From:	Butts, Sally
To:	Raymond Suazo; Jerome Perez; Edwin Roberson
Cc:	Kenneth Mahoney; Ginn, Allison; Chad Schneckenburger; Sintetos, Michael; Nikki Moore; Fisher, Timothy; Christopher McAlear; Mara Alexander; Rachel Wootton; Kathleen Benedetto; Randal Bowman; Michael Nedd; Kristin Bail; Timothy Spisak; Moody, Aaron; Mali, Peter; Jeff Brune
Subject:	National Monument Review - Draft Economic Reports - Quick Review
Date:	Wednesday, July 12, 2017 10:34:49 AM
Attachments:	Canyons of the Ancients review DRAFT 7_11_17.docx Carrizo Plain Review_07_7_17.docx GrandCanyonParashant_07_10_17.docx GrandStaircaseEscalanteReviewDRAFT_7_11_17.docx Ironwood_07_10_17.docx Mojave Trails Review_07_10_17.docx Sonoran_07_10_17.docx VermilionCliffs_7_11_17.docx

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Hi All,

We have been given the opportunity to do a quick review of the draft Department of Interior economic reports for the eight BLM managed or co-managed National Monuments currently under review. The draft reports are for:

- Grand Canyon-Parashant
- Grand Staircase-Escalante
- Sonoran Desert
- Ironwood Forest
- Canyons of the Ancients
- Carrizo Plain
- Mojave Trails
- Vermilion Cliffs

If you would like to provide comments, please compile your state's comments in track changes within the attached reports and provide them on or before **Close of Business Thursday, July 20th**. Please email your state's comments to Rachel Wootton (rwootton@blm.gov) with a copy to me (sbutts@blm.gov) and Nikki Moore (nmoore@blm.gov) as soon as you have completed your comments, so that we can get them reviewed by the deadline and submitted back to the Secretary's office. The comments are due back to the Secretary's office by Friday, July 21st.

We have blocked out Tuesday afternoon, July 18, from 4-5pm EST to answer any questions you may have. The conference line and passcode for the meeting are:

- Conference Line: (b) (5) CIP [redacted]
- Passcode: (b) (5) CIP [redacted]

Thank you so much for all the time and energy you and your staff have put in to make sure that we are providing DOI with the information they need. Please contact me with any questions.

Sally

--
Sally R. Butts, J.D., Acting Division Chief
National Conservation Lands
Bureau of Land Management
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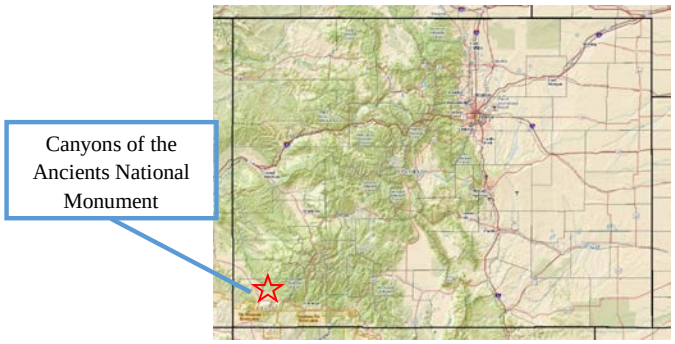
Office 202-912-7170; Cell 202-695-5889; Fax 202-245-0050; sbutts@blm.gov

Canyons of the Ancients

Economic Values and Economic Contributions

DRAFT



Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Canyons of the Ancients National Monument (CANM).[1]

Canyons of the Ancients National Monument

Location: Montezuma County, Dolores County, CO
Managing agency: BLM
Adjacent towns: Cahone; Pleasant View; Yellow Jacket; Lewis; Cortez, CO
Tribal land: Ute Mountain Reservation
Resource Areas:
☑ Recreation ☑ Energy ☑ Minerals
☑ Grazing ☐ Timber ☑ Scientific Discovery
☑ Tribal Cultural

Background

Canyons of the Ancients National Monument spans 176,370 acres in Montezuma County, CO, with a small portion extending into Dolores County, CO. It was designated in June 2000 for the purposes of ensuring protection of the area's cultural and natural objects, including the highest known density of archaeological sites in the Nation, as well as natural, geological, and biological resources. In 1985, this area was designated as an Area of Critical Environmental Concern (ACEC) due to the importance of the resources found there. In late 1990s, beginning with significant discussion of a legislative conservation designation, there was community support for the creation of a National Conservation Area, which ultimately led to the National Monument designation following extensive outreach, public scoping and comment periods, and tribal consultation.

Local Economy and Economic Impacts

Montezuma County, with a population of 25,700 people[2], is home to less than 0.5% of the population of the State of Colorado. In recent years, the county has experienced slightly higher levels of unemployment and lower levels of median household income than the State. The County also has a significantly higher Native American population, with 11.5% of the population being of Native American descent versus less than 1% for the State. The Ute Mountain Reservation is within the County borders.

Activities and Resources

Information on the economic contributions associated with the activities occurring at Canyon of the Ancients National Monument are provided below.

- **Recreation:** A variety of recreation activities are available at CANM including: dispersed camping, hiking, hunting, horseback riding, biking, OHV riding, and viewing archaeological sites. In addition, the Anasazi Heritage Center, a premiere archaeological museum of the Ancestral Puebloan and other Native cultures of the Four Corners region, is located on the Monument. Visitation in FY16 was about 89,500 visits, which is associated with estimated value added of about $4.7 million and approximately 80 jobs.
- **Energy:** There is oil, gas, and CO2 production within the Monument.
    - **Coal.** There are have been no coal developments in the Monument area.
    - **Oil and gas.** There is oil, gas, and CO2 production within the Monument area. 95% of the production of oil, gas, and CO2 in Montezuma and Dolores counties is from within

[1] The BLM provided data used in this paper.
[2] 2011-2015 ACS, 5-Year Estimates, U.S. Census Bureau

DOI-2018-09 00739

Monument boundaries. In 2016, there were approximately 85,759 bbls of oil, 421,320 mcf of natural gas, and 340,099,151 mcf of CO_2 produced in Montezuma and Dolores counties. (b) (5) DPP [redacted]

- There are 9 past-producing uranium/vanadium mines within the Monument boundaries that are no longer in operation.

- **Non -fuel minerals.**
  - There are little to no mineral resources within CANM and no records available for locatable mineral production.
- **Timber.** There is no commercial timber production in CANM either before or after the Monument designation, although the Monument allows for continued firewood cutting.
- **Grazing.** There are currently 23 existing grazing allotments with a total of about 6,800 permitted Animal Unit Month (AUMs)[3]. There has been an average of approximately 4,300 billed per year since the Monument was designated. Those AUMs were associated with economic output of about $1.6 million and supported about 23 jobs. The Monument proclamation allows for the continuation of all pre-designation grazing activities.
- **Tribal cultural, archeological, and historic resources**. The CANM area is central to the historic and prehistoric territories of multiple tribes. Tribal consultation for the Monument is undertaken with 26 tribal entities, including the three federally recognized Ute tribes, the Navajo Nation, the Jicarilla Apache, and 21 different Puebloan tribes. Archaeological surveys show extensive use of the land within the Monument by ancient Native American cultures and as a contact point for multiple Pueblos, Ute bands, Navajo and Jicarilla Apache and cultural sites within the Monument include traditional cultural properties, sacred sites, and cultural landscapes. Prehistoric archaeological sites include rock art panels, occupation sites, campsites, and granaries. In addition, local ranching as a major focus of area livelihood and increased settlement dates back to the late 1800s, and continues to be an important cultural bond of local communities and families in the CANM area though the economic importance has diminished.

Land Management Tradeoffs

This section presents some information to help understand land management tradeoffs. (b) (5) DPP [redacted]

[3] BLM measures an AUM as the amount of forage needed to sustain one cow and her calf, one domestic horse, or 5 sheep or goats for one month. https://www.blm.gov/programs/natural-resources/rangelands-and-grazing/livestock-grazing/fees-and-distribution.

(b) (5) DPP [redacted]

[redacted]

[redacted]

[redacted]

Carrizo Plain National Monument

Economic Values and Economic Contributions

DRAFT

DOI-2018-09 00742

Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Carrizo Plain National Monument (CPNM) as well as to provide a brief economic profile of Kern and San Luis Obispo Counties.[1]

Carrizo Plain National Monument

Location: San Luis Obispo and Kern Counties, CA
Managing agencies: BLM, USFS
Tribes/Reservations: Chumash, Salinian, and Yokuts Tribes
Gateway communities: Taft; Sana Margarita; and Atascadero.

Resource Areas:
☑ Recreation ☐x Energy ☐ Minerals ☑ Grazing ☐ Timber ☑ Scientific Discovery ☑ Tribal Cultural

Background

The Carrizo Plain National Monument was established in 2001 for the purposes of protecting lands that contained cultural, prehistoric, historic, geologic, and scientific resources, including objects of archaeological significance. The CPNM encompasses 211,045 million acres of land primarily in San Luis Obispo County, CA (a small amount of monument is located in Kern County). State and private inholdings total 35,772 acres. CPNM is managed by BLM. A wide range of recreational activities take place on the Monument; in addition, activities such as grazing and oil and gas production are also permitted.

The designation of the Monument had backing and support from the general public, including the gateway communities and the Native American tribes in the area.

Prior to being designated as a National Monument, Carrizo Plain was managed by BLM as a Natural Area. The CPNM is proximate to the major population center of Los Angeles The Monument is home to diverse communities of wildlife and plant species including 13 Federally listed Threatened and Endangered species. Native Americans have occupied the area for at least the last 10,000 years, including the Chumash, Salinian, and Yokuts Tribes. In addition, the monument provides many recreational opportunities, including hiking, camping, hunting, horseback riding, bicycle riding, tours of Native American rock art sites and historical ranches, and wildlife and wildflower viewing.

The area is cooperatively managed by the California Department of Fish and Wildlife and The Nature Conservancy.

A management plan was developed with the public and BLM partners. Meetings were held with the public and the Monument Advisory Committee (MAC) in the development of the alternatives, review of the alternatives and development and review of the proposed alternative. These meetings took place in Bakersfield, Carrisa Plains, San Luis Obispo. The public planning process occurred over July 2002 - 2011. The Carrizo was then being proposed as a National Conservation Area (NCA). A number of public meetings and outreach occurred over 1999-2000.

[1] The BLM provided data used in this paper.

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During the planning process it was proposed by the public the area be closed for Off Highway Vehicles (OHVs). After going through the planning process and public comment the area was closed to non-street legal OHVs; there is an open OHV area adjacent to the monument.

Local Economy and Economic Impacts

Table 1 presents socio-economic information for Kern and San Luis Obispo Counties and the state of California. Together, the two counties contain roughly 3% of the State's population. The population of Kern County increased about 60% from 2000 to 2015; the population of San Luis Obispo County grew by about 27% over the same time period. The population demographics of the two counties are roughly similar, except that Kern County has more than double the Hispanic population compared to San Luis Obispo (52% compared to 22%). The median 2015 household income in Kern and San Luis Obispo Counties was $49,026 and $60,691, respectively. The median 2015 household income for California was about $62,000.

Table 1. Economic Snapshot -- Kern, and San Luis Obispo Counties and State of California

Measure	Kern	San Luis Obispo	California
Population, 2015[a]	865,736	276,517	38,421,464
Unemployment rate, April 2017	9.5	3.3	4.5
Median Household Income, ($2015[a)]	49,026	60,691	61,818

[a] U.S. Census Bureau, 2011-2015 American Community Survey
[c] https://data.bls.gov/cew/apps/data_views/data_views.htm#tab=Tables

The USDA Economic Research Service (ERS) has developed a set of county-level typology codes that captures a range of economic and social characteristics. The CPNM counties are classified as follows:

- Recreation dependent – San Luis Obispo is classified as a recreation dependent county (the ERS formula is based on recreation-related employment, earnings, income, and seasonal housing);
- Kern County is classified as a low education county; and
- No dependence on mining, and no persistent poverty in these counties.

The largest sectors in terms of employment in Kern and San Luis Obispo Counties are retail trade, accommodation and food service, and health care (see Figure 1). Together these sectors accounted for about 45% of total employment in the county in 2015.[2]

[2] U.S. Census Bureau County Business Patterns, 2015.

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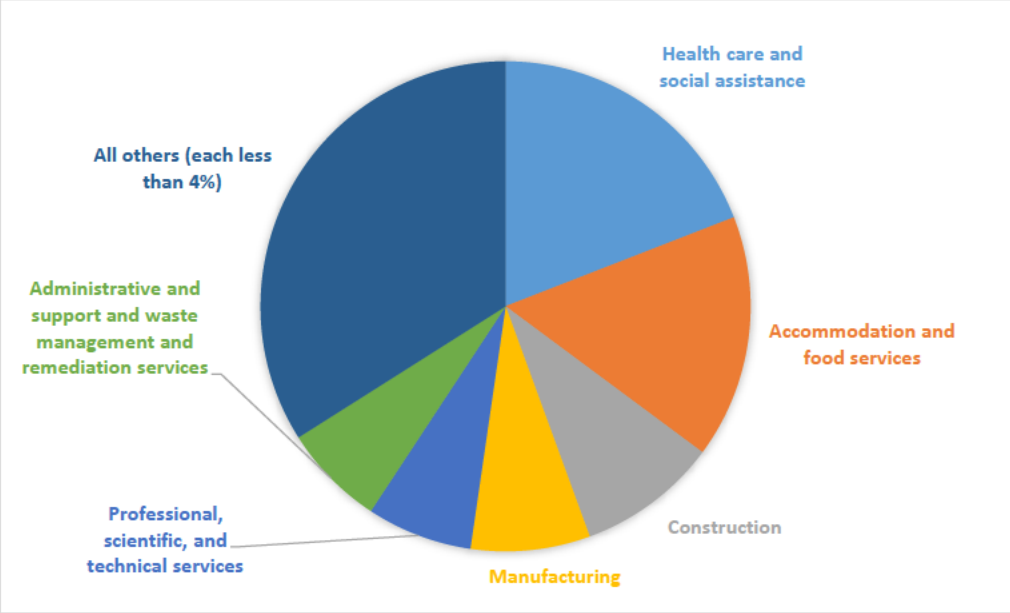
Figure 1. Percent of employment by sector in Kern and San Luis Obispo Counties, 2015



*All others includes agriculture/forestry; utilities; wholesale trade; finance and insurance; real estate; professional, scientific and technical services; admin and support services; waste management; educational services; arts and entertainment; and transportation and warehousing Each of these represents 4% or less of total employment Source: 2015 County Business Patterns, U S Census Bureau

Information is provided below on two different types of economic information: "economic contributions," and "economic values." Both types of information are informative in decision making. Economic contributions track expenditures as they cycle through the local and regional economy, supporting employment and economic output.

Definitions

***Value Added*:** A measure of economic contributions; calculated as the difference between total output (sales) and the cost of any intermediate inputs.

Economic Value: The estimated net value, above any expenditures, that individuals place on goods and services; these are particularly relevant in situations where market prices may not be fully reflective of the values individuals place on some goods and services.

Employment: The total number of jobs supported by activities.

Table 2 provides estimates of the economic contribution of activities associated with CPNM. It is estimated that recreation activities in the CPNM area supported about 48 jobs and provided about $2.9 million in value added in FY 2016.

Economic values, in contrast to economic contributions, represent the net value, above and beyond any expenditures, that individuals place on goods and services. It is not appropriate to sum values for

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economic contributions and economic values because they represent different metrics. To the extent information is available some economic values are presented in Table 3 along with information on the timing and drivers of future activity. For commodities bought and sold in markets (e.g., oil, gas, etc.), the economic values are closely related to the market prices of the commodities. For goods and services – such as recreation – which are typically not bought and sold in markets the values are estimated based on visitor surveys which attempt to capture individual values above and beyond their direct expenditures. The economic value in FY 2016 associated with recreation is estimated to be about $2.6 million.

Table 2. Estimated CPNM Economic Contributions, 2016

Activities	Economic Output, $ millions	Value added (net additions to GDP), $ millions	Employment supported (number of jobs)
Recreation	4.8	2.9	48
Energy minerals			
Grazing	2	N/A\	22

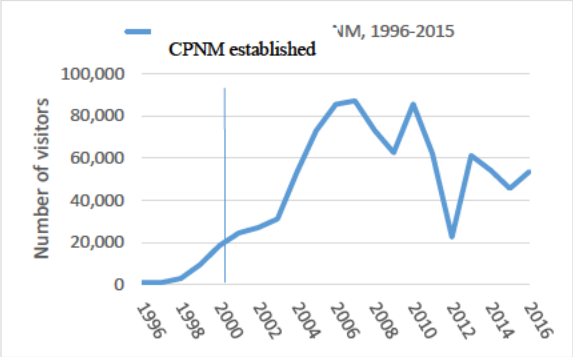
(b) (5) DPP [redacted]

Activities and Resources Associated With CPNM

Details on the activities occurring at Carrizo Plain National Monument are provided below.

- **Recreation:** Figure 2 shows CPNM recreation visitation data for FY 1996 - 2016. Recreation visits increased steadily from 1996 to about 80,000 in in 2007, dropped to about 20,000 in 2012 and have since increased to about 50,000 in 2016 (visitation was not tracked prior to 1996). Annual visitation fluctuates significantly based on the amount of wildflowers. Prior to designation, all off highway vehicles were allowed on designated routes, since designation only street legal vehicles are allowed on designated routes. The monument is open to hunting and is regulated by the California Department of Fish and Wildlife. Recreation activities provide the opportunity for economic activity to be generated from tourism for an indefinite period of time. The economic contributions occur annually, and in cases where visitation increases over time, recreation generates additional activity each year. These contributions affect the regional and state economies. Recreation activities based on visitation to BLM-managed land are estimated to contribute about $3 million in

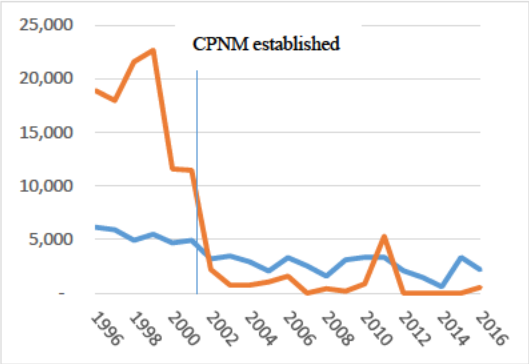
Figure 2. Recreation Visits, CPNM, 1996-2015



value added (net economic contributions) and support 48 jobs;[3] If the monument had not been designated, BLM would still anticipate visitor numbers to increase due to the proximity to large population centers (including Los Angeles and San Francisco).

- **Energy:** In general, the scope, magnitude, and timing of energy and minerals activities are closely related to supply and demand conditions in world markets and the market prices of mineral commodities. Local or regional cost considerations related to infrastructure, transportation, etc. also may play a role in defining the supply conditions. To date, energy development on the Monument has been limited.
    - **Coal.** There are no coal resources present in the Monument area.
    - **Oil and gas.** There are two existing active oil fields in the Monument (the Morales Canyon and Russell Ranch fields) that are recognized as having valid existing rights. Prior to designation there were some small exploratory test sites outside the existing fields with the potential of having 1-3 drilled wells. Oil production has generally been trending down since 1996, with about 9,000 barrels produced in 2016. Gas production peaked in 1998, and has subsequently declined to low levels.
    - **Energy transmission:** There has only been one application for a new transmission line since the Monument was established. Pacific Gas and Electric (PGE) applied for a transmission right-of-way on 3/30/2016. PGE has done public scoping for this project, however they currently put a hold on the project. There have been 3 renewals on existing right-of- ways originally issued between 1949 and 1970.
- **Non -fuel minerals.** There are no solid mining activities on the Monument nor are there mineral developments or processing facilities adjacent to or impacted by the Monument designation.
- **Timber.** There are no active timber production in the Monument.

Figure 3. Permitted and Billed AUMs, Carizzo Plain, 1996-2016



- **Grazing.** The Monument proclamation allows for the continuation of all pre-designation grazing activities, including maintenance of stock watering facilities. About 2,700 AUMs were billed in FY 2016. Figure 3 shows the trend in billed Animal Unit Months (AUMs) on CPNM (some allotments are wholly or partially contained within the boundaries of CPNM). There are two types of grazing authorizations within the Monument: traditional Section 15 grazing leases (seven grazing allotments); and Free Use grazing permits (9 allotments), which are issued only for the management of vegetation to meet Monument Management Plan objectives rather than the production of livestock forage. The Free Use grazing permits were established in 1995. Prior to 1998, as part of the 1996 Carrizo Plain Natural Area (CPNA) Plan, the "Managing Partners"

(b) (5) DPP [redacted]

[3] BLM data.

(California Department of Fish and Wildlife Service and The Nature Conservancy), had been annually implementing a three pasture, rest-rotation grazing system on all of the acquired lands within Carrizo Plain - solely for the benefit of natural communities and listed species. In 1998, the Partners removed this rest-rotation system and began a grazing management system with a more comprehensive resource-based approach. This approach focused on adaptive management and the objectives and needs of each resource value or conservation target. This change in management resulted in fewer AUMs billed in the CPNA, between 1998 and 2001. The comprehensive resource-based approach continues today through the implementation of the 2010 Carrizo Plain National Monument Resource Management Plan. During 1998-2003 drought resulted in resource conditions that did not allow for grazing on the Free Use Grazing Permit allotments and reduced the number of billable AUMs on Section 15 lease allotments.

- **Cultural, archeological, and historic resources**. Due to the deep history of Native American use and occupation of the Carrizo Plain and the presence of identified sacred sites, contemporary tribes maintain strong ties with the area. The BLM works closely with tribes to insure the CPNM is managed in manner compatible with tribal cultural resource values. Activities currently undertaken by tribal members include hunting, fishing, gathering, wood cutting, and the collection of medicinal and ceremonial plants, edible herbs, and materials for crafting items like baskets and footwear.

  Since 2001, approximately 22,500 acres, roughly 10% of the monument, has been surveyed for cultural sites. A total of 241 archaeological sites within the CPNM have been identified to date, with about 80% of these identified since the MTNM was designated. The majority of these sites are associated with the long history of Native American occupation of the Carrizo Plain. One hundred of these constitute scientifically and spiritually significant Native American heritage sites and have been awarded the highest level of national significance as the Carrizo Plain Archaeological District National Historic Landmark. An important component of this district is the 33 pictograph sites internationally recognized as among the most significant examples of their kind in the world. The CPNM also contains a large number of historic period sites are eligible for the National Register of Historic Places. These sites consist of remains and structures associated with mid-18th century settlement and homesteading and subsequent post World War ll large scale agricultural development.

  This is largely due to a marked increase in the completion of archaeological surveys during this period.

Multiple Use and Tradeoffs Among Resource Uses

This section presents some information to help understand land management tradeoffs. (b) (5) DPP [redacted]

(b) (5) DPP [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

(b) (5) DPP [redacted]

[redacted]

Table 3. Summary of CPNM Activities and Economic Values, FY 2016

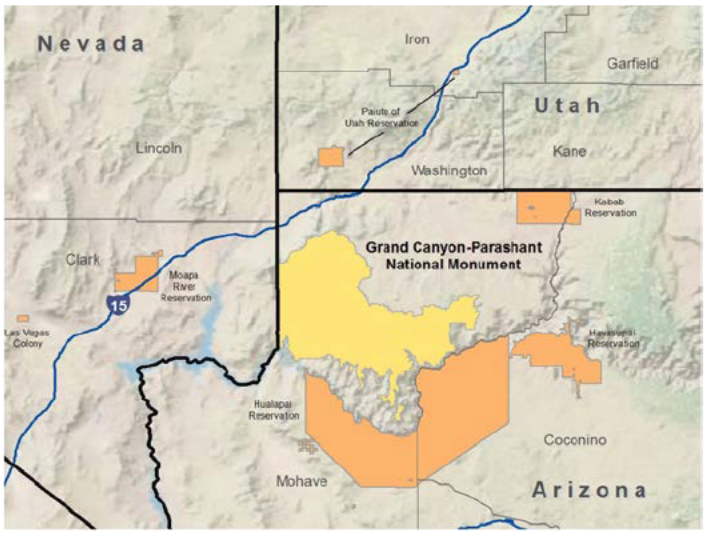
Activities	Level of annual activity	Economic Value	Timing	Drivers of current and future levels of activity
Recreation	FY 2016: 60,000 visits	$44.34/visitor-day[a]	Visitation could continue indefinitely if landscape resources remain intact and of sufficient quality.	Societal preferences for outdoor recreation; disposable income; changing individual preferences for work and leisure time
Oil, gas, coal production	FY 2016: 9,000 bbl	FY 2016 average prices[b]: -crude oil (WTI): $41.34/bbl -natural gas: $2.29/mcf -coal (subbituminous): $12.08/ton	Development of energy and non-energy minerals is subject to market forces (worldwide supply and demand, prices). Mineral extraction is non-renewable and occurs only as long as the resource is economically feasible to produce.	Market prices of energy commodities affect both supply and demand. Local and regional cost considerations related to infrastructure and transportation are also relevant.
Grazing	2,700 AUMs billed in 2016	2016 grazing fee: $2.11/AUM	Grazing could continue indefinitely if forage resources are managed sustainably.	Market prices for cattle and sheep and resource protection needs and range conditions (due to drought, fire, etc.) can affect AUMs permitted and billed.
Cultural resources	Indigenous communities often use natural resources to an extent and in ways that are different from the general population, and the role that natural resources play in the culture of these indigenous communities may differ from that of the general population. Culturally important sites and unique natural resources, by definition, have limited or no substitutes. Recognizing this is a critical consideration in land management because it may affect consideration of tradeoffs. CPNM contains substantial cultural resources that have not been fully surveyed. Tribes use the sacred sites within CPNM for hunting; fishing; gathering; wood cutting; and for collection of medicinal and ceremonial plants, edible herbs, and materials for crafting items like baskets and footwear.			
Benefits of nature	Services provided by nature underpin all sectors of a local economy. As many of these services are not sold in markets, we have limited information on their prices or values. Specific benefits related to CPNM include protection of crucial habitats for deer, elk, desert bighorn sheep, pronghorn, and endemic plant species that inhabit rare habitat types such as hanging gardens.			

[a] This value represents the estimated consumer surplus associated with general recreation for the Intermountain region from the USGS Benefit Transfer Toolkit (https://my.usgs.gov/benefit-transfer/). Consume surplus represents values individuals hold for goods and services over and above expenditures on those goods and services.
[b] All prices are from EIA.gov.

Grand Canyon-Parashant National Monument

Economic Values and Economic Contributions

DRAFT



Introduction

The purpose of this paper is to provide an overview of the economic values and economic contributions of the activities and resources associated with Grand Canyon-Parashant National Monument (GCPNM or the Monument). The GCPNM is located entirely within Mohave County in northwest Arizona, bordering Nevada to the west and near the southern border of Utah. With the Grand Canyon along the south perimeter, the GCPNM can only be accessed through rough, unpaved roads from the north, west, and northeast. For context, this paper provides a brief economic profile of the surrounding area, focused on Mohave County, Arizona and supplemented with basic and relevant information for Clark County, Nevada; Washington County, Utah; and Coconino County, Arizona.

Grand Canyon-Parashant National Monument, Arizona

Location: Mohave County, AZ
Managing agencies: NPS, BLM
Adjacent cities/counties/reservations:
- Clark County, Nevada to the west; Washington County, Utah to the north; Coconino County, Arizona to the east

Resources and Uses:
☑ Recreation ☐ Energy ☐ Minerals
☑ Grazing ☐ Timber ☑ Scientific Discovery
☑ Tribal Resources ☑ Cultural / Paleo Resources

Background

The GCPNM was established by President Clinton on January 11, 2000 (Proclamation 7265) and is jointly managed by the National Park Service (NPS) and the Bureau of Land Management (BLM) under a Service First Agreement. The Monument consists of 1,048,321 acres including 808,744 acres of BLM-administered land, 208,447 acres of NPS-administered land, 23,205 acres of Arizona State Trust lands, and 7,920 acres of private land. NPS-administered lands within the monument are part of the Lake Mead National Recreation Area legislated unit, established by Congress in 1964. There are four Wilderness Areas located on the Monument, accounting for just over 93,000 acres. The Foundation Document for the GCPNM summarizes the purpose of the Monument to: "protect undeveloped, wild, and remote northwestern Arizona landscapes and their resources, while providing opportunities for solitude, primitive recreation, scientific research, and historic and traditional uses."[1] To protect objects within the Monument, the Proclamation directed the following management:

- Prohibit all motorized and mechanized vehicle use off road, except for emergency or authorized administrative purposes.
- Withdraw from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws including mineral and geothermal leasing.
- Only permit the sale of vegetative material if part of an authorized science-based ecological restoration project.
- Continue to issue and administer grazing leases within the portion of the Monument within the Lake Mead National Recreation Area as well as the remaining portion of the Monument.

The Proclamation also states that the establishment of the monument is subject to valid existing rights.

The GCPNM boundary occupies approximately 12% of the area of Mohave County. Communities in Clark County, Nevada; Washington County, Utah; and Coconino County, Arizona also serve as access points to the Monument and are therefore connected economically and socially to the Monument.

[1] DOI. 2016. Foundation Document, Grand Canyon-Parashant National Monument. As stated in document, "The purpose statement identifies the specific reason(s) for establishment of the monument. The purpose statement for Grand Canyon-Parashant National Monument was drafted through a careful analysis of its enabling presidential proclamation and the legislative history that influenced its development.

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Individuals from the Hopi, Southern Paiute, Hualapai, Havasupai, and Navajo tribes continue visiting sites, gathering, and using resources in the Planning Area.[2]

Public Outreach Prior to Designation

In November 1998, former Department of Interior Secretary Babbitt went to Northern Arizona and began a dialogue that included two more visits, two large public meetings, and more than 59 other meetings with concerned local governments, tribes and other groups regarding the future of these lands.[3]

A December 21, 1999 briefing paper for the Secretary described the position of interested parties as follows: "Legislation was introduced in August 1999 by Senator Kyl (S. 1560) and Congressman Stump (H.R. 2795) proposing a National Conservation Area designation for the region. Stump's bill would actually lower protections in existing law. No hearings have been held on Kyl's legislation. Environmental groups have expressed support for the monument designation, most notably, The Grand Canyon Trust. The Arizona Strip Grazing Board has expressed general opposition to further designation, but stated that if a proposal is pursued, they would like to work with those making the designation to ensure grazing activities continue. Private land owners, recreationists and mining interests have expressed concerns over possible restrictions and changes to past agreements, but desire to participate in the process."

Local Economy and Economic Impacts

Table 1 summarizes some key demographic and economic indicators for Mohave County, Arizona and the State as a whole. While the County accounts for just 3 percent of the State's population, the percent increase since 1990 was larger than the State (118% compared to 81%). The unemployment rate in Mohave County is higher than the State and a substantial portion of the Mohave County workforce are employed in jobs outside the County. This observation is reflected in the ratio of jobs to population (33% in Mohave County compared to 53% for the State) and BEA personal income data that shows a net inflow of income. Furthermore, the median household income in Mohave County was 77% of the State average in 2015. The demographics of Mohave County consists of a relatively higher percentage of non-Hispanic Whites compared to the State (78% compared to 57.5%) and, as shown in Table 1, a relatively small percentage of Native Americans. The USDA Economic Research Service's (ERS) county-level typology codes indicate that Mohave County is a recreation-dependent county. That classification is supported, in part, by the relatively higher percentage of jobs recreation/tourism related sectors (e.g., retail trade and accommodation and food services) in Mohave County in 2015 as reported by the BEA. The proportions of jobs in Mohave County associated with other natural resource related sectors are relatively low (0.9%, 0.2%, 0.4% for the Farm, Forestry, fishing, & ag. and

Table 1. Mohave County and State of Arizona Economic Snapshot

Measure	Mohave County, AZ	Arizona
Population, 2016[a]	203,362	6,641,928
Native American % of population [a]	2.1%	4.4%
Employment, December 2016[c]	67,304	3,542,969
Unemployment rate, March 2017[b]	5.5%	3.1%
Median Household Income, 2015[a]	$38,488	$50,255

[a] U S Census Bureau, 2011-2015 American Community Survey
[b] https://laborstats az gov/sites/default/files/documents/files/emp-report pdf
[c] U S Bureau of Economic Analysis (BEA), Regional Economic Accounts Table CA25N

[2] BLM and NPS. 2007. The Proposed Resource Management Plan/FEIS for the Arizona Strip Field Office, the Vermilion Cliffs National Monument, and the BLM Portion of Grand Canyon-Parashant National Monument, and a Proposed General Management Plan/Final EIS for the NPS Portion of the Canyon-Parashant National Monument.
[3] White House Press Release.

Mining sectors; respectively) and are comparable to the State as a whole.

Non-labor income (income from dividends, interest, and rent and transfer payments) has become an increasingly large source of total income within the County, reaching over 52 percent of all income as of 2015 (compared to about 40% for the State as a whole). A relatively high proportion of this non-labor income is associated with age-related transfer payments (Social Security and Medicare) which is reflective of the relatively older population in the County compared to the State as a whole.

As noted above, communities in Clark County, Nevada; Washington County, Utah; and Coconino County, Arizona are common access points for the Monument. Coconino County has a population around 135,000 with half of the population living in Flagstaff. Much of the County does not provide easy access to the Monument. The Town of Fredonia (population around 1,300) represents the main access point to the Monument from the County and bills itself as "the gateway to the North Rim of the Grand Canyon."[4] Washington County, Utah has a population around 155,000 with half of the population living in St. George. The County is classified by ERS as recreation dependent. St. George, an access point for the GCPNM, has been a tourist destination since the 1960s and provides access to a number of other National Parks and Monuments.[5] Clark County, Nevada has a population of around 2.1 million with the vast majority of the population living in the greater Las Vegas area. The closest communities in the County to the Monument are Mesquite (population of about 17,000) and Bunkerville (population of about 1,000). Mesquite is a "growing resort destination"[6] providing local activities (such as golf and casinos) and access to a range of publically managed lands. Information on the primary economic drivers for Bunkerville are not readily available.

Activities and Resources Associated With GCPNM

Activities taking place on and resources within the GCFNM include:

- **Recreation:** As described in the Final Environment Impact Statement (FEIS) associated with the GCPNM Resource Management Plan, GCPNM's remote, open, sparsely developed area and engaging scenery provides a wide array of dispersed recreation opportunities for moderately regulated recreation. Exploration, driving for pleasure, hiking, backpacking, camping, picnicking, big and small game hunting, and wildlife observation are the most common activity types. Motorized or mechanized vehicle, small aircraft, walking, or equestrian are typical modes of travel. Approximately 30,000 visits to the GCPNM resulted in $1.8M in expenditures in local gateway regions in 2016. These expenditures supported a total of 27 jobs, $0.9 million in labor income, $1.5 million in value added, and $2.6 million in economic output in local gateway economies surrounding the Monument. The total consumer surplus associated with recreation at the GCPNM in 2016 was estimated to be $2.4M. This estimate is based on average consumer surplus values and participation counts for camping, big game hunting, other hunting,

Table 2. Estimated Economic Contributions, 2016

Activities	Economic output ($millions)	Value added (net additions to GDP), $ millions	Employment supported (number of jobs)
Recreation*	$2.6	$1.5	27
Grazing	$3.7	Grazing value-added is not available	100

*Source: BLM data

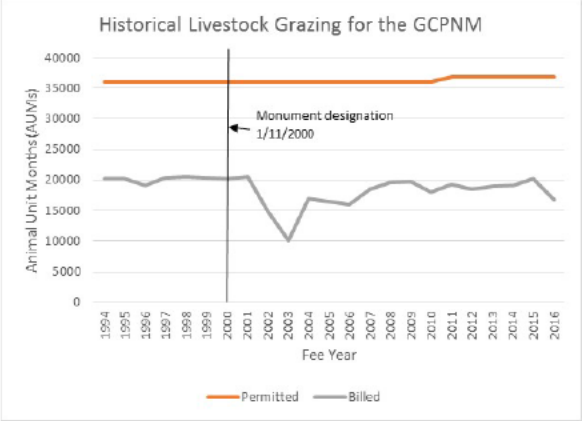
[4] See http://www.fredoniaaz.net/.
[5] See https://www.sgcity.org/aboutstgeorge/.
[6] See https://www.visitmesquite.com/about/.

mountain biking, hiking, off highway vehicle, and general recreation.[7] The Proclamation's prohibition of all motorized and mechanized vehicle use off road was implemented through travel management decisions during the planning process. In general, the BLM considered motorized and mechanical use on existing routes to be consistent with the Proclamation. The BLM, based on input from interested stakeholders, classified existing routes open, closed, or administrative. The analysis in Final Environmental Impact Statement (FEIS) concluded that routes identified for closure would have negligible impact on recreational OHV use and the businesses in nearby communities that cater to those users.

- **Energy:** The FEIS identified moderate potential for oil and gas and geothermal resources and no potential associated with coal, although the level of certainty associated with these ratings varies. Furthermore, the ratings were associated with the Planning Area as a whole so the potential within the GCPNM may differ. There are no active energy-related mineral production and no existing energy related right-of-way developments (including renewable developments) within the Monument. Given the remote setting and limited access, there has been very little interest in energy resources in recent decades. The designation withdrew the Monument from location, entry, and patent under mining laws, subject to valid existing rights.

- **Non-Energy Minerals:** The FEIS identified moderate potential for sodium and high potential for metallic minerals, uranium, gypsum, and mineral materials (such as sand, stone, gravel, pumicite, and clay). Again, the ratings were associated with the Planning Area as a whole so the potential within the GCPNM may differ. The FEIS describes historical mining within the Monument associated primarily with copper and residual amounts of the other metals and hardrock minerals as well as uranium ore exploration. These activities occurred in the 1910s through 1980s. There are no active mining claims in the Monument. Given the remote setting and limited access, there has been very little interest in non-energy mineral resources in recent decades. The designation withdrew the Monument from location, entry, and patent under mining laws, subject to valid existing rights.

Figure 1 GCPNM Grazing.



- **Grazing:** The BLM issues and administers grazing leases on both BLM and NPS administered lands within the Monument. The Proclamation states that management with respect to livestock grazing would not be altered by the designation of the Monument. At the time of the FEIS (based on 2004 data), the BLM administered 28 grazing allotments and managed them in cooperation with 25 permittees throughout the Monument. The permits authorized 38,000 Animal Unit Months (AUMs), primarily associated with cattle operations. Figure 1 shows permitted and billed AUMs from 1994 through 2016.

[7] Recreation unit value is a survey-based value for general recreation for the Intermountain region from the USGS Benefit Transfer Toolkit https://my.usgs.gov/benefit-transfer/. Economic value is the net benefit to recreational users (total benefits minus total costs).

The figures shows that permitted AUMs have remained relatively stable over the 23 year period. Billed use (which approximates actual use) has fluculated over time and ranging from a low of 28 percent to a high of 57 percent of the permitted AUMs. Various reasons, in any given year, affect the number of AUMs used by permittees such as drought conditions, market forces, and fluctuations in individual permittee livestock operations. Based on the 5-year average of recent annually billed AUMs (18,758), livestock grazing on the Monument has supported approximately 100 paid and unpaid (i.e., family labor) jobs annually resulting in approximate $980 thousand in labor income and generating about $3.7 million in total economic output.

- **Timber:** Upon designation, the BLM and NPS were directed to only permit the sale of vegetative material if part of an authorized science-based ecological restoration project. The FEIS describes the limited opportunities and interested in commercial use of woodland products from within the Monument. No commercial activity associated with timber have been reported in the Monument since the 1960s.

- **Resource values:** Monument designation is intended to protect scientific and historic objects. In general, these objects are valued by society but those values are not bought or sold in the marketplace and therefore difficult to quantify. Below is a brief overview of the objects identified in Proclamation that the designation is intended to protect[8]:
  - **Scientific Investigation:** Scientific research and opportunities associated with the ponderosa pine ecosystem in the Mt. Trumbull area and ecological research opportunities made possible by the vast, remote, and unspoiled landscapes.
  - **Cultural (Historic and Archaeological) and Paleontological Resources:** Undisturbed archaeological evidence, displaying the long and rich human history spanning more than 12,000 years. Historic resources, including evidence of early European exploration, Mormon settlements, historic ranches, sawmills, and old mining sites. Abundant fossil record.
  - **Cultural Tribal Resources:** Individuals from the Hopi, Southern Paiute, Hualapai, and Havasupai tribes continue visiting sites, gathering, and using resources in the Monument.
  - **Recreation:** The value of recreation opportunities and experience extend beyond the economic activity supported by visitors to the Monument. The Monument provides iconic western viewsheds in a setting known for its solitude, natural soundscapes, internationally recognized night skies, and wilderness values.

Land Management Tradeoffs

This section presents some information to help understand land management tradeoffs. (b) (5) DPP [redacted]

[8] In addition to the Proclamation, Chapter 1 of the FEIS provides a more detailed description of these objects and their significance.

(b) (5) DPP [redacted]

[redacted]

[redacted]

[redacted]

(b) (5) DPP [redacted]

Grand Staircase Escalante National Monument

Economic Values and Economic Contributions

DRAFT

DOI-2018-09 00759

Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Grand Staircase Escalante National Monument (GSENM) as well as to provide a brief economic profile of Kane and Garfield counties.

Grand Staircase Escalante National Monument, Utah

Location: Kane County, Garfield County, UT
Managing agencies: BLM
Adjacent cities/counties/reservations: Dixie National Forest, Capitol Reef National Park, Glen Canyon National Recreation Area, Bryce Canyon National Park, other Bureau of Land Management (BLM) administered lands, and Kodachrome Basin State Park
Resource Areas:
☑ Recreation ☑ Energy ☐ Minerals
☑ Grazing ☐ Timber ☑ Scientific Discovery
☑ Tribal Cultural

Background information

Grand Staircase Escalante National Monument, which encompasses 1,866,331 acres in Kane and Garfield counties in Utah, was established in 1996 by President Clinton to protect an array of historic, biological, geological, paleontological, and archaeological objects. It was the first National Monument under BLM multiple use management. Since designation, there have been two congressional boundary adjustments as well as an exchange of all of the State of Utah School and Institutional Trust Lands Administration (SITLA) lands within the Monument boundaries. In May 1998, Secretary of the Interior Bruce Babbitt and Utah Governor Michael Leavitt negotiated a land exchange to transfer all State school trust lands within the Monument to the Federal government, as well as the trust lands in the National Forests, National Parks and Indian Reservations in Utah. On October 31, 1998 President Clinton signed the Utah Schools and Lands Exchange Act (Public Law 105- 335) which legislated this exchange. The federal government received all State inholdings in GSENM (176,699 acres) while the State received $50 million in cash plus $13 million in unleased coal and approximately 139,000 acres, including mineral resources. The federal government received additional State holdings within other NPS and US Forest Service units as part of the same exchange. On October 31, 1998, President Clinton also signed Public Law 105-355. Section 201 of this law adjusted the boundary of the Monument by including certain lands (a one-mile wide strip north of Church Wells and Big Water) and excluding certain other lands around the communities of Henrieville, Cannonville, Tropic, and Boulder. This law resulted in the addition of approximately 5,500 acres to the Monument. In 2009, H.R. 377, the Omnibus Public Land Management Act (Public Law 111-11), directed a boundary change and purchase for the Turnabout Ranch, resulting in the removal of approximately 25 acres from GSENM.

Public Outreach

GSENM was designated in 1996 without public engagement. However, the area in southern Utah had long been considered, discussed and evaluated for the possibility of providing greater recognition of, and legal protection for, its resources. In 1936, the National Park Service (NPS) considered making a recommendation to President Roosevelt to designate a 6,968 square mile "Escalante National Monument" (which also extended to portions of Bears Ears National Monument). A second NPS proposal proposed a 2,450 square mile National Monument. In the late 1970s, under the authority of Section 603 of the Federal Land Policy and Management Act of 1976 (FLPMA), the BLM evaluated the area for its wilderness characteristics. The Section 603 process ultimately led to the establishment of more than a dozen wilderness study areas (WSAs), totaling about 900,000 acres, in the area that is now GSENM.

GSENM's Monument Management Plan included substantial outreach, public scoping and comment periods according to land use planning regulations and policies. Over 6,800 individual letters were received during the public scoping period. During the planning process, the planning team conducted 30 public workshops, both to elicit initial input during the scoping process and to hear comments on the Draft Management Plan after its release. The team held dozens of meetings with American Indian tribes, local, State, and Federal government agencies, and private organizations to discuss planning issues of concern to each party. Similar public outreach efforts are underway for the Livestock Grazing Monument Management Plan Amendment and Environmental Impact Statement.

Local Economy and Economic Impacts

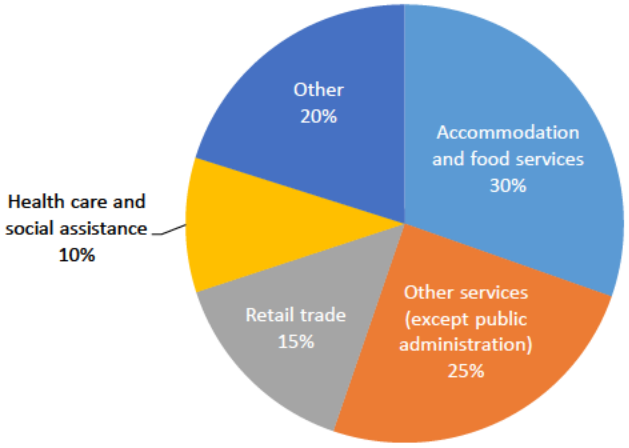
Combined, Kane and Garfield counties make up less than half a percent of Utah's population. Current unemployment rates are similar to the state average in Kane County, but higher in Garfield County. Median household income is similar in the two counties but lower than at the State level (Table 1). The accommodation and food services industry is the largest by employment in both Kane and Garfield counties (see Figure 1).

Table 1. Economic Profile for Kane and Garfield Counties

Measure	Kane County	Garfield County	Utah
Population, 2015	7,131	5,009	2,995,919
Unemployment rate, March 2017[a]	3.3%	7.6%	3.1%
Median Household Income (2015)[b]	$47,530	$45,509	$62,961

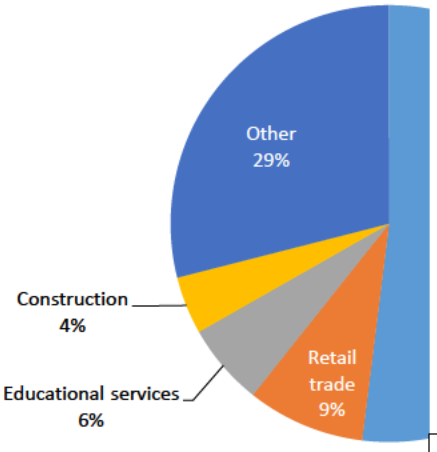
[a] http://www jobs utah gov/wi/pubs/une/season html
[b] https://jobs utah gov/wi/pubs/wni/income/index html

Kane County



"Other" includes industries classified as Wholesale trade, Administrative and support and waste management and remediation services, Transportation and warehousing, Professional, scientific, and technical services, Real estate and rental and leasing, Arts, entertainment, and recreation, Construction, Finance and insurance, and Other, each of which represents less than 6% of paid employment.

Garfield County



"Other" includes industries classified as Real estate and rental and leasing, Arts, entertainment, and recreation, Administrative and support and waste management and remediation services, Transportation and warehousing, Finance and insurance, Professional, scientific, and technical services, Manufacturing, Wholesale trade, and Other, each of which represents less than 3% of paid employment.

Figure 1. Percent employment by sector in Kane and Garfield Counties, 2015

Information is provided below on two different types of economic information: "economic contributions," and "economic values." Both types of information

Definitions

Value Added: A measure of economic contributions; calculated as the difference between total output (sales) and the cost of any intermediate inputs.

Economic Value: The estimated net value, above any expenditures, that individuals place on goods and services; these are particularly relevant in situations where market prices may not be fully reflective of the values individuals place on some goods and services.

Employment: The total number of jobs supported by activities.

are informative in decision making. Economic contributions track expenditures as they cycle through the local and regional economy, supporting employment and economic output (see Table 2). Economic values, on the other hand, represent the net value, above any expenditures, that individuals place on goods and services (see Table 3). These values are particularly relevant in situations where market prices may not be fully reflective of the values individuals place on some goods and services.

Activities and Resources Associated with Grand Staircase Escalante National Monument
Information on the activities taking place on GSENM are provided below.

- **Recreation:** Grand Staircase Escalante National Monument provides a large variety of multiple-use recreation opportunities including traditional hiking and camping, hunting, fishing, horseback riding, mountain biking, as well as motorized activities for off-highway vehicles. Visitation has increased since designation, rising from 456,369 visits in 1997 to 926,236 visits in 2016 (Figure 2). BLM also issues commercial Special Recreation Permits (SRPs) for GSENM. SRPs are authorizations that allow specified recreation use of the public lands and related waters. At GSENM commercial SRPs cover a wide range of activities including general guide/hiking service, hunting & fishing guides, ATV/vehicle experiences, educational events (geology classes, etc.), horseback riding, and bicycling. The number of permits issued has increased from 35 in 1999 to 115 in 2017.[1]
  Recreation activities provide the opportunity for economic activity to be generated from tourism for an indefinite period of time. Recreational visitors spend money at local businesses, and that spending can lead to economic contributions that affect regional and state economy. The economic contributions occur annually, and in cases where visitation increases over time, recreation generates additional activity each year. The net economic contributions associated with recreation in 2016 are estimated to be about $51 million in value added and 1,024 jobs (Table 2).[2]

Table 2. GSENM Estimated Economic Contributions, 2016

Activities	Value added (net addition to GDP), $ millions	Employment supported (number of jobs)
Recreation	50.78	1,024
Oil		
Gas		
Grazing	Grazing value-added is not available	184

(b) (5) DPP [redacted]

[redacted]

[1] BLM data.
[2] BLM data.

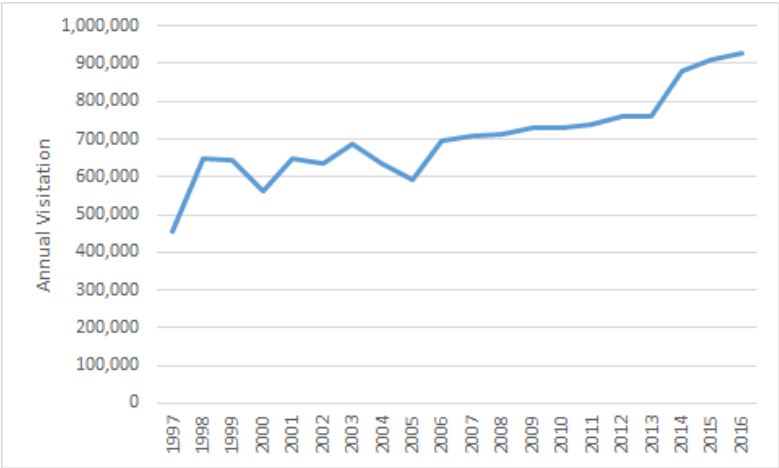


Figure 2. Annual Visitation to Grand Staircase Escalante National Monument

- **Energy:** In general, the scope, magnitude, and timing of energy and minerals activities are closely related to supply and demand conditions in world markets and the market prices of mineral commodities. Since designation, there has been some oil and gas production, but no coal production or exploration.
  - **Coal.**

    Exploration and Production in GSENM:
    - No coal lands have been explored or coal produced within the GSENM since designation. Existing coal leases were voluntarily exchanged for Federal payments totaling $19.5 million (not adjusted for inflation) in Dec. 1999/Jan. 2000. As many as 23 companies acquired coal leases in the 1960s.
    - 64 coal leases (~168,000 acres) were committed and a plan was submitted for Andalex Resources' Smoky Hollow Mine prior to designation. At the time of designation, the Warm Springs Smoky Hollow DEIS was in progress to analyze the proposed mine. The plan proposed mining on 23,799 acres of the area leased in GSENM. In the mid-1990's an EIS was initiated. In December 1999, the Andalex coal leases were voluntarily sold to the U.S. Government using Land and Water Conservation Fund funding for $14 million.[3]

    Coal Resources in GSENM:
    - Most of the coal resources in the Monument are within the Kaiparowits Plateau Coal Field, which contains one of the largest undeveloped coal resources in the United States. An estimated 62.3 billion tons of original coal resources (coal beds > 1 foot thick) are contained in the Kaiparowits coal field, with an estimated 44.2 billion tons within the Monument.[4] In 1997 the Utah Geological Survey indicated that around 11.36 billion tons of the coal in the Kaiparowits Plateau coal filed are

[3] BLM data.
[4] 1996-1997 BLM Kaiparowits Coal Report.

estimated recoverable.[5] It is possible that advances in underground coal mining techniques would result in additional coal being considered minable compared to estimates from the 1990s. In addition to the Kaiparowits Plateau Coal Field, the Monument contains some coal resources in the Eastern portion of the Alton - Kanab Coal Field, which are generally of lower quality than the coal in the Kaiparowits Plateau.

- The Kaiparowits Plateau coal resources in the GSENM are estimated to make up 59% of the potentially recoverable coal in Utah, as of 2015.[6]

Utah Coal Market:

- In 2015, the vast majority of coal consumed in Utah (96%) was used at electric power plants. The remaining coal (3.9%) was consumed by the industrial sector at cement/lime plants and Kennecott Utah Copper's power plant (182 MW capacity) which provides electricity for copper smelting.[7]
- The majority of Utah coal, 80% in 2015, was used in state, while 17% was shipped out of state (up to 60% of Utah coal was shipped to others states in the early 2000s), and 3% was shipped to other countries. Domestic exports have significantly decreased in recent years as several electric plants and industrial users in California and Nevada have switched to natural gas.[8] California, which historically was Utah's largest coal customer, is in the process of eliminating coal use. Nevada was the next largest domestic consumer of Utah's coal, but Nevada also has decided to phase out coal use in electricity generation.[9]
- Utah's electricity portfolio is dominated by coal-fired power plants. However, several natural gas plants have been built in the past 15 years, decreasing Utah's reliance on coal generation. There are currently 5 coal-fired power plants in Utah. All of these plants are in the central part of the state.[10]
- About half of the coal burned in-state is delivered by truck to power plants and industrial users, and the other half is delivered by rail.[11] Transportation costs can contribute a large share of the costs associated with using coal as an energy resource, and can be a factor in determining the extent to which a given coal resource is economic to develop.

- **Oil & Gas.**
  - As of 1997, 47 wildcat wells had been drilled within the monument (24 in Garfield County and 23 in Kane County). Oil production is concentrated in the Upper Valley (UV) field; 5 of the 22 wells in the UV field lie within the National Monument. In addition to the producing wells, there are also 2 water injection

[5] Utah Geological Survey. 1997. A Preliminary Assessment of Energy and Mineral Resources within the Grand Staircase-Escalante National Monument. Circular 93.
[6] Vanden Berg, Michael D. 2016. Utah's Energy Landscape. Circular 121, Utah Geological Survey.
[7] Vanden Berg, Michael D. 2016. Utah's Energy Landscape. Circular 121, Utah Geological Survey.
[8] Vanden Berg, Michael D. 2016. Utah's Energy Landscape. Circular 121, Utah Geological Survey.
[9] U.S. Energy Information Administration. 2016. Utah State Energy Profile.
[10] Vanden Berg, Michael D. 2016. Utah's Energy Landscape. Circular 121, Utah Geological Survey.
[11] U.S. Energy Information Administration. 2016. Utah State Energy Profile.

wells in the monument. There are no oil and gas pipelines in the region, all of the oil is trucked 300 miles to refineries in Salt Lake City.[12]

- The Upper Valley Oil Field was in production prior to designation; no other oil and gas production existed in Kane and Garfield Counties. From 1992 until 1996, 336,313 barrels of oil were produced in the GSENM. No natural gas was produced during that time.[13]
- Four wells within the GSENM are currently producing oil and a small amount of gas. The UVU was approved in 1962 and production from the wells peaked in 1972 at 183,133 barrels. In the last 20 years (1997-2016) production has slowly declined from about 65,828 barrels of oil and no gas annually to 45,538 barrels of oil and 2,357 thousand cubic feet (mcf) of gas (Figures 3 and 4).[14] There is no other oil and gas production in GSENM, or Kane and Garfield Counties.
- 34 oil and gas leases (45,894 acres) are in suspension while a Combined Hydrocarbon Lease (CHL) conversion application is processed.[15]

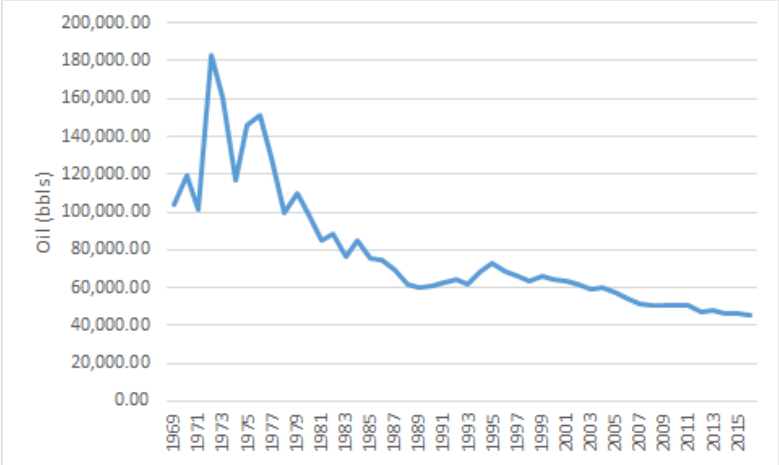


Figure 3. Oil Production on Grand Staircase Escalante National Monument

[12] Utah Geological Survey. 1997. A Preliminary Assessment of Energy and Mineral Resources within the Grand Staircase-Escalante National Monument. Circular 93.
[13] BLM data.
[14] BLM data.
[15] BLM data.

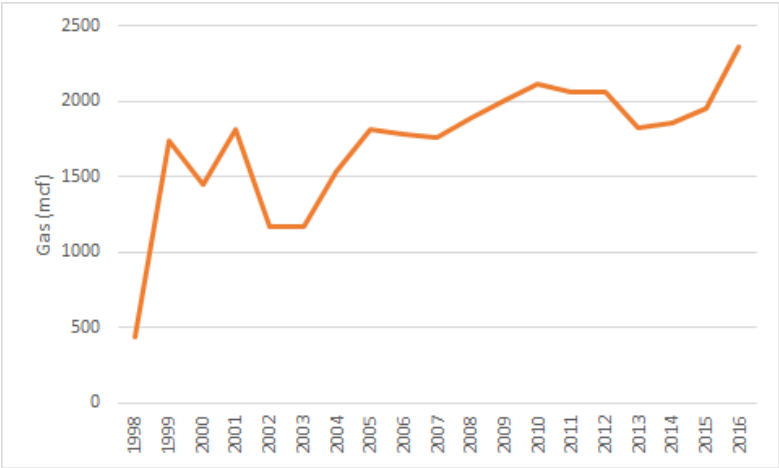


Figure 4. Gas Production on Grand Staircase Escalante National Monument

- **Non-Energy Minerals:** Five small mining operations are permitted within the Monument. Four are active quarries for alabaster, and the fifth is a suspended operation for petrified wood. [16] These claimants failed to pay the required annual filings and therefore, the claims were terminated. The BLM's decision to close the claims was upheld by Interior Board for Land Appeals in March 2008. Since that time, there have been no mining law operations within the monument. Valid existing permits, including those in Title 23 (3 Federal Highway Rights of Way), continue to be recognized until permit expiration. Significant quantities of gravel and riprap from existing pits continue to be provided for Federal Highways projects, primarily to Utah Department of Transportation.[17]

- **Grazing:** Grazing is allowed within Grand Staircase Escalante National Monument. When the Monument was designated, there were 106,645 total Animal Unit Months (AUMs), with 77,400 Permitted AUMs.[18] Today, there are 106,202 total AUMs and 76,957 permitted AUMs. Total AUMs is the sum of permitted AUMs plus suspended AUMs.[19] The number of permitted AUMs represents the most AUMs that may be used under ideal conditions. No reductions have occurred as a result of Monument designation, though small reductions within limited areas have taken place under normal BLM procedures to protect riparian resources and to address other issues. Grazing use levels vary from year to year depending on factors such as drought. Total AUMs billed were 41,597 in 2016, with an average of 44,164 AUMs billed annually since 1996. Figure 5

[16] Utah Geological Survey. 1997. A Preliminary Assessment of Energy and Mineral Resources within the Grand Staircase-Escalante National Monument. Circular 93.
[17] BLM data.
[18] BLM measures an AUM as the amount of forage needed to sustain one cow and her calf, one domestic horse, or 5 sheep or goats for one month. https://www.blm.gov/programs/natural-resources/rangelands-and-grazing/livestock-grazing/fees-and-distribution.
[19] Suspended AUMs are those initially adjudicated and are no longer available for use on an annual basis. These are carried forward in case they become available for use in the future from changes such as vegetation restoration, or improved water making more forage available.

shows the number of AUMs permitted and billed annually from 1991 through 2016. Billed AUMs represent an average of 58% of permitted AUMs since designation. Billed AUMs for 2016 were associated with economic output of about $8.3 million and supported about 184 jobs in the local economy.[20]

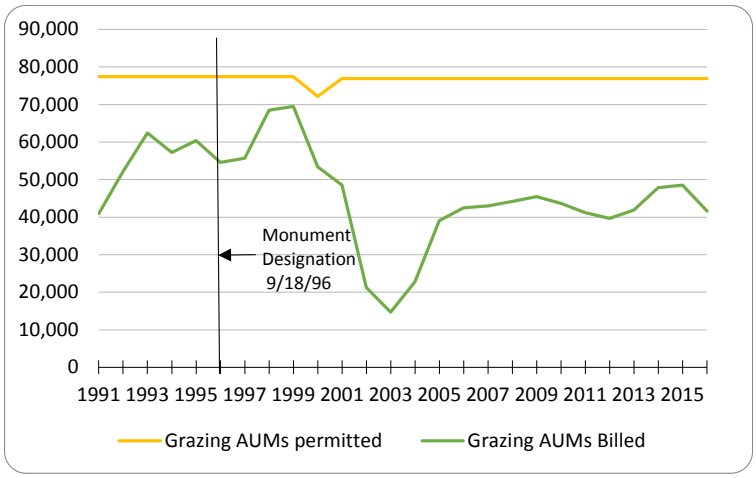


Figure 5. AUMs Permitted and Billed on Grand Staircase Escalante National Monument

- **Timber:** No commercial timber harvest is allowed within Grand Staircase Escalante National Monument. Firewood harvest is allowed in two forestry product areas.

- **Cultural/Tribal/Archeological:** Archaeological surveys carried out to date show extensive use of places within the monument by ancient Native American cultures and a contact point for Anasazi and Fremont cultures. Hundreds of recorded sites include rock art panels, occupation sites, campsites and granaries. Cultural sites include historic and prehistoric sites, Traditional Cultural Properties, Native American Sacred Sites and cultural landscapes.
  According to the Utah State Historic Preservation Office (SHPO), as of March 6, 2017, there are 3,985 recorded archaeological sites within GSENM. However, the GSENM staff estimates that there are more likely around 6,000 recorded archaeological sites within the GSENM, due to a records backlog. This is with only five to seven percent of the Monument surveyed.
  Prehistoric archaeological sites in the GSENM include pottery and stone tool (lithic) scatters, the remains of cooking features (hearths), storage features such as adobe granaries and subsurface stone lined granaries, prehistoric roads, petroglyphs, pictographs and cliff dwellings. Historic sites include historic debris scatters, roads, trails, fences, inscriptions, and structures. Following the designation of GSENM, consultations were initiated with the Native American tribes associated with the GSENM area, including the Hopi, the Kaibab Paiute, the San Juan Paiute, the Paiute Indian Tribes of Utah, the Zuni, and the Ute, and the Navajo. Over the past 20 years, the Hopi and the Kaibab Paiute have been most closely associated with the Monument and most

[20] BLM data.

responsive to continued consultations, as the GSENM area is central to the historic and prehistoric territories of these two tribes.
Local ranching began in the 1860s, and became a major focus of area livelihood and increased settlement in the 1870s. Ranching was initially small scale and for local subsistence, but the herds quickly grew so that by the late 1800s the raising of cattle, sheep, and goats was of major economic importance. Ranching and subsistence farming was historically the backbone of the local economies, and this is still reflected in the views of the modern communities surrounding GSENM. In modern times the economic importance of ranching has somewhat diminished, but the culture of, and past history of, livestock grazing and ranching is one of the important "glues" that binds local communities and families in the GSENM area.

- **Scientific/Paleontological:** Approximately six percent of the area has been surveyed (120,000 acres), with 3,350 documented paleontological sites. Several new discoveries have been made including: 12 new dinosaurs (including four in 2017); 11 new mammal species; 3 new species of marine reptile; 2 new crocodile species; 3 new turtle species; 1 new lizard species; and several new shark and bony fish species. A Paleontological Traveling Exhibit Program annually provides opportunities to more than 12,000 people to see real fossils and related reconstructed specimens of dinosaurs excavated on GSENM.

Land Management Tradeoffs

This section presents some information to help understand land management tradeoffs. (b) (5) DPP [redacted]

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(b) (5) DPP [redacted]

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[redacted]

Table 3. Summary of Activities and Economic Values, 2016

Activities	Level of annual activity	Unit value	Timing	Drivers of current and future levels of activity
Recreation	926,236 visitor days (FY 2016)	$54.19/visitor day[a]	Visitation could continue indefinitely if landscape resources remain intact and of sufficient quality.	Societal preferences for outdoor recreation; disposable income; changing individual preferences for work and leisure time
Oil	45,538 bbls (2016)	FY 2016 average price crude oil (WTI): $41.34/bbl[b]	Development of energy and non-energy minerals is subject to market forces (worldwide supply and demand, prices). Mineral extraction is non-renewable and occurs only as long as the resource is economically feasible to produce.	Market prices of energy commodities affect both supply and demand.
Gas	2,357 mcf (2016)	FY 2016 average price: $2.29/mcf[b]		
Coal	None. See "Coal" section for more information.	May 2017 Utah average coal price: $38.19/ton[c]		
Non-energy Minerals	None. See "Non-energy Minerals" section for more information.	2016 estimated price for gypsum (crude f.o.b mine): $9.00/metric ton[d]		Market prices of non-energy commodities affect both supply and demand. Mineral production is limited to 200,000 cubic yards over a 10-year period per the existing resource management plan.
Grazing	41,567 AUMs billed (2016)	2016 grazing fee: $2.11	Grazing could continue indefinitely if forage resources are managed sustainably.	Market prices for cattle and sheep and resource protection needs and range conditions (due to drought, fire, etc.) can affect AUMs permitted and billed.
Cultural/archeological resources	Indigenous communities often use natural resources to an extent and in ways that are different from the general population, and the role that natural resources play in the culture of these indigenous communities may differ from that of the general population. Culturally important sites and unique natural resources, by definition, have limited substitutes. Recognizing this is a critical consideration in land management because it may affect consideration of tradeoffs. Archaeological surveys carried out to date show extensive use of places within the monument by ancient Native American cultures and a contact point for Anasazi and Fremont cultures. To date, approximately 6% of GSENM has been surveyed.			

Table 3. Summary of Activities and Economic Values, 2016	
Scientific/Paleontological resources	Approximately 6% of the area has been surveyed. New discoveries include: 12 new dinosaurs, 11 new mammal species, 3 new marine reptile species, 2 new crocodile species, 3 new turtle species, 1 new lizard species, and several new shark and bony fish species.
Benefits of nature	Services provided by nature underpin all sectors of a local economy. As many of these services are not sold in markets, we have limited information on their prices or values.

[a] This value represents the estimated consumer surplus associated with general recreation for the Intermountain region from the USGS Benefit Transfer Toolkit (https://my.usgs.gov/benefit-transfer/). Consumer surplus represents values individuals hold for goods and services over and above expenditures on those goods and services.
[b] Prices from EIA.gov
[c] Coal price from ONRR May 2017 Monthly Market Analysis Report.
[d] Gypsum price from USGS: https://minerals.usgs.gov/minerals/pubs/commodity/gypsum/mcs-2017-gypsu.pdf

~~Mohave~~Mojave Trails National Monument

Economic Values and Economic Contributions

DRAFT

Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with ~~Mohave~~Mojave Trails National Monument (MTNM) as well as to provide a brief economic profile of San Bernardino and Riverside Counties.[1]

~~Mohave~~Mojave Trails National Monument

Managing agencies: BLM
Counties San Bernardino, Riverside, CA
Gateway communities: Barstow; Needles; Yucca Valley
Tribes: Chemehuevi, Mojave and Serrano/Vanyume, with transient or joint use by bordering tribes including the Southern Paiute, Kawaiisu and Shoshone people..

Resource Areas:
☑ Recreation ☐ Energy ☐ Minerals
☑ Grazing ☐ Timber ☑ Scientific Discovery ☑ Tribal Cultural

Table 1. San Bernardino County and State of California Economic Snapshot

Measure	San Bernardino County	State of California

Background

The ~~Mohave~~Mojave Trails National Monument encompasses 1.6 million acres of land in San Bernardino County (with minor acreage in Riverside County). The ~~monument~~ Monument is in close ~~proximate~~ proximity to major population centers in Southern California. The Monument was established in 2016 for the purposes of protecting lands that contained cultural, prehistoric, historic, geologic, and scientific resources, including objects of archaeological significance. Mojave Trails is bounded on two sides by National Park units (Joshua Tree National Park and Mojave National Preserve) and one side by the 29 Palms Marine Corps Air Ground Combat Center. Prior to the establishment of the Monument, all lands within the Monument boundaries were Federal lands managed by the BLM. Approximately 358,000 acres within the boundary represent Wilderness areas previously established by Congress, and 84,400 acres within the boundary were managed by the BLM as the Cady Mountains Wilderness Study Area.

Native Americans in the region regularly utilize lands within the MTNM. In addition, the monument provides many recreational opportunities, including hiking, camping, hunting, horseback riding, bicycle riding, tours of Native American rock art sites and historical ranches, and wildlife and wildflower viewing.

[1] The BLM provided data used in this paper.

Public outreach prior to designation

The BLM hosted a series of public meetings in August and September 2016 on the establishment of the Mojave Trails National Monument. Members of the California Congressional delegation hosted a listening session in 2015.

Local Economy and Economic Impacts

Population, 2015[a]	2,094769	38,421,464
Employment, December 2016[c]		
Unemployment rate, March 2017	4.6	4.5
Median Household Income, 2015[a]	53,433	61,818

[a]U S Census Bureau, 2011-2015 American Community Survey
[c]https://data bls gov/cew/apps/data_views/data_views htm#tab =Tables

Table 1 presents socio-economic information for San Bernardino County and the state of California. The County contains roughly 5% of the State's population. The population in San Bernardino County has grown about 50% since 1990. Over the last eight years, the unemployment rate in the county rose to about 13.5% in 2010 and has since declined to about 4.6% which is very close to the state average. Median household income is about 86% of the state average.

Figure 1 shows percentage employment by sector in San Bernardino County for 2015.[2] The health care sector was associated with the largest percentage of employment (20%), followed by the transportation/warehousing (11%) and manufacturing (11%).

Information is provided below on two different types of economic information: "economic contributions," and "economic values." Both types of information are informative in decision making. Economic contributions track expenditures as they cycle through the local and regional economy, supporting employment and economic output. Table 2 provides estimates of the economic contribution of activities associated with MTNM. It is estimated that recreation activities in the MTNM area supported about 460 jobs and provided about $23 million in value added in FY 2016.

Definitions

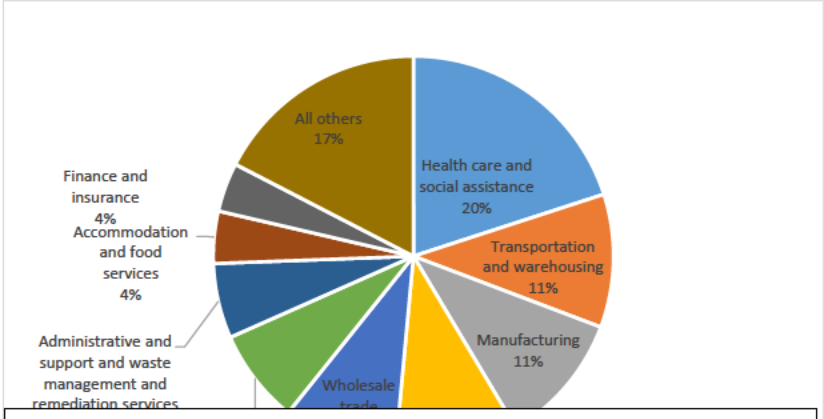
Value Added: A measure of economic contributions; calculated as the difference between total output (sales) and the cost of any intermediate inputs.

Economic Value: The estimated net value, above any expenditures, that individuals place on goods and services; these are particularly relevant in situations where market prices may not be fully reflective of the values individuals place on some goods and services.

Employment: The total number of jobs supported by activities.

Figure 1. Percent of Employment by Sector, San Bernardino County, 2015.

[2] U.S. Census Bureau County Business Patterns, 2015.



* "All Others" includes agriculture/forestry; utilities; wholesale trade; finance and insurance; real estate; professional, scientific and technical services; admin and support services; waste management; educational services; and arts and entertainment Each of these represents less than 4% of total employment Source: 2015 County Business Patterns, U S Census Bureau

Economic values, in contrast to economic contributions, represent the net value, above and beyond any expenditures, that individuals place on goods and services. It is not appropriate to sum values for economic contributions and economic values because they represent different metrics. To the extent information is available some economic values are presented in Table 3 along with information on the timing and drivers of future activity. For commodities bought and sold in markets (e.g., oil, gas, etc.), the economic values are closely related to the market prices of the commodities. For goods and services – such as recreation – which are typically not bought and sold in markets the values are estimated based on visitor surveys which attempt to capture individual values above and beyond their direct expenditures. The economic value in FY 2016 associated with recreation is estimated to be about $30 million.

Activities and Resources Associated With ~~Mohave~~Mojave Trails National Monument

Details on the activities occurring at ~~Mohave~~Mojave Trails National Monument are provided below.

Table 2. MTNM Estimated Economic Contributions, 2016

Activities	Economic output, $millions	Value added (net additions to GDP), $millions	Employment supported (number of jobs)
Recreation	14.1	8.5	144
Non-energy Minerals			
Grazing	2.4	Not available	26

- **Recreation:** A wide variety of recreation activities occur on the Monument including hunting, off-highway vehicle use, rockhounding, overland expeditions, photography, hiking, backpacking, camping, target shooting, picnicking, heritage tourism, wildflower/wildlife watching. Hunting on the monument is regulated by the California Department of Fish and Wildlife. All off highway vehicles prior to designation were allowed on designated routes, since designation only street legal vehicles are allowed on designated routes.

Table 3. ~~Mohave~~Mojave Trails NM Annual Visitation, 2012-2016

Year	Number of Visits
2012	63, 188
2013	
2014	182,717
2015	172,623
2016	169,879

Source: BLM data.

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Annual recreation visitation data for FY 2012-2016 is shown in table 3.[3] Recreation visits have increased from about 63,000 in FY 2012 to about 170,000 in 2016. Recreation activities provide the opportunity for economic activity to be generated from tourism for an indefinite period of time. The economic contributions occur annually, and in cases where visitation increases over time, recreation generates additional activity each year. Recreation associated with visitation to MTNM is estimated to contribute about $8.5 million in value added (net economic contributions) and support 144 jobs;[4] If the monument had not been designated, BLM would still anticipate visitor numbers to have increased over time due to population growth in the large urban centers in areas proximate to the National Monument.

- **Energy:** In general, the scope, magnitude, and timing of energy and minerals activities are closely related to supply and demand conditions in world markets and the market prices of mineral commodities. Local or regional cost considerations related to infrastructure, transportation, etc. also may play a role in defining the supply conditions. To date, energy development on the Monument has been limited.
    - **Coal.** There is no coal present in the Monument area.

[3] Prior to designation, traffic counters were not installed. Data is only available from 1999 to current. Visitation numbers from 1996-1998 are based on counts conducted at the Visitor Center.
[4] BLM data.

- **Oil and gas.** There is no oil and gas produced in MTNM.
- **Renewable energy.** The MTNM is located within the area covered by the Desert Renewable Energy Conservation Plan. The BLM considered many of the objectives of the Mojave Trails National Monument throughout the DRECP planning process and identified protective measures or proposed designations for the lands contained within them. The DRECP decision retains these measures as interim management for the national monuments until monument management plans are completed.
- **Energy transmission:** There is significant energy transmission infrastructure within the Monument, including 43 power transmission lines/power facilities right-of-ways and 45 oil and gas pipeline/gas facility rights-of-way. Numerous energy rights-of way are also present within the monument. Since the Presidential Proclamation to present, two communication site leases have been renewed, one new communication ROW permit was issued, one Oil and Gas pipeline ROW permit was issued and a FLPMA Section 302 permit was issued.

- **Non -fuel minerals.** There are approximately 1,447 mining claims within MTNM. Several large mining operations are located outside of the Monument that produce sodium, calcium and limestone, with annual production valued at nearly one billion dollars per year.[5] The designation withdrew the Monument from location, entry, and patent under mining laws, subject to valid existing rights. It seems likely that mineral production (sand and gravel) will *increase* from lands within the Monument owing to the monument designation, as maintenance of Route 66 requires mineral materials sites, and the county is actively considering development of two pits.
- Within the Monument, there are six mining Plans of Operations: two are inactive; two are for exploration; and two are small currently active mines. The Castle Mine, on the western edge of the Trilobite Wilderness, is a small gold mining operation, with estimated production of less than 100 tons per year. The Anamac Mine is a diatomaceous earth operation that produces diatomite from a small surficial freshwater deposit. Diatomite is used principally as a filter aid, whitener in paint, abrasive in polishes and silica additive in cement. The mine produces about 35 tons of diatomaceous earth per year. The mine is located in the Piute-Fenner Area of Critical Environmental Concern and critical desert tortoise habitat, limiting the opportunity for expansion. The annual production from designation to present for locatable minerals is not to exceed 135 tons of gold ore (100 tons) and diatomaceous earth (35 tons).
- The monument boundary was drawn specifically to exclude active mines adjacent to MTNM. This includes: 1) mines on the Bristol Lakebed that extract salt and calcium chloride. Other minerals, such as Lithium, are also present at Bristol Lake and potentially could be mined in the future.[6] Operations at Bristol Lake have continued to expand since the Monument designation; 2)

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[5] Feyerabend. W. 2016. Technical Report on the Mojave Lithium Property, San Bernardino County, CA

[6] The Bristol Lake contains salt and calcium chloride resources that have been mined since pre-Columbian times, with industrial mining beginning in the early 1900s. Current operations include: 1) Hill Brothers Chemical Company, with 1-4 employees and $1.5-$1.75 million in annual sales; 2) National Chloride Company of America with approximately 5-9 employees and sales of $7.25-$7.5 million annually; Tetra Technologies (no production information available). These operations have a combination of Federal and State mining permits. National Chloride is concerned the proposed Cadiz Water Project would significantly impact their operations (and supported the Mojave Trails National Monument) because the designation would help protect the groundwater resources that their operation relies on. Since the Monument designation, Standard Lithium has agreed to work with National Chloride on lithium exploration, development and production at Bristol Lake.

the Omya Amboy Quarry (primarily on patented lands and includes some federal lands); and currently inactive mines on Danby Dry Lake.[7]

- **Timber.** There is no timber production in the Monument.
- **Grazing.** There is one grazing allotment within the boundary of MTNM, the Lazy Daisy allotment. The allotment covers a total of 311,289 acres, of which about 60%(183,232 acres) are within the Monument. The number of AUMs permitted has remained constant at 3,192 AUMs since 2010. Since 2010, the number of AUMs billed increased from 1,20 in FY 2010 to 3,192 in FY 2016.

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- **Cultural, archeological, and historic resources**. Currently records indicate that approximately 140,000 acres, or about 8 percent of the lands within MTNM, have been subject to survey. Records also indicate there are currently 1,123 cultural resources recorded within the monument, of which 63 percent are prehistoric, 35 percent are historical and the remaining 2 percent are multi-component with both prehistoric and historic material present. There have been no formal changes in cultural and paleontological activities and uses allowed within the MTNM since its designation. Until a management plan is completed, the monument is managed in accordance with the Presidential Proclamation, BLM Manual 6220, the California Desert Conservation Act of 1994 and its applicable amendments including, but not limited to the Desert Renewable Energy Conservation Plan.

  Native American cultural resources: Native Americans in the region regularly utilize lands within the MTNM, which has been increasing over the past few years as solar farm and transmission line projects continue to be constructed within traditional tribal use areas. According to ethnographic data, the Indian ethnic groups which traditionally utilized lands within the MTNM include the Chemehuevi, Mojave and Serrano/Vanyume, with transient or joint use by bordering tribes including the Southern Paiute, Kawaiisu and Shoshone people. Several types of prehistoric cultural resources are present within the MTNM associated with use over the past 8000 to 10,000 years. There are sites exhibiting aesthetic expression such as petroglyphs, pictographs, geoglyphs and intaglios, as well as sacred sites highly valued by Tribes. The MTNM also contains locations clays are collected and used for making traditional pottery, specific grasses used for basket weaving, various edible vegetation for medicinal purposes, areas that serve as meeting places, specific trails for the salt songs and activities such as trail runs.

  Paleontological archeological and other cultural resources: Overland travel throughout human history is the most prevalent theme associated with the Monument. Indian trails formed the foundation for early explorer's trails; wagon roads and railroads followed. These resources form the basis of many of the cultural resources and current infrastructure present in the MTNM today. Notable early explorers that frequented the area now including the Monument included Franciso Carces, Jedediah Smith and Kit Carson. Route 66 traverses a portion of the MTNM.[8]

[7] This operation is not currently in production (no royalties have been paid since 2001) with work primarily in reclamation, though continued production has been proposed for several decades.

[88] Francisco Garces in the 1770s, and Jedediah Smith and Kit Carson in the 1820s are notable early explorers who upon reaching Needles were befriended by Mojave Indians who provided guides over the Mojave Trail and into the San Bernardino Valley or down the River towards Yuma. The western extents of the Mojave Trail became part of

In the early 1940s, the U.S Army reserved 6,810,018 acres (10,640 square miles) within the Mojave and Colorado Deserts of California to serve as the Desert Training Center (DTC), later referred to as the California Arizona Maneuver Area (CAMA). Approximately 791,261 acres (2,031 square miles) of the DTC was located within the MTNM, including five major divisional camps (Ibis, Clipper, Essex, Iron Mountain and Granite), as well as various railroad sidings (low-speed track sections distinct from a running line or through route), smaller camps, maneuver areas, and airstrips. The DTC/CAMA served to train over one million soldiers for the last 13 weeks of a two-year training program designed to prepare for America's entry into WWII. The DTC lands in California combined with the 60 million acres of land in Arizona and Nevada represented the largest military training facility in history. It enabled the military to train all branches of the military in a theatre of operations while also enabling the military to develop and test various weaponry and tactics directly leading to the success in WWII and various military campaigns. The BLM is currently working on a nomination to list the DTC in the National Register of Historic Places.

Many of the cultural resources in the MTNM retain their integrity of location, design and materials. These qualities are exemplified when traveling along the 92-mile stretch of Route 66 from Mountain Springs to Ludlow, a trip people from around the world enjoy because it enables a driving experience with wide open views and vistas similar to as they were when the road was first constructed. The same can be said for many of the old mines or DTC camps and maneuver areas within the MTNM.

The MTNM contains paleontological resources and expectation of yet to be discovered. The most well-known area is the Marble Mountain Fossil Beds ACEC. This area is visited regularly by many students and teachers as well as tourists from around the world who are given the opportunity to see and collect limited amounts of 12 different trilobite species dating back 500 million years. From a scientific point of view, the most important paleontological areas within the MTNM include three localities in the Cady Mountains WSA that are 18.8 to 22.6 million years old, accounting for 6.5 million years of the earliest Miocene, and that contain taxa that are identical to those in Nebraska, thereby assisting with and strengthening cross-continental temporal and biotic correlations. The southern Bristol Mountains contain the oldest Tertiary record of fossils in the Mojave Desert, as well as the only late Oligocene locality in the Mojave Desert. Camel tracks are present under which contain important invertebrate and a complex

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the Old Spanish Trail, while the portion near Needles became the Mojave Road, also referred to as Old Government Road. Subsequent expeditions in the 1850s by Edward Beales who was commissioned to build a wagon road from Fort Smith Arkansas to Los Angeles, lead to the development of Old Trails National Highway, most of this route became Route 66 and the corridor for the Atlantic and Pacific Railroad, entering the MTNM near Needles, then south to Cadiz and west towards Ludlow. Railroad surveys conducted by Amiel Whipple ended up serving as the corridor for the Southern Pacific and the Atchison, Topeka and Santa Fe Railroads, which enter the MTNM from the south at Fishel, then onto Cadiz and Ludlow. The Tonopah Tidewater Railroad interest the MTNM near Balch, and into Crucero, where it joined a line to Broadwell to the south and Barstow to the east. As populations increased so did various industries to support them including cattle ranching and agriculture along the Colorado River. Mining in the Mojave Desert developed relatively late because gold, silver and other minerals required extraction through hard rock mining techniques, requiring investment and capital. Many of the mines proved more successful in extracting industrial metals such as copper, salt (for processing silver), iron, manganese and borax. However, by the late 1800s and early 1900s minerals and metals were being transported by train from deposits in the Old Woman and Ship Mountains, as well as Danby Dry Lake.

fossil flora that enable reconstruction of the landscape at that time. The Piute Valley contain Pleistocene spring deposits include spring pipes and calcareous spring aprons that are choked with late Pleistocene (Rancholabrean age) vertebrates fossils and represent the most complex vertebrate assemblage in the southeastern Mojave Desert. The Cadiz Valley includes five geographic area that produce fossil faunas that have been tentatively dated at middle Pleistocene, a time period that is poorly known from the Mojave Desert. The Ship Mountains exhibit some of the oldest Miocene fossils in the southeastern Mojave Desert.[9]

Land Management Tradeoffs

This section presents some information to help understand land management tradeoffs. (b) (5) DPP [redacted]

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[9]Fossil camels in the Ship Mountain area are greater than 21 million years old and provide age control for the start of extensional tectonics in this area, as well as a faunal link to other mammalian assemblages to the west in the Cady Mountains and to the east in the Little Piute and Sacramento Mountains. The Little Piute Mountains also contain fossil camels that can be compared with those camels in the Ship Mountains and provide temporal constraint on the tectonic uplift of the Old Woman Mountains. Trackways in the Little Piute Mountains can also provide evidence of how mammals moved when alive. The Sacramento Mountains contains the most easterly early Miocene vertebrate fossil locality in the Mojave Desert as well as Late Pleistocene (Rancholabrean) fossil faunas including the most eastern California record of giant ground sloth.

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Table 3. Summary of MTNM Activities and Economic Values, FY 2016

Activities	Level of annual activity	Economic Value	Timing	Drivers of current and future levels of activity
Recreation	FY 2016: xxxx visitor days (BLM)	$54.19/visitor-day[a]	Visitation could continue indefinitely if landscape resources remain intact and of sufficient quality.	Societal preferences for outdoor recreation; disposable income; changing individual preferences for work and leisure time
Grazing	2016 billed AUMs: 3,192 AUMs	2016 grazing fee: $2.11/AUM	Grazing could continue indefinitely if forage resources are managed sustainably.	Market prices for cattle and sheep and resource protection needs and range conditions (due to drought, fire, etc.) can affect AUMs permitted and billed.
Cultural resources	Indigenous communities often use natural resources to an extent and in ways that are different from the general population, and the role that natural resources play in the culture of these indigenous communities may differ from that of the general population. Culturally important sites and unique natural resources, by definition, have limited or no substitutes. Recognizing this is a critical consideration in land management because it may affect consideration of tradeoffs. MTNM contains substantial cultural resources that have not been fully surveyed. Tribes use the sacred sites within MTNM for hunting; fishing; gathering; wood cutting; and for collection of medicinal and ceremonial plants, edible herbs, and materials for crafting items like baskets and footwear.			
Benefits of nature	Services provided by nature underpin all sectors of a local economy. As many of these services are not sold in markets, we have limited information on their prices or values. Specific benefits related to MTNM include protection of crucial habitats for deer, elk, desert bighorn sheep, pronghorn, and endemic plant species that inhabit rare habitat types such as hanging gardens.			

[a] This value represents the estimated consumer surplus associated with general recreation for the Intermountain region from the USGS Benefit Transfer Toolkit (https://my.usgs.gov/benefit-transfer/). Consume surplus represents values individuals hold for goods and services over and above expenditures on those goods and services.
[b] All prices are from EIA.gov.

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Vermilion Cliffs National Monument

Economic Values and Economic Contributions

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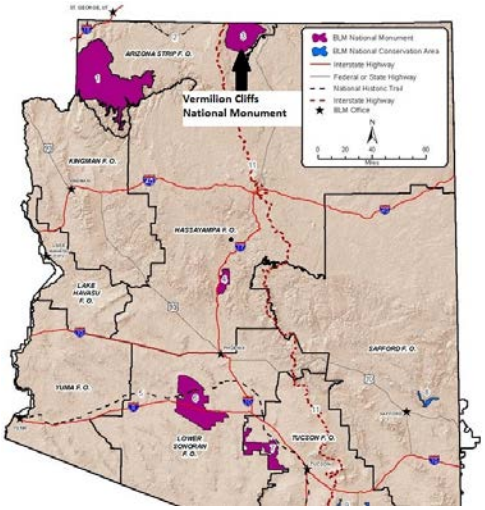


Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Vermilion Cliffs National Monument (VCNM) as well as to provide a brief economic profile of Coconino County.

Vermilion Cliffs National Monument, Arizona

Location: Coconino County, Arizona
Managing agency: BLM
Adjacent cities/counties/public lands: Kaibab National Forest, Glen Canyon National Recreation Area, Grand Staircase Escalante National Monument, other BLM lands
Resource Areas:
☑ Recreation ☐ Energy ☐ Minerals
☑ Grazing ☐ Timber ☑ Scientific Discovery
☑ Tribal Cultural

Background

Vermilion Cliffs National Monument ~~(VCNM)~~ was established by Presidential Proclamation 7374 on November 9, 2000 consisting of 293,000 acres. Prior to designation, the area was managed by the BLM and continues to be following designation. The Proclamation designated "approximately 293,000 acres" and states that acreage is "the smallest area compatible with the proper care and management of the objects to be protected." The BLM manages for multiple use within the Monument (hunting, recreation, and grazing, etc.), while protecting the vast array of historic and scientific resources identified in the Proclamation and providing opportunities for scientific study of those resources. The resources identified in the Proclamation include:

- Geology - Sandstone slick rock, rolling plateaus, and brilliant cliffs with arches, amphitheaters, and massive walls.
- Cultural and Historic Resources - Archaeological evidence displaying a long and rich human history spanning more than 12,000 years. Historic resources, including evidence of early European exploration, ranches, homesteads, mines, and roads.
- Wilderness - The Paria Canyon-Vermilion Cliffs Wilderness is a remote and unspoiled landscape with limited travel corridors along the Utah-Arizona border. A majority of the wilderness lies within Vermilion Cliffs National Monument.
- Vegetation – Cold desert flora and warm desert grassland.
- Wildlife – California condor, bighorn sheep, mountain lion, pronghorn antelope, raptors and desert stream fishes.
- Paria River – The Paria River and widely scattered ephemeral water sources and springs.

Overall, multiple use activities compatible with the protection of resources and objects identified in the Presidential Proclamation are allowed in Vermilion Cliffs National Monument. Multiple use activities are subject to decisions made in current and future BLM resource management planning efforts, which include public participation. National Monuments and other conservation areas managed by the BLM continue to allow for multiple uses according to the Federal Land Policy and Management Act.

Public outreach prior to designation

The Secretary of the Interior met with the public in meetings and in the field prior to VCNM designation. Public outreach was conducted during the summer of 2000 with various participants. It included meetings

with affected ranchers, community leaders, the Page Chamber of Commerce and business owners in the Marble Canyon and Jacob Lake Areas.

Local Economy and Economic Impacts

Coconino County makes up around two percent of Arizona's population. Approximately 27 percent of the county population is Native American. Current unemployment rates and median household income are similar to the values for Arizona as a whole (*Table 1*). The accommodation and food services industry is the largest by employment in Coconino County, accounting for 26 percent of county employment (*Figure 1*). Other industries that make up more than 10 percent of total employment include retail trade, health care and social assistance, and manufacturing.

Table 1. Economic Profile for Coconino County

Measure	Coconino County, AZ	Arizona
Population, 2015	136,701	6,641,928
Unemployment rate, April 2017[a]	4.9%	5.0%
Median Household Income (2015)[b]	$50,234	$50,255

[a] https://laborstats.az.gov/sites/default/files/documents/files/emp-report.pdf
[b] https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_15_5YR_DP03&src=pt

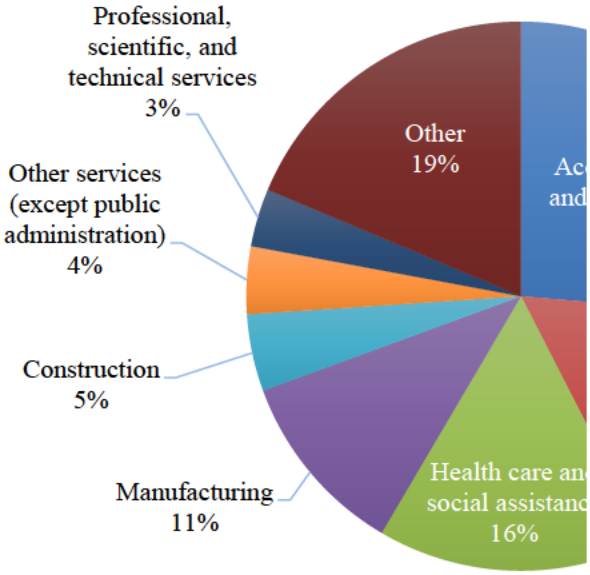


Figure 1. Percent employment by sector in Coconino County, 2015

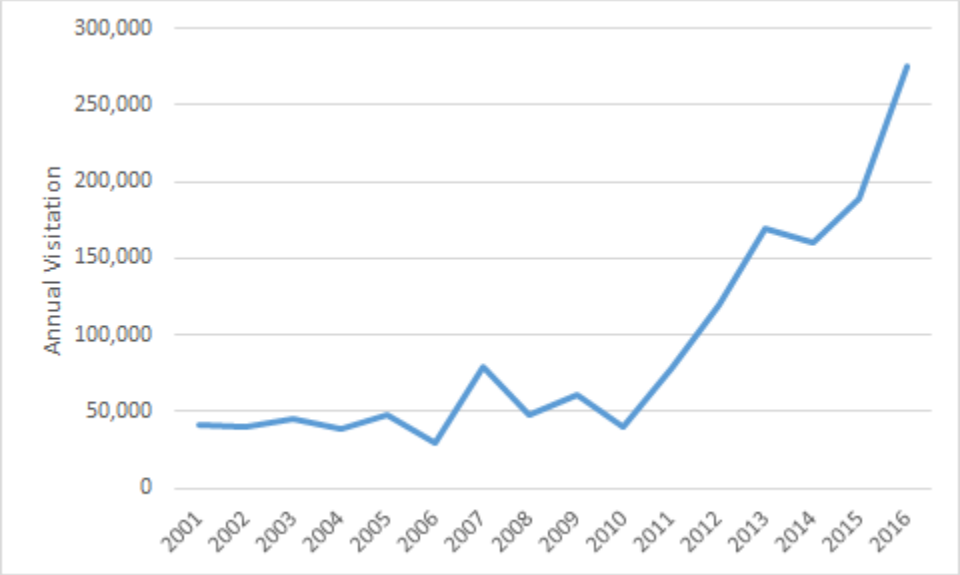
"Other" includes industries classified as Arts, entertainment, and recreation, Transportation and warehousing, Administrative and support and waste management and remediation services, Wholesale trade, Finance and insurance, Real estate and rental and leasing, Information, Educational services, Management of companies and enterprises, Utilities, Agriculture, forestry, fishing and hunting, Mining, quarrying, and oil and gas extraction, and Industries not classified, each of which represents less than 3% of employment.

Activities and Resources Associated with Vermilion Cliffs National Monument

Activities taking place on Vermilion Cliffs National Monument lands include recreation, grazing, and cultural/archaeological exploration. Further detail on these activities is listed below:

- **Recreation:** Visitation at Vermilion Cliffs National Monument has increased since designation, rising from 41,884 visits in 2001 to 275,845 visits in 2016 (*Figure 2*). Recreation activities provide the opportunity for economic activity to be generated from tourism for an indefinite period of time. Recreational visitors spend money at local businesses, and that spending can lead to economic contributions that affect regional and state economy. The economic contributions occur annually, and in cases where visitation increases over time, recreation generates additional activity each year. The net economic contributions associated with recreation in 2016 are estimated to be about $14 million in value added and 246 jobs.

Figure 2. Annual Visitation to Vermilion Cliffs National Monument



- **Energy:** There are no renewable resources or known coal, oil and gas resources within the Monument.

- **Non-Energy Minerals:** No production of locatable minerals has occurred. Active mining claims are subject to valid existing rights. An estimated 1,000 cubic yards per year of gravel is used from existing material sites by the BLM for road maintenance. No new permits or sales contracts were issued.

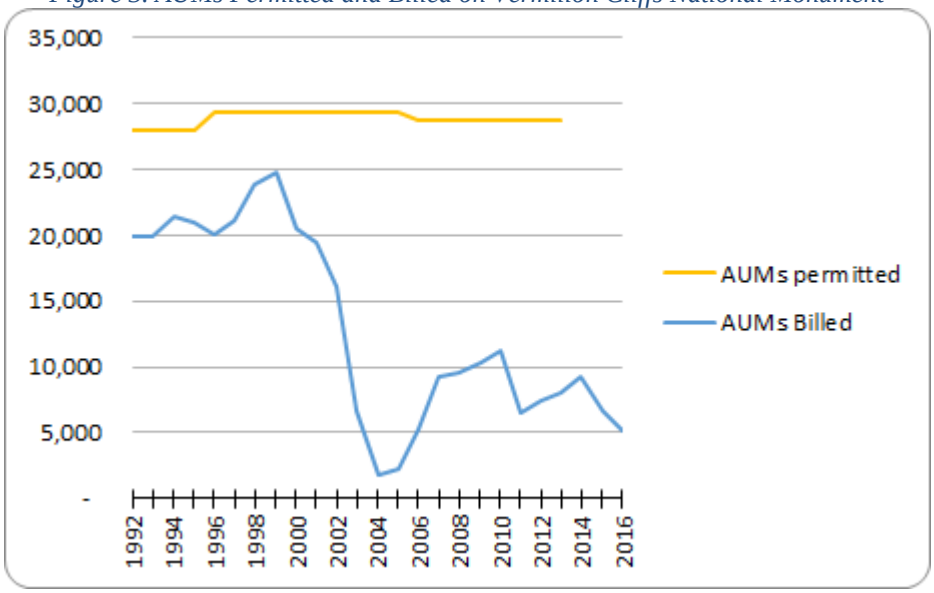
- **Grazing:**
    - Grazing is allowed within Vermilion Cliffs National Monument. In 2001, there were 29,313 permitted Animal Unit Months (AUMs).[1] Today, there are 28,773 permitted AUMs. Grazing use levels vary from year to year depending on factors such as drought. Total AUMs billed were 5,138 in 2016, with an average of 8,456 AUMs billed annually

[1] BLM measures an AUM as the amount of forage needed to sustain one cow and her calf, one domestic horse, or 5 sheep or goats for one month. https://www.blm.gov/programs/natural-resources/rangelands-and-grazing/livestock-grazing/fees-and-distribution.

since 2001.[2] *Figure 3* shows the number of AUMs permitted and billed annually from 2001 through 2016. Billed AUMs represent an average of 29% of permitted AUMs over the period.

Range conditions and management decisions led to the decrease in billed AUMs after 2002. A severe drought in 2002 had lasting impacts on ~~the~~ range-land conditions, as well as on the ~~overall~~ ranching operations in the area. Many operators voluntarily reduced the number of cattle grazed and sold off cattle during the drought. In addition, four allotments were purchased by an individual and subsequently transferred over the years (late 1990s and early 2000s) to the Grand Canyon Trust through the North Rim Ranch. The North Rim Ranch's current management approach is not to run at full authorized AUM numbers. This also contributes to the lower numbers of billed AUMs on these four allotments.

Figure 3. AUMs Permitted and Billed on Vermilion Cliffs National Monument



- **Timber:** There is no annual timber production of the pinyon pine and juniper community. Personal use fuelwood cutting of pinyon pine and juniper trees is the only activity related to timber prior to the RMP and ROD being implemented in January 29, 2008, seven years post-monument designation. The quantity of personal use fuelwood removed is unknown.

- **Cultural/Scientific:** VCNM provides for the collection of pinyon pine seeds (pine nuts) for non-commercial, personal use. Personal use quantities of items necessary for traditional, religious, or ceremonial purposes, such as herbals, medicines or traditional use items are also allowed. All cultural sites are generally allocated to Scientific Use, other than the few Public Use sites (five and Sun Valley Mine). 350 sites have been recorded in VCNM from 2000 to the present.

Land Management Tradeoffs

[2] The total billed AUMs reported do not exclusively fall within the monument, because the allotment boundaries encompass both Vermillion Cliffs and Arizona Strip Field Office lands.

(b) (5) DPP

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(b) (5) DPP [redacted]

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