

Appendix G

# Social and Economic Analysis Technical Report





**Final Report**

**Social and Economic Analysis  
Technical Report**

Bureau of Land Management

White River RMPA

Environmental Impact Statement



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Revised April 8, 2011

**Social and Economic Analysis  
Technical Report**

Bureau of Land Management  
White River RMPA  
Environmental Impact Statement

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## **SECTION I.**

# **Introduction**

This report provides a description and evaluation of the socioeconomic affected environment and the anticipated social and economic effects of alternative resource management plans (RMP) being considered by the Bureau of Land Management's (BLM), White River Field Office (WRFO). The WRFO manages public lands under BLM jurisdiction for a large region generally coinciding with the boundaries of Rio Blanco County, Colorado.

### **Background and Objectives**

In June 2008, BBC Research & Consulting (BBC) was retained as a subcontractor to URS Corporation to assist them in the development of an Environmental Impact Study of alternative resource management plans being evaluated by the BLM WRFO. BBC has extensive experience in socioeconomic evaluations and considerable recent experience in northwest Colorado.

BBC was assisted in this effort by Mr. Lloyd Levy of Lloyd Levy Consulting, LLC.

### **Report Organization**

This report presents a description of the social and economic affected environment and an evaluation of the social and economic environmental consequences associated with alternative resource management plan amendments (RMPAs) being considered by the BLM WRFO. This report is intended to serve as a base document for the environmental impact statement, which is being assembled by URS Corporation.

Following this Introduction, Part One presents the description of the socioeconomic affected environment. In Part One, Section II presents a description of current economic and demographic conditions in the primary and secondary socioeconomic study areas. Section III describes current fiscal conditions and trends for local governments likely to be affected by BLM resource management strategies. Section IV describes social conditions in the study areas.

Part Two of this report presents the anticipated social and economic environmental consequences associated with the alternative RMPAs under BLM consideration. Section V presents the impacts common to all alternatives. Section VI presents the anticipated social and economic effects associated with Alternative A, Existing Management (the No Action Alternative). Sections VII through IX present the anticipated social and economic effects under Alternatives B, C and D, respectively (the action alternatives). Section X analyzes cumulative social and economic impacts anticipated under each alternative. Section XI provides a list of references for this study.

## **The White River Field Office Management Alternatives**

Four alternatives were analyzed in detail in this RMPA/EIS. These alternatives were developed to present for analysis of a range of reasonable management options to assist decision-makers and the public in understanding the potential environmental consequences of each alternative. The four alternatives are:

- Alternative A (Existing Management or No Action Alternative) retains the current management goals, objectives, and direction specified in the 1997 White River RMP, and is designed to analyze the impacts of continuing current management resources and resource programs at the levels and locations of future oil and gas development projected in the RFD Scenario (BLM 2007a).
- Alternative B (Conservation Emphasis)—limits the duration and overall extent of disruptive development activities in order to maintain existing resource conditions throughout all phases of development (i.e., from construction throughout and beyond the production phase), and is designed to evaluate the impacts of emphasizing conservation and protection of other resources and resource uses while allowing continued production of oil and gas.
- Alternative C (Managed Development)—designed to evaluate the impacts of short-term use of the environment and the maintenance and enhancement of long-term community function and ecological integrity (throughout and beyond the production phase).
- Alternative D (Development Emphasis)—designed to evaluate the impacts of emphasizing the production of oil and gas resources under the environmental protection afforded by applicable laws, regulations, and BLM policy.

### **Definition of the Primary and Secondary Socioeconomic Study Areas**

For purposes of this analysis, the study team has categorized northwestern Colorado into a Primary Socioeconomic Study Area (PSSA) and a Secondary Socioeconomic Study Area (SSSA). While the BLM WRFO includes lands in Moffat County and Garfield County, as well as in Rio Blanco County, the vast majority of the population within the WRFO resides in Rio Blanco County. Consequently, Rio Blanco County constitutes the PSSA. The PSSA is the geographic region that will be most directly affected by BLM WRFO management and operational decisions. The SSSA is a broader region that includes both sparsely populated lands in Garfield County and Moffat County that are within the WRFO, and other areas of northwestern Colorado that have indirect social and economic ties with WRFO activities. Though these areas are termed the “Secondary” Socioeconomic Study Area, they will likely provide business support services as well as additional housing or community services associated with changes in WRFO management practices and may experience substantial effects from WRFO management alternatives.

**The Primary Socioeconomic Study Area.** The BLM White River Field Office encompasses virtually all of Rio Blanco County in addition to small portions of northern Garfield and southern Moffat counties (see Exhibit II-1 on the following page). Potential changes to the WRFO Resource Management Plan, most notably increases in natural gas drilling activity, would occur primarily in the Mesa Verde formation in central Rio Blanco County. It is likely that unincorporated Rio Blanco County and the nearby towns of Meeker and Rangely will be the communities most immediately and

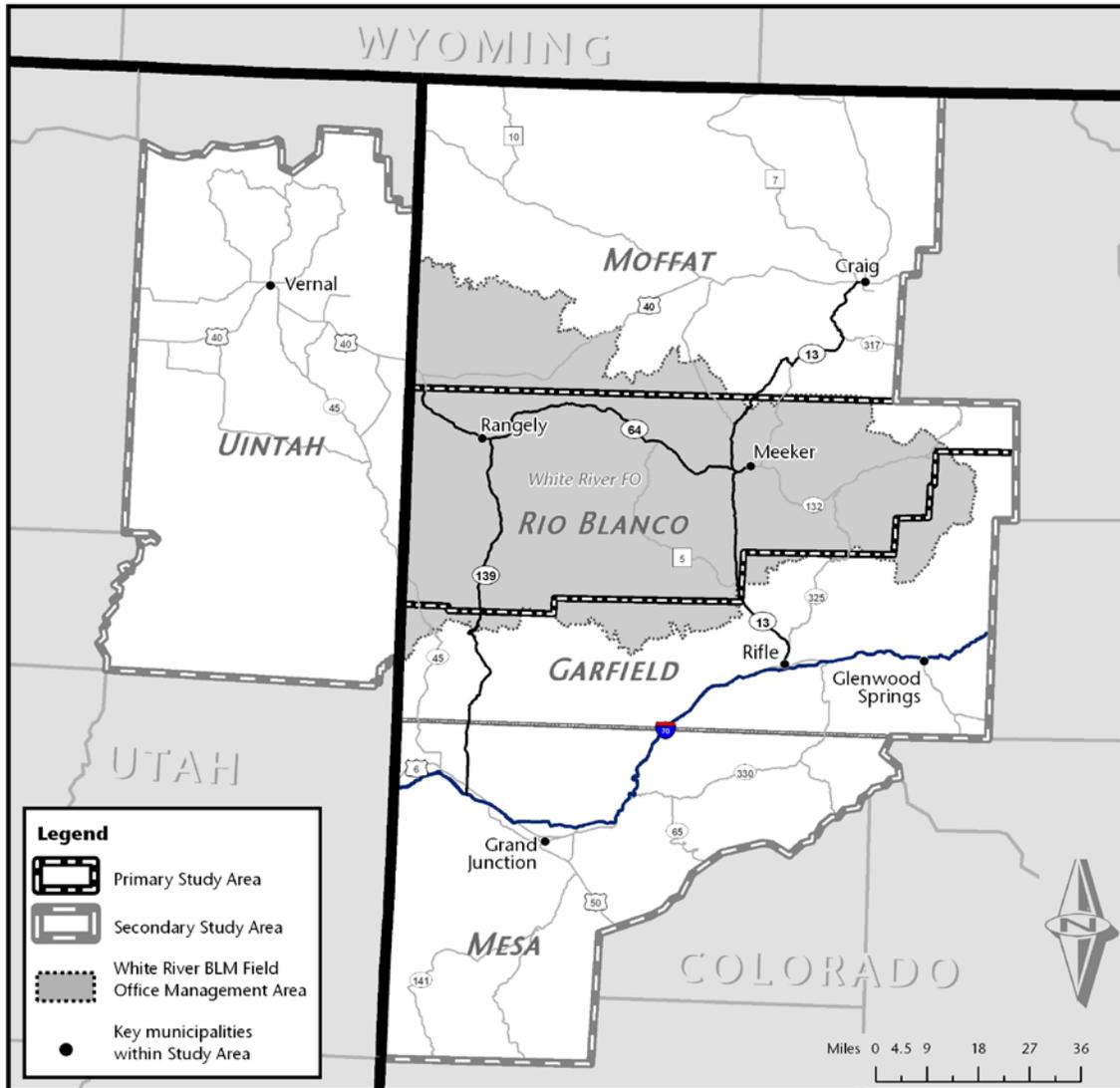
directly affected by changes in resource management policies and any new workforce-related population or related demand for housing and public services (though the City of Rifle, in the SSSA, is also likely to house a substantial portion of the workforce associated with WRFO management alternatives). Based on this assessment, the PSSA is defined as Rio Blanco County, which includes the towns of Meeker and Rangely. Given current road configurations, portions of Garfield County—particularly the City of Rifle and nearby communities along the I-70 corridor—may also be affected. The City of Rifle, although outside of the PSSA boundary, is a focus of this analysis because it is a major service center and housing location for the oil and gas workforce in the region.

**The Secondary Socioeconomic Study Area (SSSA).** As documented in a number of recent studies, Rio Blanco County lies at the center of a large, interdependent economic region that stretches from eastern Utah to the border of Eagle County, Colorado (BBC, 2008; Redifer et al 2008). This sparsely populated, five-county area incorporates one Utah county (Uintah) and four northwest Colorado counties. The subject area shares a common economic base of ranching, hunting and tourism as well as energy extraction (oil, gas and coal). Grand Junction, Colorado is the largest service community in the region, but much of the remainder of the region’s resident population resides in small towns dispersed broadly across this large geographic area. Interstate 70 is the primary transportation corridor but beyond the interstate corridor, road systems are limited. For the purposes of this analysis, this five-county SSSA includes Garfield, Rio Blanco, Moffat and Mesa counties in Colorado, and Uintah County, Utah.

Within the SSSA, potential changes to WRFO management and operations will affect the socioeconomic environment, but effects will be diffused because of the long distances and the multiple communities involved. Nevertheless, because of the economic interdependence of this area, it is appropriate to consider this broader region as part of the socioeconomic evaluation.

The PSSA (Rio Blanco County) and the larger SSSA are shown in Exhibit I-1 on the following page.

**Exhibit I-1.**  
**The BLM White River District and the Primary and Secondary Socioeconomic Study Areas**



Source: BBC Research & Consulting, 2008.

**Methods**

Methods, sources, key assumptions and metrics for the social and economic analysis are described in the following portion of this section.

**Affected Environment.** Information to characterize baseline socioeconomic conditions in the study area was assembled from local, state and federal data sources as well as previous reports and publications. The study team also conducted interviews with local sources within the primary and secondary socioeconomic study areas.

Published data were used to describe current conditions and historic trends in measures such as total population, ethnic/minority population, housing, total employment, employment by sector, earnings

by sector, labor force, unemployment rates, household income and other general economic and demographic metrics. Published data sources reviewed and used in the analysis include:

- Information from federal sources, such as demographic information from the 2000 Census and economic information from the Bureau of Economic Analysis, Regional Economic Information System;
- Information from state sources, including the Colorado State Demography Office, Colorado Department of Labor, and Utah state agencies; and
- Information from local sources, including local government budget and operating data.

Information from a number of previous reports also contributed substantially to the description and evaluation of existing socioeconomic conditions. Among the key reports used in this evaluation were:

- Socioeconomic studies conducted by BBC Research & Consulting in 2005 through 2008 for Garfield County, the Associated Governments of Northwest Colorado and the Colorado Department of Local Affairs;
- Socioeconomic studies conducted by Mesa State College in 2007;
- The 2008 environmental impact statement developed by the BLM for proposed management plan amendments to address land use allocations for potential oil shale and tar sands development; and
- Extensive previous literature regarding social issues associated with energy development in rural areas of the Western U.S.

The study team also conducted interviews with representatives of a variety of interests within the study area, including local government officials, ranchers, recreational interests and various other sources. A complete list of these sources is provided at the end of this report.

**Social and economic environmental consequences.** The analysis of oil and gas leasing effects on social and economic conditions is based on the following indicators and attributes:

Indicators

- Economic conditions in the socioeconomic study area;
- Demographic conditions in the socioeconomic area;
- Fiscal conditions within state and local governments; and
- Social conditions within Planning Area and local communities.

Attributes

- Direct oil and gas-related employment;
- Direct recreation, tourism, and hunting-related employment;
- Direct agriculture employment;
- Secondary jobs related to oil and gas, recreation, tourism and hunting and agriculture;
- Total population in study area and population by location;

- Direct and indirect revenue for state and local governments resulting from BLM-managed activities;
- Direction, magnitude and rate of change in demographic conditions;
- Change in economic conditions for “traditional” industries – agriculture, recreation/tourism and energy;
- Changes in land use; and
- Geographic concentration of land use, demographic and economic changes.

Attributes and indicators were quantified, where feasible. Qualitative assessments were also used to evaluate potential effects.

In some cases, social effects are described in terms of effects to the quality of life. Factors that could affect quality of life include the amount and quality of available resources, such as grazing and hay land, wildlife and places to hunt, and the pace and character of community growth and development. Quality of life also could be affected by conflict over resources, such as may occur in allocating BLM land among multiple uses such as grazing, habitat and resource extraction, or conflict over community development, such as whether growth should occur in towns or in the unincorporated county.

The intensity, or magnitude, of social impacts would be roughly in proportion to three indices of change, constructed specifically for this analysis. The first is the annual rate of community growth over the 20 year planning horizon for the RMPA (growth rate metric). The second is the degree of resource dependency among the community labor force and population, as measured by the percentage of the population that depends directly or indirectly on jobs in agriculture, energy, and recreation (resource dependency metric). The third is the stability of the energy industry, as measured by the ratio of “permanent” jobs in field operation and maintenance compared to temporary or rotational jobs in drilling and facilities construction (energy industry stability metric).

Environmental justice is evaluated by identifying populations, communities or groups that may suffer disproportionate adverse effects and considering whether or not those groups are disadvantaged or minority populations based on the data and analyses presented in Part One.

**Key assumptions.** Primary assumptions upon which the social and economic analysis is based are presented below.

- The number of wells completed in each year, under each alternative, is based on the projections developed for the air quality analysis.
- Development of ancillary oil and gas facilities (e.g., pipelines, compressor stations, gas plants) is assumed to be proportional to number of wells developed.
- Oil and gas exploration and development activity may affect agriculture due to changes in the amount of grazing land available for use by ranchers and due to potential increases in the energy-related use of private lands owned by energy companies that have historically been leased back to agricultural operators.

- Oil and gas development activity may affect hunting activity due to potential changes in the game population supported within the Planning Area and/or potential changes in the perception of the area as a hunting destination among in-state and out-of-state hunters.
- For assessing cumulative effects, projected future changes in the economic drivers in the PSSA and SSSA are based on the most recent projections developed by the Colorado State Demography Office (SDO) — except for economic activities directly or secondarily associated with oil and gas development and other activities in the Planning Area related to BLM resource management (e.g., hunting, agriculture, tourism).
- Direct and secondary employment and demographic changes resulting from oil and gas development, changes in hunting activity levels and changes in agricultural activity (as well as cumulative economic and demographic effects from reasonably foreseeable activities) were estimated using the socioeconomic model developed for the Associated Governments of Northwest Colorado and Colorado Department of Local Affairs (AGNC model) in 2007-2008. The AGNC model is described later in this section.

The differences in the number of wells assumed in the air quality analysis for the alternatives are assumed to include the collective effects of differences among the management actions for each alternative in technological requirements, timing limitations stipulation, available acreages and other management action requirements for oil and gas development. However, the relationship between the individual and collective management actions under each scenario and the ultimate number of wells that would be developed is difficult to predict. To the extent that the actual timing and magnitude of well development under any of the alternatives differs from the estimates prepared for the air quality analysis, social and economic effects will differ from the estimates presented in this section.

**Social effects metrics.** As discussed in Section IV of this report, current residents of the PSSA have a positive attitude toward growth in general. However, there is concern over an energy industry characterized by uncertain and potentially disruptive cycles of very rapid growth and decline (i.e. a pattern of short term “booms” and “busts.”)

The growth rate metric is the primary indicator of potentially disruptive social impact. Previous “boomtown” case studies have identified annual population growth rates ranging from 5 percent to more than 15 percent (population doubles in less than 10 years) as being socially disruptive (Jacquet 2009:10-11). If an alternative were to cause population growth rates within this range, published observations indicate a range of potential social effects. The principal cause of disruptive social impact is a large or rapid influx of newcomers, transplanted from different social and cultural contexts and focused primarily on short-term economic opportunity, who would settle temporarily in the community. Attributes of this level of disruptive social impact include pressure on local government facilities and services; inflation of local wages and prices to the detriment of those outside the flow of new benefits; dilution of the familiarity, security and mutual support that Western communities value, and alteration of social relationships in the community for the duration of the boom. Historically, rapid growth impacts are often followed by a succeeding bust, another stressful period of re-adjustment and dissatisfaction with the quality of life in reaction to employment and population decline, a deflating economy, and shrinkage of important tax bases. Only when stability returns after

a boom and bust episode do residents again begin perceiving the quality of life as satisfactory (Smith et al 2001, Brown et al 2005).

None of the WRFO RMP management alternatives constitutes a large-scale, socially disruptive boom-bust cycle. The average annual population growth rate implied by each management alternative is below the growth rate threshold considered highly disruptive in this analysis. However, this does not eliminate the potential for growth-related social impacts to occur in the PSSA for shorter periods of time within the 20-year planning horizon.. The energy industry is subject to wide growth rate fluctuations over periods of less than 20 years because of external economic circumstances. The short-term swings in activity that might occur during overall planning horizon could cause interim boom-bust episodes where the rates of growth (and subsequent decline) exceed the 5-percent threshold. No specific prediction can be made as to when or how often this kind of disruptive boom-and-bust episode might occur over 20 years or how disruptive they might be. For example, the rapid pullback in drilling activity in Rio Blanco County as resource prices declined and the national economy suddenly descended into recession in 2008 was unforeseen and households, businesses, and local governments are still adjusting to the consequences.

Sustained high levels of growth in the PSSA could also bring about “transformative” change in the character of the area from a social standpoint. Substantial cumulative growth would affect social relations and institutions in the PSSA simply because the character of places and the composition of their populations would change. In effect, growth in the PSSA, varying in degree across the management alternatives, would initiate change that further distances communities from a rural and agricultural past. If sustained and permanent, the change would move communities farther along the path toward urbanization. Social impacts shared by residents of communities experiencing this trend could include rising fear of crime and less openness to casual interaction with others, both of which may derive from the rising number of unfamiliar individuals. Additional social stress may come from upward pressure on the cost of living due to growth. These and other issues associated with growth, such as housing shortages, overtaxed police and fire services, and constraints on health care, education and public infrastructure, would continue to challenge leaders and their constituents. A changing quality of life may also affect the sense of place among more rooted groups in the community, leading to feelings of detachment, even alienation, from political and social affairs.

Social effects of this last kind, i.e. related to sense of place, would concentrate in communities of Meeker and Rangely and especially in the ranch community along Piceance Creek. The key difference among the communities—as confirmed in recent surveys and political dialogue—is that attitudes in Rangely, after decades of close association with the energy industry, tend toward acceptance of change related to energy development, while attitudes in Meeker—and to an even greater degree among residents of ranch community along Piceance Creek—tend toward discomfort and resistance to an industry that has visibly altered the landscape in the Piceance Creek Basin over the past decade.

Two other metrics are presented as proxies for change and social effects that would potentially occur as the energy industry grows under the management alternatives. The first metric represents the share of the resident workforce that depends on the growing gas exploration and development industry in contrast with those who depend on the PSSA’s traditional economic drivers. The PSSA’s current economic and social institutions are structured around energy resources, grazing capacity, wildlife

habitat, and community and recreational settings largely supplied by the BLM. Management decisions that re-allocate these public lands resources would potentially change the composition of the population in terms of its resource dependency.

The final metric that can serve as a proxy for social disruptions is the ratio of “permanent” jobs in the energy industry to drilling and development jobs. This measure is a proxy for the stability of the energy industry as a component of the economic base in the PSSA and as a social and economic part of its communities. Social disruption in the PSSA remains a possibility in any management alternative that is composed primarily of drilling and development activity, which is most susceptible to economic ups and downs. This economic reality becomes a social issue as households, firms and social and governmental institutions cope with the uncertainty and the economic fluctuations likely to occur over the entire 20-year life of the management alternative.

**Other key metrics.** In order to develop a consistent metric for comparison among the management alternatives considered in this EIS, the study team analyzed the impact on direct and secondary agricultural employment in the PSSA by assuming direct agricultural employment is proportional to the amount of public grazing land available in the area. However, there are a number of considerations that could result in smaller or larger impacts on agricultural activity and employment than indicated by changes in grazing land alone. The maximum cumulative reduction in grazing acres does not reflect the effects of reclamation activities following well completion. At no time during the life of the plan would this amount of forage become unavailable all at once because reclamation would reestablish vegetation on abandoned well pads as new pads are approved. This forage would be reestablished to the extent that reclamation activities reestablish palatable plant communities and reclamation areas are accessible to livestock.

Other considerations; however, suggest that the effects on agricultural activity and employment could be greater than indicated by changes in the amount of available grazing land. The noise, disruption and traffic associated with drilling and maintenance activities may have indirect effects on grazing on public lands beyond the areas of direct surface disturbance. Of potentially greater significance to the agricultural sector, development of additional oil and gas wells on public lands in the Planning Area may lead to increased development of related energy facilities on private lands in river valley areas near Piceance Creek and the White River. As discussed in Chapter 3, a substantial proportion of these valley-bottom lands in the Piceance Basin are already owned by energy companies, but have historically been leased back to agricultural operators for hay production. These hay lands provide critical feed for local agriculture during the months outside of the spring and summer grazing season.

The study team has assumed that changes in future hunting activity due to energy development activity, and corresponding social and economic effects, will be proportional to changes in the big-game population. The study team further assumed that the reduction in big-game population would reflect the management goal that BLM has identified for each alternative (e.g., 90 percent of the state-established population objective under Alternative B) and that this reduction would be correlated with the number of new wells developed in each year. (So the full 10-percent reduction under Alternative B would not occur until the maximum well development year of 2031.)

The study team also recognized that the perception of the area among hunters will play an important role in determining hunting activity levels. Consequently, a range of potential effects on hunting-related jobs is presented. The lower end of the impact range assumes that only hunting activity in

GMU 22 (which approximately corresponds to the Mesaverde Gas Play Area and the Piceance Basin and represents about 20 percent of all hunting activity in Rio Blanco County) is affected by energy development. The upper end of the impact range assumes that all hunting activity in the Planning Area is affected in proportion to the changes in big-game population objectives identified by BLM's management goal.

The indirect fiscal impacts of the WRFO alternatives are associated with the development of natural resources and the creation of new jobs and resultant new residents migrating to the SSSA and the PSSA for expanded employment opportunities. Key public revenues within the PSSA are closely tied to the value of oil and gas and the cumulative oil and gas production in the area.

The extraction of natural resources generates new resource-specific tax revenues for both state and local governments. Key resource-associated revenues are: severance taxes, federal mineral leasing charges and property taxes. The annual revenues associated with these taxes are influenced by the annual number of new wells, the productivity of wells, the location of wells and the market value of oil and gas.

The State of Colorado has instituted programs to ensure that revenues associated with resource extraction are available to those communities facing the fiscal challenges of providing public services and infrastructure for energy-related growth. The Department of Local Affairs (DOLA) distributes funds directly to communities where energy workers live from DOLA's Employee Direct Distribution Fund. In addition, DOLA maintains an Impact Grant Program that allows energy-impacted communities the opportunity to apply for state grants and loan assistance.

The state's severance tax receipts support multiple state functions, but a share of this severance tax revenue is allocated to the DOLA Direct Distribution Fund and the DOLA Grant Fund. Similarly a share of the Federal Mineral Lease revenues are allocated to the state of Colorado and a portion of these funds are also available to local governments for impact assistance.

The state's programs that distribute tax revenues based on energy worker residency will help mitigate the uncertainty associated with worker commuting decisions and ensure that revenues effectively follow workers wherever they choose to live. The state's impact grant program has the flexibility to provide funds to the appropriate jurisdictions as worker residency choices become clear. Rio Blanco County also imposes a road impact fee, which is designed to recover the costs of road construction associated with oil and gas well development. Worker decisions regarding location of residency will influence the net fiscal effects of growth. In addition to these resource-based revenues, new households will generate the traditional sales and property taxes typically associated with residential growth.

The major issue facing local governments in terms of the indirect fiscal effects of oil and gas development involves the provision of critical infrastructure (roads, water, and sewer) in advance of an expanding population and growing commuter workforce, and the challenges presented in making investment commitments given the risk and uncertainty inherent in a resource-based economy. Similar challenges confront private investors considering the development of new housing and other privately provided infrastructure in the area.

**Additional Information – The AGNC Model.** In 2007-2008, members of the study team developed a regional economic and demographic model to estimate employment and population effects associated with energy development, and other economic drivers, on behalf of the Associated Governments of Northwest Colorado (AGNC) and the Colorado Department of Local Affairs (DOLA). This regional economic and demographic model (AGNC model) was updated and used in the socioeconomic effects analysis for this EIS.

The AGNC model develops estimates of direct employment related to natural gas development and maintenance of existing wells based on the projected number of new and existing wells in the region each year. The model assumes worker productivity in the natural gas industry will continue to increase gradually over the 20-year planning period as a result of ongoing technological improvements. The model also calculates the cumulative number of producing wells in each year, which determines the size of the natural gas maintenance workforce. A proportion of existing wells are assumed to be retired each year as they reach the end of their economic lives.

The AGNC model determines the proportion of the gas workforce residing in each county within the PSSA and SSSA, and the secondary jobs (“multiplier effects”) in the PSSA and SSSA associated with natural gas development and other basic economic activities such as agriculture and hunting. The model converts net employment effects into estimated affects on population based on relationships between jobs, employed residents and corresponding population. To the extent that portions of the natural gas-related workforce, particularly the workers involved in drilling new gas wells, are comprised of temporary workers not residing with their families, the estimated effects on population may be somewhat overstated.



# Part One.

## Social and Economic Affected Environment

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Preparer's note: The information contained in this section was prepared in 2008. Consequently, the economic and demographic data contained herein is approximately four years old. Since 2008, economic conditions in the study area (and elsewhere) have been substantially affected by the global and national economic recession.

The pace of energy development in Northwest Colorado has also slowed substantially since 2008. Whether this slowdown is temporary or more long lasting is uncertain. However, anecdotal information from the study area suggests that the prevalent concerns of a few years ago regarding rapid growth have more recently been supplanted by concerns about retaining jobs and meeting local government fiscal obligations.



## SECTION II.

# Economic and Demographic Conditions in the Socioeconomic Study Area

This section documents recent employment, population, housing and demographic trends in the area most likely to be affected by changes in BLM resource management decisions. Fiscal and service provision conditions for the area's local communities and key service districts are described in the following Section III. Social conditions are addressed in Section IV.

### **Current Economic Activities Specifically Related to Lands Managed by BLM White River Field Office**

As discussed in Section I, the geographic area encompassed by the White River Field Office (WRFO) roughly corresponds to the political jurisdiction of Rio Blanco County. A wide spectrum of economic and social conditions in the Primary Socioeconomic Study Area (PSSA)—Rio Blanco County—and the Secondary Socioeconomic Study Area (SSSA) are indirectly influenced by the management and disposition of WRFO lands. Three types of economic activities in the PSSA, however, are most directly related to the management of WRFO lands—agriculture; recreation, hunting and fishing; and oil and gas development.

**Agriculture.** Ranches in Rio Blanco County as a whole raise cattle, sheep and horses. One estimate puts the total county-wide livestock inventory at about 40,000 cattle, 20,000 sheep, and 11,000 horses. A few farms in the PSSA, all within a 20-mile radius of Meeker, still grow grain. In all, the Farm Service Agency lists 475 active agricultural producers in Rio Blanco County. These are producers that sell the output of one or more of four types of commodity: livestock, hay, grain and forage (Lake 2008).

Rio Blanco County ranches function by making use of ownership and use rights on multiple parcels of private and public land. This arrangement has been essential for ranches in the PSSA since before the Taylor Grazing Act of 1934, which culminated 40 years of change in western Colorado agriculture. Over time, successive legislation—beginning with the creation of the White River Forest reserve in 1891—put an end to open range ranching and implemented the existing permit and quota system, which means permittees must own or lease land proportionate to the number of animals grazed on the public range (Husband 1984).

The WRFO manages 144 grazing allotments that, together, provide forage for over 126,000 animal unit months (AUMs). Most of the BLM land is used for livestock grazing in the spring and early summer growing periods. (WRFO 1996).

Within the PSSA, the Piceance Creek area stands out as a historical and still important ranch district. Piceance Creek ranches—of which there are 30 in the drainage—have a long history. Two of them are designated as Colorado Centennial Farms, meaning they are working ranches that have been in the same family continuously for 100 years or more. One of the two Piceance Creek ranches on the list is the oldest of the designated Colorado Centennial Farms in all of Rio Blanco County (Colorado Historical Society 2008).

Piceance Creek ranches are cattle or sheep ranches. They currently support an inventory of 5,000 head of cattle and 4,000 head of sheep (Lake 2008). Private parcels on the valley floors and low slopes of Piceance Creek, and its tributaries, contain residences and other structures, hay meadows, and irrigated and cultivated hay fields. Public uplands owned by BLM are leased to ranchers for grazing. Cattle are wintered over on the hay output from private land and are grazed for the four snow-free “turnout” months on forage leased from the BLM and the U.S. Department of Agriculture (USDA) Forest Service.

Over time, difficult conditions for western Colorado agriculture have created pressure to sell off private land as one strategy to sustain a ranching way of life. Piceance Creek ranches have sold land, since perhaps as early as the 1950s, to energy companies seeking land for gas field and oil shale development. Sales of ranch lands in the Piceance Creek area have typically not included all of the private ranch lands. In addition, land sales often have been accompanied by a lease-back arrangement that has allowed families to continue to work and live on the ranch (Ekstrom 2008, Lake 2008, Neilson 2008).

Despite ownership by energy companies, most Piceance Creek ranches continue to be run as ranches by the companies, by the historical owners as lessees, or on a smaller scale to fit lower hay output or reduced forage on grazing allotments. At present, just two former Piceance Creek ranches owned by energy companies are not run as ranches (Lake 2008). Thirteen ranch families have some of their own land and also lease from oil and gas companies, or the State of Colorado (Neilson 2008).

As recent development activity on Piceance Creek indicates, energy companies do convert their own ranch lands to industrial use as the need arises. This is apparent on Piceance Creek where production, gathering, processing and transportation facilities are found on former agricultural land. Seeking income, rancher-owners have also leased or developed land for development-related production, support, and residential facilities. No estimate of the amount or rate of the conversion is made here, but the change of use is clear in places along many county roads in the Piceance Creek area (Burkhead 2008a). Initially, some residential facilities were intended to be temporary, but demand for such accommodations has continued (Rio Blanco County 2005, Burkhead 2008b, Burkhead 2008c). New sales of places with good location for an RV park continue to occur (Neilson 2008).

**Recreation, hunting and fishing.** Lands managed by the WRFO provide recreational opportunities for local residents and visitors, and support hunting and fishing activities that are an important part of the economy in the PSSA.

When the last Resource Management Plan (RMP) was developed for the WRFO in 1997, the Colorado Parks and Wildlife (CPW) had established the following big game objectives for the area: 5,526 elk; 39,026 deer; and 268 Pronghorn. The 1997 RMP also targeted habitat conditions sufficient to support a minimum winter deer population of 24,900 on BLM land in the Piceance Basin (WRFO 1996).

These big game populations, along with fishing opportunities in the White River and other streams in the PSSA, provide an important contribution to the economy in Rio Blanco County. The latest preliminary analysis for the CPW indicates that there were approximately 123,000 hunting activity days in Rio Blanco County in 2005, and about 58,000 fishing activity days (an activity day is one individual participating for all or part of a day). Almost one-half of all of the hunting activity days in Rio Blanco County were logged by non-Colorado residents; however, most fishing activity in Rio Blanco County was by Colorado residents (BBC 2008c).

In 2007, hunting and fishing directly and indirectly led to about \$30 million in economic activity in Rio Blanco County and supported over 300 jobs. With nearly six percent of total county employment attributable to hunting and fishing, Rio Blanco County is the fourth most dependent on hunting and fishing among Colorado's 64 counties. Only Jackson, San Juan and Mineral counties have a larger percentage of employment that is attributable to hunting and fishing activity (BBC 2008c).

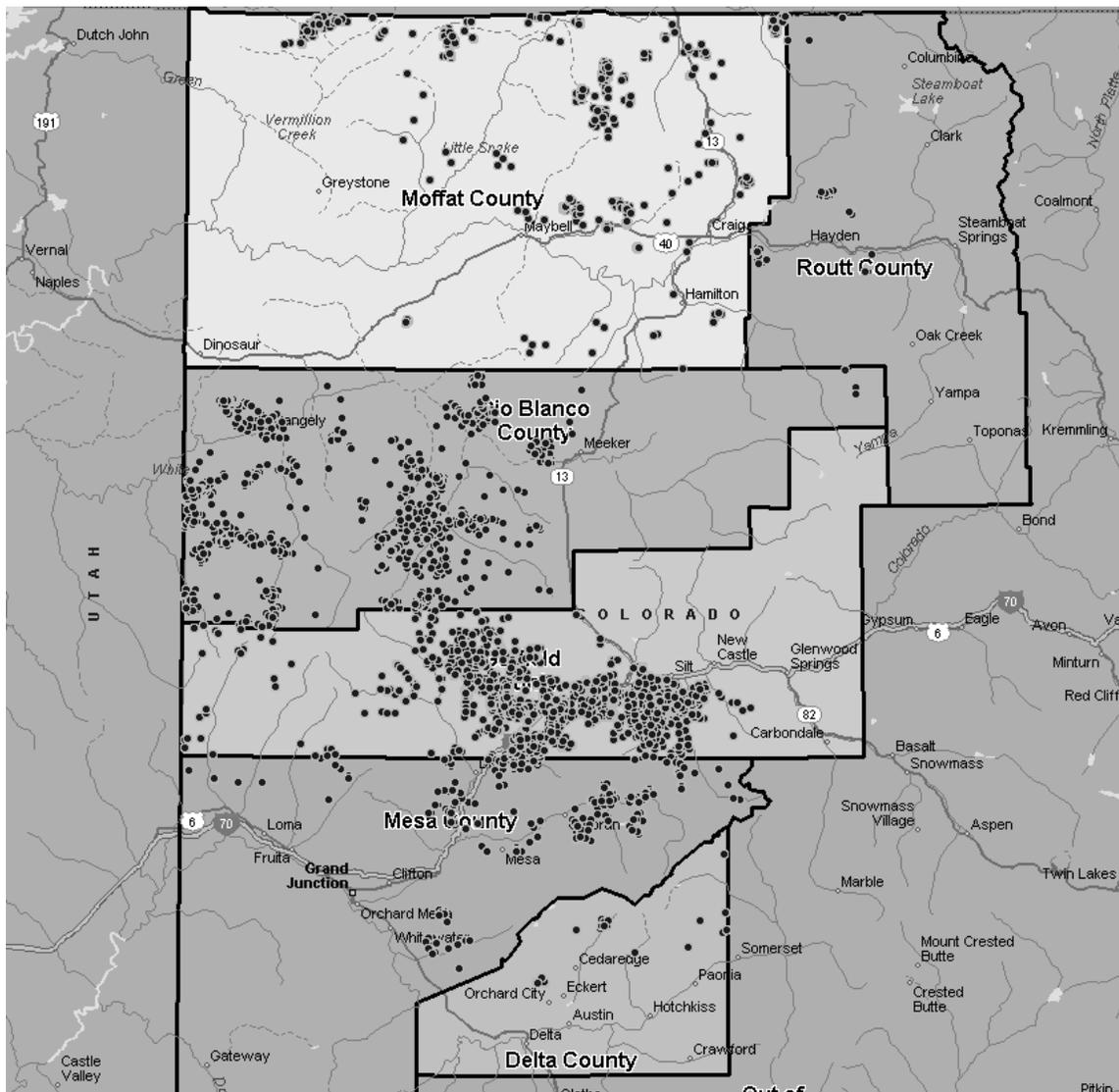
BLM lands provide other recreational opportunities in the PSSA as well. Lands managed by the WRFO provide activities such as:

- Mountain biking;
- Scenic viewing;
- Horseback riding;
- Wildlife viewing;
- Wilderness hiking and backpacking;
- River floatboating (canoeing);
- Motorized (ATV, snowmobile) trail use; and
- Camping (WRFO 1996).

Statistics on the extent of participation in these recreational activities in the PSSA, and their economic contribution, are not available. Approximately 80 percent of the public lands in Rio Blanco County (1.15 million of 1.44 million acres) are managed by BLM (USDO I BLM WRFO 2008). Although the lands managed by the White River National Forest in the eastern portions of the county consist of far fewer acres than the lands managed by BLM, the National Forest lands include important areas for fishing, hiking, and other recreational uses.

**Oil and gas.** There is a long history of energy development in the region, as discussed further in Section IV of this report. Most recently, the combined study area has been one of the focal points in the natural gas "boom" that has occurred in northwest Colorado since 2000. Exhibit II-1 on the following page depicts the general location of gas wells completed in northwest Colorado between 2000 and 2007.

**Exhibit II-1.  
Natural Gas Wells Completed in Northwest Colorado, 2000 to 2007**



Source: BBC Research & Consulting, 2007, based on Colorado Oil and Gas Conservation Committee data.

Thus far, the primary focus of natural gas exploration and production in northwest Colorado has been in Garfield County, south of the PSSA. As of September 2007, Rio Blanco County accounted for about 1,500 of the 9,500 wells completed since 2000, compared to 6,500 in Garfield County.

Determining the economic contribution of natural gas activity to individual counties within northwest Colorado is complicated by differences between the geographic locations of where the activity takes place (well locations), where the businesses providing development services (including subcontractors) are based, and where the employees reside. As discussed later in this section, up to the present, many of the workers at Rio Blanco County well sites live in nearby counties and many of the businesses are also based elsewhere—primarily in Mesa and Garfield counties in Colorado, as well as Uintah County, Utah.

The socioeconomic analysis and forecasts developed in 2008 for the Associated Governments of Northwest Colorado (AGNC) and the Colorado Department of Local Affairs (DOLA) sought to sift through the varying geographic complexities and estimate the economic effects of gas development, by location, within northwest Colorado. That analysis estimated that about 1,000 jobs in Rio Blanco County were directly or indirectly supported by natural gas activity in 2005, and the figure was anticipated to more than double by 2010 (BBC 2008b), although the recent economic downturn and falling prices for natural gas may slow development in the near term.

There is no way to determine exactly how many of these jobs are related to gas wells located on lands managed by the WRFO. However, the Reasonably Foreseeable Development Scenario for the RMPA indicates that approximately 80 percent of new wells in Rio Blanco County are expected to be located on lands managed by the WRFO (USDOI BLM 2007). Recognizing that some of the gas workers that reside in Rio Blanco County also commute out to work on wells located on non-WRFO managed lands in Garfield and Moffat counties, perhaps 50 percent of current oil and gas-related employment in Rio Blanco County stems from development and maintenance of wells and other gas facilities located on lands managed by the WRFO. This proportion is expected to increase in the future as the focus of Piceance Basin natural gas activity shifts north from Garfield County to Rio Blanco County. Given the fluid relationship between well locations, business offices and worker residences, gas activity on WRFO lands also affects employment in the SSSA, as well as the PSSA.

Apart from the three categories of economic activity just described, the lands managed by the WRFO are part of the overall economic, demographic and social conditions in the PSSA and the SSSA. The remainder of this section provides broader information regarding current economic and demographic conditions.

### **Overview of General Socioeconomic Conditions in the Primary and Secondary Socioeconomic Study Areas**

Rio Blanco County, the primary socioeconomic study area, is one of the largest counties in Colorado in terms of land area, but contains only two incorporated municipalities and has a population of less than 8,000 persons (SDO 2008). The county is part of a larger socioeconomic area (included in the SSSA) with common economic underpinnings and shared growth opportunities and challenges. In recent years, a rapidly growing natural gas industry has supplemented the area's traditional economic base of other energy development (e.g., the Rangely Oil Field), agriculture, tourism, recreation and retirees.

The study area is also influenced by activities along its borders. Resort developments in Pitkin, Eagle and Routt counties are important economic influences on the east side of the SSSA. Uintah County, Utah shares some economic ties with Grand Junction, but also with Salt Lake City to the west. An expanding natural gas industry in southern Wyoming is also an influence on Moffat County and the town of Craig.

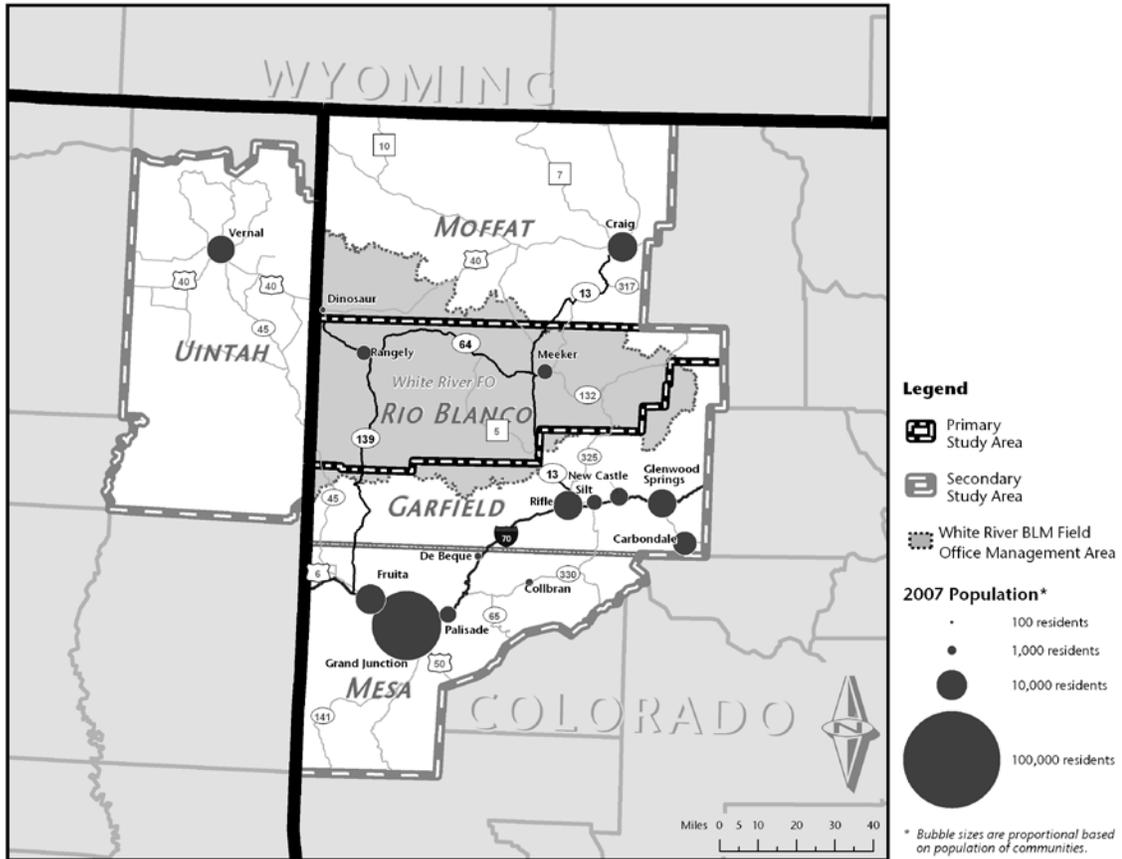
A few geographic characteristics of the primary and secondary socioeconomic study areas are particularly important in terms of baseline social and economic characteristics as well as potential environmental consequences of management alternatives:

- The combined study area is very rural. Despite its physical size, the entire area has only about 240,000 residents. Nearly two-thirds of the area's residents are concentrated in Mesa County;

- Currently, urbanization is concentrated along the I-70 corridor, which also contains the area's major rail line and the Colorado River. Rio Blanco County, the PSSA, is very large and very sparsely populated;
- Grand Junction is the major regional service center for retailing, professional service, health care and education; and
- There are only two north/south highways in the entire region: SH-13 between Rifle and Meeker, and SH-139 between Grand Junction and Rangely.

The combined study area (PSSA and SSSA), the local road network and the region's communities (by population) are shown in Exhibit II-2 on the following page.

**Exhibit II-2.  
Primary and Secondary Socioeconomic  
Study Areas and Location of the WRFO Management Area**



Source: Shape Files Provided by U.S. TIGER data (Census Tiger 2007) and Bureau of Land Management (BLM 2008)

**Regional Economic Trends**

**Employment history.** As shown in Exhibit II-3, Rio Blanco County has experienced periods of rapid growth, and rapid decline, in employment over the past 36 years. Rio Blanco County was particularly hard hit by the termination of the Exxon oil shale project in the early 1980’s. The pace of employment growth has recovered in recent years with employment expanding at a robust rate of 3.9 percent per year for the period 2000-2006.

The broader region has experienced similar patterns. Between 1970 and 2006, employment in the SSSA grew at an average annual rate of 3.9 percent, faster than the 3.2 percent average growth rate for the State of Colorado as a whole (BEA 2008). This long-term growth masks considerable economic fluctuations. Perhaps the most memorable single economic event in the region was the rise and subsequent rapid decline of the oil shale industry during the late 1970s and early 1980s. After a few years of rapid expansion, on May 2, 1982—now known as “Black Sunday”—Exxon terminated its experimental oil shale project near the Town of Parachute, and TOSCO (The Oil Shale Company) and UNOCAL soon followed suit. The resultant oil shale bust produced a large exodus of workers from Colorado’s Western Slope.

Exhibit II-3 shows employment growth rates for the PSSA and the SSSA over the 36 year period ending in 2006.

**Exhibit II-3.  
Employment Totals and Average Annual Growth Rate, Socioeconomic Study Area, 1970–2006**

County, State	Total Employment					Average Annual Growth Rate			
	1970	1980	1990	2000	2006	1970-1980	1980-1990	1990-2000	2000-2006
Rio Blanco, CO	2,375	4,609	3,653	4,149	5,224	9.4%	-2.1%	1.4%	4.3%
Garfield, CO	6,055	12,262	18,245	29,693	37,255	10.3%	4.9%	6.3%	4.2%
Mesa, CO	23,121	43,853	49,881	70,724	83,742	9.0%	1.4%	4.2%	3.1%
Moffat, CO	2,916	6,865	6,394	7,365	8,036	13.5%	-0.7%	1.5%	1.5%
Uintah, UT	5,121	9,123	10,057	13,667	17,844	7.8%	1.0%	3.6%	5.1%

Source: Bureau of Economic Analysis; BBC Research & Consulting

Although it required nearly ten years for the region to recover the jobs lost during the mid 1980's, the area did stabilize and eventually created a larger and more diverse economy. In the 1990s, the area's low cost of living and relatively affordable housing options spurred the in-migration of retirees and persons attracted by the region's hunting and fishing recreation as well as the affordable lifestyle. In some areas, second homes became an important influence. Since the year 2000, increasing natural gas exploration, development and distribution has further bolstered the regional economy.

Exhibit II-4 shows Rio Blanco County's job growth by sector over the 30-year period between 1970 and 2000<sup>1</sup>. After gaining 1,500 mining jobs by the mid-1980s, Rio Blanco County netted only 117 new mining jobs between 1970 and 2000 (BEA 2008).

**Exhibit II-4.  
Employment Growth by  
Industry, Rio Blanco County,  
1970 and 2000**

Note:  
\* Indicates that data was suppressed and total for all industries may not be summation of individual industries.

Source:  
United States, Bureau of Economic Analysis (BEA 2008).

Industry (SIC)	Employment		Absolute Change	Annual Percent Change	Statewide Annual Percent Change
	1970	2000			
Farm employment	216	276	60	0.8%	0.1%
Agricultural services, forestry and fishing	11	*	*	*	6.5%
Mining	371	488	117	0.9%	0.8%
Construction	215	278	63	0.9%	4.7%
Manufacturing	15	62	47	4.8%	2.0%
Transportation and public utilities	121	125	4	0.1%	3.6%
Wholesale trade	19	*	*	*	3.1%
Retail trade	304	507	203	1.7%	3.7%
Finance, insurance and real estate (F.I.R.E.)	72	174	102	3.0%	4.1%
Services	333	796	463	2.9%	5.4%
Government	508	1,146	638	2.7%	1.7%
<b>All Industries</b>	<b>2,375</b>	<b>4,149</b>	<b>1,774</b>	<b>1.9%</b>	<b>3.6%</b>

Although rich in natural resources, prior to year 2000 Rio Blanco County employment had not grown as rapidly as neighboring Garfield or Mesa counties, which have better transportation access and more economic diversity. As noted later in this report<sup>2</sup>, the Rio Blanco community harbors some skepticism about forecasts of future job growth based on its long-standing, but never fully realized, label as the “next” area to experience rapid economic expansion.

<sup>1</sup> Because the SIC classification system was replaced by a new NAICS industry classification system in 2000, consistent trend historical data can only go to the year 2000.

<sup>2</sup> See Section IV, *Baseline Social Conditions*.

Since 2000, however, Rio Blanco County has averaged 4.3 percent job growth per year. This growth rate is similar to the rate of job growth in Garfield County and faster than the rate of job growth in Mesa and Moffat counties (though slower than the growth rate in Uintah County, Utah). Almost 900 of the 1,021 new jobs added in Rio Blanco County from 2001 to 2006 were in the mining and construction sectors (CDLE 2008).

**Current employment.** Exhibit II-5 displays current wage and salary positions by county for 2007.<sup>3</sup> Although wage and salary positions are not a full accounting of all employment, these data provide a valuable comparative profile of both the PSSA and the SSSA. Nearly 50 percent of Rio Blanco County’s wage and salary employment is in mining and construction. A large share of these jobs is associated with the county’s older oil fields and more recent natural gas development.

**Exhibit II-5.**  
**Wage and salary jobs by industry, Primary and Secondary Study Areas, 2007**

Industry	County:	Primary Area		Secondary Area							
		Rio Blanco, CO		Garfield, CO		Mesa, CO		Moffat, CO		Uintah, UT	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Agriculture		40	1.0%	179	0.7%	463	0.8%	46	1.0%	71	0.5%
Mining		868	21.0%	2,339	8.6%	3,017	4.9%	639	14.4%	3,526	24.6%
Utilities		42	1.0%	241	0.9%	378	0.6%	*	*	186	1.3%
Construction		1,106	26.8%	4,759	17.5%	5,902	9.6%	264	6.0%	1,105	7.7%
Manufacturing		48	1.2%	411	1.5%	3,293	5.4%	90	2.0%	255	1.8%
Wholesale Trade		0	0.0%	731	2.7%	2,331	3.8%	256	5.8%	634	4.4%
Retail Trade		234	5.7%	3,647	13.4%	8,480	13.8%	735	16.6%	1,579	11.0%
Transportation and Warehousing		144	3.5%	1,055	3.9%	2,559	4.2%	144	3.2%	861	6.0%
Information		25	0.6%	267	1.0%	998	1.6%	41	0.9%	172	1.2%
Finance and Insurance		43	1.0%	601	2.2%	2,187	3.6%	100	2.3%	216	1.5%
Real Estate and Rental and Leasing		25	0.6%	656	2.4%	1,222	2.0%	44	1.0%	390	2.7%
Professional and Technical Services		67	1.6%	1,194	4.4%	2,330	3.8%	102	2.3%	380	2.7%
Management of Companies and Enterprises		*	0.0%	144	0.5%	91	0.1%	*	*	*	*
Administrative and Waste Services		65	1.6%	878	3.2%	3,078	5.0%	164	3.7%	340	2.4%
Educational Services		296	7.2%	2,223	8.2%	4,140	6.7%	*	*	857	6.0%
Health Care and Social Assistance		260	6.3%	2,317	8.5%	9,037	14.7%	470	10.6%	964	6.7%
Arts, Entertainment, and Recreation		54	1.3%	359	1.3%	1,067	1.7%	90	2.0%	141	1.0%
Accommodation and Food Services		320	7.8%	2,901	10.7%	6,156	10.0%	492	11.1%	953	6.6%
Other Services		67	1.6%	741	2.7%	1,715	2.8%	173	3.9%	400	2.8%
Public Administration		423	10.2%	1,562	5.7%	3,079	5.0%	584	13.2%	1,305	9.1%
<b>Total</b>		<b>4,127</b>	<b>100%</b>	<b>27,205</b>	<b>100%</b>	<b>61,523</b>	<b>100%</b>	<b>4,434</b>	<b>100%</b>	<b>14,335</b>	<b>100%</b>

Source: Colorado Department of Labor, Quarterly Census of Employment and Wages (QCEW).

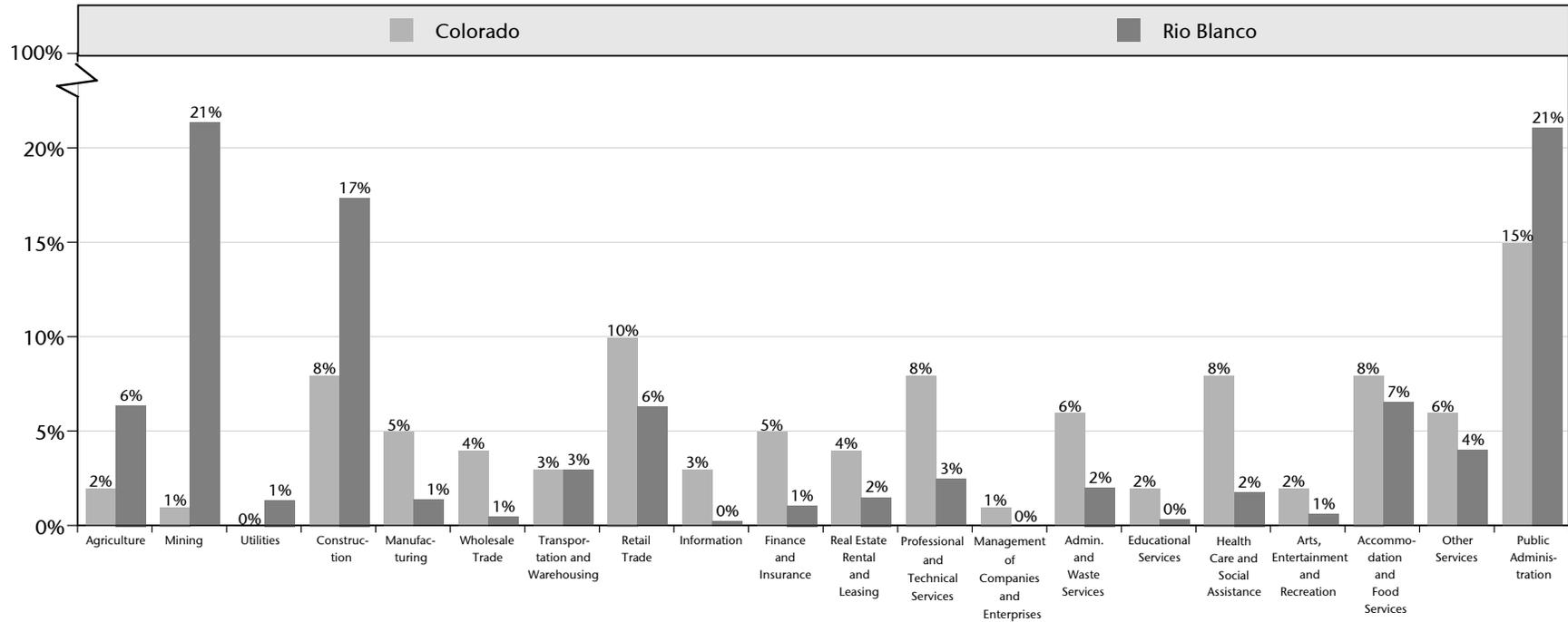
<sup>3</sup> Data in Exhibit II-5 shows the employment distribution by 2-digit North American Industry Classification System (NAICS) in 2007, based on Quarterly Census of Wage and Salary (QCEW) data from the Colorado Department of Labor. The NAICS system replaced the Standard Industrial Classification (SIC) system in 2000 to better describe the nation’s increasingly service-oriented economy.

Exhibit II-6 on the following page offers a comparison of Rio Blanco County's employment distribution with the State of Colorado as a whole. Exhibit II-6 is based on the total employment estimates developed by the Colorado State Demography Office. The total employment estimates include proprietors as well as the wage and salary workers shown in earlier exhibits of this section.

The 2006 employment comparison indicates:

- Rio Blanco County relies heavily on mining and construction activity, both of which are largely associated with gas development. Over 38 percent of the county's employment is in these industries in comparison with nine percent statewide. This would imply that the PSSA has already transitioned from its agricultural roots, and that further development of this kind would not be as transformative as it might be in an area with less mining and construction experience.
- Rio Blanco County's relatively large share of jobs in public administration reflects the small size of the county's economy and the lack of economies of scale in providing government services.
- Conversely, only a small share of Rio Blanco employment is in retail trade, finance, real estate and other services. This is an indication that a large share of these services currently must be purchased outside of the county.
- Future growth of natural resource-related employment might produce sufficient scale for secondary jobs to develop in retail and services. This would accelerate the amount of employment and population growth but would also diversify the economy and provide greater retail and service options for local residents.

**Exhibit II-6.**  
**Comparison of 2006 Total Jobs by Sector: Rio Blanco County and State of Colorado**



Note: Job estimates include proprietors and wage and salary jobs.

Source: Colorado State Demographer's Office and IMPLAN, 2008.

**Unemployment Rates.** Unemployment rates in the PSSA and portions of the SSSA exceeded 10 percent between 1982 and 1987, following the collapse of the oil shale industry. The regional economy has since stabilized and is now experiencing unemployment rates far below statewide averages. These data confirm that increased oil and gas activity has created a high demand for labor throughout the regional economy.

**Exhibit II-8.  
Unemployment Rates,  
PSSA and SSSA,  
2000–2007**

Source:  
Colorado Economic and Demographic  
Information System, Colorado  
Department of Local Affairs.

County, State	2000	2001	2002	2003	2004	2005	2006	2007
Rio Blanco, CO	2.9	2.7	3.5	4.7	4.3	3.6	2.6	2.1
Garfield, CO	2.7	3	4.7	5.4	4.4	3.7	2.9	2.5
Mesa, CO	3.2	3.5	4.9	5.7	5.1	4.7	3.9	3.2
Moffat, CO	3.5	3.7	5	6.4	5.3	4.6	3.7	3.2
Uintah, UT	4.2	4.4	6	5.8	5.1	3.8	2.5	2.3
Colorado	2.7	3.8	5.7	6.1	5.6	5	4.3	3.8

As indicated in Exhibit II-8, Rio Blanco County’s unemployment rates are notably low and many local businesses report difficulty in finding skilled workers (BBC, 2008b).

**Salaries and Wages.** Exhibit II-9 shows average reported wages by industry for the region in comparison with the state as a whole.

**Exhibit II-9.  
Average Weekly Wages by Industry: PSSA, SSSA and State of Colorado, 2007**

NAICS Code	Industry	Rio Blanco, CO	Garfield, CO	Mesa, CO	Moffatt, CO	Uintah, UT	Regional Average	Colorado
11	Agriculture	\$ 708	\$ 574	\$ 499	\$ 499	\$ 418	\$ 540	\$ 515
21	Mining	\$ 1,341	\$ 1,375	\$ 1,316	\$ 1,316	\$ 1,387	\$ 1,347	\$ 1,680
22	Utilities	\$ 1,233	\$ 1,266	*	*	\$ 1,482	\$ 1,327	\$ 1,326
23	Construction	\$ 1,479	\$ 963	\$ 659	\$ 659	\$ 729	\$ 898	\$ 877
31	Manufacturing	\$ 493	\$ 941	\$ 827	\$ 827	\$ 611	\$ 740	\$ 1,094
42	Wholesale Trade	*	\$ 966	\$ 887	\$ 887	\$ 1,116	\$ 964	\$ 1,269
44	Retail Trade	\$ 356	\$ 601	\$ 545	\$ 545	\$ 452	\$ 500	\$ 511
48	Transportation and Warehousing	\$ 1,216	\$ 1,028	\$ 769	\$ 769	\$ 1,090	\$ 974	\$ 849
51	Information	\$ 657	\$ 852	\$ 757	\$ 757	\$ 513	\$ 707	\$ 1,457
52	Finance and Insurance	\$ 561	\$ 1,000	\$ 780	\$ 780	\$ 665	\$ 757	\$ 1,322
53	Real Estate and Rental and Leasing	\$ 1,151	\$ 755	\$ 411	\$ 411	\$ 1,107	\$ 767	\$ 829
54	Professional and Technical Services	\$ 618	\$ 998	\$ 495	\$ 495	\$ 915	\$ 704	\$ 1,449
55	Management of Companies	*	\$ 899	*	*	*	\$ 899	\$ 2,117
56	Administrative and Waste Services	\$ 864	\$ 792	\$ 412	\$ 412	\$ 620	\$ 620	\$ 609
61	Educational Services	\$ 553	\$ 611	*	*	\$ 555	\$ 573	\$ 717
62	Health Care and Social Assistance	\$ 658	\$ 877	\$ 601	\$ 601	\$ 474	\$ 642	\$ 813
71	Arts, Entertainment, and Recreation	\$ 283	\$ 387	\$ 503	\$ 503	\$ 351	\$ 405	\$ 572
72	Accommodation and Food Services	\$ 368	\$ 332	\$ 250	\$ 250	\$ 238	\$ 288	\$ 322
81	Other Services	\$ 651	\$ 578	\$ 481	\$ 481	\$ 626	\$ 563	\$ 604
92	Public Administration	\$ 616	\$ 839	\$ 754	\$ 754	\$ 693	\$ 731	\$ 977

Note: \* Indicates suppressed data.

Source: Colorado Department of Labor and Employment and Utah Department of Workforce Services, QCEW, 2007.

Although the average salary among mining jobs in Rio Blanco is below the statewide average, this likely results from the inclusion of high-level executive positions located in Denver, Grand Junction and other metropolitan areas in the statewide average. High demand and highly-skilled labor positions in construction, transportation and real estate, often associated with energy development, pay well within Rio Blanco County. However, professional positions (e.g. government and educational employees) are paid below statewide averages (CDLE 2008).

Exhibit II-10 summarizes wage trends—net of inflation—from 2001 to 2007 for all wage and salary employment. All counties in the study area have witnessed wage escalation beyond Colorado statewide averages.<sup>4</sup> In recent years, wage growth in Rio Blanco County has been remarkable, particularly in relationship to trends in the state as a whole, which has experienced very little overall growth in real wage levels net of inflation.

**Exhibit II-10.  
Wage Trends in the Socioeconomic Study Area and Colorado, 2001 to 2007**

County, State	Average Weekly Wage						Annual Average Percent Change (after inflation)		Total Percent Change (after inflation)	
	2001 (in 2001 dollars)		2001 (in 2007 dollars)		2007 (in 2007 dollars)		All Industries	Mining	All Industries	Mining
	All Industries	Mining	All Industries	Mining	All Industries	Mining				
Rio Blanco, CO	\$551	\$975	\$647	\$1,145	\$994	\$1,341	7.4%	2.7%	53.7%	30.4%
Garfield, CO	\$585	\$1,176	\$687	\$1,381	\$814	\$1,375	2.9%	-0.1%	18.5%	-0.8%
Mesa, CO	\$527	\$912	\$619	\$1,071	\$697	\$1,316	2.0%	3.5%	12.7%	39.6%
Moffat, CO	\$567	\$1,002	\$666	\$1,176	\$728	\$1,316	1.5%	1.9%	9.4%	21.0%
Uintah, UT	\$568	\$988	\$667	\$1,160	\$883	\$1,387	4.8%	3.0%	32.3%	34.0%
Colorado	\$730	\$1,447	\$857	\$1,699	\$873	\$1,680	0.3%	-0.2%	1.9%	-2.2%

Source: Colorado Department of Labor and Employment, and Utah Department of Workforce Services, QCEW, 2007.

It is also notable that the overall average wage in Rio Blanco County now exceeds the state average. Interviews with Rio Blanco businesses and recent studies in the area suggest that there has been a considerable increase in wages as growing local businesses of all kinds have been forced to compete for local labor in the very isolated area (BBC 2008b).

**Population**

**Growth trends.** Population growth tends to mirror employment trends. Population growth in the region accelerated after the national recession of 1973-1974, stimulated in part by rising energy prices, federal fuels policies and investment in northwestern Colorado oil shale. Growth was unaffected by the national recessions of 1980 and 1981-1982, but Exxon’s closure of the Colony Oil Shale Project in 1982 dealt the region a significant setback, as job losses caused a widespread dispersal from the area (BBC 2008b).

<sup>4</sup> The wage data are adjusted 17.4 percent for inflation between 2001 and 2007.

Exhibit II-11 displays the relationship between aggregate population data and employment for the five-county region encompassing the primary and secondary socioeconomic study areas.

**Exhibit II-11.  
Population and  
Employment Growth  
in the Five-county  
Primary and Secondary  
Socioeconomic Study  
Areas, 1970–2006**

Source:  
U.S. Bureau of Economic Analysis, DOLA,  
Utah Governor’s Office of Planning and  
Budget, and Utah Department of Workforce  
Services.

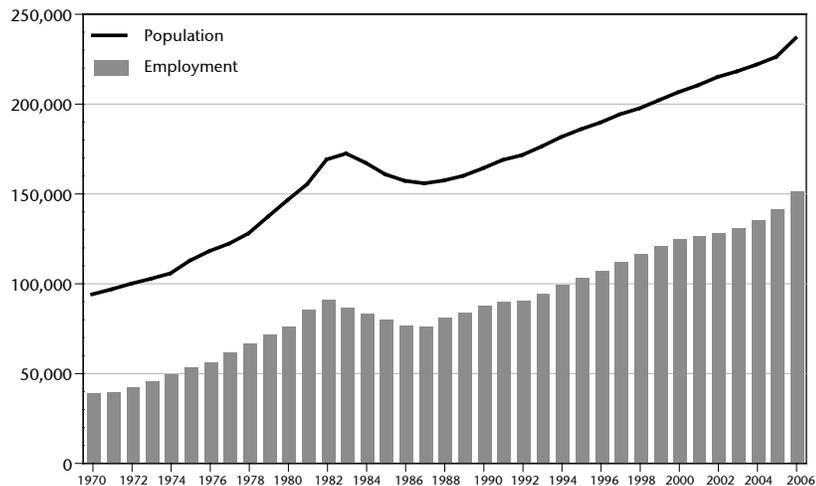


Exhibit II-12 reflects population growth by county for the region. Population trends have not been uniform throughout the study region. Rio Blanco and Moffat counties were particularly hard hit by the oil shale industry pullout in the early 1980s and took many years to recover.

**Exhibit II-12.  
Population Growth by County, Primary and Secondary Study Area, 1970–2006**

County, State	1970	1980	1990	2000	2006	Annual Growth Rate	
						1970 2000	2000 2006
Rio Blanco, CO	4,842	6,255	5,972	5,986	6,288	0.7%	0.8%
Garfield, CO	14,821	22,514	29,974	43,791	53,020	3.7%	3.2%
Mesa, CO	54,374	81,530	93,145	116,255	135,468	2.6%	2.6%
Moffat, CO	6,525	13,133	11,357	13,184	13,729	2.4%	0.7%
Uintah, UT	5,121	9,123	10,057	13,667	17,844	3.3%	4.5%
Colorado	2,209,596	2,889,733	3,294,394	4,301,261	4,813,536	2.2%	1.9%

Source: Colorado Department of Local Affairs, and Utah Governor’s Office of Planning and Budget.

In small rural areas, individual construction projects, such as expansion of I-70 or construction of the Craig electric generating station, can unduly influence year-to-year population data. The more diverse economies of Garfield and Mesa counties tend to stabilize population fluctuations. Rio Blanco County experienced population growth rates below one percent annually between 1970 and 2006.

Comparing the relatively slow rate of population growth in Rio Blanco County since 2000 with the much faster rate of employment growth shown earlier in Exhibit II-3 indicates that the recent surge in job growth has not yet led to a corresponding increase in county population. Instead, recent job growth has likely resulted in an increase in commuting into the county from Garfield, Mesa and Moffat counties and from Uintah County, Utah.

Exhibit II-13 presents population trends for the larger municipalities in the PSSA and SSSA that are the key residential and retail service centers in the region. If development were to accelerate, these communities would likely experience the most notable direct or indirect socioeconomic effects.

**Exhibit II-13.  
Population Growth for Selected Municipalities, 1970–2006**

	1970	1980	1990	2000	2006	Average Annual Growth Rate	
						1970-2000	2000-2006
<b>Regional Municipalities</b>							
Craig, Colorado	4,205	8,133	8,091	9,189	9,260	2.6%	0.1%
Fruita, Colorado	1,822	2,810	4,045	6,478	10,349	4.3%	8.1%
Glenwood Springs, Colorado	4,106	4,637	6,561	7,736	8,743	2.1%	2.1%
Grand Junction, Colorado	20,170	27,956	32,893	41,986	51,631	2.5%	3.5%
Meeker, Colorado	1,597	2,356	2,098	2,242	2,357	1.1%	0.8%
Rangely, Colorado	1,591	2,113	2,278	2,096	2,111	0.9%	0.1%
Rifle, Colorado	2,150	3,215	4,858	6,784	8,706	3.9%	4.2%
Vernal, Utah	N/A	N/A	6,644	7,702	8,140	N/A	0.9%
Unincorporated Rio Blanco County	1,654	1,786	1,596	1,648	1,820	0.0%	1.7%

Note: Vernal, Utah data are from the U.S. Census Bureau.

Source: Colorado Department of Local Affairs, U.S. Census Bureau Population Estimates Program.

Growth patterns have shifted over the years. In the most recent six-year period, the communities of Fruita, Rifle and Grand Junction have witnessed the most rapid development.

**Household size.** Exhibit II-14 presents average household size for the PSSA and SSSA. Household size does not vary radically within the PSSA and the SSSA, except for Uintah County, which has a substantially larger average household size than its nearby Colorado counties (Claritas 2008a). Communities with smaller average household sizes are sometimes older and slow growing, with more one and two person elderly households; or conversely, younger and faster growing, with singles and younger couples.

**Exhibit II-14.  
Average Household Size,  
Primary and Secondary  
Study Area, 2006**

Note:

Claritas was used for Uintah County's Average Household Size.

Source:

Colorado Department of Local Affairs and Claritas.

PSSA	Average Household Size	SSSA	Average Household Size
<b>Rio Blanco County, CO</b>	<b>2.49</b>	Garfield County, CO	2.66
Town of Meeker	2.39	Mesa County, CO	2.46
Town of Rangely	2.59	Moffat County, CO	2.59
Town of Rifle	2.68	Uintah County, UT	2.93
		<b>Colorado</b>	<b>2.55</b>

**Race and ethnicity.** The population within the PSSA and SSSA is relatively homogenous, consisting primarily of white, non-Hispanic residents. Exhibit II-15 on the following page displays the percentage of the population that identifies themselves as non-white. In 2000, 95 percent of Rio Blanco County's population identified themselves to be racially white; the remaining portion of the population identified themselves as one of the other racial categories: African American, Asian, Two or More Races, "Some other Race," American Indian or Native Hawaiian.

Individuals identifying themselves of Hispanic ethnicity trace their origin to Mexico, Puerto Rico, Cuba, Spanish-speaking Central and South American countries, and other Spanish cultures. Exhibit II-16 presents the percentage of the population identifying themselves as being of Hispanic origin. Counties within the study areas saw a rise in their Hispanic population between 1990 and 2000, consistent with national trends. Garfield County saw the greatest rise in Hispanic residents, indicating that overall population growth in the 1990s included a larger proportion of Hispanic residents than was seen in previous decades.

The State of Colorado as a whole contains a larger non-white and Hispanic population, as compared to the PSSA and the SSSA. In 2000, 17 percent of the state identified themselves as non-white, with 7 percent identifying themselves as “Some Other Race”; 4 percent of the population identifying themselves as African American; and 3 percent considering themselves of “Two or more races” (Census 2000 STF3).

**Exhibit II-15.  
Non-White Population, as a Percent of Total Population, Socioeconomic Study Areas, 1990-2000**

Source: U.S. Census Bureau, 2000, SF3

	1990	2000
<b>Rio Blanco, CO</b>	3%	5%
Garfield, CO	3%	10%
Mesa, CO	5%	8%
Moffatt, CO	4%	6%
Uintah, UT	12%	12%

**Exhibit II-16.  
Hispanic Population, as a Percent of Total Population, Socioeconomic Study Areas, 1990-2000**

Note:  
Claritas was used for most recent estimation years, as some study area counties are too small to be included in the Census’ American Community Survey.

Source:  
U.S. Census Bureau and Claritas.

	1990	2000
<b>Rio Blanco, CO</b>	4%	5%
Garfield, CO	6%	17%
Mesa, CO	8%	10%
Moffatt, CO	6%	9%
Uintah, UT	3%	4%

**Personal income and Poverty.** Despite growing wage levels, Rio Blanco County residents continue to trail the state as a whole in measures of household and personal income. Currently, Rio Blanco County is home to a larger proportion of low-earning households than the region as a whole. For example, 13 percent of households in the SSSA earn \$100,000 or more per year. This compares to only nine percent of households in Rio Blanco County (Claritas 2008b). Household income statistics reflect many factors, including the number of persons per household, household age, and the number of workers per household.

Exhibit II-17 provides income statistics for the PSSA and SSSA. Rio Blanco County, as well as all counties within the SSSA, trail the State of Colorado as a whole in terms of average household income, median household income and per capita income. Garfield County residents have the highest incomes with a median household income 25 percent greater than Rio Blanco County’s corresponding statistic.

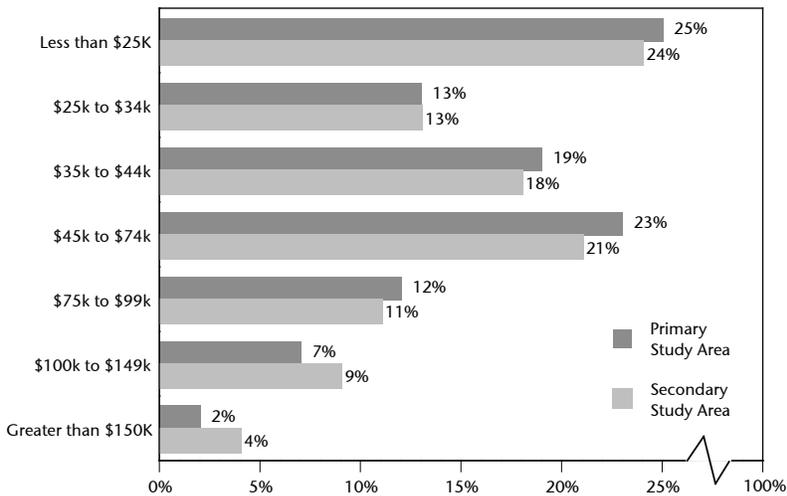
**Exhibit II-17.**  
**Average, Median and Per Capita**  
**Income for the Study Area, 2007**

	Average Household Income	Median Household Income	Per Capita Income
<b>Rio Blanco County, CO</b>	<b>\$52,409</b>	<b>\$44,804</b>	<b>\$21,143</b>
Town of Meeker	\$48,236	\$40,132	\$20,632
Town of Rangely	\$58,377	\$48,977	\$21,921
Town of Rifle	\$57,500	\$48,788	\$21,076
Garfield County, CO	\$68,264	\$55,441	\$25,473
Mesa County, CO	\$55,642	\$42,772	\$22,583
Moffat County, CO	\$55,795	\$49,386	\$21,936
Uintah County, UT	\$52,533	\$43,573	\$17,832
Colorado	\$73,236	\$56,432	\$28,654

Source:  
 Claritas.

Exhibit II-18 compares the household income distributions of the PSSA and SSSA. Many of the higher-earning households in the SSSA reside in Garfield and Mesa counties, where there is greater economic diversity.

**Exhibit II-18.**  
**Household Income**  
**Distribution, Rio Blanco**  
**County and Socioeconomic**  
**Study Area, 2007**



Source:  
 Claritas.

Poverty levels within the SSSA were consistent with statewide poverty statistics. In 2000, ten percent of residents in the entire SSSA were living below the poverty level, compared with nine percent of the state’s residents. Garfield County reported the lowest county-level poverty rate within the SSSA (seven percent), while Uintah County, Utah had the highest incidence of poverty within the SSSA at 14 percent (Census 2000 STF3).

**Commuting Patterns.** Commuting data reflect the interdependency of the counties within the study areas. Because the most complete available data come from the 2000 Census, these data do not capture more recent changes in job location and community growth. The tendency to commute out of the area for resort jobs in Pitkin and Routt counties is notable. Exhibit II-19 presents the county of which residents commute to within the SSSA.

**Exhibit II-19.**  
**Place of Work for SSSA Residents, Secondary Socioeconomic Study Area, 2000**

Place of Residence	Place of Work						
	Study Area					Non-Study Area	
	Garfield, CO	Mesa, CO	Moffat, CO	Rio Blanco, CO	Uintah, UT	Pitkin, CO	Routt, CO
Rio Blanco, CO	3%	0%	4%	89%	<1%	1%	<1%
Garfield, CO	74%	<1%	<1%	<1%	NA	16%	<1%
Mesa, CO	1%	96%	<1%	<1%	NA	<1%	<1%
Moffat, CO	<1%	<1%	72%	3%	<1%	NA	21%
Uintah, UT	<1%	NA	<1%	1%	88%	NA	<1%

Note: NA indicates that this commuting pattern did not exist in the JTW data.

Source: Census Bureau, Journey to Work data, 2000.

Recent natural gas exploration and development is changing commuting patterns in northwest Colorado. The location of gas drilling is continuously changing as wells are completed and new drilling commences in new locations. The gas workforce is similarly mobile. The recently completed study for the Associated Governments of Northwest Colorado contained updated commuting estimates for the natural gas workforce based on a combination of data on worker residence locations filed by energy companies for purposes of severance tax distribution, and data on well drilling by location (BBC 2008b). Exhibit II-20 depicts the estimated relationship between work sites (e.g. well locations) and the residences of the natural gas workforce.

As shown in Exhibit II-20, only 25 percent of gas workers operating in Rio Blanco County also live in that county. By comparison, an estimated 45 percent of the workers drilling wells in Garfield County also live there. Commuting from the borders of the region is particularly significant for wells drilled in Rio Blanco County (primarily Utah workers) and Moffat County (primarily Wyoming workers).

**Exhibit II-20.**  
**Estimated Work Site-to-Residence Relationship for Natural Gas Operations in Northwest Colorado**

County Well Location	Place of Residence				Edge of Region	Total
	Garfield, CO	Rio Blanco, CO	Moffat, CO	Mesa, CO		
Rio Blanco, CO	25%	25%	5%	20%	25%	100%
Garfield, CO	45%	5%	0%	50%	0%	100%
Moffat, CO	15%	10%	10%	30%	35%	100%
Mesa, CO	0%	0%	0%	100%	0%	100%

Note: Data not available for Uintah County.

Source: BBC Research & Consulting, 2008.

Anecdotal data suggest that lengthy commuting patterns reflect the challenges in finding local housing and services near active gas fields in Rio Blanco and Garfield counties.

**Housing Trends**

It is likely that unincorporated Rio Blanco County and the nearby towns of Meeker and Rangely—the PSSA for this analysis—will be the most immediately and directly affected by an RMP amendment as well as new workforce-related population and related demand for housing. Given the area’s human geography (i.e., the distribution of communities, roads and resources), portions of Garfield County may also be affected, particularly the City of Rifle and nearby communities along the I-70 corridor. In addition, anecdotes from local interviews suggest that long commutes can occur when local housing is tight near the active gas fields in Rio Blanco and Garfield counties (Brown 2008).

**Overview.** Although it required nearly a decade for the region to recover the jobs lost during the mid-1980’s, the area eventually stabilized to support a larger and more diverse economy. In the 1990s, the area’s low cost of living and relatively affordable housing options spurred the in-migration of retirees and persons seeking a different quality of life into the region. In some areas, second homes became an important influence. Rio Blanco County has participated in both the retirement and second home trends, with seasonal and second-home interest focused especially on the locally-identified “Upper White River Valley” east of Meeker (Viscardi 2008). Since the year 2000, increasing natural gas exploration, development and distribution has further bolstered the regional economy.

As noted in Exhibit II-21, Garfield and Mesa counties capitalized on a strong housing market between the years 2000 and 2006, expanding their current housing stocks by 18 percent and 20 percent, respectively. Within Garfield County, Rifle’s housing stock grew by about 25 percent to 3,231 units.

In contrast, Rio Blanco County saw little housing development during this time. The total number of housing units in Rio Blanco County increased by about 6 percent between 2000 and 2006, from 2,855 to 3,021 units. Moffat County also experienced slow development over the most recent six-year period.

**Exhibit II-21.  
Housing Units, Secondary Socioeconomic Study Area, 2000-2006**

	2000	2001	2002	2003	2004	2005	2006	Percent Change 2000 2006
<b>Rio Blanco County, CO</b>	<b>2,855</b>	<b>2,872</b>	<b>2,897</b>	<b>2,915</b>	<b>2,938</b>	<b>2,977</b>	<b>3,021</b>	<b>6%</b>
Town of Meeker	1,054	1,056	1,069	1,076	1,085	1,095	1,111	5%
Town of Rangely	899	904	905	906	907	908	908	1%
<b>Garfield County, CO</b>	<b>17,336</b>	<b>17,972</b>	<b>18,622</b>	<b>19,117</b>	<b>19,489</b>	<b>19,995</b>	<b>20,525</b>	<b>18%</b>
City of Rifle	2,586	2,675	2,795	2,889	2,974	3,110	3,231	25%
<b>Mesa County, CO</b>	<b>48,427</b>	<b>50,400</b>	<b>51,811</b>	<b>53,437</b>	<b>54,989</b>	<b>56,541</b>	<b>58,098</b>	<b>20%</b>
<b>Moffat County, CO</b>	<b>5,635</b>	<b>5,701</b>	<b>5,749</b>	<b>5,839</b>	<b>5,872</b>	<b>5,943</b>	<b>6,019</b>	<b>7%</b>

Note: Uintah County is not included because of the lack of available data.

Source: Colorado Department of Local Affairs (SDO 2008).

In the past, Garfield County has been the affordable housing provider for nearby Pitkin and Eagle counties seasonal workforce. However, a 2006 study released by the Garfield County Building and Planning Department suggested housing was becoming less affordable in the county and commuting to nearby resorts was less common. The study reported that home appreciation was exceeding increases in average wages, thereby making the median priced home in Garfield County unaffordable for a household earning the county’s median household income (RMN 2007).

Garfield County boasts the most expensive housing stock within the SSSA. In 2007, Garfield County reported a median home price of \$267,368, compared with the much lower home prices in Rio Blanco (\$119,589) and Uintah counties (\$94,169). Garfield County’s housing is also newer; the median year of construction for Garfield County housing stock was 1986. In Rio Blanco County, the median year of construction for a home was 1975 (Claritas 2008c)

**Vacancy rates.** Exhibit II-22 shows housing vacancy rates for the Colorado counties in the primary and secondary socioeconomic study areas. Rio Blanco and Moffat counties have had relatively high vacancy rates over most of the past two decades. Vacancy rates in Mesa and Garfield counties have been comparatively lower, generally staying below ten percent since 1990 (BBC 2008a). The decline in vacancy rates for all counties in 2006 reflects recent effects from growth in regional energy development.

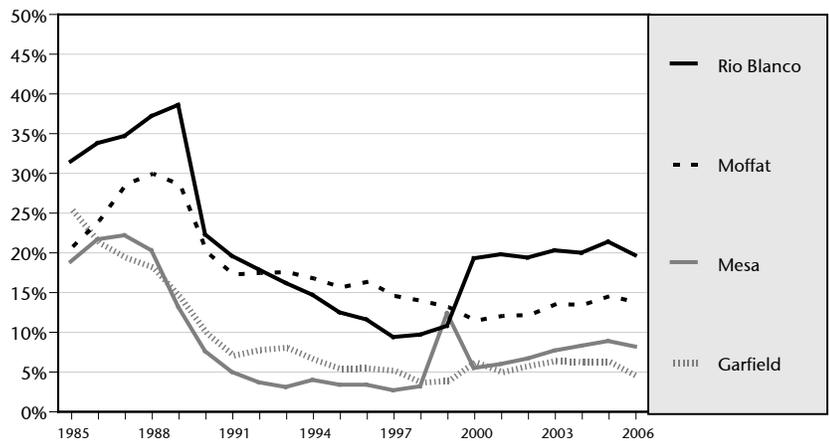
It should be noted that vacancy rates reported here include second homes, which alters vacancy statistics and interpretation. Local authorities in both Garfield and Rio Blanco counties report that for-sale housing and rental markets are now very constrained and availability is very low. Rifle vacancy is reportedly less than one percent in 2007, a rate at which available units among existing housing are extremely difficult to find (BBC 2008a).

**Exhibit II-22.  
Vacancy Rates,  
1985–2006**

Note:  
Uintah County is not included because of the lack of available data.

Note:  
Data provided by Colorado Department of Local Affairs.

Source:  
BBC 2008b.



Observers from Rio Blanco County have expressed skepticism about even modest vacancy rates. For-sale housing prices have remained high, reflecting sellers’ expectation of appreciation in the future (Wix 2008). The price of houses sold over the past 18 months to two years reportedly indicate that values have doubled since 2006 (Brown 2008). In the summer of 2008, demand for homes priced under \$250,000 was very strong, homes priced above that tend to stay on the market for much longer intervals (Wix 2008).

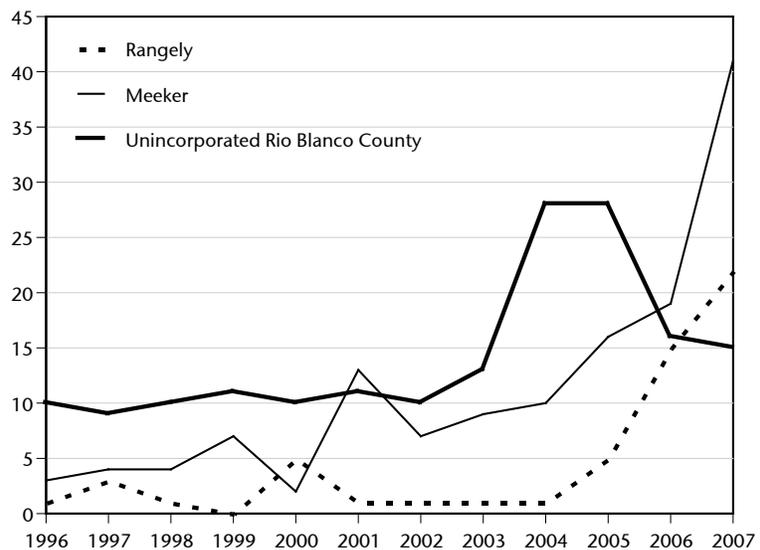
**Temporary workers.** Another distinctive aspect of the energy development currently taking place in northwest Colorado is the large number of temporary workers living out of motel rooms and RV campgrounds in the region. Based on 2007 interviews with local visitor bureaus, BBC estimates that between 15 and 30 percent of the approximately 6,800 motel rooms in the four-county northwest Colorado region are continuously occupied by workers associated with regional energy development (BBC 2008b).

### Housing Development Activity, Plans and Issues

**Rio Blanco County.** Economic expansion in recent years has led to a modest increase in Rio Blanco County housing starts. Exhibit II-23 reflects building permit data for Meeker, Rangely and unincorporated Rio Blanco County. Meeker and Rangely have seen steady growth in housing starts since mid-year 2004, but the number of new units remains very small—about 60 units in total in 2007. Land with the potential for subdivision is available in Rio Blanco County and the county is beginning a new comprehensive planning process, which is intended to better define the location and building conditions that are suitable for rural subdivision growth (Brown 2008).

#### Exhibit II-23. Building Permits

Source:  
U.S. Census Building Permit data



Industry activity has stimulated some subdivision and housing construction in unincorporated Rio Blanco County along Highway 64 between Meeker and the intersection of County Road 5, which is the main access to ongoing natural gas development. New lots have been developed and housing built in Meeker, where the town’s comprehensive plan update of 2005 showed that three-fourths of Meeker’s households supported growth as “somewhat” or “very” important (Town of Meeker 2005).

Real estate agents report that current demand for Meeker rental housing is high, with supplies of units low, availability “near zero,” and rents “very high” (Wix 2008). Availability of this type of housing in Meeker and Rangely has been limited or extremely tight since the fall of 2005 (Blankenship Consulting and Sammons/Dutton 2006). Policies in the Meeker plan recognize this need, and the plan’s objectives call for a range of development densities (Town of Meeker 2005). Recently, three apartment complexes have been completed in Meeker and a fourth is nearing completion. However, these were undertaken by firms specifically for employee use (Brown 2008). Most of the recent construction of single-family housing units in the Meeker area has occurred at suburban or rural residential densities, despite demand for lower priced “for sale” and rental units. Similarly, recent subdivision proposals in Meeker have been for larger lots (Town of Meeker 2008).

Transient accommodations, such as motels and RV parks, are also in high demand, often as a substitute for more permanent residences. Construction crews occupied many mobile home spaces and motel units, leading local land owners to apply for and receive permits for temporary RV parks during the Entrega and WIC pipeline projects, which have since been completed (Blankenship Consulting and Sammons/Dutton 2006). As new projects have been launched, demand for this type of housing has remained high (Burkhead 2008b and 2008c). Long-established seasonal demand from hunters is also a factor in Meeker, and transient accommodations are stretched thin when demands pile up. This situation led organizers of the 2008 annual Meeker Classic Sheepdog Event to recruit housing for participants from local residents for the first time because of the lack of available commercial lodging (Brown 2008).

**City of Rifle.** The City of Rifle is outside of the PSSA, but the community could be directly affected by BLM WRFO management decisions if growth rates are high or communities within the PSSA are unable to expand offerings in line with population demands. With approximately 9,000 residents, Rifle is the largest city between Glenwood Springs and Grand Junction and is located on one of two north-south highways that provide direct access into the BLM White River area. Rifle has grown rapidly in recent years as a retail and service center, and the community’s experience is instructive in terms of the challenges faced by rural communities compelled to provide for rapid urbanization.

Rifle currently reports a total of 3,132 housing units, of which 1,970 are single-family dwellings, while the remainder are townhouses, duplexes and multifamily. The housing stock has increased 43 percent from 2,194 housing units, since the 2000 Census.

A very large number of housing units (approximately 1,400 single-family and 2,400 multifamily) are currently in the approval and planning stages (May 2008). The largest developments include 1,400-unit Rim Rock project north of the Rifle and the 1,200-unit Bryce Valley project northeast of the city. Several smaller developments are planned for the areas south and west of Rifle.

**Exhibit II-24.  
Future Development**

Source:

City of Rifle Planning Department; BBC Research & Consulting, May 2008

Development	No. of Units	Description	Progress
Rim Rock	1,400	Village center, mixed residential	In process
Bryce's Valley	1,500	Village center, mixed residential	In process
The Farm	450	Mixed residential	In process
Trapper Hollow	22	Multifamily, townhomes	Drawing board
Rifle Heights	95	Single family	In process
Two Creeks	184	Townhomes	In process
Queen's Crown	120	Single family	In process
Brown Property	(40 acres)	Mixed residential	Drawing board
Black Lion	(40 acres)	Mixed residential	Drawing board
Pioneer Mesa	115	Single family	In process

At the time of this report, Rifle has over 3,000 homes in the regulatory approval process. For-sale housing availability and rental vacancies have been near zero for the last few years despite aggressive annexations, utility extensions and the addition of roughly 400 new homes per year over the past three years. Growth pressures have been so strong and workforce so stretched that finalization of the city’s comprehensive plan—which is complete at a draft level—has been delayed two years waiting for staff time for final review.

**Construction costs.** The costs of home building and road construction in Rifle have risen sharply in recent years. Prices of construction materials have been driven up by strong demand from the energy sector.

According to city staff responsible for construction contracts, the prices of asphalt and concrete have risen by 30 percent in the past two years (2006-2007). Currently, Rifle is constructing a new public safety facility at over \$250 per square foot—a large increase from the \$125-\$150 per square foot cost of a similar building constructed by Garfield County in 2005. The cost of Rifle’s new wastewater treatment plant was estimated at \$14 to \$16 million in 2006, but the actual cost is over \$23 million (BBC 2008b)

As a result of increasing costs, bids on public works projects have increased by 30 percent over the past three years, and many public works projects receive no bids at all because of contractor and worker shortages (BBC 2008b)

**Housing prices.** Housing prices in Garfield County have risen rapidly. Rifle is no longer a low cost alternative for commuting resort workers. The surge of energy workers and related service jobs, most of which pay higher wages than resort jobs and may not require a lengthy and increasingly expensive commute, has largely replaced resort employment as a driving factor in local real estate markets. One of the ramifications of Garfield County’s rapid growth has been the reduction of housing options for resort workers, resultant “push-back” pressure to develop more housing within the resorts and, at least for the time being, significant shortages of workers for seasonal and construction demands in Eagle and Pitkin counties due largely to lack of affordable housing.

A 2008 report looked at Multiple Listing Service (MLS) data since 2005 and found that the median price for homes had increased rapidly from \$200,000 in 2005 to \$275,000 in 2007, an increase of 38 percent in two years. More tellingly, the report found that in 2007, the proportion of housing affordable to families making 180 percent of the regional median income was only 32 percent, and an analysis of current listings in 2008 suggests that this proportion may be declining even further.

The increasing costs of housing and lack of affordable housing are blamed by area schools, hospitals and other agencies for creating difficulties in attracting and retaining qualified teachers, health care professionals, and other skilled employees. The City of Rifle has experienced this effect in its own workforce, demonstrated by a recent example in which a Rifle city planner left to work for the City of Aspen because it was able to offer affordable housing for its employees (BBC 2008a).

**Overcrowding.** Another housing issue has been the use of some units as illegal hot-bunk houses where a large number of industry employees rent the same house and stagger their work schedules so that they can sleep in shifts. Such overcrowding leads to poorly maintained properties and overcrowded streets and driveways. Some local motels may serve as “man camps,” and it is estimated that 80 percent of local hotel room-nights are used by energy workers.

Meanwhile, the unavailability of lodging in Rifle has meant that tourists have gone elsewhere for temporary lodging. Hunting has long been a significant economic generator for Rifle and the surrounding area, but congestion and the lack of available rooms in the city have caused hunters to look elsewhere for supplies and accommodations (BBC 2008a).

**Building fees.** Rifle imposes a number of fees on new development. On a sample home valued at \$200,000, fees totaled almost \$21,000. The largest fees include the use tax fee (about \$4,400 on a \$200,000 home), wastewater improvement fee (\$5,300), water system improvement fee (\$4,700) and street impact fee (\$3,000). In recent years, the city has doubled wastewater rates and increased tap fees by 50 percent to ensure that new development is “paying its way.” To this end, the city also plans to increase water fees by 50 percent in the next three years and to continue charging impact fees for streets, parks and special improvements (BBC 2008a).

### **Summary of Baseline Economic Conditions**

- The BLM WRFO manages an area that is largely coincident with Rio Blanco County, one of the state’s largest, but most sparsely populated, counties.
- Changes in BLM resource management practices, particularly the prospect of greatly increased gas drilling activity, will affect socioeconomic conditions in a wide area. The PSSA is that geographic region that will likely be directly and immediately affected by WRFO management and operational decisions. The PSSA consists of Rio Blanco County and its two incorporated towns: Meeker and Rangely. Rio Blanco County is very isolated and its municipalities are small.
- The SSSA is a broader region that has indirect social and economic ties with WRFO activities and will likely provide some business support services, resident housing and community services for WRFO associated development. This five-county SSSA includes Garfield, Rio Blanco, Moffat and Mesa counties in Colorado, and Uintah County, Utah.
- The northwest Colorado region has a diverse economic base of ranching, hunting, tourism, agriculture, retirees, education, health services and energy extraction (oil, gas and coal). Rio Blanco County, the PSSA, is increasingly reliant on energy and construction trades—nearly 50 percent of jobs in Rio Blanco County are in the mining and construction industries.
- The oil shale bust in 1992, when Exxon Company abruptly pulled out of the oil shale development business, was a defining event for northwest Colorado with lasting repercussions for residents of both the PSSA and SSSA. Oil shale’s boom and bust underscores resident concerns about reliance on a single industry and dependence on natural resource extraction for long-term economic sustainability.
- The SSSA, particularly Garfield County, has traditionally been the affordable housing option for resort workers employed in Pitkin and Eagle counties, as well as housing Rio Blanco-based gas workers in recent years. Increasing population growth and housing demand associated with energy extraction has led to rapid home price appreciation and housing shortages in Garfield County. Housing has become considerably less affordable throughout the SSSA in recent years.
- Increased oil and gas activity has led to rapid employment growth in Rio Blanco County but population and retail service growth has thus far lagged behind employment growth. Between 2000 and 2006, Rio Blanco County added jobs at an average annual growth rate of nearly four percent, which is double the growth rate experienced during the 1990s. Rio Blanco population growth has been at a much slower rate, as most new workers have commuted from Garfield and Mesa counties, or from Utah.

## SECTION III.

# Public Facilities, Finances and Services in the Socioeconomic Study Areas

Changes in BLM WRFO management practices and potential additional development of WRFO oil and gas reserves have the potential to affect public costs and revenues for Rio Blanco County, as well as local municipal governments, school districts and the public service providers. Lesser effects may occur throughout the Secondary Socioeconomic Study Area (SSSA).

Potential changes in property values, employment levels, resident population and worker commuting patterns will affect the funding and provision of most government services, particularly county road maintenance, county and municipal law enforcement, health and human services, and emergency response systems.

This section offers an overview of current conditions for key service providers within the Primary Socioeconomic Study Area (PSSA). The section also provides a more general discussion of issues and challenges in the broader SSSA.

### Rio Blanco County

**Budget Organization.** Rio Blanco County serves approximately 6,300 residents; nearly 70 percent of its residents reside in the incorporated municipalities of Meeker (pop. 2,357) and Rangely (pop. 2,111) (SDO 2008).

The county's overall budget includes six types of major funds, which are listed below:

- **General Fund**—provides for most of the administrative, public safety, public works and health and welfare functions, excluding the county-operated hospital.
- **Capital Expenditure Fund**—supports annual expenditures for the “acquisition, development, construction and renovations of facilities, projects and equipment, as well as purchases of computer and communications equipment.” Two capital expenditure funds exist to support the following county services:
  - Road and Bridge; and
  - Social Services.
- **Use Tax Fund**<sup>1</sup>—supports senior transportation, aviation, public welfare, and other designated programs. Use tax is derived from a tax on building materials.

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<sup>1</sup> Use tax receipts after 2007 are uncertain. The county and the oil and gas industry is in a legal dispute over the applicability of use tax on certain drilling and gas production equipment.

- **Proprietary or Enterprise Funds**—recover all or nearly the full cost of providing services by charging fees for those persons who use these services. Rio Blanco County has three proprietary funds:
  - Fairfield Complex – the complex provides meeting locations for community activities, the Meeker District Library and the Meeker Senior Nutrition program;
  - Solid Waste Landfill; and
  - Weed and Pest Control.

The county also has a conservation trust fund, a contingency fund for countywide emergencies<sup>2</sup> and a capital improvement fund, which received its initial principal from the state’s oil shale trust fund. The county general fund accounts for the great majority of direct services. In 2007, over 85 percent of Rio Blanco County’s \$23.3 million in revenues accrued to the general fund (Rio Blanco County 2008b).

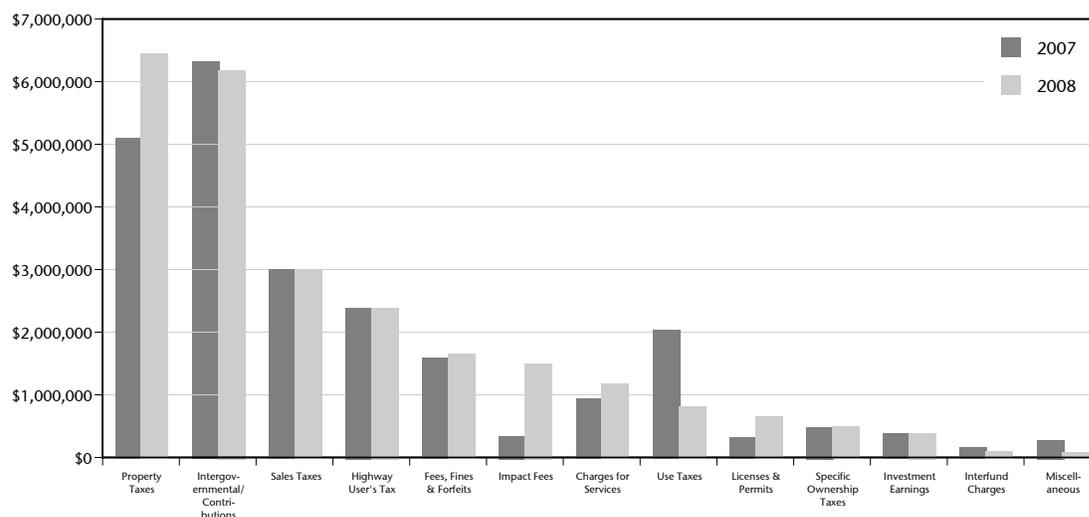
**County Revenues**

Exhibit III-1 displays the distribution of Rio Blanco County’s revenues in 2007 and 2008.

In 2007, intergovernmental revenues were the largest single category of county receipts. Intergovernmental revenues are primarily mineral leasing and severance tax funds that are distributed to the county based on the amount of drilling activity and location of employees. County pass through funds (funds from state sources) for road and bridge and human services are also included in this category (Rio Blanco County 2008b).

Impact fees, a charge levied on new development—including new gas wells—in order to recover the capital costs associated with servicing new growth, is a relatively new taxing vehicle that was first applied in part of 2007. As a result, impact fee revenue is expected to rise rapidly in 2008 (Rio Blanco County 2008b).

**Exhibit III-1.  
Rio Blanco County 2007 Estimated and 2008 Proposed Total Revenues by Source**



Source: Rio Blanco County Budgets for years 2007 and 2008.

<sup>2</sup> Contingency fund has not been used in 15 or more years.

As noted previously, revenue from use tax, which is a form of excise tax applied on certain building materials and equipment imported to Rio Blanco County for use within the county, is budgeted to decrease 60 percent in 2008. This loss is attributable to a dispute over the applicability of use tax to certain natural gas production equipment, which is currently being contested in the state court system (Rio Blanco County 2008b).

The voters of Rio Blanco County have “de-Bruced” county functions, allowing county revenues to grow without regard to the Taxpayer’s Bill of Rights (TABOR) Amendment limitations. The TABOR would otherwise require a rebate of revenues that increase above certain limits.

Property tax revenue, the second largest revenue category for the county, is dependent on the assessed value of land and personal property, assessment percentages that are dictated by state law, and the mill levy amount applied for each service entity. Total assessed valuation on taxable property in Rio Blanco County has increased sharply over the past several years, primarily due to the increased natural gas activity in the region. Conversely, the assessed value for agricultural land has decreased, demonstrating the county’s shift away from agricultural applications (Rio Blanco County 2008a).

In 2008, the county is anticipating sharp increases in property tax revenues, mostly because of increased oil and gas drilling activity and increased reserve values. In Colorado, the value of natural gas and oil production, along with the value of gas field collection, processing, and transmission facilities, is subject to ad valorem taxes (property taxes) levied by the affected jurisdictions. Exhibit III-2 presents the change in assessed land value by property classification in Rio Blanco County for years 2005 through 2007. Oil and gas assessed values dominate all other categories.

**Exhibit III-2.  
Rio Blanco Assessed Value by Property Classification, 2005-2007**

Classification	Assessed Value			Percent Change	
	2005	2006	2007	2005-2006	2006-2007
Vacant land	\$4,034,170	\$4,265,340	\$5,437,300	6%	27%
Residential	\$18,614,720	\$19,033,570	\$29,001,420	2%	52%
Commercial	\$15,017,610	\$16,259,180	\$21,521,619	8%	32%
Industrial	\$21,068,880	\$27,289,940	\$24,526,557	30%	-10%
Agricultural	\$11,916,030	\$12,198,950	\$7,121,390	2%	-42%
Natural Resources	\$27,274,010	\$26,844,690	\$27,601,164	-2%	3%
<b>Oil and Gas</b>	<b>\$303,612,600</b>	<b>\$435,989,240</b>	<b>\$537,651,791</b>	<b>44%</b>	<b>23%</b>
State Assessed	\$33,101,400	\$33,455,900	\$59,583,000	1%	78%

Source: Rio Blanco County Assessor

Exhibit III-3 on the following page displays the taxing entities within Rio Blanco County. Land and personal property are subject to property taxes from the listed entities, depending on whether the parcels fall within the taxing entity’s jurisdiction.

**Exhibit III-3.  
Rio Blanco County Taxing Entities, 2007**

<b>Taxing Entity and Assessed Value</b>		<b>Mill Levy</b>	<b>Revenue</b>
<b>Rio Blanco County</b> <i>Assessed Value: \$431,977,129</i>	<i>General Fund</i>	4.750	\$3,384,110
	<i>Road &amp; Bridge Fund</i>	2.500	\$1,781,111
	<i>Public Welfare</i>	0.550	\$391,844
	<i>Capital Expenditures</i>	1.250	\$890,555
<b>School District RE-1</b> <i>Assessed Value: \$280,269,062</i>	<i>General Fund</i>	9.517	\$2,667,321
<b>School District RE-4</b> <i>Assessed Value: \$431,977,129</i>	<i>General Fund</i>	3.671	\$1,585,788
	<i>Bond</i>	1.552	\$670,429
	<i>Transportation</i>	0.197	\$85,099
<b>School District RE-JT3</b> <i>Assessed Value: \$198,050</i>	<i>General Fund</i>	27.116	\$5,370
	<i>Bond</i>	7.750	\$1,535
<b>Colorado Northwest Community College</b> <i>Assessed Value: \$431,977,129</i>	<i>General Fund</i>	5.000	\$2,159,886
	<i>Bond</i>	1.600	\$691,163
<b>Town of Meeker</b> <i>Assessed Value: \$18,178,865</i>	<i>General Fund</i>	7.000	\$127,252
<b>Town of Rangely</b> <i>Assessed Value: \$13,805,070</i>	<i>General Fund</i>	10.000	\$138,051
<b>Special Districts</b>	<b>Assessed Value</b>	<b>Mill Levy</b>	<b>Revenue</b>
Colorado River Water	\$712,444,241	0.191	\$136,077
Yellow Jacket Water	\$91,247,806	0.161	\$14,691
Meeker Cemetery	\$280,269,062	0.867	\$242,993
RBC Fire Protection	\$280,269,062	2.573	\$721,132
Meeker Sanitation	\$17,342,448	9.470	\$164,233
Meeker Regional Library	\$280,269,062	2.032	\$569,507
East Rio Blanco County Parks & Recreation	\$262,470,421	7.512	\$1,971,678
West Rio Blanco County Parks & Recreation	\$426,401,092	5.740	\$2,447,542
Rangely Fire Protection	\$431,977,129	0.874	\$377,548
Rangely Cemetery	\$431,977,129	0.086	\$37,150
Rangely Regional Library	\$431,977,129	0.500	\$215,989
Rio Blanco Water Conservation	\$431,977,129	0.623	\$269,122
Lower White River Pest Control	\$102,913,080	2.000	\$205,826
Piceance Creek Pest Control	\$92,430,420	2.000	\$184,861
White River Soil and Conservation	\$263,295,068	0.275	\$72,406
Douglas Creek Soil and Conservation	\$415,267,679	0.037	\$15,365
E. Rio Blanco County Health Services	\$280,467,112	7.280	\$2,041,801
Rangely Hospital District	\$431,977,129	5.050	\$2,181,485

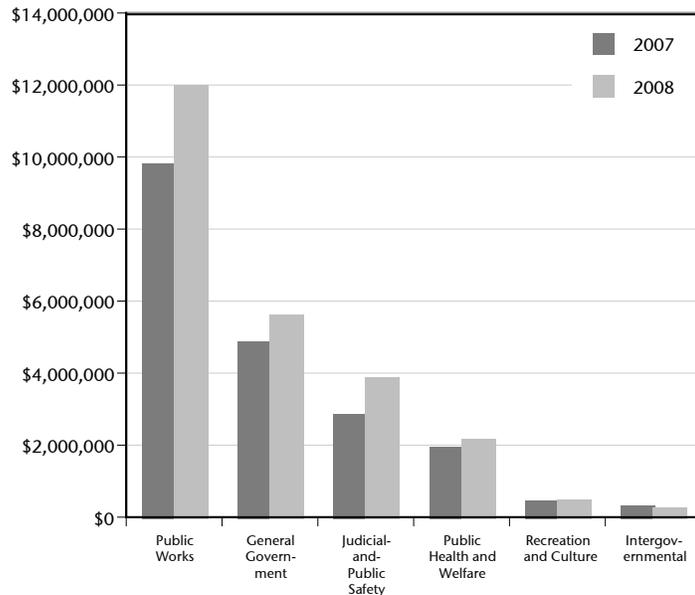
Source: Rio Blanco County Assessor.

## County Expenditures and Services

As documented in Exhibit III-4, Rio Blanco County's largest expenditures are for public works, a category that is predominantly road maintenance and repair. The majority of additional general fund revenues expected in 2008 will be applied to expanded public works projects, although as noted below, virtually all service categories are expected to see some expenditure increases. The county's capital expenditure fund, which is separate from the general fund, accounts for most street expansion and highway improvement expenditures.

### Exhibit III-4. Rio Blanco County 2007 Estimated and 2008 Proposed Total Expenditures by Function

Source:  
Rio Blanco County, 2007 and 2008 Budgets.



According to interviews with county staff and policy makers, Rio Blanco County's expenditures are largely associated with servicing local residents and the local oil and gas activity. Despite modest growth in full-time residents, pressure on county infrastructure and services has grown significantly with drilling activity, and associated traffic and commuting workers. The county also cites "inflationary pressures in salaries and benefits" as a contributing cause to increased expenditures. Salary and benefit expenses increased 30 percent between 2006 and 2007, and the 2008 budget forecasts a 13 percent increase from 2007 costs (Rio Blanco County 2008b). The county has also expressed difficulty in finding and retaining qualified county workers, who are often lured away by higher-waged jobs in the private sector (Joos 2008).

**Law enforcement.** The Rio Blanco County Sheriff's Office provides law enforcement services to the unincorporated portions of Rio Blanco County. The county sheriff's department currently employs nine patrol officers: one sergeant and four deputies in the main office in Meeker; and one Sergeant and three deputies in the Rangely substation.

Despite accounting for a small proportion of the county's acreage, the Piceance Basin, which houses much of the county's oil and gas activity, has experienced a rapid increase in police reports. In 2003, 135 reports were made from the basin; in 2007, 1,675 calls were made from the basin. As a result, county police staffing needs have changed. A new deputy is being hired in Meeker and an existing Meeker deputy is being converted a full-time traffic deputy. This is the first time the county has employed a full-time deputy exclusively for traffic issues (Joos 2008).

The sheriff's office has difficulty attracting new staff members. It is not uncommon for deputies to be required to work at least one overtime shift per week. To assist the department with additional demand, the department requested nine additional deputies in 2007, but only two additional deputies were approved (Joos 2008).

**Jail.** The Rio Blanco County Detention Center was constructed in 1937 and is designed to hold 18 prisoners. Recent daily jail populations have exceeded 18, which requires prisoners to sleep on the floor. One cell block (three beds) is for female inmates. An area that formerly housed the police cars has been adapted into a juvenile detention center, which can hold juveniles for up to two weeks. After two weeks, the under-aged inmates are transported to Grand Junction, which requires a deputy chauffer. This practice is viewed as a temporary solution to the increasing juvenile detention needs.

The county conducted a feasibility study in 2006 to determine the configuration, location and cost for a new 55-bed jail facility. Construction of the new facility has not yet been approved (Joos 2008).

**Emergency Management and Response.** The Rio Blanco Emergency Manager, a sheriff's office employee, coordinates emergency response planning and training functions for emergency response agencies in the county. Emergency response agencies in the county face a variety of obstacles to providing timely service:

- the county is large;
- the transportation infrastructure (roads) can be dangerous;
- the large number of recreational visitors in remote areas;
- the proliferation of dispersed energy exploration and development sites; and
- extensive communication dead spots.

**Public Health and Social Services.** Rio Blanco County Nursing Service is the public health agency serving all of Rio Blanco County as well as the incorporated areas. Services provided include:

- monitoring of the health status of the population and identification of community health problems;
- prevention and control of the spread of communicable diseases; promotion of positive health behaviors and environmental practices;
- mobilization of community partnerships to solve identified health problems; and
- enforcement of laws and regulations that protect public health and assurance of access to personal health services.

From offices in Meeker and Rangely, the Rio Blanco County Social Services Department administers the following programs: Food Stamp Program, Colorado Works Program, Medical Assistance Program, Families in Transition, Child Support Enforcement, Child Protection, Adult Protection, Child Care Services, Old Age Pension (OAP), Aid to the Needy Disabled (AND), Long-Term Care (LTC), Colorado Employment First, and Senior Nutrition (Rio Blanco County 2008c).

The social services department has not witnessed a dramatic increase in demand for services, a trend they attribute to slow population growth and an increase in employment opportunities brought about by oil and gas activity in the area (Social Services 2008).

**Hospital and Medical Services.** Pioneers Medical Center provides hospital and medical services for Meeker and the eastern portion of Rio Blanco County. It operates a 15-bed hospital and provides 24-hour emergency medical, pulmonary, laboratory, radiological, surgical, acute care and rehabilitative services. Pioneers operates an attached 33-bed skilled convalescent and long-term care facility, named the Walbridge Wing. The hospital is designated as a Level IV trauma center and provides advanced cardiac and life-support trauma services.

Pioneers also operates the Meeker Family Health Center, which offers a variety of medical care for children, adults and families. Four resident physicians provide services through the Meeker Family Health Center, and staff the hospital and emergency room. The physicians also provide medical direction to Emergency Medical Technicians (EMTs) who staff the ambulance service and provide training to law enforcement and emergency response personnel in the county. The medical center offers industrial medicine services and is currently evaluating options for on-site medical services for energy companies. In addition to the four primary care physicians, another eight or nine physicians visit from neighboring communities and use Pioneers' clinic to provide specialized care.

In September of 2007, Pioneers opened a clinic in the Piceance Basin one day per week to accommodate oil and gas companies requiring pre-employment screenings (Pioneers 2008).

**Public Schools.** Two school districts cover the majority of Rio Blanco County; Meeker School District RE-1 (Meeker RE-1), and Rangely School District RE-4 (Rangely RE-4). Meeker RE-1 covers about the eastern two-thirds of the county, including the Piceance Creek project area (CDE 2008).

The 2006 Meeker RE-1 enrollment was 678 students, an increase of 54 students since 2003. Meeker public schools have only recently returned to the enrollment levels reached in 2000, after declines in enrollment between 2001 and 2003 (CDE 2008). Enrollment reduction trends are attributed to an aging population, growth in childless households, and few affordable housing options for younger families. However, with the grade school absorbing much of the district's growth, local officials see some evidence that young families are returning to Meeker to capitalize on well-paying jobs within the oil and gas industry (Meeker 2008a).

The grade school facility has reached capacity. As such, a \$24 million bond is currently being sought for a new grade school facility. The middle and high school facilities have adequate space to meet current demands, although repairs and maintenance are needed (Meeker 2008a).

Meeker public schools have struggled to maintain staff, as higher paying jobs have drawn workers away from lower paying public service jobs. To attract and retain staff, average salaries have increased. In 2006, the average teacher salary was \$44,400, an 18 percent increase from the \$37,567 average salary in 2000.<sup>3</sup> By comparison, the average yearly salary for a construction worker in Rio Blanco County was \$76,908, nearly 73 percent more than Meeker's teacher salaries.<sup>4</sup>

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<sup>3</sup> Salaries are not adjusted for inflation between 2000 and 2006.

<sup>4</sup> Average construction worker salary is provided by Department of Labor and Employment QCEW data and assumes a 52 week work year.

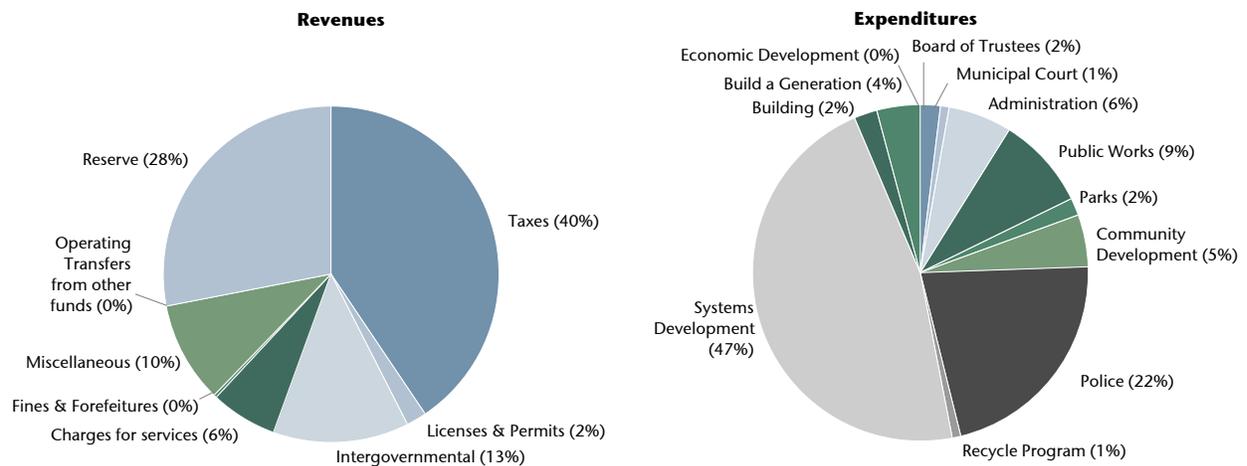
Rangely public schools have seen a decrease in enrollment in recent years; 2006 enrollment was 478 students, down 26 percent from 2000’s enrollment of 643 students (CDE 2008). As such, District RE-4 has excess physical capacity and a school building was recently closed as a result of declining enrollment. Full-time staff has decreased as student population decreases. In 2000, RE-4 supported 40 staff members; in 2006, 29 full-time staff members were reported (CDE 2008). An improvement project is currently underway to improve the roofs of all three school buildings in RE-4 (Rangely 2008b).

**Municipal Governments**

Rio Blanco County includes two municipalities: Meeker and Rangely. Proximity to the Piceance Basin has created challenges for both Meeker and Rangely. The City of Rifle, nearby in Garfield County, is also heavily affect by activity in the PSSA. A closer look at the communities’ budgets and development challenges follows.

**Town of Meeker.** The Town of Meeker, with a population of 2,357 residents, operates with a general fund of approximately \$3.2 million (Meeker 2008b).

**Exhibit III-5. Town of Meeker 2008 Proposed General Fund Budget Revenue and Expenditures**



Source: Town of Meeker

The revenue attributed to “reserve” represents a transfer of funds from reserve accounts, which are supported largely by severance tax and mineral leasing distributions from the State of Colorado, to the general fund. The town often accrues multiple years of these transfer revenues, or partial amounts of annual revenues, accounting for them as revenue to the general fund in the year in which they are expended (Meeker 2008b).

In addition to the general fund, Meeker also has a water fund, a conservation trust fund, and the Walbridge fund, which covers hospital and nursing home operating costs.

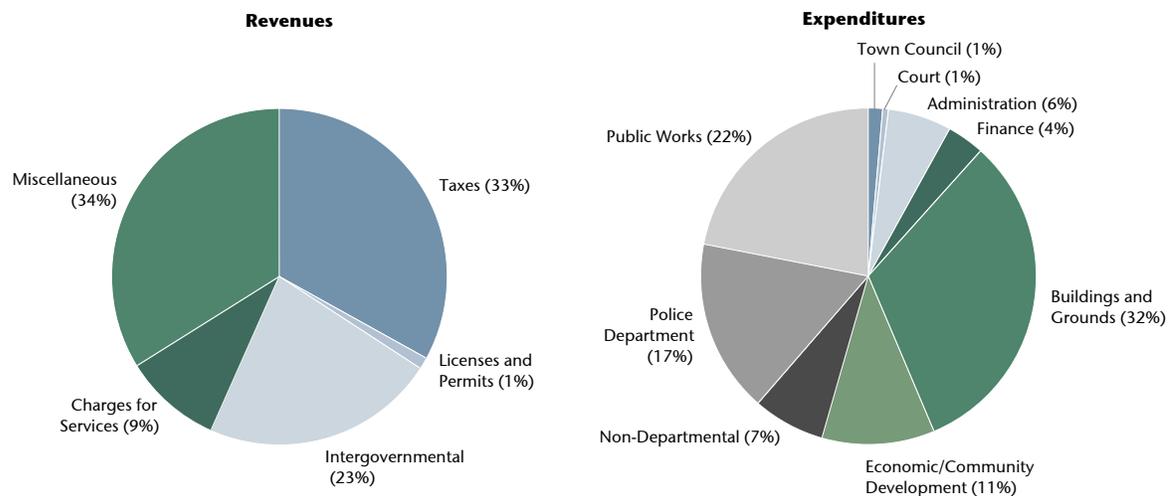
Some notable recent public improvements, and financing issues are identified below (Meeker 2008a).

- A new water well was recently drilled, enhancing raw water supply and reliability.
- Major streets were rebuilt and paved with a form of asphalt better suited to accommodating heavy truck traffic. A state energy impact grant and local systems development funds paid for the project, which account for 47 percent of Meeker's 2008 expenditures.
- An energy impact grant was used to improve pedestrian access along SH-13, which has seen a substantial increase in truck traffic. The street is often crossed by children to get to school or to the town park and safety along SH-13 had been a long standing concern for town officials.
- The local school district is currently seeking approval for a \$24 million bond issuance to construct a new elementary school, where enrollments have exceeded capacity. Additional improvements are needed for the middle and high schools.
- A task force, comprised of representative of tax collecting entities, has been assembled to discuss pressing needs related to oil and gas activity. Topics include capital improvement plans and workforce housing needs.
- Sales tax revenues have been volatile in Meeker for a number of years. Despite regional growth, the town's retail base is still very small.
- The receipt of a \$350,000 energy implementation and comprehensive plan grant increased the contribution of intergovernmental revenue from previous years (Meeker 2008a).

**Town of Rangely.** The Town of Rangely, with a population of 2,111 residents, operates with a general fund budget of approximately \$4.5 million (Rangely 2008b).

**Exhibit III-6.**

**Town of Rangely 2008 Proposed General Fund Budget Revenue and Expenditures**



Source: Town of Rangely 2008 Proposed Budget.

Additional segregated funds within the town of Rangely include accounts for water, gas, wastewater, the housing authority, housing assistance, the Rangely Development Corporation, the Foundation for Public Giving, and a Conservation Trust Fund.

Review of the town's budget led to the following observations.

- The town's traditional accounting of annual revenues and expenditures includes capital improvement spending and one-time revenues, which makes year-to-year comparisons difficult.
- Generally property tax revenue has been stagnant; sales tax revenue has experienced moderate growth since 2006.
- Growth in "miscellaneous revenue" is attributed to a \$1.3 million energy rehab loan, administered by DOLA to improve energy efficiency of the town's housing stock;
- Over \$330,000 in severance tax and mineral lease distributions are expected for the proposed 2008 fiscal year.
- Police department and public works spending has consistently accounted for a large proportion of Rangely's expenditures.
- A \$1.3 million building and grounds capital improvement project is proposed for 2008 to update insufficient and ageing infrastructure.
- Primary concerns in the community are affordable housing opportunities for the town's workforce and an increase in traffic through town, due to oil and gas activity. A traffic study is currently being conducted on the west side of town to supplement proposed housing projects (Rangely 2008a).

**City of Rifle.** The City of Rifle in Garfield County has a population of approximately 8,700 persons and operates on an annual budget of approximately \$9 million (Rifle 2008). Rifle is outside of the PSSA, but may be greatly affected by WRFO management decisions if the magnitude of growth is significant and the smaller communities in Rio Blanco County are unable to fully accommodate new resident demands.

Rifle is in a very different fiscal and service position than Meeker or Rangely. Rifle has experienced rapid growth since about 2000 and, although challenged to provide appropriate services, the community has generally risen to the challenge.

The current Rifle population boom has put a strain on the infrastructure of the city. Water, wastewater, transportation and other infrastructure projects that would have required improvements, expansions or replacement in the 2012-2015 time frame are needed today. In every segment of the community's infrastructure, there has been expansive growth and the timetable for improvements have been accelerated dramatically (BBC 2008a).

Increased traffic flows at the intersection of I-70 and SH-13 will require the construction of several roundabouts. Currently, the city only has sufficient funds to construct two of the three needed roundabouts south of I-70, while a roundabout north of I-70 will require additional funding. The intersection of SH-13 and SH-6 nearby will also need to be redesigned in the coming years due to increases in heavy traffic (BBC 2008a).

A growing population has brought increased demands on the city’s public safety department. As a result, Rifle, in partnership with Garfield County, will construct a new public safety facility in 2008. The existing wastewater and tap water treatment plants are approaching full capacity and will be expanded or replaced in coming years (BBC 2008a).

Exhibit II-12 below summarizes Rifle’s five-year infrastructure needs.

**Exhibit III-7.  
Five-year Infrastructure Needs**

Source:  
City of Rifle, August 13, 2007.

	Five-year needs 2007
Roads/Streets	\$14,120,000
Water	\$15,372,000
Wastewater	\$26,925,000
Storm drainage	\$1,270,000
Parks/recreation	\$5,645,000
Police	\$4,638,000
<b>Total</b>	<b>\$67,970,000</b>

Traffic congestion is a major problem in several areas of Rifle, most notably along Railroad Avenue in the city center where average daily traffic was estimated to be over 14,000 vehicles per day in 2002. Congestion is a growing problem along the stretch of SH-13 going under I-70 and connecting Rifle proper to the southern commercial district, where average daily traffic was estimated to be 14,500 vehicles per day in 2002 (BBC 2008a).

In the past five years, traffic on Railroad Avenue has increased from 9,000 vehicles per day to over 14,000 vehicles per day. As drilling activity moves north, Railroad Avenue’s traffic will increase proportionately. City public works staff reports that increased traffic has created longer lines at street lights and various intersections. The increase in the number of heavy trucks related to the energy industry is a particular concern, as these vehicles put a large strain on Rifle’s infrastructure (BBC 2008a).

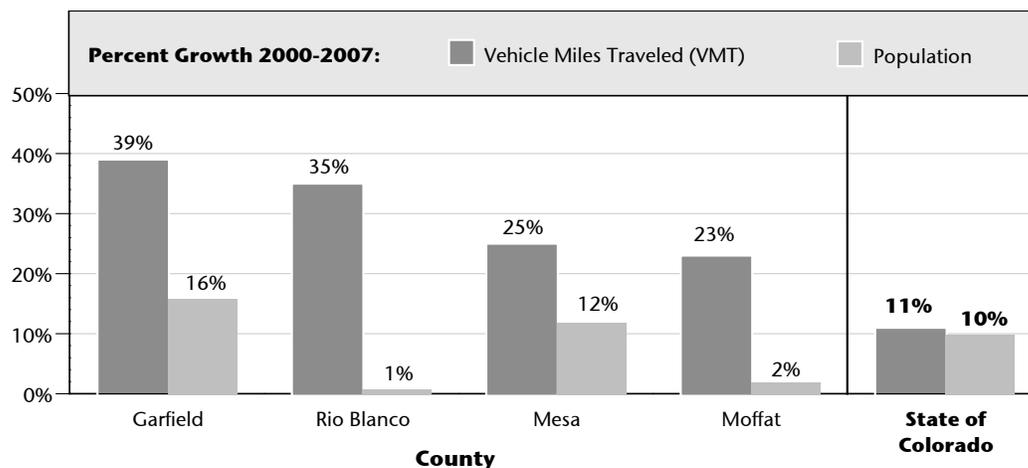
**General Fiscal and Service Provision Challenges in the PSSA and SSSA**

A recent study conducted By BBC Research & Consulting for the Associated Governments of Northwest Colorado (AGNC) and the Colorado Department of Local Affairs (DOLA) offered a summary of issues facing local governments related to service provision in northwest Colorado (BBC 2008b). This study was intended to find state and local consensus on the nature and magnitude of socioeconomic issues in anticipation of increased energy development activity in the region, as well as prospective oil shale development. Interviews conducted with Rio Blanco County, Meeker and Rangely staff for this EIS confirms that these issues remain.

- **Municipal growth capacity and related financial support are pressing issues in Garfield, Rio Blanco and Moffat counties.**
  - The level of growth anticipated in northwest Colorado generally exceeds the reasonable long-term capacity of the existing communities. Rifle and nearby communities are already stretched to accommodate additional development, and Rio Blanco and Moffat counties have minimal growth capacity.

- **Accommodating growth in this region is unusually challenging.**
  - The area is among the most rural in the United States and local communities have very limited ability to absorb and service new development.
  - Public lands and topographic barriers can force inefficient development patterns.
  - Existing road systems were never intended to serve high levels of traffic and heavy trucks. Projected street maintenance and repair costs are staggering expenses for most communities.
  - Worker shortages, compounded by rising housing and cost of living expenses, make retention of service workers difficult and expensive. Similarly, the absence of contractors and the competition for their services along with shortages of materials drives up the costs of new projects and personnel.
  - Capital investment is needed far in advance of likely revenue. As a rule, residents arrive first and revenues follow, sometimes years later. Nevertheless, residents require public services, streets and utilities from the day of arrival.
  - The problems with TABOR expenditure limitations, which require population to be in place before increased spending can be allowed, compound service provision problems.
  
- **Gas drilling and extraction activity produces high volumes of traffic in an area with limited road system capacity; this represents a challenging financial situation.**
  - The natural gas industry is decentralized and highly mobile, and its employees and subcontractors often commute each day to job sites in remote areas. High volumes of vehicle and truck traffic will continue even as activity turns from drilling to maintenance. Road expansion and a mixture of surface improvements, system expansions, safety enhancements and on-going maintenance, are pressing needs.

**Exhibit III-8.  
Traffic Congestion and Population Growth**

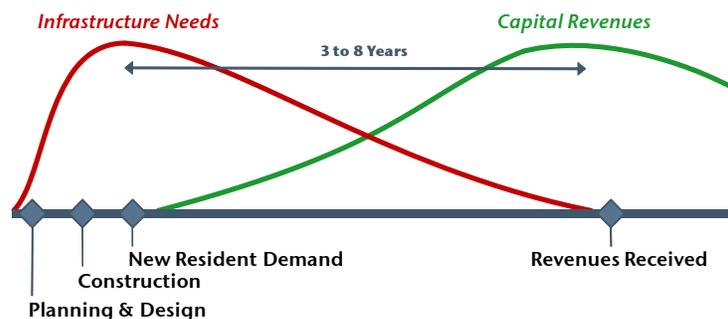


Source: Colorado Department of Transportation, 2007.

- **Housing and worker shortages restrict community development options.**
  - The natural gas industry has the ability to pay higher wages and aggressively compete for workers. Although beneficial for local residents, this competition for workers and housing has strained many other local businesses as well as local governments, hospitals and schools. Housing costs have risen rapidly in the area and housing of any kind is scarce, making attraction of new residents challenging.
- **Funding and timing of critical capital infrastructure, such as roads, water, sewer and community amenities, are the area’s primary fiscal challenges.**
  - Community operating costs will rise as growth occurs, but the state’s per worker reimbursement system helps those communities directly impacted by energy workers. Each qualified energy worker in northwest Colorado meant slightly over \$4,000 in state reimbursement funds in 2008.
- **The lag-time between infrastructure need and tax revenue exacerbates funding problems.**
  - Residents need functioning communities when they arrive, but most revenue sources (property taxes, sales taxes and severance taxes) occur only after new workers are in place, drilling and production is complete, and tax-revenue is flowing. This tax lag problem is further compounded by the need to plan, design and construct infrastructure even before resident relocation.

**Exhibit III-9.  
Public Investment  
Timing Issue**

Source:  
BBC Research & Consulting



- **Uncertainty undermines infrastructure investment strategies.**
  - Natural resource extraction has traditionally been a boom-and-bust business. Changes in gas development economics, rising or declining prices, and the uncertainty of tax revenue redistribution make infrastructure investment difficult. Gas prices are uncertain and the pace and value of extraction is subject to sudden swings. This makes both private and public investment decisions, which are often made in anticipation of future events, more difficult.
- **Resource derived property taxes will rise substantially as new wells come online.**
  - Natural resource-based property taxes will rise rapidly as the region’s operating gas wells increases. In aggregate, counties with strong gas production will benefit, but revenue timing and imbalances between service delivery responsibility and tax revenue collections will remain. Local communities will also benefit from expected increases in severance tax and federal royalty payments, which are currently distributed, in part, based on energy worker residence. Rio Blanco County’s high assessed valuation is evidence of energy extraction’s high value added presence.

- **Federal royalties and severance tax revenue production from northwest Colorado will grow rapidly, but distribution of revenues to northwest Colorado is uncertain.**
  - Northwest Colorado federal royalty and severance tax payments are projected to rise very rapidly in line with gas production. The percentage of production on federal lands (subject to federal royalty taxes) will more than double, stimulating federal royalty payments. As tax production in this area grows, other Colorado gas and oil fields will likely decline dampening the overall growth in statewide collections. If severance tax and Federal Royalty payments to local municipalities rise in line with state collections, local municipalities will be well positioned to meet operating obligations.
  
- **Local ability and willingness to expand self-funding capacity is uneven.**
  - Certain communities—larger cities with strong retail sales, towns that can attract higher value development and communities with aggressive impact fees—will be able to fund much of what is required to service rapid residential growth. As energy development migrates northward, affecting the smaller and more remote communities of Rio Blanco and Moffat counties, growth-financing capacities become more constrained and infrastructure solutions will require additional regional and state support. Communities that retain TABOR limitations will be hard pressed to maintain services.

### **Influence of BLM Lands and Policies**

The WRFO of the BLM manages approximately 1.2 million acres of land within Rio Blanco County, or approximately 44 percent of the county's 2.7 million acres. In addition, the BLM manages approximately 232,000 acres of Rio Blanco County split-estate lands, where the Federal government controls subsurface mineral rights including oil and gas. The USDA Forest Service manages an additional 247,000 acres in Rio Blanco County, which includes a large share of the public lands with high esthetic resource values and high economic value for hunting, fishing and recreation.

The BLM properties represent the majority of county lands with high oil and gas and mineral values. Because of this property and mineral concentration, BLM management policy decisions are critical to the local economy and to governmental revenues. Resource development on public lands is the primary economic opportunity that might produce significant employment and residential growth in the future.

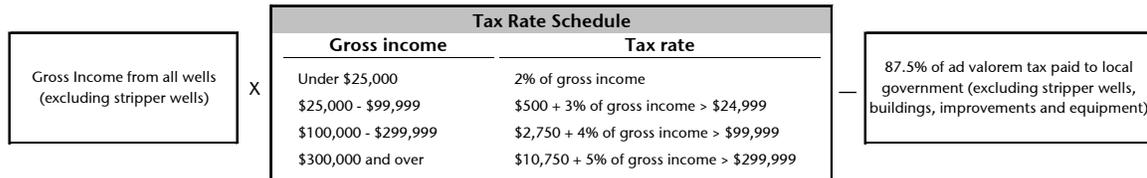
As discussed previously in this section, assuming market conditions and regulatory conditions are attractive, and the BLM allows additional leasing and development of public lands, local job creation and population growth will follow. County revenues are also very sensitive to resource development pace and patterns and thus BLM decisions. Specifically, development of mineral resources on BLM lands will influence production of state severance taxes, Federal mineral leasing and bonus revenues, and county property taxes. These revenue sources and the distribution of tax proceeds are described below.

**Severance Taxes**

**Severance tax rates.** Severance taxes are imposed by the state of Colorado on the extraction of non-renewable natural resources from both public and private property. Tax revenue is intended to offset the losses associated with the removal of the state’s natural resource.

For oil and natural gas, annual severance taxes are based on gross income produced by all wells except “stripper wells” (those producing less than 15 barrels of crude oil or 90,000 cubic feet of gas per year on average). Certain production costs, which include transportation, processing and manufacturing costs, are deducted from gross revenue to account for the costs to move the gas from the point of severance (the wellhead; where valuation is supposed to occur) to the point of valuation (usually a regional gas gathering hub). The resultant value is then multiplied by a variable tax rate to determine gross severance tax due. Taxpayers may credit 87.5 percent of ad valorem property taxes paid to local governments on oil and gas production (not including taxes related to stripper wells or taxes on buildings, improvements and equipment) to determine the net severance tax due.<sup>5</sup>

**Exhibit III-10. Calculation of Severance Taxes, Colorado**



Source: Colorado Department of Revenue, BBC Research & Consulting.

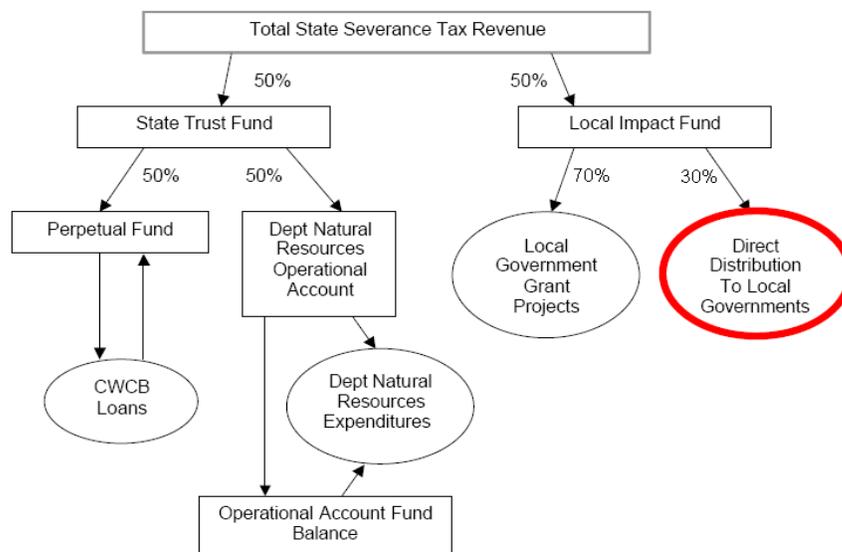
**Severance tax revenue distribution.** Once collected, severance taxes are distributed through a complex state process. Colorado’s severance tax revenues are first split 50-50 between State Trust Fund and the Local Impact Fund. The State Trust Fund provides funding for Water Conservation and Department of Natural Resources operations. The Local Impact Fund gives 70 percent (85 percent prior to 2008) of its collections to a local government grant program that awards funding through a competitive process. The other 30 percent is directly distributed to local governments (15 percent prior to 2008). It should be noted that Federal Mineral Leasing funds (revenues from leasing of Federal lands within the state) also accrue to the Local Impact Fund, thus total available funds are more than the severance tax distributions.

This direct distribution to local governments is based on energy employee residence and is designed to offset additional public service and infrastructure costs in areas where these workers live. This distribution translates to a per-resident-employee payment made to a jurisdiction in which industry-specific qualified employees reside. Per capita formulas differentiate between the types of natural resource employees; thus, certain industries, such as natural gas extraction, generate more revenue per qualified worker than other industries.

<sup>5</sup> This credit is designed to eliminate the disincentive to invest in counties/jurisdictions with high property taxes.

**Exhibit III-11.  
Colorado  
Severance Tax  
Distribution,  
2008**

Source:  
Colorado Department of  
Local Affairs.



**Federal Mineral Lease (FML) Revenue**

The Office of Natural Resources Revenues (ONRR) of the U.S. Department of the Interior collects mineral lease revenues from the leasing of federal lands used for mineral extraction. Of the total FML revenue collected, the federal government retains approximately half of the revenue and half is returned to the state from which the revenue originated. Each state distributes FML revenue using different methodologies.

**FML tax rates.** For oil and natural gas operations, gross FML revenue is based on three components:

- **Rent** of \$1.50 per acre annually for the first 5 years and \$2.00 per acre annually thereafter .
- **Royalties** of 12.5 percent of the revenue generated from mineral extraction on these federal lands.
- **Bonuses** paid by companies to obtain mineral leases, based on a competitive bidding process.

**FML revenue distribution.** Colorado’s share of federal mineral lease receipts are distributed within the state based on a complex formula, described below and depicted in a flowchart in Exhibit III-12 Generally, rents, royalties, and interest earnings on the same are allocated in the following manner:

- 48.3 percent of all state mineral lease rent and royalty receipts are sent to the State Education Fund (to fund K-12 education), up to \$65 million in FY 2009 – FY 2011, and growing at four percent per year thereafter. Any amounts greater than the upper limit flow to the Higher Education Capital Fund.
- 10 percent of all state mineral lease rent and royalty receipts are sent to the Colorado Water Conservation Board (CWCB), up to \$13 million in FY 2009, and growing at four

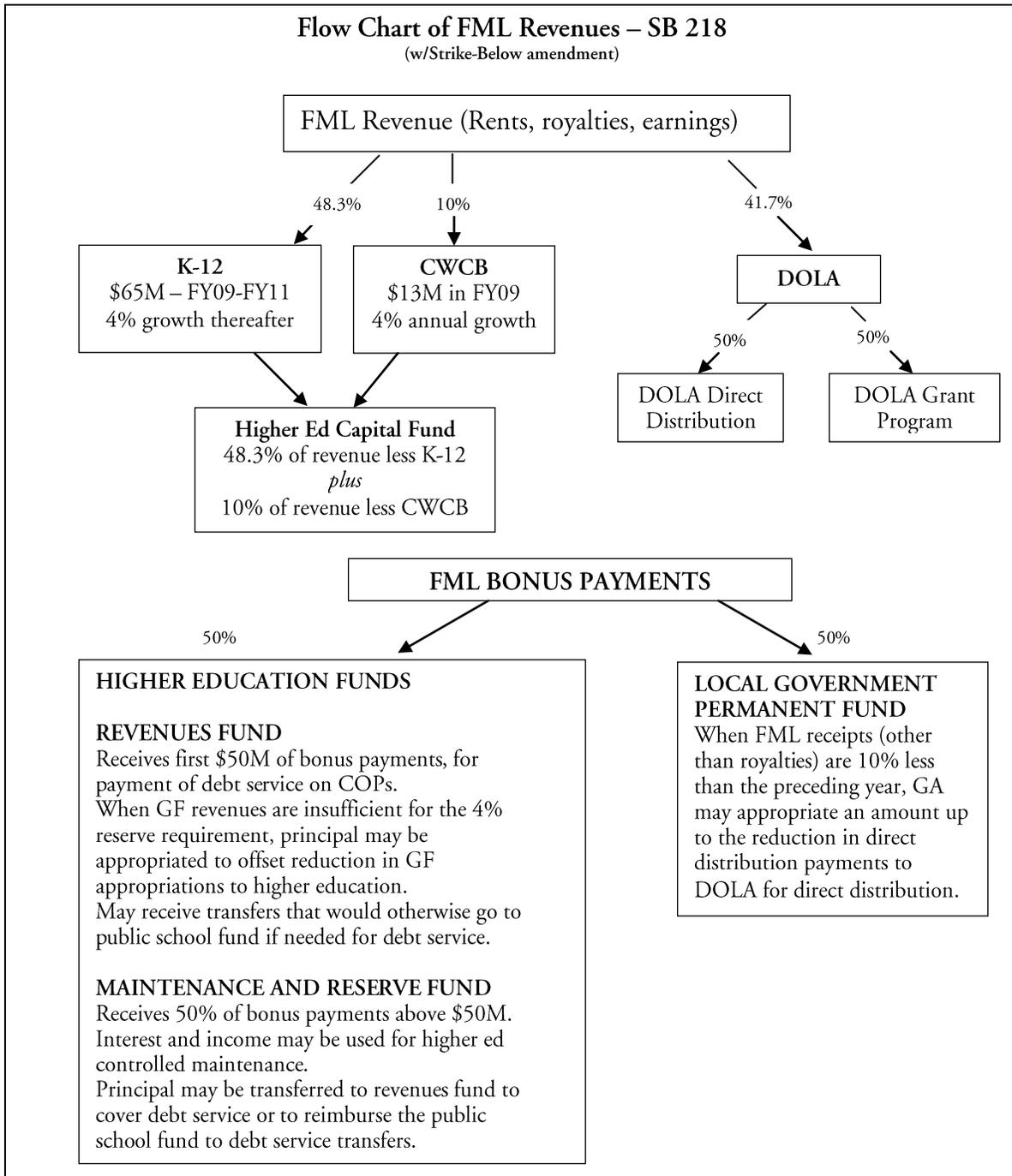
percent per year thereafter. Any amounts greater than the upper limit flow to the Higher Education Capital Fund.

- 41.4 percent of all state mineral lease rent and royalty receipts are sent to the DOLA, which then distributes half of the total amount received to a grant program, designed to provide assistance with offsetting community impacts due to mining, and the remaining half directly to the counties and municipalities originating the FML revenue or providing residence to energy employees.

Bonus payments are allocated separately from rents and royalties, in the following manner:

- 50 percent of all state mineral lease bonus payments are allocated to two separate higher education trust funds: the “Revenues Fund” and the “Maintenance and Reserve Fund”. The Revenues Fund receives the first \$50 million of bonus payments to pay debt service on outstanding higher education certificates of participation (COPs). The Maintenance and Reserve Fund receives 50 percent of any bonus payment allocations greater than \$50 million. These funds are designated for controlled maintenance on higher education facilities and other purposes.
- The remaining 50 percent of state mineral lease bonus payments are allocated to the Local Government Permanent Fund, which is designed to accumulate excess funds in trust for distribution in years during which FML revenues decline by ten percent or more from the preceding year.

**Exhibit III-12.  
Colorado Federal Mineral Lease Revenue Distribution**



Source: Colorado Municipal League, memo dated 5/8/2008.

**Property Taxes**

As described previously in this section, property taxes, particularly taxes on mineral reserves, are the largest source of governmental revenues for Rio Blanco County and the local school and hospital district. In Colorado, the value of natural gas and oil production, along with the value of gas field collection, processing, and transmission facilities, is subject to ad valorem taxes (property taxes) levied by the affected jurisdictions. Valuation of mineral resources and production is a complicated process

accommodating changing resource values and certain deductions and allowances for costs of production. Property tax revenue flows typically lag mineral production by two years and the uncertainty of mineral values over time introduces a high level of uncertainty in property tax projections.



## SECTION IV.

### Social Conditions

This section characterizes social conditions in the primary socioeconomic study area (PSSA) and, to a lesser extent, the secondary socioeconomic study area (SSSA) and beyond. The section begins with a discussion of the area's historical experience with energy development. A brief summary of relevant literature on social disruption and change associated with rapid, energy-based development in rural areas follows. The section concludes with a discussion of local perceptions of quality of life and concerns related to energy development and growth among stakeholders within the primary and secondary socioeconomic study area as well as outside of those areas.

#### Historical Energy Development

Although, Rio Blanco County's economy was originally based on agriculture, the county has a long history of energy development.

**The Rangely Oil Field.** The Rangely Field, at the western end of the county, began producing oil around 1900. Oil development in Rangely grew more prominent after World War II as demand rose for petroleum products. In the mid-1940s, during a period of field expansion, Rangely was a tent city for a time with a population of as many as 5,000 residents (Thompson and Williams 1990). The local population declined substantially in Rangely after the 1940s oil boom, but the Rangely Field has been pumped heavily since that time, using enhanced recovery methods to maintain production. As a result, the Rangely Field has been one of the most prolific sources of oil in the State of Colorado (Athearn 1981, McDonald et al. 2007).

**Oil shale: 1973-1982.** The SSSA also hosts the nation's and world's largest deposit of oil shale. A fact sheet from the Colorado School of Mines summarizes the history of oil shale in northwestern Colorado.

“In 1915, it was reported that the U.S. may be running out of petroleum and the first oil shale boom was on. The boom went bust in the late 1920s when the West Texas oil fields were discovered and developed.”

“In 1944, interest in oil shale was renewed when the federal government realized that domestic conventional crude oil reserves would be unable to meet demand in the near future. However, nuclear energy and the discovery of enormous deposits of oil in the Middle East kept oil shale development relatively low until 1973.”

“In 1973, the Arab oil embargo and Organization of the Petroleum Exporting Countries (OPEC's) escalating prices created awareness of U.S. dependence on foreign oil and a second oil shale boom resulted. This time, major oil companies began developing oil shale projects with federal subsidization. As the oil companies moved into place, so did the people. By 1980, the population in some of the small towns near the oil shale deposits had increased as much as 400%. Even with all of the new construction that occurred, there was insufficient housing and utilities to support the exploding population” (CSM 2005b).

“This oil shale boom, as had its predecessors, also ended. OPEC lost control of oil prices and it was soon apparent that even subsidized shale oil could not compete with the declining prices for conventional crude. Almost overnight, the jobs were gone, leaving a housing glut as people moved away seeking employment elsewhere. Local businesses that had expanded during the boom faced a reduced market, and many went bankrupt as loans were foreclosed. Local companies were crippled as city and county governments were faced with a substantially reduced tax base from which to service debt accrued in an effort to keep pace with anticipated growth. By the early 1990s, there were no commercial oil shale facilities operating in the U.S., with the exception of the New Paraho Corporation, which was experimenting with the development of road asphalt additives, and other applications” (CSM 2005b).

In Rio Blanco County, the oil shale booms of the 1940s and the 1970s led to waves of land acquisition by oil companies in the Piceance Creek area, which contains private oil shale resources and is near the federally-owned oil shale deposits (Ekstrom 2008, Lake 2008, Neilson 2008, C.W. Brennan 2008). Rio Blanco County also saw a population surge and related effects from oil shale in the 1970s, mainly because of the federal C-a tract, south of Rangely, and the C-b tract, in the Piceance Creek drainage. The oil shale boom in Rio Blanco County was less frenzied than in Garfield and Mesa counties to the south. In Rio Blanco County, the boom ended, as it did elsewhere in the SSSA, with a decline to pre-boom levels in the economy and the population, which is where Rio Blanco County stayed until the recent renewed interest in the area’s natural resources (USDOI BLM 2006).

**Recent developments.** While the prospect of commercial oil shale production again looms on the horizon, natural gas has been the dominant factor in energy development within the PSSA and SSSAs over the past decade. Energy companies began pursuing Colorado natural gas in earnest in the late 1980s, with drilling and production growing steadily since then and, more recently, at a fast pace. According to the BLM, by the end of the 1990s, the new thrust in the Colorado and Utah oil and gas industry was putting local communities under many of the same pressures felt during the oil shale boom. (USDOI BLM 2008).

Since 2003, drilling and related construction has accelerated, with many development companies active in northwestern Colorado, including major corporations such as Williams, Encana, Exxon-Mobil, Conoco-Phillips, and Chevron-Texaco. The path of development has moved east and north from western Garfield County, and the BLM’s Reasonably Foreseeable Development Scenario (RFDS) for natural gas activity in the WRFO projects movement north into Rio Blanco County (USDOI BLM WRFO 2007).

In 2006 and 2007, the Colorado Oil and Gas Conservation Commission approved 360 and 321 drilling permits respectively for Rio Blanco County, even as Garfield County’s total permits grew to 2,550 from 1,844 (COGCC 2008). Activity in 2008 was expected to be comparable to 2007. Construction of pipeline and processing facilities has also added to industry activity and employment in the area. Projects built in Rio Blanco County alone include completed interstate pipeline segments and large gas processing plants needing 500 or more temporary workers, with more projects currently undergoing permitting or projected for the future.

Though modest in comparison to the natural gas activity in the Piceance Basin, Chevron's operations in the Rangely Field also maintain Rangely's historical association with the petroleum industry. To continue production, Chevron deployed secondary recovery through water flooding in the late 1950s; tertiary recovery using carbon dioxide injection began in 1986. The field obtains carbon dioxide through a pipeline link to a natural gas processing plant in western Wyoming (CSM 2005a). In 1999, Chevron began a major revitalization of the field. Today, the company annually employs 58 workers, contracts for an additional 200 workers, typically drills 10 to 15 wells, and installs 10 miles of pipeline per year. Chevron spent \$67 million on the field in 2007 and paid \$19 million in property and severance taxes on production and assets (Urbanik 2008).

### **Relevant Literature on Social Disruption and Change**

The current experience of Rio Blanco County, and the SSSA, with rapid energy development is not unique. Sociologists and others have written extensively on social issues associated with rapid development in rural areas since the 1980s. Analysts have focused on past energy development campaigns in the western United States and impacts to the social well-being in host communities (USDOI BLM 2008).

**Indicators of social disruption.** In some studies, disruption is identified and measured using the social statistics, or "indicator rates," that are maintained and often published by government and other institutions (Little and Krannich 1989). Wilkinson and Camasso (1984) measured an increase in adolescent "delinquency" during boom years and, similarly, Camasso and Wilkinson (1990) found an increase in incidents of child abuse and neglect. However, three studies in the same vein found that rapid growth did not significantly raise divorce or crime *rates* [emphasis supplied], despite the apparent rise in caseload accompanying development and a growing population (Brookshire and D'Arge 1980; Wilkinson 1983; Wilkinson et al. 1984). In two victimization studies using direct, personal surveys instead of official statistics, the conclusions were different: Krannich et al. (1989) did not find a higher crime victimization rate during the boom years in several energy communities, but Freudenburg and Jones (1991) did find an increase in the rate for their area and period of study.

Instead of crime statistics, survey studies usually measure *fear* of crime (Saltiel et al. 1992), which has been shown to rise during energy booms. Studies from the 1980s that found higher fear of crime during rapid, energy-related growth are Freudenburg (1986), Brown et al. (1989), and Krannich et al. (1989). Other feelings, attitudes and behaviors studied and shown to respond negatively, at least temporarily, to "boom" conditions are local friendship ties (Brown et al. 1989), residential stability (Brown et al. 1989), personal integration with the community (Greider et al. 1991), social support behavior (Greider and Krannich 1985), satisfaction with community facilities and services (England and Albrecht 1984, Greider and Krannich 1985), and general community satisfaction (Brown et al. 1989).

**Mixed findings.** When studies of this type are considered together, it is seen that not all of the effects show up under boom conditions, or in all communities. For example, Krannich et al. (1989) did find changed perceptions of social integration, while England and Albrecht (1984) found no dramatic shift in community perceptions. Seyfrit and Sadler-Hammer (1988) found only a limited connection between rapid growth and the change in young peoples' attitudes toward, and ties to, community and family.

Neighborhood relationships may be resilient during community upheavals, a finding reported in several studies. Berry et al. (1990) found relative stability in measures of “neighboring.” Greider et al. (1991) reported no large increases in distrust among neighbors, and Greider and Krannich (1985) found that neighborly interaction did not decline significantly because of more “heterogeneity” (i.e., diversity) in the fast-growing population. Recently, the USDO I BLM (2008) stated that “residents of rapidly growing communities may experience expanded opportunities for obtaining social support *beyond* [emphasis supplied] their local neighborhood, while at the same time maintaining adequate relations with their neighbors.”

While social disruption often occurs in so-called “boomtowns,” there is contradictory evidence for whether social structures (functional and meaningful networks of human relationships) are fundamentally changed. Krannich et al. (1989) asserted “that rapid community change does alter the social environment of the community,” but this statement is an interpretation of the context for the study and was not a direct measure of social structure. Using a more direct approach, England and Albrecht (1984), found no evidence that formal interpersonal relationships theoretically characterized as “urban” came to replace the informal relationships expected of rural areas. Instead, the authors suggested that informal and external ties may actually strengthen with length of residence and that a boomtown environment may facilitate rather than diminish informal social ties.

Using a non-statistical research framework, a case study by Thompson and Williams (1990) found that energy development in Rangely in the late 1970s appeared to change local power relationships. The authors construed development as bringing with it opportunities for the community to establish new “vertical” linkages, or connections to the larger society, especially to influential energy companies. They observed that this changed the local “power structure” and continued to stimulate competition for power among community groups for years.<sup>1</sup>

In Seyfrit and Sadler-Hammer (1988), cited above, the authors found an effect of rapid growth that was distinctive for adolescents. Other groups within a community may have distinctive reactions to a boom, as well. Freudenberg (1984) found higher levels of dissatisfaction and alienation for boomtown adolescents compared to neighboring communities but no differences in attitude for adults. Krannich and Greider (1984) found lower perceived social integration among temporary mobile home residents in boomtown communities. Additionally, Thompson and Williams (1990) observed that new “vertical linkage” in the community can create winners and losers among groups competing for power and benefits. Similarly, it is often stated that the elderly, usually the longest residents of a community, suffer dissatisfaction with a boom. However, no studies directly addressing this topic have been identified.

**Longer term effects.** Studies covering the full cycle of development—boom, decline, and (at least partial) recovery—address the question of whether disruptions will persist after growth has moderated or stabilized and will permanently change community well-being. Smith et al. (2001) found that disruptive effects to social well-being vary by phase in the development cycle and that the effects may not be permanent in some communities, dissipating over time after the boom ends (Smith et al. 2001). Brown et al. (2005) reported a rebound in community satisfaction after the decline phase and an ensuing, improved sense of community well-being. In Greider et al. (1991), the findings show that a decline in community identity and solidarity caused by rapid population growth rebounded

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<sup>1</sup> Through a case study based on participant observation, Thompson and Williams (1990) is included because it directly addresses the PSSA.

fairly quickly as growth became moderate and consistent again. The Greider study emphasizes “local identity, solidarity and trust” as key elements of “community,” and argues that “even when some elements of community are adversely affected by rapid change, there is likely to be a general tendency for the community to emerge and be reaffirmed when conditions stabilize.”

The reaffirmation of community and of community character may depend in part on the landscape around it. A case study by Greider and Garkovich (1994) states that “... ‘landscape’ [as] the symbolic environment created by a human act of conferring meaning on nature and the environment... reflects the self-definitions of the people within a particular cultural context... [and is] reconstructed in response to people’s changing definitions of themselves.” In the SSSA, where community and landscape are traditionally closely linked, physical changes to the landscape are accelerated. Over time, a changed landscape, if changed enough and if permanently changed, may change the culture of the people who live within it.

### **Quality of Life Perceptions and Concerns**

The remainder of this section describes meanings and attitudes toward “quality of life” and related concerns based upon the public scoping report, recent special studies, local newspaper content, and interviews with selected individuals.

The discussion begins with Rio Blanco County as a whole, and then focuses on the localities of Meeker, Rangely and the Piceance Creek area, which is one of the areas in Rio Blanco County that has experienced the most activity during the natural gas “boom” over the past decade. The discussion then considers the SSSA—by considering the regional quality of life in general and then focusing on Rifle and Craig, which have a strengthening commuter and supply linkage to the WRFO management area under current conditions. Finally, this section concludes with a discussion of the perspectives and values of stakeholders outside the region—focusing on wild land preservation interests.

**Rio Blanco County.** The goals of achieving “balanced and responsible growth,” helping county employees “efficiently accommodate growth,” and helping law enforcement and social services “meet the needs of our growing population,” dominated a political statement published recently by a candidate for Rio Blanco County Commissioner (Turner 2008). A study conducted by Mesa State College researchers in 2007 identified similar themes based upon interviews with local officials. The researchers stated that they were already hearing their respondents suggest that “county-wide there is a desire to look at growth in new ways” (Redifer et al. 2007).

In those interviews—with Rio Blanco County commissioners and other local officials—the Grand Junction-based researchers sought to “identify the benefits and challenges” perceived by leaders “during this period of economic expansion.” They found “concern over potential negative impacts to quality of life in Rio Blanco County, especially in the southeastern section of the county where energy development is “exploding” (Redifer et al. 2007).

Rio Blanco County's principal towns—Meeker and Rangely—“are experiencing different impacts and their cultures equip them with different tools to harness the winds of change.” Meeker residents live in, and often own, some the county's best known agricultural and outdoors assets. There, the researchers said, one might hear “nostalgic comments” from residents wanting to protect the “western way of life” and hold onto the ability to “push your sheep through the middle of town” (Redifer et al. 2007).

Ranching is harder and recreation more specialized in Rangely, where homesteads and other private holdings are hemmed in by remote public lands. Nostalgia in Rangely might instead be for the boom town of 5,000 residents that built the Rangely oil field.

The practical side of quality of life emerged when the government officials spoke of their own responsibility for “maintaining acceptable levels of [government] service” for all of the county's residents. They reported existing revenue shortfalls, higher labor costs, and shortages of space for government operations. They made a long list of statistics they officially track as “indicators” of social impact and cost: crime, traffic, jail detainees, public school enrollment (up), community college enrollment (down, because of the new industry jobs, which is seen as not necessarily a bad thing but could lead to underinvestment in human capital in the long run), services to the unemployed (down, for the same reason), and higher demand for child protection, public child care, low-income housing, and medical care and hospitalization for the uninsured (Redifer et al. 2007). Researchers said they sensed that the local officials may feel “overwhelmed just trying to keep up and not able to be proactive, given limited resources available in a small county” (Redifer et al. 2007).

One way that two of “the most critical issues” mentioned to the researchers—temporary and transient workforces (including “too many illegal immigrants” [Redifer et al. 2008]), and the housing shortage—interact with each other reflects on social integration in Rio Blanco County today. Temporary workforces are neither members of the community (though some may stay, eventually) nor are they always affiliated with a company with a local presence other than the project site. Without strong community ties themselves, temporary workers create housing demand that is hard to satisfy when there is a housing shortage, competition for housing resources, and competition for the land upon which to develop housing. Similarly, labor and service companies down the supply chain may have weak local ties, too. “Companies call us all the time and ask about housing. They seem to have no idea what they're getting into,” said the Rio Blanco County undersheriff (Joos 2008).

A similar idea was repeated in Rio Blanco County's official response to the recent economic and demographic impact forecasts developed for the Associated Governments of Northwest Colorado (AGNC) and the Colorado Department of Local Affairs (DOLA). “Growth brings problems on an urban scale, disproportionate to local capabilities, and appearing to outweigh [sic] the economic and social benefits, except to a limited range of economic agents within the community,” stated a county commissioner (BBC 2008b). Although not always a part of discussions of quality of life, this response highlights concerns about the equity of growth effects within the community.

The goal of improving, or at least maintaining, quality of life through collaborative efforts shows up in different ways in public attitudes toward growth. In the political ad mentioned previously, the candidate proposed to pursue growth while preserving “our way of life.” The mix is based upon “a heritage of agriculture, energy production and recreation” in the candidate's view, all of which depend on the same resource base (Turner 2008).

This “multi-use” character is often cited as essential to community character (USDOJ BLM WRFO 2007b). While the multi-use concept may have different interpretations in Rio Blanco County, it is often invoked. The candidate, for instance, called for “all of the county’s industries to work together so we don’t give any special interest groups a reason to question our way of life” (Turner 2008). Others may want to establish different linkages and coalesce with other influential, outside institutions if industry interests appear too dominant in local decision-making and activities.

County officials also express support for cooperation in handling growth and preserving quality of life. Rio Blanco County government leaders have looked for industry participation, in terms of “public/private partnerships,” and report that “there have been cooperative measures to replace and repair roads.” The electorate’s cooperation also has been obtained in these efforts. Voters supported referenda to override fiscal caps imposed by the TABOR amendment to the state constitution and have, at least tacitly, supported county code changes for residential camps in the field (the so-called “man camps”), and to impose impact fees on gas developments under county jurisdiction. The Mesa County researchers see these as indications of where the ongoing conversation about growth and quality of life may lead Rio Blanco County (Redifer et al. 2007).

**Town of Meeker.** Many Meeker residents still identify with a rural lifestyle that centers on agriculture, the outdoors, and living and working among neighbors, friends and family. “[Meeker is] a close-knit community with a small town feel,” said a business leader (Brown 2008). Some residents see new faces in town as a signal of disruption of the community’s solidarity that could weaken traditions of volunteerism that make some public services possible, such as fire protection, emergency response, and boards and commissions. If community cohesion declines, it could also interfere with the staging of signature events, like the annual Range Call Rodeo and the Meeker Classic Championship Sheepdog Trials, which bolster identity and attract tourism.

The town’s self-image emphasizes wildlife, hunting, recreation and tourism; residents likely see that image reflected in the historically open and agricultural landscape surrounding the town (see Greider and Garkovich 1994). With planning and management of impacts, residents would mostly welcome growth, but many are wary of a future “bust” (Sheridan and Day). In addition, the town would like to keep its populations centralized to minimize impacts on agriculture and tourism. However, the cost of infrastructure and development in town tends to push the growth into the unincorporated areas of the county, which hastens the conversion of agricultural lands that have long been the town’s setting (BBC 2008b).

For local officials, quality of life concerns are tied to the communities housing situation and level of municipal services. The potential for more aggressive energy development in the future has raised concerns. “I feel the most significant issues facing the town right now are housing needs, infrastructure needs and quality of life,” said the town’s new mayor (Rio Blanco Herald Times 2008). As energy development has moved north away from Garfield County into the Piceance Creek area, the town is seeing more construction activity than ever before. Industry’s reliance on temporary workers exacerbates the housing shortage, places new demands on water and sewer infrastructure, and confronts police with more, and more serious, law enforcement and public safety issues.

The faster pace in town also stretches the business community. Mesa State College researchers heard it expressed “that the business community is tired. This is especially true in the Meeker area where hunting season brings an influx of people but then they leave. This recent period of accelerated growth has not let up and residents are concerned about the ability of businesses to withstand the pace.” (Redifer et al. 2007). Quality of services may have declined, as “people are not able to pay the higher wages the energy companies can and in turn, employment is unavailable to the services community” (BBC 2008b).

Hotel and motel accommodations are full, due to the needs of energy workers in the area. Tourism, wildlife-related businesses for fishing and hunting—as well as general recreation activities—are being negatively impacted because of competition for available lodging (BBC 2008b). Industrial traffic is affecting Colorado State Highway 13 (SH-13), which runs through town as Market Street, and could conflict with plans to upgrade the streetscape (Brown 2008). Traffic on the street now includes trucks and equipment. This carries over to other parts of town, and entering Market Street from arterial streets has become more difficult than ever before (BBC 2008b).

Traffic outside of town also affects quality of life. Rifle is Meeker’s closest regional shopping and services center, historically less than an hour’s drive away on Colorado SH-13. Now, “there are also serious safety concerns along [Colorado State Highway] 13 from Rifle to Meeker for the town’s residents. With the increasingly large number of trucks and over-sized vehicles on this highway, major accidents are becoming a common occurrence” (BBC 2008b).

If the town’s character is affected, some town officials worry that second homeowners may leave, bringing a drop in property values and the loss of economic diversity (Day and Sheridan 2007). Though town officials say less than one percent of growth now comes from second homes and quality of life migrants (Day and Sheridan 2007), some see retirees as a potential driver of growth and source of diversification that would fit well with Meeker’s traditional lifestyle.

**Town of Rangely.** Rangely today expresses a willingness to capitalize on growth from natural gas development and a community capacity to do so, in terms of a view that economic development would promote quality of life. “Bring it on,” was a response heard from town administrators asked about the community’s attitudes toward energy-related growth (Stewart and Devere 2007). The Rangely area, as described in the historical sections above, has experienced fluctuations in their economy, due to its reliance on natural resources (USDOJ BLM 2008), community feeling is that the last decade or so was spent managing a depression (Stewart and Devere 2007).

Located further away from the Rio Blanco County epicenter of new gas development than Meeker, Rangely strategizes to obtain economic benefits. Oil company industry and occupational groups are already embedded in the community, though not all are affiliated with companies developing in the Piceance Creek area. The town’s location on the highway route between the Piceance Basin and the large industry services center in Vernal, Utah, fits with the town’s economic development strategy of capitalizing on the boom as a workforce residential center (Stewart and Devere).

Economic revitalization overlaps with quality of life objectives in Rangely. An economic stimulus would promote revitalization of the town's Main Street and raise revenue to maintain the town's spacious facilities and infrastructures, that are the legacy of past energy development. "In the last boom, Rangely did plan and grew properly with the money we had, but when the population dropped we lost the money to keep the infrastructure up to date," said a respondent in a recent focus group (Redifer et al 2008).

As a small community out of the direct path of anticipated natural gas development, Rangely is receptive to linkage to other groups, institutions and governments. "Collaboration between county and towns for infrastructure development ... is critical to meeting the demands of the workforce, as well as families, seniors and school-age children," said a town official after attending a presentation by leaders from a Wyoming town experiencing intensive natural gas development (Rio Blanco County Herald 2008).

The difficulties that came from the last boom-and-bust cycle still make the community cautious, but receptive to the possibilities if handled right. "As we move forward we may have to contend with a boom, for which there may not be sufficient fiscal support. Or if we moderate, overreact and suppress development, we may have to contend with a bust," said a former town official (Devere 2008).

**Piceance Creek.** Historically, ranch communities like Piceance Creek have produced models of non-governmental, community cooperation. In fact, the Piceance Creek Stock Growers, which existed for a decade or two in the early twentieth century, once appeared as an item in a young academic's dissertation for its cooperative handling of wolf predation (Yoder 1999).

Few today likely know of the Stock Growers' association, and Piceance Creek is a different community today. The economic pressures and cycles of energy development have led to sales of private land and to the rising demand for mineral development on BLM range lands. Piceance Creek ranchers have sold productive land, sold water, and peeled off land to rent out or develop on their own for revenue. "You do what you can do to survive," said a Meeker resident from a long time Piceance Creek ranching family (Brennan, M. 2008). Outfitting or simply selling trespass hunting rights is also a "value added" strategy for ranchers, but development activity or energy company policy on leased land has led to cutbacks for some operations (Ekstrom 2008).

The urban and industrial attributes evident now in the Piceance Creek are affecting residents' way of life. One key indicator of change is the traffic counts on local roads, which indicate the need for more and different services from local government. The Rio Blanco County Sheriff's Office tracks the Piceance Creek area, which patrol a network of roads that access roughly 500 square miles. The area generated 1,675 calls for service in 2007, and 1,171 calls through August of 2008, a rate of about five a day, compared to 135 in 2003. The county now operates a satellite health clinic in the area, and is maintaining the road to a higher standard with industry participation.

Growth in general has contributed to added demands on local roads, and not all the change comes from energy development activity. Still, use of the roads for access to gas development is more often mentioned than other effects. “The biggest impact now is the traffic,” said a rancher on County Road 5 (CR-5), the Piceance Creek Road. “I can remember a time when you didn’t even have to look down the road to cross it. Sometimes now you see a line of 10 or 15 vehicles at a time.” The rancher expressed concern for his “older neighbors” driving CR-5 under these conditions (Oldland 2008).

Piceance Creek residents encounter people from outside the area much more often than in the past. Ranches may not be able to lock perimeter gates and, with gas companies having access, see outside vehicles on interior roads “all the time,” said a rancher who added that, before, the only people that came to the area “were in the cattle business.” This can be seen during hunting season, too: “In the past we never had anybody on the ranch that we didn’t know. Now there is a tremendous influx” (Oldland 2008).

Under current conditions, some question whether the ranch community on Piceance Creek can coexist with energy development. “At a certain industrial density, a ranch could continue to operate” said the county extension agent, and said, “Up to that level it’s not a bad deal,” if there are beneficial spillovers, as there are in some cases (Ekstrom 2008).

One rancher said a lot depends on how the industry’s development approach affects activity levels in the long run. “Directional drilling ... where they’re not constructing and operating so many sites, temporary living quarters near sites, buses to transport workers...those kinds of things make a big difference. It helps the people living here. It helps the community” (Oldland 2008).

Under current conditions, ranchers young and old on Piceance Creek are considering personal options with social implications. The small group of between 25 and 30 ranches (depending on the estimate) is linked to the immediate area as well as to multiple external contexts on many levels and in varying ways. Each ranch is faced with a set of individual circumstances.

Not all trends affecting the ranching community are related to the natural gas industry. One trend is the aging of the ranch community. Another is the finite resource: one Meeker resident, now in a second career as a business owner in town, said he left the family ranch on Piceance Creek early in his life because, “there was more family than there was ranch” (Brennan 2008). High paying jobs in industry are creating other options now. For some young family members, those options may lead away from Piceance Creek. Financial considerations also play a part. “There’s a magic number (regarding income and profits) where if it gets below that, they can’t continue,” said the county extension agent (Ekstrom 2008). For some, a second income can contribute to a ranch’s survival.

Change in the perceived quality of life along Piceance Creek affects the outlook of residents about the area as a place to live and as a place to run a ranch. Piceance Creek “used to be nice, friendly and quiet. It’s still nice, it’s still friendly, but it’s no longer quiet” (Ekstrom 2008). The change an older rancher has seen, “Makes you wonder why we want to stay put, but we have to. It’s our livelihood” (Brennan, C.W 2008).

A new ripple of real estate activity is under way in response to an increasing natural gas industry presence. Some ranchers have sold, some are considering selling, and some “people are trying to get out, but no one wants in,” said the county extension agent (Ekstrom 2008). Others are waiting and watching. The industry appears to be “very active” now, and “I’m hopeful when that’s complete, the activity will drop down...I’m a strong believer in developing our domestic resources of oil and gas. But if [the development] is in your backyard it takes a lot of patience” (Oldland 2008).

**Secondary Socioeconomic Study Area.** Since the end of the 1990s, northwestern Colorado communities have been adapting to the natural gas industry’s growing presence. The regional perspective that has emerged since 2003, when natural gas development began to accelerate, often emphasizes the wider region’s “quality of life.” Summarizing interviews with officials of each county—Mesa, Moffat, Garfield, Rio Blanco and Routt—Mesa State College researchers noted four general trends in people’s reaction to ongoing change in the quality of life throughout the wider region:

- Urbanization and higher land values have reduced agriculture’s viability, changing the culture of the area;
- Long-term residents miss the “small town atmosphere” of the past;
- Many of these same residents find it less satisfying to hunt and fish in their favorite places as development encroaches into wildlife areas; and
- The natural beauty of the area is disrupted as views are marred by drilling rigs and networks of resource roads. (Redifer et al. 2007).

The business community, as a whole, considers the quality of life “a specific strength of the business environment,” according to the Mesa State research. The business community would have policymakers “be aware of the effect growth has on the perceived quality of life since that one factor is consistently named as the most significant community strength,” the researchers said. Overall, the region’s business leaders were reported to be optimistic that “quality of life” can be achieved in the face of change—seen as “not all bad”—if quality of life is addressed as an “essential” outcome when other priorities are set (Redifer et al. 2008).

Two communities outside of the PSSA—Rifle in Garfield County and Craig in Moffat County—are tied closely to the WRFO management area by proximity, commuting patterns and a historical role as residential and service centers for energy development. The shortage of housing in the WRFO immediately triggered commuting to the Piceance Creek area from Rifle and Craig as energy development began. The pattern was reinforced by contractors running bus shuttles to the construction sites of major gas processing facilities. In both Rifle and Craig, growth from energy development in Rio Blanco County is incremental to trends already under way in each community.

The growth factors affecting Rifle and Craig differ according to their location, but the two communities share a “concern about the quality of life” with the rest of a growing northwestern Colorado (Redifer et al. 2007). Rifle as a community generally accepts its role as a residential center and has coalesced in support of policies that accommodate growth, as long as city leaders take steps “to ensure new growth and development pays its way,” said the city’s Government Affairs and Energy Coordinator (Braaten 2008).

Craig still smarts from past “boom and bust” experiences, which include a coal-fired power plant construction project, the oil shale surge of the early 1980s, and ripples of oil and gas field development. The community remains “somewhat apprehensive about growth,” according to interviews with city officials (Moffat County and the City of Craig 2008).

**Wildland Preservation Interests.** Aside from industry—whose interests and objectives are reflected in the purpose and need for this EIS—another outside “community of interests” with objectives for the WRFO area comprises individuals and organized or informal associations whose primary interest is in “wildland” preservation. The Wilderness Society (TWS)—a national organization with a strong Colorado presence—participated in public scoping for the WRFO RMPA and submitted a detailed set of recommendations for an approach to the analysis of alternatives in the EIS.

A program of TWS’s is the “Too Wild to Drill” campaign whose objective is to prevent drilling in areas identified by the organization as having wilderness quality but not designated as wilderness under the Wilderness Act. The TWS list contains seventeen areas, including five in Colorado. The WRFO management area is not among the Colorado areas, but the Roan Plateau, which is adjacent to the WRFO area, is included on the list.

TWS argues that the “Too Wild to Drill” areas are too “fragile” for gas development to be undertaken without causing irreparable damage to natural values. The critique casts drilling in a negative light. However, TWS does not condemn drilling in general, stating that drilling may be conducted “responsibly as part of a balanced energy policy,” which entails drilling only in places “where it is appropriate to drill,” drilling at a slower pace, and having “energy efficiency, renewable energy, and conservation” play “larger roles” in a national energy policy (The Wilderness Society).

No data is provided here on TWS membership or its current influence in the WRFO area. However, environmental messages are pervasive in the larger culture, available to all, and potentially appealing to a conditioned audience. Interviews with local officials throughout the wider region of northwestern Colorado convinced Mesa State College researchers that “the past history of environmental damage and the forecast of future substantial development of the energy industry makes it easy for preservationists to encourage distrust of the energy industry, and anyone who supports it” (Redifer et al. 2007).

That observation resonates in Rio Blanco County—though the prevalence of these concerns, or counter-reactions against perceived outside interests, cannot be known without direct surveys of public opinion. A recent ad for the winning candidate for a Rio Blanco County commissioner’s seat seemed to allude to TWS, or environmental advocacy groups in general. It set such interests apart from the local social setting when, in one plank of his platform, the candidate stated this formula for local leadership: “Encourage all of the county’s industries to work together, managing our natural resources so we do not give any special interest groups a reason to question our way of life” (Turner 2008).

### **Non-Market Value**

Non-market values are often associated with “public goods.” Public goods are goods and services that, once provided to one person, can be consumed by another for no additional cost. Despite not being traded in markets, economic theory defines the total economic value of a public good as what individuals would be willing to pay for all of its attributes. It is difficult to measure total economic value, which can only be inferred from related data by conducting special quantitative analyses.

In some cases, goods that are traded in markets also have non-market attributes that people would be willing to pay for in addition to the costs that show up in the financial transactions. Publicly provided recreation is an example in which recreation visitors may be willing to pay for value that is in addition to what it costs out of pocket (measured by gate fees, travel, and so forth) for the experience of using a recreation area. Productive agricultural land may have value as a public good as well, with people being willing to pay for the character that agricultural land adds to an area that is over and above the dollar value attributed to the land for its ability to produce commodities.

During scoping, participants asked BLM to consider the non-market value of conserving public wildlands and places with wilderness character (BLM WRFO 2007b, p. 40-41). The WRFO Planning Area contains six Wilderness Study Areas (WSA), three of which have been recommended for wilderness designation. The three WSAs recommended for wilderness contain a total of about 42,000 acres and would potentially support between 2,100 and 2,550 visitor days per year (U.S. Department of the Interior, Bureau of Land Management, Colorado State Office, Wilderness Study Report, Volume 1, Craig District Study Areas, October 1991. Available from the State Office).

Other resources besides wilderness on BLM-managed and private land in the PSSA could potentially have qualities that generate non-market economic benefits. Abundant wildlife is a well-known example. Another is the area’s open landscapes where agricultural activity dominates other types of development. The following sections discuss these resources as public goods with possible economic value. The discussion does not include a determination of the economic value itself. Instead, it relies on theory and refers to quantitative analyses conducted elsewhere. No studies of non-market value have focused on the PSSA in the past, although the non-market value of natural resources has been studied in Colorado.

**Wilderness.** Current knowledge about the economic value of wilderness can be summed up by focusing on the published research concerning the “on-site recreation” and “passive use” benefits derived from designated wilderness areas created pursuant to the Wilderness Act of 1964 (Bowker et al. 2005). Three of the six WSAs in the WRFO have the potential to be ratified as part of the National Wilderness Preservation System (NWPS) through an act of Congress.

Recreation benefits accrue to people from their activities in wildness area, such as fishing, hunting, birdwatching, hiking, camping, and other non-motorized recreation. Passive use benefits (also called “non-use” benefits) “are less tangible than the physical presence of a person being on site and participating in a recreational activity” (p.162).” The authors acknowledge three components of non-use benefits: 1) “Option benefits” accrue to a person because the opportunity to visit a wilderness in the future has been assured; 2) “bequest benefits” accrue because one knows his or her heirs or future generations will be able to use and enjoy wilderness areas, and 3) “existence benefits” accrue because one simply knows that a wilderness exists. Citing Freeman (1994, p. 141), the authors say the question of whether non-use value exists is more or less settled:

“While there is some debate among economists over the precise definitions for the various components, and perhaps even more debate as to the empirical measurement of the resulting economic values, most natural resource economists would agree with the concept of passive use benefits.” (Bowker, et al. 2005).

The Bowker, et al. review of the economics literature identified 14 published studies that quantify “individual consumer surplus<sup>2</sup> for on-site Wilderness recreation” and eight published studies that quantify the “passive use values of Wilderness.” These papers reflect studies from wilderness areas across the country between 1981 and 1999. They were performed as the opportunity presented itself to individual researchers, so they do not represent a systematic wilderness program evaluation.

The following table is a brief presentation of the findings in Bowker et al (2005).

**Exhibit IV-1.  
Average Consumer Surplus Value per Person per Day by Activity on Public Land Based upon Existing Studies in the Intermountain Region, 2004 Dollars**

Category of Benefits	Denomination (2002 dollars)	Consumer Surplus / Willingness-to-Pay	
		Average / Median	Range
On-Site Recreation Use	Per person per trip for a single day use	\$19.50 / \$17.99	\$12 to \$31
	Per person per trip for a multi-day use	\$68.47 / \$30.11	\$5 to \$287
Passive Use	Per household per year	\$67	\$20 to \$98

Source: Summarized by Lloyd Levy Consulting LLC from Bowker et al. (2005)

Some of the studies identified by Bowker et al. focused specifically on wilderness in Colorado. For the Colorado studies, the estimates of per person per trip consumer surplus are \$31 for single day use (one study) and \$94 to \$185 (2002 dollars) for multi-day use (two studies). The Colorado estimates of annual household willingness-to-pay for wilderness ranged from \$38 to \$98 (2002 dollars, two Colorado only and two multi-state studies that included Colorado).

The national and Colorado wilderness value estimates should be interpreted with caution. Because of how recreation use value is denominated by Bowker et al., their findings cannot be used simply as a

<sup>2</sup> Consumer surplus is the dollar amount a person would be willing to pay over and above out of pocket expenditures.

multiplier in combination with the BLM’s standard unit of measurement for recreation use, which is the “recreation visitor day,” or RVD.

**Wildlife.** In Colorado and other western states, the public, through state government, “owns” its wildlife populations. Wildlife viewing on public land is open to the public. The State sells hunting permits, but the permit cost is generally set for management purposes, to reflect wildlife’s public status and to maintain quality. The price of hunting permits is set to “ration” hunting opportunities and is not a market-determined price for hunting.

Besides permits, hunters make other cash expenditures for goods and services that are part of the price of hunting. People who visit public land to view wildlife make similar travel-related expenditures. These expenditures generate local “economic impacts” when spent away from the participant’s home county. However, participants are typically willing to pay more than these direct costs for the satisfaction of hunting and wildlife observation. The total amount that participants would be willing to pay, net of costs, is the measure of wildlife recreation’s economic benefits. This is called the net willingness to pay, or “consumer surplus.”

Valuation studies of recreation use, including wildlife recreation, are common nationally, with most studies of hunting and wildlife viewing that have been conducted since 1967 having been conducted in the intermountain region of the U.S.—which includes Colorado (Loomis 2005). Exhibit IV-2 presents average values for the consumer surplus of wildlife recreation in the intermountain region. The exhibit also presents the overall U.S. average value. These values represent the economic value received by participants in hunting and wildlife viewing over and above their direct costs of participation.

**Exhibit IV-2.  
Average Consumer Surplus Value per Person per Day by Activity on Public Land Based upon Existing Studies in the Intermountain Region, 2004 Dollars**

Activity	Intermountain	United States
	Region Average	Average
Hunting	\$49	\$47
Wildlife Viewing	\$37	\$42

Note: Consumer surplus is the value of a recreation activity beyond what must be paid to enjoy it. The data in the table are based on studies published from 1967 to 2003. The Intermountain Region is a U.S. Forest Service definition that incorporates 12 states, including Colorado (Loomis, 2005). Amounts in the table have been rounded to the nearest dollar.

Source: Loomis, 2005.

**Agricultural land.** Analysts began considering “farmland preservation” in the mid-1980s (Rose 1984). Since then, studies of how open space benefits the citizens of a community have become more common as economists pay more attention to non-market values. The studies generally indicate the public puts a value on agricultural land for qualities and societal benefits that are in addition to private benefits, though there is debate over how analytical methods affect the reliability of specific dollar estimates (Johnston and Duke 2007)

The community benefits most associated with agricultural land in Colorado are open space, viewshed, wildlife habitat and lifestyle (Loomis et al. 2000). Methods for analyzing these public benefits are the same as those used to study other types of non-market values. They include 1) observing actual market purchases of agricultural land for preservation by governments and land trusts; 2) analyzing related market transactions to identify land or house price differentials attributable to closeness to agricultural land; and 3) analyzing public perceptions agricultural land's value by using a combination of qualitative and quantitative social research methods (Loomis et al. 2000).

To illustrate the use of market transactions as an indicator of non-market values, Loomis et al. (2000) analyzed purchases by governments and land trusts that led to restricting lands from residential, commercial and industrial development. The transactions were assumed to represent a societal evaluation of the benefit of preserving certain agricultural lands, given the public or quasi-public character of the buyers. Exhibit IV-3 presents the average price per acre revealed in these conservation purchases occurring in three parts of Colorado.

**Exhibit IV-3.  
Market Transaction Values of Restricting Colorado Lands from Development, 1998 Dollars**

	Front Range	Western Slope	Mountains
Total Number of Purchases	51	6	14
Total Acres	18,999	18,849	82,364
Average Cost Per Acre (nominal dollars)	\$26,582	\$1,889	\$3,577

Note: These transactions include the state government-sponsored and lottery-funded Great Outdoors Colorado Land Trust (GOCO) and Private Land Trusts. The Colorado Coalition of Land Trusts (CCLT) reported an additional 34 Land Trusts that protected some 518,209 acres on 686 parcels in 1998. Average costs by region were calculated from a subset of the total number of purchases reported above: 39 for Front Range, 5 for Western Slope, and 12 for Mountains. One conservation purchase was also reported for the Eastern Plains.

Source: Loomis et al., 2000.

A study in Routt County in 2004 used a social research method known as contingent valuation (CV) to estimate what registered voters would be willing to pay to protect local ranch open space through county government action (Magnan et al. 2005). The estimate of average willingness to pay of up to \$220 per person per year was larger than the amount of \$182 (inflation adjusted) estimated ten years earlier (Rosenberger and Walsh 1997). Contingent valuation uses a survey to describe a hypothetical change in a market and then elicit a stated preference for how much the respondent would be willing to pay for the hypothesized benefit.

A related study using CV in Routt County in 2005 estimated that tourists would spend an average of \$210 per person per trip less (median value of \$63) because they would spend less and stay fewer days given a change from ranch land to urban use around Steamboat Springs (Ellingson et al. 2006). This result was contrasted with a previous estimate (Rosenberger and Loomis 1999) that predicted no significant impact to tourist spending from the loss of agricultural land in the surrounding area.

**Non-use value.** Non-market valuation studies view public lands in terms of their on-site use value and their off-site, non-use, or “passive” use value (all interchangeable terms). Passive users, or individuals who never visit or otherwise use a natural resource, may still perceive themselves to be affected by changes in its status or quality (Harpman et al. 1994). As discussed above, more and more studies from around the country have focused on use values for public goods like hunting and wildlife observation. Fewer studies to date focus on passive use, but the literature includes measures of the passive use value of rare species and natural environments such as free flowing rivers and wilderness.

Wildlife and agricultural open space may also have passive use economic value. Residents, property owners, tourists and potential migrants may put an economic value on wildlife and agricultural open space even if it is outside of a group’s usual domain of use or direct experience, as indicated by the Routt County studies already discussed. Compared to a decade earlier, registered voters in Routt County in 2004 seemed to be “willing to pay at least as much to protect ranch open space in the area in and around Steamboat Springs ... and more to protect ranch open space elsewhere in the county” (Magnan et al. 2005). The tourists surveyed in 2005 ascribed 56 percent of the economic value they put on ranch open space to vicarious benefits like opportunity to view in the future, potential for upcoming generations to enjoy viewing, knowing that it exists for its own sake, and conserving soil, water, wildlife, and western cultural heritage. They ascribed the rest of the value to a mix of market and non-market use benefits like actually viewing, managing growth to reduce dispersed rural residential development and a source of private enterprise for ranchers and for the local economy (Ellingson et al. 2006).

**BLM management and non-market value.** There is no existing research quantifying non-market values in the WRFO Planning Area. However, characteristics of the Affected Environment’s geography, economy and social conditions — and some similarities to other areas where non-market valuation studies have been conducted — suggest that BLM management could potentially affect non-market values. Two brief descriptions relating public and private resources as they exist in the WRFO Planning Area illustrate the possibilities for such interaction.

For wildlife populations that may provide non-market values, such as big game animals or other large fauna, the connection potentially exists because seasonal ranges may cover areas that are a mosaic of public and private land. Specific parts of the public domain may have no substitutes elsewhere, so wildlife populations valued for their use or simply for their existence may be affected.

Previous portions of this technical report described an example of the relationship between BLM management and the agricultural private sector, focusing on the ranches on Piceance Creek. These ranches are intrinsically a combination of public range and private land, much of latter being held open to grow hay and pasture livestock. Industrial development occurring on public land may entail increasing disturbance of ranch operations. By pressuring ranch operators economically, socially and psychologically, BLM management decisions that facilitate development on public land may, for one reason or another may affect a ranch’s viability.



## **Part Two.**

# **Social and Economic Environmental Consequences**

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Preparer's note: The information contained in this section was developed in 2005 through 2010. Since 2008, economic conditions in the study area (and elsewhere) have been substantially affected by the global and national economic recession.

The pace of energy development in Northwest Colorado has also slowed substantially since 2008. Whether this slowdown is temporary or more long lasting is uncertain. However, anecdotal information from the study area suggests that the prevalent concerns of a few years ago regarding rapid growth have more recently been supplanted by concerns about retaining jobs and meeting local government fiscal obligations.



## **SECTION V.**

### **Impacts Common to All Alternatives**

Part Two of this report describes the potential effects on social and economic conditions in the socioeconomic study area from the implementation of the four proposed alternatives to manage oil and gas exploration and development in the Planning Area. This section describes the impacts common to all alternatives.

As defined in Part One, the socioeconomic study area consists of the primary socioeconomic study area (PSSA), which encompasses Rio Blanco County, and the secondary socioeconomic study area (SSSA), which encompasses Garfield County, Moffat County and Mesa County in Colorado and Uintah County in Utah. As described in the WRFO RFD Scenario (2007), 95 percent of future oil and gas wells are projected to be drilled in the Mesaverde Gas Play Area, which generally corresponds with the area known as the Piceance Basin in Rio Blanco County. Oil and gas exploration and development is expected to affect social and economic conditions in the SSSA due to workforce commuting from outside Rio Blanco County and the extensive economic interrelationships between the PSSA and the SSSA.

#### **Indirect Effects of Oil and Gas Development**

The magnitude and pace of oil and gas development determines most of the social and economic effects that would indirectly result from the WRFO management alternatives.

The drilling-related oil and gas workforce will include drilling-related employees of the energy development companies operating in the area (e.g., Williams, EnCana, etc.) and subcontract workers primarily in the oil and gas and construction industries. In addition to direct jobs associated with drilling and maintaining oil and gas wells and related infrastructure, oil- and gas-related economic activity would support other secondary jobs in both the PSSA and SSSA. These jobs result from both indirect economic effects of oil and gas activity (purchases of goods and services by energy companies and their subcontractors) and induced economic effects (purchases of household goods by the employees of energy companies, subcontractors and indirectly affected firms). A relatively large proportion of secondary jobs would occur in the SSSA due to oil and gas activity in the Planning Area (within the PSSA). This reflects both the extensive commuting of oil and gas workers from outside the PSSA and the role of the larger communities in Mesa County, Garfield County and Uintah County in providing regional services.

Projected well development for each alternative is defined in the air quality analysis. Management decisions related to some other resources may affect the pace and timing of oil and gas development because of their effects on the economics of energy development. In this context, relevant resource management categories include:

- Soil and water resources;
- Vegetation;

- Fish and wildlife;
- Trails and travel management;
- Lands and realty; and
- Special status species.

### **Effects on Hunting**

The collective effect of the individual management actions on the hunting resource are assumed to be reflected in the management goals BLM has established for wildlife population objectives under each alternative. Those management goals are:

- 100 percent of the state-established (CPW) population objective under Alternative A;
- 90 percent of the state-established population objective under Alternative B;
- 70 percent of the state-established population objective under Alternative C; and
- 50 percent of the state-established population objective under Alternative D.

The relationship between hunting activity levels and big game herd sizes is imprecise. For purposes of this analysis; however, the relationship is assumed to be linear. For example, Alternative D would support only 50 percent as many hunting days as Alternative A.

### **Effects on Agriculture**

In general, Alternatives A, C and D would adjust grazing management to resolve potential conflicts with oil and gas operations, while Alternative B would adjust oil and gas activity to resolve conflicts with grazing. There are differences in the amount of grazing land and the number of AUMs that can be supported among the alternatives, which would affect the agricultural economy.

### **Effects on Non-market Values**

There are non-market values associated with several of the resources managed by BLM in the Planning Area, as well as with agricultural open space on both public and private lands. As discussed more fully in Chapter 3, non-market values include the benefits received by people from participating in recreational activities in the Planning Area, as well as the passive, or non-use benefits individuals derive from the existence of abundant wildlife, six wilderness study areas, extensive agricultural lands with little development and other amenities in the area. BLM management decisions that offer more protection for the following resource categories will tend to also provide more protection for non-market values and non-quantifiable recreation benefits:

- Special status species;
- Wild horses;
- Cultural resources;
- Paleontological resources;
- Visual resources; and
- Recreation resources.

## **SECTION VI.**

### **Social and Economic Effects Under Alternative A (Existing Management)**

This section describes anticipated direct and indirect social and economic effects related to Alternative A (Existing Management or the No Action Alternative). The section addresses the following effects in sequence:

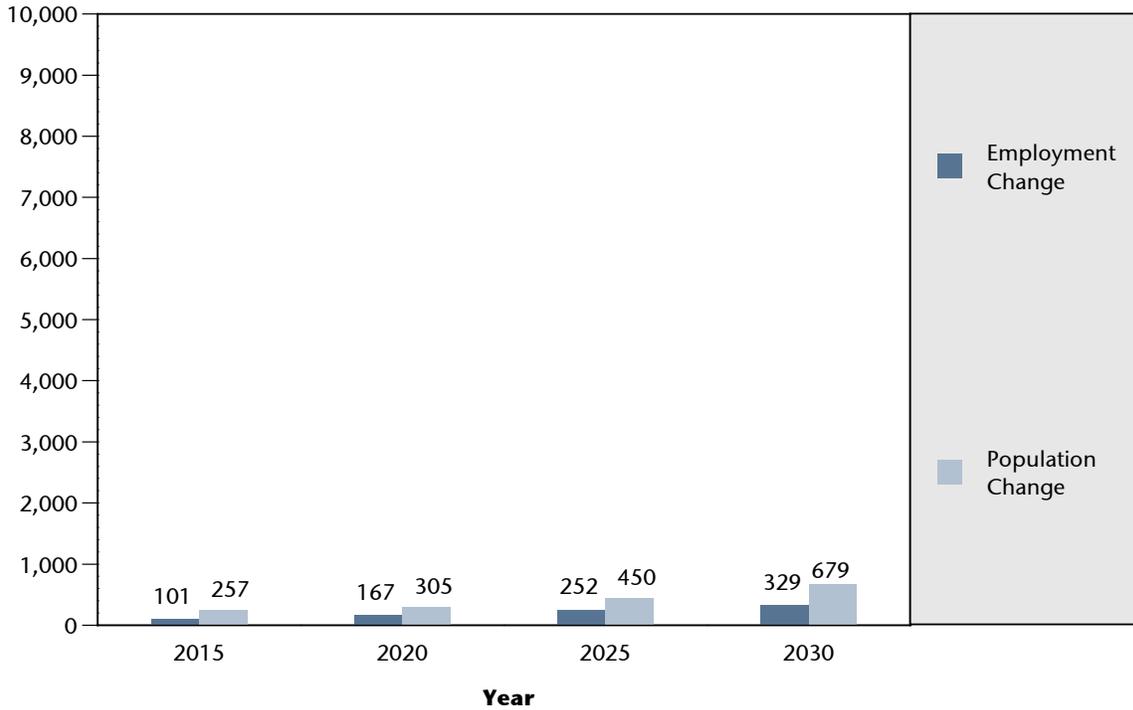
- total employment and population effects;
- energy-related activity and employment;
- agricultural activity and employment;
- hunting and tourism activity and employment;
- fiscal effects;
- housing, public services and infrastructure
- social conditions; and
- non-market values.

#### **Total Employment and Population Effects**

The estimated net effect of Alternative A on employment in the PSSA and SSSA combines the new direct and secondary jobs associated with increased oil and gas development with the projected decrease in direct and secondary jobs related to agriculture.

Within the PSSA, Alternative A is projected to lead to a net increase of 329 employed persons and 679 residents by 2030. These estimates represent a seven percent increase in employment and a nine percent increase in population compared to 2010 existing conditions. Exhibit VI-1 shows the projected changes in employment and population within the PSSA under Alternative A – compared to existing conditions – in five-year increments.

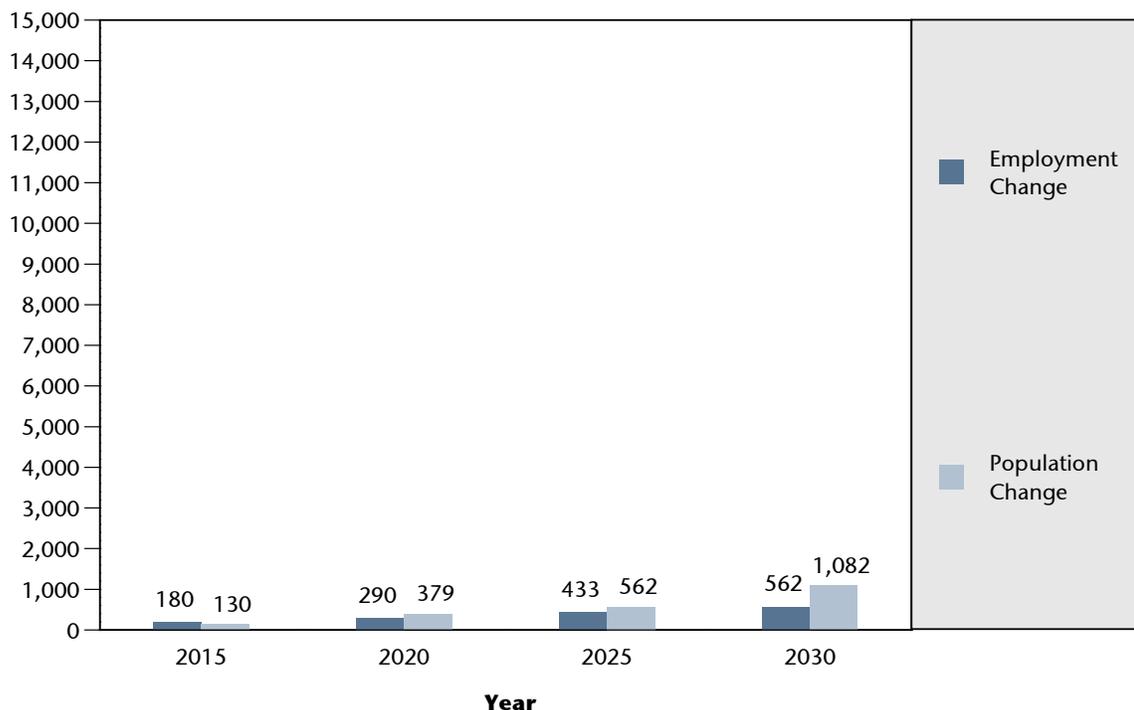
**Exhibit VI-1.  
Projected Employment and Population Effects in the PSSA (Alternative A)**



Source: BBC Research & Consulting 2010.

Within the SSSA, Alternative A is projected to lead to a net increase of 562 employed persons and 1,082 residents by 2030. These estimates represent less than a 1 percent increase in SSSA employment and population compared to 2010 existing conditions. Exhibit VI-2 shows the projected changes in employment and population within the SSSA under Alternative A – compared to existing conditions – in five-year increments.

**Exhibit VI-2.  
Projected Employment and Population Effects in the SSSA (Alternative A)**



Source: BBC Research & Consulting, 2010.

**Energy-related Activity and Employment**

Under Alternative A, approximately 4,600 new wells would be developed in the Planning Area over the 20-year planning horizon. The average number of new wells per year is similar to the rate of development in 2007 when the RFD Scenario was identified. This average reflects a slightly higher rate of well development than the study team projects for 2010 (160 wells). The current (2010) development rate continues to reflect the ongoing recession affecting the oil and gas industry in Northwest Colorado. The maximum rate of well development under Alternative A is projected to occur in the final three years of the 20-year planning period, when 263 wells are projected to be developed each year.

The total number of producing wells, reflecting both the addition of new wells completed during the planning period and the retirement of new and existing wells that reach the end of their productive lives, is projected to grow from about 2,866 wells in 2010 to about 5,042 by 2030 under Alternative A.

The drilling-related workforce employed in the Planning Area (based on work sites) is projected to increase from about 475 workers in 2010 to about 691 workers by 2030 under Alternative A. The maintenance-related oil and gas workforce employed in the Planning Area is projected to increase from about 478 jobs in 2010 to 655 jobs by 2030. Combining drilling-related jobs and maintenance jobs, the total workforce directly related to the oil and gas industry in the Planning Area is projected to increase by almost 400 jobs over the 20-year study period.

Secondary employment in the PSSA resulting from oil and gas activity is projected to increase from 666 jobs in 2010 to 941 jobs by 2030 under Alternative A. In the SSSA, secondary employment resulting from oil and gas activity in the Planning Area is projected to increase from 833 jobs to 1,177 jobs by 2030.

Exhibit VI-3 summarizes projected energy-related activity and employment under Alternative A from 2010 (existing conditions) through 2030.

**Exhibit VI-3.  
Projected Energy-related Activity and Employment (Alternative A)**

	2010	2015	2020	2025	2030
<b>Gas Activity in Planning Area</b>					
Annual new wells	160	208	219	241	263
Cumulative producing wells	2,866	3,364	3,900	4,464	5,042
<b>Related employment</b>					
Drilling jobs in PSSA	475	547	576	633	691
Maintenance jobs in PSSA	478	538	585	625	655
Total direct jobs in PSSA	953	1,085	1,161	1,258	1,347
Secondary jobs in PSSA	666	758	811	880	941
Secondary jobs in SSSA	833	948	1,015	1,100	1,177

Note:

PSSA is equivalent to Rio Blanco County.

SSSA includes Garfield County, Mesa County, Moffat County and Uintah County, UT.

Sums may not equal totals due to rounding.

Source: BBC Research & Consulting, 2010.

**Agricultural Activity and Employment**

The study team’s analysis of the impacts on livestock grazing indicates that a cumulative total of 6,664 acres of publicly administered grazing lands could be impacted under Alternative A over the 20-year study period. This total represents 0.46 percent of the approximately 1.445 million acres of publicly administered grazing lands in the Planning Area as a whole. If all of the affected grazing land were within the Mesaverde Gas Play Area (roughly corresponding to the Piceance Basin), it would represent about 1.24 percent of the 588,000 acres of publicly administered grazing land in that area.

As shown in Exhibit VI-4, the relatively small amount of grazing land that could be affected under Alternative A corresponds to a very small direct and secondary impact on agricultural employment in the PSSA under these analytical assumptions.

**Exhibit VI-4.  
Projected Agricultural Sector Effects (Alternative A)**

	2010	2015	2020	2025	2030
Maximum cumulative reduction in grazing acres	0	1,153	2,709	4,424	6,283
Percent of total Planning Area grazing land	0%	0.08%	0.19%	0.31%	0.43%
Percent of total Mesa Verde Play Area grazing land	0%	0.21%	0.50%	0.82%	1.17%
<b>Projected effects on agricultural jobs</b>					
Direct jobs	0	-0.3	-0.8	-1.3	-1.9
Secondary jobs	0	-0.2	-0.5	-0.9	-1.2
Total jobs	0	-0.6	-1.3	-2.2	-3.1

Note: Impacts on jobs if agricultural employment is directly proportionate to total Planning Area grazing land. Actual impacts may be larger or smaller for reasons discussed in the narrative.

Source: BBC Research & Consulting, 2010.

**Hunting and Tourism Activity and Employment**

Under Alternative A, BLM has identified the management goal of maintaining the big-game population objectives established by CPW. Consequently, this alternative would not be expected to lead to changes in hunting activity levels due to reductions in big-game herd sizes.

Some anecdotal reports suggest there has been some decrease in interest in big-game hunting in the Planning Area (and in Garfield County south of the Planning Area) due to hunter perceptions of extensive, energy-related industrial activity in the area. Since future oil and gas activity under Alternative A would be of a similar scale to existing conditions, effects of public perceptions on hunting activity levels would likely remain similar to existing conditions.

The results of the temporal analysis indicate that approximately 1.1 percent of the mule deer range area in the Mesaverde Play Area would be developed over the 20 year planning period under Alternative A.

**Fiscal Effects**

Projections of oil and gas-associated state and local revenues for Alternative A are set forth in Exhibit VI-5. County property taxes accruing to Rio Blanco County as a result of oil and gas well development are also shown in the exhibit. These revenues are an indirect effect of the proposed management actions because they result from the rate of well development in the Planning Area.

Under Alternative A, Rio Blanco County-generated funds from the DOLA Direct Distribution Fund are projected to increase from about \$5.2 million in 2010 to about \$9.3 million by 2031. These funds will be distributed to local jurisdictions in both the PSSA and the SSSA based on worker residence. WRFO-generated grant funds available, but not necessarily designated, for the area will rise from \$12.0 million to \$21.6 million. Rio Blanco County property tax revenues are projected to increase from about \$23.7 million in 2010 to \$42.6 million by 2031.

**Exhibit VI-5.  
Energy Associated Revenue Projections (Alternative A)**

Year	New Wells Drilled (region total )	Cumulative Producing Wells	Total Natural Gas Jobs	Production MMCF	Dollars in Millions					
					Production Value	State Severance Tax	DOLA Direct Distribution Revenue	DOLA Grant Revenues	Mineral Lease Revenues to DOLA	County Property Tax Revenue
2009										
2010	160	2,866	953	143,315	\$ 859.9	\$ 34.4	\$ 5.2	\$ 12.0	\$ 17.6	\$ 23.7
2011	160	2,940	946	147,016	\$ 882.1	\$ 35.3	\$ 5.3	\$ 12.3	\$ 18.0	\$ 24.3
2012	195	3,047	1,020	152,355	\$ 914.1	\$ 36.6	\$ 5.5	\$ 12.8	\$ 18.7	\$ 25.2
2013	195	3,151	1,017	157,534	\$ 945.2	\$ 37.8	\$ 5.7	\$ 13.2	\$ 19.3	\$ 26.0
2014	197	3,253	1,038	162,658	\$ 976.0	\$ 39.0	\$ 5.9	\$ 13.7	\$ 19.9	\$ 26.9
2015	208	3,364	1,085	168,179	\$ 1,009.1	\$ 40.4	\$ 6.1	\$ 14.1	\$ 20.6	\$ 27.8
2016	208	3,471	1,102	173,533	\$ 1,041.2	\$ 41.6	\$ 6.2	\$ 14.6	\$ 21.3	\$ 28.7
2017	208	3,575	1,083	178,727	\$ 1,072.4	\$ 42.9	\$ 6.4	\$ 15.0	\$ 21.9	\$ 29.5
2018	219	3,686	1,128	184,315	\$ 1,105.9	\$ 44.2	\$ 6.6	\$ 15.5	\$ 22.6	\$ 30.5
2019	219	3,795	1,145	189,736	\$ 1,138.4	\$ 45.5	\$ 6.8	\$ 15.9	\$ 23.3	\$ 31.4
2020	219	3,900	1,161	194,994	\$ 1,170.0	\$ 46.8	\$ 7.0	\$ 16.4	\$ 23.9	\$ 32.2
2021	230	4,013	1,206	200,644	\$ 1,203.9	\$ 48.2	\$ 7.2	\$ 16.9	\$ 24.6	\$ 33.2
2022	230	4,122	1,182	206,125	\$ 1,236.7	\$ 49.5	\$ 7.4	\$ 17.3	\$ 25.3	\$ 34.1
2023	241	4,240	1,227	211,991	\$ 1,271.9	\$ 50.9	\$ 7.6	\$ 17.8	\$ 26.0	\$ 35.0
2024	241	4,354	1,243	217,681	\$ 1,306.1	\$ 52.2	\$ 7.8	\$ 18.3	\$ 26.7	\$ 36.0
2025	241	4,464	1,258	223,201	\$ 1,339.2	\$ 53.6	\$ 8.0	\$ 18.7	\$ 27.4	\$ 36.9
2026	252	4,582	1,304	229,105	\$ 1,374.6	\$ 55.0	\$ 8.2	\$ 19.2	\$ 28.1	\$ 37.9
2027	252	4,697	1,273	234,832	\$ 1,409.0	\$ 56.4	\$ 8.5	\$ 19.7	\$ 28.8	\$ 38.8
2028	252	4,808	1,287	240,387	\$ 1,442.3	\$ 57.7	\$ 8.7	\$ 20.2	\$ 29.5	\$ 39.7
2029	263	4,927	1,332	246,325	\$ 1,478.0	\$ 59.1	\$ 8.9	\$ 20.7	\$ 30.2	\$ 40.7
2030	263	5,042	1,347	252,085	\$ 1,512.5	\$ 60.5	\$ 9.1	\$ 21.2	\$ 30.9	\$ 41.7
2031	263	5,153	1,361	257,673	\$ 1,546.0	\$ 61.8	\$ 9.3	\$ 21.6	\$ 31.6	\$ 42.6

Note: MMCF = million cubic feet  
Source: BBC Research & Consulting 2010.

**Housing, Public Services and Infrastructure**

It is likely that unincorporated Rio Blanco County and the towns of Meeker and Rangely— the PSSA for this analysis — will be the area most immediately and directly affected by the housing needs associated with energy development. Given the PSSA’s limited housing and services capacity, portions of Garfield County may also be affected, particularly the City of Rifle and other nearby communities along the I-70 corridor.

As noted earlier, Alternative A is projected to lead to a net increase of 679 residents in the PSSA by the end of the 20 year planning horizon – corresponding to an average annual increase of about 39 residents per year. Based on the county’s overall average of about 2.5 residents per household, this rate of population growth would indicate the need to add at least 16 housing units per year – although the segment of this new population comprised of workers engaged in drilling and production is likely to prefer temporary housing options and to form smaller households.

As summarized in Table 3.8.1-1 of the RMPA/EIS, Rio Blanco County added approximately 165 housing units between 2000 and 2006, corresponding to an average of about 27 units per year. Based on

this comparison, the existing rate of housing development in the PSSA appears sufficient to accommodate the incremental population growth associated with Alternative A, although there is likely to be a need for greater development emphasis on multifamily and rental housing. When the cumulative effects of other growth drivers are added to the incremental effects of Alternative A, there will be greater demands for new housing in the PSSA.

Since the rate of gas development under Alternative A would be similar to existing conditions, effects on public services would likely remain similar to what the PSSA is currently experiencing. As noted in Part One of this report, there was a substantial increase in police reports from the Piceance Basin between 2003 and 2007, which led to the reorganization of law enforcement services in Meeker and the county. Under Alternative A, law enforcement demands, and other public service needs, are likely to remain at levels similar to existing conditions.. Meeker has already identified the need for a new grade school facility, but the relatively modest additional growth associated with Alternative A would not substantially worsen existing public school capacity issues in the PSSA.

### **Social Conditions**

Within the PSSA (Rio Blanco County), Alternative A would cause an incremental population growth rate of less than 1 percent per year through 2030. This incremental growth rate caused by Alternative A is well below the growth rates likely to cause socially disruptive change. As discussed in Part One, residents of the PSSA are generally supportive of economic and population growth and are generally willing to trade some desirable local characteristics for increased prosperity and the opportunities that come with change. However, a number of undesirable social effects have already been observed in the PSSA as a result of increasing energy development and growth over the past decade. As discussed in Part One, some of the community's concerns include:

- Residents wanting to protect the “western way of life”;
- Maintaining acceptable levels of public service, including law enforcement, fire protection, emergency response, and boards and commissions;
- Additional strain on limited resources, including the business community;
- Temporary and transient workforces and associated social disruption;
- Housing and hotel shortages;
- Increased construction disruption;
- Concern about repercussions associated with a future “bust”;
- Desire to minimize impacts on agriculture and tourism;
- Negative aspects of increased traffic.

The PSSA is adapting to the pace of growth experienced during the past decade. Since the projected rate of energy development, and overall population growth, under Alternative A would be similar to existing conditions, social concerns will likely diminish over the 20 year planning horizon under this Alternative.

Under Alternative A in the PSSA, 39 percent of incremental growth in the number of employed residents would come directly or indirectly from energy development by 2030, compared to 16 percent from agriculture, and six percent from hunting (hunting being just part of total recreation and

tourism employment). This change would have little incremental effect on the overall dependency of the PSSA's labor force and population on energy industry employment, agriculture or hunting. Consequently, this alternative would tend to preserve the existing balance of interests among different population groups within the PSSA.

The energy labor force of the PSSA would continue to be roughly equally split between more temporary drilling jobs and more permanent field maintenance and operations jobs during the 20-year planning horizon. The substantial proportion of drilling jobs among oil- and gas-related jobs in the PSSA indicates that the energy industry would not become a fully stable component of the economic base during the 20-year planning horizon. The volatile attribute of the drilling sector of the energy industry is perceived by the population in communities of the PSSA as having the potential to diminish their quality of life. The validity of this concern has been reinforced by the downturn in the local gas industry over the past two years.

Overall the social indicators suggest that Alternative A would not have an impact on the quality of life of most community residents in the PSSA compared to existing conditions. Since future oil and gas activity under Alternative A would be of a similar scale to existing conditions, no change to quality of life for recreation interests would occur from effects on hunting. For ranchers along the Piceance Creek Road and its side roads, Alternative A would affect their quality of life due to traffic, noise, dust, and competition for resources on BLM land, but these effects would be similar to current conditions. Social effects in the SSSA would be minimal relative to existing conditions.

National and local environmental interests likely would consider continued energy development to diminish quality of life under Alternative A. However, groups with environmental interests would see some benefit to the quality of life in the PSSA under Alternative A because higher levels of potential development under consideration in this RMPA would be avoided.

### **Non-market Values**

The number of wells projected to be developed under Alternative A (and corresponding development of other energy-related infrastructure) is relatively small compared to the other alternatives and is generally similar to the development rate under existing conditions. As noted earlier, this alternative is not expected to affect the big game population in the Planning Area. The temporal analysis indicates that approximately 1.1 percent of the vegetation communities and the mule deer range in the Mesaverde Play Area would be developed over the 20 year planning period under Alternative A. Consequently, this alternative is likely to have little effect on recreation values, passive use values or other non-market values associated with agricultural open space, preservation of special status species, visual resources and other resources associated with BLM lands or indirectly affected public and private lands.

## **SECTION VII.**

### **Social and Economic Effects Under Alternative B (Conservation Emphasis)**

This section describes anticipated direct and indirect social and economic effects related to Alternative B (Conservation Emphasis). The section addresses the following effects in sequence:

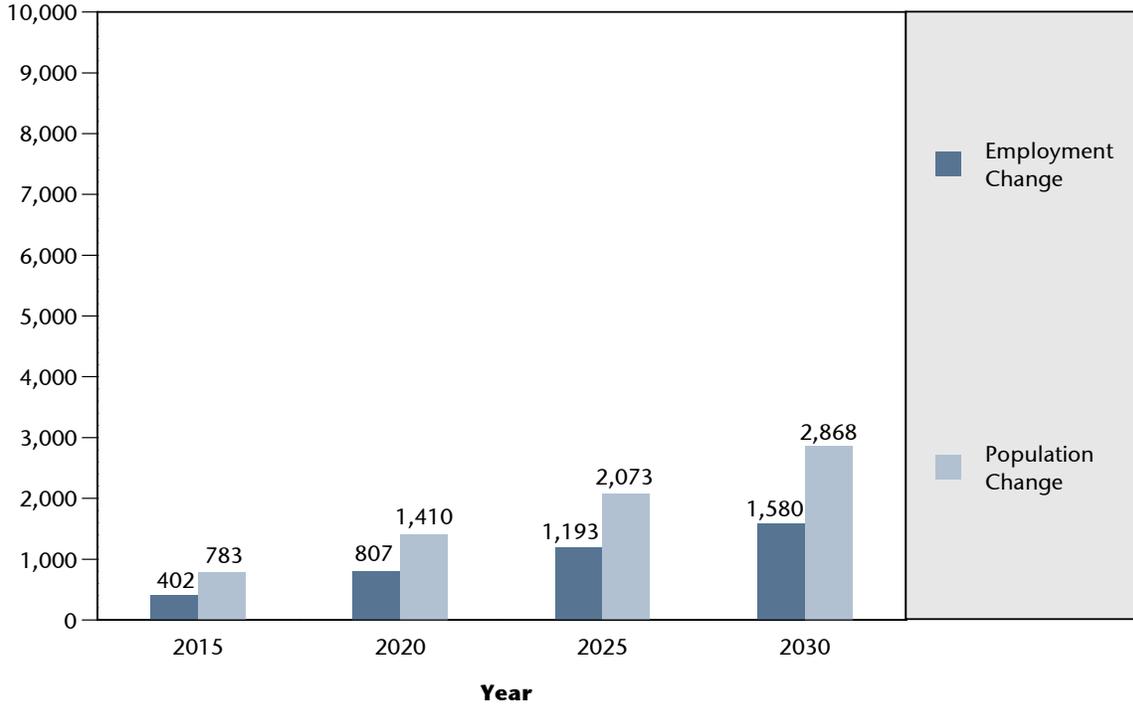
- total employment and population effects;
- energy-related activity and employment;
- agricultural activity and employment;
- hunting and tourism activity and employment;
- fiscal effects;
- housing, public services and infrastructure
- social conditions; and
- non-market values.

#### **Total Employment and Population Effects**

The estimated net effect of Alternative B on employment and population in the PSSA and SSSA combines the projected direct and secondary jobs that would be added due to increased oil and gas development (relative to existing conditions) with the projected decrease in direct and secondary jobs related to agriculture and hunting activity.

Within the PSSA, Alternative B is projected to lead to a net increase of 1,580 employed persons and 2,868 residents by 2030. These estimates represent a 35-percent increase in employment and a 37-percent increase in population compared to 2010 existing conditions. Exhibit VII-1 shows the projected changes in employment and population within the PSSA under Alternative B – compared to existing conditions – in five-year increments.

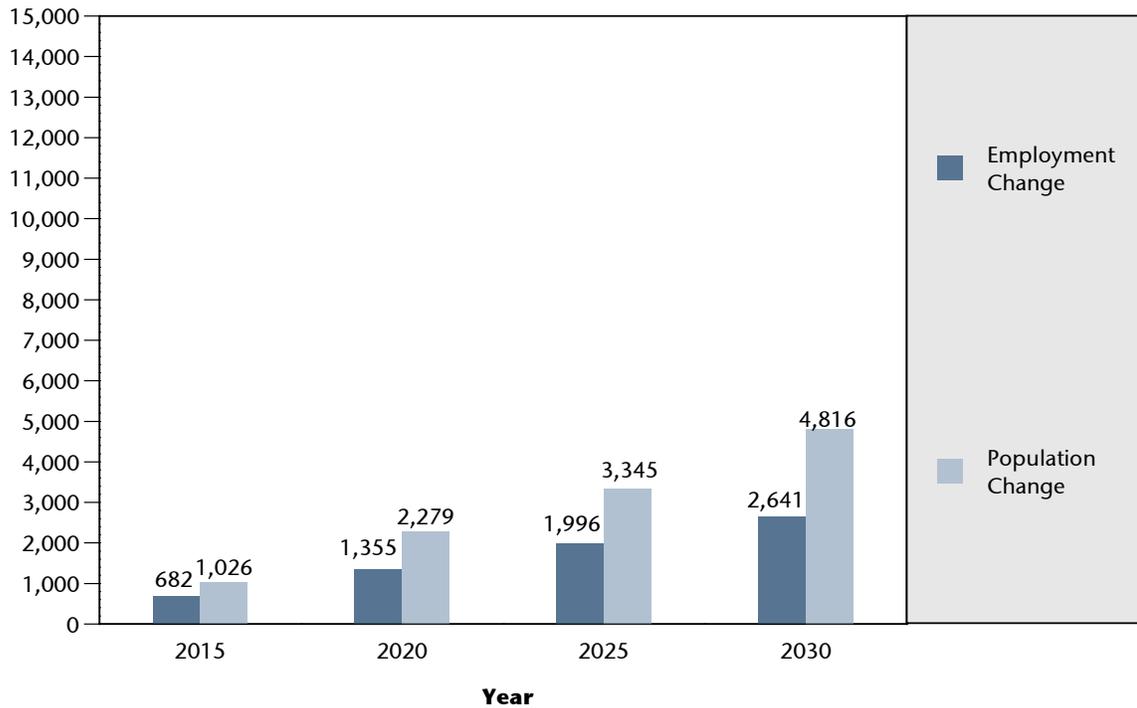
**Exhibit VII-1.  
Projected Employment and Population Effects in the PSSA (Alternative B)**



Source: BBC Research & Consulting 2010.

Within the SSSA, Alternative B is projected to lead to a net increase of 2,641 employed persons and 4,816 residents by 2030. These estimates represent about a two percent increase in SSSA employment and population compared to 2010 existing conditions. Exhibit VII-2 shows the projected changes in employment and population within the SSSA under Alternative B – compared to existing conditions – in five-year increments.

**Exhibit VII-2.  
Projected Employment and Population Effects in the SSSA (Alternative B)**



Source: BBC Research & Consulting, 2010.

**Energy-related Activity and Employment**

Under Alternative B, approximately 9,200 new wells would be developed in the Planning Area over the 20-year planning horizon. The maximum rate of well development is projected to occur in the final three years of the 20-year planning period, when over 600 wells are projected to be developed each year.

The cumulative number of producing wells, reflecting both the addition of new wells completed during the planning period and the retirement of new and existing wells that reach the end of their productive lives, is projected to grow from about 2,866 wells in 2010 to about 8,500 by 2030 under Alternative B.

The drilling-related workforce employed in the Planning Area (based on work site, not office location) is projected to increase from about 475 workers in 2010 to about 1,671 workers by 2030 under Alternative B. The maintenance-related oil and gas workforce employed in the Planning Area is projected to increase from about 478 jobs in 2010 to 1,105 jobs by 2030. Combining drilling-related jobs and maintenance jobs, the total workforce directly related to the oil and gas industry in the Planning Area is projected to increase by more than 1,800 jobs over the 20-year study period.

Secondary employment resulting from oil and gas activity is projected to increase from 666 jobs in 2010 in the PSSA to 1,941 jobs by 2030 under Alternative B. In the SSSA, secondary employment resulting from oil and gas activity in the Planning Area is projected to increase from 833 jobs in 2010 to 2,427 jobs by 2030.

Exhibit VII-3 summarizes projected energy-related activity and employment under Alternative B from 2010 (existing conditions) through 2030.

**Exhibit VII-3.  
Projected Energy-related Activity and Employment (Alternative B)**

	2010	2015	2020	2025	2030
<b>Gas Activity in Planning Area</b>					
Annual new wells	160	318	434	535	636
Cumulative producing wells	2,866	3,711	5,017	6,628	8,501
<b>Related employment</b>					
Drilling jobs in PSSA	475	836	1,141	1,406	1,671
Maintenance jobs in PSSA	478	594	753	928	1,105
Total direct jobs in PSSA	953	1,429	1,893	2,334	2,777
Secondary jobs in PSSA	666	999	1,324	1,632	1,941
Secondary jobs in SSSA	833	1,250	1,655	2,041	2,427

Note:

PSSA is equivalent to Rio Blanco County.

SSSA includes Garfield County, Mesa County, Moffat County and Uintah County, UT.

Sums may not equal totals due to rounding.

Source: BBC Research & Consulting, 2010.

Relative to Alternative A, Alternative B is projected to lead to 1,430 more direct energy-related jobs and 1,000 more secondary jobs in the Planning Area (PSSA) by 2030. Alternative B is also projected to lead to 1,250 more secondary jobs in the SSSA by 2030 due to greater oil and gas development in the Planning Area.

**Agricultural Activity and Employment**

The study team’s analysis of the impacts on livestock grazing indicates that a cumulative total of 13,328 acres of publicly administered grazing lands could be impacted under Alternative B over the 20-year study period. This total represents 0.92 percent of the approximately 1.445 million acres of publicly administered grazing lands in the Planning Area as a whole. If all of the affected grazing land were within the Mesaverde Gas Play Area (roughly corresponding to the Piceance Basin), it would represent about 2.48 percent of the 588,000 acres of publicly administered grazing land in that area.

If agricultural employment is proportional to the amount of public grazing land available in the area, the relatively small amount of grazing land that could be affected under Alternative B corresponds to a small direct and secondary impact on agricultural employment in the PSSA, as shown Exhibit VII-4. The projected impact on agricultural activity and employment under Alternative B would be twice as large as under Alternative A, but the estimated effect on direct and secondary employment (based on the simplified assumption of proportionality to the loss of grazing land) would be only about six jobs by 2030.

**Exhibit VII-4.  
Projected Agricultural Sector Effects (Alternative B)**

	2010	2015	2020	2025	2030
<b>Maximum cumulative reduction in grazing acres</b>	0	1,676	4,485	8,048	12,363
<b>Percent of total Planning Area grazing land</b>	0%	0.12%	0.31%	0.56%	0.86%
<b>Percent of total Mesa Verde Play Area grazing land</b>	0%	0.31%	0.83%	1.49%	2.30%
<b>Projected effects on agricultural jobs</b>					
Direct jobs	0	-0.5	-1.3	-2.4	-3.7
Secondary jobs	0	-0.3	-0.9	-1.6	-2.4
Total jobs	0	-0.8	-2.2	-4.0	-6.1

Note: Impacts on jobs if agricultural employment is directly proportionate to total Planning Area grazing land. Actual impacts may be larger or smaller for reasons discussed in the narrative.

Source: BBC Research & Consulting, 2010.

With the additional well development projected in the Planning Area under Alternative B compared to Alternative A, valley-bottom hay lands currently owned by energy companies are more likely to be developed for energy-related activities than under Alternative A.

**Hunting and Tourism Activity and Employment**

Under Alternative B, the BLM has identified a management goal of maintaining 90 percent of the big-game population objectives established by CPW. The maximum ten percent reduction would occur in year 2031 when annual development would peak at 666 wells. The results of the temporal analysis indicate that approximately 2.1 percent of the mule deer range area in the Mesaverde Play Area would be developed over the 20 year planning period under Alternative B (compared to 1.1 percent under Alternative A).

Exhibit VII-5 shows the estimated percentage of the CPW big-game population targets maintained under Alternative B from 2010 through 2030 and the projected effects on hunting related jobs in the PSSA and the SSSA. By 2030, Alternative B is projected to result in the loss of between 4 and 22 direct and secondary hunting-related jobs in the Planning Area (PSSA) and between 3 and 14 direct and secondary hunting-related jobs in the SSSA. These employment effects are relative to Alternative A, which maintains existing conditions relative to hunting activity levels.

**Exhibit VII-5.  
Projected Hunting Sector Effects (Alternative B)**

	2010	2015	2020	2025	2030
<b>Percent of CPW target big game population</b>	100%	99%	97%	94%	91%
<b>Projected effects on hunting-related jobs</b>					
Direct jobs in PSSA	0	-1 to -4	-2 to -8	-2 to -11	-3 to -15
Secondary jobs in PSSA	0	0 to -2	-1 to -4	-1 to -5	-1 to -7
Total jobs jobs in PSSA	0	-1 to -5	-2 to -11	-3 to -17	-4 to -22
Direct jobs in SSSA	0	0 to -2	-1 to -4	-1 to -6	-2 to -8
Secondary jobs in SSSA	0	0 to -1	-1 to -3	-1 to -5	-1 to -6
Total jobs in SSSA	0	-1 to -3	-1 to -7	-2 to -11	-3 to -14

Note: PSSA is equivalent to Rio Blanco County.  
 SSSA includes Mesa, Moffat, Garfield and Uintah, UT counties – hunting related effects arise in Mesa and Moffat counties only.  
 Source: BBC Research & Consulting, 2010.

**Fiscal Effects**

Projections of oil and gas-associated state and local revenues for Alternative B are set forth in Exhibit VII-6. County property taxes accruing to Rio Blanco County as a result of oil and gas well development are also shown in the exhibit. These revenues are an indirect effect of the proposed management actions because they result from the rate of well development in the Planning Area.

**Exhibit VII-6.  
Energy Associated Revenue Projections (Alternative B)**

Year	New Wells Drilled (region total)	Cumulative Producing Wells	Total Natural Gas Jobs	Production MMCF	Dollars in Millions					
					Production Value	State Severance Tax	DOLA Direct Distribution Revenue	DOLA Grant Revenues	Mineral Lease Revenues to DOLA	County Property Tax Revenue
2009										
2010	160	2,866	953	143,315	\$ 859.9	\$ 34.4	\$ 5.2	\$ 12.0	\$ 17.6	\$ 23.7
2011	160	2,940	946	147,016	\$ 882.1	\$ 35.3	\$ 5.3	\$ 12.3	\$ 18.0	\$ 24.3
2012	260	3,112	1,209	155,605	\$ 933.6	\$ 37.3	\$ 5.6	\$ 13.1	\$ 19.1	\$ 25.7
2013	275	3,294	1,250	164,687	\$ 988.1	\$ 39.5	\$ 5.9	\$ 13.8	\$ 20.2	\$ 27.2
2014	303	3,498	1,356	174,896	\$ 1,049.4	\$ 42.0	\$ 6.3	\$ 14.7	\$ 21.4	\$ 28.9
2015	318	3,711	1,429	185,549	\$ 1,113.3	\$ 44.5	\$ 6.7	\$ 15.6	\$ 22.7	\$ 30.7
2016	347	3,947	1,543	197,333	\$ 1,184.0	\$ 47.4	\$ 7.1	\$ 16.6	\$ 24.2	\$ 32.6
2017	361	4,189	1,577	209,463	\$ 1,256.8	\$ 50.3	\$ 7.5	\$ 17.6	\$ 25.7	\$ 34.6
2018	390	4,454	1,693	222,679	\$ 1,336.1	\$ 53.4	\$ 8.0	\$ 18.7	\$ 27.3	\$ 36.8
2019	405	4,725	1,773	236,249	\$ 1,417.5	\$ 56.7	\$ 8.5	\$ 19.8	\$ 29.0	\$ 39.1
2020	434	5,017	1,893	250,861	\$ 1,505.2	\$ 60.2	\$ 9.0	\$ 21.1	\$ 30.8	\$ 41.5
2021	448	5,315	1,975	265,735	\$ 1,594.4	\$ 63.8	\$ 9.6	\$ 22.3	\$ 32.6	\$ 43.9
2022	477	5,632	2,042	281,613	\$ 1,689.7	\$ 67.6	\$ 10.1	\$ 23.7	\$ 34.5	\$ 46.6
2023	491	5,954	2,124	297,715	\$ 1,786.3	\$ 71.5	\$ 10.7	\$ 25.0	\$ 36.5	\$ 49.2
2024	506	6,282	2,209	314,083	\$ 1,884.5	\$ 75.4	\$ 11.3	\$ 26.4	\$ 38.5	\$ 51.9
2025	535	6,628	2,334	331,411	\$ 1,988.5	\$ 79.5	\$ 11.9	\$ 27.8	\$ 40.6	\$ 54.8
2026	549	6,978	2,420	348,919	\$ 2,093.5	\$ 83.7	\$ 12.6	\$ 29.3	\$ 42.8	\$ 57.7
2027	578	7,347	2,474	367,351	\$ 2,204.1	\$ 88.2	\$ 13.2	\$ 30.9	\$ 45.0	\$ 60.7
2028	592	7,719	2,559	385,931	\$ 2,315.6	\$ 92.6	\$ 13.9	\$ 32.4	\$ 47.3	\$ 63.8
2029	621	8,108	2,686	405,403	\$ 2,432.4	\$ 97.3	\$ 14.6	\$ 34.1	\$ 49.7	\$ 67.0
2030	636	8,501	2,777	425,041	\$ 2,550.2	\$ 102.0	\$ 15.3	\$ 35.7	\$ 52.1	\$ 70.3
2031	666	8,912	2,909	445,589	\$ 2,673.5	\$ 106.9	\$ 16.0	\$ 37.4	\$ 54.6	\$ 73.7

Note: MMCF = million cubic feet  
Source: BBC Research & Consulting 2010.

Under Alternative B, Rio Blanco County-generated funds from the DOLA Direct Distribution Fund are projected to increase from about \$5.2 million in 2010 to about \$16.0 million by 2031 (compared with \$9.3 million in Alternative A). These funds will be distributed to local jurisdictions in both the PSSA and the SSSA based on worker residence. WRFO-generated grant funds available, but not necessarily designated, for the area will rise from \$12.0 to \$37.4 million (compared with \$21.6 million under Alternative A). Rio Blanco County property tax revenues are projected to increase from about \$23.7 million in 2010 to \$73.7 million by 2031 (compared with \$42.6 million under Alternative A).

The major issue facing local governments in terms of the fiscal impact of oil and gas development involves the provision of critical infrastructure (roads, water, and sewer) in advance of an expanding population, and the challenges presented in making investment commitments, given the risk and uncertainty inherent in a resource based economy. These issues and challenges will be somewhat greater under Alternative B than under Alternative A, given the larger increase in population projected to occur under Alternative B.

## **Housing, Public Services and Infrastructure**

Alternative B is projected to lead to a net increase of 2,868 residents in the PSSA by the end of the 20 year planning horizon – corresponding to an average annual increase of about 144 residents per year. Based on the county’s overall average of about 2.5 residents per household, this rate of population growth would indicate the need to add at least 58 housing units per year – although the segment of this new population comprised of workers engaged in drilling and production is likely to prefer temporary housing options and to form smaller households.

As summarized in Table 3.8.1-1 of the RMPA/EIS, Rio Blanco County added approximately 165 housing units between 2000 and 2006, corresponding to an average of about 27 units per year. Based on this comparison, the rate of housing development in the PSSA will need to approximately double to accommodate the incremental population growth associated with Alternative B. There is also likely to be a need for greater development emphasis on multifamily and rental housing. When the cumulative effects of other growth drivers are added to the incremental effects of Alternative B, there will be even greater demands for new housing in the PSSA.

Since Alternative B would increase both the rate of gas development and the rate of overall population growth relative to existing conditions, public service challenges that the PSSA is already experiencing are likely to be exacerbated. As noted in Part One of this report, there was a substantial increase in police reports from the Piceance Basin between 2003 and 2007 which has led to the reorganization of law enforcement services in Meeker and the county. Law enforcement demands, and other public service needs, are likely to further increase under Alternative B. The need for a new grade school in Meeker will become more acute, though student enrollment growth in the Rangely area would likely be welcome given the decline in that district’s enrollment since 2000. Infrastructure and service delivery costs will be at least somewhat offset by rising property values, particularly the rising value of minerals and the resultant property and severance taxes. The county and school district are likely to be significant revenue beneficiaries, but the towns of Meeker and Rangely will be required to provide most new resident services with little new tax revenue. The state’s mineral revenue redistribution programs will offer some revenue relief.

As also noted in Part One, local governments and school districts in the PSSA have struggled to hire and retain staff due to wage competition from the energy industry. These challenges are likely to increase under Alternative B.

## **Social Conditions**

Alternative B would cause an incremental population growth rate in the PSSA of less than two percent per year through 2030 compared to less than one percent per year for Alternative A. The rate for Alternative B is three percent below the threshold range of socially-disruptive growth that has been observed in small, energy impacted communities. This is just the incremental effect of the alternative.

Previously identified social issues in the PSSA associated with energy-driven growth include:

- Residents wanting to protect the “western way of life”:

- Maintaining acceptable levels of public service, including law enforcement, fire protection, emergency response, and boards and commissions;
- Additional strain on limited resources, including the business community;
- Temporary and transient workforces and associated social disruption;
- Housing and hotel shortages;
- Increased construction disruption;
- Concern about repercussions associated with a future “bust”;
- Desire to minimize impacts on agriculture and tourism;
- Negative aspects of increased traffic.

While the PSSA is adapting to the pace of growth experienced during the past decade, that pace would accelerate somewhat under Alternative B. The cumulative level of population growth under Alternative B is unlikely to result in “transformative” social change (as discussed in Section 4.1.1 of the RMPA/EIS) in the PSSA and the rate and level of growth that would result under Alternative B would likely be welcomed by many PSSA residents. However, in contrast to Alternative A, where social issues are likely to diminish over the 20-year planning period, many of the social concerns identified to date in the PSSA may continue to arise under Alternative B.

Under Alternative B in the PSSA, 53 percent of incremental growth in the number of employed residents would come directly or indirectly from energy development by 2030, compared to 13 percent from agriculture, and four percent from hunting (hunting being just part of total recreation and tourism employment). This change is 14 percent higher than under Alternative A for energy development (39 percent), three percent lower for agriculture (16 percent) and two percent lower for hunting (six percent). These differences suggest Alternative B would cause a shift toward labor force and population dependency on employment in the energy industry in the PSSA and away from agriculture and hunting. The impact of the shift in dependency under Alternative B could be perceived by the population in communities of the PSSA as potentially improving the quality of life because of additional economic opportunities. However, the shift also could be perceived as potentially reducing quality of life because of increased exposure to volatility in the energy industry and greater competition for resources with agriculture and hunting, which embody traditional cultural values. These effects would be larger under Alternative B than Alternative A roughly in proportion to the relative change in dependency among the three kinds of livelihoods in the PSSA. The change in the mix of livelihoods under Alternative B would somewhat modify the balance of interests among different population groups within the PSSA, increasing the potential for social tensions between differing groups relative to Alternative A.

Under Alternative B, the majority of employment by the energy industry would be in drilling and development during the 20-year planning horizon. The share involved in drilling would grow over time. By 2030, 60 percent of energy jobs in the PSSA would be in drilling and 40 percent in field maintenance and operation compared to an equal split in 2010 and a roughly equal split in 2030 under Alternative A. This indicates that the energy industry would have the potential for greater instability during the 20-year planning horizon under Alternative B than under Alternative A. The volatile attribute of the drilling sector of the energy industry is likely to be perceived by the population in communities of the PSSA as having the potential to diminish their quality of life.

The prevalence of drilling jobs in the PSSA under Alternative B would be about ten percent greater in 2030 than under Alternative A. A drilling-oriented industry can both increase quality of life, because of economic opportunities, and reduce quality of life, because of exposure to industry volatility. These impacts would be larger under Alternative B than Alternative A roughly in proportion to the change in prevalence of drilling jobs.

For ranchers on the Piceance Creek Road and its side roads, Alternative B would affect their quality of life due to traffic, noise, dust, and competition for resources on BLM land, much of it related to drilling activity and facilities development. The impact to ranchers would be greater from Alternative B than from Alternative A. The increase in these effects under Alternative B is indicated by the estimated change in drilling employment and the number of annual wells drilled, which are more than double the levels under Alternative A in 2030.

The impact to quality of life for recreation interests would be larger under Alternative B than for Alternative A. The impact is related to the loss of between 4 and 22 direct and secondary hunting-related jobs in the PSSA and between 3 and 14 direct and secondary hunting-related jobs in the SSSA. These employment effects are relative to Alternative A, which maintains existing conditions relative to hunting activity levels. Recreation interests would also be impacted because of lower perceived quality of the hunting experience in the area affected by oil and gas drilling and production. This is indicated by the development of 4,600 more wells under Alternative B than Alternative A over the 20-year period.

Social effects in the SSSA would be minimal relative to existing conditions.

National and local environmental interests likely would consider continued energy development to diminish quality of life. Alternative B allows about twice as much development compared to Alternative A. However, groups with environmental interests would see some benefit to the quality of life in the PSSA because higher levels of potential development under consideration in this RMPA would be avoided during the 20-year planning horizon.

### **Non-market Values**

Compared to Alternative A, the larger number of wells that would be developed under Alternative B (along with associated infrastructure and land disturbance) implies more potential to affect recreation values, passive use values or other non-market values associated with agricultural open space, preservation of special status species, visual resources and other resources associated with BLM lands or indirectly-affected public and private lands. As noted earlier, Alternative B is expected to potentially reduce the big game population in the Planning Area by up to ten percent by the end of the 20 year planning period and would likely affect the recreational value associated with hunting compared to Alternative A. The temporal analysis indicates that approximately 2.1 percent of the vegetation communities and the mule deer range in the Mesaverde play area would be developed over the 20 year planning period under Alternative B, compared to 1.1 percent under Alternative A. The six Wilderness Study Areas in the Planning Area are not expected to be affected by energy development under Alternative B.

## **SECTION VIII.**

### **Social and Economic Effects Under Alternative C (Managed Development)**

This section describes anticipated direct and indirect social and economic effects related to Alternative C (Managed Development). The section addresses the following effects in sequence:

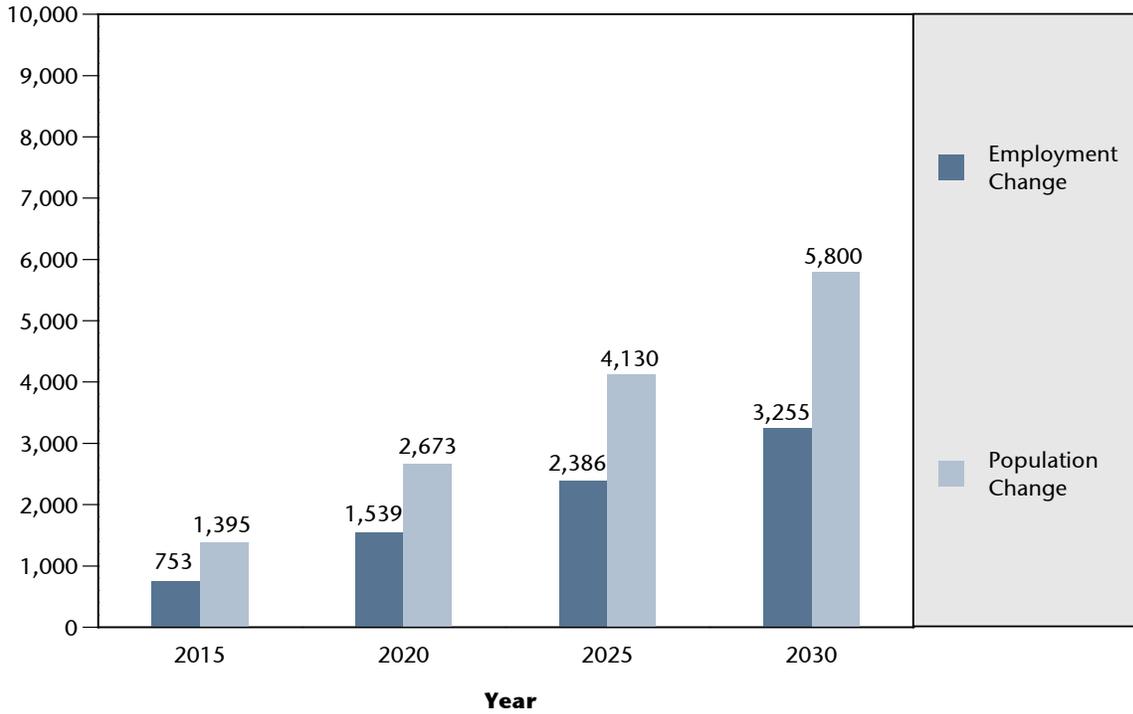
- total employment and population effects;
- energy-related activity and employment;
- agricultural activity and employment;
- hunting and tourism activity and employment;
- fiscal effects;
- housing, public services and infrastructure
- social conditions; and
- non-market values.

#### **Total Employment and Population Effects**

The estimated net effect of Alternative C on employment and population in the PSSA and SSSA combines the projected direct and secondary jobs that would be added due to increased oil and gas development (relative to existing conditions) with the projected decrease in direct and secondary jobs related to agriculture and hunting activity.

Within the PSSA, Alternative C is projected to lead to a net increase of 3,255 employed persons and 5,800 residents by 2030. These estimates represent a 72-percent increase in employment and a 75-percent increase in population compared to 2010 existing conditions. Exhibit VIII-1 shows the projected changes in employment and population within the PSSA under Alternative C – compared to existing conditions – in five-year increments.

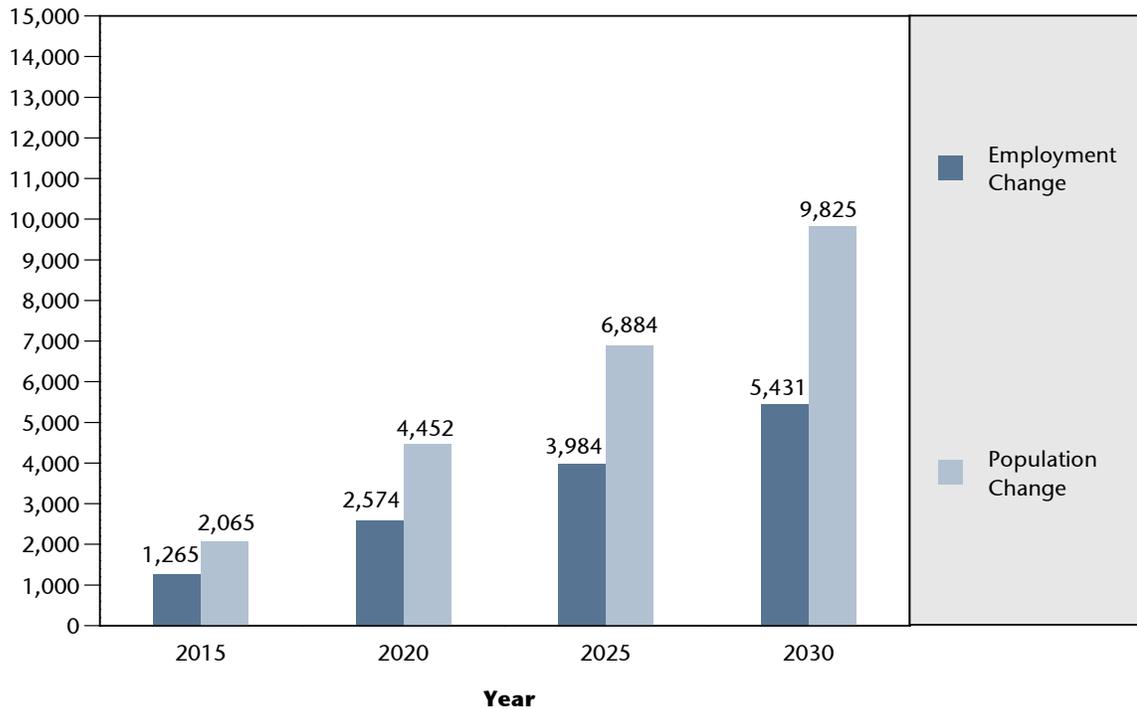
**Exhibit VIII-1.  
Projected Employment and Population Effects in the PSSA (Alternative C)**



Source: BBC Research & Consulting 2010.

Within the SSSA, Alternative C is projected to lead to a net increase of 5,431 employed persons and 9,285 residents by 2030. These estimates represent about a 4 percent increase in SSSA employment and population compared to 2010 existing conditions. Exhibit VIII-2 shows the projected changes in employment and population within the SSSA under Alternative C – compared to existing conditions – in five-year increments.

**Exhibit VIII-2.  
Projected Employment and Population Effects in the SSSA (Alternative C)**



Source: BBC Research & Consulting, 2010.

**Energy-related Activity and Employment**

Under Alternative C, approximately 15,000 new wells would be developed in the Planning Area over the 20-year planning horizon. The maximum rate of well development is projected to occur in the final three years of the 20-year planning period, when over 1,100 wells are projected to be developed each year.

The cumulative number of producing wells, reflecting both the addition of new wells completed during the planning period and the retirement of new and existing wells that reach the end of their productive lives, is projected to grow from about 2,866 wells in 2010 to about 12,943 by 2030 under Alternative C.

The drilling-related workforce employed in the Planning Area (based on work site, not office location) is projected to increase from about 475 workers in 2010 to about 3,017 workers by 2030 under Alternative C. The maintenance-related oil and gas workforce employed in the Planning Area is projected to increase from about 478 jobs in 2010 to 1,683 jobs by 2030. Combining drilling-related jobs and maintenance jobs, the total workforce directly related to the oil and gas industry in the Planning Area is projected to increase by about 3,750 jobs over the 20-year study period.

Secondary employment resulting from oil and gas activity is projected to increase from 666 jobs in 2010 in the PSSA to 3,286 jobs by 2030 under Alternative C. In the SSSA, secondary employment resulting from oil and gas activity in the Planning Area is projected to increase from 833 jobs in 2010 to 4,109 jobs by 2030.

Exhibit VIII-3 summarizes projected energy-related activity and employment under Alternative C from 2010 (existing conditions) through 2030.

**Exhibit VIII-3.  
Projected Energy-related Activity and Employment (Alternative C)**

	2010	2015	2020	2025	2030
<b>Gas Activity in Planning Area</b>					
Annual new wells	160	450	682	915	1,148
Cumulative producing wells	2,866	4,060	6,274	9,273	12,943
<b>Related employment</b>					
Drilling jobs in PSSA	475	1,183	1,792	2,405	3,017
Maintenance jobs in PSSA	478	650	941	1,298	1,683
Total direct jobs in PSSA	953	1,832	2,733	3,703	4,700
Secondary jobs in PSSA	666	1,281	1,911	2,589	3,286
Secondary jobs in SSSA	833	1,602	2,390	3,237	4,109

Note:

PSSA is equivalent to Rio Blanco County.

SSSA includes Garfield County, Mesa County, Moffat County and Uintah County, UT.

Sums may not equal totals due to rounding.

Source: BBC Research & Consulting, 2010.

Relative to Alternative A, Alternative C is projected to lead to about 3,353 more direct energy-related jobs and 2,345 more secondary jobs in the Planning Area (PSSA) by 2030. Alternative C is also projected to lead to 2,932 more secondary jobs in the SSSA by 2030 due to greater oil and gas development in the Planning Area.

**Agricultural Activity and Employment**

The study team’s analysis of the impacts on livestock grazing indicates that a cumulative total of 21,811 acres of publicly administered grazing lands could be impacted under Alternative C over the 20-year study period. This total represents 1.51 percent of the approximately 1.445 million acres of publicly administered grazing lands in the Planning Area as a whole. If all of the affected grazing land were within the Mesaverde Gas Play Area (roughly corresponding to the Piceance Basin), it would represent about 4.05 percent of the 588,000 acres of publicly administered grazing land in that area.

If agricultural employment is proportional to the amount of public grazing land available in the area, the relatively small amount of grazing land that could be affected under Alternative C corresponds to a small direct and secondary impact on agricultural employment in the PSSA, as shown in Exhibit VIII-4. The projected impact on agricultural activity and employment under Alternative C would be over three times as large as under Alternative A, but the estimated effect on direct and secondary employment (based on the simplified assumption of proportionality to the loss of grazing land) would be only about ten jobs by 2030.

**Exhibit VIII-4.  
Projected Agricultural Sector Effects (Alternative C)**

	2010	2015	2020	2025	2030
Maximum cumulative reduction in grazing acres	0	2,200	6,471	12,432	20,080
Percent of total Planning Area grazing land	0%	0.15%	0.45%	0.86%	1.39%
Percent of total Mesa Verde Play Area grazing land	0%	0.41%	1.20%	2.31%	3.73%
<b>Projected effects on agricultural jobs</b>					
Direct jobs	0	-0.7	-1.9	-3.7	-6.0
Secondary jobs	0	-0.4	-1.2	-2.4	-3.9
Total jobs	0	-1.1	-3.2	-6.1	-9.9

Note: Impacts on jobs if agricultural employment is directly proportionate to total Planning Area grazing land. Actual impacts may be larger or smaller for reasons discussed in the narrative.

Source: BBC Research & Consulting, 2010.

With the additional well development projected in the Planning Area under Alternative C compared to Alternatives A or B, valley-bottom hay lands currently owned by energy companies are more likely to be developed for energy-related activities than under those alternatives.

**Hunting and Tourism Activity and Employment**

Under Alternative C, BLM has identified the management goal of maintaining 70 percent of the big-game population objectives established by the CPW. The maximum 30-percent reduction would occur in year 2031 when annual development would peak at 1,194 wells. The results of the temporal analysis indicate that approximately 3.4 percent of the mule deer range area in the Mesaverde Play Area would be developed over the 20 year planning period under Alternative C (compared to 1.1 percent under Alternative A).

Exhibit VIII-5 shows the estimated percentage of the CPW big-game population targets maintained under Alternative C from 2010 through 2030 and the projected effects on hunting-related jobs in the PSSA and the SSSA. By 2030, Alternative C is projected to result in the loss of between 13 and 67 direct and secondary hunting-related jobs in the Planning Area (PSSA) and between 9 and 43 direct and secondary hunting-related jobs in the SSSA. These employment effects are relative to Alternative A, which maintains existing conditions relative to hunting activity levels.

**Exhibit VIII-5.  
Projected Hunting Sector Effects (Alternative C)**

	2010	2015	2020	2025	2030
<b>Percent of CPW target big game population</b>	100%	97%	91%	83%	72%
<b>Projected effects on hunting-related jobs</b>					
Direct jobs in PSSA	0	-2 to -11	-5 to -23	-7 to -34	-9 to -46
Secondary jobs in PSSA	0	-1 to -5	-2 to -11	-3 to -16	-4 to -21
Total jobs jobs in PSSA	0	-3 to -17	-7 to -33	-10 to -50	-13 to -67
Direct jobs in SSSA	0	-1 to -6	-2 to -12	-4 to -18	-5 to -25
Secondary jobs in SSSA	0	-1 to -5	-2 to -9	-3 to -14	-4 to -19
Total jobs in SSSA	0	-2 to -11	-4 to -22	-7 to -33	-9 to -43

Note: PSSA is equivalent to Rio Blanco County.

SSSA includes Mesa, Moffat, Garfield and Uintah, UT counties – hunting related effects arise in Mesa and Moffat counties only.

Source: BBC Research & Consulting, 2010.

**Fiscal Effects**

Projections of oil and gas-associated state and local revenues for Alternative C are set forth in Exhibit VIII-6. County property taxes accruing to Rio Blanco County as a result of oil and gas well development are also shown in the exhibit. These revenues are an indirect effect of the proposed management actions because they result from the rate of well development in the Planning Area.

**Exhibit VIII-6.  
Energy Associated Revenue Projections (Alternative C)**

Year	New Wells Drilled (region total)	Cumulative Producing Wells	Total Natural Gas Jobs	Production MMCF	Dollars in Millions					
					Production Value	State Severance Tax	DOLA Direct Distribution Revenue	DOLA Grant Revenues	Mineral Lease Revenues to DOLA	County Property Tax Revenue
2009										
2010	160	2,866	953	143,315	\$ 859.9	\$ 34.4	\$ 5.2	\$ 12.0	\$ 17.6	\$ 23.7
2011	160	2,940	946	147,016	\$ 882.1	\$ 35.3	\$ 5.3	\$ 12.3	\$ 18.0	\$ 24.3
2012	307	3,159	1,344	157,955	\$ 947.7	\$ 37.9	\$ 5.7	\$ 13.3	\$ 19.4	\$ 26.1
2013	357	3,421	1,486	171,066	\$ 1,026.4	\$ 41.1	\$ 6.2	\$ 14.4	\$ 21.0	\$ 28.3
2014	403	3,722	1,655	186,084	\$ 1,116.5	\$ 44.7	\$ 6.7	\$ 15.6	\$ 22.8	\$ 30.8
2015	450	4,060	1,832	203,002	\$ 1,218.0	\$ 48.7	\$ 7.3	\$ 17.1	\$ 24.9	\$ 33.6
2016	496	4,434	2,013	221,712	\$ 1,330.3	\$ 53.2	\$ 8.0	\$ 18.6	\$ 27.2	\$ 36.6
2017	543	4,844	2,154	242,210	\$ 1,453.3	\$ 58.1	\$ 8.7	\$ 20.3	\$ 29.7	\$ 40.0
2018	589	5,288	2,341	264,394	\$ 1,586.4	\$ 63.5	\$ 9.5	\$ 22.2	\$ 32.4	\$ 43.7
2019	636	5,765	2,536	288,262	\$ 1,729.6	\$ 69.2	\$ 10.4	\$ 24.2	\$ 35.3	\$ 47.6
2020	682	6,274	2,733	313,714	\$ 1,882.3	\$ 75.3	\$ 11.3	\$ 26.4	\$ 38.5	\$ 51.9
2021	729	6,815	2,938	340,753	\$ 2,044.5	\$ 81.8	\$ 12.3	\$ 28.6	\$ 41.8	\$ 56.3
2022	776	7,387	3,073	369,330	\$ 2,216.0	\$ 88.6	\$ 13.3	\$ 31.0	\$ 45.3	\$ 61.1
2023	822	7,987	3,278	399,351	\$ 2,396.1	\$ 95.8	\$ 14.4	\$ 33.5	\$ 49.0	\$ 66.0
2024	869	8,616	3,490	430,820	\$ 2,584.9	\$ 103.4	\$ 15.5	\$ 36.2	\$ 52.8	\$ 71.2
2025	915	9,273	3,703	463,645	\$ 2,781.9	\$ 111.3	\$ 16.7	\$ 38.9	\$ 56.8	\$ 76.6
2026	962	9,957	3,922	497,836	\$ 2,987.0	\$ 119.5	\$ 17.9	\$ 41.8	\$ 61.0	\$ 82.3
2027	1,008	10,666	4,036	533,301	\$ 3,199.8	\$ 128.0	\$ 19.2	\$ 44.8	\$ 65.4	\$ 88.2
2028	1,055	11,401	4,255	570,052	\$ 3,420.3	\$ 136.8	\$ 20.5	\$ 47.9	\$ 69.9	\$ 94.2
2029	1,101	12,160	4,474	608,000	\$ 3,648.0	\$ 145.9	\$ 21.9	\$ 51.1	\$ 74.5	\$ 100.5
2030	1,148	12,943	4,700	647,160	\$ 3,883.0	\$ 155.3	\$ 23.3	\$ 54.4	\$ 79.3	\$ 107.0
2031	1,194	13,749	4,925	687,446	\$ 4,124.7	\$ 165.0	\$ 24.7	\$ 57.7	\$ 84.3	\$ 113.6

Note: MMCF = million cubic feet  
Source: BBC Research & Consulting 2010.

Under Alternative C, Rio Blanco County-generated funds from the DOLA Direct Distribution Fund are projected to increase from about \$5.2 million in 2010 to about \$24.0 million by 2031 (compared with \$16.0 million in Alternative B). These funds will be distributed to local jurisdictions in both the PSSA and the SSSA based on worker residence. WRFO-generated grant funds available, but not necessarily designated, for the area will rise from \$12.0 to \$57.7 million (compared with \$37.4 million under Alternative B). Rio Blanco County property tax revenues are projected to increase from about \$23.7 million in 2010 to \$113.6 million by 2031 (compared with \$73.7 million under Alternative B).

The major issue facing local governments in terms of the fiscal impact of oil and gas development involves the provision of critical infrastructure (roads, water, and sewer) in advance of an expanding population, and the challenges presented in making investment commitments given the risk and uncertainty inherent in a resource-based economy. These issues and challenges will be greater under Alternative C than under Alternative B or Alternative A, given the larger increase in population projected to occur under Alternative C.

## **Housing, Public Services and Infrastructure**

Alternative C is projected to lead to a net increase of 5,800 residents in the PSSA by the end of the 20 year planning horizon – corresponding to an average annual increase of about 290 residents per year. Based on the county’s overall average of about 2.5 residents per household, this rate of population growth would indicate the need to add at least 116 housing units per year – although the segment of this new population comprised of workers engaged in drilling and production is likely to prefer temporary housing options and to form smaller households.

As summarized in Table 3.8.1-1 in the RMPA/EIS, Rio Blanco County added approximately 165 housing units between 2000 and 2006, corresponding to an average of about 27 units per year. Based on this comparison, the rate of housing development in the PSSA will need to substantially increase to accommodate the incremental population growth associated with Alternative C. There is also likely to be a need for greater development emphasis on multifamily and rental housing. When the cumulative effects of other growth drivers are added to the incremental effects of Alternative C, there will be even greater demands for new housing in the PSSA.

During the socioeconomic study performed for the AGNC in 2007-2008, representatives of Meeker, Rangely and other communities in the region were interviewed to estimate the ultimate buildout capacity of their communities. Those interviews suggested that Meeker may be able to ultimately house as many as 10,000 people, while Rangely may be able to house up to 7,000 residents (AGNC 2008). Since the two communities currently house about 4,500 people, it is theoretically possible that all of the new residents associated with Alternative C could be housed in Rio Blanco County municipalities. However, it is more likely that Alternative C will also increase development pressure in the unincorporated portions of Rio Blanco County and that some residents will locate in the Rifle area in Garfield County.

Since Alternative C would approximately triple the rate of gas development and the rate of energy-related population growth relative to existing conditions, public service challenges in the PSSA will increase compared to either Alternative A or Alternative B. The county has already experienced a substantial increase in law enforcement demands, particularly for calls in the Piceance Basin, and those demands and corresponding staffing requirements would likely be substantially greater under Alternative C than under Alternatives A or B. Although Rio Blanco County has yet to experience substantial increases in social service demands, the experience of neighboring Garfield County with more rapid gas development suggests those demands could increase substantially in the Rio Blanco County under the higher development levels associated with Alternative C. In addition to the existing need for a new grade school in Meeker, the additional growth associated with Alternative C may also begin to strain capacities for other grade levels. Student enrollment growth in the Rangely area would likely be welcome given the decline in that district’s enrollment since 2000.

The challenges local governments and school districts in the PSSA have already confronted in hiring and retaining staff due to wage competition from the energy industry would be greater under Alternative C than under Alternative B or Alternative A.

## **Social Conditions**

Alternative C would cause an incremental population growth rate in the PSSA of less than 3 percent per year through 2030 compared to less than 1 percent per year for Alternative A. The rate for Alternative C is 2 percentage points below the threshold range of socially-disruptive growth that has been observed in small, energy-impacted communities. This is just the incremental effect of the alternative, however, and does not include the cumulative effects of other economic and population growth drivers.

Previously identified social issues in the PSSA associated with energy-driven growth include:

- Residents wanting to protect the “western way of life”;
- Maintaining acceptable levels of public service, including law enforcement, fire protection, emergency response, and boards and commissions;
- Additional strain on limited resources, including the business community;
- Temporary and transient workforces;
- Housing and hotel shortages;
- Increased construction disruption;
- Concern about repercussions associated with a future “bust”;
- Desire to minimize impacts on agriculture and tourism;
- Negative aspects of increased traffic.

The PSSA is adapting to the pace of growth experienced during the past decade. While residents of the PSSA tend to be favorably disposed toward growth, the rate of development under Alternative C would be more socially “transformative” for the area (as discussed in Section 4.1.1 in the RMPA/EIS) than under Alternative A or Alternative B. Many of the social concerns identified to date are likely to grow under Alternative C.

Under Alternative C in the PSSA, 65 percent of incremental growth in the number of employed residents would come directly or indirectly from energy development by 2030, compared to ten percent from agriculture, and two percent from hunting (hunting being just part of total recreation and tourism employment). This change is 26 percent higher than under Alternative A for energy development (39 percent), six percent lower for agriculture (16 percent) and four percent lower for hunting (6 percent). This indicator suggests that Alternative C would cause an additional shift toward labor force and population dependency on the energy industry and away from agriculture and hunting. The impact of the shift in dependency under Alternative C could be perceived by the population in communities of the PSSA as potentially improving quality of life because of additional economic opportunities. However, the shift also could be perceived as potentially reducing quality of life because of greater exposure to volatility in the energy industry and increased competition for resources with agriculture and hunting, which embody traditional cultural values. These effects would

be larger under Alternative C than Alternatives A or B. The change in the mix of livelihoods under Alternative C would change the balance of interests among different population groups within the PSSA and the population would be increasingly dominated by individuals dependent on the energy industry. There would be greater potential for social tensions between differing groups, and between new and established residents, relative to Alternative A or Alternative B.

The majority of employment by the energy industry under Alternative C would be in drilling and development during the 20-year planning horizon. The share involved in drilling would grow over time. By 2030, 65 percent of energy jobs in the PSSA would be in drilling and 35 percent in field maintenance and operations compared to a roughly equal split under Alternative A. This indicates that the energy industry would have the potential for greater instability during the 20-year planning horizon under Alternative C than under Alternatives A or B. The volatile attribute of the drilling sector of the energy industry is likely to be perceived by the population in communities of the PSSA as having the potential to diminish their quality of life.

The prevalence of drilling jobs in the PSSA under Alternative C would be 15 percent greater in 2030 than under Alternative A. A drilling-oriented industry can both increase quality of life because of economic opportunities, and reduce quality of life because of exposure to industry volatility. These impacts would be larger under Alternative C than Alternatives A or B roughly in proportion to the differences in the prevalence of drilling jobs.

For ranchers on the Piceance Creek Road and its side roads, Alternative C would affect quality of life due to traffic, noise, dust, and competition for resources on BLM land, much of it related to drilling activity and facilities development. The scale of these effects under Alternative C is indicated by the estimated drilling employment and the annual number of wells drilled by 2030, which are approximately four times the levels under Alternative A and two times the levels under Alternative B.

The impact to quality of life for recreation interests would be larger under Alternative C than for Alternative A. The impact is related to the loss of 13 and 67 direct and secondary hunting-related jobs in PSSA and between 9 and 43 direct and secondary hunting-related jobs in the SSSA. These employment effects are relative to Alternative A, which maintains existing conditions relative to hunting activity levels. Recreation interests would also be impacted because of a lower perceived quality of the hunting experience in the area affected by oil and gas drilling and production. This is indicated by the development of 10,400 more wells under Alternative C than Alternative A over the 20-year period.

Social effects in the SSSA would be minimal relative to existing conditions.

National and local environmental interests likely would consider continued energy development to diminish quality of life. The relative magnitude of this effect corresponds to the scale of development under Alternative C compared to Alternatives A or B. Alternative C allows more than three times as much well development as Alternative A over the 20-year study period and about 50 percent more development than Alternative B. However, groups with environmental interests would see some benefit to the quality of life in the PSSA because higher levels of potential development under consideration in this RMPA would be avoided during the 20-year planning horizon.

### **Non-market Values**

The larger number of wells that would be developed under Alternative C (compared to Alternatives A or B) implies more land disturbance, greater development of associated energy infrastructure and more potential to affect recreation values, passive use values or other non-market values associated with agricultural open space, preservation of special status species, visual resources and other resources associated with BLM lands or indirectly-affected public and private lands. As noted earlier, Alternative C is expected to potentially reduce the big game population in the Planning Area (relative to Alternative A or Alternative B) and affect the recreational value associated with hunting compared to those alternatives. The temporal analysis indicates that approximately 3.4 percent of the vegetation communities and the mule deer range in the Mesaverde play area would be developed over the 20 year planning period under Alternative C, compared to 1.1 percent under Alternative A. The six Wilderness Study Areas in the Planning Area are not expected to be affected by energy development under Alternative C.



## **SECTION IX.**

### **Social and Economic Effects Under Alternative D (Development Emphasis)**

This section describes anticipated direct and indirect social and economic effects related to Alternative D (Development Emphasis). The section addresses the following effects in sequence:

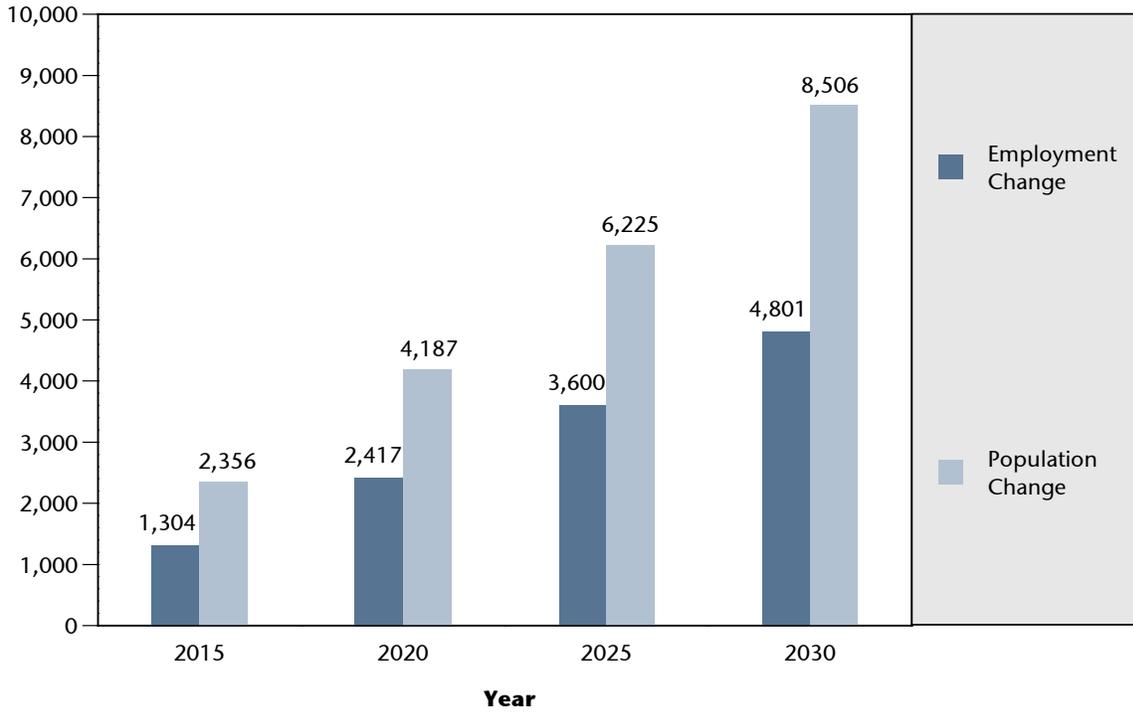
- total employment and population effects;
- energy-related activity and employment;
- agricultural activity and employment;
- hunting and tourism activity and employment;
- fiscal effects;
- housing, public services and infrastructure
- social conditions; and
- non-market values.

#### **Total Employment and Population Effects**

The estimated net effect of Alternative D on employment and population in the PSSA and SSSA combines the projected direct and secondary jobs that would be added due to increased oil and gas development (relative to existing conditions) with the projected decrease in direct and secondary jobs related to agriculture and hunting activity.

Within the PSSA, Alternative D is projected to lead to a net increase of 4,801 employed persons and 8,506 residents by 2030. These estimates represent a 106-percent increase in employment and a 110-percent increase in population compared to 2010 existing conditions. Exhibit IX-1 shows the projected changes in employment and population within the PSSA under Alternative D – compared to existing conditions – in five-year increments.

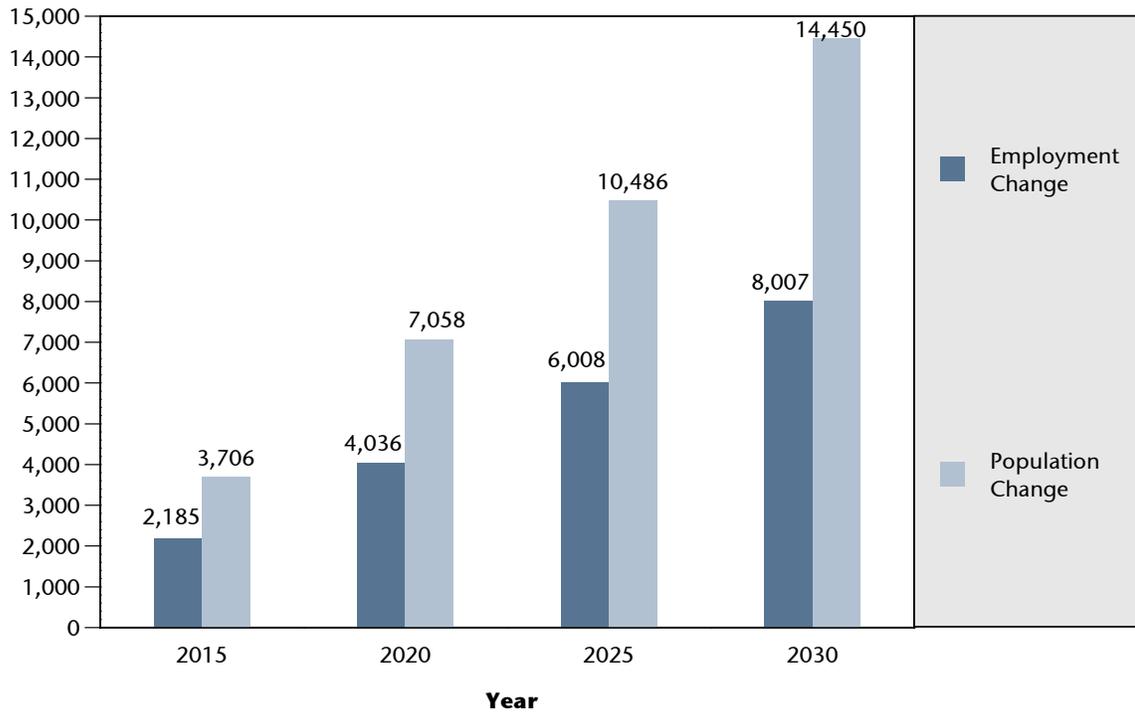
**Exhibit IX-1.  
Projected Employment and Population Effects in the PSSA (Alternative D)**



Source: BBC Research & Consulting 2010.

Within the SSSA, Alternative D is projected to lead to a net increase of 8,007 employed persons and 14,450 residents by 2030. These estimates represent about a 6 percent increase in SSSA employment and population compared to 2010 existing conditions. Exhibit IX-2 shows the projected changes in employment and population within the SSSA under Alternative D – compared to existing conditions – in five-year increments.

**Exhibit IX-2.  
Projected Employment and Population Effects in the SSSA (Alternative D)**



Source: BBC Research & Consulting, 2010.

**Energy-related Activity and Employment**

Under Alternative D, approximately 21,200 new wells would be developed in the Planning Area over the 20-year planning horizon. The maximum rate of well development is projected to occur in the final three years of the 20-year planning period, when over 1,500 wells are projected to be developed each year.

The cumulative number of producing wells, reflecting both the addition of new wells completed during the planning period and the retirement of new and existing wells that reach the end of their productive lives, is projected to grow from about 2,866 wells in 2010 to about 17,550 by 2030 under Alternative D.

The drilling-related workforce employed in the Planning Area (based on work site, not office location) is projected to increase from about 475 workers in 2010 to about 4,194 workers by 2030 under Alternative D. The maintenance-related oil and gas workforce employed in the Planning Area is projected to increase from about 478 jobs in 2010 to 2,282 jobs by 2030. Combining drilling-related jobs and maintenance jobs, the total workforce directly related to the oil and gas industry in the Planning Area is projected to increase by about 5,523 jobs over the 20-year study period.

Secondary employment resulting from oil and gas activity is projected to increase from 666 jobs in 2010 in the PSSA to 4,528 jobs by 2030 under Alternative D. In the SSSA, secondary employment resulting from oil and gas activity in the Planning Area is projected to increase from 833 jobs in 2010 to 5,662 jobs by 2030.

Exhibit IX-3 summarizes projected energy-related activity and employment under Alternative D from 2010 (existing conditions) through 2030.

**Exhibit IX-3.  
Projected Energy-related Activity and Employment (Alternative D)**

	2010	2015	2020	2025	2030
<b>Gas Activity in Planning Area</b>					
Annual new wells	160	650	965	1,282	1,596
Cumulative producing wells	2,866	4,737	8,037	12,356	17,550
<b>Related employment</b>					
Drilling jobs in PSSA	475	1,708	2,536	3,369	4,194
Maintenance jobs in PSSA	478	758	1,206	1,730	2,282
Total direct jobs in PSSA	953	2,466	3,742	5,099	6,476
Secondary jobs in PSSA	666	1,724	2,616	3,565	4,528
Secondary jobs in SSSA	833	2,156	3,271	4,458	5,662

Note:

PSSA is equivalent to Rio Blanco County.

SSSA includes Garfield County, Mesa County, Moffat County and Uintah County, UT.

Sums may not equal totals due to rounding.

Source: BBC Research & Consulting, 2010.

Relative to Alternative A, Alternative D is projected to lead to about 5,129 more direct energy-related jobs and 3,587 more secondary jobs in the Planning Area (PSSA) by 2030. Alternative D is also projected to lead to 4,485 more secondary jobs in the SSSA by 2030 due to greater oil and gas development in the Planning Area.

**Agricultural Activity and Employment**

The study team’s analysis of the impacts on livestock grazing indicates that a cumulative total of 30,741 acres of publicly administered grazing lands could be impacted under Alternative D over the 20-year study period. This total represents 2.13 percent of the approximately 1.445 million acres of publicly administered grazing lands in the Planning Area as a whole. If all of the affected grazing land were within the Mesaverde Gas Play Area (roughly corresponding to the Piceance Basin), it would represent about 5.71 percent of the 588,000 acres of publicly administered grazing land in that area.

If agricultural employment is proportional to the amount of public grazing land available in the area, the relatively small amount of grazing land that could be affected under Alternative D corresponds to a small direct and secondary impact on agricultural employment in the PSSA, as shown in Exhibit IX-4. The projected impact on agricultural activity and employment under Alternative D would be over four times as large as under Alternative A, but the estimated effect on direct and secondary employment (based on the simplified assumption of proportionality to the loss of grazing land) would be only about 14 jobs by 2030.

**Exhibit IX-4.  
Projected Agricultural Sector Effects (Alternative D)**

	2010	2015	2020	2025	2030
Maximum cumulative reduction in grazing acres	0	3,223	9,306	17,677	28,333
Percent of total Planning Area grazing land	0%	0.22%	0.64%	1.22%	1.96%
Percent of total Mesa Verde Play Area grazing land	0%	0.60%	1.73%	3.28%	5.26%
<b>Projected effects on agricultural jobs</b>					
Direct jobs	0	-1.0	-2.8	-5.3	-8.5
Secondary jobs	0	-0.6	-1.8	-3.4	-5.5
Total jobs	0	-1.6	-4.6	-8.7	-14.0

Note: Impacts on jobs if agricultural employment is directly proportionate to total Planning Area grazing land. Actual impacts may be larger or smaller for reasons discussed in the narrative.

Source: BBC Research & Consulting, 2010.

With the additional well development projected in the Planning Area under Alternative D compared to the other alternatives, valley-bottom hay lands currently owned by energy companies are more likely to be developed for energy-related activities than under those alternatives.

**Hunting and Tourism Activity and Employment**

Under Alternative D, BLM has identified the management goal of maintaining 50 percent of the big-game population objectives established by the CPW. The maximum 50-percent reduction would occur in year 2031 when annual development would peak at 1,661 wells.

Exhibit IX-5 shows the estimated percentage of the CPW big-game population targets maintained under Alternative D from 2010 through 2030 and the projected effects on hunting-related jobs in the PSSA and the SSSA. By 2030, Alternative D is projected to result in the loss of between 22 and 112 direct and secondary hunting-related jobs in the Planning Area (PSSA) and between 15 and 73 direct and secondary hunting-related jobs in the SSSA. These employment effects are relative to Alternative A, which maintains existing conditions relative to hunting activity levels.

**Exhibit IX-5.  
Projected Hunting Sector Effects (Alternative D)**

	2010	2015	2020	2025	2030
<b>Percent of CPW target big game population</b>	100%	95%	85%	71%	54%
<b>Projected effects on hunting-related jobs</b>					
Direct jobs in PSSA	0	-5 to -24	-8 to -41	-12 to -59	-15 to -76
Secondary jobs in PSSA	0	-2 to -11	-4 to -19	-5 to -27	-7 to -36
Total jobs jobs in PSSA	0	-7 to -35	-12 to -61	-17 to -86	-22 to -112
Direct jobs in SSSA	0	-3 to -13	-4 to -22	-6 to -32	-8 to -41
Secondary jobs in SSSA	0	-2 to -10	-3 to -17	-5 to -24	-6 to -32
Total jobs in SSSA	0	-5 to -23	-8 to -39	-11 to -56	-15 to -73

Note: PSSA is equivalent to Rio Blanco County.  
 SSSA includes Mesa, Moffat, Garfield and Uintah, UT counties – hunting related effects arise in Mesa and Moffat counties only.  
 Source: BBC Research & Consulting, 2010.

**Fiscal Effects**

Projections of oil and gas-associated state and local revenues for Alternative D are set forth in Exhibit IX-6. County property taxes accruing to Rio Blanco County as a result of oil and gas well development are also shown in the exhibit. These revenues are an indirect effect of the proposed management actions because they result from the rate of well development in the Planning Area.

**Exhibit IX-6.  
Energy Associated Revenue Projections (Alternative D)**

Year	New Wells Drilled (region total)	Cumulative Producing Wells	Total Natural Gas Jobs	Production MMCF	Dollars in Millions					
					Production Value	State Severance Tax	DOLA Direct Distribution Revenue	DOLA Grant Revenues	Mineral Lease Revenues to DOLA	County Property Tax Revenue
2009										
2010	160	2,866	953	143,315	\$ 859.9	\$ 34.4	\$ 5.2	\$ 12.0	\$ 17.6	\$ 23.7
2011	160	2,940	946	147,016	\$ 882.1	\$ 35.3	\$ 5.3	\$ 12.3	\$ 18.0	\$ 24.3
2012	462	3,314	1,793	165,705	\$ 994.2	\$ 39.8	\$ 6.0	\$ 13.9	\$ 20.3	\$ 27.4
2013	524	3,739	1,975	186,934	\$ 1,121.6	\$ 44.9	\$ 6.7	\$ 15.7	\$ 22.9	\$ 30.9
2014	587	4,214	2,217	210,676	\$ 1,264.1	\$ 50.6	\$ 7.6	\$ 17.7	\$ 25.8	\$ 34.8
2015	650	4,737	2,466	236,856	\$ 1,421.1	\$ 56.8	\$ 8.5	\$ 19.9	\$ 29.0	\$ 39.2
2016	713	5,308	2,723	265,400	\$ 1,592.4	\$ 63.7	\$ 9.6	\$ 22.3	\$ 32.5	\$ 43.9
2017	776	5,925	2,928	296,238	\$ 1,777.4	\$ 71.1	\$ 10.7	\$ 24.9	\$ 36.3	\$ 49.0
2018	839	6,586	3,193	329,301	\$ 1,975.8	\$ 79.0	\$ 11.9	\$ 27.7	\$ 40.4	\$ 54.4
2019	902	7,290	3,464	364,522	\$ 2,187.1	\$ 87.5	\$ 13.1	\$ 30.6	\$ 44.7	\$ 60.3
2020	965	8,037	3,742	401,836	\$ 2,411.0	\$ 96.4	\$ 14.5	\$ 33.8	\$ 49.3	\$ 66.4
2021	1,028	8,824	4,025	441,181	\$ 2,647.1	\$ 105.9	\$ 15.9	\$ 37.1	\$ 54.1	\$ 72.9
2022	1,092	9,651	4,221	482,546	\$ 2,895.3	\$ 115.8	\$ 17.4	\$ 40.5	\$ 59.2	\$ 79.8
2023	1,154	10,515	4,505	525,769	\$ 3,154.6	\$ 126.2	\$ 18.9	\$ 44.2	\$ 64.5	\$ 86.9
2024	1,217	11,417	4,797	570,846	\$ 3,425.1	\$ 137.0	\$ 20.6	\$ 48.0	\$ 70.0	\$ 94.4
2025	1,282	12,356	5,099	617,821	\$ 3,706.9	\$ 148.3	\$ 22.2	\$ 51.9	\$ 75.7	\$ 102.1
2026	1,343	13,329	5,395	666,436	\$ 3,998.6	\$ 159.9	\$ 24.0	\$ 56.0	\$ 81.7	\$ 110.2
2027	1,407	14,336	5,561	716,793	\$ 4,300.8	\$ 172.0	\$ 25.8	\$ 60.2	\$ 87.9	\$ 118.5
2028	1,470	15,376	5,862	768,789	\$ 4,612.7	\$ 184.5	\$ 27.7	\$ 64.6	\$ 94.3	\$ 127.1
2029	1,533	16,448	6,167	822,376	\$ 4,934.3	\$ 197.4	\$ 29.6	\$ 69.1	\$ 100.8	\$ 135.9
2030	1,596	17,550	6,476	877,504	\$ 5,265.0	\$ 210.6	\$ 31.6	\$ 73.7	\$ 107.6	\$ 145.1
2031	1,661	18,685	6,794	934,229	\$ 5,605.4	\$ 224.2	\$ 33.6	\$ 78.5	\$ 114.5	\$ 154.4

Note: MMCF = million cubic feet  
Source: BBC Research & Consulting 2010.

Under Alternative D, Rio Blanco County-generated funds from the DOLA Direct Distribution Fund are projected to increase from about \$5.2 million in 2010 to about \$33.6 million by 2031 (compared with \$26.0 million in Alternative C). These funds will be distributed to local jurisdictions in both the PSSA and the SSSA based on worker residence. WRFO-generated grant funds available, but not necessarily designated, for the area will rise from \$12.0 to \$78.5 million (compared with \$57.7 million under Alternative C). Rio Blanco County property tax revenues are projected to increase from about \$23.7 million in 2010 to \$154.4 million by 2031 (compared with \$113.6 million under Alternative C).

The major issue facing local governments in terms of the fiscal impact of oil and gas development involves the provision of critical infrastructure (roads, water, and sewer) in advance of an expanding population, and the challenges presented in making investment commitments given the risk and uncertainty inherent in a resource based economy. These issues and challenges will be considerably greater under Alternative D than under Alternative C, Alternative B or Alternative A, given the larger increase in population projected to occur under Alternative D.

## **Housing, Public Services and Infrastructure**

Alternative D is projected to lead to a net increase of 8,506 residents in the PSSA by the end of the 20 year planning horizon – corresponding to an average annual increase of about 425 residents per year. Based on the county’s overall average of about 2.5 residents per household, this rate of population growth would indicate the need to add at least 170 housing units per year – although the segment of this new population comprised of workers engaged in drilling and production is likely to prefer temporary housing options and to form smaller households.

As summarized in Table 3.8.1-1 in the RMPA/EIS, Rio Blanco County added approximately 165 housing units between 2000 and 2006, corresponding to an average of about 27 units per year. Based on this comparison, the PSSA would need to add as many housing units each year as it did over the entire six year period from 2000 through 2006 to accommodate the incremental population growth associated with Alternative D. There is also likely to be a need for much greater development emphasis on multifamily and rental housing. As discussed later in this section, when the cumulative effects of other growth drivers are added to the incremental effects of Alternative D, there will be even greater demands for new housing in the PSSA.

As discussed earlier, the ultimate buildout capacity of Meeker was estimated at 10,000 people, and Rangely’s buildout capacity was estimated at 7,000 residents, during the 2007-2008 AGNC socioeconomic study (AGNC 2008). Since the two communities currently house about 4,500 people, it is theoretically possible that all of the new residents associated with Alternative D could be housed in Rio Blanco County municipalities. However, it is much more likely that Alternative D will substantially increase development pressure in the unincorporated portions of Rio Blanco County and that a substantial portion of the growth may be shifted to the Rifle area in Garfield County.

Since the rate of gas development under Alternative D would be approximately six times the rate under existing conditions, and the incremental population effects of the alternative would more than double the county’s population during the 20 year planning period, public service challenges in the PSSA under Alternative D would be substantial. Increases in staff and infrastructure for law enforcement, social services, public health and public education are likely to be needed. Local governments and school districts in the PSSA are likely to face considerable challenges in hiring staff due to wage competition from the energy industry. All of these community challenges would be greater under Alternative D than under Alternative C, and considerably greater than under Alternative B or Alternative A.

## **Social Conditions**

Alternative D would cause an incremental population growth rate in the PSSA of less than four percent per year through 2030 compared to less than one percent per year for Alternative A. The rate for Alternative D is one percent below threshold range of socially-disruptive growth that has been observed in small, energy-impacted communities. This is just the incremental effect of the alternative, when combined with the cumulative effects of other growth drivers in the region, annual population growth could well exceed five percent per year.

Rapid population growth in a generally rural and sparsely populated area such as the PSSA can lead to a number of social issues. Although the area has not yet experienced the magnitude or pace of growth

anticipated under Alternative D, a number of social concerns have already been identified in response to energy-driven growth over the past decade. Some of the concerns to date have included:

- Residents wanting to protect the “western way of life”;
- Maintaining acceptable levels of public service, including law enforcement, fire protection, emergency response, and boards and commissions;
- Additional strain on limited resources, including the business community;
- Temporary and transient workforces;
- Housing and hotel shortages;
- Increased construction disruption;
- Concern about repercussions associated with a future “bust”;
- Desire to minimize impacts on agriculture and tourism;
- Negative aspects of increased traffic.

The rate of development under Alternative D would be the most “transformative” for the area (as described in Section 4.1.1 in the RMPA/EIS) of any of the alternatives. Most of the social concerns identified to date are likely to increase under Alternative D and additional social issues may well arise.

Under Alternative D in the PSSA, 71 percent of incremental growth in employed residents would come directly or indirectly from energy development by 2030, compared to eight percent from agriculture, and one percent from hunting (hunting being just part of total recreation and tourism employment). This change is 32 percent higher than under Alternative A for energy development (39 percent), eight percent lower for agriculture (16 percent) and five percentage points lower for hunting (six percent). This indicator suggests that Alternative D would cause an additional shift toward labor force and population dependency on the energy industry in the PSSA and away from agriculture and hunting. The impact of the shift in dependency under Alternative D could be perceived by the population in communities of the PSSA as potentially improving their quality of life because of additional economic opportunities. However, the shift also could be perceived as potentially reducing quality of life because of greater exposure to volatility in the energy industry and increased competition for resources with agriculture and hunting, which embody traditional cultural values. These effects would be larger under Alternative D than Alternative A through Alternative C roughly in proportion to the relative changes in dependency among the three kinds of livelihoods in the PSSA. Under Alternative D, the population of the PSSA would be increasingly dominated by individuals dependent on the energy industry. There would be greater potential for social tensions between differing groups, and between new and established residents, than under Alternative A, Alternative B or Alternative C.

The majority of employment by the energy industry under Alternative D would be in drilling and development during the 20-year planning horizon. The share involved in drilling would grow over time. By 2030, 65 percent of percent of energy jobs in Rio Blanco County would be in drilling and

35 percent in field maintenance and operations compared to a roughly equal split under Alternative A. The volatile attribute of the drilling sector of the energy industry is likely to be perceived by the population in communities of the PSSA as having the potential to diminish their quality of life. With greater exposure to economic volatility due to national forces affecting the energy industry, the PSSA could experience more profound “boom and bust” cycles, and associated social disruption, under Alternative D than under the other alternatives.

The prevalence of drilling jobs in the PSSA under Alternative D would be 15 percent greater in 2030 than under Alternative A. A drilling-oriented industry can both increase quality of life, because of economic opportunities, and reduce quality of life because of exposure to industry volatility. These impacts would be larger under Alternative D than Alternative A and Alternative B roughly in proportion to the change in the prevalence of drilling jobs. These impacts would be similar in Alternative D and Alternative C as both alternatives are projected to lead to comparable ratios of temporary drilling workers to more permanent maintenance and operations workers.

Overall, the social indicators suggest that Alternative D would incrementally affect the quality of life of community residents in the PSSA more than Alternatives A and B. The impact would also be larger than under Alternative C in terms of the incremental population growth rate and relative increase in labor force and population dependency on the energy industry, compared to the agriculture and hunting components of the economic base.

For ranchers on the Piceance Creek Road and its side roads, Alternative D would affect quality of life due to traffic, noise, dust, and competition for resources on BLM land, much of it related to drilling activity and facilities development. This impact from Alternative D would be greater than from Alternative A through Alternative C. The relative magnitude of these effects is indicated by level of drilling employment and the annual number of new wells by 2030, which range from 6 times the levels projected under Alternative A to about 40 percent more than under Alternative C.

The impact to quality of life for recreation interests would be higher under Alternative D than for Alternative A through Alternative C. The impact is related to the loss of between 22 and 112 direct and secondary hunting-related jobs in the PSSA and between 15 and 73 direct and secondary hunting-related jobs in the SSSA. These employment effects are relative to Alternative A, which maintains existing conditions relative to hunting activity levels. Recreation interests would also be impacted because of a lower perceived quality of the hunting experience in the area affected by oil and gas drilling and production. This is indicated by the development of 16,600 more wells under Alternative D than Alternative A over the 20-year period.

Social effects in the SSSA would be minimal relative to existing conditions.

National and local environmental interests likely would consider continued energy development to diminish quality of life. The magnitude of this effect likely corresponds to the scale of development under Alternative D compared to Alternative A. Alternative D allows almost six times as much well development as Alternative A. Groups with environmental interests would not see a benefit to the quality of life from Alternative D because this alternative would allow the most energy development within the full range of development under consideration by the BLM.

### **Non-market Values**

Alternative D would result in the largest number of wells, and correspondingly largest amount of associated infrastructure and overall land disturbance, over the 20-year study period. Consequently, this alternative has the greatest potential to affect recreation values, passive use values or other non-market values associated with agricultural open space, preservation of special status species, visual resources and other resources associated with BLM lands or indirectly-affected public and private lands. As noted earlier, Alternative D is expected to potentially reduce the big game population in the Planning Area by as much as 50 percent by the end of the planning period (relative to Alternative A) and, consequently, could reduce the recreational value associated with big game hunting to a corresponding degree. The temporal analysis indicates that approximately 4.9 percent of the vegetation communities and the mule deer range in the Mesaverde Play Area would be developed over the 20 year planning period under Alternative D, compared to 1.1 percent under Alternative A. The six Wilderness Study Areas in the Planning Area are not expected to be affected by energy development under Alternative D.



## **SECTION X.**

### **Cumulative Social and Economic Effects**

Social and economic conditions in both the PSSA and the SSSA over the next 20 years will be affected by numerous factors beyond the resource management decisions made by BLM for the WRFO. The study team considered the potential for cumulative impacts from other reasonably foreseeable activities within the PSSA and SSSA. At the landscape level, key factors in terms of cumulative social and economic impacts include:

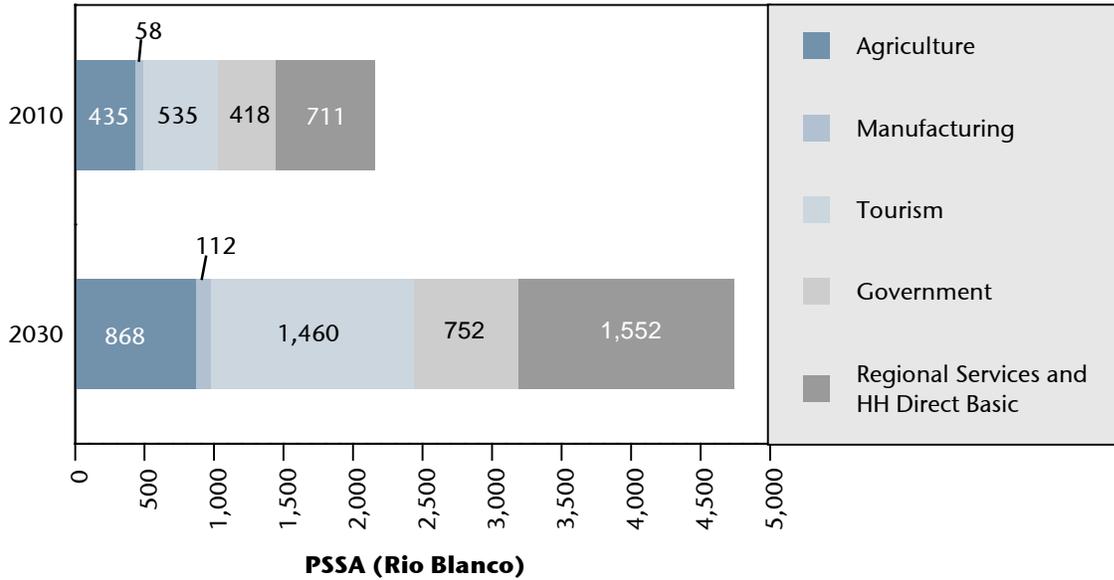
- Oil and gas activity outside of the WRFO, but within the SSSA;
- Economic development and growth in other sectors within the PSSA and SSSA;
- Further development of oil shale research development and demonstration projects within the PSSA; and
- Potential development of commercial oil shale within the PSSA.

Over the past decade, the majority of natural gas drilling activity in the socioeconomic study area has occurred outside of the WRFO in the SSSA, principally in Garfield County and Uintah County, Utah. Research conducted by the study team with representatives of the natural gas industry in 2006-2007 indicated that the development of new gas wells in Garfield County was expected to continue at approximately the same pace through about 2015 and then gradually diminish over the following ten years or more. The national economic recession, which began in late 2008, and falling natural gas prices have led to a decrease in Garfield County and Uintah County natural gas activity. A rebound in activity to gas development levels more similar to those experienced from 2006-2008 appears to be reasonably foreseeable. Gas development in Garfield County and Uintah County, like gas development in the WRFO, results in economic and demographic effects throughout the PSSA and SSSA due to the extensive commuting of energy workers within the region and the regional nature of the energy industry.

Other economic drivers will also contribute to further economic development and population growth in the PSSA and SSSA. In Colorado, the official source of employment and population forecasts is the State Demography Office (SDO). The SDO's forecasts are based on projected growth in "economic base" jobs – these are activities such as tourism, regional services, manufacturing and agriculture that bring dollars from outside the area into the local economies. The SDO projections, adjusted by the study team to exclude energy-related activities, envision that the non-energy related economic base in the PSSA will increase from approximately 2,157 jobs in 2010 to approximately 4,744 jobs in 2030. The largest growth is expected to occur in tourism jobs, state and federal government jobs and regional service and household direct basic jobs. The latter represents the spending of household income by retirees and individuals receiving transfer payments, among other components.

Exhibit X-1 depicts the projected growth in the non-energy-related economic base in the PSSA under the SDO's latest projections.

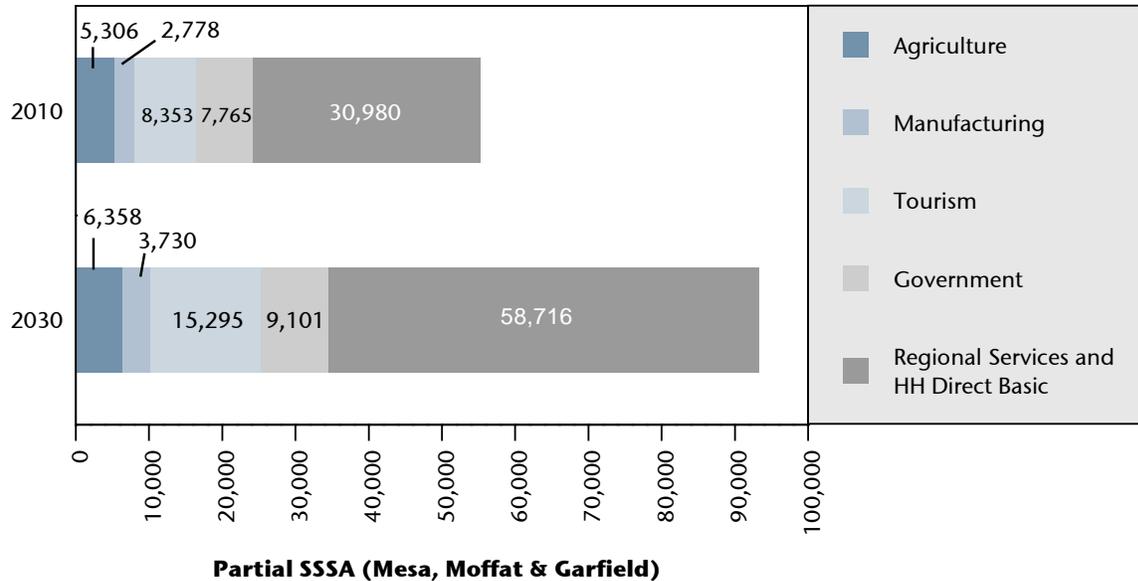
**Exhibit X-1**  
**Projected Non-Energy Economic Base Jobs in the PSSA, 2010 and 2030**



Source: SDO, 2010 as adjusted by BBC to exclude energy-related activities.

Exhibit X-2 depicts the projected growth in the non-energy-related economic base in the Colorado portions of the SSSA under the SDO’s latest projections. The SDO projections anticipate that the non-energy related economic base in the SSSA will increase from approximately 55,182 jobs in 2010 to approximately 93,200 jobs in 2030. The largest growth is expected to occur in tourism jobs and regional service and household direct basic jobs.

**Exhibit X-2**  
**Projected Non-Energy Economic Base Jobs in the SSSA, 2010 and 2030**

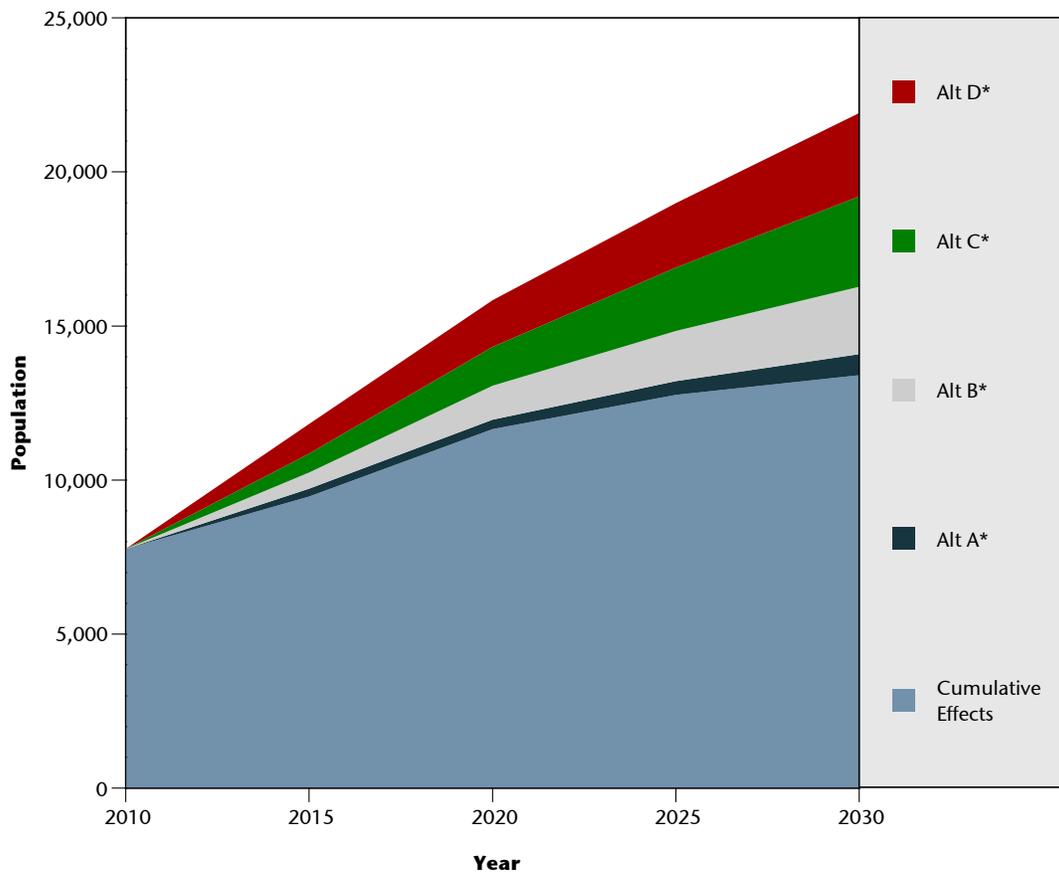


Source: SDO, 2010 as adjusted by BBC to exclude energy-related activities.

To assess the potential cumulative effects of a rebound in gas development activity in the Colorado portions of the SSSA (primarily Garfield County) along with the projected growth in other sectors anticipated by the SDO, the study team modeled the combined effects of those potential growth drivers together with the projected economic effects of the WRFO alternatives described earlier in this section.

Exhibit X-3 depicts projected population growth in the PSSA from 2010 through 2030. In Exhibit X-3, the area labeled cumulative effects indicates the growth in the existing population of the PSSA that is projected to occur based on projected growth in non-energy economic base activity combined with projected growth resulting from a rebound in Garfield County gas development. The exhibit also shows the additional population growth projected to result from each of the WRFO alternatives. The area shown for each alternative indicates the incremental effect of that alternative on population growth in the PSSA, relative to the next closest alternative — e.g. the area shown as Alternative A indicates the additional growth from that Alternative beyond growth due to cumulative effects, while the area shown as Alternative D indicates the additional population growth from that alternative beyond the cumulative growth projected under Alternative C.

**Exhibit X-3  
Projected Future PSSA Population including Cumulative Effects**



Note: \*Area shown for each alternative represents the incremental, additional population growth from that alternative beyond projected population levels due to cumulative effects and the next closest alternative.

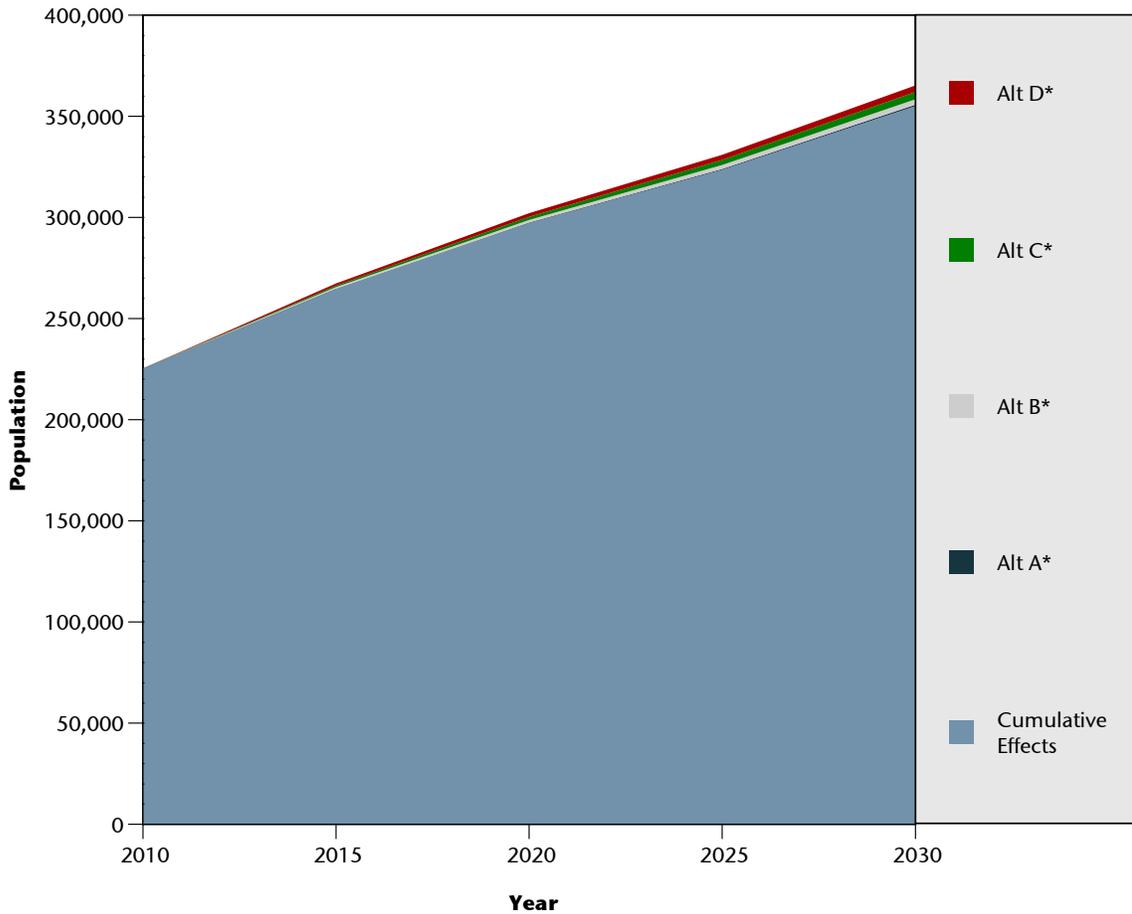
Source: BBC Research & Consulting, 2010.

As indicated in Exhibit X-3, the population of the PSSA would be projected to grow from about 7,768 residents in 2010 to about 13,400 residents by 2030 even without any increase in the rate of natural gas development activity within the WRFO. With the addition of the modest increase in natural gas activity projected under Alternative A (relative to 2010 natural gas activity levels), the projected population of the PSSA would reach about 14,100 residents by 2030. Under Alternative B, the projected 2030 population would reach almost 16,300 residents. Under Alternative C, about 19,200 residents are projected in 2030, while under Alternative D, nearly 22,000 residents are projected by 2030.

It is possible that natural gas-related economic activity could affect the rate of growth in other economic base activities, particularly within the PSSA, due to competition for labor and other inputs and corresponding regional wage increases (a phenomenon sometimes referred to as “factor competition”). The potential effect of factor competition on the growth of other sectors is difficult to estimate and has not been included in the cumulative effects analysis — consequently, the results portrayed in Exhibit X-3 may overstate potential cumulative effects on study area demographics. Nonetheless, it appears likely that accommodating the projected population growth in the PSSA under Alternative D (and potentially under Alternative C) will present challenges. During the Northwest Colorado Socioeconomic Analysis and Forecasts study conducted by the study team in 2007-2008, representatives from the Town of Meeker indicated they believed the ultimate population capacity of their community at build-out might be about 10,000 residents. Representatives from the Town of Rangely indicated they believed Rangely could ultimately accommodate about 7,000 residents. Under Alternative C, and particularly under Alternative D, a large number of people may need to be housed in other areas within the PSSA, or some of the projected growth in PSSA population may be pushed to the SSSA. The latter would further increase commuting activity and traffic loads into and out of the PSSA.

Exhibit X-4 provides a comparable depiction of projected population growth in the Colorado portions of the SSSA from 2010 through 2030 including both cumulative effects and each of the WRFO alternatives. The projected population increases in the SSSA due to the WRFO alternatives are actually larger than the projected increases in the PSSA. However, the much larger scale of the existing population in the SSSA — and the substantial population growth projected to occur due to other factors not related to the WRFO alternatives — suggest there would not be a substantial difference between the alternatives in terms of effects on the SSSA population.

**Exhibit X-4  
Projected Future SSSA Population including Cumulative Effects (Colorado Counties only)**



Note: \*Area shown for each alternative represents the incremental, additional population growth from that alternative beyond projected population levels due to cumulative effects and the next closest alternative.

Source: BBC Research & Consulting, 2010.

As indicated in Exhibit X-4, the population of the Colorado portions of the SSSA would be projected to grow from about 225,000 residents in 2010 to about 355,000 residents by 2030 even without any increase in the rate of natural gas development activity within the WRFO. With the addition of the modest increase in natural gas activity projected under Alternative A (relative to 2010 natural gas activity levels), the projected population of the SSSA would reach about 356,000 residents by 2030. Under Alternative B, the projected 2030 population would reach about 358,500 residents. Under Alternative C, about 362,000 residents are projected in 2030, while under Alternative D, about 365,000 residents are projected by 2030.

Public revenues for both the state and local governments will rise as gas activity increases, and specifically, as the cumulative number of productive wells increases. Resource value, in this instance the value of natural gas, is the most critical factor determining local government fiscal success. While service delivery costs are largely tied to the number of workers, revenues: property tax receipts, severance taxes and mineral leasing returns from drilling on Federal land, all rise as gas prices and property valuations rise. If employment growth rates are too high, communities struggle to keep pace

with growth-associated demands for housing and services—but rapid growth implies high resource values and thus higher revenues. Alternatives A-C present sustainable growth rates, particularly given the existing back drop of planning and assessed valuation that has contributed to the area’s current fiscal health. The most rapid growth, suggested in Alternative D, implies a return to the rapid growth rates experienced in 2005-2008, which strained the fiscal capacity of many smaller communities in the immediate impact area.

### **Cumulative Effects on Social Conditions**

Changes in three indicators provide a measure of the potential cumulative impacts to social conditions in the PSSA. Two of these are the cumulative population growth rate (indicator of social disruption) and the change in dependency of the cumulative population in the PSSA on the energy industry versus the traditional sectors of agriculture and recreation. The definitions and the interpretation of these indicators were described above and used to assess the impacts of the alternatives (see Section I of this report). Corresponding indicators have been calculated for each alternative that include the combined effects of other potential growth drivers (as defined by the SDO) together with the projected economic effects of the alternatives.

A third indicator, the cumulative number of producing wells in the PSSA, is used to indicate potential effects on quality of life for ranchers along Piceance Creek Road and its side roads and to recreation and environmental interests. Well development under the alternatives disproportionately occurs in this area, so the amount of cumulative development on BLM land would correspond to the magnitude of the potential for perceived loss in quality of life by these groups. The impacts to quality of life stem from the energy industries’ contribution to noise, dust and activity along the Piceance Creek Road and its side roads, change in the quality of the recreational and commercial hunting experience and in the natural characteristics of the BLM-owned landscape after the installation of energy facilities.

The cumulative population growth rates that would occur in the PSSA, given each alternative, are based on the population data depicted in Exhibit X-3. They are 3.0 percent per year under Alternative A, 3.8 percent under Alternative B, 4.6 percent under Alternative C, and 5.3 percent under the Alternative D. Alternatives C and D are near the threshold range of socially disruptive growth that has been observed in small, energy impacted communities (see Section I). However, a rigorously documented case of social disruption, followed over the course of 24 years, involved a three-fold population increase in a community that was small compared to the PSSA (Brown et al. 2005). Therefore, the cumulative average-annual growth rates that would occur in the PSSA under the alternatives would not be likely to be socially disruptive.

However, the cumulative average rates considered here assume that steady, gradual development would occur under each alternative. To the extent that the actual timing and magnitude of well development under any of the alternatives differs from this assumption, the social effect could be different. For example, market conditions could trigger surges of drilling activity and could cause periods during the 20-year planning horizon when socially disruptive growth could occur within the PSSA.

The cumulative employment growth that would occur in the PSSA, when combined with the population data presented above, also could cause a shift in the dependency of the population in the

PSSA away from livelihoods based on agriculture, recreation and energy toward a concentration of dependency on energy. This dimension of cumulative change is depicted in Exhibit X-5.

**Exhibit X-5  
Predicted Shares of the Cumulative Population in the PSSA Dependent on Cumulative Employment for three Key Economic Drivers, 2010 Estimates and 2030 Projection by Alternative**

Economic Base Sectors	Existing Conditions	Projected Conditions in 2030			
		Alternative A	Alternative B	Alternative C	Alternative D
Agriculture	18%	13%	12%	10%	8%
Energy	26%	20%	30%	41%	48%
Recreation/Tourism	16%	23%	20%	16%	14%
Remaining Economic Base	40%	44%	38%	33%	30%

Source: Source: BBC Research and Consulting and Lloyd Levy Consulting, 2010.

As depicted in Exhibit X-5, there would be a shift in dependency toward the energy industry of varying degrees because of cumulative employment and population growth under Alternative B, Alternative C, and Alternative D. This shift would be perceived by the population in communities of the PSSA as potentially enhancing quality of life, because of additional economic opportunities, but also potentially reducing quality of life because of exposure to volatility in the energy industry. This shift in the makeup of the PSSA economy could also increase competition for resources between the energy industry and agriculture and hunting, which embody traditional cultural values. Under Alternative A, cumulative population dependency on energy development and agriculture is projected to decrease over time relative to dependency on tourism.

The cumulative number of producing wells in the PSSA would grow from an estimated 2,866 in 2010 to 5,000 in 2030 under Alternative A, 8,500 under Alternative B, 15,000 under Alternative C, and 21,200 under Alternative D, with almost all of the growth occurring in the Piceance Creek Basin of the PSSA. Compared to the existing base of producing wells, cumulative producing wells would grow by a factor of 1.8 under Alternative A, 3.0 under Alternative B, 4.5 under Alternative C, and 6.0 under Alternative D.

Quality of life of ranchers on the Piceance Creek Road and its side roads committed to continuing an agricultural livelihood and lifestyle beyond the current generation would be affected by the cumulative shift of the PSSA’s economic base away from agriculture as well as the noise, dust and traffic associated with energy development. The cumulative effects on quality of life for recreation interests would be related to the lower perceived quality of the hunting experience in the area affected by the cumulative producing wells, which contribute to changes in landscape character from natural or rural to developed or industrial. This occurs in all of the alternatives in proportion to the growth factors calculated above.

National and local environmental interests likely would consider the cumulative increase in producing wells to diminish quality of life under all of the alternatives. This impact would be in rough

proportion to the relative scale of cumulative development that occurs on BLM land in the Piceance Creek Basin area under each alternative.

## **Oil Shale**

The most unpredictable issue in terms of cumulative social and economic effects is the potential development of oil shale resources within the Piceance Basin. On January 1st, 2007, BLM issued five Research, Demonstration & Development (RD&D) leases on lands in Rio Blanco County to Shell Frontier Oil and Gas (three separate leases), Chevron Shale Oil Company and EGL Resources Inc. All three companies are using these leases to further investigate in situ processes for extracting and recovering oil shale.

Information from the lease applications, environmental assessments of the lease applications and study team interviews with representatives of the companies in 2007 indicates that the RD&D programs will have a fairly modest effect on local economic conditions. Shell anticipates a peak construction workforce of about 700 jobs at each of their three leasing sites, but these peaks would not overlap. The Shell operating workforce was projected at about 150 jobs on each of the three sites. EGL's lease application indicates a construction workforce of 10 to 100 workers and an operating workforce of 10 to 40 workers. Chevron indicated to the study team that they anticipate a very limited on-site presence over the next ten years, with most of the work being done on sample materials sent to other corporate locations. Overall, the study team estimated in the 2008 AGNC study that RD&D employment could eventually lead to as many as 800 direct jobs in the PSSA.

Longer-term, development of a viable commercial oil shale industry in Colorado is highly uncertain. At one end of the spectrum of possibilities, development efforts may come to a halt during, or at the conclusion of, the current RD&D projects. At the other end of the spectrum, if a commercial oil shale ultimately does develop in northwest Colorado, it might resemble the tar sands industry currently operating in Alberta, Canada. This type of large scale industrial development is unlikely to occur within BLM's 20 year planning horizon for this RMPA EIS, but could involve thousands or even tens of thousands of construction and operations jobs.

## **SECTION XI.**

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