

Executive Summary

Social and Economic Conditions

Energy development in the Wyoming portion of the Powder River Basin (PRB)¹ has been a primary factor affecting social and economic conditions within the basin, although the types and magnitude of effects have varied by county, community, and time frame. Energy development has been occurring in the PRB for well over a century. The first coal mine in the basin was developed near Glenrock, in Converse County, in 1883 (Foulke et al. 2002). Oil, natural gas, and uranium also are part of the PRB's abundant and diverse energy resource base. Although coal and other energy resources can be found in several areas of Wyoming, the enormous surface-accessible coal resource located in the PRB sets it apart from other energy-producing areas of the state and country.

Historically, energy resource development has been volatile, driven by commodity price fluctuations associated with international and domestic energy demand and policies, environmental regulation and litigation, changing technologies, and transportation constraints and improvements. That volatility has resulted in surges and contractions in local population, employment, income, needs for public services and infrastructure, and other dimensions of social and economic conditions in the affected communities. Such volatility characterized Campbell County and much of the PRB prior to the emergence of coal production as the dominant regional economic activity.

During the 1970s and early 1980s, the PRB emerged as a major coal producing region. Federal coal leasing was a high profile activity since over 90 percent of the coal resources in the PRB are federally owned. The surface coal mines that developed during that period are now mature operations, providing a stable economic and social foundation for the region. While energy development has produced periodic surges in population, followed occasionally by population loss in some communities, the growth in domestic energy consumption, coupled with the PRB's vast energy resource base, has resulted in a 50-year growth trend in the region without the absolute economic busts that characterize many other western U.S. resource booms. This period of extended energy development has been accompanied by substantial benefits, including economic growth, employment opportunity, tax revenue growth, and infrastructure development for local governments in the region and across Wyoming as tax revenues generated by coal and other energy resource production have funded infrastructure development programs statewide. At the same time, periods of rapid growth have stressed communities, and their social structures, housing resources, and public infrastructure and service systems.

The emergence of the coal and other energy resource development industries in the PRB has had a long-term cumulative influence on social and economic conditions in the region. In general, Campbell County and the entire PRB region have a greater capacity to respond to and accommodate growth. The regional coal industry also provides a measure of insulation from dramatic economic and social dislocations. Key current cumulative social and economic conditions are described below.

¹ For this discussion the PRB is defined as Campbell, Converse, Crook, Johnson, Sheridan, and Weston counties.

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Population and Demographics

Population Change. Population growth is perhaps the single best indicator of cumulative social and economic changes in the PRB. Campbell County was not among the original 13 counties when Wyoming was admitted to statehood, but it was carved from Weston and Crook counties in 1911. Campbell County's population of 5,233 in the 1920 census ranked it seventeenth among Wyoming's counties. Forty years later and prior to the onset of coal development in the region, Campbell County, with a population of 5,861, ranked eighteenth among Wyoming's counties in terms of population, with neighboring Converse, Sheridan, and Weston counties each having a larger population.

By 1980, Campbell County's population had increased by more than 300 percent, to 24,367, seventh among Wyoming's counties. Energy development also contributed to population growth in Sheridan, Converse, Johnson, and Crook counties during that period. Weston County recorded a population decline during the period; however, the combined population of the PRB climbed from 49,311 in 1960 to 82,598 in 1980.

Annual coal production in the PRB has increased by nearly 500 percent since 1980, accompanied by expanded mine service and rail transportation capacity, stimulating further growth. The impetus for growth was tempered by substantial productivity increases in the mining industry, coupled with declining production of other energy resources. Consequently, the region's population gained a relatively modest 11 percent, 9,318 residents, between 1980 and 2000, reaching 91,916. Campbell County registered a net gain of 9,331 residents during that period, raising its total population to 33,698 in 2000, fourth highest in the state. Across the rest of the PRB, the loss of about 2,000 residents in Converse County was offset by modest gains in the other four counties (U.S. Census Bureau 2001).

More recently, the PRB has seen renewed population growth, primarily linked to coal bed natural gas (CBNG) development. Population estimates for 2003 indicate a total regional population of 95,811, a 4.2 percent increase over the 2000 census population. Gains were reported for all six counties, ranging from 15 persons in Weston County to 2,542 persons in Campbell County (see **Table 1**).

Table 1
Recent PRB Population

Location	Census 1990	Census 2000	Estimate 2003	Change from 2000 to 2003	
				Number	Percentage
Campbell County	29,370	33,698	36,240	2,542	7.5
Converse County	11,128	12,052	12,330	278	2.3
Crook County	5,294	5,887	5,928	41	0.7
Johnson County	6,145	7,075	7,543	468	6.6
Sheridan County	23,562	26,560	27,111	551	2.1
Weston County	6,518	6,644	6,659	15	0.2
Study Area	82,017	91,916	95,811	3,895	4.2
Wyoming	453,588	493,782	501,242	7,460	1.5

Source: U.S. Census Bureau, various years.

As in many rural areas of the West, population in the PRB tends to be concentrated in a small number of communities. The largest communities and their respective estimated 2003 populations include: Campbell County – Gillette (21,840) and Wright (1,414); Converse County – Douglas (5,398) and Glenrock (2,274); Crook County – Sundance (1,160) and Moorcroft (819); Johnson County – Buffalo (4,220); Sheridan County – Sheridan (16,016); and, Weston County – Newcastle (3,234). Most of these communities are the county seats and also are the trade and service centers for the surrounding area.

Demographic Characteristics. Demographic characteristics from the 2000 Census reveal many similarities to the statewide population, but also many minor differences across the PRB. First, the region's population is predominately white and has a lower percentage of minority residents when compared to Wyoming. Whites accounted for 94.7 percent to 97.0 percent of residents in the PRB counties, compared to 92.1 percent statewide. When compared to the state, fewer residents of the PRB indicated they were Hispanic or Latino.

The median age of Campbell County residents was 32.2 years, compared to 36.2 years statewide. The median ages of residents in the remaining five PRB counties all were higher than the statewide average, with the eldest being 43.0 years in Johnson County.

Campbell County also had the largest percentage of residents less than 18 years of age, at 31 percent, compared to 26.1 percent statewide. The corresponding percentages for the other PRB counties ranged from 24.1 percent in Sheridan and Weston counties to 28.5 percent in Converse County.

Comparative average household size was 2.73 persons in Campbell County, 2.48 persons statewide, and between 2.31 (Sheridan) and 2.55 (Converse) in the remaining PRB counties.

Economic Conditions

Employment and the Economic Base. Energy resource development since 1970 has resulted in substantial economic expansion across the PRB. Total employment expanded by 156 percent as 38,948 net new jobs were added between 1970 and 2002. The most rapid expansion occurred between 1975 and 1980. More modest growth and even some declines occurred into the mid-1990s due to the curtailment of a number of coal enhancement, uranium, and other anticipated projects. Employment growth resumed in the late 1990s, led by increases in coal mine employment, including subcontractors, and CBNG development. Across the six-county area, total employment was 63,871 in 2002.

Nearly half of the net job gain occurred in Campbell County, where total employment increased from 6,026 jobs in 1970 to 25,453 jobs in 2002. Strong gains also were posted in Sheridan County (9,052 jobs) and Converse County (4,323 jobs).

The economic stimulus associated with the gains in mining and CBNG employment and the long-term population growth triggered secondary job gains in construction, trade, services, and government. The latter gains reflect responses to the gains in basic industrial activity and consumer household expenditures, and also underlying structural changes in the broader domestic economy where trade and services have been among the strongest growth sectors. As a consequence, the region's economic composition is substantially different today than when

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large-scale coal development first began. In 2002, business and consumer services accounted for 55.5 percent of all jobs in the region, while mining and government accounted for 10.7 percent and 14.5 percent of all jobs, respectively. Farm employment in the region, as a share of total employment, declined from 14.3 percent in 1970 to 5.0 percent in 2002. However, that shift is primarily due to growth in non-farm employment rather than declines in farming, as total farm employment in the PRB recorded a net decline of only 333 jobs, from 3,571 to 3,238.

Labor Market Conditions. Labor market conditions in the PRB reflect a generally healthy economy, with average annual county unemployment rates between 3.2 percent and 4.8 percent in 2003. Johnson County recorded the lowest unemployment (3.2 percent) and Converse County registered the highest (4.8 percent). Statewide and national unemployment rates for the period were 4.4 percent and 6.0 percent, respectively.

Over time, local unemployment levels and rates have reflected the influences of the large, relatively stable employment base associated with the coal mining industry and the more transitory and variable influences of the natural gas and other industries. Prior to the beginning of CBNG development in 1999, unemployment in Campbell County fluctuated between 4.8 and 5.3 percent, slightly above the corresponding statewide averages. Labor demand associated with CBNG development contributed to a decline in unemployment to below 3.0 percent in the 2001. As the pace of CBNG development has stabilized, labor demand eased and unemployment rates climbed to 5.2 percent in 2003, before abating.

Dynamic labor market conditions not only are reflected in the unemployment rates, but also in the underlying supply of labor. Increasing labor opportunity entices additional individuals into the labor force, allows employers to increase work hours for part-time employees, overtime for full-time workers, or convert part-time to full-time jobs, and may trigger labor force immigration. Weaker labor market conditions may result in the opposite responses.

Labor force commuting is another means of maintaining equilibrium in local labor markets. The presence of coal mining in the PRB and the well-paying long-term jobs it supports, permits workers to choose to live at some distance from the mines and commute to work. The 2000 census enumerated 1,713 workers who commute to jobs in Campbell County from other Wyoming counties and another 786 workers in Campbell County who live outside Wyoming. In contrast, 597 Campbell County residents worked outside the county. Monetary flows related to wages and salaries are associated with such commuting, with implications for the local economies as well.

Personal Income. A benefit associated with energy resource development, whether it is mineral mining or oil and gas development, is wages and salaries that are among the highest in the state. Personal income registered gains across the region, but especially in Campbell County, during the late 1970s and early 1980s. In 1981, per capita personal income in Campbell County was \$17,520, compared to the national average of \$11,280 and the statewide average of \$12,879. Per capita income declined in Campbell County following the completion of major construction projects, the transition from mine development to production, and weakness in other energy sectors. Per capita personal income in Campbell County resumed a positive growth trend in 1987 reaching \$30,253 in 2002. Those gains notwithstanding, per capita income among Campbell County's residents was below statewide and national norms, as well as that for Sheridan (\$32,563) and Weston (\$31,388) counties. When measured on a median household or family

income basis in the 2000 census, Campbell County lead statewide, national, and other counties in the PRB by considerable margins.

In terms of total personal income, Campbell County leads the six-county region with \$1.093 billion in 2002. Sheridan County residents recorded aggregate personal income of \$878 million in 2002. Total personal income in the other counties was substantially lower, ranging from \$177.8 million in Crook County to \$347.8 million in Converse County.

Housing

While the population grew by 55 percent in the 1970s, the housing stock in the study area grew by almost 78 percent. Housing growth was especially rapid during the 1970s in Campbell County, where population grew by 88 percent and the housing stock grew by 140 percent. In 2000, the housing inventory in the PRB was 41,203 units (see **Table 2**).

Table 2
Total Housing Stock, 2000

Campbell	Converse	Crook	Johnson	Sheridan	Weston	Six-county PRB Region
13,288	5,669	2,935	3,503	12,577	3,231	41,203

Source: U.S. Census Bureau 2001.

This expansion in housing supply, combined with the slowdown in the rate of population growth, produced double-digit vacancy rates for rental housing in the late 1980s and early 1990s. At the same time, vacancy rates among ownership housing remained tight. After growth resumed in the mid-1990s, most county-level vacancy rates for ownership units were at or below the state levels in 2000. Vacancy rates for rental units declined even more sharply. By 2000, rental vacancy rates in Campbell County were below the state average and were well below the average in Johnson County and Sheridan County.

Monthly costs for rental housing in the PRB, measured in the fourth quarter of 2003, generally were highest in Campbell County (see **Table 3**). At the end of 2003, monthly rental costs in Campbell County averaged \$707 per month for a house, \$590 per month for a mobile home on a lot, \$563 per month for an apartment, and \$228 per month for a mobile home lot. Weston County had the lowest rental housing costs in the study area during the same period.

In 2002, the average sale price of homes in the study area varied from \$70,674 in Weston County to \$142,565 in Sheridan County. The average home price statewide in 2002 was \$120,314. In addition to Sheridan County, Campbell (\$133,482) and Johnson (\$131,782) also had average home sale prices above the statewide average in 2002.

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Table 3
Monthly Housing Rents in 2003, PRB Study Area

County	Apartments	Mobile Home Lots	Houses	Mobile Homes on a Lot
Campbell	\$563	\$228	\$707	\$590
Converse	\$385	\$150	\$488	\$374
Crook	\$345	\$120	-	-
Johnson	\$443	\$208	\$606	\$414
Sheridan	\$465	\$273	\$667	\$502
Weston	\$333	\$99	\$380	\$365
Wyoming	\$466	\$195	\$658	\$484

Notes: 2003 data are for the fourth quarter.

Source: Wyoming Department of Administration and Information, Division of Economic Analysis 2004.

With the exception of Weston, counties in the PRB have experienced substantial residential construction activity in recent years. A combined total of 1,242 new housing units were issued permits from 1998 through 2002 in the PRB, including permits for 400 housing units in Campbell County and 509 units in Sheridan County. Although not all local governments in the study area issue permits, these data are general indicators of residential construction activity.

Temporary housing resources are available in the PRB in the form of hotel-motel rooms, private and public campgrounds, two large special event facilities, and vacant spaces in mobile home parks. In all, there are an estimated 71 lodging establishments with a total of more than 2,500 rooms. Many of these housing resources, supplemented by pockets of persistently vacant apartments, townhouses, and mobile home spaces in Gillette and Wright, have accommodated temporary housing needs associated with natural resource and energy projects in the past.

Public Education

There are 10 school districts in the PRB ranging in size from Campbell County School District #1 (Campbell #1) with 7,368 students in the 2003 school year to Sheridan County School District #3 (based in Clearmont) with fewer than 100 students. Campbell #1, based in Gillette, serves the primary energy and resource development region.

Trends in public school enrollment generally mirrored population trends during the period of rapid population growth. District-wide enrollment in Campbell County grew by more than 4,600 students (131 percent) between 1975 and 1985. Enrollment increased in all districts in Converse and Sheridan counties as well. Enrollment in Campbell #1 subsequently peaked, but remained near the record high level for nearly a decade. In recent years, the district has experienced some declines as many Campbell County households that arrived or formed during the energy boom of the 1970s are now in life-stages where their children have or will soon complete their education. Elsewhere in the region, enrollments generally have declined, and the combined enrollments in the study area's other districts is now below 10,000, its lowest level since 1975. Recent CBNG development has tempered, but not reversed, the trend of declining school enrollments across the region.

In Wyoming, a statewide school finance system, the Wyoming School Foundation Program (WSFP) regulates operating revenues and expenditures for public educational services delivered

at the local level. The system is structured to achieve equalization in educational opportunities across the state, irrespective of an individual district's local revenue generating capacity. The northeastern part of the state plays an important role in the system because of its large energy- and minerals-related tax base. Revenues for school funding come from taxes on minerals production, real estate, and taxable personal property, and various other local, state, and federal program funds and grants.

Public education funding also functions under the rules and procedures of the Wyoming School Facilities Commission (WSFC). The WSFC was established in 2002 to oversee construction and maintenance of public school facilities and physical plant. Its mission is to provide adequate educational facilities for all children in Wyoming, mirroring the focus of the WSFP on operations. In light of recent enrollment trends, most of the school districts in the PRB have adequate capacity. However, many are facing needs to modernize or replace aging facilities. The WSFC has approved more than \$72 million in capital improvements in these districts over the next 5 years.

Seventy-two percent of CCSD #1's revenue in the 2001 school year was locally derived, the highest among the school districts in northeastern Wyoming and twice the share of local taxes in school district revenues statewide. That local share represents the maximum requirement under the state's funding program. Furthermore, because of the total amount of revenue generated locally, Campbell #1 remits approximately \$20 million annually to the state under the "recapture" provisions of the WSFP. Those funds are used to support public education in less affluent districts.

Energy resource development also has enlarged the tax base of other school districts in the study area as it has that of Campbell County. In Converse County School District #1, assessed valuation has grown because of coal production. Elsewhere in the PRB, school district assessed valuations have grown recently because of increasing CBNG production.

Facilities and Services

Energy development affects local government facilities and services in several ways. In some cases, such as law enforcement and road maintenance, local governments provide direct services to energy facilities. Local governments also provide facilities and services used by employees and population associated with energy development, and most local governments receive revenues from taxes on energy facilities and production and from taxes on company and employee spending.

The types and levels of facilities and services provided by local governments reflect service demand, revenue availability, and community values regarding appropriate services and service levels. As with most socioeconomic characteristics, the level and availability of local government facilities and services varies by county and community across the PRB. There are likely literally several hundred different service providers in the region. Although all local government facilities and services are affected by energy development, the critical facilities and services include municipal water and sewer systems, law enforcement at the county level, and hospitals. A comprehensive inventory and assessment of facilities and services is beyond the scope of this analysis. However, an initial screening revealed no critical needs or shortfalls and indicated that most providers are engaged in an ongoing long-term process to maintain and improve facilities and services to meet community needs and to comply with various regulations and standards.

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Fiscal Conditions

Federal mineral royalties and state and local taxes levied on coal and other mineral production are major sources of public revenue in Wyoming. Taxes, fees, and charges levied on real estate improvements, retail trade, and other economic activity supported by energy development provide additional revenues to support public facilities and services. These revenues benefit not only those jurisdictions within which the production or activity occurs or is located, but also the federal treasury, state coffers, school districts, and local governments across the state through revenue-sharing and intergovernmental transfer mechanisms.

Assessed Valuation. Coal and other minerals produced in Wyoming, regardless of ownership, are subject to ad valorem taxation by local taxing entities and a statewide levy to support public education. Statewide total taxable value of coal has increased in response to production, but falling prices have dampened the increases. Taxable valuation on coal production climbed from \$38.9 million in 1971 to \$1,100.3 million in 1991. Even as production expanded by 94 percent between 1991 and 2003, falling market prices limited the subsequent increases in taxable value as the statewide total climbed to \$1,760.3 million. Of that total, 91 percent was based on production in the PRB.

Although the inventory and value of non-mineral property has climbed over time, the valuation on minerals is the dominant component of Campbell County's ad valorem tax base. The total assessed valuation of Campbell County, boosted by recent increases in CBNG production, was \$2,687 million in 2003. Valuations on aggregate mineral production accounted for 82 percent of that total.

With respect to assessed valuation on mineral and energy resource production, Campbell County has been the primary beneficiary of production gains over the past three decades and the recent gains tied to CBNG. The results include order of magnitude differences in the assessed valuation among the counties in the PRB: Campbell County's assessed valuation of \$2,687 million in 2003 was nearly 35 times that of Weston County (\$77.7 million) and 29 times that of Crook County (\$92.1 million).

Severance Taxes. Wyoming levies a severance tax on coal and many other minerals produced in the state. The severance tax rate, levied on the value of production, has varied over time. Prior to the dramatic increase in production, the severance tax rate on coal stood at 1.0 percent in 1972. The rate was raised to 10.5 percent in 1977 to 1978, in part to fund long-term highway, education, and community infrastructure improvements. The rate has since ratcheted down, first to 8.5 percent between 1987 and 1992, and to 7.0 percent since 1992, as legislatively established permanent trust fund caps were reached.

Statewide severance tax receipts grew from \$1.3 million in 1972 to a peak of \$129.2 million in 1985. Receipts declined thereafter, to \$73.7 million in 1995, reflecting falling market prices and reductions in the tax rate. Recent production increases yielded statewide proceeds of \$86.5 million in 2001, \$91.9 million in 2002, and \$105.4 million in 2003.

Cumulative statewide severance tax proceeds total \$2.22 billion since 1970. Severance tax revenues on coal produced in Campbell County total \$1.42 billion. Severance tax revenues for

the corresponding period total \$67.4 million from Converse County, \$60.5 million from Sheridan County, and \$675.9 million from the remainder of the state.

Distribution formulas for severance tax proceeds are set by the Wyoming legislature, with concurrence by the Governor. Over time, the basic allocation framework has remained relatively consistent, though some specific allocation shares have varied in response to changing fiscal needs.

Federal Mineral Royalties. Producers pay a 12.5 percent royalty to the federal treasury on the value of all surface coal production from federal leases. The size of the resource base, the rate of surface coal production in the PRB, and the predominance of federal ownership, combine to make federal mineral royalties (FMR) an important revenue source for Wyoming. Across the entire state, 90 to 95 percent of all coal production is from federal coal. FMR also are assessed on natural gas, oil, and other minerals produced on federal leases. One-half of the FMR receipts subsequently are disbursed to the state in which the production occurred.

FMR on coal have grown sharply. In 1975, FMR receipts totaled \$2.2 million. They had increased more than 12-fold, to \$27.7 million, in 1985, topping \$100 million in 1989 and \$200 million in 1999. Total FMR receipts in 2003 were \$321.0 million. Cumulative FMR receipts on coal produced in Wyoming exceeded \$2.76 billion between 1970 and 2003.

Social Setting

The past 30 years have seen sweeping social change in the United States (U.S.) and throughout much of the world. But in addition to the broad forces that have driven social change in the U.S. as a whole, social conditions in some PRB communities have been substantially influenced by energy development. Factors that have affected social conditions in the PRB include industrial and natural resource development, economic and demographic change, housing and public infrastructure development, and institutional change at the local and state government levels.

One of the key drivers of social change in the PRB has been energy-related population growth. When the first oil boom occurred in the late 1950s, Campbell County was a relatively stable, sparsely-populated rural county. Like many places in Wyoming and throughout the rural west, Campbell County was a small, relatively homogeneous ranching community (ROMCOE 1982). The oil booms of the 1950s and 1960s brought an influx of new people. Development of coal mines, continued oil and gas drilling, and power plant construction precipitated another round of growth. In all, Campbell County population grew by almost 600 percent between 1950 and 2000.

On the one hand, this population growth, combined with a robust economy, generated a variety of positive social effects. Financial and technical resources poured into the community as it mobilized to accommodate the new population. Job opportunities were created in the construction industry, as the community responded to demands for housing, public facilities, and retail goods and services. The large and rapid influx of new residents, eager to take advantage of the employment opportunities, created energy, vitality, and sense of economic optimism about the community. Where economic advancement had been limited before the boom, there was now opportunity (Gardiner 1985).

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New residents brought new ideas, new ways of doing things, new preferences for goods and services, and new demands for government services. Some long-time residents, particularly those who were not directly participating in the economic benefits of energy development, viewed these changes as negative. Long-time residents who were used to knowing virtually everyone in the community and to being recognized by merchants, city and county personnel, doctors, and other community members, increasingly encountered strangers in their business and social interactions. It is likely that many residents had mixed feelings about these changes (Heineke 1985).

These changes were accompanied by some conflicts and stresses, both at an individual and at the community level. However, over time, a certain sense of community and normalcy has re-established itself as housing shortages abated, government facilities and services were expanded to meet the increased demands, and the operations of the coal mines promoted a higher degree of economic stability. Local and state governments, individually and in cooperation, have developed growth management capabilities and institutional mechanisms to assist communities in their efforts to respond to energy development and related population growth.

As a result of previous booms and the magnitude and duration of population growth, newcomers are now able to more easily integrate into local communities. Today, almost any organization, committee or government body is made up of a cross-section of energy employees, ranchers, and other community members whose tenure in the community may be long or short (Bigelow 2004; Spencer 2004). Moreover, because of the turnover in the energy companies, the community has become accustomed to newcomers.

There is potential for conflict between new or expanded energy development and certain segments of the community, however. During the recent CBNG boom, split estate conflicts between CBNG developers and ranchers gained national attention and resulted in continuing attempts to change mineral entry laws.