

Socio-Economics

Introduction

The social and economic analysis incorporates in its entirety the Apache-Sitgreaves National Forests Economic and Social Sustainability Assessment (USDA Forest Service 2009). The analysis was completed in 2009 (hereafter referred to as the sustainability analysis) for land management planning purposes and is the best available science to assess the forests contribution to economic and social sustainability within the assessment area. The assessment area is Apache, Navajo, Coconino and Greenlee Counties in Arizona and Grant and Catron Counties in New Mexico. For the purposes of evaluating how travel management decisions may affect social and economic outputs, this information provides the most comprehensive and relevant data.

Methodology

Principles of economic impact analysis are relied upon to estimate the effects of ASNFs travel management alternatives on the economic environment of the study area. “Economic impact analyses seek to determine short-term effects that Forest Service programs have on economic conditions in defined impact areas in which the planning area occurs” (FSM 1900). As prescribed by FSM 1900, short-term effects are those that occur during the first 10 years of a longer planning cycle.

Models of the local economy were built using IMPLAN Professional 2.0 software and 2007 data. IMPLAN was utilized to develop response coefficients which estimate the level of jobs and income generated per thousand visits by activity type. The response coefficients are then input into the Travel Management Economic Contribution Application (TMECA). TMECA is a spreadsheet that uses these response coefficients along with data collected from the 2001 NVUM survey to estimate the local economic contribution of different types of recreational activities based on whether the recreationists stayed only for a day or overnight (http://fsweb.ftcol.wo.fs.fed.us/imi/economic_center/Travel%20Management%20Economics_economics.html).

Relevant Laws, Regulations and Policy that Apply

Forest Service Manual 1900 provides direction for implementing the National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations.

Title 36 CFR 212: provides direction for the administration of the Forest Transportation System; the designation of roads, trails, and areas for motor vehicle use; and use by over-snow vehicles.

Executive Order 13443: this EO provides direction for the expansion and enhancement of hunting opportunities and the management of game species and their habitat as affected by public land management, outdoor recreation, and wildlife management

ASNFs Land and Resource Management Plan (forest plan), 1987, as amended.

Analysis Issues

The economic analysis addresses Issue #4 is based on the economic environment and the social analysis addresses in part (also see the recreation analysis) Issues 1 and 2. In addition to issues that drove alternative development, other concerns raised by the public that involve the social environment includes potential impacts to traditional ways of life, specifically, impacts to grazing authorizations.

While this analysis describes the social environment existing condition, the recreation analysis evaluates potential conflicts between motorized and non-motorized uses, impacts associated with noise, the availability of recreation opportunities, and impacts to scenery/visuals. The transportation analysis addresses the costs of maintaining the transportation system by alternative.

Issue #1: Motorized Access for Dispersed Camping

There should be no changes to the existing transportation system. Restricting motorized access for dispersed camping may increase interactions between campers and diminish the quality of experience. Designating routes and corridors for camping may eliminate favorite spots which have been used for decades.

The units of measure are:

- Miles/acres/location of motorized dispersed camping corridors, and,
- Miles/location of roads accessing dispersed camping

Issue #2: Motorized Big-Game Retrieval

Changing the motorized big game retrieval policy to a fixed distance corridor may result in hunters being unable to collect a downed animal in a timely manner.

The unit of measure is: Acres available for motorized big-game

Issue #4: Economics

Restrictions on motorized access (a change from the current condition) could negatively impact local and state economies from a loss of local, tourist and hunter-generated revenues.

- The unit of measure is: Revenues and jobs generated from motorized (recreation-related) activities.

Affected Environment

Economics

The economics assessment area is all of Apache, Navajo, Coconino, and Greenlee Counties in Arizona and Catron and Grant Counties in New Mexico (figure 1). Because of the physical distances, economic activities in northern Apache and Navajo Counties generally do not influence the ASNFs' management and, conversely, management of the ASNFs does not affect those areas. Similarly, the portion of Coconino County in the ASNFs is physically separated from the remainder of that county. Access to this area is through southern Navajo County. The remainder of Coconino County (including Flagstaff and Page) does not affect forest management and is not affected by ASNFs' management. Less than 1 percent of ASNFs' Arizona visitors are from Coconino County. Western Catron County was included because county residents contribute to Apache County through the purchase of goods and services. Western Grant County is adjacent to the ASNFs and some grazing permittees operate on both the ASNFs and the Gila National Forest (NF). In addition, recreationists commonly travel between the Gila NF and ASNFs due to close proximity of Reserve, New Mexico to Alpine, Arizona.

Prominent cities and towns within the Arizona counties include Heber-Overgaard, Show Low, Alpine, Springerville, Payson, Pinetop-Lakeside, St. Johns, Forest Lakes, Clifton, Snowflake-Taylor, Greer, Eager and Winslow. Reserve, New Mexico is the county seat for Catron County. The county seat for Grant

County is Silver City, New Mexico. In terms of land area, of the counties, Greenlee County (1,837 sq. miles) is the smallest, and Coconino County (18,661 sq. miles) is the largest. See the 2009 sustainability



report for additional information on each county including population, median age, median income and revenue sources.

Figure 1. Economic Assessment Area by County

The income and employment and Payments in Lieu of Taxes (PILT) analyses for the six counties was summarized from the economic sustainability assessment. In order to estimate the level of economic change to the assessment area, IMPLAN (the IMPact analysis for PLANing, Minnesota IMPLAN Group, Inc. (IMPLAN)¹ was utilized to develop response coefficients which estimate the level of jobs and income generated per thousand visits by activity type. The response coefficients were then input into the Travel Management Economic Contribution Application (TMECA).

TMECA is a spreadsheet that uses these response coefficients along with data collected from the 2001 NVUM survey to estimate the local economic contribution of different types of recreational activities based on whether the recreationists stayed only for a day or overnight. Additional information is available at http://fsweb.ftcol.wo.fs.fed.us/imi/economic_center/Travel%20Management%20Economics_economics.html).

The data displays contributions of motorized vs. non-motorized recreation activities. TMRECA estimates the local and regional economic contribution of expenditures associated with current levels of recreational activity on National Forest roads and trails.

¹ A regional economic impact analysis system, that uses county-level, input-output data to determine the extent to which these activities (such as livestock grazing) contribute to the local economy. Input-output analysis is an economist's tool that traces linkages among the structural parts of an economy and calculates the employment, income, and output effects resulting from a direct impact on the economy.

Income – Assessment Area Existing Condition and Trends Summary

- The assessment area per capita income is far below the national average. The 2002 per capita personal income of the four Arizona counties abutting the ASNFs was \$19,333. This represents only 63 percent of the national average (approximately \$31,000). Relative increases in per capita and median family incomes were greater in each county than in either state from 1990 to 2000. Despite these increases, per capita and median family incomes in all counties except Grant (New Mexico) remained substantially lower than the 2000 state averages.
- Assessment area poverty levels are above the state averages. Approximately 26 percent of the population in the counties had incomes below the poverty level in 1999, well above the average for Arizona (14 percent) and New Mexico (18 percent). The poverty level is highest in the Native American population (42 percent).
- Assessment area poverty levels are declining, but are still higher than the state averages. Relative rates of decline in the poverty in all counties were greater than were reflected at the state level. Nonetheless, the percentages of individual and family poverty in all counties except Greenlee were higher than their respective states. Greenlee County has lower poverty levels because of the high mining-related employment and salaries.
- Income not tied to local employment (retirement age residents and seasonal homeowners) is growing. Demographic trends show an influx of retirement-age residents and seasonal homeowners. Several researchers (Booth 2002, Rasker 2000) have noted that while labor income is growing in the rural Mountain West, it is growing more slowly than transfer (social security, pensions, and retirement) and dividend income. In other words, growth of rural communities is being fueled, at least in part, by income that is not tied to local employment (USDA Forest Service 2009).

Payments to States Assessment Area Conditions and Trends:

- Payments to states generally vary from year to year because of Congressional allocations or revenues from forest activities.
- Counties receive Payment in Lieu of Taxes (PILT) to replace tax revenue lost because of the public nature of lands administered by federal agencies (Payments in Lieu of Taxes Act of 1976). These payments are based on acreage of federal lands within a county. In 2005, \$1.8 million was distributed to Apache, Coconino, Greenlee, Navajo, and Catron Counties for ASNFs lands. Although Grant County is affected by ASNFs' management activities, no ASNFs lands are located within the county so Grant County does not receive PILT funds associated with the ASNFs.
- In addition to PILT payments, the five counties have received a portion of the revenues generated on National Forest System lands (the "25 Percent Fund"). These payments returned 25 percent of all revenues generated from forest activities, with the exception of certain mineral programs, and were paid based on the acreage of National Forest System lands within each county. These funds were used for the maintenance of public schools and roads. In the past, timber sale proceeds constituted the majority of the 25 Percent Fund payments, but these have declined substantially since the late 1980s.
- In 2005, \$2.4 million was distributed to Apache, Coconino, Greenlee, Navajo, and Catron Counties from the Secure Rural Schools and Community Self-Determination Act (SRSCS). If SRSCS (expires in 2006) is not further extended or no other legislation enacted, payments would

again be made under the 25 Percent Fund. PILT and SRSCS payments are not major portions of each county's overall budget, but may account for substantial portions of local school budgets.

Tourism

Towns and cities throughout the counties that are located near the forests profit economically from expenditures made by visitors to the forests. The region is primarily a summer destination for tourists; however, winter tourism is also a component of the regional economy. Towns such as Show Low, Pinetop-Lakeside, Eagar, and Springerville benefit from visitors to the region who book hotel rooms, eat, purchase gas, and shop, among other activities.

Recreation and tourism are important contributors to the economic stability of the area; economic benefits are derived from direct spending on food, gas, lodging, etc., but also from sales tax generated from visitor spending. Local and sales tax revenue is important in rural (or non-urban) areas. This is because tourism often forms a larger proportion of the economic activity in these areas, and also because special excise taxes on tourists and visitors (i.e., from food, lodging, auto rentals, etc.) are more heavily paid by visitors rather than residents (Runyan 2008).

According to the 2009 sustainability analysis, IMPLAN indicated industry output for tourism sectors in the region in 2006 was \$2.38 billion, or 11.93% of the region's production output. Of the six-county study area, tourism sectors in Coconino County generated the most output at \$1.36 billion, or 58% of the sector total. Sectors included in the broader category of tourism for the analysis included hunting and trapping; food and beverage stores and drinking locales; gasoline stations; clothing, sporting goods, and general merchandise stores; lodging; travel arrangement and reservation services; and transportation (transit/ground passenger and scenic/sightseeing). Less than 15% of the regional economic output is attributed to the tourism-related sectors; however, it is still an important component of the economic stability of the region.

OHV Economic Contributions

Based on the *Arizona Trails 2005 Plan*, OHV users represent over 24% of the Arizona population which include residents who use motorized vehicles on trails for multiple purposes. Of that, 7% of Arizona residents reported that motorized trail use accounted for the majority of their time and are considered 'core users' (Arizona State Parks 2009). Less than 2% of the estimated use on the ASNFs is attributed to OHV use (see visitor use discussion which follows).

Arizona State Parks estimated OHV use and camping (both dispersed and developed), along with hunting and fishing, stimulate the regional economy through direct local expenditures on motorized vehicles, trailers, equipment and accessories, and insurance and maintenance costs (Arizona State Parks 2003). Local spending on food, gas and lodging, and souvenirs also indirectly benefits the region by supporting wages and income in the local economy, as well as contributing local and state tax dollar revenue. OHV users alone spend an estimated \$3.1 billion (Silberman 2003) to \$4 billion annually (Arizona State Parks 2003) in Arizona.

The estimated expenditure per overnight visit for non-local OHV use is \$84 and \$63 for local overnight visits (USDA Forest Service 2009). All-terrain vehicles and cycles titled or registered with the Arizona Motor Vehicle Division increased 347% from 1998 (51,453 vehicles) to July 2006 (230,000 vehicles). This does not include untitled OHVs, out of state visitors, or other OHVs that recreate in Arizona. In 2009 Arizona State Parks estimated the State received over 53.9 million OHV users and over \$780,000 was generated from OHV sticker purchases over a 6 month period in 2009 (Arizona State Parks 2009).

Fishing, Hunting and Watchable Wildlife

Arizona State Parks routinely documents the effects of fishing and hunting recreation has on Arizona's economy. More than 255,000 Arizona anglers spend an estimated \$831.5 million on equipment and trip-related expenditures annually. Hunters (about 135,000 of them in Arizona), account for an additional \$126.5 million in retail sales. This combined \$958 million in spending creates an economic impact of \$1.34 billion to the state of Arizona. This spending supports more than 17,000 jobs, provides residents with \$314 million in salary and wages and generates more than \$58 million in state tax revenue (Arizona State Parks 2009). Non-consumptive related recreation generates additional spending through the economy. In 2001, watchable wildlife activities in Arizona generated \$1.5 billion. In addition, watchable wildlife recreation supported over 15,000 jobs in the state, providing total household income near \$430 million and generated over \$57 million in state taxes (Arizona State Parks 2009). According to the 2001 NVUM survey, about 85% of all visits to the forests was primarily for recreation which encompasses about 10% of forest visitors viewing natural features (includes watching wildlife), about 18% participating in fishing and 2% participating in hunting (Kochis 2002).

OHV use, hunting, and fishing are interrelated; visitors and recreationists often use OHVs for big-game retrieval and access to remote areas for angling. According to a national study on the economic importance of hunting (International Association of Fish and Wildlife Agencies 2002), hunters spend an average of \$1,896 annually per hunter. Annual hunting expenditures in Arizona range from an estimated \$126 million (Silberman 2003) to \$1.3 billion (Congressional Sportsmen Foundation 2008). Expenditures include hunting gear, such as guns and ammunition, hunting tags and permits, processing, and taxidermy costs, as well as in the sectors noted above, such as gas, food, and lodging.

The estimated expenditure per overnight visit for nonlocal fishing use is \$119.57 and \$58 for local overnight visits. The estimated expenditure per overnight visit for nonlocal hunting use is \$151.05 and \$96.32 for local overnight visits (USDA Forest Service 2009). The 2001 NVUM study results note that hunting and fishing users on the ASNFs spend more per trip than OHV users (Kocis et al 2002). Travel management decisions have the potential to increase or decrease the miles of road and motorized trail that are open to the general public. There is a concern that any decrease in the miles of road and trail could negatively affect local economies.

On the ASNFs, about 9,056 hunting permits were issued in 2008. Of this total, the percentage of hunters using motorized vehicles to retrieve big game range from 11% to 31% (see table 1 and recreation section). The ability to continue using motorized vehicles to retrieve game was a key economic and social issue in this analysis. The relationship to economics is the potential reduction in hunters using the forests (and the associated purchase of amenities in communities within or adjacent to the forests) if motorized big game retrieval is not available.

Table 1. Average number of hunting permits and estimated off-road retrieval within game management units on the forests*

Unit	Average Number of Permits	Estimated Average Number of Off-Road Retrieval	Percentage of Average Number of Permits Utilizing MBGR
West Sector			
3A-C	1,835	515	28%
3B	751	111	15%
4A	1,303	225	17%

4B	977	117	12%
Total	4,866	968	20%
East Sector			
1	1,535	483	31%
27	2,655	305	11%
Total	4,190	788	19%
Grand Total	9,056	1,756	19%

*Source: AGFD, 2009.

ASNFs Economic Contribution

Table 2 displays the total estimated direct and “secondary” labor income and employment contributions of current management activities on the ASNFs. Forest-related activities contributes less than 1% to total jobs in the assessment area and slightly over \$32 million in revenues in the assessment area.

The ASNFs contribute over \$83 million (table 3) and over 3,100 jobs (table 4) directly and indirectly to the local economy. These contributions represent a stimulus to economic growth and employment. The labor income estimate generated by industry sectors is displayed in table 5. The largest amount of labor income is generated in the government sector, followed by the accommodations and food services sector.

Table 2. Forest Service contribution to jobs and revenue in the assessment area

Industry	Jobs Total		Revenue Total (millions of dollars)	
	Assessment Area	FS Related	Assessment Area	FS Related
Agriculture	2,439	12	45	0.226
Mining	4,389	8	336	0.307
Utilities	456	1	31	0.062
Construction	12,143	5	526	0.226
Manufacturing	5,964	26	379	1.000
Wholesale Trade	2,083	49	109	2.578
Transportation & Warehousing	4,961	37	285	1.414
Retail Trade	18,913	152	516	4.007
Information	2,209	13	116	0.605
Finance & Insurance	2,756	9	95	0.352
Real Estate & Rental & Leasing	5,642	58	172	1.624
Prof, Scientific & Tech Services	4,771	34	193	1.156
Mgmt of Companies	330	2	19	0.129
Admin, Waste Mgmt & Rem Serv	3,484	16	112	0.455
Educational Services	2,253	7	63	0.158
Health Care & Social Assistance	15,551	38	684	1.664

Economic Contribution Area	Thousands of 2006 Dollars Contributed
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Industry	Jobs Total		Revenue Total (millions of dollars)	
	Assessment Area	FS Related	Assessment Area	FS Related
Arts, Entertainment, and Rec	2,785	104	59	2.760
Accommodation & Food Services	18,061	523	346	9.611
Other services	8,729	36	173	0.765
Government	46,312	88	2,308	5.172
Total	164,230	1,219	6,566	34.239
FS percent as percent of total:	N/A	0.74%	N/A	0.52%
Local		19	6	25
Non-Motorized Non-Local		63	18	81
Subtotal* Non-motorized		83	24	107
Motorized Local		16	5	21
Motorized Non-Local		17	5	22
Subtotal* Motorized		34	10	44

Source: Forest Service (2009).

* Subtotals included non-primary and therefore may be greater than the sum of local and nonlocal.

Table 3. ASNFs Labor Income Contribution (2006)

	Total Contribution	Contribution from Recreation Activities of Local Residents¹	New Money Contribution
Recreation	\$43,866	\$3,882	\$39,983
Wildlife	\$12,733	\$1,028	\$11,705
Grazing	\$586	\$0	\$586
Timber	\$12,140	\$0	\$12,140
Minerals	\$857	\$0	\$857
Payments to States/Counties	\$1,353	\$0	\$1,353
Forest Service Expenditures	\$11,766	\$0	\$11,766
Total Forest Management	\$83,301	\$4,910	\$78,391
Percent of Total Labor Income Contributed	100%	6%	94%

¹ Expenditures by local residents for recreation on the national forests do not introduce "new

" money into the economy. If local residents could not recreate on the national forests, they would likely find other forms of recreation in the area and would continue to spend their recreation dollars in the local economy. Therefore, this portion of labor income is not necessarily dependent on the existence of the national forests or the opportunities it provides.

Table 4. ASNFs Employment Contribution

Table 5. ASNF's Estimated Labor Income Contribution by Industry Sector (2006)

Economic Contribution Area	Number of Jobs Contributed		
	Total Contribution	Contribution from Recreation Activities of Local Residents ⁷	New Money Contribution
Recreation	1,678	140	1,538
Wildlife	483	39	444
Grazing	45	0	45
Timber	527	0	527
Minerals	23	0	23
Payments to States/Counties	44	0	44
Forest Service Expenditures	319	0	319
Total Forest Management	3,119	179	2,940
Percent of Total Employment Contributed	100%	3%	97%

Industry Sector	Thousands of 2006 Dollars Contributed		
	Total Contribution	Contributions from recreation activities of local residents	Contributions from New Money
Agriculture	\$6,482.7	\$79.3	\$6,403.4
Mining	\$602.2	\$1.7	\$600.5
Utilities	\$661.6	\$27.0	\$634.7
Construction	\$763.8	\$29.6	\$734.2
Manufacturing	\$3,725.8	\$30.6	\$3,695.2
Wholesale Trade	\$4,813.1	\$512.5	\$4,300.6
Transportation & Warehousing	\$2,034.1	\$133.8	\$1,900.3
Retail Trade	\$7,571.7	\$745.1	\$6,826.6
Information	\$1,112.1	\$83.5	\$1,028.6
Finance & Insurance	\$963.7	\$43.8	\$919.9
Real Estate & Rental & Leasing	\$1,342.9	\$73.9	\$1,269.0
Prof., Scientific, & Tech. Services	\$1,295.2	\$94.0	\$1,201.2

Mgmt.of Companies	\$542.4	\$33.4	\$509.1
Admin., Waste Mgmt., & Rem. Services	\$744.5	\$47.7	\$696.8
Educational Services	\$167.0	\$11.0	\$156.1
Health Care & Social Assistance	\$2,574.3	\$143.5	\$2,430.8
Arts, Entertainment, and Recreation	\$3,055.8	\$239.2	\$2,816.6
Accommodations & Food Services	\$14,573.3	\$912.32	\$13,661.0
Other Services	\$1,766.1	\$78.2	\$1,687.9
Government	\$28,509.3	\$1,590.3	\$26,919.0
Total Forest Management	\$83,301.8	\$4,910.5	\$78,391.4
Percent of Total	100%	6%	94%

ASNFs Employment and Labor Income by Recreation Activity Type

NVUM reports estimates of current visitor use by activity type based on interviews of visitors as they leave the forests. Thus, the data available represents the existing conditions and includes response coefficients for each activity which allows for inferences to be made regarding the economic implications of changes in visitor use under the action alternatives. Any change in visitor use that would occur as a result of implementation of an action alternative would impact the economy according to the response coefficients. The discussion of the economic consequences of the action alternatives is based on the response coefficients.

Response coefficients estimate effects in three parts. First, direct effects are the response of an industry to demand for the goods or services it produces. The employment and labor income that result from the production of output to meet demand are direct effects. However, direct effects are only a part of the picture. There are many interdependencies between businesses, consumers, and the natural resources on which economic activity depends. IMPLAN modeling allows a more complete examination of these complex linkages. In addition to direct effects, there are also indirect and induced effects. Indirect effects are produced when a sector must purchase supplies and services from other industries in order to produce output sufficient to meet demand. The employment and labor income generated in other industries as a result are referred to as indirect effects. Induced effects represent the employment and labor income stimulated throughout the local economy as a result of the expenditure of new household income generated by direct and indirect employment.

Response Coefficients by Activity Type

Table 6 displays the estimated employment and labor income response coefficients by activity type for local and non-local recreation. Day, overnight (OVN) and non-primary (NP) trips are also accounted for. Non-primary (NP) trips are those where recreation on the ASNFs was not the primary purpose for the trip. Local visitors are defined as those visitors whose primary residence is within 30 straight line miles of the

forest visited (Stynes and White, 2005). Non-local visitors are all those who are not considered local. The response coefficients indicate the jobs and labor income supported per thousand visits by activity type.

Table 6 displays that current recreation use generates a total of 114 jobs and \$3,144,291 in labor income from non-motorized activities. This includes direct, indirect and induced activity resulting from the expenditures of visitors. Non-local visitors hiking/walking support the most jobs and labor income among non-motorized activities with 64.58 jobs and \$1,777,945 in labor income. Total motorized activities support 56 jobs and \$1,540,239 in labor income.

Average expenditures by non-locals are greater than those of local visitors; however, in some cases there are far more total visits by locals which results in a greater economic contribution than that of non-locals. The majority of economic stimulus supported by recreation on the forests is from “all other” activities. Those activities include: developed camping, primitive camping, resort use, picnicking, viewing natural features, visiting historic sites, nature center activities, nature study, relaxing, fishing, hunting, motorized water activities, non-motorized water activities, downhill skiing, gathering forest products, viewing wildlife, sightseeing, cross-country skiing, other motorized activities and no activity reported. Visitor use in these activities combined supports 1,147 jobs and \$31,766,752 in labor income.

The table also displays that total economic effects vary widely by activity type. Non-local overnight snowmobiling and cross-country skiing visits generate the most jobs and income per thousand visits; however there is little to no activity by these user groups on the forests. As noted above, the majority of total spending in the local economy is currently generated from other types of recreationists.

Table 6: Employment and Labor Income Contribution by Activity Type

	Employment (# of jobs)		Labor Income (2008 dollars)	
	Direct	Indirect & Induced	Direct	Indirect & Induced
Non-Motorized Use				
Backpacking - Local	1.53	0	\$38,087	\$17,928
Non-local	1.62	0	\$39,894	\$18,728
Hiking/Walking - Local	19.21	6	\$473,678	\$219,222
Non-local	49.86	15	\$1,221,686	\$556,259
Horseback Riding - Local	1.22	0	\$30,112	\$13,936
Non-local	3.17	1	\$77,662	\$35,361
Bicycling – Local	1.20	0	\$29,532	\$13,668
Non-local	3.11	1	\$76,169	\$34,681
Other Non-motorized - Local	0.00	0	\$0	\$0
Non-local	0.00	0	\$0	\$0
Total Non-motorized	1.93	1	\$47,484	\$21,976
Subtotal: Non-Motorized	114		\$3,144,291	
Motorized Use				
OHV Use – Local	9.78	3.04	\$236,707	\$115,282
Non-local	11.60	3.60	\$283,028	\$135,984
Driving for Pleasure - Local	13.04	3.97	\$309,638	\$151,903
Non-local	8.68	2.54	\$210,759	\$96,937
Snowmobiling - Local	0.00	0.00	\$0	\$0
Non-local	0.00	0.00	\$0	\$0
Total Motorized	43	13	\$1,040,132	\$500,107

Subtotal: Motorized	56		\$1,540,239	
All Other Use				
All Other Activities - Local	374	113	\$9,212,777	\$4,339,630
Non-local	507	152	\$12,441,000	\$5,773,345
Total Other	881	265	\$21,653,777	\$10,112,976
Subtotal: All Other	1,147		\$31,766,752	
Grand Total	1,012	304	\$24,850,679	\$11,600,603
Grand subtotal	1,317		\$36,451,283	
Source: TMECA, 2009 and IMPLAN, 2007				

Table 7 displays the percent of total employment and labor income supported by each activity type. Direct jobs supported by all other activities accounts for 66.9 percent of all jobs contributed to the local economy from recreation on the ASNFs, and indirect and induced jobs account for another 20.1 percent. Total motorized activities accounts for 4.27 percent of total jobs (including direct, indirect and induced jobs) and 4.23 percent of total labor income (including direct, indirect and induced labor income). In terms of total employment and income in the study area, recreation on the forests account for 0.885 percent of total jobs and 0.588 percent of total labor income (table 8). Non-local motorized use on the Forests supports just 0.017 percent and 0.012 percent of total jobs and labor income in the study area respectively.

Table 7: Percent of Total Employment and Labor Income Contributed by Activity Type

	Employment		Labor Income(2008 dollars)	
	(% of full & part-time jobs)		% of Total Income	
	Direct	Indirect & Induced	Direct	Indirect & Induced
Non-Motorized Use				
Backpacking - Local	0.12%	0.04%	0.10%	0.05%
Non-local	0.12%	0.04%	0.11%	0.05%
Hiking/Walking - Local	1.46%	0.44%	1.30%	0.60%
Non-local	3.79%	1.12%	3.35%	1.53%
Horseback Riding - Local	0.09%	0.03%	0.08%	0.04%
Non-local	0.24%	0.07%	0.21%	0.10%
Bicycling - Local	0.09%	0.03%	0.08%	0.04%
Non-local	0.24%	0.07%	0.21%	0.10%
Other Non-motorized - Local	0.15%	0.04%	0.13%	0.06%
Non-local	0.38%	0.11%	0.34%	0.15%
Total Non-motorized	6.67%	1.98%	5.92%	2.71%
Motorized Use				
OHV Use - Local	0.74%	0.23%	0.65%	0.32%
Non-local	0.88%	0.27%	0.78%	0.37%
Driving for Pleasure - Local	0.99%	0.30%	0.85%	0.42%
Non-local	0.66%	0.19%	0.58%	0.27%
Snowmobiling - Local	0.00%	0.00%	0.00%	0.00%
Non-local	0.00%	0.00%	0.00%	0.00%
Total Motorized	3.27%	1.00%	2.85%	1.37%

All Other Use				
All Other Activities - Local	28.4%	8.6%	25.3%	11.9%
Non-local	38.5%	11.5%	34.1%	15.8%
Total Other	66.9%	20.1%	59.4%	27.7%
Totals	76.9%	23.1%	68.2%	31.8%
	100%		100%	

Source: TMECA, 2009 and IMPLAN, 2007

Table 8: Percent of Study Area Employment and Labor Income

		Employment Effects (full and part time jobs)	Labor Income (2008 dollars)
Total Non-Motorized Use	Local	0.022%	0.014%
	Non-Local	0.054%	0.036%
Total Motorized Use	Local	0.020%	0.013%
	Non-Local	0.017%	0.012%
Total All Other Use	Local	0.323%	0.215%
	Non-Local	0.436%	0.289%
	Total Use	0.885%	0.588%

Source: TMECA, 2009 and IMPLAN, 2007

Summary of the ASNFs' Economic Contribution to the Assessment Area

Conditions and Trends:

- Over 95 percent of the economic activity associated with the ASNFs represents new money introduced from outside the local area.
- The management activities of the ASNFs in 2005 contribute a small percentage of the labor income and jobs (5 and 7 percent, respectively) within the assessment area and are not a major contributor to the sustainability of the economic system. The majority of these jobs were in the government sector and in the accommodations and food service sector. The White Mountain Stewardship Project (WMSP) contract accounts for approximately 5 percent of the ASNFs' total economic contribution.
- The Forest Service programs that generate the greatest economic stimulus are recreation and wildlife followed by timber. The recreation and wildlife contribution areas represent approximately 69 percent of the jobs and 68 percent of the labor income. Recreation and fish/wildlife programs contribute the most to the assessment area economy. Recreation service industry jobs are generally moderate- to low-paying. Timber generates approximately 15 percent of the forests' contribution to labor income and 17 percent of the jobs.
- The local industry sectors most dependent on ASNFs management activities and forest uses are agriculture; arts, entertainment, and recreation; and accommodations and food services. Associated labor income and jobs would be most closely connected to the timber management, grazing, recreation, and fish and wildlife economic contribution areas.

- Within individual counties and communities, dependency on natural resource industries may be greater. Small changes in forest activities have the potential to cause more noticeable localized effects.
- The majority of economic stimulus supported by recreation on the forests is from “all other” activities. Visitor use in these activities combined supports 1,147 jobs and \$31,766,752 in labor income.
- In terms of total employment and income in the study area, recreation on the forests account for 0.885 percent of total jobs and 0.588 percent of total labor income. Non-local motorized use on the forests supports just 0.017 percent and 0.012 percent of total jobs and labor income in the study area respectively.

Social Conditions and Trends

Landownership

There are over 31 million acres of land in the five-county assessment area. About 23 percent of the five-county area is managed by the Forest Service. Greenlee and Catron County have large percentages of Forest Service land (64 percent and 50 percent, respectively). The percentage of assessment area private land ranges from a high of 24 percent in Catron County to a low of 8 percent in Greenlee County (see figure 2). This is relevant to this analysis in terms of qualifying to what extent transportation management on the forests may affect the counties.

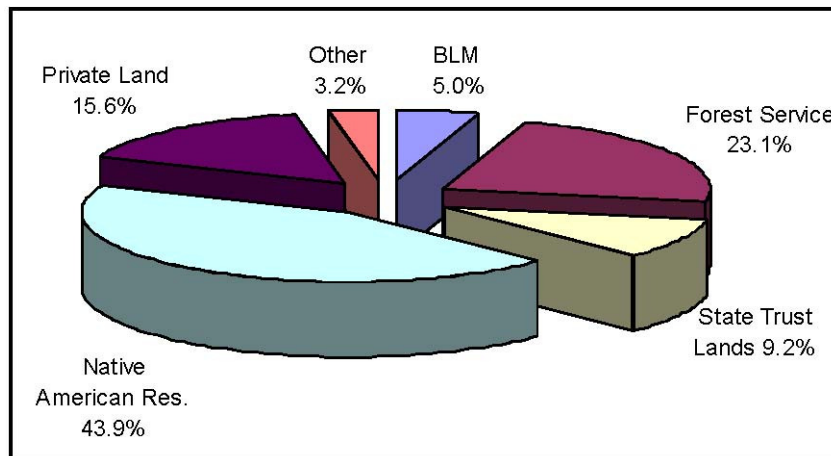


Figure 2.
Ownership
Land
Six-County
Area (US Forest Service 2009)

Percent
by Major
Owners in
Assessment

Demographic Conditions and Trends

Population

- Population growth in the assessment area has been well below the state average. Each county, except Greenlee and Catron, experienced population growth between 1990 and 2000. Greenlee and Catron Counties saw declines in their relatively small populations between 1980 and 1990. The growth rate for each county over the past 2 decades has remained well below the growth rates for Arizona and New Mexico.

- Population density is low. Catron County has the lowest population density with one individual for every 2 square miles. In contrast, Navajo County is the most densely populated with almost ten people per square mile.
- Apache and Navajo Counties have experienced strong growth with individuals migrating to the area from other states, as well as from different counties in Arizona. There has been limited in-migration in the other counties.

Race and Ethnicity

Populations have moderate racial and ethnic diversification. The past 50 to 60 years have seen only moderate racial diversification in Arizona. The Hispanic presence has increased from 20 percent to 25 percent of the total population since 1940, while African American population increased only 0.1 percent. The Native American population has grown from 44,076 to 275,321 over the past 6 decades. However, as a percentage of Arizona's population, it has declined from 11 percent in 1940 to 5 percent in 2000 (U.S. Census Bureau 2005).

Age

The retirement age population is growing faster than the under-18 population. Growth rates for the under-18 population were considerably lower than overall population growth within the five counties between 1990 and 2000. Conversely, the 65-and-over population for each county grew at a higher rate than average for their respective states and considerably faster than county populations.

Educational Attainment

Populations have moderate levels of education. Both Coconino and Greenlee Counties exceed the overall state percentage of high school graduates, while Apache and Navajo Counties fall well short. While the percentage of individuals with a Bachelor's degree or higher is greater for Coconino County than the state as a whole, Apache, Navajo, and Greenlee Counties all fall below the statewide percentage in this category.

Housing

There have been substantial increases in seasonal housing, especially in the Pinetop-Lakeside area. Total housing units in 2000 ranged from a high of 53,443 in Coconino County to a low of 2,548 in Catron County. Housing density and median home value within Greenlee and Apache Counties are substantially lower than neighboring counties and Arizona. There has been a notable increase in seasonal housing units for both Apache and Navajo Counties between 1990 and 2000, most dramatically in Snowflake and Pinetop-Lakeside, both of which saw increases of over 1,000 percent. Within the assessment area, median home values increased the most in Pinetop-Lakeside.

Forest Visitors

Based on the 2001 visitor use survey (Kocis et al. 2002), an estimated 2 million people visited the forests. Of the visitors contacted, 85% indicated they were visiting the area primarily for recreation purposes. Relaxing (39.58%), fishing (18%), viewing natural features (10.19%), and hiking and walking (8.18%) were listed as the primary reasons participants visited the Forests. Driving for pleasure (3.74%), OHV use (1.97%), hunting (1.96%), and developed (2.18%) and primitive (6.93%) camping in the region are also important tourism and recreation activities that provide employment and revenue to local economies. In terms of the primary reasons listed for visiting the forests, non-motorized, passive recreation activities dominate the visitor experience (USDA Forest Service 2009). However, in many cases, visitors require

motorized access to get to their destination for fishing, hiking and walking, etc. See the recreation analysis for additional information on the social environment.

Summary of Forest Uses and Trends

- Livestock grazing on the ASNFs has declined since the late 1980s. These changes were based on a soil capability assessment and on balancing permitted livestock numbers with the allotment capacity. A continuing drought and large fires have also affected the numbers of permitted livestock. In the future, the number of ranches may decline and the ranching lifestyle may dwindle.
- The majority of recreation visitors come from the Phoenix and Tucson metropolitan areas. According to National Visitor Use Monitoring (NVUM) data, the ASNFs received nearly two million visits during fiscal year 2001; 70 percent of those visitors came from Maricopa (Phoenix) and Pima (Tucson) Counties.
- Access to public lands is considered a major contributor to the quality of life by many Arizonans. Many parks and forests are experiencing very high recreational use while urban expansion is decreasing the amount of available open space. Increased demand may not be met due to limited recreation opportunities. These include facilities, developed campground, trails, and dispersed camping opportunities.
- According to NVUM data, 73 percent of the ASNFs' visitors participated in wildlife viewing, 50 percent fished, and only 3 percent hunted.
- Trends show declines in extractive uses of national forests concurrent with increases in recreational use. Increased demand may not be met due to limited recreation opportunities. These include facilities, developed campground, trails, and dispersed camping opportunities. Certain types of dispersed recreation activities, such as OHV use and geocaching, have greatly increased or are relatively new and currently have little management.

Key assumptions used to evaluate alternatives

- The relative size of the local communities plays an important role in the assessment of job and income impacts to the economy. Broader, more diverse, economies should be more resilient to changes in jobs and income than smaller, more rural, communities. For example, a loss of ten jobs in a large metropolitan area should have very little impact on the overall health of the economy. However, the same loss in jobs in a small rural community may severely affect local economic conditions.
- People visiting the forests usually arrive by personal automobile. Most visitor use originates from locations outside communities located within the forests. The demographic breakout shows 80 percent of visitors are from outside of the forests and only 18 percent from communities within the forests (Stynes and White 2006). Less than one percent of forest visitors were from another country.
- From 1990 to 2000, the state's population has grown from 3,665,228 to 5,130,532. This equates to a population increase of 40 percent for the same time frame. According to Census Bureau projections, the population of the State of Arizona will continue to increase at a faster rate (47.5%) than historic rates of population growth (ADOC 2010).

Actions Common to all Alternatives

- Under all alternatives, activities authorized under a separate permitting system would not be directly affected by any alternative. This includes but is not limited to forest product gathering, access to private lands, grazing authorizations and special use authorizations including outfitter and guides and temporary recreation events. No alternative would have direct economic impacts as the permitting decision (to issue or not) is outside the scope of this analysis. In terms of continuation of lifestyle and the social values attributed to conducting livestock grazing activities on the ASNFs, there would be no change as a result of this analysis and decision.
- The data used for this analysis reflects the economic conditions of the study area as they were in 2007. Therefore the response coefficients are not applicable to visitation numbers that are dramatically different from current recreation levels. If visitation were to change substantially, there would be a structural shift in the economy as spending patterns changed and these response coefficients would no longer reflect the underlying composition of economic sectors. It is unknown exactly how visitor use may change, particularly by specific activity type. General trends provide the best available data.

In all alternatives, it is foreseeable that visitor use originating from locations outside communities located within the forests would continue to increase due to the growth of urban populations such as Phoenix. Increasing visitation by non-local forest users would result in the creation of more jobs and income in the study area than the same increase in visitation by local forest users.

In all alternatives, if local residents could not recreate on the ASNFs, they could find other forms of recreation in the study area and maintain local recreational expenditures. Therefore employment and labor income supported by this type of spending are not necessarily dependent on the opportunities provided by the forests.

In all alternatives, access to developed recreation sites and opportunities (such as campgrounds, day use areas, picnic sites) would remain unchanged.

Alternative A

Alternative A represents the existing transportation system and proposes no changes. There would be 2,832 miles of road designated open for motor vehicle use and 156 miles of motorized trails designated for motor vehicles 50" or less in width. Cross-country travel off of system roads on approximately 1.6 million acres would continue, except where currently prohibited.

Since no travel management rule would be implemented under this alternative, there is no anticipated change in motorized or non-motorized use on the ASNFs. Therefore it is assumed that current levels of recreation provide an accurate representation of the effects of visitation on the local economy. There are no predictions of changes to current economic conditions. Since there would be no change in activities, there would be no direct and indirect effects on the economy. The employment and income figures that represent the contribution of current activities to the local economy would be unchanged. The only change in recreation would be that occurring as a natural progression from changes in population and tastes and preferences for recreational activities.

Environmental Consequences common to all action alternatives

With the elimination of cross country motorized use, non-motorized use, which is attributed with generating the most employment and revenues may increase as the potential to have a higher quality non-motorized experience increases. Since non motorized opportunities may expand into the areas previously

used by motorized, some increases in use may occur in the sector that currently provides the most direct and indirect employment and revenues.

Alternative B

Alternative B (modified proposed action) would designate 2,673 miles of road open for motor vehicle use and 268 miles of motorized trails designated for vehicles 50" or less in width. Both roads and corridors would be designated to access dispersed camping and dispersed camping corridors would be found on about 25 percent of the open roads. In comparison to Alternative A (no action), Alternative B slightly decreases (net reduction) the miles of open road by less than 6 percent (159 miles total) but increases the miles of motorized trail by about 71 percent. Any additional miles of road closures is likely to be offset by the addition of user created and closed routes to the designated system. These routes have been added as they represent where visitors have been recreating or represent desirable locations for recreationists.

The potential economic impact to the study area from a decrease in motorized road miles by about 6% is not measurable as additional OHV opportunities are increased by 71% and five motorized use areas would be designated. The increase in motorized trails would result in the ability to access more miles of trail from additional locations, provide opportunities for longer trips and provide loop opportunities. The motorized use areas may result in new participants or increased use from those interested in a play area experience. However, the total acres equate to a minimal 459 acres, well under 1% of the ASNFs acreage. In addition, the use areas are only found on two districts. Although the acres available for MBGR are reduced (to a total of 1.3 million acres) when compared to Alternative A, the opportunity would exist in all game management units. This should reduce the potential for hunters to seek out other public or private lands and not purchase amenities in and around the ASNFs.

Although cross country motorized is eliminated, ample access to dispersed camping by both motorized means and walk in would remain. About 85% of all visitors purpose is for recreation (which includes camping). Dispersed camping corridors would encompass established routes to about 69% of the dispersed camping spots. Overall, the potential change in motorized and non-motorized use to the local economy in the short term (up to 10 years) is not measurable. The MVUM can be updated each year and additional opportunities for both motorized and non-motorized uses is likely to occur.

Alternative C

Alternative C most closely resembles the existing transportation system. In comparison to Alternative A (no action), the miles of open road increases by one percent (28 miles) to provide access to dispersed camping and the miles of motorized trails would be unchanged. The increase in road miles does not represent new opportunities for either motorized or non-motorized uses. The mileage is associated with designating existing routes to dispersed camping.

Although the acres available for MBGR are reduced when compared to Alternative A, the opportunity would exist. This should reduce the potential for hunters to seek out other public or private lands and not purchase amenities in and around the ASNFs.

Since there would be a very limited change in activities, there would be no measurable direct and indirect effects on the economy. The employment and income figures that represent the contribution of current activities to the local economy would be unchanged or changed so slightly that they cannot be evaluated.

Alternative D

Alternative D would designate 2,730 miles of roads open for motor vehicle use and 302 miles of motorized trails for vehicles 50" or less in width. In comparison to Alternative A (no action), the miles of

open road decreases slightly (net decrease) by less than four percent (102 miles) but the most miles of dispersed camping corridors and motorized trail miles would be designated. Any additional miles of road closures is likely to be offset by the addition of user created and closed routes to the designated system. These routes have been added as they represent where visitors have been recreating or represent desirable locations for recreationists.

Dispersed camping corridors would be found on about 74 percent (2,034 miles) of open roads and the miles of motorized trails would increase by about 86 percent (136 miles). The increase in miles of motorized corridors encompasses most existing dispersed camping spots on the forests – approximately 1,335 of the forests' total of 1,611. The minimal change in the total open road system combined with the minimal change in dispersed camping opportunities would result in little change from the current condition. Potential economic impacts associated with an increase in motorized trails is the same as described in Alternative B.

The potential economic impacts as a result of restricted MBGR use is the same as described for Alternatives B and C but with reduced acres available due to a smaller corridor width. About 711,305 acres would be available for MBGR. The economic impacts associated with motorized use areas (not measurable at the 459-acre scale) is the same as described for Alternative B.

Alternative E

Alternative E decreases the miles of open road but increases the miles of motorized trail. Alternative E would designate 2,473 miles of roads open for motor vehicle use and 206 miles of trails for vehicles 50" or less in width. In comparison to Alternative A (no action), there would be approximately 13 percent less (359 miles) open roads but about 31 percent (50 miles) more motorized trail miles. Although this alternative closes the most miles of road it also opens closed roads and adds user created routes. The overall net change to the motorized system is approximately 1%. This alternative provides the most opportunity for non-motorized uses to expand into areas previously used by both uses as about 94% of miles of road and trails that occurred in a primitive and semi-primitive non-motorized setting would be eliminated (see environmental consequence common to all action alternatives section).

Dispersed camping corridors would be found on less than 5 percent (118 miles) of open roads. Although no existing dispersed camping favorite locations would be included in the 118 miles of corridors, roads that are designated would access about 1,334 sites (out of 1,611 total). The change from the existing condition (assuming visitors seek out existing access to camping) is minimal when combined with the ability to walk in to any location that is not in a restricted area.

Alternative E has the most potential to displace those hunters who rely on MBGR. This equates to 3% of the forests visitors (2001 NVUM survey) and further equates to affecting between 11% and 31% of big game hunting permits issued. Whether there is the potential to affect the local economy is highly dependent on individual preferences. The designated road system would still offer access into the interior portions of the forests. Assuming hunters (3% of the forests visitor use) who currently use the ASNFs decide to hunt elsewhere there is a potential loss of revenue to the local economy. The amount of loss is (as noted above) dependent on hunter reaction to the loss of MBGR options and measurable at this time.

Summary of Environmental Consequences including Cumulative Effects

In all alternatives, there are no measurable direct and indirect effects that would affect the economy at a local or regional scale. The changes in the designated transportation system between alternatives are minimal when total miles of open road and motorized trail additions are considered. Road closures are offset in all alternatives with the addition of user created or closed road miles. Alternatives B, D, E add to

the motorized trail system. In all alternatives but E, MBGR continues and even in alternative E motorized access remains into the interiors of the forests.

In all alternatives any reduction in the motorized system could provide additional opportunities for those non-motorized uses whom are seeking quiet and solitude. However, this outcome cannot be quantitatively measured. Given that there are no measurable direct and indirect effects that would occur under any alternative, there would also be no measurable cumulative effects. Cumulatively, how foreseeable transportation decisions on the ASNFs when combined with adjacent forest decisions (Tonto, Gila, and Coconino) would affect the local and regional economy are unknown until decisions are implemented.

Environmental Justice

Executive Order (EO) on Environmental Justice (EO 12898, dated February 11, 1994) and its accompanying memorandum have the primary purpose of ensuring that “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.”

Demographics

Populations have moderate racial and ethnic diversification. The past 50 to 60 years have seen only moderate racial diversification in Arizona. The Hispanic presence has increased from 20 percent to 25 percent of the total population since 1940, while African American population increased only 0.1 percent. The Native American population has grown from 44,076 to 275,321 over the past 6 decades. However, as a percentage of Arizona’s population, it has declined from 11 percent in 1940 to 5 percent in 2000 (USDA Forest Service 2009).

Poverty

The 2002 per capita personal income of the four Arizona counties abutting the ASNFs was \$19,333, only 63 percent of the national average (approximately \$31,000). The average rate of income growth in the assessment area over the past 3 decades has been just under 8 percent (USDA Forest Service 2009).

Approximately 26 percent of the assessment area population had incomes below poverty level in 1999, well above the averages for Arizona (14 percent) and New Mexico (18 percent). Table 8 displays the percentage of the population below poverty level by race in 1999. The poverty level is highest in the Native American population. Overall, Apache County has the highest population percentage with incomes below poverty level (38 percent) (USDA Forest Service 2009)

Table 8. Poverty Levels by Race/Ethnicity, 1999 (U.S. Census Bureau 2000)

Location (State/ County)	White	Black or African American	Am. Indian & Alaska Native	Asian	Native Hawaiian & Other Pacific Islander	Other Race	Two or More Races	Hispanic or Latino
United States	9.1%	24.9%	25.7%	12.6%	17.7%	24.4%	18.2%	22.6%
Arizona	10.3%	19.9%	37.3%	12.3%	16.1%	25.3%	18.5%	24.5%
New Mexico	14.0%	23.0%	36.2%	13.5%	11.9%	25.2%	20.3%	23.7%
Apache Co.,	12.4%	56.8%	44.5%	25.5%	5.2%	28.6%	31.5%	29.0%

AZ								
Coconino Co., AZ	11.7%	19.0%	32.1%	15.2%	12.9%	20.4%	22.3%	20.4%
Greenlee Co., AZ	9.5%	4.1%	5.0%	0.0%	0.0%	12.4%	8.8%	11.6%
Navajo Co., AZ	12.2%	25.3%	46.0%	24.2%	13.0%	31.1%	26.7%	26.0%
Catron Co., NM	23.4%	0.0%	67.3%	0.0%	0.0%	19.0%	27.8%	19.5%
Grant Co., NM	16.4%	18.5%	16.9%	35.5%	39.4%	26.6%	23.8%	23.7%
Assessment Area	12.7%	21.6%	41.9%	18.7%	13.7%	24.2%	24.6%	22.3%

Environmental Consequences – All Alternatives

The net change in miles of road open for motorized uses for the action alternatives is no more than 13 percent when compared to the existing transportation system. Decreases in the miles of open road are offset by the addition of closed roads and user created routes to the designated system. Motorized trail opportunities are maintained or increased. Motorized access to camping is maintained or minimally decreased while opportunities to access camping via non-motorized means are unchanged. Since there would be a very limited change in activities, the employment and income figures that represent the contribution of current activities to the local economy would be unchanged or changed so slightly that they cannot be evaluated. No change to affected populations would occur in the no action alternative and implementing the changes to the transportation system under any action alternative would have no disproportionate effects on minority, low income, or children populations.

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