

# **Bi-State Amendment EIS**

## **Economics Report**

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## Introduction

This document describes the methods and data that underlie the economic impacts modeling analysis used to determine the potential effects of the proposed action and alternatives on the economic environment within the economic study area. In-input out-put models such as Impact Analysis for Planning (IMPLAN) model, an economic impact analysis model, provide quantitative representation of the production relationships between individual economic sectors. The economic modeling analysis uses information about physical production quantities and prices and cost for goods and services. The inputs required to run the IMPLAN model are described in the following narrative and tables. The resulting estimates from the IMPLAN model, by alternative, are then summarized in Chapter four of the EIS. The first section describes general aspects of the IMPLAN model and how it is used to estimate economic impacts. The remaining sections provide additional detailed data used in the analysis for Livestock grazing, Recreation, mining, and alternative energy economic sectors.

### *Overview of Issues Addressed*

During scoping member of the public commented on the potential negative impacts that the proposed action would have on the livestock grazing, mining, recreation and renewable energy economic sectors. Each of these sectors has many employees, provide security to the county tax base and support other local business with business transactions and by helping enlarge the employee pool. Commenters suggested with the implementation of the proposed action livestock grazing, mining and alternative energy development would be severely limited by the standards and guidelines imposed in the plan amendment. There are questions regarding how buffers around leks would impact the size of permitted livestock herds. How mineral companies would or would not be able to explore, develop and mine ore bodies, and how timing limitations would restrict recreation opportunities in the area.

As foundations of the local economy there is concern that the proposed action could adversely affect the economy of the region by limiting the utilization of rangelands, mineral sites, geothermal activities, and tourism due to buffer zones and timing limitations to protect the BSSG.

### Issue Indicators

To address this issue the following issue indicators will be developed and analyzed for the proposed action and alternatives. The resulting comparison of this analysis will allow the decision makers to look at the estimates and make a reasoned and data driven decision. It needs to be understood that there are assumptions that need to be made in order to use the IMPLAN model and the analysis is only as good as the data used.

#### *Issue Statement-*

Issue statement- The proposed action could adversely affect the economy of the region by limiting the utilization of rangelands, mineral sites, geothermal activities, and tourism due to buffer zones and timing limitations to protect the BSSG.

- Issue measure- Estimate potential changes in forage availability or production (e.g., AUMs).
- Issue measure- Potential changes in availability of mineral resources and/or the potential extraction of mineral resources.

- Issue measure- Estimated change in opportunities for the development of alternative energy resources (i.e. geothermal, solar, wind, etc).
- Issue measure- Estimated changes in the volume or type of tourism based on potential changes in travel and tourism related employment, and visitor information provided by the BLM recreation monitoring and FS National Visitor Use Monitoring.

Changes in output value and income flow for the measures identified above may be evaluated depending upon results of the estimates identified for the various economic sectors. A qualitative discussion of how changes between the proposed action and alternatives affect the economic effects.

## Affected Environment

The socioeconomic study area is made up of counties within the Nevada and California that contain Bi-State Sage-Grouse habitat and within which social and economic conditions might reasonably be expected to change based on alternative management actions.

The socioeconomic study area contains seven counties, all containing sage-grouse habitat: Two counties are in California (Alpine and Mono) and four counties are in Nevada (Douglas, Esmeralda, Lyon, and Mineral) (Table 1). Inyo, Tuolumne and Carson City counties are not consider part of the economic study area for this project because management of sage grouse in those areas is not subject to the management direction proposed in the Toiyabe Forest Plan or the Carson City District RPM.

**Table 1: Economic Study Area and BSSG Habitat by Agency Ownership**

BSSG Project Area - Area Analysis State/County	Ownership Acres		
	BLM	FS	Grand Total
<b>CA</b>	<b>46344</b>	<b>579486</b>	<b>625831</b>
Alpine (471,503 ac)	24207	204825	229032
Mono (2,006,450 ac)	21956	374627	396583
<b>NV</b>	<b>3029404</b>	<b>764080</b>	<b>3793484</b>
Douglas (470,857 ac)	161410	46964	208374
Esmeralda (2,288,414 ac)	1674508	65220	1739728
Lyon (1,282,642 ac)	407738	276287	684025
Mineral (2,442,031 ac)	718503	375603	1094106
<b>Grand Total</b>	<b>2962159</b>	<b>764074</b>	<b>3726233</b>

Between 1970 and 2011 the combined population of the study area increased 332.6 percent. In comparison the United States (US) population increased by 52.9 percent and the populations of California and Nevada increased by 88.2 percent and 452.1 percent respectively. With the growth in population a similar, if less dramatic, growth in employment followed. During the same period (1970-2011) employment in the study area grew 244.8 percent, compared to national (92 percent) and state statistics (California  $\approx$  120 percent and Nevada  $\approx$  484 percent

The following section provides brief summaries of the demographic and economic trends for each of the five study area counties. Refer to **Headwaters 2013**, Study Area Demographic and Economic Data, for complete demographic and economic data tables. The county descriptions below are primarily derived from county websites, and data from the US Census Bureau.

## Nevada

Four counties in Nevada are wholly or partially within the planning area (Table 1). Land area and population are not necessarily correlated. There are many large counties that have a relatively low population density. At the same time large counties may include large areas of open land where economic activity is high. Another consideration for this report would be correlation between population and land ownership, as demonstrated by the differences between the overall size of the county and the amount located in the project area and how much is on NFS lands and BLM public lands. .

## Douglas County

Douglas County is located on the northern edge of the project area, changing in terrain from the shores of Lake Tahoe, over the eastern slope of the Sierra Nevada Mountains, and down into the Carson Valley. Genoa, one of the oldest permanent settlements in Nevada, is located in Douglas County and was established in 1851 as a trading post for wagon trains. Due to fertile soils on the valley floor, Douglas County has some of the most productive agricultural areas in the state and is able to support the population centers of Minden and Gardnerville. Many retirees also come to Douglas County for the scenic values and temperate climate, while many tourists frequent the area for recreation and gaming opportunities. These populations support the two largest employment sectors in the area: education and health care and entertainment and recreation (Headwaters 2013).

In 2011, the population of Douglas County was 47,058 people, a 569 percent increase from 1970. This is the largest increase in population among the six counties in the study area and exceeds the growth rate of Nevada by approximately 119 percent. The population density is approximately 66 people per square mile (US Census Bureau 2012). Douglas County is also the most sub-urban county in the study area providing housing and retail opportunities outside Carson City. Recreation opportunities range from fishing and river rafting to horseback riding and ATV tours. Hiking and biking are also major recreation activities. Over the past several years, Douglas County has seen an increase in demand for healthier tourism activities, prompting them to create a network of both urban bike paths and mountain biking trails.

For the 2006-2010 average, the median household income in the county was \$60,721, per capita income was \$35,239, and 7.9 percent of people fell below the poverty level (US Census Bureau 2010). Unemployment rates have increased over the past several years, with a low of 4.3 percent in 2004 and a high of 14.5 percent in 2010. The unemployment rate for 2011 was 14.4 percent (Headwaters 2013).

## Esmeralda

Esmeralda County is a rural county with a large amount of undeveloped open space; the largest town in the county is Goldfield with an estimated population of 415 (Esmeralda County 2011). Esmeralda County experienced the slowest growth between 1970 and 2011 with an increase of 24percent. This growth rates is half that of the US and 7 percent of that of the study area. The county has a population below 1,000 and has experienced a 7.4 percent decrease in population over the last ten years (Headwaters Demographics 2013). The county has always been sparsely

settled except during the first decade of the 20th century when the population of Goldfield reached perhaps as many as 30,000 as a result of a gold mining boom. The mines were largely tapped out by the end of the 1910s and the economy and population declined afterwards.

Population density as of 2010 was estimated to be approximately 0.2 people per square mile, among the lowest densities for counties in the continental US. Today, the sparsely populated county continues to rely on a mining, ranching, and agricultural economy as well as tourism, recreational resources, and an emerging potential for renewable energy production. Recreationally, Esmeralda County offers hunting, fishing, hiking, and four-wheel drive trails as well as old mining camps and ghost towns. There is a significant population of retirees in Esmeralda County. Fish Lake Valley, for example, has a 30 to 40 percent retirement base; and recreation, especially birding, is attractive for retirees. Median household income was \$44,118 (per 2005-2009 average); per capita income was \$30,763; and 7 percent of people fell below the poverty level. Unemployment rates in the county have ranged from a high of 8.6 percent in 2000 to a low of 3.2 percent in 2007. Unemployment in 2010 was 8.3 percent (BLS 2011). Esmeralda County had the largest proportion of government-employed workers in 2008, at 20 percent, with the national average at 13.5 percent (Headwaters 2013).

### Lyon County

Lyon County is located in western Nevada, bordering California on its southern edge. It first prospered in the mid-1800s as an agricultural and commercial center to support the booming Comstock Lode. The City of Fernley flourished in the early 1900s as part of the Newlands Reclamation Project that brought water to parts of western Nevada for agriculture. The economy still relies heavily on agriculture, both in rural areas and near the population centers of Fernley and Yerington. Manufacturing and construction are also important employment sectors in Lyon County (US Census Bureau 2010). In the 1950s, the Anaconda Mine opened just west of Yerington and was the third largest open pit copper mine in the world until it shut down in 1978. Lyon County has transformed from mostly rural areas to suburban areas as the Northern Nevada region continues to grow. For three out of the past ten years, it has been one of the fastest growing counties in the US.

In 2011, the population of Lyon County was 51,937 people, a 50.5 percent increase since 2000. The population density is approximately 26 people per square mile (US Census Bureau 2010). Due to the close proximity to various lakes and rivers, freshwater fishing and boating are popular recreation activities, as is camping, visiting historic sites, and range shooting. There is a possibility that the Anaconda Mine will be reopened in the near future for resumed production; however, there is a current effort by the Environmental Protection Agency and the mine's current owner to clean up the toxic remains at the site.

For the 2006-2010 average, the median household income for Lyon County was \$48,433, per capita income was \$21,041, and 12.8 percent of people fell below the poverty level (US Census Bureau 2010). Unemployment rates have increased over the past several years, with a low of 5.5 percent in 2004 and a high of 17.8 percent in 2010. The unemployment rate for 2011 was 17.5 percent (Headwaters 2013). At the state level unemployment was 13.2 indicating that county level economy was more stable and quicker to recover from recession than the state.

### Mineral County

Mineral County is located in southwestern Nevada, bordering California. The region gained prominence during the 1860s when gold was discovered in Aurora, Nevada. Hawthorne was founded in 1883 in response to the construction of the southern extension of the Virginia and

Truckee Railroad. In 1911, Mineral County was annexed from Esmeralda County, and Hawthorne became the county seat. Hawthorne remains the county seat and is the largest population center in the county. Mining has been historically very important to area, and there continues to be active mining operations as well as a high potential for future mineral extraction. In 1930, the Naval Ammunition Depot, now called the Hawthorne Army Depot, was established. The depot is used for ammunition storage and maintenance and, at its peak during 1945, employed over 5,600 people (NDEP 2012). Although the current employment levels are much lower and it is now run by a private contractor, the depot remains vital to the economy of Hawthorne and Mineral County. The Marine Corps Mountain Warfare Training Center, located near Bridgeport, California, also utilizes NFS lands and BLM land in Mineral County to perform training exercises.

In 2010, the population of Mineral County was 4,760 people, a 6.1 percent decrease from 2000. The population density is approximately 1 person per square mile (US Census Bureau 2012). Walker Lake, just north of Hawthorne, provides many recreation opportunities, including fishing and boating. Hunting, rock hounding, and OHV tours are also popular activities.

Mineral mining activities in the area help support the local economy, as well as hard rock mining. There is some interest in geothermal energy production near Aurora.

For the 2006-2010 average, the median household income for Mineral County was \$35,446, per capita income was \$23,226, and 19.1 percent of people fell below the poverty level (US Census Bureau 2010). Unemployment rates have increased over the past several years, with a low of 5.4 percent in 2004 and a high of 13.9 percent in 2010. The unemployment rate for 2011 was 13.3 percent (Headwaters 2013).

## *California*

The following California counties contain fragments of land bi-state sage-grouse habitat managed by the Carson and Bridgeport ranger districts.. The descriptions below describe the entire county, which may not present an accurate representation of the lands with bi-state sage-grouse habitat or populations.

### **Alpine County**

Alpine County is located in eastern California, just south of Lake Tahoe and bordering Nevada. It is the smallest county in California by both size and population. Alpine County was formed when prospectors and pioneers came to the eastern Sierra looking for silver after the Comstock Lode began in 1859, forming temporary mining towns and producing a sudden spike in population. When very little silver was discovered, most people left, dropping the population to a few hundred people by the 1920s. In the past few decades, however, outdoor recreation and tourism have increased the population and created a new, steady source of economic activity.

The population of Alpine County was 1,167 people in 2011, which is a 3.4 percent decrease since 2000. The population density of the area is approximately 2 people per square mile (US Census Bureau 2012). There are also no incorporated towns in Alpine County. Much of the economy is supported by tourism, primarily based on two major ski resorts and the outdoor recreation industry. About 96 percent of the land is under public ownership, providing plenty of space for snow sports, hunting, and fishing, camping, and rafting in the area. Education and healthcare and public administration are also strong sectors of the economy in Alpine County.

For the 2006-2010 average, the median household income was \$63,478, per capita income was \$32,159, and 13.1 percent of people fell below the poverty level (US Census Bureau 2010). Unemployment rates have increased over the past several years, with a low of 6.6 percent in 2006 and a high of 15.4 percent in 2010. The unemployment rate for 2011 was 15.1 percent (BLS 2012). These numbers do not account for expected seasonal layoffs that are common for recreation employers, such as ski resorts (Headwaters 2013).

## Mono County

Mono County is located in the east central portion of California, to the east of the Sierra Nevada between Yosemite National Park and Nevada. Mono County was formed in 1861 from parts of Calaveras County, Fresno County and Mariposa County. Parts of the county's territory were given to Inyo County in 1866. The county is named after Mono Lake which, in 1852, was named for a Native American Paiute tribe, the Mono people, that inhabited the Sierra Nevada from north of Mono Lake to Owens Lake. With a land area of 3,131 square miles and a population of 14,016 people in 2011 the population density of Mono County works out to about 5 people per square mile (Headwaters 2013). Bridgeport is the County seat and Mammoth Lakes, is the only incorporated town in the county. Mono County is home to Bodie, California's official gold rush ghost town and state park.

The population of Mono County has grown 9 percent between 2000 and 2011 with approximately 47 percent of the population between the ages of 20 and 50 years old and a median age of 36.5 years. Eighty percent of the population is White, "Some other race alone" accounts for 10 percent and the remaining 10 percent is divided between Black (1.3) American Indian (4.5) Asian (0.6), Native Hawaiian and Other Pacific Islanders (0.3) and two or more races (2.2).

Mono county employment statistics indicate an emphasis on outdoor recreation in the economy with close to 30 percent of the working population employed in the Art, Entertainment, Recreation and Accommodation sector.

## *Economic Conditions*

Economic analysis is concerned with the production, distribution, and consumption of goods and services. This section provides a summary of economic information, including trends and current conditions. It also identifies and describes major economic sectors in the socioeconomic study area that can be affected by management actions. Economic activities that rely or could rely on public lands, such as recreation and livestock grazing, are the economic activities that are most likely to be affected.

## Economic Sectors, Employment, and Personal Income

Employment in the study area includes the 13 sectors identified in Table 2. This table provides a measure of how employment is distributed through in the counties and by association how the sectors contribute to that economy. For instance, the education, health care, and social assistance sector, on average employs 15.9 percent of the workforce in the six counties. This sector is a driver for the economy given the stable workforce in this sector. There are exceptions. The table points out how important the agriculture, mining, hunting and fishing sector is to Esmeralda County and the role art, entertainment, accommodation, and food plays in the Mono County economy. For comparison the agriculture, mining, hunting and fishing sector in Esmeralda County includes 30.9 percent of the work force. In the six county study area this sector only employs 2.3 percent of the work force and it is represented by 1.9 percent of the national workforce.

**Table 2: Study Area Employment by Sector, 2012**

	Alpine County, CA	Mono County, CA	Douglas County, NV	Esmeralda County, NV	Lyon County, NV	Mineral County, NV	County Region	U.S.
<b>Civilian employed population &gt; 16 years</b>	529	8,001	21,172	340	20,198	1,761	52,001	141,832,499
Agriculture, forestry, fishing & hunting, mining	6	313	359	105	344	84	1,211	2,669,572
Construction	42	669	1,999	14	1,611	98	4,433	9,642,450
Manufacturing	40	179	1,824	13	2,478	135	4,669	15,281,307
Wholesale trade	4	4	656	5	431	25	1,125	4,158,689
Retail trade	14	851	2,657	19	3,009	167	6,717	16,336,915
Transportation, warehousing, and utilities	28	219	695	14	1,545	93	2,594	7,171,438
Information	7	99	113	24	258	0	501	3,256,311
Finance and insurance, and real estate	6	805	1,389	15	1,140	55	3,410	9,738,275
Prof., scientific, mgmt., admin., & waste mgmt.	46	665	1,801	5	1,163	219	3,899	14,942,494
Education, health care, & social assistance	129	1,227	3,736	51	3,210	312	8,665	31,927,759
Arts, entertain., rec., accomodation, & food	52	2,237	3,476	6	2,029	168	7,968	12,779,583
Other services, except public administration	55	237	868	21	932	26	2,139	6,960,820
Public administration	100	496	1,599	48	2,048	379	4,670	6,966,886
<b>Percent of Total</b>								
Agriculture, forestry, fishing & hunting, mining	1.1%	3.9%	1.7%	30.9%	1.7%	4.8%	2.3%	1.9%
Construction	7.9%	8.4%	9.4%	4.1%	8.0%	5.6%	8.5%	6.8%
Manufacturing	7.6%	2.2%	8.6%	3.8%	12.3%	7.7%	9.0%	10.8%
Wholesale trade	0.8%	0.0%	3.1%	1.5%	2.1%	1.4%	2.2%	2.9%
Retail trade	2.6%	10.6%	12.5%	5.6%	14.9%	9.5%	12.9%	11.5%
Transportation, warehousing, and utilities	5.3%	2.7%	3.3%	4.1%	7.6%	5.3%	5.0%	5.1%
Information	1.3%	1.2%	0.5%	7.1%	1.3%	0.0%	1.0%	2.3%
Finance and insurance, and real estate	1.1%	10.1%	6.6%	4.4%	5.6%	3.1%	6.6%	6.9%
Prof., scientific, mgmt., admin., & waste mgmt.	8.7%	8.3%	8.5%	1.5%	5.8%	12.4%	7.5%	10.5%
Education, health care, & social assistance	24.4%	15.3%	17.6%	15.0%	15.9%	17.7%	16.7%	22.5%
Arts, entertain., rec., accommodation, & food	9.8%	28.0%	16.4%	1.8%	10.0%	9.5%	15.3%	9.0%
Other services, except public administration	10.4%	3.0%	4.1%	6.2%	4.6%	1.5%	4.1%	4.9%
Public administration	18.9%	6.2%	7.6%	14.1%	10.1%	21.5%	9.0%	4.9%
Data Sources: U.S. Department of Commerce. 2012. Census Bureau, American Community Survey Office, Washington, D.C.								

To break this sector into its two primary components, agriculture in Esmeralda County provides employment for 36 individuals (Headwaters Agriculture4 2013) that is equivalent to 10.6 percent of the work force. Mining provides employment to 15 individuals out of the 340 civilian employees over the age of 16 (Headwaters Mining5 2013). There is no data for hunting and fishing employment for the six counties.

The agriculture, mining, hunting and fishing sector are commodities based sectors in the study area that provide resource based employment in the study area. Portions of these sectors rely on the availability of resources on public lands to be successful. Regulatory mechanisms that limit

access to resources on public lands could have an effect on businesses in this sector that are dependent on the resources. Based on sector specific data for the US census Esmeralda County has the majority of job opportunities: 4.4 percent of the employment opportunities are in mining related jobs and 10.6 percent are in agriculture. According to the Agriculture summary from Headwaters 2013 there are 19 farms in Esmeralda County and three of those are categorized as ranches. These ranches would be the only ones with the potential to use public lands as part of their operations.

The individual county numbers are slightly deceiving given that they are based on the total private employment for the individual counties (340 persons greater than 16 years of age (Headwaters Demographics3 2013). The 10.6 percent of jobs in the agricultural sector in Esmeralda County represent approximately 36 individual jobs out of the total workforce population of 340 individuals. In comparison government employs 96 individuals (28 percent) 88 state and local, 6 federal (Headwaters, 2013).

Looking at the total private employment in the study area Headwaters 2013 indicates that there are 340 private jobs in Esmeralda County. Fifteen of those are in the Mining sector. No mining proprietors are counted in the 67 total business proprietors for the county. Mining does occur in Esmeralda County. It is assumed that to support the mining ventures in Esmeralda County the proprietors are from outside the county and a number of the workers for these mines also travel from outside the county. Unfortunately it is difficult to tell how many or where they may be traveling to or from.

The travel and tourism sector includes a combination of: retail trade, passenger transportation, arts, entertainment, and recreations, and accommodation and food employees (Headwaters Tourism7 2013). Tourism related employment is a substantial portion of total employment in the study area (except Esmeralda County) but it has declined by 27.2 percent between 1998 and 2011 (Headwaters Tourism, 2013). During this same period non-travel and tourism employment grew by approximately 21.9 percent (Headwaters Tourism7 2013). In 2011, Alpine County had the largest percent of total travel and tourism employment (89.6 percent) and Esmeralda County had the smallest (1.7 percent). The average for the study area was 38 percent (Headwaters Tourism7 2013). In 2011, accommodations & food was the largest component of travel and tourism-related employment (32.6% of total jobs) in the Study Area, and passenger transportation was the smallest (0.2% of total jobs).

Employment results for the socioeconomic study area as a whole are driven in large part by Douglas, Lyon Counties, which combined account for approximately 79 percent of the employed workers in the study areas. The industries with the largest numbers of employees are the education, health care and social assistance field and the art, entertainment, recreation, accommodation and food service. When compared county to county the percent of workers in any one sector is fairly consistent with the percent of employees in that sector and within the Study Area (Table 2).

For the other counties retail trade, education, art and entertainment (which includes accommodations), and public administration all have high employment numbers when compared to the population of the counties and the overall number of employees.

## Agriculture

Agriculture is an important part of the history, culture, and economy of the seven-county area. According the most recent census of Census of Agriculture , there were more than 623,00 acres of land dedicated to agricultural use (including livestock production) in the seven counties<sup>1</sup> with BSSG habitat (USDA NASS, 20014). Farm employment accounts for approximately 2% of total regional employment and supports nearly 3% of local income. Since the distinction between farm and home is often not well-defined, the majority of the labor used in agricultural production is provided by unpaid family workers and is not reflected in general industry reporting. Traditional labor statistics only reflect hired employment. While hired agricultural workers often fill a labor gap during peak seasons, they are estimated to make up only one-third of the total workforce in the agricultural sector (Kandel, 2008). When labor contributions of unpaid family workers are considered alongside those of hired agricultural workers, the agricultural sector is revealed to play a much larger role in the study area.

Livestock production is an important part of the region's agricultural sector. While there are several commercial feedlots within the study area, this region is characterized as having many small to mid-size ranches. These ranches primarily raise cattle and sheep. Of the 1,147 farms operating in seven-county study area, 446 were reportedly involved in the production of cattle and calves and 178 were involved in the production of sheep and lambs (USDA NASS, 2014). While livestock feed may be supplemented with hay and grains, the dietary needs of local herds is largely met by forage from pastures and other rangelands. Livestock within the seven-county area are grazed on public and private lands, and many of them rely on forage from federal lands for part of the year.

**Table 3: Study Area Livestock Inventory, 2012**

	Total Number of Farms	Cattle & Calves		Sheep & Lamb	
		Farms	Inventory	Farms	Inventory
<b>California</b>	<b>77,857</b>	<b>16,764</b>	<b>5,370,531</b>	<b>4,224</b>	<b>668,517</b>
Alpine County	3	1	(D)	-	-
Mono County	72	17	4,781	6	378
<b>Nevada</b>	<b>4,137</b>	<b>1,822</b>	<b>420,322</b>	<b>508</b>	<b>91,934</b>
Douglas County	255	106	9,485	51	1,240
Esmeralda County	38	3	(D)	N/A	N/A
Lyon County	462	166	46,039	84	27,854
Mineral County	119	65	2,221	1	(D)

Source: NASS Census of Agriculture, 2012

\* (D) denotes information suppressed to protect information for individual farms.

Grazing is authorized on Forest Service and BLM lands under the Taylor Grazing Act and FLPMA for the purpose of fostering economic development for private ranchers and ranching communities by providing ranchers access to additional forage (GAO, Sept. 2005). While some

<sup>1</sup> The Census of Agriculture withholds some information at the county level to avoid disclosing information for individual farms.

sheep graze on federal public lands within the amendment area, cattle are more prevalent. Livestock operations are primarily cow/calf operations. Most calves are born in late winter through spring on private lands. Cattle are turned out to graze as cow/calf pairs. There are 87 grazing allotments that contain BSSG habitat within the amendment area. The Forest Service currently permits more than 39,000 animal unit months (AUMs), while the BLM administers another 46,000 active authorized AUMs on these allotments. About two-thirds of these AUMs are permitted for use in spring and/or summer and the other one-third is for fall and/or winter use.

**Table 4: Permitted Federal Range Use**

<b>Forest Service Ranger District or BLM District</b>	<b>No. of Allotments containing BSSG Habitat</b>	<b>Allotment Acres</b>	<b>Permitted AUMs</b>	<b>Acres of Sage Grouse Habitat in Allotments</b>
Bridgeport Ranger District	50	796,088	33,744	376,705
Carson Ranger District	10	52,879	5,578	42,594
Battle Mountain District	5	704,290	18,520	57,459
Carson City District	22	565,554	28,044	173,234
Total	87	2,118,811	85,886	649,992

Although the amendment area's grazing potential has been estimated to be more than 85,000 AUMs a year, grazing is often restricted below its full potential because of factors such as drought, rangeland conditions, changes in active permit holders, financial limitations on operators and market conditions. Between 2009 and 2013 Forest Service billed for only 59% of permitted AUMs (10,727 sheep AUMs and 12,431 cattle AUMs) on annual average. Use of BLM administered allotments was even more restricted over this time period. On annual average BLM billed for only 26% percent of active annual authorized use (approximately 3,600 cattle AUMs and 2,900 sheep AUMs). Reductions in the use of these allotments have largely been attributed to persistent drought conditions which have reduced the quality and quantity of available forage. Although permits may entitle local ranchers to additional AUMs, many have taken voluntary reductions in recent years to maintain good range conditions. In addition to voluntary reductions on most of the allotments, 15 allotments within the amendment area have been closed or remain vacant for various reasons, including poor range conditions and deferrals following land treatments and fire rehabilitation projects. When 2012 cattle inventory allocations were compared to estimates of total inventories within the seven-county area from the most recent agricultural census, the amendment area's allocations were found to have provided less than one percent of the forage required for the more than 91,000 cattle and nearly 31,000 sheep inventoried within the seven-county area (USDA NASS, 2014).

Local ranchers who graze livestock on allotments within the amendment area pay federal grazing fees. The annually determined grazing fee is computed by using a 1966 base value of \$1.23 per AUM/HM for livestock grazing on public lands in Western states. The figure is then calculated according to three factors – current private grazing land lease rates, beef cattle prices, and the cost of livestock production. In effect, the fee rises, falls, or stays the same based on market conditions, with livestock operators paying more when conditions are better and less when conditions have declined. The formula used for calculating the grazing fee, which was established by Congress in the 1978 Public Rangelands Improvement Act, has continued under a presidential Executive Order issued in 1986. Under that order, the grazing fee cannot fall below \$1.35 per AUM, and any increase or decrease cannot exceed 25 percent of the previous year's level.

Federal grazing fees have remained constant at the minimum \$1.35/AUM for the past eight years. Relative to the statewide average of \$15.00 per AUM in Nevada and \$19.40 per AUM in California, Federal lands appear to be the least expensive grazing land available (USDA NASS, 2013). Grazing fees are only a small portion of the total cost of grazing on federal public lands, however. In general, private rangelands conditions are of higher quality and provide ranchers with fences, roads, salt and water, and protection for livestock. On public lands, ranchers must provide these themselves. Once additional costs associated with grazing on public lands are factored in, the cost differential between public and private grazing fees disappears. In many cases, the total cost of a public land AUM exceeds the total cost of a private land AUM (Rimbey and Torrell, 2011). Even though ranchers incur additional costs to graze on federal lands, federal grazing permits are coveted by ranchers. In addition to granting permit holders access to forage during a critical period of the year when forage on private hay fields and meadows is being grown, federal grazing permits add to the resale value of local ranches.

On annual average livestock grazing within the amendment area has generated \$47,423 in federal revenue. A portion of which is distributed back to these counties to fund schools, roads, and range improvement projects. In addition, to the value of forage supplied by federal lands, livestock grazing on NFS and BLM lands provides local area employment and income. In terms of local area contributions from BLM supplied forage, allocated use levels of federal range in the project area support approximately 63 jobs<sup>2</sup> and approximately \$1.1 million in local labor income (direct, indirect and induced wages and proprietor's income) on an average annual basis.

Although livestock grazing is reported to support only one percent of total employment within these seven counties in 2012, raising livestock is more of a tradition than a job to most ranchers (Headwaters- Agriculture 2014). Most ranching families only obtain a small portion of their household income from livestock production. Many ranches are dependent upon one or more family members working off-ranch and continue to raise livestock because the tradition is often deeply rooted in their personal history and identity. Livestock ownership and ranch life are powerful forces that bind communities and families, and responsibility toward land and livestock are often enmeshed in family values. Continuing this way of life maintains traditional values and connects families to ancestral lands and heritage.

## Mining

Industries that comprise the mining sectors in the Study area include Oil and gas extraction, Coal Mining, Metal ore Mining, Non-metallic mining, Oil and Gas related construction and pipeline mineral transportation. In all approximately 867 individuals are employed in the mining sector within the seven county study area. Employment and income in this sector is stimulated by the exploration and development of public and private minerals. The majority of mining jobs (731) is employed in Nye County and includes the workforce at the Kinross-Barrick Smokey Valley joint venture Round Mountain mine in central Nye County. Of the different mining sectors the majority of the employees are involved in the metal ore mining (Headwaters Mining 2013).

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<sup>2</sup> This measure of employment is not in terms of full-time equivalents and includes all full-time, part-time, seasonal, and unpaid family labor positions associated with livestock grazing on pastures 2, 10, and 11. Thus, IMPLAN employment can be interpreted as 1 job lasting 12 months = 2 jobs lasting 6 months each = 3 jobs lasting 4 months.

	Alpine County, CA	Mono	Douglas County, NV	Esmeralda County, NV	Lyon County, NV	Mineral County, NV	Bi-State Sage-Grouse Study Area
<b>Total Private Employment</b>	711	6,451	15,740	119	8,395	488	31,904
<b>Mining</b>	0	35	35	15	45	6	136
Oil & Gas Extraction	0	7	35	0	0	4	46
Drilling Oil & Gas Wells	0	7	2	0	0	0	9
Support for Oil & Gas Operations	0	0	0	0	0	2	2
Coal Mining	0	0	33	0	0	2	35
Support Activities for Coal Mining	0	0	0	0	7	0	7
Metal Ore Mining	0	0	0	0	0	0	0
Support Activities for Metal Mining	0	0	0	0	7	0	7
Nonmetallic Minerals Mining	0	14	1	9	2	3	29
Support for Nonmetal Minerals	0	14	1	7	0	0	22
<b>Mining Related</b>	0	0	0	2	2	3	7
Oil & Gas Pipeline & Related Const.	0	14	0	6	40	0	60
Pipeline Transportation	0	14	0	6	40	0	60
<b>Non-Mining</b>	711	6,416	15,704	104	8,331	482	6,192

Non-metallic mining and oil and grass production also occurs within the study area. Lyon County has 40 employees, and in Mono County has 14 employees employed in the non-metallic sector. Non-metallic mining includes sand and gravel production and other saleable minerals.

Between 1998 and 2011 mining employment has decreased within the study area from 3.77 percent of the total employment to 2.23 percent. During that same period non-mining employment has grown by 2.9 percent. In the mining sectors growth and declines are mixed. Between 1998 and 2011 oil and gas related employment grew from 7 jobs to 46 jobs. Coal mining grew from 2 to 7 jobs and metal ore mining dropped from 1132 to 713 jobs. Non-metallic minerals jobs also shrank during this period from 233 in 1998 to 106 in 2011. A number of reasons could be responsible for these shifts including the increase or decrease in prices for oil and gas, metal ore, or saleable material, market demand, and technological changes.

Annual average wages related to mining are some of the higher wages in the study area with averages ranging between \$52,000 and \$86,000 annually. Counties with data include Esmeralda, Lyon, Mineral and Nye (Headwaters Mining 2013).

Although mineral development in this region includes a wide variety of solid and fluid minerals, mineral development within the amendment area is relatively limited. As described in the Minerals Section, minerals currently extracted from the amendment area include gold, silver,

lithium carbonate, diatomite, sand, and gravel. In addition to solid minerals, Forest Service and BLM lease fluid minerals within the amendment area for geothermal exploration and development. There are currently three geothermal leases inside BSSG habitat consisting of approximately 7,614 acres. Currently there are no existing power plants operating in the amendment area. However, several commercial geothermal power plants operate within a short distance to the north and east of the amendment area.

The exploration and development of these minerals accounts for only a fraction of total economic activity in the region's mining sector. As such, a small portion of regional employment and income in the mining sector is directly attributed to the exploration and development of gold, silver, lithium carbonate, diatomite, gravel, and geothermal minerals in the amendment area. In addition to local economic activity stimulated from the extraction of federal minerals, public revenue is generated from locatable and leasable minerals within the amendment area.

On annual average there are approximately 17,000 active mining claims. These claims are subject to an annual maintenance fee of \$140 per claim. Federal revenue from mining claim maintenance fees within the amendment area exceeds \$2.3 million on annual average. These funds are used for mine reclamation projects across the country. While a portion of the revenues collected from claims within the amendment area is spent on reclamation in the seven counties of interest, there is not a clear formula for how these revenues get distributed back to counties. Additional federal, state, and county revenue is generated from royalties and leasing associated with geothermal within the amendment area. In accordance with the Energy Policy Act of 2005, the federal government retains 25% of the revenues from royalties and leasing, distributing 50% to the state and 25% to the counties where revenue was generated. The spending of these revenues on mine reclamation and public infrastructure projects ripples through the local economy, further stimulating employment and income throughout the local economy.

## Service Sector

With the exception of Esmeralda County the Service sector provides the majority of employment opportunities in the study area. Esmeralda County is the outlier because of its very rural nature, comparably low population, and economic focus agricultural production. Where employment in the other counties the service sector exceeds 70 percent of total employment in Esmeralda County the service sector jobs account for only 21.8 percent (Table 5) (Headwaters Services (2013).

**Table 5: Service Sector Employment, 2011**

Percent of Total Private Employment							
	Alpine County, CA	Mono County, CA	Douglas County, NV	Esmeralda County, NV	Lyon County, NV	Mineral County, NV	Bi-State Sage-Grouse Study Area
<b>Services Total</b>	711	~95.2%	~85.2%	~21.8%	~70.7%	~96.3%	
Utilities	699	~0.7%	~0.1%	~1.7%	~0.8%	~0.4%	~1.1%
Total Private Employment	711	6,451	15,740	119	8,395	488	31,904
Service Total	~699	~6,142	~13,404	~26	~5,937	~470	~26,678
Utilities	~4	~46	~18	~2	~63	~2	~135
Wholesale trade	0	~49	473	~2	~585	~13	~1,122
Retail Trade	~8	679	1,831	~7	1,241	~83	~3,849
Transportation and Warehousing	~2	~17	~110	~8	~836	~2	~975
Information	0	44	310	0	~24	8	386
Finance and Insurance	~2	~40	375	0	152	~30	~599

Percent of Total Private Employment							
	Alpine County, CA	Mono County, CA	Douglas County, NV	Esmeralda County, NV	Lyon County, NV	Mineral County, NV	Bi-State Sage-Grouse Study Area
Real Estate and Rental and Leasing	~3	599	578	0	~109	~8	~1,297
Professional, Scientific, and Tech.	10	131	713	~1	405	~12	~1,272
Mgmt. of Companies and Enterprises	~2	0	42	0	~2	0	~46
Administrative and Support Services	~2	173	1,417	0	434	~8	~2,034
Educational Services	~7	6	80	0	~5	0	~98
Health Care and Social Assistance	~24	~428	1,247	0	~597	~188	~2,484
Arts, Entertainment, and Recreation	~16	22	269	0	618	~1	~926
Accommodation and Food Services	617	3,688	5,304	~2	644	~104	~10,359
Other Services	~2	220	637	~4	222	~11	~1,096
<b>Unclassified</b>	0	~3	~12	0	~3	0	~18
<b>Non-Services</b>	~12	~309	~2,336	~93	~2,458	~18	~5,226
This table does not include employment data for government, agriculture, railroads, or the self-employed because these are not reported by County Business Patterns. Estimates for data that were not disclosed are indicated with tildes (~).							

In the study area employment in the Service sector has grown from approximately 26,269 employees in 1998 to 26,678 employees in 2011 and non-service related jobs have decreased by 21 percent. The percentage of all employees in the service sector has remained relatively stable increasing from 79.8 percent to 83.6 percent during the 14 years period. This suggests that the service sectors growth reflects population growth and is fairly stable. As the largest employment sector it is also a major driver of the economy within the study area.

As can be seen in table 5 the service sector includes a wide range of job types. These include: wholesale retail, finance, transportation, entertainment, education, and accommodation and food service to list a few. Of all the job types included in the service sector accommodation and food service ranks the highest in respect to the number of people employed and lowest in annual average salary earned (Headwaters 2013). The highest paid (professional and business) accounts for approximately 10 percent of the workforce while accommodation/food service employee's account for on average across the study area approximately 32 percent.

Individually some counties have a higher percentage of employees in the accommodation/food service category. Alpine County and Mono County, with their location in the eastern Sierra and close proximity to Yosemite National Park, Lake Tahoe, Reno, and other high draw tourist areas have the highest ratio of people working in the leisure and hospitality area with 45.9 and 46.3

percent. Esmeralda Lyon and mineral counties have the fewest people employed in leisure and hospitality professions (Headwaters Services 2013).

## Travel and Tourism

High concentrations of local employment and income in the service sector are often a reflection of a robust travel and tourism industry. While travel and tourism is not reflected in any one industrial sector, economic activity associated with this industry is generally reflected in a number services related industries. This subset of the services related industries includes retail trades, Passenger transportation, Arts, entertainment, and recreation, and Accommodation and food.

**Table 6: Travel & Tourism Related Employment, 2011**

	Alpine County, CA	Mono County, CA	Douglas County, NV	Esmeralda County, NV	Lyon County, NV	Mineral County, NV	Bi-State Sage-Grouse Study Area
<b>Total Private Employment</b>	711	6,451	15,740	119	8,395	488	31,904
<b>Travel &amp; Tourism Related</b>	~637	~3,884	~5,951	~2	~1,507	~153	~12,134
	~89.6%	~60.2%	~37.8%	~1.7%	~18.0%	~31.4%	~38.0%
Retail Trade	0.0%	~2.6%	2.1%	0.0%	~3.0%	~4.3%	~2.4%
Passenger Transportation	0.0%	0.0%	~0.3%	0.0%	0.0%	0.0%	~0.2%
Arts, Entertainment, and Recreation,	~2.3%	~0.5%	~1.7%	0.0%	~7.4%	~0.2%	~3.0%
Accommodation and Food	~87.3%	57.2%	33.7%	~1.7%	~7.6%	~26.8%	~32.6%
The data does not include employment in government, agriculture, railroads, or the self-employed because these are not reported by County Business Patterns. Estimates for data that were not disclosed are indicated with tildes (~). (Headwaters Tourism 2013)							

Tourism related employment is a substantial portion of total employment in the study area (except Alpine County) but has declined by 27.2 percent between 1998 and 2011. During this same period non travel and tourism employment grew by approximately 21.9 percent. In 2011, Alpine county had the largest percent of total travel and tourism employment (89.6 percent) and Esmeralda County had the smallest (1.7 percent) (Headwaters 2013). In 2011, accommodations & food\* was the largest component of travel and tourism-related employment (32.6% of total jobs) in Bi-State Sage-Grouse Study Area, and passenger transportation\* was the smallest (0.2% of total jobs).

Outdoor recreation has become the driving force behind travel and tourism in rural communities across the Western United States. Many of the recreational opportunities which attract visitors to these areas are provided by federal public lands. The Humboldt-Toiyabe National Forest recorded approximately 2,300,000 visits on the Forest in 2011, while the Battle Mountain District and Carson City District of the BLM reported approximately 1,300,000 visitors. While the

amendment area supports only a small portion of these annual visits, Forest Service and BLM visitation data does not enable amendment area visitation to be broken out from total visitation estimates.

At the time of this analysis numerous outfitter-guide permits were in effect on the Carson RD and the Bridgeport RD. Carson RD issued the greatest number of permits for rafting trips, with hunting and fishing a close second and third. On the Bridgeport RD, permits were issued on a relatively even basis for backpacking, multi-sport activities, fishing and stock-based activities. According to the authorized permits on the Carson and Bridgeport Ranger District, 39,006 service days were authorized to outfitter-guides.

**Table 7: Annual Visitation by Trip Segment, Humboldt-Toiyabe National Forest**

	Non-Local Segments			Local Segments		
	Day	Overnight on NF	Overnight off NF	Day	Overnight on NF	Overnight off NF
<b>Annual Visits</b>	<b>282,030</b>	<b>66,360</b>	<b>132,720</b>	<b>1,078,349</b>	<b>49,770</b>	<b>49,770</b>
<b>Share of Total Visits</b>	<b>12%</b>	<b>3%</b>	<b>6%</b>	<b>47%</b>	<b>2%</b>	<b>2%</b>

**Table 8: Visitors and Visitor Use Days on the Carson City District, 2006-2011**

Year	Visits	Visitor Days
2006	972,726	929,440
2007	1,010,192	948,747
2008	1,040,303	912,562
2009	972,392	863,017
2010	945,623	831,742
<sup>[1]</sup> 2011	1,007,842	840,653

**Table 9: Trends in Visitation (2005-2010) Battle Mountain**

Data	2005	2006	2007	2008	2009	2010
Visitors	271,700	289,200	296,200	291,000	296,200	299,162
Visitor Days	246,000	247,700	291,000	305,000	291,000	293,910

Recreational experiences supported by the Humboldt-Toiyabe NF and the Battle Mountain District and Carson City Districts contribute to the overall quality of life enjoyed by local residents and stimulates economic activity throughout the local economy. On their way, and once they arrive at these public lands, recreationists spend money on food, gas, lodging, and other trip-related expenses. Although spending by public land visitors account for only a small portion of all recreation related spending in the region, a portion of employment and income in the local

<sup>[1]</sup> Bureau of Land Management , Carson City District. Analysis of the Management Situation, Carson City District Resource Management Plan Revision and Environmental Impact Statement. Draft document. April 2013. page 2-135

tourism and recreation industry can be directly attributed to outdoor experiences within the amendment area. As visitor spending ripples through the local economy, recreational spending stimulates additional employment opportunities in supporting industries. In total, recreational opportunities supported by the Humboldt-Toiyabe NF are estimated to support more than 800 jobs (direct, indirect and induced) and \$33 million in labor income in communities surrounding these NFS lands. Approximately 650 jobs and \$25 million in labor income is supported by non-local recreation on the Humboldt-Toiyabe NF (IMPLAN, 2012). Additional employment and income is supported by recreational opportunities on BLM lands. Although only a small portion of this employment and income is supported in the seven counties with BSSG habitat, recreational opportunities on NFS and BLM lands within the amendment area plays an important role in supporting local employment and income in communities which rely heavily on travel and tourism.

## Environmental Justice

In 1994, President Clinton issued Executive Order 12898. This order directs federal agencies to focus attention on the human health and environmental conditions in minority and low-income communities. The purpose of EO 12898 is to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects on minority and low-income populations.

Environmental justice (EJ) is the fair treatment and meaningful involvement of people of all races, cultures, and incomes, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The goal of environmental justice is for Federal agency decision-makers to identify impacts that are disproportionately high and adverse with respect to minority and low-income populations and identify alternatives that will avoid or mitigate those impacts. According to USDA DR5600-002 (USDA 1997), EJ, minority, minority population, low-income, and human health and environmental effects, are defined as follows:

**Environmental Justice** means that, to the greatest extent practicable and permitted by law, all populations are provided the opportunity to comment before decisions are rendered on, are allowed to share in the benefits of, are not excluded from, and are not affected in a disproportionately high and adverse manner by, government programs and activities affecting human health or the environment.

**Minority** means a person who is a member of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic.

**Minority Population** means any readily identifiable group of minority persons who live in geographic proximity to, and, if circumstances warrant, migrant farm workers and other geographically dispersed/transient persons who will be similarly affected by USDA programs or activities.

**Low-Income Population** means any readily identifiable group of low-income persons who live in geographic proximity to, and, if circumstances warrant, migrant farm workers and other geographically dispersed/transient persons who will be similarly affected by USDA programs or activities. Low-income populations may be identified using data collected, maintained and analyzed by an agency or from analytical tools such as the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty.

**Human Health and/or Environmental Effects** as used in this Departmental Regulation includes interrelated social and economic effects.

The emphasis of environmental justice is on health effects and/or the benefits of a healthy environment. The CEQ has interpreted health effects with a broad definition: “Such effects may include ecological, cultural, human health, economic or social impacts on minority communities, low-income communities or Indian Tribes ...when those impacts are interrelated to impacts on the natural or physical environment” (CEQ, 1997).

**Table 10: Study Area Minority Populations, 2012**

	White alone	Black or African American alone	American Indian alone	Asian alone	Native Hawaiian & Other Pacific Is. alone	Some other race alone	Two or more races
<b>California</b>							
Alpine County	71.2%	0.0%	19.7%	2.7%	1.8%	3.3%	1.3%
Mono County	83.6%	0.6%	3.4%	0.8%	0.2%	8.0%	3.5%
<b>Nevada</b>							
Douglas County	90.4%	0.4%	2.1%	1.1%	0.2%	2.3%	3.5%
Esmeralda County	90.2%	0.8%	3.1%	0.0%	0.0%	4.7%	1.3%
Lyon County	87.8%	1.0%	2.8%	1.5%	0.4%	3.5%	3.0%
Mineral County	76.7%	1.8%	13.3%	1.8%	0.0%	2.6%	3.8%
<b>United States</b>	<b>74.2%</b>	<b>12.6%</b>	<b>0.8%</b>	<b>4.8%</b>	<b>0.2%</b>	<b>4.8%</b>	<b>2.7%</b>

According to the Census Bureau's 2012 American Community Survey (ACS)<sup>3</sup> this region is less racially diverse than the general U.S. population. As shown in the Table 10, the majority of residents living in the 6-county area self-identifies as white alone. Even though the region containing BSSG habitat is predominately white, smaller minority populations continue to exist. American Indians account for nearly three percent of study area residents. Although this appears to be a relatively small proportion of residents, it is substantially higher than the national share (0.8 percent of US residents identify as American Indian or Alaska Native). Local American Indian populations are highly concentrated in Alpine County, CA (20 percent) and Mineral County, NV (13 percent).

Vulnerable groups within the planning area may also include low-income individuals and households living in poverty. Poverty is an import indicator of both economic and social well-being. Individuals with low incomes are more vulnerable to a number of hardships which may negatively affect their health, cognitive development, emotional well-being, promote socially unacceptable behavior, and stifle school achievement (Williams 1984, Patterson 1991, Haan et. al 1986, Battistich et. al 1995, Farrington 1995, Chung 2004, and Hopson and Lee 2011). Poverty rates for all geographic regions are reported below. Although overall poverty rates for the 6-county study area are comparable to those at the national level, many local residents continue to struggle with poverty. Poverty rates for individuals and households in Esmeralda, Mineral, and Nye counties are high in comparison to rates for the general U.S. population. Given the high

<sup>3</sup> The ACS is a nation-wide survey conducted every year by the Census Bureau that provides current demographic, social, economic, and housing information about communities every year—information that until recently was only available once a decade. The ACS is not the same as the decennial census, which is conducted every ten years (the ACS has replaced the detailed, Census 2000 long-form questionnaire).

poverty rates in these counties, it is important to consider the impact of alternative management scenarios on local income, and the potential effect on low income populations.

**Table 11: Percent of Population below the Poverty Level, All Ages**

	People Below Poverty	Families Below Poverty
<b><u>California</u></b>		
Alpine County	14%	2%
Mono County	9%	5%
<b><u>Nevada</u></b>		
Douglas County	10%	7%
Esmeralda County	24%	16%
Lyon County	14%	11%
Mineral County	23%	12%
<b>United States</b>	<b>15%</b>	<b>11%</b>

Source: U.S. Census Bureau, 2012

Based on the minority status data presented above, environmental justice issues appear unlikely. However, even in counties with relatively small minority populations, disproportionate impacts to vulnerable groups may occur. The impact analysis will consider the potential for Forest Service and BLM management actions to adversely affect all area residents, with particular attention to any potential disproportionate impacts on minority and/or low-income residents.

## Environmental Consequences

The previous sections assessed social and economic conditions and trends. The following section will consider the potential consequences of alternative management scenarios on the social and economic environment.

### *Methodology and Assumptions*

For the analysis of economic impacts, quantitative estimates are provided where sufficient data or estimates are available. The effects of management actions to protect BSSG habitat (including buffer zones and timing limitations) on local employment and labor income levels were estimated using a customizable input-output model known as IMPLAN Professional Version 3.0 and the Forest Economic Analysis Spreadsheet Tool (FEAST), with 2012 data. Input-output models provide a means of examining relationships within an economy, both between businesses and between businesses and final consumers, so that net changes in economic activity as a result of a decision, event, or policy can be assessed. The resulting mathematical representation allows one to examine the effect of a change in one or several economic activities on an entire economy, all else constant. This examination is called impact analysis and the input-output modeling tool most commonly used by the Forest Service is IMPLAN. The IMPLAN modeling system allows the user to build regional economic models of one or more counties for a particular year. IMPLAN translates changes in final demand for goods and services into resulting changes in economic effects, such as labor income and employment of the affected area's economy.

In addition to economic impacts, management actions to protect BSSG habitat may also have social consequences which may not be reflected in traditional labor statistics. Potential social impacts are discussed qualitatively and address how management actions under the alternatives may affect traditional and cultural ties to federal lands within the area of influence.

### *Assumptions*

The following list presents the basic assumptions related to the social and economic analysis of potential impacts resulting from management actions to protect BSSG under the alternatives.

- The analysis of economic impacts of management alternatives on grazing uses billed AUMs as a baseline, estimated as a five-year average. Active AUMs measure the amount of forage from land available for grazing. Forest Service terms this measure “permitted” AUMs. While these measures reflect grazing potential, annual use fluctuates based on various environmental and market conditions. Billed AUMs measure the amount of forage for which BLM and Forest Service bill annually and is a better indicator of actual use. Forest Service uses the term “authorized” AUMs for the same concept. The analysis uses two scenarios to describe a range of potential economic impacts of management alternatives on economic activity related to livestock grazing.
- The analysis of federal mineral resources analyzes how future mineral development within the amendment area may change as a result of management actions proposed under the alternatives to protect BSSG. Development scenarios were developed by the minerals specialist based on current production, proposals for development, and nominations for additional minerals leasing. This analysis recognizes valid and existing rights and focuses on those mineral resources which are anticipated to be directly affected by proposed actions.
- This analysis does not address oil and gas development. There are no existing oil and gas leases within the study area, and the potential for future development in areas that overlap BSSG habitat is minimal. The BLM also has not received any nominations for development on BSSG habitat in the study area, and does not anticipate receiving any such applications. Therefore, there are not anticipated to be any economic impacts associated with oil and gas development across any of the alternatives.

### **Incomplete and Unavailable Information**

At the scale of this project there is little data that can be used to determine the potential effects at the local or household scale. As a result the analysis of potential effects is presented at the large study area.

Data on recreational visits to Forest Service and BLM lands is only available at the Forest and District Office level. Since baseline visitation to the amendment area could not be disaggregated from total visitation to the Humboldt-Toiyabe NF and BLM lands within the Battle Mountain and Carson City Districts, economic activity and potential impacts from changes in recreation management could not be measured.

Information on the purchase price of previous geothermal lease sales was unavailable at the time of this analysis. Without this information, anticipated federal, state, and county revenue from geothermal leasing under the alternatives could not be estimated.

### **Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis**

The cumulative effects analysis area for this project is the study area boundaries. Within the study area there are few projects that, when combined with the potential effects of the proposed

action, meet the spatial or temporal conditions to be considered for cumulative effects. The few projects that may contribute incremental effects to the economic conditions in the study area include the Forest Plan Revision effort being conducted on the Inyo National Forest and the Resource management Plan Revision effort being conducted on the Carson City District.

The Inyo National Forest Land and Resource management Plan Revision process is considering the addition of similar regulatory mechanisms for the management of lands and resources in grouse habitat. The resulting Forest plan may result in a moderate increase of effect on the local economies by extending the overall area where new regulatory mechanisms would be applied. The BLM Resource Management Plan revision on the other hand should not result in increased economic effects on local economies. The BLM effort will adopt the regulatory mechanisms analyzed in this analysis and apply them to the grouse habitat on the Carson and Battle Mountain districts. The effects to these areas are considered in the Analysis of direct and indirect effects not cumulative.

Two other recent projects may also have an overall positive impact on local economies. These are the recent Humboldt-Toiyabe Geothermal Leasing EIS, and the West-wide solar energy EIS being conducted by the BLM. Both projects set sideboards for the leasing and development of alternative energy sources on NFS lands and BLM public lands. This project identifies regulatory mechanisms for activities within grouse habitat. Those future projects associated with either the geothermal or the solar energy EIS will be required to follow the regulatory guidelines outlined in this document.

There are no regulatory mechanisms outlined in this EIS that would prohibit development of geothermal or solar energy sources. Identified regulatory mechanisms may require mitigations to avoid long term discrete negative impacts but implementation of these could have a positive impact to the local economy by introducing growth to economic sectors related to habitat restoration.

## *Alternative A – The No Action Alternative*

### **Direct Effects**

Alternative A is the no action alternative. Under this alternative, there would be no change to current management direction or the economic well-being of the study area. Although many of the regulatory mechanisms identified in the proposed amendment are already being applied to projects proposed in BSSG habitat, current Forest Service Forest Plans and BLM Resource Management Plans do not guarantee that mitigations will be consistently applied for each project type that occurs on public lands. Since there will be no formal change in the management of the amendment area under this alternative, resource use and associated economic activity with resources within the amendment area will be similar to those discussed in the existing conditions.

### *Effects to Livestock Grazing*

Alternative A, the no action alternative, will not change the current grazing management in the amendment area. Domestic livestock grazing would continue under the terms and conditions of current grazing permits until updated by allotment level NEPA analyses. Since grazing potential for allotments containing BSSG habitat would continue to be 85,886 AUMs annually, this alternative would not impact the ability of livestock operators to fully utilize permitted AUMs. If permitted AUMs on allotments within the amendment area were fully utilized, the resulting economic activity would support approximately 128 jobs (direct, indirect, and induced) and \$2.4

million in wages and proprietor's income in the seven-county study area. Although permit holders have the right to fully utilize permitted federal forage, many local ranchers have taken voluntary reductions in recent years in order to maintain long-term range conditions. Over the past five years Forest Service and BLM have billed for less than half of all AUMs permitted within the amendment area. On annual average, there are 21,467 cattle AUMs and 13,661 sheep AUMs billed on active allotments in the amendment area. This forage is estimated to support 73 jobs (direct, indirect, and induced) and \$1.3 million in local income within the six counties.

Under Alternative A, permit holders will continue to pay federal grazing fees equal to \$1.35 per AUM. On annual average grazing fees associated with the amendment area are anticipated to generate more than \$47,000 in federal revenue. In accordance with federal and state statutes, a portion of this revenue will be distributed back to state and local governments. Twenty-five percent of federal revenue from livestock grazing on Forest Service lands is distributed back to Nevada and California to fund public schools and roads in the county when revenue was generated (16 U.S. Code § 500). The redistribution of federal grazing fees from BLM lands depends on whether grazing allotments reside within or outside of a grazing district. Fifty percent of federal grazing fees on section 15 (outside grazing district) and 12.5 percent of revenue from section 3 (inside a grazing district) are distributed back to the state under the Taylor Grazing Act. In Nevada, money derived revenue from the Taylor Grazing Act shall be deposited in the State Treasury in a special fund designated the Nevada Taylor Grazing Act Range Improvement Fund and distributed back to counties proportionately for range improvement projects (NV Rev Stat § 568.030).

Since annual permitted use levels will remain unchanged under Alternative A, the modified proposed action is not anticipated to have any measurable effect on the social environment of surrounding communities. The combination, timing, and location of conservation practices under this alternative may have short-term disparate effects on individual permit holders, access to federal forage on the 87 allotments in amendment area will continue to support traditional uses and values associated with the ranching way of life. By promoting the long-term health and viability of the project area, management tools implemented to achieve goals and objectives under Alternative A will reinforce the longstanding bonds between local ranching families and these rangelands. In doing so, management practices under this alternative will contribute to the preservation of ranching heritage and community values associated with livestock production.

#### *Effects to Mineral Exploration & Development*

Under the no action alternative mineral activities with the amendment area would proceed without any changes. The BLM would continue to use the Instruction Memorandum NV-2013-009 for Bi-State Sage Grouse for Minerals Activities until a plan amendment can be completed. On annual average there are 17,000 active mining claims within the amendment area. As described in the existing conditions, mining within the amendment area includes gold, silver, lithium carbonate, diatomite, sand, and gravel. Minerals specialists expect that the production of gold, silver, diatomite, sand, and gravel would remain the same across all alternatives. Active mining claims are subject to an annual maintenance fee of \$155 per claim. These revenues are paid to the Treasury Department and put into a general fund to cover the cost of mine reclamation projects across the West. On annual average, maintenance fees associated with active claims within the amendment area generate more than \$2.6 million. Although there are no statutes which require these revenues to be used for reclamation projects in counties where fees were generated, some federal funds collected through claim maintenance fees are spent on projects within the six-county area.

In addition to locatable minerals, 7,614 acres of geothermal resources in the Bridgeport District are leased and anticipated to be developed over the next ten to fifteen years. Proposals to develop these leases will undergo project level NEPA analysis and will be required to include design criteria to mitigate adverse effects on BSSG. Under this alternative, 22,174 acres of pending geothermal lease nominations within the Bridgeport District and would be made available for leasing with NSO stipulations in habitat. All commercial development of geothermal leases will have to be developed outside of BSSG habitat. Based on the RFD for the amendment area, potential geothermal projects within the amendment area could eventually produce 25MW of commercial electricity annually.

Federal, state, and county revenue would be generated from the leasing and production of 7,614 acres of geothermal resources currently leased, and the pending additional 22,174 acres of geothermal minerals which would be made available for leasing upon completion of this EIS. In accordance with the Energy Policy Act of 2005, a portion of geothermal revenues from lease sales, annual lease rents, and royalties on commercial production are distributed back to state and local governments. Under this statute the federal government retains 25% of the revenues from royalties and leasing, 50% total revenue is distributed back to states to plan, construct, and maintain public facilities and provide public services and the remaining 25% is returned to counties where federal leasing and royalty revenue was generated.

While economic activity associated with mineral resources within the amendment area is estimated to support 217 jobs<sup>4</sup> and \$11.4 million in wages and proprietor's income on annual average within the six-county local economy, these estimates likely under state the total economic contribution of amendment area minerals to the local economy. Under Alternative A, additional local employment and income would be supported by saleable and locatable minerals extracted from the amendment area and from the redistribution of federal revenue from future geothermal leasing and development. While these economic contributions could not be estimated because of data limitations, it is important to acknowledge that additional local employment and income may be associated with federal minerals within habitat areas.

### *Effects to Recreation & Special Uses*

Under Alternative A, recreation management would continue under current guidance and policy and existing recreation opportunities in the study area would be maintained. People would continue to recreate on public lands as they have done in the past. Recreational experiences supported by Forest Service and BLM lands within the amendment area would continue to contribute to the overall quality of life enjoyed by local residents and stimulate economic activity throughout the local economy. As discussed in the existing conditions, recreationists traveling to these areas spend money in the local economy and stimulate employment and income in numerous industrial sectors that support the travel and tourism industry. Although the level of employment and income directly attributed to visitation to the amendment area could not be estimated, the magnitude and importance of these economic contributions to rural communities surrounding the amendment area are not anticipated to change under the no action alternative.

Issuance of recreation special uses and lands authorizations would continue using Forest Plan direction, interim guidance, and existing policy and direction. Site-specific environmental analysis would determine stipulations, timing, and location of use. Since access would not be limited seasonally, permanently or through modifications of permits except through normal

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<sup>4</sup> These jobs include and full-time, part-time, and temporary jobs directly, indirectly, and induced by mineral development within the amendment area.

permitting processes; Alternative A would not result in impacts to revenue of commercial outfitters or managing agencies attributable to BLM SRPs and Forest Service SUAs.

### Cumulative Effects

There would be no cumulative effects associated with the No Action Alternative since there are no direct or indirect effects to the economy in the study area associated with this alternative. It is speculative to draw conclusions from the limited data available. Census data provide an indication of trends over the past few years, but they do not provide a clear picture of future trends. For the data available the trends visible are a decrease in the agricultural sector and the increase in recreation and accommodation sectors. No Action would maintain a status quo that has been in place since the current management direction was adopted.

## *Alternative B – The Modified Proposed Action*

### Direct Effects

Alternative B is the modified proposed action. This alternative includes more specific standards and guidelines identified for managing anthropogenic uses and to meet Goal 2: *Bi-state sage grouse and their habitats will benefit from standards and guidelines adopted to eliminate or reduce negative impacts and increase positive impacts from discretionary and non-discretionary actions.*

### *Effects to Livestock Grazing*

Alternative B contains multiple standards and guidelines that are designed to eliminate or reduce negative impacts from domestic livestock grazing. Although there would be no change in the amount of BSSG habitat open for grazing, or in the number of AUMs permitted, the restrictive utilization standards under this alternative may force local livestock management practices to change. Under this alternative permitted use within the amendment area would remain at 85,886 AUMs a year until further site specific analysis was conducted. While permitted use levels will remain constant, reduced allowable utilization in BSSG habitat will likely have a direct affect livestock grazing.

Compliance with new utilization standards proposed under Alternative B may result in changes in grazing systems, increased herding of livestock, shortened seasons of use, or reductions in permitted livestock numbers. The extent to which management actions under Alternative B will further contribute to disparities between permitted and billed use within the amendment area is unclear. While permitted use will remain constant, adjustments in seasonal use and restrictions on the construction of range improvements may further restrict the ability of livestock operators to fully utilize permitted AUMs. Over the long-run, implementation of Alternative B is anticipated to move rangeland conditions toward the BSSG habitat desired conditions which could increase vegetation productivity and forage production.

Economic activity and federal grazing fees associated with livestock grazing within the amendment area would be less under Alternative B than under Alternative A. Since site specific analysis is needed to determine how restrictions under this alternative will affect allotment use, changes in local employment, income, and county revenue from the redistribution of federal grazing fees cannot be quantified at this time.

In addition to potential adverse economic impacts, reduced access to federal forage under Alternative B may have adverse social impacts which threaten the ranching way of life. The financial burden of trying to offset federal forage losses with more expensive private or supplement feed may force some local ranchers to transition land and other ranch resources from livestock production to other agricultural uses or abandon agricultural practices all together. Shifts away from these longstanding agricultural land uses may threaten traditional values of local ranchers and inhibit future generation's ability to learn and connect with the heritage of their ancestors.

### *Effects to Mineral Development*

More restrictive standards and guidelines would be implemented under Alternative B to improve vegetation conditions and to minimize negative impacts and increase positive impacts from discretionary and non-discretionary actions. Under this alternative new leases, APD's, and utilization plans would still be authorized after completion of site specific NEPA, but would be subject to standard stipulations which would mitigate adverse effect on sage grouse. Since valid existing rights apply, only new development (including proposals for mine expansion) would be subject to standards and guidelines implemented under this alternative

While these standards and guidelines with only have minor impacts on oil & gas exploration and production they would have a much greater impact on geothermal exploration and production. Consequently most geothermal exploration would likely take place outside of habitat. Solid leasable minerals would not be expected to be permitted in habitat but existing gravel pits would continue some level of seasonal production most likely. Locatable minerals would have impacts from site specific NEPA and likely seasonal restrictions and other mitigations.

Since valid existing rights apply, Alternative B is anticipated to have any effect on current gold, silver, lithium carbonate, diatomite, sand, and gravel production within the amendment area. Minerals specialists expect that the production of gold, silver, diatomite, sand, and gravel would remain the same across all alternatives. On annual average, there would continue to be 17,000 active mining claims within the amendment area and these claims would continue to require an annual maintenance fee of \$155 per claim which paid to the federal government and put into a general fund to cover the cost of mine reclamation projects across the West. On annual average, maintenance fees associated with active claims within the amendment area would generate more than \$2.6 million for the Abandoned Mine Reclamation Fund. Although there are no statutes which require these revenues to be used for reclamation projects in counties where fees were generated, some federal funds collected through claim maintenance fees are spent on projects within the six-county area.

In addition to locatable minerals, 7,614 acres of geothermal resources in the Bridgeport District are leased and anticipated to be developed over the next ten to fifteen years. Proposals to develop these leases will undergo project level NEPA analysis and will be required to include design criteria to mitigate adverse effects on BSSG. Under this alternative, 22,174 acres of pending geothermal lease nominations within the Bridgeport District and would be offered for lease subject to these standards and guidelines. All commercial development of geothermal leases will have to be developed outside of BSSG habitat. Based on the RFD for the amendment area, potential geothermal projects within the amendment area could eventually produce 35MW of commercial electricity annually.

Federal, state, and county revenue would be generated from the leasing and production of 7,614 acres of geothermal resources currently leased, and the pending additional 22,174 acres of geothermal minerals which would be made available for leasing upon completion of this EIS. In accordance with the Energy Policy Act of 2005, a portion of geothermal revenues from lease sales, annual lease rents, and royalties on commercial production are distributed back to state and local governments. Under this statute the federal government retains 25% of the revenues from royalties and leasing, 50% total revenue is distributed back to states to plan, construct, and maintain public facilities and provide public services and the remaining 25% is returned to counties where federal leasing and royalty revenue was generated.

While economic activity associated with mineral resources within the amendment area is estimated to support 252 jobs<sup>5</sup> and \$10.4 million in wages and proprietor's income on annual average within the seven-county local economy, these estimates likely under state the total economic contribution of amendment area minerals to the local economy. Under Alternative A, additional local employment and income would be supported by saleable and locatable minerals extracted from the amendment area and from the redistribution of federal revenue from future geothermal leasing and development. While these economic contributions could not be estimated because of data limitations, it is important to acknowledge that additional local employment and income may be associated with federal minerals within habitat areas.

### *Recreation*

Recreation could potentially be affected by implementation of Alternative B. Changes in recreation settings and opportunities could result from implementation of the standards and guidelines in the proposed action. Timing limitations and limitations placed on construction could result in corresponding changes in the certain types of recreation opportunities to that depend on free unmanaged access and desired recreation experiences and associated benefits. Recreational experiences most likely to be affected by management actions under Alternative B are motorized.

Opportunities for motorized recreation are limited to BLM lands within the amendment area. Although management activities included in the modified proposed alternatives could affect OHV use, the effects are not projected to be substantial. Under this alternative, all acres of open designation on BLM lands would remain available for OHV use. Agency recreation specialists anticipate that timing and location limitations may inconvenience some recreationists, but will not result in measurable impacts on recreation visitor days. Since management actions under this alternative are not anticipated to have a net effect on annual recreational visits to the amendment area, economic activity associated with recreation to the amendment area would be similar to activity under Alternative A. Recreation related spending by visitors to the amendment area would continue to attract new money to rural communities and support local employment and income across the seven counties.

All OHV events would continue to be analyzed under site specific environmental analysis. All permits and proposals would be evaluated and modified if necessary under the existing interim direction for both agencies. Permit modifications are anticipated to be minor and may include stipulations on the location and timing of events. Since the majority of organized OHV events occur after leking, and the distance needed to avoid sensitive habitat is relatively small, event organizers would likely be able to avoid impacts altogether without incurring addition costs. Thus, Alternative B is not anticipated to result in a loss of commercial revenue to recreation

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<sup>5</sup> These jobs include and full-time, part-time, and temporary jobs directly, indirectly, and induced by mineral development within the amendment area.

service providers, or a loss of permit-generated fee revenue for the BLM and Forest Service as managing agencies.

## Cumulative Effects

The social and economic environment in which we live is constantly changing in response to local, regional, and national, and global factors. While census data may provide an indication of recent social and economic trends, it does not attempt to forecast future social or economic conditions. Although social and economic conditions of the seven-county study area may continue to change over the next 15 years, management actions proposed under Alternative B are anticipated to provide Forest Service and BLM with the flexibility and authority to manage amendment area resources to mitigate adverse effects on BSSG habitat and populations while continuing to support mandated Multiple Uses which contribute to the health and well-being of local communities.

Recent trends indicate that the region's economic base is slowly transitioning from the agricultural sector to the service sector which the region's growing travel and tourism industry. Although management actions proposed under Alternative B would continue to support agricultural and recreational uses on Forest Service and BLM lands within the amendment area, range management under this alternative is recognized as having a potentially negative cumulative effect on the social and economic climate of the seven-county study area.

While an allocation decision is not being made in this EIS, standards and guidelines proposed under Alternative B are anticipated to have a direct and indirect effect on forage use within the amendment area. More restrictive livestock grazing on the 87 allotments which contain BSSG habitat has the potential to be detrimental to social and economic vitality of smaller agricultural communities within the seven-county study area. The degree to which more restricted use of allotments in BSSG habitat will have cumulative effects on local communities and the regional Agricultural sector depends largely on permittees' ability to adapt to standards and guidelines which may restrict their ability to utilize grazing rights authorized under federal grazing permits. While ranchers may choose to: (a) graze on their own properties if they have sufficient grazing land; (b) find and secure private pasture and rangeland leases during summer months; (c) purchase hay and grains to replace forage in winter, early spring, or late fall; additional costs to secure additional range or supplemental feed may force some local ranchers to drastically reduce herd sizes or stop livestock production all together.

In addition to potential adverse cumulative economic impacts, reduced access to federal forage under Alternative B may have adverse social impacts which threaten the ranching way of life. The financial burden of trying to offset federal forage losses with more expensive private or supplement feed may force some local ranchers to transition land and other ranch resources from livestock production to other agricultural uses or abandon agricultural practices all together. Shifts away from these longstanding agricultural land uses may threaten traditional values of local ranchers and inhibit future generation's ability to learn and connect with the heritage of their ancestors.

There are not anticipated to be any cumulative social or economic effects from standards and guidelines proposed under Alternative B.

## *Alternative C – The Conservative Alternative*

### Direct Effects

Under this alternative, standards and guidelines that are more conservation oriented and more restrictive to lands/recreation activities are proposed in order to meet Goal 2: *Bi-state sage grouse and their habitats will benefit from standards and guidelines adopted to eliminate or reduce negative impacts and increase positive impacts from discretionary and non-discretionary actions*

### *Livestock Grazing*

Alternative C would close all grazing allotments containing BSSG habitat. In the absence of grazing activities, no grazing fees would be collected and no local employment or labor income would be supported by livestock grazing on the 87 allotments within the amendment area. The prohibition of livestock grazing on these allotments would reduce local operators' access to affordable forage. Although forage provided by these allotments account for only a small portion of the annual forage needed to support local herds, forage on Forest Service and BLM allotments in the amendment area offset more expensive hay and grain feed during critical times of the year. To compensate for these forage losses permit holders would have to supplement forage with more expensive feed or find and graze on other private lands at an increased fee. Without access to federal forage, many producers would be forced to drastically reduce their herd sizes or cease livestock production all together.

The elimination of livestock grazing on these Federal public lands would create a ripple effect in the local economy which would adversely affect employment and income in three ways: (1) direct effects attributable to employment associated with the ranches; (2) indirect effects attributable to industries that supply materials, equipment, and services to the ranches; and (3) induced effects attributable to personal spending by the ranch owners, employees, families, and supporting industries. In this manner, elimination of federal grazing within the amendment area has the potential to effect employment and income in nearly every sector of the seven-count local economy.

The potential social consequences of eliminating livestock grazing on federal lands within the amendment area are not fully captured in traditional measures of employment and income. Socially, livestock ownership and ranch life is a way of life. For most ranching families, raising livestock is more of a tradition deeply rooted in their personal history than a job. Increased costs to feed and raise livestock may threaten the traditional values associated with ranch life and cause shifts away from longstanding agricultural land uses. As more lands are taken out of agricultural production, future generation's ability to learn and connect with the heritage of their ancestors will continue to decline.

### *Mineral Development*

Similar to Alternative B, standards and guidelines implemented under Alternative C would include additional restrictions on proposed and existing activities in the amendment area to improve vegetation conditions and mitigate adverse effects of mineral development on BSSG habitat and populations. Standards and guidelines under Alternative C would be more conservative than those proposed under Alternative B.

Many of the operating mines, existing gravel pits, and exploration projects would continue operating for a while but new proposals in habitat would be significantly curtailed on both discretionary and nondiscretionary project proposals under Alternative C. If implemented, the

Forest Service would petition the BLM to withdraw the locatable mineral rights subject to valid existing claims from the habitat area. Once the withdrawal was completed no new claims would be valid. Although current mining operations would not likely be impacted by the withdrawal of the mineral rights, their expansion and exploration potential would be substantially reduced.

The impacts to locatable mineral exploration and mining would be considerable. Valid existing rights followed by Surface Use Determinations and/or Validity exams would be performed on all new proposals for exploration and on existing mining claims. Although minerals specialists expect that the production of gold, silver, diatomite, sand, and gravel would remain the same across all alternatives, validity examines are expected to adversely affect mining of lithium carbonate because nearly one-third of lithium claims are located in BSSG habitat. These validity exams would likely indicate many of the claims in habitat are invalid and create additional uncertainty around plan operation approvals, causing a 20 percent annual decline in the number of active mining claims within the amendment area over the next 10 to 15 years. On annual average, active mining claims within the amendment area would drop to 5,467 claims over the next 15 years. These claims would continue to require an annual maintenance fee of \$155 per claim which paid to the federal government and put into a general fund to cover the cost of mine reclamation projects across the West. On annual average, maintenance fees associated with active claims within the amendment area generate more than \$76,000. Although there are no statutes which require these revenues to be used for reclamation projects in counties where fees were generated, some federal funds collected through claim maintenance fees are spent on projects within the six-county area.

In addition to locatable minerals, 7,614 acres of geothermal resources in the Bridgeport District are leased and anticipated to be developed over the next ten to fifteen years. Proposals to develop these leases will undergo project level NEPA analysis and will be required to include design criteria to mitigate adverse effects on BSSG. Under this alternative, 22,174 acres of pending geothermal lease nominations within the Bridgeport District and would be offered for lease subject NSO stipulations in habitat areas. All commercial development of geothermal leases will have to be developed outside of BSSG habitat. Based on the RFD for the amendment area, potential geothermal projects within the amendment area could eventually produce 15MW of commercial electricity annually under this alternative.

Federal, state, and county revenue would be generated from the leasing and production of 7,614 acres of geothermal resources currently leased, and the pending additional 22,174 acres of geothermal minerals which would be made available for leasing upon completion of this EIS. In accordance with the Energy Policy Act of 2005, a portion of geothermal revenues from lease sales, annual lease rents, and royalties on commercial production are distributed back to state and local governments. Under this statute the federal government retains 25% of the revenues from royalties and leasing, 50% total revenue is distributed back to states to plan, construct, and maintain public facilities and provide public services and the remaining 25% is returned to counties where federal leasing and royalty revenue was generated.

While economic activity associated with mineral resources within the amendment area is estimated to support 160 jobs<sup>6</sup> and \$8.5 million in wages and proprietor's income on annual average within the six-county local economy, these estimates likely under state the total economic contribution of amendment area minerals to the local economy. Under Alternative C, additional local employment and income would be supported by saleable and locatable minerals extracted

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<sup>6</sup> These jobs include and full-time, part-time, and temporary jobs directly, indirectly, and induced by mineral development within the amendment area.

from the amendment area and from the redistribution of federal revenue from future geothermal leasing and development. While these economic contributions could not be estimated because of data limitations, it is important to acknowledge that additional local employment and income may be associated with federal minerals within habitat areas.

### *Recreation*

Recreation opportunities could be affected the most under implementation of Alternative C. Restrictions on seasons, locations, and access could change the way people recreate in the amendment area. A small number of acres within the amendment area would be closed for cross-country OHV recreation, and users that enjoy this type of recreation would be displaced to other locations or would be limited to designated roads and trails. Although the quality and quantity of motorized recreational experiences in the amendment area may adversely affected by management actions under Alternative C, opportunities for non-motorized recreation, such as hiking, horseback riding, and hunting, in a more natural or primitive setting may be expanded and enhanced. It is unclear to what extent additional non-motorized recreational opportunities could offset losses in motorized use. While management actions under alternative C may cause displacement, overall visitation is not anticipated to change much because the amendment area contains a number of substitute sites that would suit visitors' needs.

All OHV events would continue to be analyzed under site specific environmental analysis. Overall changes in the number of BLM SRPs and Forest Service recreation permits from standards and guidelines proposed under Alternative C are anticipated to be relatively small. Permit modifications under Alternative C would include more extensive stipulations on the location and timing of OHV events than under Alternative B. While there would be numerous alternative locations for OHV events and outfitter-guide activities outside of BSSG habitat, permit holders who still wanted to hold events or guide clients would need to identify alternative locations and routes to minimize adverse effects on BSSG. Permit holders and applicants could incur additional costs and longer timelines in order to obtain permission for their events and some past OHV event participants might be deterred by changes in event locations and timing. Although changes in recreational activity within the amendment area may result from the implementation of Alternative C, is not possible to quantify these economic effects.

### **Cumulative Effects**

The social and economic environment in which we live is constantly changing in response to local, regional, and national, and global factors. While census data may provide an indication of recent social and economic trends, it does not attempt to forecast future social or economic conditions. Restrictive standards and guidelines proposed under Alternative C would have direct and indirect effects on the social and economic would eliminate livestock grazing and significantly reduce mineral exploration and development within the amendment area.

Alternative C is anticipated to have a direct effect on forage use within the amendment area. The prohibition of livestock grazing on the 87 allotments which contain BSSG habitat would be detrimental to the social and economic vitality of smaller agricultural communities within the seven-county study area. The degree to which closing allotments in BSSG habitat to livestock grazing will have cumulative effects on local communities and the regional Agricultural sector depends largely on permittees' ability to adapt to standards and guidelines which may restrict their ability to utilize grazing rights authorized under federal grazing permits. While ranchers may choose to: (a) graze on their own properties if they have sufficient grazing land; (b) find and secure private pasture and rangeland leases during summer months; (c) purchase hay and grains

to replace forage in winter, early spring, or late fall; additional costs to secure additional range or supplemental feed may force some local ranchers to drastically reduce herd sizes or stop livestock production all together.

In addition to potential adverse cumulative economic impacts, eliminating access to federal forage under Alternative C may have adverse social impacts which threaten the ranching way of life. The financial burden of trying to offset federal forage losses with more expensive private or supplement feed may force some local ranchers to transition land and other ranch resources from livestock production to other agricultural uses or abandon agricultural practices all together. Shifts away from these longstanding agricultural land uses may threaten traditional values of local ranchers and inhibit future generation's ability to learn and connect with the heritage of their ancestors.

New restrictive standards, guidelines, and stipulations associated with mineral development in the amendment area also have the potential to generate adverse cumulative effects. Although many of the operating mines, existing gravel pits, and exploration projects would continue operating, discretionary and nondiscretionary actions are anticipated to significantly inhibit locatable mineral exploration, mining, and future geothermal development within the amendment area. While some extraction activities can move outside BSSG habitat and have little effect on overall economic activity within the mining sector, the only lithium mine operating in the U.S. is largely located in the amendment area and would only have limited ability to shift production out of habitat areas. Validity exams and restrictions on mine expansion are anticipated to negatively affect the mine's ability to extract lithium carbonate over the long-run. Since overall lithium production in the U.S. would decline as mining activities in the amendment area became more restrictive, these restrictions would have a net-effect on the local mining sector and adversely affect national and global lithium supplies.

Potential cumulative effects associated with changes in recreation under this alternative are anticipated to be minimal. The degree to which new standards and guidelines for recreation within the amendment area will create cumulative effects depends on recreationists' ability to adapt timing and location restrictions. Although management actions proposed under this alternative may affect the mix of recreational experiences supported by the amendment area, the region is believed to contain sufficient substitute recreation sites to continue to provide a wide range of opportunities for motorized and non-motorized recreation. Management actions proposed under other federal public lands planning efforts in the region may adversely affect substitute recreation sites' ability to support opportunities for activities inhibited within the amendment area. As a result, regional opportunities for some recreational motorized uses may be reduced in the long-run. Potential long-run net losses in overall regional recreation could have an adverse effect on employment and income in the region's service sector.

### *Alternative D – Fluid Minerals only*

This alternative only applies to Fluid Minerals with includes geothermal and oil & gas.

Under this alternative BSSG habitat would be closed to additional fluid mineral leasing. All parcels located in BSSG habitat currently nominated for leasing would be deferred and the development of federal fluid mineral resources would have to come some distance outside habitat. Restrictions on leasing and development of fluid minerals within BSSG habitat would adversely affect the potential for commercial geothermal energy production in the amendment

area. Under this alternative, development of geothermal resources in the amendment area could result in the commercial production of 10 MW of geothermal energy. While additional economic impacts would be generated from the construction and operation expenditures for geothermal electricity development, the commercial production of 10 MW anticipated under this alternative is estimated to support approximately 30 jobs and \$1.5 million in wages across the six-county study area on annual average over the next 15 years..

The leasing and development in fluid minerals under Alternative D would generate federal revenue from lease sales, annual lease rents, and royalties on commercial production. In accordance with the Energy Policy Act of 2005, a portion of geothermal revenues are distributed back to state and local governments. Under this statute the federal government retains 25% of the revenues from royalties and leasing, 50% total revenue is distributed back to states to plan, construct, and maintain public facilities and provide public services and the remaining 25% is returned to counties where federal leasing and royalty revenue was generated. Since leasing and production of geothermal resources would be lowest under this alternative, Alternative D is anticipated to produce the least amount of federal, state, and county revenue from activities associated with fluid minerals within the amendment area.

### Cumulative Effects

Cumulative effects associated with Alternative D would be minimal. Since this alternative inhibits future fluid mineral exploration and development in BSSG habitat, reduced access and ability to develop high potential geothermal resources in these areas may limit growth in the region's budding geothermal industry. Since large amounts of high potential geothermal resources exist outside BSSG habitat, restrictions on exploration and development in the amendment area is anticipated to have a relatively small effect on regional geothermal activities over the next 10 to 15 years.

### Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

All alternatives considered are in full compliance with relevant laws, regulations, policies and the Forest Plan.

### Other Relevant Mandatory Disclosures

**Environmental Justice (Executive Order [EO] 12898):** During the course of this analysis, none of the alternatives considered resulted in any identifiable effects or issues specific to any minority or low-income population or community. The agency considered all public input from persons or groups regardless of age, race, income status, or other social/economic characteristics. Examination of community composition, as required under EO 12898, found no minority or low-income communities to be disproportionately affected under any of the alternatives. This was not raised as an issue during scoping.

**Civil Rights:** U.S. Department of Agriculture civil rights policy requires each agency to analyze the civil rights impact(s) of policies, actions, or decisions that will affect federally conducted and federally assisted programs and activities. A civil rights impact analysis facilitates the identification of the effects of eligibility criteria, methods of administration, or other agency-imposed requirements that may adversely and disproportionately impact employees or program beneficiaries based on their membership in a protected group. Protected groups include multiples of similarly situated persons who may be distinguished by their common race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status,

religion, sexual orientation, genetics, political beliefs, or receipt of income from any public assistance program. During the course of this analysis, none of the alternatives considered resulted in any identifiable effects or issues specific to any minority or low-income population or community. The agency considered all public input from persons or groups regardless of age, race, income status, or other social/economic characteristics. Examination of community composition, as required under EO 12898, found no minority or low-income communities to be disproportionately affected under any of the alternatives.

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