
Nonfarm proprietors income	17.7%	14.3%	11.3%	6.8%	7.0%	6.6%	6.9%	7.6%	8.7%	9.0%	8.0%		
Farm earnings	16.0%	4.9%	8.3%	5.2%	6.6%	4.4%	3.8%	3.9%	3.7%	0.7%	0.9%		
Nonfarm earnings	84.0%	95.1%	91.7%	94.8%	93.4%	95.6%	96.2%	96.1%	96.3%	99.3%	99.1%		
Private earnings	61.0%	72.9%	69.0%	70.4%	69.8%	71.7%	71.5%	72.7%	72.8%	76.5%	76.9%		
Government earnings	23.0%	22.2%	22.6%	24.4%	23.6%	23.9%	24.7%	23.4%	23.5%	22.8%	22.2%		
Location Quotients of Earnings Components													
Wage and salary disbursements	0.79	0.91	0.90	0.98	0.97	1.00	1.00	0.99	0.98	1.01	1.02	29.4%	0.7%
Supplements to wages and salaries	0.69	0.94	0.96	1.14	1.11	1.10	1.11	1.16	1.13	1.15	1.14	65.3%	1.4%
Employer contribs for pensions and insurance	0.65	0.97	0.97	1.20	1.17	1.13	1.13	1.20	1.15	1.16	1.17	79.7%	1.6%
Employer contribs for gov't social insurance	0.77	0.88	0.94	1.03	1.01	1.04	1.07	1.07	1.07	1.11	1.09	42.9%	1.0%
Proprietors income	2.70	1.77	1.77	0.96	1.08	0.86	0.83	0.87	0.93	0.71	0.66	−75.6%	−3.7%
Farm proprietors income	6.85	4.42	7.75	10.54	16.76	16.47	6.49	5.98	6.04	N/A	N/A		
Nonfarm proprietors income	1.86	1.59	1.20	0.62	0.62	0.59	0.63	0.66	0.75	0.76	0.70	−62.3%	−2.6%
Farm earnings	6.33	4.35	6.57	7.65	10.40	8.91	5.52	5.20	5.43	1.54	1.47	−76.9%	−3.9%
Nonfarm earnings	0.86	0.96	0.93	0.95	0.94	0.96	0.97	0.97	0.97	1.00	1.00	15.8%	0.4%
Private earnings	0.77	0.90	0.85	0.84	0.83	0.86	0.87	0.88	0.88	0.92	0.93	20.5%	0.5%
Government earnings	1.26	1.26	1.27	1.59	1.51	1.46	1.47	1.41	1.41	1.39	1.35	6.9%	0.2%

Note: Average wage per job is wage and salary disbursements divided by wage and salary employment. Location quotient values greater than 1.00 indicate concentrations relative to the country.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System; Utah Department of Workforce Services; and Bureau of Economic and Business Research, University of Utah.

Figure 8.10
Sevier County Components of Personal Income, 1970–2007
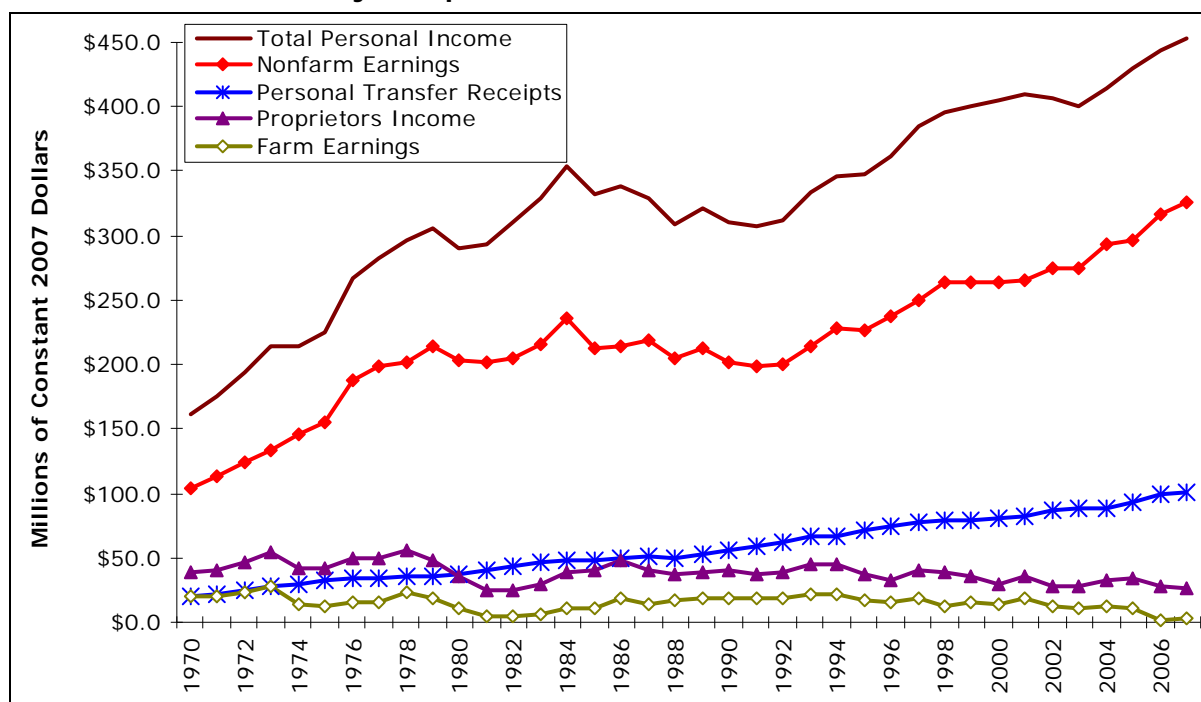
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

In 2007, 73.5 percent of total earnings in Sevier County came from wages and salaries, less than 19 percent was due to supplements to wages and salaries (employer contributions for pensions, insurance, and government social insurance), and the remaining almost 8 percent was proprietors' income. Sevier had the highest share of earnings from proprietors' income of the three coal counties but it was just two-thirds of the national average, down from 2.7 times the average in 1970. Farm proprietors' share was 6.0 times the national average in 2004 and 2005, and was as high as 16.8 times in 2001. Similarly, farm earnings' share of total earnings was 1.5 times the national average in 2006 and 2007, and reached 10.4 times in 2001. Sevier is the most agriculture-dependent of the three study counties.

The main sources of nonfarm earnings in Sevier County in 1970 were retail trade, which paid $20.1 million (in constant 2007 dollars); state and local government, which together paid $19.0 million; manufacturing, which paid $17.0 million; transportation and public utilities, which paid $11.2 million; and services, which paid $10.6 million (Table 8.23 and Figure 8.11a). Together these sectors accounted for 63 percent of total (farm and nonfarm) earnings, with the top three representing 16 percent, 15 percent, and almost 14 percent, respectively (Table 8.24). Mining was just 2 percent of total earnings. By way of comparison, farm earnings contributed 16 percent of the total. In 2000 there were the same top five sectors, though their order had changed. State and local government paid $51.4 million, services paid $48.6 million, transportation and public utilities paid $39.0 million, retail trade paid $31.2 million, and manufacturing paid $24.5 million. These sectors now accounted for 70 percent of total earnings, and the top three contributed almost 19 percent, 17.5 percent, and 14 percent, respectively. Farm earnings had shrunk to just 5 percent, and figures for mining were not disclosed.
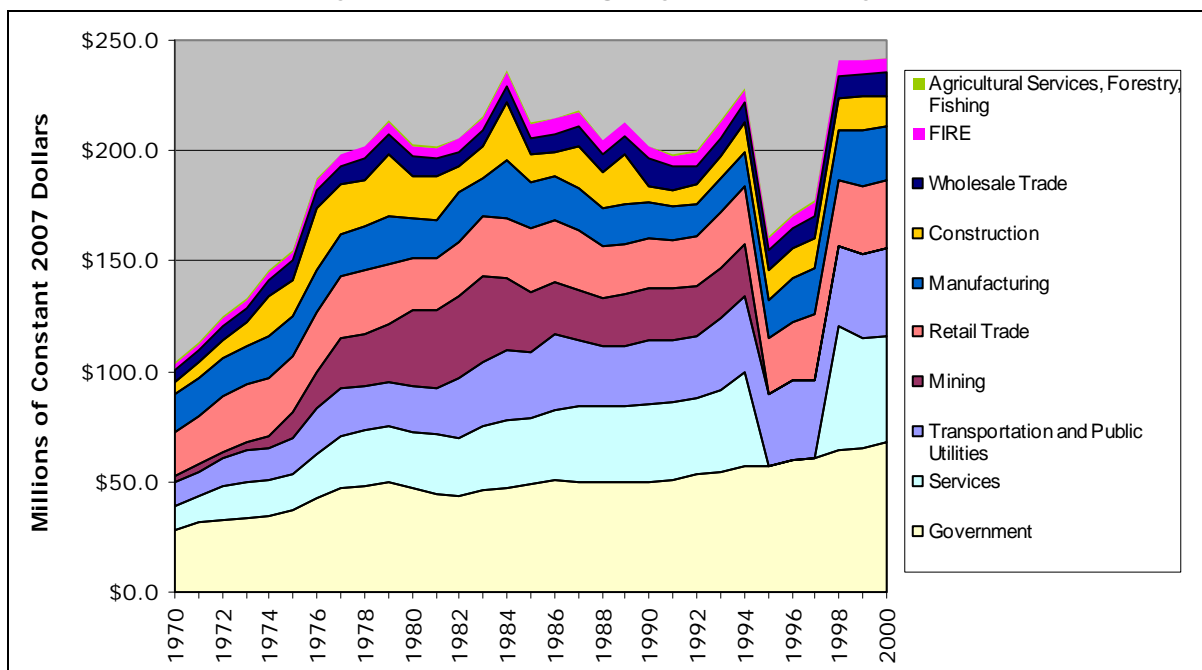
Table 8.23
Sevier County Nonfarm Earnings by Industry, 1970–2007
(Millions of Constant 2007 Dollars)

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Agricultural Services, Forestry, Fishing	$1.0	$0.2	$0.5	$0.7	$0.6	$0.7	$0.7	$0.6	$0.6	$0.7	N/A	N/A	N/A
Mining	$2.2	$33.7	$23.6	$23.1	$22.0	$22.7	$23.3	N/A	N/A	N/A	N/A	N/A	N/A
Metal mining	$0.00	$0.00	N/A	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	N/A	$0.00	$0.00	$0.00
Coal mining	N/A	N/A	N/A	$21.0	$19.6	$20.0	$19.5	N/A	N/A	N/A	N/A	N/A	N/A
Oil and gas extraction	N/A	N/A	$0.20	N/A	$0.20	$0.16	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nonmetallic minerals, except fuels	N/A	N/A	$1.9	N/A	$2.2	$2.6	$3.8	$3.3	$3.3	$4.1	N/A	N/A	N/A
Construction	$5.5	$18.9	$7.6	$7.4	$8.6	$10.3	$13.4	$13.4	$13.8	$13.7	$15.1	$14.9	$13.7
Manufacturing	$17.0	$18.6	$16.0	$15.0	$15.0	$15.6	$15.7	$17.3	$19.3	$21.1	$22.0	$25.2	$24.5
Petroleum and coal products	$0.0	$0.3	$2.5	$2.1	$2.2	$3.4	$2.9	$2.8	$2.9	$3.8	N/A	N/A	N/A
Transportation and Public Utilities	$11.2	$20.9	$28.7	$28.4	$28.8	$32.6	$35.0	$32.0	$35.7	$35.5	$36.0	$37.5	$39.0
Wholesale Trade	$5.5	$8.4	$12.1	$10.9	$8.9	$7.7	$9.0	$8.5	$9.0	$9.4	$9.4	$10.2	$10.5
Retail Trade	$20.1	$23.8	$23.0	$22.3	$22.6	$25.2	$26.1	$26.1	$26.6	$29.3	$30.4	$31.2	$31.2
Building materials and garden equipment	$1.83	$1.98	$1.09	$1.11	$1.16	$1.23	$1.44	$1.50	$1.70	$1.68	$2.04	$2.22	$2.28
General merchandise stores	$2.80	$2.11	$2.43	$2.04	$2.59	$2.87	$2.68	$2.79	$2.70	$3.03	$3.31	$3.37	N/A
Food stores	$2.49	$3.92	$4.32	$4.85	$4.80	$5.03	$5.25	$4.90	$5.02	$5.39	$5.98	$6.16	$6.01
Automotive dealers and service stations	$6.84	$6.22	$6.05	$5.85	$5.80	$7.56	$8.15	$8.10	$8.05	$8.85	$8.11	$8.26	$8.50
Apparel and accessory stores	$0.67	$1.25	$1.21	$1.21	$0.47	$0.50	$0.59	$0.61	$0.64	$0.71	$0.71	$0.66	$0.61
Home furniture and furnishings stores	$1.06	$1.29	$1.35	$0.88	$0.74	$0.75	$0.63	$0.57	$0.91	$1.17	$1.01	$0.83	N/A
Eating and drinking places	$2.07	$3.84	$3.82	$3.96	$4.41	$4.59	$4.69	$5.22	$5.07	$5.16	$5.87	$6.27	$6.45
Miscellaneous retail	$2.30	$3.21	$2.70	$2.42	$2.60	$2.66	$2.67	$2.37	$2.56	$3.28	$3.35	$3.46	$3.26
Finance, Insurance, and Real Estate	$2.6	$5.2	$5.4	$4.5	$6.2	$5.7	$5.5	$6.0	$5.7	$6.9	$7.9	$6.6	$6.7
Services	$10.6	$25.3	$35.3	$34.8	$34.6	$37.3	$42.8	N/A	N/A	N/A	$56.0	$50.1	$48.6
Government	$28.5	$47.3	$49.9	$51.0	$53.0	$53.9	$56.6	$57.3	$60.2	$61.0	$64.4	$65.3	$67.8
Federal, Civilian	$8.7	$17.4	$12.1	$12.2	$12.4	$12.5	$13.7	$13.1	$13.8	$13.0	$14.2	$13.3	$14.6
Military	$0.8	$0.9	$2.0	$1.8	$1.8	$1.8	$1.8	$1.6	$1.7	$1.7	$1.7	$1.7	$1.8
State	N/A	$7.5	$9.2	$9.5	$9.8	$9.7	$10.3	$10.6	$11.1	$11.6	$12.3	$13.0	$14.0
Local	N/A	$21.5	$26.6	$27.5	$29.0	$29.9	$30.9	$31.9	$33.5	$34.7	$36.2	$37.2	$37.4

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	$0.6	$0.9	N/A	N/A	N/A	$0.5
Mining	$21.5	$24.0	$22.7	$23.8	$22.7	$26.2	$30.0
Oil and gas extraction	N/A	$0.0	N/A	N/A	N/A	N/A	N/A
Mining (except oil and gas)	$21.5	$24.0	$22.7	N/A	$22.3	$24.8	$28.3
Support activities for mining	N/A	$0.0	$0.0	$0.0	N/A	N/A	N/A
Construction	$13.0	$13.2	$13.3	$14.8	$12.9	$13.9	$13.9
Manufacturing	$22.4	$19.3	$18.0	$19.1	$18.7	$21.1	$21.7
Petroleum and coal products	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Transportation and Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wholesale Trade	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail Trade	$30.8	$30.4	$29.5	$34.1	$34.1	$35.0	$37.4
Motor vehicle and parts dealers	$7.2	$7.2	$7.1	$7.2	$7.6	$7.7	$8.2
Furniture and home furnishings stores	$0.5	$0.4	N/A	N/A	N/A	N/A	$0.7
Electronics and appliance stores	N/A	N/A	N/A	$0.7	$0.5	$0.4	N/A
Building material and garden supply stores	$3.4	$3.3	$3.4	$3.4	$3.6	$3.8	$5.0
Food and beverage stores	$7.1	$7.6	$7.3	$6.9	$7.0	$7.0	$7.1
Health and personal care stores	$0.6	$0.4	$0.3	N/A	N/A	N/A	N/A
Gasoline stations	$4.5	$4.3	$4.0	$4.5	$4.7	$4.8	$4.7
Clothing and clothing accessories stores	$0.9	$1.0	$0.6	$0.7	$0.6	$0.6	$0.7
Sporting goods, hobby, book & music stores	N/A	N/A	$0.5	$0.5	$0.5	$0.6	$0.7
General merchandise stores	$3.3	$3.2	$3.3	$7.6	$6.5	$6.7	$7.1
Miscellaneous store retailers	$1.1	$1.2	$1.0	$1.0	$1.0	$1.0	$1.1
Nonstore retailers	$1.2	$1.2	$1.1	$1.1	$1.3	$1.4	$1.6
Information	$2.4	$2.3	$2.4	$2.7	$2.9	$3.3	$3.3
Financial Activity	$6.2	$8.1	$8.4	$8.7	$9.0	$9.3	$9.5
Professional & Business Services	$11.7	N/A	N/A	N/A	N/A	N/A	$17.3
Education & Health Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	$9.3	$9.7	$10.5	$11.0	$11.2	$11.9	$12.4
Other Services	$16.7	$15.2	$15.8	$15.8	$15.0	$14.8	$15.0
Government	$67.2	$68.8	$70.6	$71.4	$72.3	$72.7	$73.2
Federal, Civilian	$15.2	$16.1	$16.4	$18.4	$18.9	$18.9	$18.3
Military	$1.9	$2.4	$3.4	$3.5	$4.0	$3.5	$3.3
State	$14.3	$14.5	$13.6	$15.0	$14.9	$15.0	$15.0
Local	$35.8	$35.8	$37.3	$34.6	$34.6	$35.3	$36.6

N/A: Data not shown to avoid disclosure of confidential information or because the data were not available.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Figure 8.11a
Sevier County Nonfarm Earnings by SIC Industry, 1970–2000
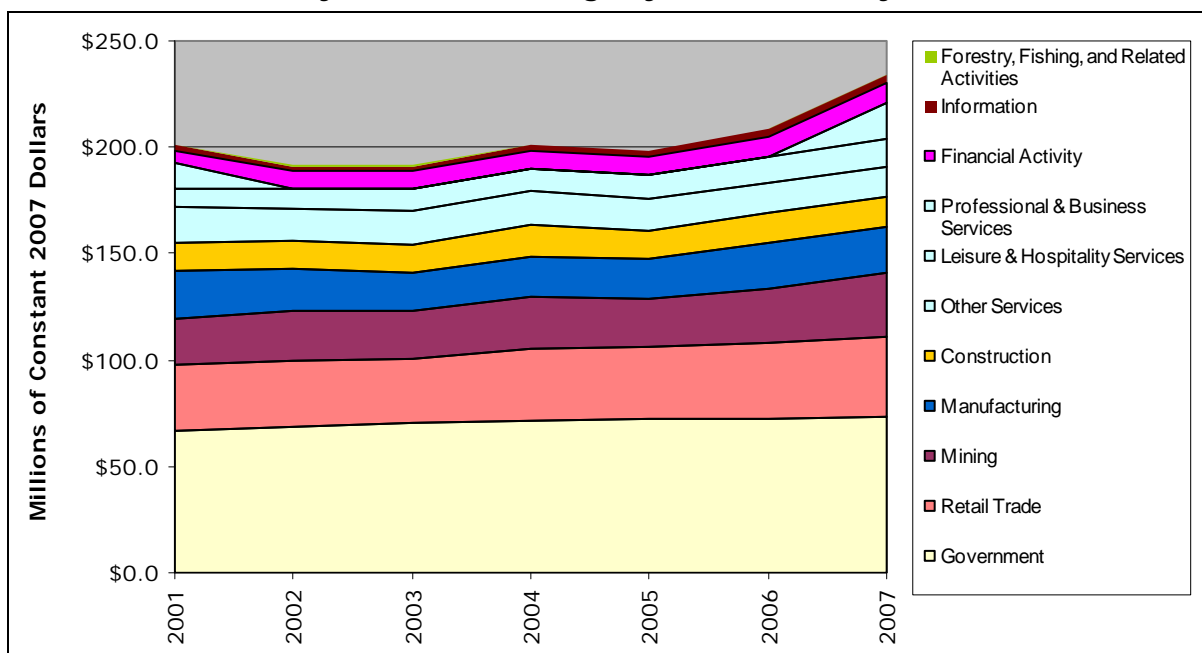

Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Figure 8.11b
Sevier County Nonfarm Earnings by NAICS Industry, 2001–2007

Note: Total earnings appear much lower in 2001 than in 2000 because figures were not reported for several industries.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

Table 8.24
Sevier County Nonfarm Earnings Shares by Industry, 1970–2007

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Agricultural Services, Forestry, Fishing	0.8%	0.1%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.3%	N/A	N/A	N/A
Mining	1.8%	15.8%	10.7%	10.7%	10.1%	9.6%	9.3%	N/A	N/A	N/A	N/A	N/A	N/A
Metal mining	0.0%	0.0%	N/A	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	0.0%	0.0%	0.0%
Coal mining	N/A	N/A	N/A	9.7%	9.0%	8.5%	7.8%	N/A	N/A	N/A	N/A	N/A	N/A
Oil and gas extraction	N/A	N/A	0.1%	N/A	0.1%	0.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nonmetallic minerals, except fuels	N/A	N/A	0.8%	N/A	1.0%	1.1%	1.5%	1.3%	1.3%	1.5%	N/A	N/A	N/A
Construction	4.5%	8.9%	3.5%	3.4%	3.9%	4.4%	5.4%	5.5%	5.5%	5.1%	5.5%	5.3%	4.9%
Manufacturing	13.7%	8.8%	7.2%	6.9%	6.8%	6.6%	6.3%	7.1%	7.7%	7.9%	8.0%	9.0%	8.8%
Petroleum and coal products	0.0%	0.1%	1.1%	1.0%	1.0%	1.4%	1.2%	1.2%	1.2%	1.4%	N/A	N/A	N/A
Transportation and Public Utilities	9.0%	9.8%	13.0%	13.1%	13.2%	13.8%	14.0%	13.1%	14.2%	13.2%	13.0%	13.4%	14.1%
Wholesale Trade	4.4%	4.0%	5.5%	5.0%	4.1%	3.3%	3.6%	3.5%	3.6%	3.5%	3.4%	3.6%	3.8%
Retail Trade	16.2%	11.2%	10.4%	10.3%	10.3%	10.7%	10.4%	10.7%	10.6%	10.9%	11.0%	11.1%	11.2%
Building materials and garden equipment	1.5%	0.9%	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	0.6%	0.7%	0.8%	0.8%
General merchandise stores	2.3%	1.0%	1.1%	0.9%	1.2%	1.2%	1.1%	1.1%	1.1%	1.1%	1.2%	1.2%	N/A
Food stores	2.0%	1.8%	2.0%	2.2%	2.2%	2.1%	2.1%	2.0%	2.0%	2.0%	2.2%	2.2%	2.2%
Automotive dealers and service stations	5.5%	2.9%	2.7%	2.7%	2.7%	3.2%	3.3%	3.3%	3.2%	3.3%	2.9%	2.9%	3.1%
Apparel and accessory stores	0.5%	0.6%	0.6%	0.6%	0.2%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%	0.2%	0.2%
Home furniture and furnishings stores	0.9%	0.6%	0.6%	0.4%	0.3%	0.3%	0.3%	0.2%	0.4%	0.4%	0.4%	0.3%	N/A
Eating and drinking places	1.7%	1.8%	1.7%	1.8%	2.0%	1.9%	1.9%	2.1%	2.0%	1.9%	2.1%	2.2%	2.3%
Miscellaneous retail	1.9%	1.5%	1.2%	1.1%	1.2%	1.1%	1.1%	1.0%	1.0%	1.2%	1.2%	1.2%	1.2%
Finance, Insurance, and Real Estate	2.1%	2.4%	2.4%	2.1%	2.8%	3.4%	2.2%	2.4%	2.2%	2.6%	2.9%	2.3%	2.4%
Services	8.5%	11.9%	16.0%	16.1%	15.8%	15.8%	17.1%	N/A	N/A	N/A	20.3%	17.9%	17.5%
Government	23.0%	22.2%	22.6%	23.6%	24.3%	22.8%	22.7%	23.4%	23.9%	22.7%	23.3%	23.3%	24.4%
Federal, Civilian	7.0%	8.2%	5.5%	5.7%	5.7%	5.3%	5.5%	5.4%	5.5%	4.8%	5.1%	4.8%	5.2%
Military	0.6%	0.4%	0.9%	0.8%	0.8%	0.8%	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%	0.6%
State	N/A	3.5%	4.2%	4.4%	4.5%	4.1%	4.1%	4.3%	4.4%	4.3%	4.5%	4.7%	5.1%
Local	N/A	10.1%	12.1%	12.7%	13.3%	12.7%	12.4%	13.0%	13.3%	12.9%	13.1%	13.3%	13.5%

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	0.2%	0.3%	N/A	N/A	N/A	0.1%
Mining	7.6%	8.4%	8.0%	7.8%	7.4%	8.2%	9.1%
Oil and gas extraction	N/A	0.0%	N/A	N/A	N/A	N/A	N/A
Mining (except oil and gas)	7.5%	8.4%	8.0%	N/A	7.2%	7.8%	8.6%
Support activities for mining	N/A	0.0%	0.0%	0.0%	N/A	N/A	N/A
Construction	4.6%	4.6%	4.6%	4.8%	4.2%	4.3%	4.2%
Manufacturing	7.9%	6.7%	6.3%	6.2%	6.1%	6.6%	6.6%
Petroleum and coal products	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Transportation and Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wholesale Trade	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail Trade	10.8%	10.6%	10.3%	11.2%	11.1%	11.0%	11.4%
Motor vehicle and parts dealers	2.5%	2.5%	2.5%	2.3%	2.5%	2.4%	2.5%
Furniture and home furnishings stores	0.2%	0.2%	N/A	N/A	N/A	N/A	0.2%
Electronics and appliance stores	N/A	N/A	N/A	0.2%	0.2%	0.1%	N/A
Building material and garden supply stores	1.2%	1.1%	1.2%	1.1%	1.2%	1.2%	1.5%
Food and beverage stores	2.5%	2.6%	2.5%	2.3%	2.3%	2.2%	2.2%
Health and personal care stores	0.2%	0.1%	0.1%	N/A	N/A	N/A	N/A
Gasoline stations	1.6%	1.5%	1.4%	1.5%	1.5%	1.5%	1.4%
Clothing and clothing accessories stores	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%
Sporting goods, hobby, book & music stores	N/A	N/A	0.2%	0.2%	0.2%	0.2%	0.2%
General merchandise stores	1.2%	1.1%	1.1%	2.5%	2.1%	2.1%	2.1%
Miscellaneous store retailers	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%
Nonstore retailers	0.4%	0.4%	0.4%	0.4%	0.4%	0.5%	0.5%
Information	0.8%	0.8%	0.8%	0.9%	1.0%	1.0%	1.0%
Financial Activity	2.2%	2.8%	2.9%	2.8%	2.9%	2.9%	2.9%
Professional & Business Services	4.1%	N/A	N/A	N/A	N/A	N/A	5.3%
Education & Health Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	3.3%	3.4%	3.7%	3.6%	3.6%	3.7%	3.8%
Other Services	5.9%	5.3%	5.5%	5.2%	4.9%	4.6%	4.6%
Government	23.6%	23.9%	24.7%	23.4%	23.5%	22.8%	22.2%
Federal, Civilian	5.3%	5.6%	5.7%	6.0%	6.1%	5.9%	5.6%
Military	0.7%	0.8%	1.2%	1.2%	1.3%	1.1%	1.0%
State	5.0%	5.0%	4.8%	4.9%	4.8%	4.7%	4.6%
Local	12.6%	12.4%	13.0%	11.3%	11.2%	11.0%	11.1%

N/A: Data not shown to avoid disclosure of confidential information or because the data were not available.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System and Bureau of Economic and Business Research, University of Utah.

Although figures for the mining sector were not reported from 1995 through 2000, Figure 8.11a reveals that it began to expand in the late 1970s and was a significant source of earnings during the 1980s and early 1990s. In 1980 the sector paid $33.7 million in earnings, which was nearly 16 percent of total earnings. In the early 1990s mining earnings averaged around $22 to $23 million per year and about 10 percent of total earnings. When details are available we see that coal mining accounted for about 90 percent of all mining earnings.

In 2007, under the NAICS classification system, state and local government was the largest source of earnings, paying $51.6 million and 15.7 percent of total earnings. Services—comprising professional and business, leisure and hospitality, and other services—paid $44.8 million and almost 14 percent of the total. Retail trade paid $37.4 million, accounting for over 11 percent of total earnings. Mining paid $30.0 million, 9 percent, of which mining (except oil and gas) was $28.3 million. This latter sector includes coal mining, but also covers metals and nonmetallic minerals. From available SIC data discussed above we know that the lion's share of total mining earnings is from coal mining. Finally, manufacturing paid $21.7 million and almost 7 percent of total earnings. These sectors—state and local government, services, retail trade, mining, and manufacturing—together accounted for 56 percent of all earnings in 2007. Farm earnings made up less than 1 percent of the total.

Using location quotients to compare the distribution of earnings by industry in Sevier County with the country as a whole reveals the importance of coal mining to the county's economy (Table 8.25 and Figure 8.12). Its share of county earnings grew from 1.7 times the sector's national share in 1970 to 7.6 times in 1980 to 9.8 times in 1990. It was more than 10 times the national average in 1991 through 1994. In this period data for coal mining are available and show that Sevier's share of earnings from this activity was more than 40 times the national share. From 2001 through 2007, under the NAICS system, mining's share of local earnings jumped from 8.4 times its national share to 10.1 times in 2002, then declined to 6.7 times in 2007. Over this same period the county's earnings share from mining (except oil and gas) was more than 30 times the national average.

Other industries with significant relative earnings concentrations include transportation and public utilities, which averaged twice the national earnings share from 1990 through 2000 (figures for 2001 through 2007 were not disclosed); various levels of government, though all were less than twice the national average; other services from 2001 through 2007; and retail trade. Within the latter sector, the local share of earnings from gas stations was about five times the average and the shares from building material and garden supply stores, food and beverage stores, and general merchandise stores were all about twice the national average.
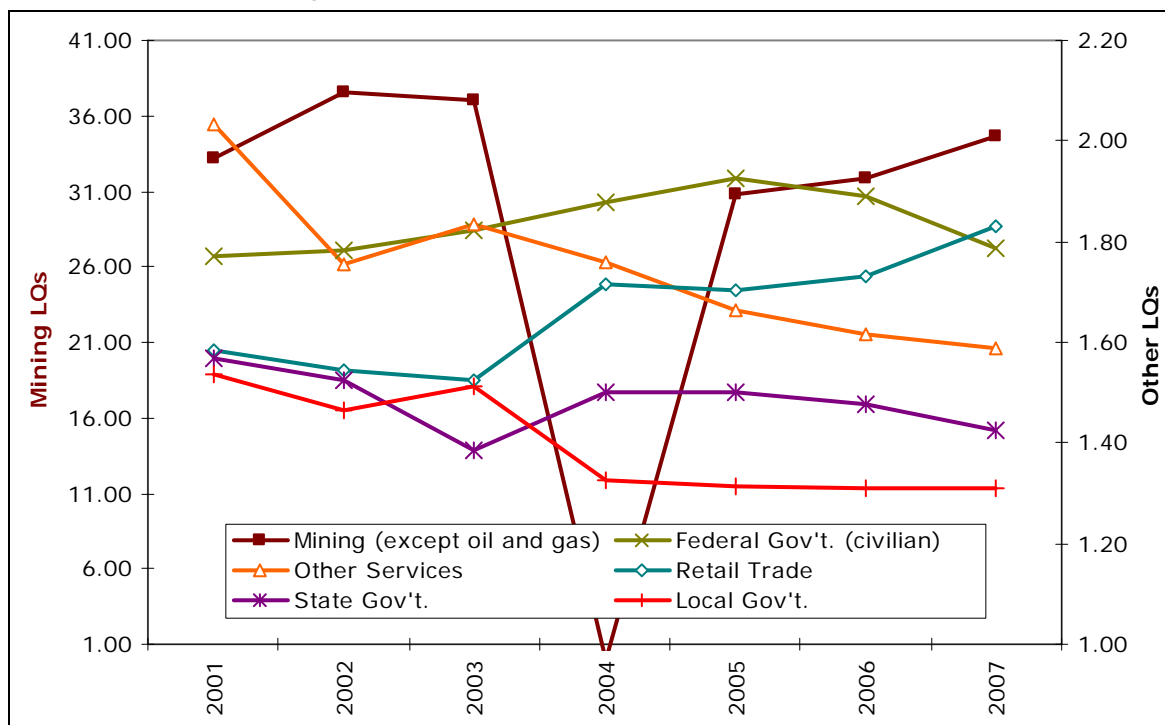
Table 8.25
Sevier County Nonfarm Earnings Location Quotients by Industry, 1970–2007

By SIC Industry	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Agricultural Services, Forestry, Fishing	1.84	0.26	0.38	0.50	0.46	0.45	0.44	0.42	0.40	0.41	N/A	N/A	N/A
Mining	1.71	7.62	9.81	10.92	10.70	10.50	10.60	N/A	N/A	N/A	N/A	N/A	N/A
Metal mining	0.00	0.00	N/A	0.00	0.00	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
Coal mining	N/A	N/A	N/A	44.06	43.80	46.10	44.03	N/A	N/A	N/A	N/A	N/A	N/A
Oil and gas extraction	N/A	N/A	0.14	N/A	0.16	0.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nonmetallic minerals, except fuels	N/A	N/A	6.98	N/A	8.94	9.86	12.93	12.02	11.39	13.54	N/A	N/A	N/A
Construction	0.69	1.43	0.59	0.64	0.78	0.85	1.00	1.03	1.02	0.93	0.97	0.91	0.84
Manufacturing	0.52	0.36	0.38	0.37	0.37	0.36	0.34	0.39	0.44	0.45	0.47	0.54	0.54
Petroleum and coal products	0.00	0.31	4.50	3.79	4.07	5.93	4.88	5.03	5.53	6.88	N/A	N/A	N/A
Transportation and Public Utilities	1.24	1.31	1.99	1.99	2.00	2.03	2.04	1.90	2.05	1.96	1.95	1.97	2.07
Wholesale Trade	0.74	0.60	0.86	0.80	0.66	0.54	0.59	0.56	0.58	0.57	0.54	0.58	0.60
Retail Trade	1.49	1.13	1.13	1.13	1.15	1.20	1.17	1.19	1.20	1.24	1.27	1.28	1.31
Building materials and garden equipment	2.16	1.63	1.01	1.07	1.11	1.08	1.16	1.23	1.36	1.25	1.46	1.54	1.62
General merchandise stores	1.18	0.78	1.03	0.91	1.15	1.19	1.07	1.14	1.11	1.19	1.28	1.29	N/A
Food stores	1.18	1.05	1.31	1.47	1.48	1.47	1.48	1.43	1.45	1.48	1.66	1.72	1.77
Automotive dealers and service stations	2.65	1.73	1.84	1.84	1.87	2.20	2.16	2.19	2.10	2.21	2.01	1.98	2.13
Apparel and accessory stores	0.83	1.09	1.13	1.12	0.46	0.46	0.53	0.58	0.61	0.65	0.63	0.58	0.55
Home furniture and furnishings stores	1.42	1.12	1.01	0.73	0.66	0.63	0.48	0.43	0.67	0.80	0.65	0.50	N/A
Eating and drinking places	0.93	0.90	0.85	0.87	0.97	0.93	0.90	1.01	0.96	0.92	1.03	1.09	1.15
Miscellaneous retail	1.32	1.00	0.80	0.76	0.80	0.78	0.73	0.66	0.70	0.84	0.85	0.85	0.80
Finance, Insurance, and Real Estate	0.40	0.42	0.36	0.30	0.38	0.43	0.29	0.30	0.27	0.29	0.30	0.24	0.24
Services	0.55	0.65	0.64	0.63	0.61	0.60	0.66	N/A	N/A	0.73	0.64	0.61
Government	1.26	1.26	1.27	1.28	1.34	1.26	1.27	1.34	1.40	1.37	1.46	1.49	1.59
Federal, Civilian	1.55	1.89	1.43	1.42	1.43	1.35	1.43	1.46	1.55	1.42	1.60	1.54	1.71
Military	0.23	0.22	0.45	0.41	0.42	0.42	0.44	0.43	0.45	0.44	0.47	0.49	0.51
State	N/A	1.06	1.18	1.19	1.26	1.15	1.14	1.22	1.27	1.28	1.37	1.47	1.62
Local	N/A	1.25	1.43	1.45	1.53	1.45	1.41	1.50	1.56	1.54	1.60	1.64	1.70

By NAICS Industry	2001	2002	2003	2004	2005	2006	2007
Forestry, Fishing, and Related Activities	N/A	0.55	0.89	N/A	N/A	N/A	0.43
Mining	8.43	10.12	8.74	7.72	6.62	6.40	6.68
Oil and gas extraction	N/A	0.00	N/A	N/A	N/A	N/A	N/A
Mining (except oil and gas)	33.14	37.53	36.99	N/A	30.80	31.87	34.70
Support activities for mining	N/A	0.00	0.00	0.00	N/A	N/A	N/A
Construction	0.75	0.76	0.77	0.79	0.65	0.67	0.68
Manufacturing	0.56	0.49	0.47	0.48	0.49	0.53	0.55
Petroleum and coal products	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Transportation and Utilities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wholesale Trade	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail Trade	1.58	1.54	1.53	1.72	1.70	1.73	1.83
Motor vehicle and parts dealers	1.85	1.80	1.78	1.77	1.87	1.89	2.01
Furniture and home furnishings stores	0.58	0.54	N/A	N/A	N/A	N/A	0.80
Electronics and appliance stores	N/A	N/A	N/A	0.73	0.49	0.42	N/A
Building material and garden supply stores	2.12	2.02	2.10	1.94	1.96	2.03	2.71
Food and beverage stores	2.33	2.43	2.41	2.23	2.30	2.31	2.32
Health and personal care stores	0.48	0.30	0.26	N/A	N/A	N/A	N/A
Gasoline stations	4.58	4.49	4.30	4.80	5.08	5.13	4.99
Clothing and clothing accessories stores	0.71	0.75	0.49	0.50	0.43	0.47	0.48
Sporting goods, hobby, book & music stores	N/A	N/A	0.85	0.84	0.88	1.05	1.09
General merchandise stores	1.37	1.22	1.26	2.80	2.38	2.37	2.45
Miscellaneous store retailers	0.84	0.96	0.84	0.82	0.81	0.86	0.90
Nonstore retailers	1.21	1.20	1.14	1.20	1.27	1.43	1.45
Information	0.20	0.20	0.22	0.24	0.26	0.28	0.28
Financial Activity	0.22	0.29	0.30	0.28	0.29	0.29	0.29
Professional & Business Services	0.27	N/A	N/A	N/A	N/A	N/A	0.33
Education & Health Services	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Leisure & Hospitality Services	0.88	0.89	0.95	0.94	0.95	0.97	0.98
Other Services	2.03	1.76	1.83	1.76	1.66	1.62	1.59
Government	1.51	1.46	1.47	1.41	1.41	1.39	1.35
Federal, Civilian	1.77	1.78	1.82	1.88	1.93	1.89	1.79
Military	0.54	0.59	0.76	0.72	0.77	0.67	0.61
State	1.57	1.52	1.38	1.50	1.50	1.48	1.43
Local	1.54	1.46	1.51	1.32	1.31	1.31	1.31

Note: Values greater than 1.00 indicate concentrations relative to the country.
Source: U.S. Bureau of Economic Analysis, Regional Economic Information System and Bureau of Economic and Business Research, University of Utah.

Figure 8.12
Sevier County Basic Industries' Location Quotients, 2001–2007

Source: U.S. Bureau of Economic Analysis and Bureau of Economic and Business Research, University of Utah.

8.2.3.3 Retail Sales

Year	Building & Garden	General Merchandise	Food Stores	Motor Vehicle Dealers	Apparel & Accessory	Furniture	Eating & Drinking	Miscellaneous
Table 8.26 Sevier County Retail Sales by Category, 1978–2008 (Thousands of Constant 2008 Dollars)								
1978	$10,086.9	N/A	$32,354.6	$38,430.0	$3,577.0	$6,255.9	$11,607.8	$10,142.4
1979	$12,150.5	N/A	$37,107.5	$39,582.8	$4,687.4	$5,998.5	$10,255.3	$9,613.1
1980	$10,924.3	N/A	$32,124.8	$28,084.6	$4,860.5	$4,262.2	$9,210.2	$9,332.4
1990	$8,065.7	N/A	$35,119.4	$31,990.5	$2,183.4	$3,738.2	$11,602.6	$7,572.1
1991	$8,107.1	N/A	$33,325.5	$27,472.2	$2,315.2	$3,113.2	$10,708.2	$7,339.8
1992	$9,044.0	N/A	$33,063.0	$27,596.0	$2,493.1	$3,166.6	$11,368.3	$6,964.1
1993	$10,788.3	N/A	$35,395.3	$34,417.5	$2,794.7	$3,195.0	$12,491.7	$6,933.0
1994	$11,347.0	N/A	$37,447.7	$36,343.5	$3,046.2	$3,876.8	$13,222.9	$7,939.2
1995	$11,816.9	N/A	$37,865.3	$38,897.8	$3,154.1	$3,337.3	$14,003.4	$7,479.6
1996	$14,208.1	N/A	$39,124.7	$38,661.9	$3,162.5	$3,907.3	$13,729.5	$7,715.8
1997	$13,977.3	N/A	$40,614.4	$35,353.2	$3,048.9	$3,520.6	$13,834.7	$7,551.9
1998	$14,810.8	N/A	$41,209.5	$36,627.4	$2,871.4	$3,984.5	$14,496.1	$8,940.8
1999	$16,410.5	N/A	$41,703.1	$37,788.7	$2,744.1	$3,777.4	$15,927.7	$9,831.2
2000	$15,364.1	N/A	$40,812.7	$26,787.3	$2,703.9	$3,295.0	$15,658.5	$9,900.8
2001	$14,218.4	$25,116.9	$37,364.8	$20,612.7	$2,593.4	$2,867.7	$14,274.2	$9,717.8
2002	$14,944.8	$22,957.3	$38,034.3	$20,996.7	$2,465.1	$3,182.4	$15,196.5	$11,387.9
2003	$13,723.4	$22,494.3	$37,551.9	$23,238.8	$2,587.9	$3,632.0	$14,224.0	$11,242.9
2004	$13,540.8	$50,044.7	$29,031.0	$24,042.4	$2,504.2	$4,281.7	$14,978.4	$11,229.8
2005	$14,239.1	$53,455.9	$29,835.8	$22,099.6	$2,665.1	$6,597.1	$16,356.3	$16,236.2
2006	$15,872.0	$57,202.0	$29,551.4	$27,303.5	$2,747.3	$7,635.7	$17,372.2	$46,784.0
2007	$19,988.6	$57,562.2	$29,442.5	$32,486.4	$2,854.6	$6,985.4	$20,254.6	$32,863.1
2008	$24,399.5	$60,094.8	$27,680.9	$31,468.1	$2,588.3	$5,516.7	$19,305.2	$12,947.6
Change	141.9%		−14.4%	−18.1%	−27.6%	−11.8%	66.3%	27.7%
AARC	3.0%	13.3%	−0.5%	−0.7%	−1.1%	−0.4%	1.7%	0.8%

NA: Not available; amounts for this category were not reported. The Tax Commission did not publish sales figures for Food Stores prior to 2002. In the quarterly sales data for 2001-06 there are two General Merchandise categories; the second of these generally corresponds to the Food Stores figures from the 2002-06 *annual* sales data. In several counties the amounts for General Merchandise sales in 1978 through 2000 matched up with the 2001-06 Food Stores sales and so have been reclassified into the latter category.
Source: Utah State Tax Commission.

Table 8.27 2008 Retail Sales in Sevier County		
Category	**Amount**	**Share**
Building & Garden	$24,399,547	13.3%
General Merchandise	$60,094,765	32.7%
Food Stores	$27,680,936	15.0%
Motor Vehicle Dealers	$31,468,067	17.1%
Apparel & Accessory	$2,588,347	1.4%
Furniture	$5,516,682	3.0%
Eating & Drinking	$19,305,183	10.5%
Miscellaneous	$12,947,590	7.0%
Total	$184,001,118	100%
Source: Utah State Tax Commission.		

8.2.3.4 Residential Construction

Exhibit 8.17
Permit-Authorized New Dwelling Units and Value of Residential Construction in Sevier County, 1975–2008

Year	Single-Family Homes	Duplexes and Twin Homes	Condominiums	Apartments (3 or more units)	Cabins	Manufactured / Mobile Homes	Total	Value (thousands of constant 2008 dollars)
1975	37	2	0	0	0	0	39	$4,458.9
1980	117	0	0	34	0	25	176	$17,006.9
1990	10	0	0	0	0	0	10	$1,377.3
1991	24	0	0	0	4	5	33	$3,140.5
1992	15	0	0	0	0	8	23	$1,875.2
1993	45	0	0	0	17	11	73	$5,761.6
1994	105	0	0	6	16	23	150	$15,738.3
1995	70	12	14	0	9	44	149	$15,146.8
1996	112	6	0	32	5	78	233	$22,221.2
1997	85	6	0	0	1	44	136	$16,973.4
1998	84	4	0	0	6	67	161	$20,072.5
1999	104	2	0	30	4	42	182	$19,830.4
2000	69	6	0	20	0	24	119	$13,362.6
2001	76	6	0	0	2	15	99	$13,152.2
2002	74	10	0	36	8	24	152	$15,904.8
2003	77	2	0	0	3	15	97	$15,577.5
2004	78	8	4	3	5	17	115	$17,615.0
2005	90	2	8	0	5	15	120	$22,676.4
2006	107	6	20	0	4	15	152	$29,043.7
2007	94	2	16	4	7	10	133	$24,765.2
2008	44	4	48	0	4	19	119	$16,666.8

New Single-Family Homes and Total Residential Construction Value

Note: Prior to 1994, condos and other multifamily units were grouped together.
Source: Bureau of Economic and Business Research, University of Utah.

8.2.3.5 Nonresidential Construction

Exhibit 8.18
Value of Nonresidential Construction in Sevier County, 1975–2008
(Thousands of Constant 2008 Dollars)

Year	Hotels & Motels	Churches & Other Religious	Industrial / Warehouse / Manufacturing	Hospital & Institutional	Office, Bank, Professional	Retail, Mercantile, Restaurant	Public Buildings & Projects	Other*	Additions and Alterations	Total
1975	$0.0	$2,355.1	$0.0	$0.0	$238.0	$71.0	$0.0	$60.5	$0.0	$2,724.7
1980	$0.0	$3,330.3	$0.0	$0.0	$2,362.6	$858.0	$26.4	$1,051.0	$485.2	$8,113.5
1990	$0.0	$918.7	$61.8	$0.0	$45.1	$33.4	$1.7	$418.4	$1,854.4	$3,333.4
1991	$719.9	$0.0	$617.5	$0.0	$0.0	$174.4	$25.6	$833.8	$140.3	$2,511.5
1992	$1.5	$3.1	$12.4	$4.6	$0.0	$13.9	$7.7	$219.5	$63.4	$326.2
1993	$37.6	$56.8	$969.0	$77.4	$0.0	$450.3	$316.8	$670.7	$684.6	$3,263.1
1994	$0.0	$0.0	$1,240.6	$26.4	$36.7	$795.8	$10,656.4	$1,760.7	$1,636.3	$16,152.9
1995	$0.0	$0.0	$17.2	$271.9	$50.1	$1,057.4	$14.3	$2,774.1	$4,132.2	$8,317.2
1996	$0.0	$0.0	$786.3	$458.5	$0.0	$385.8	$97.6	$1,192.4	$2,195.8	$5,116.4
1997	$0.0	$0.0	$0.0	$142.9	$0.0	$1,337.5	$0.0	$3,439.4	$3,809.0	$8,728.7
1998	$0.0	$0.0	$1,752.5	$1,643.3	$460.9	$390.1	$0.0	$706.0	$3,005.8	$7,958.7
1999	$780.3	$57.5	$520.2	$0.0	$651.5	$2,431.8	$51.8	$1,035.5	$2,885.4	$8,414.0
2000	$2,136.1	$313.4	$540.3	$0.0	$62.8	$0.0	$1,270.4	$418.4	$980.9	$5,722.4
2001	$0.0	$0.0	$0.0	$0.0	$0.0	$3,636.5	$0.0	$3,074.4	$2,421.2	$9,132.2
2002	$1,339.8	$3,472.5	$0.0	$0.0	$1,065.5	$0.0	$2.4	$3,077.7	$1,141.8	$10,099.6
2003	$0.0	$0.0	$0.0	$0.0	$0.0	$8,874.4	$478.7	$1,215.7	$1,669.7	$12,238.5
2004	$0.0	$0.0	$1,589.9	$0.0	$2,048.5	$1,456.7	$2,452.9	$1,288.4	$1,025.1	$9,861.4
2005	$0.0	$0.0	$1,414.6	$0.0	$792.9	$361.1	$0.0	$2,264.5	$2,208.6	$7,041.7
2006	$0.0	$0.0	$1,465.0	$305.4	$0.0	$0.0	$0.0	$2,510.0	$7,158.2	$11,438.6
2007	$5,667.3	$1,264.7	$0.0	$0.0	$243.2	$9,217.2	$1,966.4	$3,675.4	$4,663.9	$26,698.1
2008	$2,889.0	$0.0	$987.0	$1,000.0	$234.0	$556.0	$0.0	$2,571.6	$2,126.8	$10,364.4
1990–2008 Total	$13,571.5	$6,086.6	$11,974.3	$3,930.5	$5,691.3	$31,172.3	$17,342.5	$33,146.6	$43,803.3	$166,718.9

* Other includes school and educational buildings, service stations and repair garages, agricultural buildings, and structures other than buildings.

Total Value of Nonresidential Construction
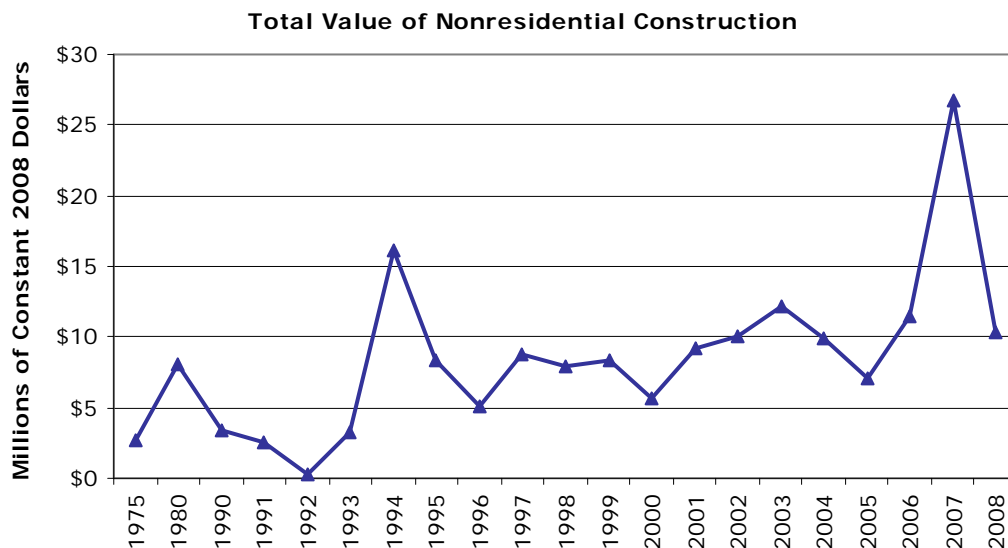
Source: Bureau of Economic and Business Research, University of Utah.

9 TECHNICAL NOTES AND METHODOLOGY

Industries are classified by economists according to the North American Industry Classification System (NAICS), which was developed by the Office of Management and Budget in cooperation with other federal agencies and foreign governments (Office of Management and Budget, 2002). The NAICS codes replaced the Standard Industrial Classification (SIC) Codes that had been used since the 1930s. This change was prompted by structural changes in the U.S. economy, with the services sector becoming a much larger portion of the economy and more complex than when the SIC codes were developed. In the switch, the 10 major industrial sectors under the SIC codes were replaced with 20 major sectors under the NAICS codes. Many of the industrial sectors under the SIC codes were split among two or more of the redefined sectors under the NAICS codes, making comparisons difficult. The NAICS codes better explain the structure of the current economy but make time series data difficult to compile.

Under the NAICS system, companies are classified under 20 major industrial categories which are further subdivided as needed. Coal mining in Utah is covered by NAICS 212112 Bituminous Coal Underground Mining while the state's coal-fired power plants are classified under NAICS 221112 Fossil Fuel Electric Power Generation.

Other local businesses and industries benefit from coal production and coal-fired power plant operation. Additional benefits accrue to local retailers and service providers as a result of spending by workers. These types of effects are referred to as the indirect and induced impacts. The indirect and induced impacts can be calculated from the value of transactions between the particular industry (mining or power generation) and these other businesses using input-output economic models.

9.1 NAICS Codes for Coal Production and Coal-Fired Power Plants

For this study, we used the following NAICS classifications for the coal production industry and coal-fired power plants. The definitions listed are those developed by the Office of Management and Budget.

212112 BITUMINOUS COAL UNDERGROUND MINING This industry comprises establishments primarily engaged in one or more of the following: (1) underground mining of bituminous coal; (2) developing bituminous coal underground mine sites; and (3) underground mining and beneficiating of bituminous coal (e.g., cleaning, washing, screening, and sizing coal).

221112 FOSSIL FUEL ELECTRIC POWER GENERATION This industry comprises establishments primarily engaged in operating fossil fuel–powered electric power generation facilities. These facilities use fossil fuels, such as coal, oil, or gas, in internal combustion or combustion turbine conventional steam process to produce electric energy. The electric energy produced in these establishments is provided to electric power transmission systems or to electric power distribution systems.

9.2 Economic Impacts

Regional exports provide external sources of income and are widely recognized as the engines of economic development and growth. These export base (or basic) industries can potentially lead to the development of backward-linked industries that provide necessary inputs and services to the primary export producer. Forward-linked industries produce additional value-added to the exports before the products are sold outside the region. These backward- and forward-linked industries create more jobs in the regional economy that are directly connected to the export industry. This amounts to an increase in the export base of the region. If the export industries purchase equipment, material, labor, or other inputs from outside the region, this is a leakage and reduces the economic impact of the industry on the host region.

Other businesses within the region provide the local population with consumer goods and services. These are referred to as nonbasic or residentiary sectors. Although these activities do not generate income from the outside world, they do keep some of the income earned through exports within the community to create new jobs and contribute to the multiplier effect. Otherwise the residents of the area must import their consumer goods, which results in a leakage of spending from the regional economy and a very small multiplier. Most products consumed by residents of isolated rural areas must be imported from outside the region even though a local retailer may serve as the middleman. Large, economically integrated metropolitan areas produce a much larger share of the goods and services purchased by households in the region. Consequently, these urban regions have much larger income, expenditure, and employment multipliers than do small, isolated communities. As regions develop, the growth of the nonbasic sector is known as import substitution. The larger the geographic region, the greater the multiplier.

Various models have been built to evaluate regional economic impacts. These are built using historical data from the areas that are modeled. Economic impacts depend upon the structure of the local economy and the specific employment and spending patterns associated with the export base activity. The most accurate impact estimates are possible when the producers provide actual in-region spending patterns (including labor and purchases from in-region firms). This requires firms to commit internal resources (extraction and summary of accounting records) and also a willingness to "open their books" to the analysts. Coal producers were contacted for this study, but none was willing to provide data. Models like REMI can also simulate industry impacts when primary data are not available. Production and employment levels serve as inputs and the model generates local impacts.

In this study, economic impact is used to mean the impact of coal mining activities or coal-fired power plant operation on the amount of employment and wages paid in the various producing counties in Utah. Many similar studies present the total economic output of an activity as the economic impact; this is the sum of all transactions in a supply chain and can be much larger than the value of the final good or service provided to the end consumer. Similarly, many authors apply economic output multipliers to all spending related to an activity, with no distinction between export-based and residentiary spending. The result is often termed "economic contribution" and presented as economic impact. As with all economic output calculations, the result is much larger than the value of the final product delivered to an end consumer.

The coal mining industry and coal-fired power plants have a direct impact on the local economy through employment and wages paid. In addition, there are indirect and induced impacts. Indi-

rect impacts result from local spending by the industries for goods and services, and induced impacts arise from employees of the mining and power industries spending their earnings. Induced benefits accrue to local retailers and service providers as a result of spending by workers. The indirect and induced impacts can be calculated from the value of transactions between the coal mining industry and these other businesses.

9.2.1 REMI

The economic and demographic impacts of coal production and of power plant employment for 2007 and for projections from 2008 through 2030 have been evaluated here using the REMI 29-region, 23-sector model built for Utah. The REMI model is a dynamic, multi-regional simulation model that forecasts economic, population, and labor market impacts for many years into the future. Although REMI has many complex, interrelated submodels and features, the essential logic of the REMI model derives from the cohort component, economic base, and input-output submodels. The REMI model connects these submodels through labor, capital, financial, and product markets. It simulates the size and composition of the population and economy over time. If there is an increase in the production of an export base industry in the region, the regional employment and income increase as well. There may not be adequate workers to meet this increased demand for labor, and net in-migration to the region could result. Economic migrants tend to be young, bringing children with them and having additional children once they become established. This increasing population adds to the local demand for housing, consumer goods and services, public schools, and so forth. Over time, as this population ages, the children of the original migrants enter the labor force and form households of their own. The end result of an increase in regional export base industries is a larger and younger population, larger labor force, and higher levels of income and spending. The magnitude of these changes and other non-modeled costs and consequences depend on the specific situation and sequence of events.

9.3 Fiscal Impacts

State income tax impacts were estimated by calculating the ratio of each county's Utah income tax liability to the county's total earnings by place of work as determined by the Bureau of Economic Analysis. The average of this ratio for the years 2004 through 2006 was then applied to the 2007 total earnings impacts (direct, indirect, and induced) due to coal production in each county and to coal-fired power plant operations to estimate the state personal income taxes paid. Other state fiscal impacts were derived by multiplying the total earnings impacts in each region by the ratio of state sales and gross receipts taxes and other taxes[78] to total earnings by place of work in 2007. Tax data were from the Census Bureau's 2007 Survey of State Government Finances.

Local sales tax revenues were estimated by calculating the ratio of 2007 selected county sales tax revenues (general sales and use taxes and the restaurant tax), as reported by counties to the state auditor, to BEA earnings by place of work in 2007. This was then applied to the total direct, indirect, and induced earnings from coal production and coal-fired power plants to derive an estimate of local sales tax revenues generated from these industries' impacts.

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[78] Other taxes includes death and gift taxes, documentary and stock transfer taxes, and severance taxes.

9.4 Projected Impact Scenarios

The Utah Geological Survey (UGS) prepared a set of coal projection scenarios to be used in this study: Low, Middle, and High production. In all three scenarios, the UGS assumes that there is a continued depletion at existing mines. In the Low Scenario, new mines have difficulty with permitting, and demand declines due to the development of affordable alternative fuels and increased greenhouse gas regulation. Growth is further restricted in this scenario as export markets do not develop. In the Middle Scenario, new mines are permitted and begin to produce coal, but demand growth is slow as older electric generation plants are shut down and not replaced. The High Scenario also assumes the development of new reserves, but, in addition, increasing demand. This increase in demand is from three sources: 1) successful carbon-capture technology and, in consequence, new power plants; 2) successful implementation of coal-to-liquids and coal-to-gas plants; and 3) increasing exports to the Pacific Rim.

The physical quantity of coal production is converted to dollar values using the price projections of the Energy Information Administration for Rocky Mountain low-sulfur bituminous coal. These are given in constant 2007 dollars, which were then converted to 2008 dollars.

The fiscal impacts of the projection scenarios assume constant taxes-to-earnings ratios for the counties and the state. In addition, the projected statewide local fiscal impacts assume a constant average local tax share of earnings of 0.4 percent, which was the average share across the three coal counties for 2003 through 2007.