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**Subject:** National Monuments review economics reports  
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**Attachments:** [NM review economics 8-16-17.zip](#)

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Hi Josh,

Attached is a zip file containing reports on the economic contributions and economic values for 12 of the non-marine national monuments under review, prepared by the Office of Policy Analysis. The balance will be coming to you by Friday (though most likely the bulk will be sent to you by COB Thursday). Please note that there is a document titled "Background and Overview" - this is a companion piece to, and is referenced by, each national monument report, and should be considered a part of any one of the individual reports. Let me know if you have any questions.

Thanks!

Ann

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# Economic Values and Economic Contributions of National Monuments

## Background and Overview



# Economic Values and Economic Contributions of National Monuments

## Background and Overview

### *Background*

This document was prepared to support the Department's activities related to Executive Order (EO) 13792 "Review of Designations Under the Antiquities Act." EO 13792, signed on April 26, 2017, directs the Secretary of the Interior to review designations of national monuments made since 1996 greater than 100,000 acres in size, expanded by at least 100,000 acres, or where the Secretary determines that the designation or expansion was made without adequate public outreach and coordination with relevant stakeholders. The list for review includes 22 national monuments and five marine monuments created by Presidents Bill Clinton, George W. Bush, and Barack Obama. The information provided here pertains only to the 22 non-marine national monuments.

National monument designations are a means of stewarding America's historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest. Monument designations may change public access to included lands, with positive or negative effects on private sector economic activity. These changes also potentially affect federal, state, local, and tribal governments. In general, land management decisions must balance the protection of landmarks, structures, and objects with the use of federal lands, and the effects on surrounding areas and communities.

The information presented for some of the monuments may be abbreviated if they are no longer under review or if data are unavailable. During the development of this report, six monuments were announced to be removed from the list of those under review (Canyons of the Ancients,<sup>1</sup> Craters of the Moon,<sup>2</sup> Grand Canyon-Parashant,<sup>3</sup> Hanford Reach,<sup>4</sup> Upper Missouri River Breaks<sup>5</sup>, and Sand to Snow<sup>6</sup>). Data on activities and resources associated with Katahdin Woods and Waters National Monument prior to its designation in 2016 are mostly unavailable since it was privately owned.

### *Land Management Tradeoffs from an Economic Perspective*

Decisions regarding federal land use can be informed by different analytical tools, including tradeoff analysis, cost-benefit analysis, scenario analysis, and optimization modeling. In concept, when considering whether to protect a given acre or limit access in some respect, one could analyze the benefits and costs to the public, relative to what would be expected under the existing management baseline. Included among the benefits and costs of the policy change would be benefits and costs associated with

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<sup>1</sup><https://www.doi.gov/pressreleases/monument-review-secretary-zinke-recommends-no-modifications-canyons-ancients>

<sup>2</sup><https://www.doi.gov/pressreleases/secretary-zinke-announces-recommendation-idahos-craters-moon-and-washingtons-hanford>

<sup>3</sup><https://www.doi.gov/pressreleases/secretary-zinke-recommends-no-modifications-grand-canyon-parashant-national-monument>

<sup>4</sup>*Ibid.*

<sup>5</sup><https://www.doi.gov/pressreleases/secretary-zinke-recommends-no-modifications-upper-missouri-river-breaks-national>

<sup>6</sup><https://www.doi.gov/pressreleases/secretary-zinke-announces-no-changes-sand-snow-national-monument-california>

goods and services that are not readily bought and sold in markets. Positive net benefits (that is, total benefits exceeding total costs), would indicate that the policy change should be undertaken. This type of analysis is challenging to undertake for a variety of reasons.

While federal land managers need to consider multiple land management objectives and the tradeoffs between uses, external factors can have a powerful effect on the scope and magnitude of resource use on federal land. In general, global market supply and demand conditions drive the production of commodities (e.g., oil, gas, timber, minerals); societal preferences and household disposal income affect recreation activity levels; and market prices and range conditions affect the demand for forage. Other resources, such as scientific information or culturally important sites and unique land formations, by definition, have limited or no substitutes, and do not have market values. It is particularly challenging to estimate the nonmarket values associated with certain resources, particularly the non-market values associated with cultural and scientific resources.

When considering any tradeoffs, it is not just the level and net economic value associated with an activity that occurs in a given year that is relevant to decision-making. Virtually all activities within a national monument occur over time and it is the stream of an activity's costs and benefits over time that is relevant. For example, recreation activities could continue indefinitely assuming the resources required for recreation remain intact and of sufficient quality for individuals to remain interested in the activity. Likewise, the values associated with the natural and cultural resources could continue indefinitely provided they are not degraded by other activities (and assuming preferences do not change). Grazing could also continue indefinitely as long as the forage resource is sustainably managed and remains consistent with the protection of monument objects. Timber harvest may also continue indefinitely as long as the timber resource is sustainably managed. The stream of costs and benefits associated with other non-renewable resources would be finite, however (assuming these activities were consistent with the designation). For example, oil, gas, coal and minerals are all non-renewable resources and would only be extracted as long as the resource is economically feasible to produce.

Energy and mineral development is subject to unique considerations. Although information may exist (e.g. USGS Mineral Resource Data<sup>7</sup>) on past or present mineral development or potential, developing a total value for mineral potential in a specific area is often highly speculative. Mineral classification information typically only describes or refers to the potential presence (occurrence) of a concentration of one or more energy and/or mineral resource(s).<sup>8</sup> Potential presence does not refer to or imply potential for development and/or extraction of the mineral resource(s) or determine the feasibility. It also does not imply that the potential concentration is or may be economic, that is, could be extracted, processed and transported profitably. The development of a site for extraction requires investments in both capital and time, and the economic viability of an operation is highly sensitive to global market forces. In addition, from the public's perspective, there are external costs associated with these activities, including human health effects and degradation of land, air, and water quality. The government seeks to avoid unnecessary

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<sup>7</sup>The USGS Energy and Resources Program conducts research and assessments on the location, quantity, and quality of mineral and energy resources, including the economic and environmental effects of resource extraction and use.

<sup>8</sup>While some estimates may exist for economically recoverable resources in certain areas, this information is speculative, and additional investment by companies would be required to determine if a given resource is economic to recover.



or undue degradation of human health and the environment. Plans of operation are required to internalize some of these costs, including the determination of financial assurances to reclaim, rehabilitate and/or restore the resources. However, it is difficult to quantify some of these external costs, and there are uncertainties in the ability to project future cleanup performance and associated costs.

Regardless of monument designation, cultural, archaeological and historic resources are protected under many laws which mandate careful consideration of these resources in land-use decision making.<sup>9</sup> American Indians and Alaskan Natives may utilize 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. As a result of the broad range of cultural services provided by natural resources, cultural service losses can encompass adverse changes in three broad areas of natural resource-based cultural practices: tribal economies (in terms of food, money, and livelihoods); tribal knowledge (e.g., languages, values, teachings); and tribal spiritual values (e.g., ceremonies, sacred histories, places). As such, substitutes, complements, and values for a tribe are likely distinct and therefore require unique considerations of land-use tradeoffs relative to other uses.

Planning for permitted resource use on national monuments will involve tradeoffs among different activities on the land area being managed in order to allow permitted activities that are compatible with protecting the objects identified in the monument proclamation. After the careful consideration of tradeoffs, management decisions may prioritize certain uses over others. In other cases, land areas may be more appropriate for a particular use and activities could be restricted to certain areas of the monument. These decisions are based upon whether a use is compatible with a designation. Factors that could inform these tradeoffs include demand for the good or activity, prices, costs, and societal preferences. Other considerations might include the timeframe of the activity—how long the benefits and costs of a given activity would be expected to extend into the future.

As is the case with many federal lands, none of the monuments has been completely inventoried or surveyed for archaeological and cultural resources. This makes it difficult to evaluate the tradeoffs and determine with any certainty which acres should comprise the “smallest area compatible with proper care and management” as required by the Antiquities Act.

The information presented in the Economic Values and Economic Considerations report of each monument is not, and should not be considered, a formal tradeoff analysis, or an attempt to provide guidance on the optimal size or use of a particular land area. Rather, the intention is to provide a limited overview of several categories of resources found within these national monuments. Where possible, estimates of the economic contributions of the national monuments, as well as the economic values of recreation, are provided. In the context of this report, the term “resources” refers to all the various assets on federal lands from which individuals or society can derive value or benefits, including those that are

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<sup>9</sup>In addition to the federal government's trust responsibilities and treaty rights, these resources are protected under several laws including: the Native American Grave Protection and Repatriation Act, the Archaeological Resources Protection Act, and the National Historic Preservation act. In the case of damages to resources from mineral extraction, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 U.S.C. 9601); the Oil Pollution Act of 1990 (OPA, 33 U.S.C. 2702); and the Clean Water Act (33 U.S.C. 1321) have allowed federally recognized Indian tribes a means to claim for damages for injury to, destruction of, or loss of natural resources.

non-monetary in nature. The examples of resources available at each monument are not intended to be exhaustive, and should not be construed as such.

### *The Distinction between Economic Contributions and Economic Values*

Information is provided in the materials for each monument on two different types of economic information: “economic contributions” and “economic values.” Both types of information are useful in decision-making. Economic contribution estimates provide information on economic activity in the local area and are often of interest to local and state stakeholders. Economic values are measured as the net economic benefit to society of a given activity, and are used in cost benefit analysis. To economists, net economic benefit is the appropriate measure to use when comparing multiple alternatives for decision-making. Insufficient information was available to provide full estimates of economic values supported by the national monuments for this analysis, although some information on the economic value of recreation is provided. Information on economic contributions is provided for several activities (recreation, grazing, oil and gas, non-energy minerals, and timber), where adequate data is available.

Economic contributions track expenditures as they cycle through the local and regional economy, supporting employment and economic output.<sup>10</sup> Measures of economic contributions include jobs, contributions to GDP (“value added”) and gross output. Where possible, these estimates are presented for each national monument. Gross or total output, which represents the value of industry production, presents some drawbacks for measuring economic contributions because it does not net out the value of intermediate inputs and thus double-counts some economic activity. Value added is the contribution of an activity to overall gross domestic product (GDP); this measure nets out the cost of intermediate inputs (i.e., goods and services purchased from other industries that are used as inputs to produce a good or service). Value added most accurately captures the dollar-value of Department of the Interior-managed resources in the U.S. economy, though estimates of it are not available on a comprehensive basis for all Interior resources.<sup>11</sup>

Where possible, estimates of economic contributions for recreation, grazing, oil and gas, non-energy minerals, and timber were generated using IMPLAN (Minnesota IMPLAN Group, Inc.). IMPLAN uses regional information to modify a standard input-output framework of the U.S., developed by the Department of Commerce, Bureau of Economic Analysis, to describe local conditions. The results of regional economic contributions modeling depend on how the geographic region of impact is defined. The economic contribution analyses for this effort were developed at the state-level. The resulting economic contributions would be larger for a National-level analysis; alternatively, contributions would be smaller for a local- or county-level analysis.

Economic values, in contrast to economic contributions, represent the net value, above and beyond any expenditures, that individuals place on goods and services. The economic value of a resource is the

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<sup>10</sup>A visual depiction of how visitor spending supports jobs and business activity in local economies can be viewed at [https://www.nps.gov/nature/customcf/NPS\\_Data\\_Visualization/overview.html?tab=tab-overview](https://www.nps.gov/nature/customcf/NPS_Data_Visualization/overview.html?tab=tab-overview)

<sup>11</sup>Since 2009, the Department (led by the Office of Policy Analysis) has released an annual Economic Contribution Report highlighting the current economic impact of Interior’s existing programs and activities. This series of reports underscores the impact Interior’s economic contributions has on a state-by-state basis. Additional information on the distinction between economic contributions and economic values can be found in this report. For copies of the report and a data visualization tool, see: <https://my.usgs.gov/doidv/>

amount that an individual or society is willing to pay for the resource, which may differ from how much they actually pay for the resource. For commodities bought and sold in markets (e.g., oil, gas, timber, minerals), the economic values are closely related to the market prices of the commodities. For goods and services not bought and sold in markets (e.g. outdoor recreation, access to areas of cultural importance, habitat preservation), economic values are more difficult to quantify in monetary terms. It is possible to derive estimates of the economic value of some goods and services using various techniques of nonmarket valuation.<sup>12</sup> Non-market valuation techniques have also been used to value activities that reflect preferences for environmental restoration or for preserving various species or ecosystems, various features or qualities of a landscape, or areas of historical or cultural importance.

For this effort, the relevant average economic value of recreation for a region was applied to monument-specific recreational visits (when available) to estimate the net economic benefit of recreation for each monument. Estimates of the average net economic benefit (i.e., consumer surplus) from general recreation range from \$41 to \$127 per person per day. These estimates are from the USGS Benefit Transfer Toolkit, and are based on the use of an average economic value estimate or some other measure of central tendency from several relevant primary studies in the existing literature.<sup>13</sup>

## *Glossary*

**Activities:** As used to estimate economic contributions, “activities” means the full range of actions associated with facilitating the use of lands and waters managed by the federal government. This includes actions taken by the federal government as well as subsequent actions undertaken by private sector individuals and businesses.

**Employment supported:** The total number of jobs supported by an activity.

**Economic output:** The total estimated value of production of goods and services supported by an activity. Output is the sum of all intermediate sales (business to business) and final demand (sales to consumers and exports).

**Net economic benefit:** To an individual, net benefit is the value received from paying less for a good than the maximum amount that the person is willing to pay for it (this is referred to as consumer surplus). Similarly, the difference between the amount a producer of a good receives and the minimum amount the producer is willing to accept for the good is the net benefit the producer receives for selling the good in the market (referred to as producer surplus). Net economic benefit is the sum of producer surplus and consumer surplus (i.e., total benefits minus total costs). In the case of natural and cultural resources, benefits can include use value, existence value, option value to potentially use in the future, and bequest value for the use by future generations (total economic value) relative to the opportunity cost of the resource. To economists, net economic benefit is the appropriate measure to use when comparing multiple alternatives for decision-making.

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<sup>12</sup>For a more detailed explanation of nonmarket valuation, see the FY 2012 DOI Economic Report, Appendix 1.

<sup>13</sup> For more information, see the USGS Benefit Transfer Toolkit, <https://my.usgs.gov/benefit-transfer/>

**Net public benefits:** Public lands that are to be managed for multiple use must consider all stakeholders in the estimation of net benefits related to decision-making (i.e., net public benefits, also called net benefits to the nation, or net social benefits). All U.S. citizens are considered stakeholders in the management of public lands, regardless of whether or not they live adjacent to the lands. This “national accounting stance” is a long-term federal perspective that is in Executive Order 12866, and was further clarified in Executive Order 13563.

**Tradeoffs:** Decision-making often requires choosing between two or more mutually exclusive opportunities, especially when there is scarcity of physical resources, time, and budget, along with competing interests. In economics, a decision that results in choosing something over another is expressed as an opportunity cost, which is the forgone value of the next best alternative (i.e., what is given up by not choosing the second best option).

**Value added:** Measures the contribution of an activity to the Gross Domestic Product (GDP). Value added is the difference between the estimated economic output (sales or receipts and other operating income) and the cost of any intermediate inputs (consumption of goods and services purchased from other industries or imported).



# Basin and Range National Monument

## Economic Values and Economic Contributions



Basin and Range  
National Monument



## Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Basin and Range National Monument (BARNM or the Monument) as well as to provide a brief economic profile of Lincoln County, Nevada (NV).<sup>1</sup>

## Background

The Basin and Range National Monument was established by President Obama on July 10, 2015 (Proclamation 9297), and is managed by the Bureau of Land Management (BLM). The Monument encompasses approximately 703,500 acres in Southeastern Nevada, and was established to protect cultural, prehistoric, historic, paleontological, and geologic resources in the Great Basin between the Sierra Mountains and Colorado Plateau. Of the 703,500 acres, about 526,000 acres are in Lincoln County, Nevada, with the remaining 177,000 acres in a remote area of northeastern Nye County, Nevada.<sup>2</sup> Prior to designation, the land was managed by BLM (Ely Field Office) with the exception of approximately 4,400 acres of private inholdings that continue to exist within Monument boundaries.

### *Basin and Range National Monument*

**Location:** Lincoln County and Nye County, NV

**Managing agency:** BLM

**Adjacent communities, Tribal, and Federal land:** Ely, NV; Caliente, NV; Alamo, NV

**Resource Areas:**

☒ Recreation ☐ Energy ☒ Minerals  
☒ Grazing ☐ Timber ☒ Scientific  
Discovery ☒ Tribal Cultural

## Public Outreach Prior to Designation

A public meeting regarding a proposal to withdraw land in the area from mining was held in February 2015. Since designation, six scoping meetings have been held in the surrounding communities to identify issues and planning criteria to be considered in the BLM Resource Management Plan and as part of complying with the National Environmental Policy Act.<sup>3</sup> BLM anticipates that the approved RMP is anticipated to be completed in FY 2018. In addition, in May 2017 the Nevada Legislature passed an assembly joint resolution (ARJ13) expressing support for the enactment and use of the Antiquities Act and the designation of the BARNM.<sup>4</sup>

## Local Economy and Economic Impacts

BARNM is located far from population centers and areas adjacent to the Monument are sparsely populated. The Monument has no facilities and few access roads. Table 1 presents socio-economic metrics for Lincoln County and the state of NV. While 25% of the Monument is in Nye County, it is geographically not located near the areas of Nye County where the majority of the population resides.<sup>5</sup> Lincoln County is a remote and rural area of Nevada containing roughly 0.2% of the State's population. Public data on employment by sector for the county is suppressed for the majority of the sectors; total

<sup>1</sup>The BLM provided data used in this paper.

<sup>2</sup>Approximately 4,400 acres (0.6% of the Monument) are private inholdings.

<sup>3</sup>Basin and Range National Monument Resource Management Plan Scoping Report, 2016.

<sup>4</sup><https://www.leg.state.nv.us/App/NELIS/REL/79th2017/Bill/5507/Overview>.

<sup>5</sup>Over 80% of the population of Nye County resides in the Pahrump Census-designated place, which is an area bordering California to the west of Las Vegas.



employment in 2015 for the industries covered by the County Business Patterns survey was 619 people.<sup>6</sup> The population of the county increased about 25% from 2000 to 2015, compared to a 40% increase in State population. Compared to the State, the percentage of household income associated with labor earnings was lower while the percentage of household income resulting from Social Security or retirement income was higher.

### *Activities and Resources Associated With Basin and Range National Monument*

Information on the economic contributions associated with the activities occurring at Basin and Range National Monument, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with BARNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** A variety of recreation activities are available at BARNM including: dispersed camping, hiking, biking, OHV riding, rock climbing, wildlife and wild horse viewing, and viewing sites associated with cultural, prehistoric, and historic legacies. Hunting and trapping are also permitted as regulated by the State of Nevada. Visitor use has only been tracked through visitor registration sheets at the most popular petroglyph sites within the Monument, though BLM plans to install traffic counters in the fall of 2017 in order to more accurately track visitation. Estimates of visitation for FY 2016 range from 120 to 950 visits.<sup>7</sup> The value added associated with those recreation visits is estimated to be about \$46,000.<sup>8</sup>

The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to a consumer surplus). Using an average consumer

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<sup>6</sup>2015 County Business Pattern data produced by the U.S. Census Bureau. The Census Bureau is forbidden by Federal Law, Title 13 of the U.S. Code, from providing data that can be linked to specific establishments; this data is in turn “suppressed”, or withheld from publication. While this data source covers most NAICS industries, it excludes crop and animal production; rail transportation; National Postal Service; pension, health, welfare, and vacation funds; trusts, estates, and agency accounts; private households; and public administration. Most establishments reporting government employees are also excluded.

<sup>7</sup>Because BARNM was recently designated, visitor use is mostly unknown. The BLM utilizes the Recreation Management Information System (RMIS) to report visitation. In 2016, RMIS reported visitation to BARNM was 120 visits. The RMIS, implemented in 1984, is the agency’s official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting. Visitor use information taken from visitor registration sheets at the most popular petroglyph sites within BARNM indicated around 950 visits for FY 2016.

<sup>8</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016. This estimate is based on the RMIS-reported visitation to BARNM of 120 visits in FY 2016. This estimate may not reflect actual levels of visitation (see footnote 7).

surplus value for the area of \$54.19 per person per day (recreational visitor day), the estimated economic value (net benefits) generated in 2016 was \$51,500.<sup>9</sup>

- **Energy:** There is no history of energy production in the area and it has not been assessed for oil and gas or coal potential by the USGS.<sup>10</sup> A USGS study of the mineral resources within the Worthington Mountains WSA, which is now part of BARNM, found that “energy resources are unknown; accordingly, their resource potential is considered low.”<sup>11</sup> The total value or amount of energy or mineral production forgone as a result of the designation cannot be determined. For more information, see the Background and Overview materials.
  - **Coal:** There have been no coal developments in the Monument area.
  - **Oil and gas:** There are currently no producing oil and gas wells within the Monument. The most recent well was drilled in 1996 and in the past 50 years, only four oil wells have been drilled; none were developed. There are several parcels with existing leases for oil and gas, and development on those existing leases could occur. Additionally, an application for permit to drill (APD) was approved in February 2016 for a lease that expires in 2020, though no wells have yet been drilled.<sup>12</sup>
  - **Geothermal:** The area included in the Monument is within an area identified by USGS as having medium geothermal favorability.<sup>13</sup>
- **Non-Energy Minerals:**
  - While there has been historic mining in the area by early European and American settlers, there has been no recent locatable mineral production on lands within the Monument boundaries. A USGS study of the mineral resources within the Worthington Mountains WSA found resource potential for metallic-minerals (Cu, Pb, Zn, Au, Ag, W) to be moderate in the northernmost part, and low in the remainder of the area. The study found large quantities of carbonate rock, quartzite, and sand and gravel in the study area, which are resources with potential industrial applications.<sup>14</sup>
  - There are three existing gravel pits that are used by Lincoln County for road maintenance but are not sold pursuant to any market activities. The sand and gravel permits were issued in 2012 to Lincoln County for ten years. They will expire in 2022.
- **Timber:** There is no commercial timber production in BARNM but timber harvest activities such as non-commercial Christmas tree cutting and collection of wood for posts and firewood are

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<sup>9</sup>The consumer surplus unit value is a survey-based value for general recreation in the Intermountain region from the USGS Benefit Transfer Toolkit (<https://my.usgs.gov/benefit-transfer/>). This unit value was applied to fiscal year 2016 visitation estimates to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).

<sup>10</sup>USGS data.

<sup>11</sup>Mineral Resources, Geology, and Geophysics of the Worthington Mountains Wilderness Study Area, Lincoln County, Nevada, <https://pubs.er.usgs.gov/publication/b1728A>

<sup>12</sup>BLM data.

<sup>13</sup><https://pubs.usgs.gov/fs/2008/3082/>

<sup>14</sup>Mineral Resources, Geology, and Geophysics of the Worthington Mountains Wilderness Study Area, Lincoln County, Nevada.

allowed by permit. The Monument Proclamation allows for the continuation of all pre-designation timber activities.

- **Grazing:** The allotments that are wholly or partially contained within the boundaries of BARNM include approximately 32,000 permitted Animal Unit Month (AUMs).<sup>15</sup> About 10,200 AUMs were billed in FY 2016. Those AUMs were associated with economic output of about \$2.1 million and supported about 27 jobs. The Monument Proclamation allows for the continuation of all pre-designation grazing activities, including use of motorized vehicles, construction and maintenance of stock watering facilities, and construction of fences and other range improvements related to grazing operations.
- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic and scientific interest. In general, these resources 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 natural, cultural, and scientific features identified in Proclamation that the designation is intended to protect:
  - **Tribal Cultural Resources:** The BARNM Planning Area contains a wide variety of cultural resources, including prehistoric resources, historic resources, and traditional use areas important to contemporary Native peoples. However, at this time, a large percentage of the planning area (over 90 percent) has not been subjected to a class III cultural resource inventory.<sup>16</sup> Therefore, it is reasonable to assume that there are many unknown cultural resources that have been neither documented nor evaluated for eligibility for inclusion in the National Register of Historic Places (NRHP).<sup>17</sup>
  - **Cultural (Historic and Archaeological) and Paleontological Resources:** This area has a long history of human inhabitation including Paleo-Indians, the Desert Archaic and Fremont people, ancestors of the Western Shoshone and Southern Paiute tribes through to some of the first Euro-American settlers. In the late 19<sup>th</sup> century, Basque and other ranchers brought sheep and cattle ranching to the area, where it remains to this day. As over 90% of the Monument has not been inventoried for cultural resources, it is likely that there are many unknown cultural resources that have been neither documented nor evaluated for inclusion in the National Register of Historic Places.<sup>18</sup> Documented resources include prehistoric and historic artifacts and sites. There are two archaeological districts and several sites within the Monument to view petroglyphs. Traces of early Euro-American settlement, including mining structures, and the continuation of ranching lifestyles dating back to the late 19<sup>th</sup> century, also exist on the Monument. American artist Michael Heizer has been granted a Conservation Easement for his private land within BARNM, on which he is constructing a piece of art

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<sup>15</sup>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>.

<sup>16</sup>A class III survey strategy is an intensive survey which systematically examines an area in a manner that would ensure the identification of the area's smallest site phenomena.

<sup>17</sup>BLM data.

<sup>18</sup>BLM data.

work that is similar in size to the National Mall. This work is expected to be completed in 2020 and has attracted interest in the art community.

- **Scientific Investigation:** The area exemplifies the unique topography and geologic history of the Great Basin region, including crustal extension, deformation, and rifting. Evidence from the Alamo bolide impact, a high-velocity impact from space about 367 million years ago, can be found there. In addition, the area is one of the largest ecologically intact landscapes in the Great Basin region, providing habitat connectivity and migration corridors for a wide variety of animal species and affording researchers the ability to conduct studies over broad scales.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

(b) (5)

A comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. Based on what is currently known, though, designation does not affect grazing operations in the Monument, including use of motorized vehicles, construction and maintenance of water infrastructure, and construction of fences and other range improvements relating to grazing operations. Additionally, the designation does not affect U.S. military uses of the airspace and allows continued military access for emergency response and training activities. Since the passage of the Lincoln County Conservation, Recreation, and Development Act of 2004, there has been over 768,000 acres of designated wilderness as components of the National Wilderness Preservation System in the county.<sup>19</sup> One of these wilderness areas (Worthington Mountains Wilderness) is within the Monument boundary, and thus a portion of the Monument has been closed to mineral leasing prior to Monument designation in accordance with multiple-use land management.

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<sup>19</sup><https://www.gpo.gov/fdsys/pkg/PLAW-108publ424/pdf/PLAW-108publ424.pdf>

Table 1. State and County Economic Snapshot

	<b>Lincoln County</b>	<b>Nevada</b>
Population, 2015 <sup>a</sup>	5,194	2,798,636
Employment, December 2016 <sup>c</sup>	1,234	1,307,813
Unemployment rate, April 2017 <sup>b</sup>	3.9%	4.6%
Median Household Income, 2015 <sup>a</sup>	\$44,866	\$51,847

<sup>a</sup>U.S. Census Bureau, 2011-2015 American Community Survey

<sup>b</sup><http://nevadaworkforce.com/>

<sup>c</sup>Bureau of Labor Statistics

Table 2. BARNM Estimated Economic Contributions, 2016

<b>Activities</b>	<b>Economic output (\$ millions)</b>	<b>Value added (net addition to GDP, \$ millions)</b>	<b>Employment supported (number of jobs)</b>
Recreation <sup>a</sup>	\$0.07	\$0.05	1
Grazing <sup>b</sup>	\$2.1	Not available	27
Cultural Resources	Not available; some values would be included in recreation		

<sup>a</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

<sup>b</sup>BLM data.





# Bears Ears National Monument

## Economic Values and Economic Contributions



Bears Ears  
National Monument



## Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Bears Ears National Monument (BENM or the Monument), as well as to provide a brief economic profile of San Juan County, Utah (UT).<sup>1</sup>

## Background

The Bears Ears National Monument was established by President Obama on December 28, 2016 (Proclamation 9558), and is jointly managed by the Bureau of Land Management (BLM) and the USDA Forest Service (FS). The Monument encompasses 1.35 million acres of land in San Juan County, UT, and was established for the purposes of protecting lands that contained cultural, prehistoric, historic, geologic, and scientific resources, including objects of archaeological significance. Prior to establishment of the Monument, all lands within the Monument boundaries were Federal lands managed by Bureau of Land Management (BLM, Monticello Field Office) and the USDA FS (USDA FS, Manti-La Sal National Forest), with the exception of about 100,000 acres of land owned by the State of Utah (managed by the Utah School and Institutional Trust Lands Administration (SITLA) and smaller private parcels.<sup>2</sup> Of the BLM and USDA FS acreage, 57% was managed with some level of protective designation under the existing land use plans as Natural Areas, Areas of Critical Environmental Concern, and Special Recreation Management Areas; or as designated Wilderness Study Areas. There have been several previous proposals to protect land in the Bears Ears area varying in terms of land use designations, the number of acres protected, and restrictions on land use.<sup>3</sup>

### *Bears Ears National Monument*

**Location:** San Juan County, UT

**Managing agencies:** BLM, USDA FS

**Adjacent communities, Tribal, and**

**Federal land:** Bluff, UT; Blanding, UT; Monticello, UT; Navajo Nation

**Resource Areas:**

☒ Recreation ☒ Energy ☒ Minerals

☒ Grazing ☐ Timber ☒ Scientific

Discovery ☒ Tribal Cultural

<sup>1</sup>The BLM and USDA Forest Service provided data used in this paper.

<sup>2</sup>SITLA serves as fiduciary of Utah's 3.4 million acres of trust lands, parcels of land held in trust to support 12 state institutions, primarily the K-12 public education system. SITLA is constitutionally mandated to generate revenue from trust lands to build and grow permanent endowments for these institutions. Utah's public school system is the largest beneficiary, holding 96% of all Utah trust lands. A May 2017 SITLA land auction included a 1,120 acre parcel within BENM, the Needles Outpost, which sold for \$2.5 million, or \$2,232 per acre (<https://trustlands.utah.gov/land-auction-earns-3-million-for-public-schools/>).

Economic activities occurring on SITLA land in the area are similar to those on adjacent Federal land, including visitation to prominent cultural resource sites and livestock grazing. Different rules apply to grazing on SITLA land versus Federal land, such as allowing SITLA to post expiring permits on the agency's website, establish 15 years as the maximum length for grazing permits, and set a fee of \$10/Animal Unit Month (AUM) when permits are assigned. The 2016 BLM grazing fee was \$2.11/AUM. The Forest Service grazing fee was \$2.11/Head Month (HM). AUMs and HMs are treated as equivalent measures for fee purposes.

<sup>3</sup>Proposals to protect land in the Bears Ears area date back over 80 years. In 2015, the "Inter-Tribal Coalition for Bears Ears" proposed establishing a 1.9 million acre National Monument. Utah Congressmen Rob Bishop and Jason Chaffetz proposed establishing two National Conservation Areas (NCAs, which are designated by Congress)—Bears Ears and Indian Creek—totaling 1.3 million acres as part of their Public Lands Initiative (PLI). In contrast to the Inter-Tribal Coalition's proposal, the PLI did not specify that all areas were to be withdrawn from future mineral development, placed a restriction on decreasing grazing permits in one of the proposed NCAs, and placed restrictions on Federal negotiations with the State of Utah for land exchanges for State-owned land within the proposed boundaries.

Native Nations organizations (including the Hopi, Navajo, Uintah and Ouray Ute, Ute Mountain Ute, and Zuni and Native Americans representing the Utah Diné Bikéyah (UDB)) have been working collaboratively with all parties to protect the Bears Ears landscape for more than five years.

In 2011, Navajo President Ben Shelley met with former Interior Secretary Ken Salazar and requested a national monument proclamation. In April 2013, the Navajo Nation and UDB submitted a proposal to the county for the creation of a Bears Ears National Conservation Area, to be co-managed by Tribes. Between 2013 and 2015, the Tribes indicated they made four visits to Washington, DC, meeting with two Utah Congressmen and their staff. In July 2015, the Bears Ears Inter-Tribal Coalition was formed, led by Hopi, Navajo, Uintah and Ouray Ute, Ute Mountain Ute and Zuni Tribes and supported by 25 other Tribes. According to the October 2015 Inter-Tribal Coalition Proposal, UDB “...interviewed and surveyed thousands of people; held eight Town Hall meetings; obtained over 15,000 statements of support; held five annual gatherings of Tribes at Bears Ears to discuss land protection strategies; interviewed dozens of elders and medicine men; developed sophisticated GIS data and many maps displaying that data; and obtained 24 resolutions of support from many Navajo chapter houses and Tribes”.

The Monument management plan has not yet been drafted. Development of a management plan is anticipated to require five years and involve extensive public involvement.<sup>4</sup> The Presidential Proclamation established the Bears Ears Commission, consisting of one elected official each from five different Tribes (Hopi Tribe, Navajo Nation, Ute Mountain Ute Tribe, Ute Indian Tribe of the Uintah Ouray, and Zuni Tribe). The Commission is to work with the Federal government to provide guidance and recommendations on the development and implementation of management plans and on management of the Monument. The Proclamation also requires a Monument Advisory Committee (MAC) be established according to the Federal Advisory Committee Act (FACA) regulations. In addition, DOI sought to enter into a MOU with the State of Utah to negotiate the exchange of state land within the Monument boundaries for other BLM land outside the Monument.

### *Public Outreach Prior to Designation*

A public meeting was held in Bluff, UT in July 2016. The meeting was hosted by former Secretary of the Interior Sally Jewell and former USDA Under Secretary for Natural Resources and Environment Robert Bonnie for the purposes of hearing about community visions for the management of public lands in Southeastern Utah. Over 1,500 individuals attended, including representatives from DOI, the Department of Agriculture (USDA), tribes, members of the Utah congressional delegation, and Utah state legislature. In addition, almost 600 written comments were submitted, the majority of which were in favor of the Monument designation.<sup>5</sup> During their visit to Utah, Jewell and Bonnie also toured various sites in the Southeastern Utah alongside stakeholders and land managers to better understand local views related to the area’s public lands.<sup>6</sup>

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<sup>4</sup>Land management plans are developed in compliance with the Federal Land Policy and Management Act (FLPMA) and NEPA regulations, the National Forest Management Act (NFMA), and the Forest Service 2012 Planning Rule.

<sup>5</sup>Fast Facts and Q&A about the Bears Ears National Monument Designation, BLM.

<sup>6</sup>DOI Press Release, 7/18/2016 <https://www.doi.gov/pressreleases/secretary-jewell-under-secretary-bonnie-join-utah-local-leaders-public-meeting-hear>

### *Local Economy and Economic Impacts*

Table 1 presents socio-economic metrics for San Juan County and the State of Utah. The County contains roughly 0.5% of the State's population. The population of the County increased about 5% from 2000 to 2015. Nearly half of the population of the county is Native American. The median household income of Native Americans in San Juan County is over 40% lower than that of the total county population (see Table 1). The County has historically experienced higher levels of unemployment and lower levels of median household income in comparison to the State.

The San Juan County economy is dependent upon recreation-based or tourism-based businesses.<sup>7</sup> The accommodation and food services industry is the largest sector by employment, accounting for about 30% of total employment in the county (see Figure 1).<sup>8</sup>

### *Activities and Resources Associated With Bears Ears National Monument*

Information on the economic contributions associated with the activities occurring at Bears Ears National Monument, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with BENM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** Annual recreation visitation data for FY 2001-2016 is available for the BLM Monticello Field Office. About 60 percent of the area formerly under the jurisdiction of the Field Office represents the area included in the BENM. This area receives the vast majority of recreation use on BLM managed lands within the Field Office boundary. Recreation visits increased steadily from an estimated 111,000 in FY 2001 to about 419,000 in 2016 (see Figure 2).<sup>9</sup> In comparison, visitation to National Monuments and National Conservation Areas (NCAs) that have tracked unit-level visitation since 2005 has grown at an average rate of about 5.4% per year. Annual recreation visits to the Manti-La Sal National Forest, part of which is now within BENM boundaries, are estimated to number around 350,000. USDA FS estimates that around 35,000 visits are to the area that is now contained within Mounument boundaries.

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 \$23 million in value added (net economic contributions) and support 463 jobs;<sup>10</sup> these could be considered conservative estimates for the Monument area as a whole, as they do not include the impacts of visitation to USDA FS-managed

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<sup>7</sup>Approved Resource Management Plan for Monticello Field Office, 2008

<sup>8</sup>U.S. Census Bureau County Business Patterns, 2015

<sup>9</sup>The BLM utilizes the Recreation Management Information System (RMIS) to report visitation. The RMIS, implemented in 1984, is the agency's official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.

<sup>10</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

land. Including the estimated 35,000 annual visits to the USDA FS-managed land, recreation activities based on visitation to all land within Monument boundaries are estimated to contribute about \$27 million in value added and support 473 jobs<sup>11</sup>; the values should be considered an upper bound as there may be some double-counting between visits to BLM-managed and to USDA FS-managed land.

The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Using an average consumer surplus unit value of \$54.19 per person per day, the estimated economic value (net benefits) generated in 2016 was \$22.7 million to \$24.6 million.<sup>12</sup> As one of the most intact and least roaded areas in the contiguous United States, the Monument provides iconic western viewsheds along with opportunities to experience solitude, natural soundscapes, absolutely black night skies, and wilderness values.

- **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. The total value or amount of energy or mineral production forgone as a result of the designation cannot be determined. For more information, see the Background and Overview materials.
  - **Coal:** There have been no coal developments in the Monument area. Furthermore, there is very little, if any, prospectively valuable coal within the Monument boundaries, based on the energy and mineral resource assessment conducted for BENM. Coal deposits, as surveyed by the USGS, lie almost entirely to the east of the Monument.<sup>13</sup>
  - **Oil and gas:**
    - There are currently no producing oil and gas wells within the Monument. USGS assessments indicate a high level of potential for oil and gas for an assessment unit that includes the Monument boundaries, though it is not scientifically valid to statistically assign energy resource numbers in an assessment unit to a specific area.<sup>14</sup> The upper northeast panhandle of BENM lies within the boundaries of the Moab Master Leasing Plan (approved in December 2016) and portions of the southeastern and southcentral areas of the Monument were included in a proposed San Juan Master Leasing Plan.<sup>15</sup>

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<sup>11</sup>USDA FS data.

<sup>12</sup>The consumer surplus unit value is a survey-based value for general recreation in the Intermountain region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). This unit value was applied to FY 2016 visitation estimates, which range from 416,000 to 454,000 visits, to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).

<sup>13</sup>BLM Information Memo “Cursory Review of the Mineral Potential/Occurrence within the Bears Ears NM” from Larry Garahana, Geologist, January 31, 2017

<sup>14</sup>The Monument area is within a USGS Energy Assessment Unit (AU) and has historic uranium mining activity (the Monument is within 2 conv. AUs and 1 cont. AU, Paradox Basin Province (315 MMBO, 999 BCF, 18 MMBNGL) <https://pubs.usgs.gov/fs/2012/3031/>

<sup>15</sup>Master Leasing Plans (MLPs) establish a framework for determining which areas are appropriate for responsible exploration and development of minerals while protecting the area’s conservation resources. MLPs also provide

Approximately 63,600 acres within the proposed San Juan Master Leasing Plan planning area have been nominated for leasing since 2014. All of these lease nominations were deferred due to existing land use plan decisions and potential adverse impacts on cultural resources.

- There are currently 23 existing federal oil and gas leases that are partially or wholly contained within the Monument boundaries on BLM-managed lands, with lease authorizations spanning the period from 1972 to 2012. Currently, there are no authorized or pending applications for permit to drill (APDs) associated with these leases. No oil and gas wells have been drilled on existing leases since 1993 and all wells within Monument boundaries have been plugged. Of the 250 wells that have been drilled since 1920, only three wells have produced economical quantities of oil and gas. The last producing well was drilled in 1984 and ceased production in 1992.
- **Uranium:** While there are no active mining operations on USDA FS-managed land, there are 78 active unpatented mining claims for uranium. The uranium ore in the Manti-La Sal National Forest is low grade, affecting the ability of the local industry to compete economically on the world market.<sup>16</sup> Uranium prices are volatile and, though currently higher than historical prices, have been trending downward since peaking in 2008.<sup>17</sup>
- **Non-Energy Minerals:**
  - **Sand and gravel:** There is one commercial minerals materials mining site within Monument boundaries on BLM-managed land that produces sand and gravel. The permit for this site was renewed in March, 2016 for a 10-year period. Production is limited to a maximum of 200,000 cubic yards over the life of the 10-year permit, and designation of the Monument does not affect the limits on production.<sup>18</sup>
  - **Potash:** While USGS surveys have assessed potential for potash in the northeastern panhandle of BENM (an area within the boundaries of the Moab Master Leasing Plan prior to designation), no sites in this area were identified as Potash Leasing Areas in the most recent Moab Master Leasing Plan (2016). BLM has denied all potash prospecting permit applications received from 2008 to 2015, primarily because they were inconsistent with protection of multiple resource values use (such as natural or cultural use) in the area.<sup>19</sup>

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direction for resolving resource conflicts, protecting important conservation resources, and supporting outdoor recreation and other activities that benefit local communities and public land visitors. For additional information on the Moab MLP see <https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=99717>.

<sup>16</sup>Manti-La Sal National Forest Land and Resource Management Plan, 1986.

<sup>17</sup><https://www.eia.gov/uranium/marketing/>

<sup>18</sup>Supply and demand conditions determine how much is produced annually within the overall limit on production. BLM receives a royalty of \$1.08 per cubic yard (\$0.66 per ton) of mineral production. The national average price for sand and gravel used in construction in 2016 was \$8.80/metric ton ([https://minerals.usgs.gov/minerals/pubs/commodity/sand\\_&\\_gravel/construction/mcs-2017-sandc.pdf](https://minerals.usgs.gov/minerals/pubs/commodity/sand_&_gravel/construction/mcs-2017-sandc.pdf)).

<sup>19</sup>Potash production depends largely on market forces. U.S. consumption of potash was down in 2016 owing to a drop in agricultural use in the first half of the year and lower industrial usage, primarily in oil well-drilling mud additives. The world potash market in 2016 was marked by weak demand in the first half of the year, mainly in China and India, the largest consumers of potash. This excess supply resulted in lower prices, and reduced production. The average price of potash in 2016 was \$360 per ton.



- **Other locatable minerals:** There are 266 mining claims on BLM-administered lands inside BENM. There are no active operations associated with these claims. Based on historic mining activity in the region, many of these claims may be associated with uranium. However, BLM does not require claimants to identify the mineral claimed.
- **Timber:** Timber harvest activities such as non-commercial Christmas tree cutting and collection of wood for posts and firewood are allowed by permit on both BLM and USDA FS-managed land. For BLM-managed lands, no information is available on the level of magnitude of these activities strictly within Monument boundaries, however within the boundaries of the Monticello Field Office the total estimated value of permit sales for harvesting firewood, wooded posts, and Christmas trees was about \$12,000 in FY 2016.<sup>20</sup> There have not been any recent commercial timber activities on USDA FS-managed land.
- **Grazing:** The allotments that are wholly or partially contained within the boundaries of BENM include 50,469 permitted Animal Unit Month (AUMs)<sup>21</sup> on BLM-managed land and 11,078 AUMs permitted on USDA FS-managed land. Figure 3 shows the number of AUMs billed by BLM annually over 2012-2016. In 2016, there were about 36,400 billed AUMs on BLM-managed land and about 9,700 billed AUMs<sup>22</sup> on USDA FS-managed land.
- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic and scientific interest. In general, these resources 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 natural, cultural, and scientific features identified in the Proclamation that the designation is intended to protect:
  - **Tribal Cultural Resources:** Indigenous communities may utilize 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. 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.
  - **Cultural (Historic and Archaeological) and Paleontological Resources:** According to the Utah State Historic Preservation Office, as of Feb. 6, 2017, there are 8,480 recorded archaeological sites and four archaeological districts within BENM. The following archaeological districts are either completely within or partially within BENM: Butler Wash, Grand Gulch, Natural Bridges, and the Salt Creek Archaeological District. More than 70 percent of the sites are prehistoric (pre-dating the 1800s). These prehistoric sites include

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<sup>20</sup>This does not necessarily represent a market value.

<sup>21</sup>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>.

<sup>22</sup>USDA FS billed 7,335 Head Months in 2016, which were converted to AUMs using a conversion factor of 1.32.



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. The remaining sites are historic and include debris scatters, roads, fences, and uranium and vanadium mines from World War II and the Cold War. About 9% of the BLM-managed portion of BENM has been surveyed for cultural resources.

The USDA FS-managed portion of BENM includes 2,725 known cultural sites and features an area containing over 2,027 Puebloan sites, most of which are Pueblo I. The Pueblo I culture is limited to only a few locations and the USDA FS-managed portion of BENM contains the only high elevation communities of this era. These sites include hunting camps and blinds, ceremonial sites, granaries, stone quarries, villages and residences, agricultural systems, kilns, rock art, and shrines, as well as protohistoric sweat lodges and hogans. Only 15-20% of the USDA FS-managed portion of BENM has been surveyed for cultural resources.

In addition, the Monument contains rich paleontological resources with many sites teeming with fossils, providing the opportunity for research that is revealing new insights into the transition of vertebrate life from reptiles to mammals and from sea to land.

- **Scientific Investigation:** The diversity of the soils and microenvironments in the Monument area provide habitat for a wide variety of vegetation, including populations of rare endemic plants and animals.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

Prior to designation, BLM tracked the number of visits to the Kane Gulch ranger station that served the southern end of the Monument. The number of visits to this ranger station in March and April of 2017 was more than 50% higher than the average visitation during the same months of the four previous years. An increase in visitation to the area of the Manti-La Sal National Forest within the Monument has also been locally observed since designation.<sup>23</sup> The Proclamation does not affect existing laws, regulations, and policies followed by the USDA FS or the BLM associated with timber activities, allowing for the continuation of all pre-designation timber activities as well as the continuation of all pre-designation grazing activities, including maintenance of stock watering facilities. Valid existing rights for minerals are also protected under the Proclamation, so development on those existing leases could occur if it is determined to be economic.

In the 2008 update to the Resource Management Plan for the Monticello Field Office, 60% of which is now BENM, an alternative emphasizing commodity development was considered but not selected due to its adverse impacts on wildlife and recreation opportunities, which includes visits for cultural purposes. This alternative was determined to be insufficient to protect all the important and sensitive resources

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<sup>23</sup>USDA FS data.

within the planning area. Likewise, an alternative emphasizing protection of the area's natural and biological values was not selected in part due to the restrictions it placed on recreation permits and opportunities, which would have resulted in negative economic impacts on local businesses.

(b) (5)

A

comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. For example, mineral and archeological surveys could be updated and completed for the entire Monument. For the near term, however, existing information can be summarized as indicating that: significant cultural resource values are present; the last producing oil or gas well was drilled in 1984; and recreation use has been increasing over this same period.

Table 1. State and County Economic Snapshot

	San Juan	Utah
Population, 2016 <sup>a</sup>	15,152	2,903,379
Native American % of population <sup>a</sup>	47.0%	1.1%
Employment, December 2016 <sup>c</sup>	2,299	1,187,682
Unemployment rate, March 2017 <sup>b</sup>	7.0%	3.1%
Median Household Income, 2015 <sup>a</sup>	\$41,484	\$60,727
Native American Median Household Income, 2015 <sup>a</sup>	\$24,132	\$36,428

<sup>a</sup> U.S. Census Bureau, 2011-2015 American Community Survey

<sup>b</sup> <http://www.jobs.utah.gov/wi/pubs/une/season.html>.

<sup>c</sup> Bureau of Labor Statistics

Table 2. BENM Estimated Economic Contributions, 2016

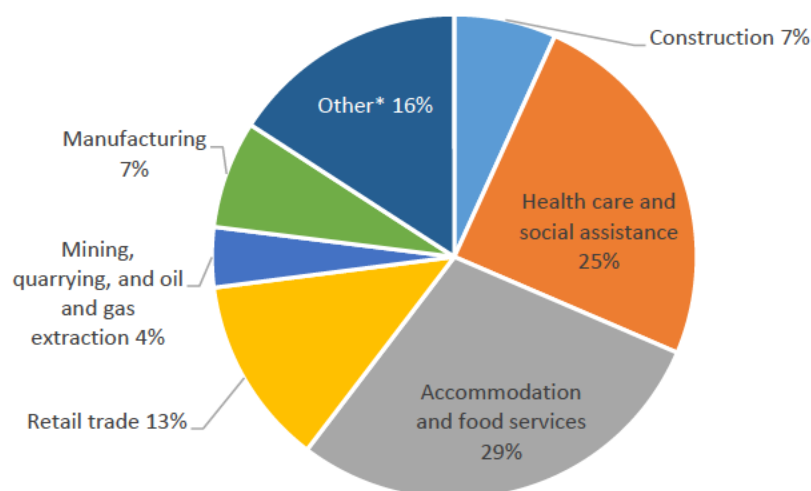
Activities	Economic output (\$ millions)	Value added (net addition to GDP, \$ millions)	Employment supported (number of jobs)
Recreation <sup>a</sup>	\$41.3-\$44.8	\$23.0-\$24.9	463-501
Non-energy Minerals <sup>b</sup>	\$0.4	\$0.2	2
Grazing <sup>c</sup>	\$7.2-\$9.5	Not available	161-210
Cultural Resources	Not available; some values would be included in recreation		

<sup>a</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016; USDA FS data.

<sup>b</sup>BLM data.

<sup>c</sup>BLM data; USDA FS data.

Figure 1. Percent of employment by sector in San Juan County, 2015



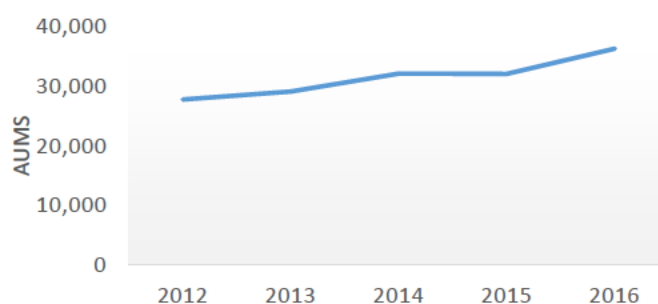
\*Other includes agriculture/forestry; utilities; wholesale trade; finance and insurance; real estate; professional, scientific and technical services; admin and support services; waste management; educational services; arts and entertainment; and transportation and warehousing. Each of these represents less than 4% of total employment. While this data source covers most NAICS industries, it excludes crop and animal production; rail transportation; National Postal Service; pension, health, welfare, and vacation funds; trusts, estates, and agency accounts; private households; and public administration. Most establishments reporting government employees are also excluded.

Source: 2015 County Business Patterns, U.S. Census Bureau.

Figure 2. Recreation Visits to BLM Monticello Field Office, 2001-2016



Figure 3. BLM AUMs Billed, 2012-2016

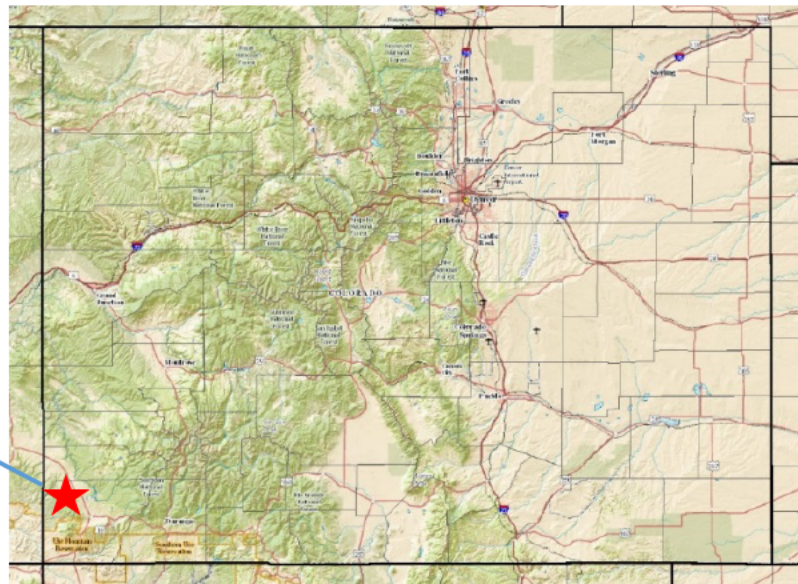




# Canyons of the Ancients National Monument

Economic Values and Economic Contributions

Canyons of the  
Ancients National  
Monument



## 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 or the Monument), Colorado (CO).<sup>1</sup>

## Background

The Canyons of the Ancients National Monument was established by President Clinton on June 9, 2000 (Proclamation 7317), and is managed by the Bureau of Land Management (BLM). The Monument spans 176,370 acres of Federally-managed land in Montezuma County, CO, with a small portion extending into Dolores County, CO and was established 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.

### *Canyons of the Ancients National Monument*

**Location:** Montezuma County, Dolores County, CO

**Managing agency:** BLM

**Adjacent communities, Tribal, and Federal land:** Cahone, Pleasant View, Yellow Jacket, Lewis, Cortez, CO; Ute Mountain

**Resource Areas:**

☒ Recreation ☒ Energy ☒ Minerals  
☒ Grazing ☐ Timber ☒ Scientific  
Discovery ☒ Tribal Cultural

## Local Economy and Economic Impacts

Montezuma County, with a population of 25,700 people,<sup>2</sup> 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 Associated With Canyons of the Ancients National Monument

Information on the economic contributions associated with the activities occurring at CANM, as well as resources within the Monument, is provided below. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** A variety of recreation activities are available at CANM including: dispersed camping, hiking, hunting, horseback riding, biking, off-highway vehicle (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

<sup>1</sup>The BLM provided data used in this paper.

<sup>2</sup>2011-2015 ACS, 5-Year Estimates, U.S. Census Bureau.



located on the Monument. Visitation in FY16 was about 89,500 visits,<sup>3</sup> which is associated with estimated value added of about \$4.7 million and approximately 80 jobs.

The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Using an average consumer surplus unit value of \$54.19 per person per day, the estimated economic value (net benefits) generated in 2016 was \$4.9 million.<sup>4</sup>

- **Energy:** There is oil, gas, and CO<sub>2</sub> production within the Monument. The total value or amount of energy or mineral production forgone as a result of the designation cannot be determined. For more information, see the Background and Overview materials.
  - **Coal:** There have been no coal developments in the Monument area.
  - **Oil and gas:** There is oil, gas, and CO<sub>2</sub> production within the Monument area. 95% of the production of oil, gas, and CO<sub>2</sub> in Montezuma and Dolores counties is from within Monument boundaries. In 2016, there were approximately 81,471 bbls (barrels) of oil, 400,254 mcf (thousand cubic feet) of natural gas, and 323,094,193 mcf of CO<sub>2</sub> produced in Montezuma and Dolores counties.<sup>5</sup> These levels of oil and gas production are associated with estimates of about \$492 million in value added and 3,440 jobs.
  - **Other:** There are nine past-producing uranium/vanadium mines within the Monument boundaries that are no longer in operation.
- **Non-Energy 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)<sup>6</sup>. There has been an average of approximately 4,300 AUMs billed per year since the Monument was designated. This level of AUMs billed is associated with

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<sup>3</sup>The BLM utilizes the Recreation Management Information System (RMIS) to report visitation. The RMIS, implemented in 1984, is the agency's official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.

<sup>4</sup>The consumer surplus unit value is a survey-based value for general recreation in the Intermountain region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). This unit value was applied to FY 2016 visitation estimates to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).

<sup>5</sup>These production levels represent 95% of the FY2016 sales volume in Montezuma and Dolores counties as reported to the Office of Natural Resources Revenue (ONRR).

<sup>6</sup>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>.

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.

- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest. 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 natural, cultural, and scientific features identified in Proclamation that the designation is intended to protect:
  - **Tribal Cultural 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.
  - **Cultural (Historic and Archaeological) and Paleontological Resources:** CANM contains the highest known density of archaeological sites in the Nation, providing evidence of cultures and traditions spanning thousands of years. Archaeological and historic objects include cliff dwellings, villages, great kivas, shrines, sacred springs, agricultural fields, check dams, reservoirs, rock art sites, and sweat lodges. More than 5,000 archaeological sites have been recorded, with thousands more anticipated to be documented and studied. 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.
  - **Scientific Investigation:** The Monument is home to a wide variety of wildlife species, including unique herpetological resources. The area serves as crucial habitat for the Mesa Verde nightsnake, long-nosed leopard lizard, and twin-spotted spiny lizard, as well as various types of buteos and game birds.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

(b) (5)

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comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. For example, mineral and archeological surveys could be updated and completed for the entire Monument.



# Carrizo Plain

## National Monument

Economic Values and Economic Contributions



## 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 or the Monument) as well as to provide a brief economic profile of Kern and San Luis Obispo counties, California (CA).<sup>1</sup>

## Background

The Carrizo Plain National Monument was established by President Clinton on January 17, 2001 (Proclamation 7393) and is managed by the Bureau of Land Management (BLM) in partnership with the California Department of Fish and Wildlife and the Nature Conservancy. The Monument encompasses 211,045 million acres of land primarily in San Luis Obispo County, CA (a small amount of monument is located in Kern County) and was established for the purposes of protecting lands that contained cultural, prehistoric, historic, geologic, ecological, and scientific resources, including objects of archaeological significance. State and private inholdings total 35,772 acres. A wide range of recreational activities take place on the Monument, including wildflower viewing, which attracted international attention in spring 2017. 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 and 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 BLM developed a Resource Management Plan (RMP) through a public process between 2002 and 2010. A Monument Advisory Committee and Native American Advisory Committee participated in the development of the alternatives, review of the alternatives and development and review of the proposed alternative. Public meetings took place in Bakersfield, California Valley, Taft, and San Luis Obispo.

Prior to its designation via Proclamation, the Carrizo Plain was part of a bipartisan legislative effort to designate a National Conservation Area (NCA). A number of public meetings and outreach occurred over 1999-2000.

During the planning process, based on public input, the Monument was closed to non-street legal off-highway vehicles (OHVs).

### Carrizo Plain National Monument

**Location:** San Luis Obispo and Kern counties, CA

**Managing agency:** BLM, in cooperation with The Nature Conservancy and California Department of Fish and Wildlife

**Adjacent communities, Tribal, and Federal land:**

- Gateway communities: Taft; Santa Margarita; and Atascadero.
- Tribes/Reservations: Chumash, Salinian, and Yokuts Tribes

**Resource Areas:**

- ☒ Recreation ☒ Energy ☒ Minerals  
☒ Grazing ☐ Timber ☒ Scientific  
Discovery ☒ Tribal Cultural

<sup>1</sup>The BLM provided data related to public land resources used in this paper.



### *Local Economy and Economic Impacts*

Table 1 presents socioeconomic 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.

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.<sup>2</sup>

### *Activities and Resources Associated With Carrizo Plain National Monument*

Information on the economic contributions associated with the activities occurring at CPNM, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with CPNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** Figure 2 shows CPNM recreation visitation data for FY 1996 - 2016.<sup>3</sup> Recreation visits increased steadily from 1996 to about 87,000 in 2007, dropped to about 23,000 in 2012 (most likely due to severe drought) and have since increased to about 54,000 in 2016 (visitation was not tracked prior to 1996). Annual visitation fluctuates significantly based on wildflower blooms, which are tied to rainfall. In spring 2017, a “super bloom” due to heavy rainfall over the winter received extensive coverage in national media outlets and on social media, attracting a typical year's worth of visitors in a single month and overwhelming CPNM's facilities. Over 1996-2016 the average number of annual visits was about 45,000.

Prior to designation, off-highway vehicles (OHV) were allowed on designated routes. Through the public planning process, BLM's RMP included OHV restrictions, allowing only

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<sup>2</sup>U.S. Census Bureau County Business Patterns, 2015.

<sup>3</sup>The BLM utilizes the Recreation Management Information System (RMIS) to report visitation. The RMIS, implemented in 1984, is the agency's official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.



street legal vehicles 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 \$2.9 million in value added (net contributions to GDP) and support 48 jobs.<sup>4</sup> The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument.

Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Based on the average number of annual visits over 1996-2016 and using an average consumer surplus unit value of \$44.95 per person per day, the estimated annual economic value (net benefits) is estimated to be about \$2.4 million.<sup>5</sup>

- **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. The total value or amount of energy or mineral production forgone as a result of the designation cannot be determined. For more information, see the Background and Overview materials. 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 held initial public meetings for this project, which includes alternative routes outside of the National Monument and remains in its early stages. There have been 3 renewals on existing right-of-ways originally issued between 1949 and 1970.
- **Non-Energy Minerals:** There are no solid mineral mining activities on the Monument nor are there mineral developments or processing facilities adjacent to or impacted by the Monument designation.

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<sup>4</sup> Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016

<sup>5</sup> The consumer surplus unit value is a survey-based value for general recreation in the Pacific Coast region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). This unit value was applied to the average number of visits over 1996-2017 as well as the FY 2016 visitation estimates. Economic value is the net benefit to recreational users (total benefits minus total costs) over and above what visitors spend.

- **Timber:** There is no active timber production in the Monument.
- **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: (1) traditional Section 15 grazing leases (seven grazing allotments); and (2) 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" (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 RMP. The 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.
- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest. In general, these objects are valued by society but those values are not bought or sold in the marketplace and therefore, are difficult to quantify. Below is a brief overview of the objects identified in Proclamation that the designation is intended to protect:
  - **Tribal Cultural 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 ensure the CPNM is managed in a manner compatible with tribal cultural resource uses and values. Activities currently undertaken by tribal members include plant gathering and conducting ceremonies at Painted Rock (RMP, p. 3-67).
  - **Cultural (Historic and Archeological) and Paleontological Resources:** 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 CPNM was designated through sustained archaeological surveying efforts. 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 that 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 II large scale agricultural development.

- **Scientific Investigation:** The CPNM provides habitat for many endangered, threatened, and rare animal species, as well as other important populations of animal species and sensitive plant species. The Carrizo Plain National Monument also encompasses Soda Lake, the largest remaining natural alkali wetland in southern California and the only closed basin within the coastal mountains. Small plants and animal species have adapted to this setting, which is also important to migratory birds. The Monument also has distinct geological features created by the geologic processes that occur along the San Andreas Fault. The area is also distinguished for its significant fossil assemblages.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply. See the Background and Overview materials for more information on tradeoff considerations.

(b) (5) [REDACTED] A  
comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis.

If the CPNM had not been designated:

- (b) (5) [REDACTED]
- [REDACTED]
- [REDACTED]

Table 1. State and County Economic Snapshot

	<b>Kern County</b>	<b>San Luis Obispo County</b>	<b>California</b>
Population, 2015 <sup>a</sup>	865,736	276,517	38,421,464
Unemployment rate, June 2017 <sup>b</sup>	9.5	3.8	4.9
Median Household Income, (\$2015 <sup>a</sup> )	49,026	60,691	61,818

<sup>a</sup>U.S. Census Bureau ACS 2011-2015 5-year estimates

<sup>b</sup><http://www.labormarketinfo.edd.ca.gov/file/1fmonth/countyur-400c.pdf>

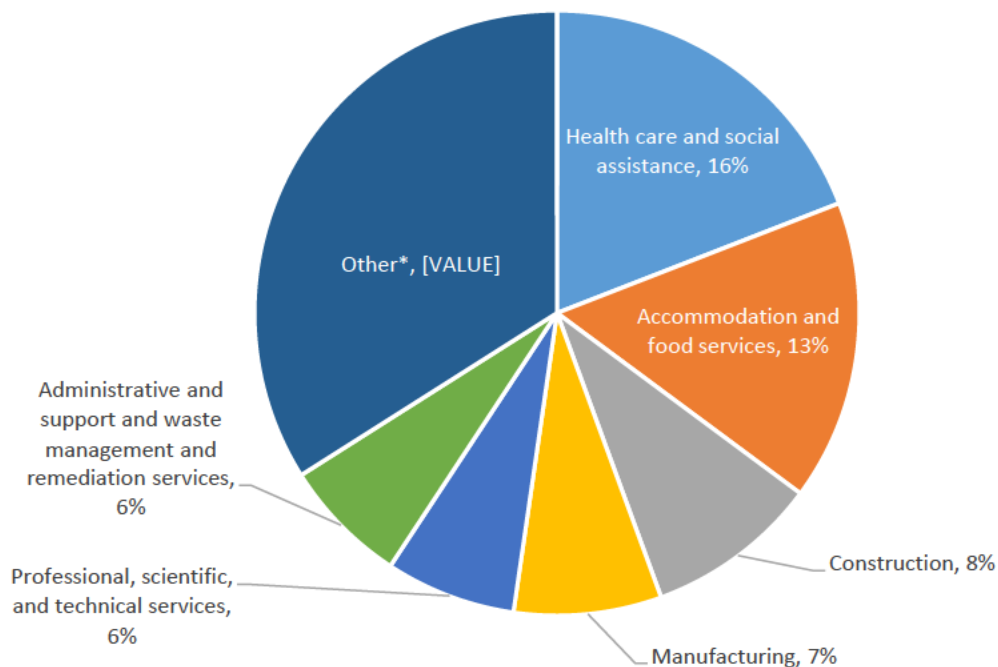
Table 2. CPNM Estimated Economic Contributions, 2016

<b>Activities</b>	<b>Economic output (\$ millions)</b>	<b>Value added (net additions to GDP, \$ millions)</b>	<b>Employment supported (number of jobs)</b>
Recreation <sup>a</sup>	\$4.8	\$2.9	48
Energy <sup>b</sup>	\$0.5	\$0.2	3
Grazing <sup>b</sup>	\$2.0	Not available	22
Cultural Resources	Not available; some values would be included in recreation		

<sup>a</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

<sup>b</sup>BLM data.

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



\*“Other” 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. While this data source covers most NAICS industries, it excludes crop and animal production; rail transportation; National Postal Service; pension, health, welfare, and vacation funds; trusts, estates, and agency accounts; private households; and public administration. Most establishments reporting government employees are also excluded.  
Source: 2015 County Business Patterns, U.S. Census Bureau.

Figure 2. Recreation Visits, CPNM, 1996-2015

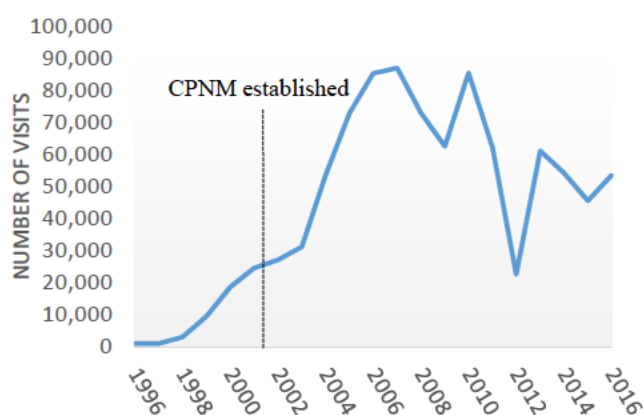
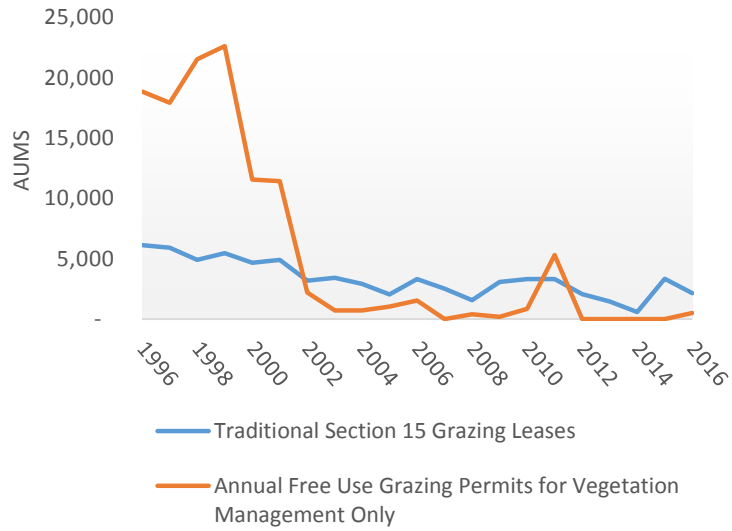




Figure 3. Billed AUMs, Carrizo Plain, 1996-2016





# Giant Sequoia National Monument

Economic Value and Economic Contributions



## Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Giant Sequoia National Monument (GSNM or the Monument). Brief economic profiles of Fresno, Kern, and Tulare counties, California (CA), are also provided.<sup>1</sup>

## Background

The Giant Sequoia National Monument was established by President Clinton on April 15, 2000 (Proclamation 7295), and is managed by the USDA Forest Service (FS). The Monument, now encompasses approximately 328,000 acres of the Sequoia National Forest (NF) in Fresno, Kern, and Tulare counties, and includes most of the giant Sequoia groves in the National Forest.

Originally designated at 327,769 acres, it has had a net increase in Federal acres due to acquisitions and conveyances within the Monument boundary which would most likely have occurred regardless of Monument designation.<sup>2</sup>

The Monument was designated in recognition of the outstanding landscape, and particularly the giant sequoias and supporting ecosystems. Giant sequoias (*Sequoiadendron giganteum*) grow only on the western slopes of California's Sierra Nevada range. The trees can reach 270 feet in height and are among the longest-lived trees in the world. The GSNM management plan emphasizes restoration and maintenance of healthy forest ecosystems, the importance of a natural fire regime, provision of a broad range of recreation opportunities, and opportunity for increasing the understanding of the value and importance of the scientific and historic objects within the Monument. Existing uses of the lands within the Monument were allowed to continue including grazing, recreation residences, and many forms of outdoor recreation.

## Public Outreach Prior to Designation

In February 2000, President Clinton asked the Secretary of Agriculture to consult with appropriate Federal, State, local, and Tribal officials and agencies prior to making a recommendation regarding designation. The Forest Service responded to this request by meeting with interested State, Federal, local, and Tribal officials. The Forest Service also held two public meetings in Visalia and Fresno, California to provide the public an opportunity to express their views regarding creation of a National Monument in Sequoia National Forest. Additionally, the Forest Service encouraged written comments at the public meetings, through individual contacts, newspaper articles, and through a website designed for the purpose.

According to the Record of Decision for the GSNM management plan, extensive public involvement occurred in the development of a collaborative management plan for the GSNM. A *Federal Register* notice was published June 8, 2001. A number of public meetings were held from July 2001 through March 2002. After the initial draft environmental impact statement (DEIS) was released for public

### *Giant Sequoia National Monument and Preserve*

**Location:** Fresno, Kern, and Tulare counties, CA

**Managing agency:** USDA FS

**Adjacent communities, Tribal, and Federal land:** Sequoia NF; Tula River Indian Reservation; Porterville, CA; Visalia, CA; Sequoia NP; Kings Canyon NP; Sierra NF

**Resource Areas:**

☒ Recreation ☐ Energy ☐ Minerals  
☒ Grazing ☐ Timber ☒ Scientific Discovery ☒ Tribal Cultural

<sup>1</sup>The USDA Forest Service provided data used in this paper.

<sup>2</sup>USDA FS data.

comment in December 2002, the USDA FS held public meetings to review, discuss and comment on it in February 2003. An initial plan was remanded to the USDA FS in 2006 and the planning process was restarted.

A third-party facilitator led meetings of people interested in recreation management from December 2007 through June 2009. The meetings resulted in the formation of a group that became the Giant Sequoia National Monument Association. Other concurrent public meetings focused on ecological restoration and fuels and vegetation management strategies. In the spring of 2009, a scoping period, website for obtaining comments, and four public workshops were used to gain public comments. The second DEIS was published in August 2010, with a 120-day public comment period. Public meetings were held in September and October 2010. The management plan was approved in August of 2012.

### *Local Economy and Economic Impacts*

As summarized in Table 1, Fresno, Kern, and Tulare counties in California account for approximately 6% of the State's population. Median income in each county is less than the State's median household income. All have unemployment rates higher than the State. The population of Kern County has increased by over 30% since 2000, while the other two are nearer to 20%. Hispanic or Latino residents account for more than half of the population in each of the three counties.<sup>3</sup>

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 GSNM counties are classified as follows:

- Nonspecialized – all three counties are nonspecialized, meaning that they are neither farming, mining, manufacturing, nor government dependent, nor were they recreation counties.
- All three were indicated as low education counties, meaning that 20% or more of the residents age 25 to 64 did not have a high school diploma or equivalent between 2008 -2012
- Fresno and Tulare Counties were indicated as being persistent related child poverty counties, indicating that 20% or more of related children under age 18 were poor, as measured by the 1980, 1990, and 2000 decennial censuses and the American Community Survey 5-year estimate for 2007-2011.

### *Activities and Resources Associated With Giant Sequoia National Monument*

Information on the economic contributions associated with the activities occurring at Giant Sequoia National Monument, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with GSNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** There were an estimated 780,000 recreation visits to the Sequoia NF in FY 2016, including about 400,000 visits to GSNM. Estimated visitation in 2011 was 626,000 to Sequoia NF and 368,000 to GSNM. The economic contributions for the 2016 visitation have not yet been calculated. In 2011, visitors to Sequoia NF spent a total of about \$31 million in the three-county area. That spending sustained about 200 jobs.

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<sup>3</sup>U.S. Census Bureau data.



The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to a consumer surplus). Using an average consumer surplus value for the area of \$44.95 per person per day (recreational visitor day), the estimated economic value (net benefits) generated in 2016 was \$18.0 million.<sup>4</sup>

- **Energy:** There are two hydroelectric projects located within the Monument. Southern California Edison operates the 2.5 megawatt Lower Tule Hydroelectric Project (Lower Tule Project; Federal Energy Regulatory Commission Project No. 372-008) in the Middle Fork of the Tule River. The Lower Tule Project generates an average of 17.9 gigawatt hours (GWh) of renewable energy annually. Approximately 200 feet of 66-kilovolt transmission line is associated with the Lower Tule Project. Pacific Gas and Electric Company operates the 7.9 megawatt Tule River Hydroelectric Project (Tule River Project; Federal Energy Regulatory Commission Project No. 1333-001) on the North Fork of the Middle Fork of the Tule River. The Tule River Project generates an average of 31.8 GWh of renewable energy annually. Approximately 15.27 miles of 70-kilovolt (kV) transmission line is associated with the Tule River Project. Monument designation did not change the production rates for these hydroelectric projects.
- **Non-Energy Minerals:** New mining claims are prohibited within the Monument. The Proclamation withdrew the area from the 1872 Mining Law and other mining laws. Existing mining claims with a valid discovery of a valuable mineral deposit as of the date of the designation constituted valid existing rights
- **Timber:** No portion of the Monument may be considered to be suited for timber production and no part of the Monument can be used in the calculation or provision of a sustained yield of timber from Sequoia National Forest. Except for timber sales that were at the time of designation (Proclamation) under contract and for personal use fuel wood, removal of trees within the Monument may only take place if clearly needed for purposes of ecological restoration and maintenance, or public safety. The Giant Sequoia Management Plan identifies "Clearly needed" criteria for felling and removal of timber for the purposes of ecological restoration, maintenance or public safety. From 1995 through 1999, an average of over 12 million board feet per year was harvested from the GSNM area.
- **Grazing:** Since designation, Animal Unit Month (AUM)<sup>5</sup> permits have ranged between 10,800 and 12,030 per year. Permitted use has remained relatively constant and changes primarily reflect permits that have become vacant for various reasons or feed that is no longer available due to growth of brush, or other reasons not related to management of the Monument. AUMs

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<sup>4</sup>The consumer surplus unit value is a survey-based value for general recreation in the Pacific Coast region from the USGS Benefit Transfer Toolkit (<https://my.usgs.gov/benefit-transfer/>). This unit value was applied to fiscal year 2016 visitation estimates to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).

<sup>5</sup>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>.



authorized (sold in a given year) averaged between 10,000 and 11,000 per year until about 2013. Since then, the number has fallen slightly, to about 9,000 in 2016. The decline in authorized use primarily reflects nonuse of permits for resource benefit due to drought conditions (see Figure 1). Grazing activities are estimated to support about 290 jobs.

- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic and scientific interest. In general, these resources 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 natural, cultural, and scientific features identified in the Proclamation that the designation is intended to protect:
  - **Tribal Cultural Resources and Subsistence Use:** At the time of designation, 1,013 sites were recorded including prehistoric sites, historic sites, trails, and standing structures. Approximately 30 recorded sites have been added to the baseline inventory since Monument designation. The USDA FS is unable to quantify the extent of access by Indian tribal members for traditional cultural, spiritual, and tree and forest product, food, and medicine gathering purposes within the Sequoia National Forest and particularly within the Giant Sequoia National Monument. However, tribes have expressed interest in collecting oak acorns, deer grass, fern, Pinyon, and various berries. Some spiritual/culturally important areas within the Monument are managed by the Forest Service, but frequency of use is not tracked for the most part. One example of tribal use on the Sequoia National Forest that is tracked is the Monache Gathering event. This is a cultural/spiritual gathering that takes place every year following National Historic Preservation Act (NHPA) Undertaking Clearances processes, accompanying a special use permit to allow the Native American religious gathering with cultural, educational, and spiritual focus in two different camp sites located within the Monument on the Western Divide Ranger District. The special use permit authorizes a temporary sweat lodge, cooking facilities, and portable toilets. This event and any similar events when proposed would be considered and authorized regardless of Monument status.
  - **Scientific Investigation:** Scientific research in the GSNM is diverse and includes ongoing investigations of the ecology and plant communities, especially the giant sequoia trees and their supporting ecosystems.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

No significant change is attributed to minerals output since Monument designation. Leaseable minerals do not occur in any substantive form on the Sequoia National Forest within the area that was designated as the Giant Sequoia National Monument. There are two lode claims for gold and one for rose quartz within the Monument. None of the claims are patented.

(b) (5)

There is no agency data on recreation visitation in the absence of designation. Anecdotal evidence from agency staff, volunteers, and partners have reported an increase in recreation usage to the area since Monument designation. This is likely a result of the many new partnerships and the extra exposure the Monument receives through media sources inside and outside the agency. No significant change to energy production is attributed to Monument designation. There are two hydropower developments licensed within the Monument area. These developments are not within the watershed areas of a giant sequoia grove and are currently in the re-licensing process with the Federal Energy Regulatory Commission (FERC). Monument designation has not affected grazing, subsistence, or cultural uses/values.

(b) (5)

A comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis.

Table 1. State and County Economic Snapshot

	<b>Fresno, Kern, and Tulare Counties</b>	<b>California</b>
Population, 2015 <sup>a</sup>	2,276,518	38,421,464
Unemployment Rate, May 2017 <sup>b</sup>	7.4%-8.6%	4.2%
Median Household Income, 2015 <sup>a</sup>	\$42,031-\$49,026	\$61,818

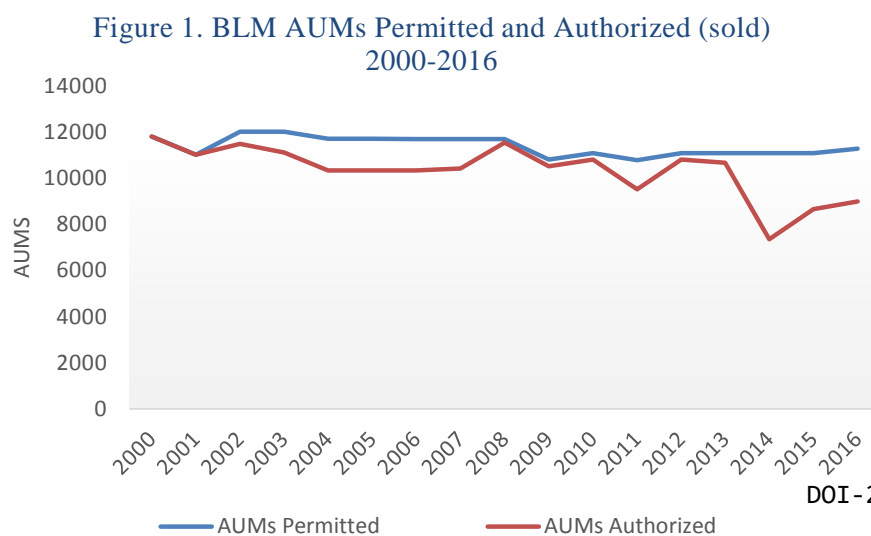
<sup>a</sup> U.S. Census Bureau, 2011-2015 American Community Survey

<sup>b</sup> <http://www.labormarketinfo.edd.ca.gov/file/lfmonth/countyur-400c.pdf>

Table 2. GSNM Estimated Economic Contributions, 2014

<b>Activities</b>	<b>Economic output (\$ millions)</b>	<b>Value added (net additions to GDP, \$ millions)</b>	<b>Employment supported (number of jobs)</b>
Recreation	\$21.8	\$12.5	199
Grazing	\$33.5	\$17.2	290
Cultural resources	Not available; some values would be included in recreation		

Source: USDA FS; economic contributions estimates are for the Sequoia NF as a whole <https://www.fs.fed.us/emc/economics/contributions/at-a-glance.shtml>





# Gold Butte National Monument

## Economic Values and Economic Contributions



Gold Butte  
National Monument



## Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Gold Butte National Monument (GBNM or the Monument).<sup>1</sup> A brief economic profile of Clark County, Nevada (NV), is also provided.

## Background

The Gold Butte National Monument was established by President Obama on December 28, 2016 (Proclamation 9559), and is managed by the Bureau of Land Management (BLM).

The Monument encompasses roughly 297,000 acres of land in Clark County, NV, and was established for purposes of protecting an array of historic and scientific resources, including critical habitat of the threatened desert tortoise, the once-thought-extinct relic leopard frog, archaeological sites, areas of spiritual significance to Native American tribes, historic ranching and mining sites, rare endemic plants, and dinosaur tracks. The Monument lies between the eastern boundary of Lake Mead National Recreation Area and the western boundary of Grand Canyon-Parashant National Monument; it is bordered by these Federal lands to the east, west, and south. Prior to designation, all land within the Monument was Federal land, the majority of which was managed by the BLM's Las Vegas Field Office with the exception of approximately 11,800 acres that had been managed by the Bureau of Reclamation. In addition, nearly all of the land had been protected under an Area of Critical Environmental Concern (ACEC) designation since the corresponding Resource Management Plan (RMP) was updated in 1998. Parts of the Monument were also designated as Wilderness or Wilderness Study Areas prior to Monument designation.

## Public Outreach Prior to Designation

Legislation for protecting the Gold Butte area has been introduced repeatedly since a proposal to designate it as a National Conservation Area was made in 2008. In 2015, a public meeting hosted by Nevada Senator Harry Reid and Representative Dina Titus was attended by representatives of DOI. The Nevada State Legislature passed a joint resolution (ARJ13) expressing support for the designation of the GBNM.<sup>2</sup>

## Local Economy and Economic Impacts

GBNM is located in Clark County, Nevada. The economy in Clark County is dominated by Las Vegas, where the most important industries are gaming, entertainment, and tourism. The nearest populated area and access point to GBNM, Mesquite, Nevada, has an economic profile similar—albeit significantly smaller—to Las Vegas based on U.S. Census Bureau estimates of employment by industry, with over a

### Gold Butte National Monument

**Location:** Clark County, NV  
**Managing agency:** BLM  
**Adjacent communities, Tribal, and Federal land:** Mesquite, NV; Grand Canyon-Parashant National Monument; Lake Mead National Recreation Area

**Resource Areas:**

☒ Recreation ☐ Energy ☐ Minerals  
☒ Grazing ☐ Timber ☒ Scientific  
Discovery ☒ Tribal Cultural

<sup>1</sup>The BLM provided data used in this paper.

<sup>2</sup><https://www.leg.state.nv.us/App/NELIS/REL/79th2017/Bill/5507/Overview>



third of civilians employed in the arts, entertainment, recreation, accommodation, and food service industries.<sup>3</sup>

### *Activities and Resources Associated with Gold Butte National Monument*

Information on the economic contributions associated with the activities occurring at Gold Butte National Monument, as well as resources within the Monument, is provided below. Table 1 provides estimates of the economic contributions of activities associated with GBNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** The opportunities for outdoor recreation in GBNM include camping and hiking, although there are no designated or marked hiking trails and no developed campgrounds or other facilities within the Monument. Most vehicle routes are unmaintained dirt roads and recommended for 4-wheel drive only. The temperatures in the area can be extreme. Hunting is permitted and is regulated by the State of Nevada. For FY 2016 and the first half of FY 2017, it is estimated that there have been around 21,000 visits. During the years 2012-2015 there were an average of approximately 88,600 visits annually.<sup>4</sup> This level of annual visitation is associated with an estimated \$4.3 million in value added and supported about 70 jobs.<sup>5</sup>  
The value of recreation opportunities and experience is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Using an average consumer surplus unit value of \$54.19 per person per day, the estimated economic value (net benefits) generated in 2016 was \$4.8 million.<sup>6</sup>
- **Energy:** There is no energy transmission infrastructure or recent history of energy production in the area and the land within the Monument has not been surveyed by the USGS for potential for coal or oil and gas.<sup>7</sup> The production of coal, oil, gas, and renewable energy was restricted when these areas were designated as ACECs in the 1998 RMP. Prior to this, there were leases or lease applications for oil and gas on the “Gold Butte A” ACEC, part of which is now within Monument

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<sup>3</sup>2015 ACS 5-Year Estimates, Comparative Economic Characteristics

<sup>4</sup>BLM utilizes the Recreation Management Information System (RMIS) to report visitation. The RMIS, implemented in 1984, is the agency’s official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.

<sup>5</sup>The annual average visitation for FY 2012-2015 was used to estimate the economic contributions associated with recreation. The combined FY 2016/17 data was not used because data was not available separately for FY 2016. Estimates of economic contributions are based on the analysis from a forthcoming BLM report (Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016).

<sup>6</sup>The consumer surplus unit value is a survey-based value for general recreation in the Intermountain region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). This unit value was applied to a visitation estimate of 88,600 which is the average of 2012-2015 visitation, to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).

<sup>7</sup>USGS data.

boundaries, but no producing wells were drilled.<sup>8</sup> This is the only portion of the Monument that was formerly open to fluid mineral leasing subject to no surface occupancy stipulations; the rest of the Monument had been closed to leasable minerals (e.g., coal, oil, gas, and geothermal resources) prior to designation of the Monument.<sup>9</sup>

- **Non-Energy Minerals:** While there has been historic mining in the area by early European and American settlers, there has been no recent locatable mineral production on lands within the Monument boundaries. Two historic mining districts occupied parts of what is now GBNM, and the mining history of these districts is characterized by “much development and exploration but little production”. Limited amounts of copper, nickel, cobalt, platinum, tungsten, mica, and beryllium were produced in one mining district and minor amounts of gold, silver, copper, lead, zinc, and mica were produced in the other.<sup>10</sup> USGS mineral resource assessments found varying degrees of potential for other minerals, including uranium, gypsum, low-sulfide gold-quartz, vermiculite, crushed-rock aggregate, and sand and gravel aggregate. Nearly all of the land within the Monument was closed to mineral materials in the 1998 Las Vegas RMP and then withdrawn from mineral entry in 2002 by the Clark County Conservation of Public Land and Natural Resources Act. There are two mining claims currently located in GBNM that could potentially be developed in the future but production would first require a validity exam due to the 2002 mineral withdrawal.<sup>11</sup>
- **Timber:** There are no commercial timber resources in GBNM. Seed collection is allowed by permit in areas that are not desert tortoise habitat.
- **Grazing:** Livestock grazing has not been permitted in the Monument area since 1998, and the proclamation does not allow for any new grazing permits or leases within the Monument. Grazing allotments for all ACECs in the area under management by the Las Vegas Field Office were bought out by Clark County in the 1990s.<sup>12</sup> There are, however, two allotments administered by the Arizona Strip Field Office that are also partially within Monument boundaries. One allotment is ephemeral and one has less than 15% of its acreage within Monument boundaries<sup>13</sup>. It is estimated that the number of billed AUMs for this portion of the

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<sup>8</sup>Mineral Resource Potential of the Gold Butte A, Gold Butte B, Virgin Mountain (Gold Butte C), Whitney Pocket, Red Rock Spring, Devil’s Throat, and Gold Butte Townsite Areas of Critical Environmental Concern, Clark County, Nevada, <https://pubs.usgs.gov/sir/2006/5197/sir2006-5197c.pdf>

<sup>9</sup>EA for Route Designations for Selected ACECs Located in the North East Portion of Clark County within the Las Vegas BLM District, 2007

<sup>10</sup>Mineral Resource Potential of the Gold Butte A, Gold Butte B, Virgin Mountain (Gold Butte C), Whitney Pocket, Red Rock Spring, Devil’s Throat, and Gold Butte Townsite Areas of Critical Environmental Concern, Clark County, Nevada

<sup>11</sup>BLM data.

<sup>12</sup>EA for Route Designations for Selected ACECs Located in the North East Portion of Clark County within the Las Vegas BLM District, 2007

<sup>13</sup>BLM data.

Monument in recent years is fewer than 500; the economic contributions for this level of grazing are not significant.<sup>14</sup>

- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest. In general, these resources are valued by society, but those values are not bought or sold in the marketplace and therefore, are difficult to quantify. In recent years, rock faces, including those containing prehistoric petroglyphs, have been found defaced with graffiti and bullet holes. Parts of pioneer-era structures, including historic stock corrals, have been stolen and even burned for firewood, as well as sustained damage due to bullet holes. An illegal water system has been found trenched throughout terrain that is considered protected habitat for the threatened Mojave desert tortoise, the development of which was done without the necessary NEPA compliance. Below is a brief overview of the natural, cultural, and scientific features identified in the Proclamation that the designation is intended to protect:
  - **Tribal Cultural Resources:** Prior to the arrival of Spanish explorers in the late eighteenth century, the area was home to the Southern Paiute people, who continue to retain a spiritual and cultural connection with the land and use it for traditional purposes such as ceremonies and plant harvesting.
  - **Cultural (Historic and Archeological) and Paleontological Resources:** The previous designation of the land within GBNM as an ACEC was specifically for the purpose of protecting historic and prehistoric archeological resources, including rock shelters and caves, roasting pits, campsites, stone tools, projectile points, rock art, lithic scatters, pottery fragments, historic mining artifacts, historic mining towns, and historic mines. In addition, the area contains paleontological resources such as dinosaur tracks dating back to the Jurassic Period alongside prints from squirrel-sized reptilian ancestors of mammals.
  - **Scientific Investigation:** Acreage within GBNM has been designated as critical habitat for the Mojave desert tortoise, which is listed as threatened under the Endangered Species Act. The tortoise depends on the creosote-bursage ecosystem, which is abundant to the land within the Monument, and which can take decades or even centuries to recover from disturbances. Gypsum deposits, an attribute of the Mojave Desert ecosystem found in the Monument, supports endemic and rare plant species such as the Las Vegas bearpoppy. An actively-expanding 1,200 square-meter sinkhole has been the subject of multiple scientific studies and provided further insight into sinkhole formation.

### *Land Use Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

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<sup>14</sup>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>

The area has been closed to livestock grazing since 1998, long before the Monument was designated.<sup>15</sup> In addition, most of the land within the Monument was designated as Areas of Critical Concern prior to the Monument designation, thus most of the land had already been restricted or closed for energy development. The area was also withdrawn from mineral entry in 2002 by an act of Congress. If the Monument had not been designated, the area would continue to be subject to all prior designations, restrictions, and closures.

(b) (5)

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comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. For example, mineral and archeological surveys could be updated and completed for the entire Monument. It is clear that the Monument experiences a significant level of annual visitation which is associated with positive economic values as well as contributing to the local and regional economy. The Monument also contains cultural resources that are very difficult to value in economic terms.

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<sup>15</sup>As stated in the proclamation. The section on Grazing in this report addresses the small areas managed by the Arizona Strip Field Office that do permit grazing.

Table 1. State and County Economic Snapshot

	<b>Clark County</b>	<b>Nevada</b>
Population, 2016 <sup>a</sup>	2,035,572	2,798,636
Employment, December 2016 <sup>c</sup>	48,251	1,307,813
Unemployment rate, April 2017 <sup>b</sup>	4.8%	4.6%
Median Household Income, 2015 <sup>a</sup>	\$51,575	\$51,847

<sup>a</sup>U.S. Census Bureau, 2011-2015 American Community Survey<sup>b</sup><http://nevadaworkforce.com/><sup>c</sup>Bureau of Labor Statistics

Table 2. GBNM Estimated Economic Contributions, 2016

<b>Activities</b>	<b>Economic output (\$ millions)</b>	<b>Value added (net addition to GDP, \$ millions)</b>	<b>Employment supported (number of jobs)</b>
Recreation <sup>a</sup>	\$6.9	\$4.3	70
Grazing <sup>b</sup>	\$0.04	Not available	1
Cultural Resources	Not available; some values would be included in recreation		

<sup>a</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.<sup>b</sup>BLM data.





# Grand Canyon-Parashant National Monument

Economic Values and Economic Contributions

Grand Canyon-  
Parashant  
National  
Monument





## 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), as well as to provide a brief economic profile of the surrounding area, focused on Mohave County, Arizona (AZ) and supplemented with basic and relevant information for Clark County, Nevada (NV); Washington County, Utah (UT); and Coconino County, AZ.<sup>1</sup>

## Background

The Grand Canyon-Parashant National Monument 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. Located entirely within Mohave County in northwest Arizona, bordering Nevada to the west and near the southern border of Utah, 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. With the Grand Canyon along the south perimeter, GCPNM can only be accessed through rough, unpaved roads from the north, west, and northeast. 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.”<sup>2</sup> 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.
- BLM continues to issue and administer grazing leases within the portion of the Monument within the Lake Mead National Recreation Area (consistent with the Lake Mead National Recreation Area authorizing legislation) 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.

### *Grand Canyon-Parashant National Monument*

**Location:** Mohave County, AZ  
**Managing agencies:** NPS, BLM  
**Adjacent communities, Tribal, and Federal land:** Clark County, NV; Washington County, UT; Coconino County, AZ

**Resource Areas:**

☒ Recreation ☐ Energy ☐ Minerals  
☒ Grazing ☐ Timber ☒ Scientific  
Discovery ☒ Tribal Cultural

<sup>1</sup>The BLM provided data used in this paper.

<sup>2</sup>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.

The GCPNM boundary occupies approximately 12% of the area of Mohave County. Communities in Clark County, NV; Washington County, UT; and Coconino County, AZ also serve as access points to the Monument and are therefore connected economically and socially to the Monument. Individuals from the Hopi, Southern Paiute, Hualapai, Havasupai, and Navajo tribes continue visiting sites, gathering, and using resources in the Planning Area.<sup>3</sup>

### *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.<sup>4</sup>

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 and the State as a whole. While the County accounts for just 3 percent of the State's population, its population growth since 1990 was larger than the State (118% compared to 81%). The population growth rate in the County was similar to the State between 2001 and 2016 (just over 25%). 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 Bureau of Economic Analysis (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 in 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, & agriculture; and Mining sectors; respectively) and are comparable to the State as a whole.

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<sup>3</sup>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.

<sup>4</sup>White House Press Release.

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, NV; Washington County, UT; and Coconino County, AZ are common access points for the Monument. Coconino County has a population around 135,000 with half of the population living in Flagstaff. A relatively small portion of Coconino County provides easy access to the Monument. The Town of Fredonia (population of about 1,300) represents the main access point to the Monument from Coconino County and bills itself as “the gateway to the North Rim of the Grand Canyon.”<sup>5</sup> Washington County 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.<sup>6</sup> Clark County 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 Clark County to the Monument are Mesquite (population of about 17,000) and Bunkerville (population of about 1,000). Mesquite is a “growing resort destination”<sup>7</sup> providing local activities (such as golf and casinos) and access to a range of publicly managed lands. Information on the primary economic drivers for Bunkerville are not readily available.

### *Activities and Resources Associated With Grand Canyon-Parashant National Monument*

Information on the economic contributions associated with the activities occurring at Grand Canyon-Parashant National Monument, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with GCPNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **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 \$1.8 million in expenditures in local gateway regions in 2016.<sup>8</sup> These expenditures supported a total of 27 jobs and \$1.5 million in value added in local gateway economies surrounding the Monument.<sup>9</sup>

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<sup>5</sup>See <http://www.fredoniaaz.net/>

<sup>6</sup>See <https://www.sgcity.org/aboutstgeorge/>

<sup>7</sup>See <https://www.visitmesquite.com/about/>

<sup>8</sup>The BLM utilizes the Recreation Management Information System (RMIS) to report visitation. The RMIS, implemented in 1984, is the agency’s official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data.

The value of recreation opportunities and experiences extend beyond the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Using an average consumer surplus unit value of \$54.19 per person per day (recreational visitor day), the estimated economic value (net benefits) generated in 2016 was \$2.4 million.<sup>10</sup> The Monument provides iconic western viewsheds in a setting known for its solitude, natural soundscapes, internationally recognized night skies, and wilderness values.

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 as open, closed, or administrative. The analysis in the Final Environmental Impact Statement (FEIS) concluded that routes identified for closure would have negligible impact on recreational off highway vehicle (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 is 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 the 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.

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Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.

<sup>9</sup> Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

<sup>10</sup> The consumer surplus unit value is a survey-based value for general recreation in the Intermountain region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). This unit value was applied to FY 2016 visitation estimates to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).

- **Timber:** Upon designation, the BLM and NPS were directed to only permit the sale of vegetative material if it was part of an authorized science-based ecological restoration project. The FEIS describes the limited opportunities and interest in commercial use of woodland products from within the Monument. No commercial activity associated with timber has been reported in the Monument area since 1958. The remote nature of the Monument and the relatively small and spread out acreage of ponderosa pine (compared to the nearby Kaibab National Forest) makes commercial timber harvest on the Monument challenging from an economic standpoint.
- **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.<sup>11</sup> Figure 1 shows permitted and billed AUMs from 1994 through 2016.

Figure 1 also shows that permitted AUMs have remained relatively stable over the 23 year period. Billed use (which approximates actual use) has fluctuated 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 \$980,000 in labor income and generating about \$3.7 million in total economic output.

- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic and scientific interest. In general, these resources 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 natural, cultural, and scientific features identified in Proclamation that the designation is intended to protect:<sup>12</sup>
  - **Tribal Cultural Resources:** Individuals from the Hopi, Southern Paiute, Hualapai, and Havasupai tribes continue visiting sites, gathering, and using resources in the Monument.
  - **Cultural Historic, 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. There is an abundant fossil record.
  - **Scientific Investigation:** Scientific research and opportunities associated with the ponderosa pine ecosystem in the Mt. Trumbull area and ecological research opportunities are made

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<sup>11</sup> 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>.

<sup>12</sup> In addition to the Proclamation, Chapter 1 of the FEIS provides a more detailed description of these objects and their significance.



possible by the vast, remote, and unspoiled landscapes. Paleozoic and Mesozoic sedimentary rock layers are relatively undeformed and unobscured by vegetation, offering a clear view to understanding the geologic history of the Colorado Plateau. A variety of formations have been exposed by millennia of erosion by the Colorado River.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

(b) (5)

A comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. For example, mineral and archeological surveys could be updated and completed for the entire Monument.

## Grand Canyon-Parashant National Monument

Table 1. State and County Economic Snapshot

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

<sup>a</sup>U.S. Census Bureau, 2011-2015 American Community Survey

<sup>b</sup><https://laborstats.az.gov/sites/default/files/documents/files/emp-report.pdf>

<sup>c</sup>U.S. Bureau of Economic Analysis (BEA), Regional Economic Accounts. Table CA25N.

Table 2. GCPNM Estimated Economic Contributions, 2016

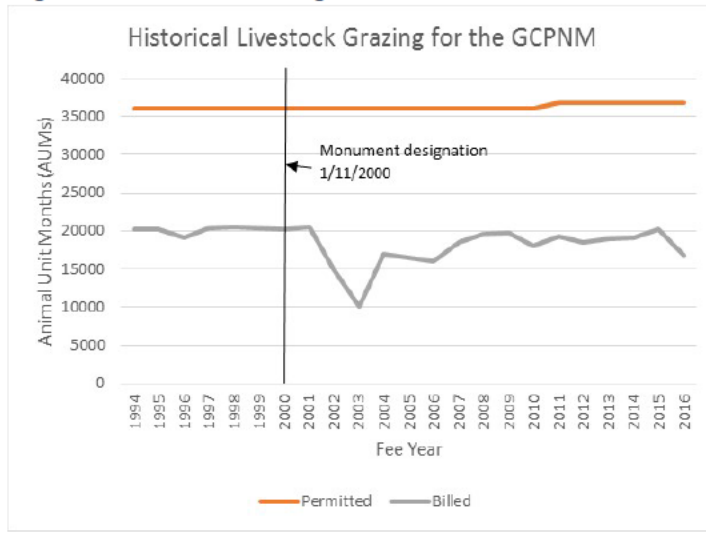
Activities	Economic output (\$ millions)	Value added (net additions to GDP, \$ millions)	Employment supported (number of jobs)
Recreation <sup>a</sup>	\$2.6	\$1.5	27
Grazing <sup>b</sup>	\$3.7	Not available	100
Cultural Resources	Not available; some values would be included in recreation		

<sup>a</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

<sup>b</sup>BLM data.

## Grand Canyon-Parashant National Monument

Figure 1. GCPNM Grazing





# Grand Staircase-Escalante National Monument

Economic Values and Economic Contributions



Grand Staircase-  
Escalante National  
Monument

## 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 or the Monument) as well as to provide a brief economic profile of Kane and Garfield counties, Utah (UT).

## Background

Grand Staircase-Escalante National Monument, which encompasses 1,866,331 acres in Kane and Garfield counties in Utah, was established on September 18, 1996 by President Clinton (Presidential Proclamation 6920) to protect an array of historic, biological, geological, paleontological, and archaeological objects. It was the first National Monument under Bureau of Land Management (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 Prior to Designation

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.

### *Grand Staircase-Escalante National Monument*

**Location:** Kane County, Garfield County, UT

**Managing agency:** BLM

**Adjacent communities, Tribal, and Federal land:** Dixie National Forest, Capitol Reef National Park, Glen Canyon National Recreation Area, Bryce Canyon National Park, other BLM administered lands, and Kodachrome Basin State Park

**Resource Areas:**

☒ Recreation ☒ Energy ☒ Minerals  
☒ Grazing ☐ Timber ☒ Scientific  
Discovery ☒ Tribal Cultural



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).

### *Activities and Resources Associated with Grand Staircase-Escalante National Monument*

Information on the economic contributions associated with the activities occurring on GSENM, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with GSENM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** GSENM 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 an estimated 456,369 visits in 1997 to 926,236 visits in 2016 (Figure 2).<sup>1</sup> 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.<sup>2</sup>

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,

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<sup>1</sup>The BLM utilizes the Recreation Management Information System (RMIS) to report visitation. The RMIS, implemented in 1984, is the agency's official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.

<sup>2</sup>Recreation Management Information System (2016); GSENM Special Recreation Permit Database.

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).<sup>3</sup>

The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Using an average consumer surplus unit value of \$54.19 per person per day, the estimated economic value (net benefits) generated in 2016 was \$50.2 million.<sup>4</sup>

- **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 nor 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.

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.<sup>5</sup> In 1997, the Utah Geological Survey indicated that around 11.36 billion tons of the coal in the Kaiparowits Plateau coal field are estimated recoverable.<sup>6</sup> 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

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<sup>3</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

<sup>4</sup>The consumer surplus unit value is a survey-based value for general recreation in the Intermountain region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). This unit value was applied to FY 2016 visitation estimates to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).

<sup>5</sup> 1996-1997 BLM Kaiparowits Coal Report.

<sup>6</sup> Utah Geological Survey. 1997. A Preliminary Assessment of Energy and Mineral Resources within the Grand Staircase-Escalante National Monument. Circular 93.

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.<sup>7</sup>

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.<sup>8</sup>
- 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 other 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.<sup>9</sup> 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.<sup>10</sup>
- 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 five coal-fired power plants in Utah. All of these plants are in the central part of the state.<sup>11</sup>
- 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.<sup>12</sup> 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 and 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 two water injection 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.<sup>13</sup>
- 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,

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<sup>7</sup> Vanden Berg, Michael D. 2016. Utah's Energy Landscape. Circular 121, Utah Geological Survey.

<sup>8</sup> Vanden Berg, Michael D. 2016. Utah's Energy Landscape. Circular 121, Utah Geological Survey.

<sup>9</sup> Vanden Berg, Michael D. 2016. Utah's Energy Landscape. Circular 121, Utah Geological Survey.

<sup>10</sup> U.S. Energy Information Administration. 2016. Utah State Energy Profile.

<sup>11</sup> Vanden Berg, Michael D. 2016. Utah's Energy Landscape. Circular 121, Utah Geological Survey.

<sup>12</sup> U.S. Energy Information Administration. 2016. Utah State Energy Profile.

<sup>13</sup> Utah Geological Survey. 1997. A Preliminary Assessment of Energy and Mineral Resources within the Grand Staircase-Escalante National Monument. Circular 93.

336,313 barrels of oil were produced in the GSENM. No natural gas was produced during that time.<sup>14</sup>

- Four wells within the GSENM are currently producing oil and a small amount of gas. The UV 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).<sup>15</sup> 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.<sup>16</sup>
- **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.<sup>17</sup> 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.<sup>18</sup>
  - **Timber:** No commercial timber harvest is allowed within GSENM. Non-commercial firewood harvest is allowed in two forest product areas.
  - **Grazing:** Grazing is allowed within GSENM. When the Monument was designated, there were 106,645 total Animal Unit Months (AUMs), with 77,400 Permitted AUMs.<sup>19</sup> Today, there are 106,202 total AUMs and 76,957 permitted AUMs. Total AUMs is the sum of permitted AUMs plus suspended AUMs.<sup>20</sup> 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 shows the number of AUMs permitted and billed annually from 1991 through 2016.

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<sup>14</sup> BLM data on historical production from Upper Valley wells in GSENM.

<sup>15</sup> BLM data on historical production from Upper Valley wells in GSENM.

<sup>16</sup> BLM data.

<sup>17</sup> Utah Geological Survey. 1997. A Preliminary Assessment of Energy and Mineral Resources within the Grand Staircase-Escalante National Monument. Circular 93.

<sup>18</sup> BLM data.

<sup>19</sup> 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>.

<sup>20</sup> 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.

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.<sup>21</sup>

- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest. In general, these objects are valued by society but those values are not bought or sold in the marketplace and therefore, are difficult to quantify. Below is a brief overview of the objects identified in Proclamation that the designation is intended to protect:
  - **Tribal Cultural Resources:** 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. 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 responsive to continued consultations, as the GSENM area is central to the historic and prehistoric territories of these two tribes.
  - **Cultural (Historic and Archaeological) and Paleontological Resources:** 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 based on surveys of only five to seven percent of the Monument.

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. 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 Discovery:** 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; three new

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<sup>21</sup>BLM data.



species of marine reptile; two new crocodile species; three new turtle species; one 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*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

(b) (5)

A comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis.

Table 1. State and County Economic Snapshot

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

<sup>a</sup>U.S. Census Bureau, 2011-2015 American Community Survey

<sup>b</sup><http://www.jobs.utah.gov/wi/pubs/une/season.html>

<sup>c</sup><https://jobs.utah.gov/wi/pubs/wni/income/index.html>

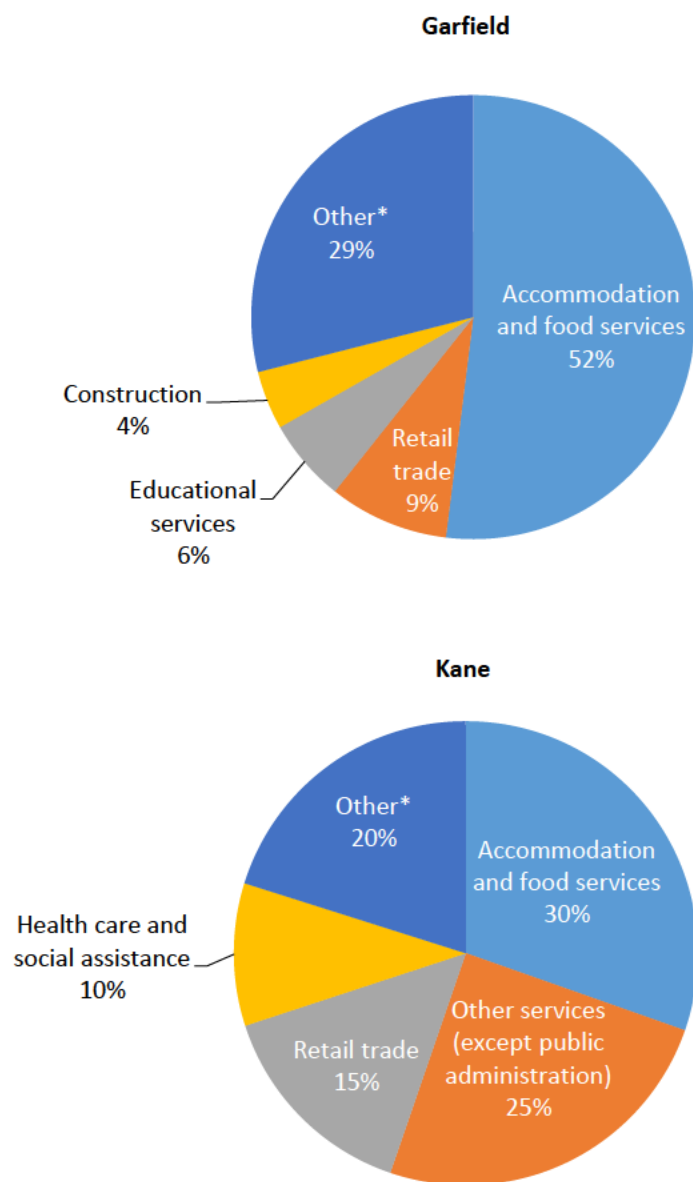
Table 2. GSENM Estimated Economic Contributions, 2016

Activities	Economic output (\$ millions)	Value added (net addition to GDP, \$ millions)	Employment supported (number of jobs)
Recreation <sup>a</sup>	\$91.5	\$50.8	1,024
Oil & Gas <sup>b</sup>	\$2.4	\$1.6	13
Grazing <sup>b</sup>	\$8.3	Not available	184
Cultural Resources	Not available; some values would be included in recreation		

<sup>a</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

<sup>b</sup>BLM data.

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



\*Other 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 less than 4% of total employment. While this data source covers most NAICS industries, it excludes crop and animal production; rail transportation; National Postal Service; pension, health, welfare, and vacation funds; trusts, estates, and agency accounts; private households; and public administration. Most establishments reporting government employees are also excluded. Source: 2015 County Business Patterns, U.S. Census Bureau.

Figure 2. Annual Visitation to Grand Staircase-Escalante National Monument, 1997-2016

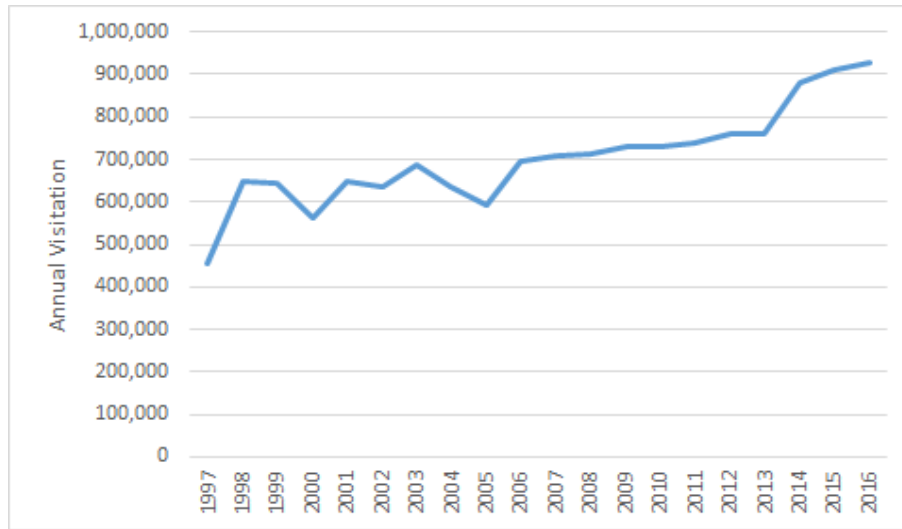


Figure 3. Oil Production on Grand Staircase-Escalante National Monument

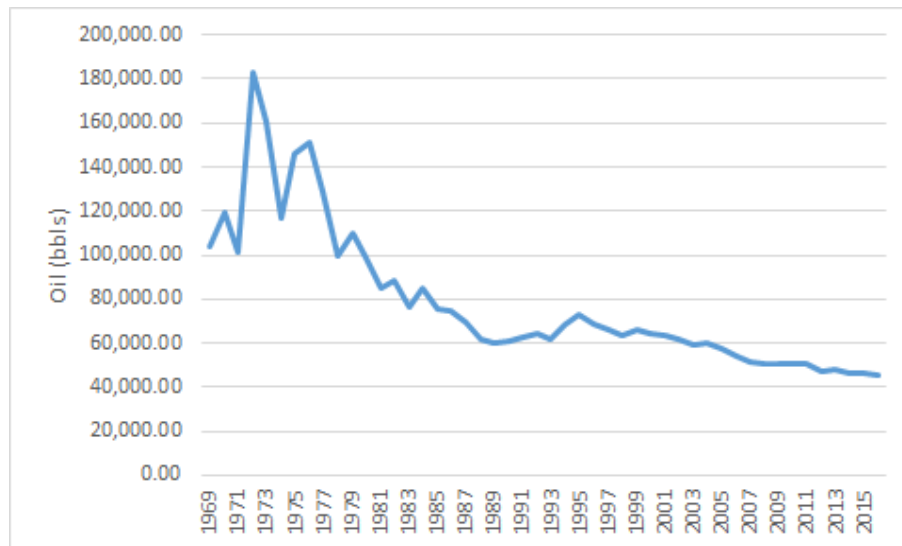


Figure 4. Gas Production on Grand Staircase-Escalante National Monument

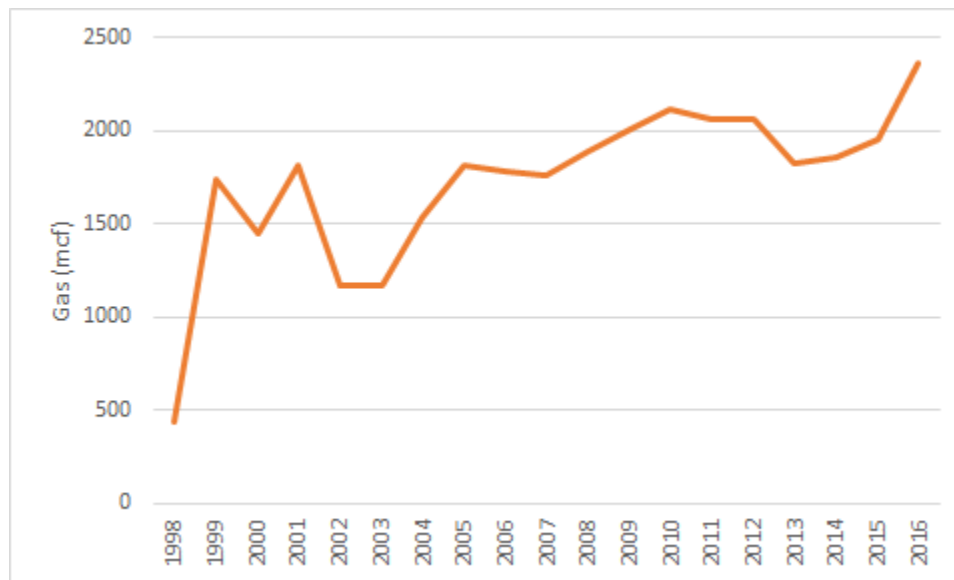
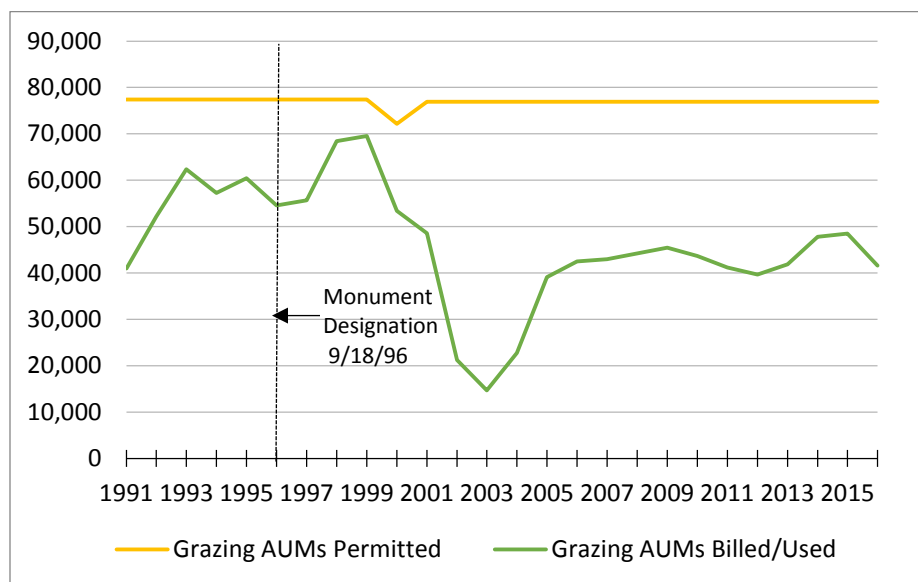


Figure 5. AUMs Permitted and Billed/Used on Grand Staircase-Escalante National Monument







# Mojave Trails National Monument

Economic Values and Economic Contributions



Mojave Trails  
National Monument

## Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with Mojave Trails National Monument (MTNM or the Monument), as well as to provide a brief economic profile of San Bernardino and Riverside Counties, California (CA).<sup>1</sup>

## Background

The Mojave Trails National Monument was established by President Obama on February 12, 2016 (Proclamation 9395) and is managed by the Bureau of Land Management (BLM). The Monument encompasses 1.6 million acres of land in San Bernardino County (with minor acreage in Riverside County) in close proximity to major population centers in Southern California, and was established for the purposes of protecting lands that contained cultural, prehistoric, historic, geologic, ecological, 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. Approximately 358,000 acres within the boundary represent Wilderness areas previously established by Congress, and 84,400 acres within the boundary are managed by the BLM as the Cady Mountains Wilderness Study Area (WSA). Numerous other administrative designations exist within the Monument including Areas of Critical Environmental Concern, National Natural Landmarks, Research Natural Area, Special Recreation Management Areas and Extensive Recreation Management Areas.

The Mojave Trails National Monument tells the human story of exploration, migration and commerce. This human history stretches back 10,000 years and includes components of travel systems that were integral in establishing populations in the Western United States. 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, heritage tourism, and wildlife and wildflower viewing. 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.

## Public Outreach Prior to Designation

MTNM first appeared as a legislative proposal in 2009. After subsequent versions of the legislation failed to pass, Sen. Dianne Feinstein (D-CA) sent a letter to the President in August 2015 requesting designation of MTNM and two other National Monuments under the Antiquities Act. Sen. Feinstein and other members of the California Congressional delegation hosted a listening session in October 2015, attended by Department of Interior and Department of Agriculture officials. Prior to the public meeting,

### Mojave Trails National Monument

**Location:** San Bernardino and Riverside Counties, CA

**Managing agency:** BLM

**Adjacent communities, Tribal, and**

**Federal land:** Barstow; Needles; Twentynine Palms, CA; Joshua Tree National Park; Mojave National Preserve; 29 Palms Marine Corps Air Ground Combat Center

**Resource Areas:**

☒ Recreation ☐ Energy ☒ Minerals  
☒ Grazing ☐ Timber ☒ Scientific  
Discovery ☒ Tribal Cultural

<sup>1</sup>The BLM provided data related to public land resources used in this paper.

representatives from the Department of Interior and Bureau of Land Management met with tribal representatives from the Agua Caliente Band of Cahuilla Indians, the Cahuilla Band of Mission Indians, the Colorado River Indian Tribes, the Fort Mojave Indian Tribe, the Morongo Band of Mission Indians, the San Manuel Band of Mission Indians, the Death Valley Timbisha-Shoshone Tribe, and the Twenty-Nine Palms Band of Mission Indians to discuss tribal concerns and opportunities of the proposed Monument designation.

### *Local Economy and Economic Impacts*

Table 1 presents socioeconomic 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.<sup>2</sup> The health care sector has the largest percentage of employment (20%), followed by the transportation/warehousing (11%) and manufacturing (11%).

San Bernardino County is the largest county in the United States in terms of area. Mojave Trails National Monument is located in the eastern portion of the county, which is less populated than the western portion. The differences in population levels may lead to differences in local economies across the county.

### *Activities and Resources Associated With Mojave Trails National Monument*

Information on the economic contributions associated with the activities occurring at Mojave Trails National Monument, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with MTNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** A wide variety of recreation activities occur within the Monument including hunting, off-highway vehicle use, rockhounding, overland expeditions, photography, hiking, backpacking, camping, target shooting, picnicking, heritage tourism, and wildflower/wildlife watching. Hunting on the Monument is regulated by the California Department of Fish and Wildlife. Annual estimated recreation visitation data for FY 2012-2016 is shown in Table 3. Recreation visits have increased from nearly 63,000 visits in FY 2012 to about 170,000 in 2016.<sup>3</sup> Recreation activities provide the opportunity for economic activity to be generated from

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<sup>2</sup> U.S. Census Bureau County Business Patterns, 2015.

<sup>3</sup> The BLM utilizes the Recreation Management Information System (RMIS) to report visitation. The RMIS, implemented in 1984, is the agency's official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.



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 can generate economic activity from tourism for an indefinite period of time. These 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 annually in value added (net contributions to GDP) and support 144 jobs.<sup>4</sup>

The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Based on the number of visits in FY 2016, and using an average consumer surplus unit value of \$44.95 per person per day, the estimated annual economic value (net benefits) is estimated to be about \$7.6 million.<sup>5</sup>

- **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. The total value or amount of energy or mineral production forgone as a result of the designation cannot be determined. For more information, see the Background and Overview materials. To date, energy development on the Monument has been limited.
  - **Coal:** There is no coal present in the Monument area.
  - **Oil and gas:** There is no oil and gas produced in MTNM.
  - **Renewable energy:** The MTNM is located within the Desert Renewable Energy Conservation Plan (DRECP) area. The DRECP was a seven-year, desert-wide planning process that identified priority areas for both renewable energy development and conservation. No renewable energy development focus areas were identified within the National Monument boundary.
  - **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. These facilities provide electricity, oil, and gas to the Los Angeles basin. Numerous energy rights-of way are also present within the Monument. Between the Monument designation and June 2017, two communication site leases have been renewed, one new communication ROW permit was issued, and one oil and gas pipeline ROW permit was issued.
- **Non-Energy Minerals:** There are approximately 1,447 mining claims within MTNM. While claimants are not required to report specific minerals to locate a claim, these claims may include

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<sup>4</sup> Estimates developed by assigning visitor characteristics and spending patterns based on visitor surveys of the nearest National Park Service unit (Thomas and Koontz 2015).

<sup>5</sup> The consumer surplus unit value is a survey-based value for general recreation in the Pacific Coast region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). This unit value was applied to the number of visits in FY 2016. Economic value is the net benefit to recreational users (total benefits minus total costs) over and above what visitors spend.

gold, silver, and gemstones sought by rockhounds. Additionally, 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.<sup>6</sup> The designation withdrew the Monument from location, entry, and patent under mining laws, subject to valid existing rights. This means that a plan of operations and validity exam would be required for activities beyond casual use associated with existing mining claims. 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, 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, one-family gold mining operation, with estimated production of less than 100 tons per year. According to BLM, it is extremely rare for an operation of this size to make a discovery of sufficient tonnage and grade to justify an expansion. 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 no greater than 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, including:
  - Mines on the Bristol Dry Lake 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. Operations at Bristol Lake have continued to expand since the Monument designation. 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; and (3) Tetra Technologies (no production information available). These operations have a combination of Federal and State mining permits. 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 (no royalties have been paid since 2001) with work primarily in reclamation, though continued production has been proposed for several decades.

- **Timber:** There is no timber production in the Monument.

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<sup>6</sup> Feyrerabend, W. 2016. Technical Report on the Mojave Lithium Property, San Bernardino County, CA



- **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. The number of AUMs billed increased from 1,920 in FY 2010 to 3,192 in FY 2016. The BLM has the authority to accept grazing permit donations and retire those allotments within the California Desert Conservation Area under Public Law 112-74.
- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest. In general, these objects are valued by society but those values are not bought or sold in the marketplace and therefore, are difficult to quantify. 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. Below is a brief overview of the objects identified in Proclamation that the designation is intended to protect:
  - **Tribal Cultural Resources:** Native Americans in the region regularly use lands within the MTNM. This use appears to be, at 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.
  - **Cultural (Historic and Archeological) and Paleontological Resources:** Several types of prehistoric cultural resources are present within the MTNM associated with use over the past 8,000 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 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, and specific trails for the salt songs and activities such as trail runs. 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 within the Monument included Franciso Carces, Jedediah Smith and Kit Carson. Route 66 traverses a portion of the MTNM. People travel from all over the world to tour Route 66, many starting in Chicago and ending in Santa Monica. Along the way, Route 66 through Mojave Trails offers visitors a glimpse into the heyday of the popular route. 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. BLM is currently working on a nomination to list the DTC in the National Register of Historic Places.

- **Scientific Discovery:** The MTNM contains paleontological resources and more are expected to be discovered. The most well-known area is the Marble Mountain Fossil Beds Area of Critical Environmental Concern (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 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 fossil flora that enable reconstruction of the landscape at that time. The Piute Valley containing Pleistocene spring deposits includes spring pipes and calcareous spring aprons that are choked with late Pleistocene (Rancholabrean age) vertebrate fossils and represents the most complex vertebrate assemblage in the southeastern Mojave Desert. The Cadiz Valley includes five geographic areas that produce fossil faunas that have been tentatively dated at middle Pleistocene. The Ship Mountains exhibit some of the oldest Miocene fossils in the southeastern Mojave Desert.<sup>7</sup>

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply. See the Background and Overview materials for more information on tradeoff considerations.

The MTNM Proclamation contains specific provisions for the protection of heritage objects and values extending beyond specific resources concerns. This emphasis on protection rather than mitigation is a critical distinction in the preservation of significant historic objects within the MTNM. The MTNM proclamation states that the MTNM contains “exceptional objects of scientific and historic interest” and

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<sup>7</sup>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.

that the purpose of designation is the “protection of these objects.” This protection is largely derived through the extra regulatory proclamation provisions for limitations on uses which are known to impact heritage objects and values and requirements that the BLM shall implement the purposes of the proclamation to protect these resources.

(b) (5)

A  
comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. Based on what is currently known, though, if the MTNM had not been designated:

- (b) (5)

Table 1. State and County Economic Snapshot

	San Bernardino	California
Population, 2015 <sup>a</sup>	2,094,769	38,421,464
Unemployment rate, March 2017 <sup>b</sup>	4.6%	4.5%
Median Household Income, 2015 <sup>a</sup>	53,433	61,818

<sup>a</sup>U.S. Census Bureau, 2011-2015 American Community Survey

<sup>b</sup><http://www.labormarketinfo.edd.ca.gov/file/lfmonth/countyur-400c.pdf>

Table 2. MTNM Estimated Economic Contributions, 2016

Activities	Economic output (\$ millions)	Value added (net additions to GDP, \$ millions)	Employment supported (number of jobs)
Recreation <sup>a</sup>	\$14.1	\$8.5	144
Grazing <sup>b</sup>	\$2.4	Not available	26
Cultural Resources	Not available; some values would be included in recreation		

<sup>a</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

<sup>b</sup>BLM data.

## Mojave Trails National Monument

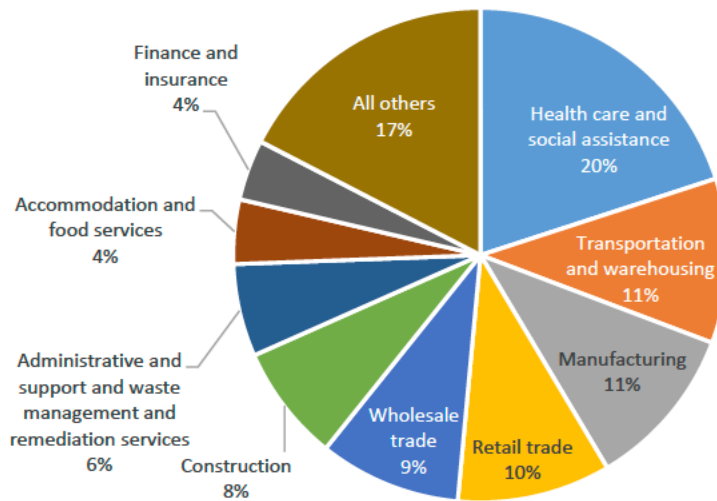
Table 3. MTNM Annual  
Visitation, 2012-2016

Year	Number of Visits
2012	53,872
2013	63,188
2014	182,717
2015	172,623
2016	169,879

Source: BLM Recreation  
Management Information System.



Figure 1. Percent of Employment by Sector, San Bernardino County, 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. While this data source covers most NAICS industries, it excludes crop and animal production; rail transportation; National Postal Service; pension, health, welfare, and vacation funds; trusts, estates, and agency accounts; private households; and public administration. Most establishments reporting government employees are also excluded.

Source: 2015 County Business Patterns, U.S. Census Bureau.



# San Gabriel Mountains National Monument

## Economic Values and Economic Contributions





## Introduction

The purpose of this paper is to provide information on the economic values and economic contributions of the activities and resources associated with San Gabriel Mountains National Monument (SGMNM or the Monument). A brief economic profile of Los Angeles and San Bernardino Counties, California (CA), is also provided.<sup>1</sup>

## Background

The San Gabriel Mountains National Monument was established by President Obama on October 10, 2014 (Proclamation 9194) and is managed by the USDA Forest Service (FS). The Monument encompasses approximately 346,000 total acres in Los Angeles and San Bernardino counties, with 342,000 acres in the Angeles National Forest (NF) and another 4,000 acres in the neighboring San Bernardino NF. It was established in recognition of the area's importance for cultural history, watershed protection, and habitat for sensitive and/or iconic plant and animal species as well as its scientific value both for astronomy and earth sciences.

## Public Outreach Prior to Designation

Prior to national monument designation, HR 4858 was introduced in the 113<sup>th</sup> Congress by Congresswoman Judy Chu. This resolution, the San Gabriel National Recreation Area Act, contained land that was ultimately designated as the San Gabriel Mountains National Monument. Since National Monument designation, Congresswoman Chu introduced the San Gabriel Mountains Foothills and Rivers Protection Act. This resolution, introduced as HR 3820 in the 114<sup>th</sup> Congress and as HR 2323 in the 115<sup>th</sup> Congress, would add an additional 109,143 acres for inclusion within the San Gabriel Mountains National Monument.

A meeting was held in Baldwin Park in August 2014 to solicit public comment for the establishment of the San Gabriel Mountains National Monument, with U.S. Forest Service Chief Tom Tidwell in attendance. Tribal and Native American outreach efforts also occurred informally prior to designation, comprising discussions with federally recognized tribes and one informal meeting with the local Native American community.

## Local Economy and Economic Impacts

As summarized in Table 1, Los Angeles and San Bernardino counties account for slightly more than 30% of the State's population. Median income in these counties is a little less than the State's median household income. The unemployment rate for the two-county area is slightly below the state average. The population of the area has increased by over 20% since 2001 and real personal income has risen by about 50%.<sup>2</sup>

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 SGMNM counties are classified as follows:

<sup>1</sup>The USDA Forest Service provided data used in this paper.

<sup>2</sup>Bureau of Economic Analysis, Regional Personal Income data

### *San Gabriel Mountains National Monument*

**Location:** Los Angeles and San Bernardino counties, CA

**Managing agency:** USDA FS

**Adjacent communities, Tribal, and**

**Federal land:** San Bernardino NF; Angeles NF; Los Angeles, CA

**Resource Areas:**

☒ Recreation ☐ Energy ☒ Minerals

☐ Grazing ☐ Timber ☒ Scientific

Discovery ☒ Tribal Cultural

- Nonspecialized – both counties are nonspecialized, meaning that they are neither farming, mining, manufacturing, nor government dependent, nor were they recreation counties.
- Both were indicated as low education counties, meaning that 20% or more of the residents age 25 to 64 did not have a high school diploma or equivalent between 2008 -2012

### *Activities and Resources Associated With San Gabriel Mountains National Monument*

Information on the economic contributions associated with the activities occurring at San Gabriel Mountains National Monument, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with SGMNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** There were an estimated 2,880,000 recreation visits to the Angeles NF in FY 2016 including about 1,738,000 visits to SGMNM, or about sixty percent of forest visitation. Estimated visitation in 2011 to the Angeles NF was about 3.6 million. The decline in visitation is attributable to conditions including extended drought and recent wildfires. The economic contributions for the 2016 visitation have not yet been calculated. In 2011, visitors to the Angeles NF spent a total of about \$83 million in the two-county area. That spending sustained about 660 jobs.

The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to a consumer surplus). Using an average consumer surplus value for the area of \$44.95 per person per day (recreational visitor day), the estimated economic value (net benefits) generated in 2016 was \$78.1 million.<sup>3</sup>

- **Energy:** There are no oil and gas wells and no coal developments in the San Gabriel Mountains National Monument. A 4.95 megawatt capacity hydropower system is located within the Monument, as well as an intake and conduit for an additional 3 megawatt capacity hydropower system. Actual production numbers are not available for either of these systems, but production would be unchanged by Monument designation. Approximately 94 miles of electrical transmission line is located within the Monument. A project to replace 25.1 miles of low-voltage electric line with high-voltage line occurred within the Monument. This project was initiated prior to designation and concluded after designation. The Presidential Proclamation that established the Monument explicitly stated that future developments of this sort were not precluded, as long as they were consistent with the overall goal of protection of the identified objects of interest.

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<sup>3</sup>The consumer surplus unit value is a survey-based value for general recreation in the Pacific Coast region from the USGS Benefit Transfer Toolkit (<https://my.usgs.gov/benefit-transfer/>). This unit value was applied to fiscal year 2016 visitation estimates to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).

- **Non-Energy Minerals:** Mineral material, specifically river rock, was previously sold within the San Gabriel Mountains National Monument from a location at the San Gabriel Off-Highway Vehicle area. These were sold under the authority of the Mineral Materials Act of 1947, which does not provide for authority to sell materials within a National Monument. Therefore, no mineral materials are currently being sold within the Monument.

There are approximately 80 active mining claims within the Monument. There is one active mine with an approved operating plan, known as the North Star Mine. The North Star Mine is located in Arrastre Canyon and is an anorthocite-syenite deposit that has been in production since 1988. Annual mineral production is unknown but would be unchanged by Monument designation.

- **Timber:** The only timber produced on the San Gabriel Mountains National Monument is fuelwood. The annual average for the two years reported subsequent to Monument designation was reported to be 977 CCF. The Monument designation has no effect on annual timber production, therefore any differences from prior years are due to other factors.
- **Grazing:** No grazing allotments exist within the SGMNM.
- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic and scientific interest. In general, these resources 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 natural, cultural, and scientific features identified in the Proclamation that the designation is intended to protect:
  - **Tribal Cultural Resources:** Participation rates for subsistence activities within the San Gabriel Mountains National Monument are mostly unknown. The Proclamation provides specific direction regarding gathering activities, specifically Tribal gathering, stating "The plan will provide... for continued...access by Indian tribal members for traditional cultural, spiritual, and tree and forest product-, food-, and medicine-gathering purposes". Since the Monument designation, the national forest has seen a significant increase in interest and concern for gathering and use of traditional resources by the local Native American community on the forest and within the Monument. Since the expiration of the agency-combined USDA FS and BLM policy on tribal gathering and collecting, the Proclamation language provides some assurance to the local Native American community that the USDA FS would continue to facilitate this activity by Tribes. Forest products such as mistletoe and seeds are also harvested within the Monument. The average annual amount harvested under permit for the two years reported subsequent to Monument designation was 405 pounds.

Out of a total of 703 sites, 22 new cultural resources were identified within the San Gabriel Mountains National Monument in the past three years since its designation in October, 2014. The resource types were predominately Native American subsistence and procurement sites. Half of the 22 sites were identified during Section 110 volunteer activities and projects, the other half were identified during Section 106 project compliance of Forest Service authorized operations or permitted undertakings.
  - **Scientific Investigation:** Scientific research in the SGMNM is diverse and includes ongoing investigations of the area's hydrology, geology, and the ecology of both plant and animal



communities. The observatory on Mount Wilson is one of the most famous observatories in the world. The San Dimas Experimental Forest is operated by the USDA FS's Pacific Southwest Research Station, and is utilized by dozens of local university researchers every year. The Experimental Forest existed before the Monument designation and its management has not changed.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

(b) (5)

A comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. No significant change to minerals, energy production, timber, or subsistence can be attributed to the Monument designation. There is no agency data on recreation visitation in the absence of designation. Anecdotal evidence from agency staff and private sector partners have reported an increase in visitation to a number of specific sites since designation of the Monument.<sup>4</sup> Because of Monument designation, the Angeles National Forest has also increased efforts in outreach to underserved communities, providing transportation grants for participation in the Every Kid in a Park program and sponsoring the Chantry Flats Pilot Shuttle project, which is a gateway to the Monument.

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<sup>4</sup>USDA FS data.

Table 1. State and County Economic Snapshot

	<b>Los Angeles and San Bernardino Counties</b>	<b>California</b>
Population, 2015 <sup>a</sup>	12,133,157	38,421,464
Unemployment Rate, May 2017 <sup>b</sup>	4.2%	4.2%
Median Household Income, 2015 <sup>a</sup>	\$53,433- \$56,196	\$61,818

<sup>a</sup> U.S. Census Bureau, 2011-2015 American Community Survey

<sup>b</sup> <http://www.labormarketinfo.edd.ca.gov/file/1fmonth/countyur-400c.pdf>

Table 2. SGMNM Estimated Economic Contributions, 2014

<b>Activities</b>	<b>Economic output (\$ millions)</b>	<b>Value added (net additions to GDP, \$ millions)</b>	<b>Employment supported (number of jobs)</b>
Recreation	\$78.0	\$45.4	660
Grazing, Timber, and Minerals	\$0.0	\$0.0	0
Cultural Resources	Not available; some values would be included in recreation		

Source: USDA FS; Economic contributions estimates are for the Angeles NF as a whole <https://www.fs.fed.us/emc/economics/contributions/at-a-glance.shtml>



# Sonoran Desert National Monument

Economic Values and Economic Contributions



Sonoran Desert  
National Monument

## 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 Sonoran Desert National Monument (SDNM or the Monument), as well as to provide a brief economic profile of Maricopa and Pinal counties and the adjacent Pima County, Arizona (AZ).<sup>1</sup>

## Background

The Sonoran Desert National Monument was established by President Clinton on January 17, 2001 (Proclamation 7397) and is managed by the Bureau of Land Management (BLM). Located in Maricopa and Pinal counties in Arizona, the Monument encompasses 496,400 acres including 486,400 acres of BLM-administered land, 3,900 acres of Arizona State Trust lands, and 6,100 acres of private land. Population centers adjacent to the planning area include metropolitan Phoenix and the communities of Ajo, Goodyear, Buckeye, Gila Bend, Mobile, Casa Grande, and Maricopa. There are three Wilderness Areas with the Monument totaling 158,516 acres, about 33% of SDNM. The BLM manages 461,000 acres of federal mineral estate. Therefore, there are a few parcels (25,800 acres) within the Monument where the surface is owned by the United States and the subsurface is owned by a non-federal entity. As stated in the Proclamation and reiterated in the Lower Sonoran-Sonoran Desert National Monument Proposed Resource Management Plan / Final Environmental Impact Statement (PRMP/FEIS), SDNM was designated to protect “a magnificent example of untrammeled Sonoran desert landscape” with an “extraordinary array of biological, scientific, and historic resources”. 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 and prepare a transportation plan that addresses action to protect identified objects (such as road closures or travel restrictions). A further discussion regarding allowed motorized and mechanized vehicle use is provided under the “Recreation” bullet in the Activities and Resources section.
- Withdraw from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws including location, entry, and patent under the mining laws and mineral and geothermal leasing.
- Continue to issue and administer grazing leases and permits within the Monument with the exception of the permits south of Interstate Highway 8 which shall not be renewed at the end of their current terms; and provided further, grazing on Federal lands north of Interstate 8 will be allowed to continue to the extent that the BLM determines grazing is compatible with the objects identified in this proclamation.
- The Proclamation also states that the establishment of the Monument is subject to valid existing rights.

### *Sonoran Desert National Monument*

**Location:** Maricopa and Pinal counties, AZ

**Managing agency:** BLM

**Adjacent communities, Tribal, and**

**Federal land:** Pima County, AZ

**Resource Areas:**

☒ Recreation ☐ Energy ☐ Minerals

☒ Grazing ☐ Timber ☒ Scientific

Discovery ☒ Tribal Cultural

<sup>1</sup>The BLM provided data used in this paper.



The SDNM Resource Management Plan (RMP) was approved in 2012. The plan put in place management that reflected the requirements of the Proclamation along with management that was responsive to issues identified by the public, stakeholders, and BLM specialists and managers during the scoping period and applicable federal and state laws, regulations, and BLM policies.

A Resource Management Plan Amendment (RMPA) is currently in progress to address recreational target shooting in response to a court decision. The draft RMPA/EIS was issued in December 2016. Discussed in further detail below, the decisions in the approved RMP related to livestock grazing are currently being litigated.

The Monument is situated primarily in Maricopa County (440,600 acres) with a much smaller portions of the Monument extending into Pinal County (55,800). Population centers adjacent to the Monument include metropolitan Phoenix and the communities of Ajo, Goodyear, Buckeye, Gila Bend, Mobile, Casa Grande, and Maricopa. The southwest boundary of the Monument is shared with the Barry M. Goldwater Air Force Range.<sup>2</sup>

### *Public Outreach Prior to Designation*

The Dryland Institute's 2001 report titled "Biological Resources of the Sonoran Desert National Monument, Arizona" provides a useful overview of the historical advocacy in support of designating SDNM. The document points to the re-conveyance of the about 75,000 acres of land from the Department of Defense to the BLM in 2000 as a motivating factor for advocates proposing the designation of the Monument. Former Department of Interior Secretary Babbitt toured the area in late 2000. Based on information in historical articles, it appears that Secretary Babbitt did meet with both advocates and opponents of the designation prior to making his recommendation for designation to President Clinton. However, the details of those meetings and any public meetings or hearings are not readily available.

### *Local Economy and Economic Impacts*

Table 1 summarizes some key demographic and economic indicators for Maricopa County, Pinal County, and the State of Arizona. Maricopa County contains just over 60 percent of the population in the State of Arizona, with most residing in the Phoenix metropolitan area. Since 2001, the County has proportionally grown slightly more than the State (27% compared to 26%). Although Pinal County has significantly less population, accounting for around 6 percent of the State's population, the County's population growth since 2001 has been well above the State's rate (108%). The current unemployment rate in both counties is 3.9 percent and below the State's rate. A substantial portion of the Pinal County workforce are employed in jobs outside the County. This observation is reflected in the ratio of jobs to population (23% in Pinal County compared to 53% for the State) and BEA personal income data that shows a significant

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<sup>2</sup>The Proclamation also directed the BLM to continue existing management practices in the area adjacent to the Barry M. Goldwater Air Force Range (the Sand Tanks Mountains area of the SDNM commonly known as "Area A"). This area was previously controlled and managed by the U.S. Air Force and re-conveyed to the BLM from the Department of Defense by the National Defense Authorization Act for Fiscal Year 2000. The approved RMP designated the area as a Special Management Area and stated that access to the area would continue to require the Barry M. Goldwater Air Force Range entry and public safety permit (for the BLM, these are managed as Individual Special Recreation Permits).



net inflow of income. This pattern is likely attributable to the close proximity of Phoenix and Tucson to the County.

Non-labor income (income from dividends, interest, and rent and transfer payments) as a source of total income has increased for both counties between 2000 and 2015 (accounting for 39% in Maricopa and 42% in Pinal in 2015 compared to about 40% for the State as a whole).

The racial and ethnic composition of Maricopa and Pinal counties are generally similar and comparable to the State as a whole. Overall, the percentage of non-Hispanic Whites is around 55 percent and about a third of the population identifies as Hispanic. Pinal County's proportion of Native American population is slightly higher the State (4.7% compared to 4%) whereas Maricopa County's proportion is lower (1.6%).

Pima County accounts for about 15 percent of the State's population, making it the second most populated county in the State. A majority of the County residents live in the Tucson area. Pima County grew at a slower rate than the State since 1990 (50% compared to 81%).

The USDA Economic Research Service's (ERS) county-level typology codes indicate that all three counties are "non-specialized" indicating a diversity of industries driving their economies. That said, based on 2015 BEA data for both counties, the proportion of jobs in the government sector in Pinal and Pima counties exceeds the State (17.6% in Pima and 22.6% in Pinal compared to 12.5% for the State). Maricopa County employment is heavily driven by service-related sectors with about 80% of jobs in those industries (compared to 76% in the State and 63% in Pinal County). Pinal County employs relatively more in the natural resource-related industries including farming (3.4%) and mining (1.8%). Together these two industries account for 5.2% of jobs (8.1% of earnings) compared to 1.5% of jobs (1.6% of earnings) in the State as a whole. Pima County has a relatively higher proportion of jobs in the health care and social assistance sector.

As noted above, the Phoenix metropolitan area and the communities of Ajo, Goodyear, Buckeye, Gila Bend, Mobile, Casa Grande, and Maricopa provide access to and could be affected by management decisions on the Monument. Several of these communities have growth at a rapid pace in the last couple of decades. For example, Maricopa city has grown from around 1,500 in 2000 to almost 50,000 today. Gila Bend and Ajo have had stable, if not contracting, populations since 2000. As noted in the FEIS, four O'odham-speaking groups reside on reservations near the boundaries of the SDNM: the Ak Chin Indian Community, Gila River Indian Community, Salt River Pima-Maricopa Indian Community, and Tohono O'odham Nation.

### *Activities and Resources Associated With Sonoran Desert National Monument*

Information on the economic contributions associated with the activities occurring at Sonoran Desert National Monument, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with SDNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** The most common recreational activities on SDNM include hiking, hunting, camping and OHV travel on designated routes. Six trailheads provide access to four established hiking trails within designated wilderness areas. The Anza National Historic Trail passes through the SDNM, providing recreational experiences along this historical resource. At the time of designation, visits to the Monument fluctuated around 15,000 to 20,000. Visits generally grew until a temporary vehicle closure in a portion of SDNM was implemented due to resource damage in 2008, causing visitation numbers to drop in fiscal year (FY) 2009. Visitation levels have steadily increased since then, especially in the past few years, from around 26,000 visits in FY 2013 to over 51,000 in FY 2016.<sup>3</sup> Estimated expenditures in local gateway regions in FY 2016 was \$2.4 million. These expenditures support an estimated 46 jobs and \$2.6 million in value added in local gateway economies surrounding the Monument.

The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Using an average consumer surplus unit value of \$54.19 per person per day (recreational visitor day), the estimated economic value (net benefits) generated in 2016 was \$2.8 million.<sup>4</sup>

The Proclamation's prohibition of all motorized and mechanized vehicle use off road was implemented through travel management decisions during the planning process. The basic approach for implementing this prohibition was to identify areas of the Monument as open, limited, or closed to off-highway vehicles.<sup>5</sup> The BLM then reviewed existing routes within areas designated as limited and, based on input from interested stakeholders, determined the type of travel, if any, that would be permitted on existing routes and under what conditions. This review inventoried and evaluated 632 miles of routes and designated 411 miles as available for public use. No motorized or mechanical travel would be permitted off existing routes designated for motorized or mechanical travel, except for emergencies. Section 2.3 of the Approved RMP describes these decisions in detail.

While not addressed in the Proclamation, the issue of recreational target shooting activity is a highly controversial activity and is currently allowed with the Monument. Some of the controversy surrounding target shooting relates to the potential for wildfire risk and buildup of hazardous materials. As noted above, the BLM is currently evaluating recreational target shooting in a RMPA in response to a court decision. The draft RMPA/EIS was issued in December 2016.

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<sup>3</sup>The BLM utilizes the Recreation Management Information System (RMIS) to report visitation. The RMIS, implemented in 1984, is the agency's official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.

<sup>4</sup>The consumer surplus unit value is a survey-based value for general recreation in the Intermountain region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). This unit value was applied to FY 2016 visitation estimates to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).

<sup>5</sup>No areas were designated as "open." The Monument lands were designated "limited" or "closed."

The BLM's Preferred Alternative would allow recreational target shooting on the Desert Back Country Recreation Management Zone (approximately 433,600 acres).

- **Energy:** There is no potential for coal resources within the Monument. The potential for oil & gas is low, except in the Vekol Basin in the southeast part of the Monument, where the potential is moderate. The potential for geothermal resources is generally moderate throughout the Monument, similar to the rest of the region south and west of Phoenix. However, there is no recorded production of leasable minerals from within the Monument area. The region has high potential for solar energy development. Opportunities for wind energy or biomass are minimal. Prior to the approved SDNM RMP, there were three 1-mile wide utility corridors that crossed BLM-administered lands within the Monument. The approved RMP designated the entire Monument as an exclusion area. This decision prohibits utility scale solar energy development and the designation of multiuse utility corridors (including new transmission infrastructure or pipelines). The Proclamation withdrew the Monument from location, entry, and patent under mining laws, subject to valid existing rights.
- **Non-Energy Minerals:** Potential for locatable minerals within the Monument area is considered low to moderate. Areas with moderate potential occur in mountainous terrain; a large portion of this terrain is within the three Wilderness areas. The southern portion of SDNM has one area outside designated wilderness with high potential for porphyry copper and one very small area with high potential for gold. Potential for salable minerals exists throughout the Monument including potential for sand and gravel and crushed stone resources. These resources are not as desirable as similar resources located closer to population centers outside the Monument. Costs to transport salable minerals produced within the Monument area to nearby population centers would be greater than transportation costs associated with mines outside the Monument and closer to population centers. However, within the Monument, along Interstate 8, there are three authorized material site rights-of-way issued to the Federal Highway Administration, for the purpose of supplying construction materials to aid federal highway projects. The material sites are sand and gravel pits that are intermittently used to supply highway maintenance projects on Interstate 8. Information on non-energy minerals resource in the FEIS is limited, but it is noted that there were no existing locatable minerals rights in SDNM as all previous mining claims had lapsed. Nor were there any existing mineral leases, mineral materials sales, or free use permits in the Monument.
- **Timber:** Commercial timber resources are not available within the SDNM.
- **Grazing:** As explained in the FEIS, in Arizona, BLM grazing allotments are classified as perennial, ephemeral, or perennial-ephemeral. Perennial means the allotment consistently produces enough forage to support a livestock operation year-round and has an established forage limit, whereas the permitted use on ephemeral allotments and allotments with ephemeral forage, is based on vegetation production and determined by the BLM prior to authorizing use. Prior to

Monument designation there were 16,433 perennial active Animal Unit Months (AUMs).<sup>6</sup> As outlined in the Proclamation, permits in areas south of Interstate 8 were not renewed upon expiration, reducing the perennial active AUMs to 8,703 on SDNM by early 2009. However, ephemeral use continued to be authorized. The approved RMP further reduced perennial active AUMs within the Monument to 3,114 by closing areas not meeting rangeland health standards, but also continued allocating grazing allotments as perennial-ephemeral or ephemeral (north of Interstate 8). These livestock grazing decisions were challenged and are currently still being litigated. However, the decision was stayed which prevented the BLM from renewing permits until the litigation is resolved. Currently there are 776 perennial-ephemeral active AUMs. Figure 1 shows billed AUMs from 1996 through 2016.

The number of billed AUMs varies widely from year to year and in many cases exceeds the amount of perennial active AUMs authorized in a given year due to ephemeral use. Since Monument designation, the amount of billed use has trended down as expected given the direction in the Proclamation, decisions made in the approved RMP, and current litigation stay.

Based on 5-year average of recent billed AUMs (3,283), livestock grazing on the Monument has supported approximately 17 paid and unpaid (i.e., family labor) jobs annually resulting in approximate \$166,000 in labor income and generating about \$630,000 in total economic output. This level of economic contribution could change in the long run after litigation has been resolved. There is a potential for an increase in labor due to the highly variable and ephemeral nature of low desert grazing. During wet years additional jobs might be supported to work cattle within SDNM.

- **Resource values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic and scientific interest. In general, these resources 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 natural, cultural, and scientific features identified in Proclamation that the designation is intended to protect<sup>7</sup>:
  - **Tribal Cultural Resources:** Although not explicitly discussed in the Proclamation, several tribes have traditional cultural affiliations with SDNM. As stated above, four O'odham-speaking groups reside on reservations near the boundaries of the Monument. SDNM is used by tribes as an area for gathering seasonal traditional food.
  - **Cultural (Historic and Archaeological) and Paleontological Resources:** SDNM contains a cultural landscape that appears largely unchanged, with a rich history that spans at least 10,000 years. It contains sites representative of the time periods from the Archaic through the modern day, including villages, camps, Ak-Chin farming sites, rock art, lithic scatters, homesteads, and historic ranches, as well as economically important trade and travel routes.
  - **Scientific Investigation:** The SDNM contains ecological, biological, and physical resources of scientific interest. Not only does this largely undeveloped area provide important open

<sup>6</sup>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>

<sup>7</sup>In addition to the Proclamation, Chapter 1 of the FEIS (Section 1.4.2 and Table 1-3: Sonoran Desert National Monument Objects) provides a more detailed description of these objects and their significance.

space, wilderness opportunities, and a valuable visual landscape in the midst of a rapidly urbanizing area, it also represents a functioning desert ecosystem with a diversity of plant and animal species. The ecological diversity of the Sonoran Desert is preserved in the Monument, including a diversity of flora and fauna associated with rare woodlands assemblages, palo verde-mixed cacti, creosote-bursage, desert washes, and rare desert grasslands vegetation communities. As noted in the Proclamation, “the saguaro cactus forests within the Monument are a national treasure, rivaling those within the Saguaro National Park.”

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

(b) (5)

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comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis. For example, mineral and archeological surveys could be updated and completed for the entire Monument.



Table 1. State and County Economic Snapshot

	<b>Maricopa County</b>	<b>Pinal County</b>	<b>Arizona</b>
Population, 2016 <sup>a</sup>	4,018,143	389,772	6,641,928
Native American % of population <sup>a</sup>	1.9%	5.3%	4.4%
Employment, December 2016 <sup>c</sup>	2,431,731	90,119	3,542,969
Unemployment rate, March 2017 <sup>b</sup>	3.9%	3.9%	5.0%
Median Household Income, 2015 <sup>a</sup>	\$54,229	\$49,477	\$50,255

<sup>a</sup> U.S. Census Bureau, 2011-2015 American Community Survey

<sup>b</sup> <https://laborstats.az.gov/sites/default/files/documents/files/emp-report.pdf>

<sup>c</sup> U.S. Bureau of Economic Analysis (BEA), Regional Economic Accounts. Table CA25N.

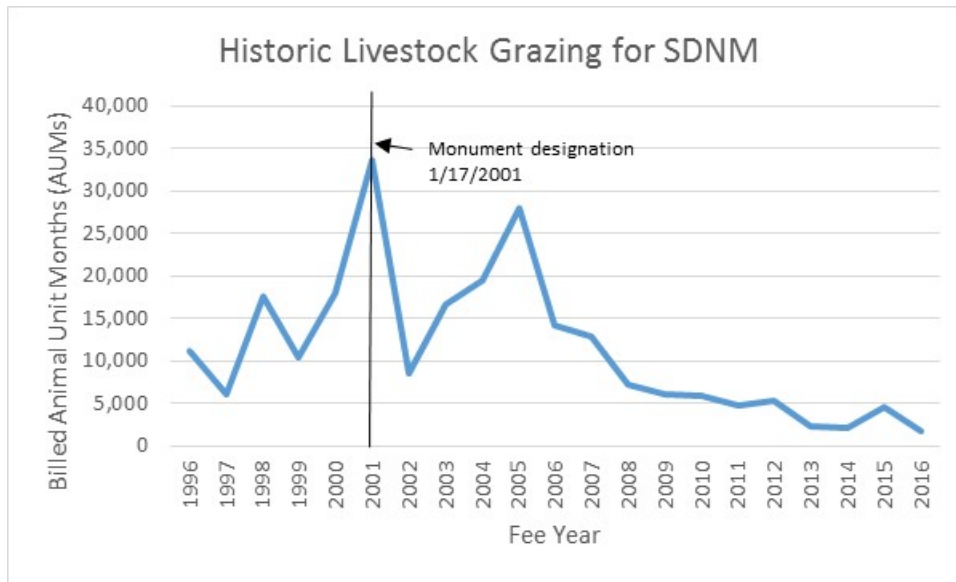
Table 2. Estimated Economic Contributions, 2016

<b>Activities</b>	<b>Economic output (\$ millions)</b>	<b>Value added (net additions to GDP, \$ millions)</b>	<b>Employment supported (number of jobs)</b>
Recreation <sup>a</sup>	\$4.3	\$2.6	46
Grazing <sup>b</sup>	\$0.6	Not available	17
Cultural Resources	Not available; some values would be included in recreation		

<sup>a</sup>Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016.

<sup>b</sup>BLM data.

Figure 1. AUMs Billed



Source: BLM data.



# Vermilion Cliffs National Monument

## Economic Values and Economic Contributions



Vermilion Cliffs  
National Monument

## 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 or the Monument) as well as to provide a brief economic profile of Coconino County, Arizona (AZ).

## Background

Vermilion Cliffs National Monument was established by President Clinton on November 9, 2000 (Presidential Proclamation 7374). Prior to designation, the area was managed by the Bureau of Land Management (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.

### *Vermilion Cliffs National Monument*

**Location:** Coconino County, AZ  
**Managing agency:** BLM  
**Adjacent communities, Tribal, and Federal land:** 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

### *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.

### *Activities and Resources Associated with Vermilion Cliffs National Monument*

Information on the economic contributions associated with the activities occurring at Vermilion Cliffs National Monument, as well as resources within the Monument, is provided below. Table 2 provides estimates of the economic contributions of activities associated with VCNM. Additional information on the difference between economic contribution and economic value is provided in the Background and Overview materials.

- **Recreation:** Visitation at VCNM has increased since designation, rising from 41,884 visits in 2001 to 275,845 visits in 2016 (Figure 2).<sup>1</sup> 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.

The value of recreation opportunities and experiences is different from the economic activity supported by visitors to the Monument. Recreationists place a value on characteristics of a site, including non-marketed ones (e.g., dark skies, quiet, scenic views), over and above their expenditures to visit the site (this is referred to as consumer surplus). Using an average consumer surplus unit value of \$54.19 per person per day, the estimated economic value (net benefits) generated in 2016 was \$14.9 million.<sup>2</sup>

- **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

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<sup>1</sup>The BLM utilizes the Recreation Management Information System (RMIS) to report visitation. The RMIS, implemented in 1984, is the agency's official system of record for recreation information relating to recreation visitation, permits, and partnerships. Visitation information is based on the best available collection tools and data. Providing definitive visitation information at each National Monument is difficult to quantify, given the numerous factors influencing visitation and collection of visitor information data. Federal land managers are continually improving the methodology and technological resources for visitation reporting.

<sup>2</sup>The consumer surplus unit value is a survey-based value for general recreation in the Intermountain region from the USGS Benefit Transfer toolkit (<https://my.usgs.gov/benefit-transfer>). This unit value was applied to FY 2016 visitation estimates to derive an estimate of economic value. Economic value is the net benefit to recreational users (total benefits minus total costs).



existing material sites by the BLM for road maintenance. No new permits or sales contracts were issued.

- **Timber:** There is no annual timber production of the pinyon pine and juniper community. Personal use fuelwood cutting of pinyon pine and juniper trees was permitted prior to the Resource Management Plan (RMP) and Record of Decision (ROD) being implemented in January 29, 2008, seven years post-Monument designation. Following a decision in the RMP/ROD, the Monument is closed to the sale of vegetative products; however, the gathering of dead and downed wood for campsite use is authorized in areas where campfires are allowed. The quantity of personal use fuelwood removed prior to the signing of the RMP/ROD is unknown.
- **Grazing:**
  - Grazing is allowed within VCNM. In 2001, there were 29,313 permitted Animal Unit Months (AUMs).<sup>3</sup> 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 since 2001.<sup>4</sup> 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 rangeland conditions, as well as on the 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.
- **Resource Values:** Monument designation is intended to protect historic landmarks, historic and prehistoric structures, and other objects of historic and scientific interest. In general, these resources 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 natural, cultural, and scientific features identified in the Proclamation that the designation is intended to protect:
  - **Tribal Cultural Resources:** 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.
  - **Scientific Investigation:** All cultural sites are generally allocated to Scientific Use, other than the few Public Use sites. 350 sites have been recorded in VCNM from 2000 to the present.

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<sup>3</sup>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>

<sup>4</sup>The total billed AUMs reported do not exclusively fall within the Monument, because the allotment boundaries encompass both Vermilion Cliffs NM and Arizona Strip Field Office lands.

### *Land Management Tradeoffs*

Managing land for multiple use requires the consideration of a variety of users, resource needs, and legal requirements, among others. Not all of the competing uses are compatible with one another. Regardless of designation, legal authorities would continue to apply, including the American Indian Religious Freedom Act (42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites). See the Background and Overview materials for more information on tradeoff considerations.

(b) (5)



A comprehensive evaluation of tradeoffs would require a significant amount of research and additional analysis.

Table 1. State and County Economic Snapshot

	Coconino	Arizona
Population, 2015 <sup>a</sup>	136,701	6,641,928
Unemployment rate, April 2017 <sup>b</sup>	4.9%	5.0%
Median Household Income, 2015 <sup>a</sup>	\$50,234	\$50,255

<sup>a</sup> U.S. Census Bureau, 2011-2015 American Community Survey

<sup>b</sup> <https://laborstats.az.gov/sites/default/files/documents/files/emp-report.pdf>

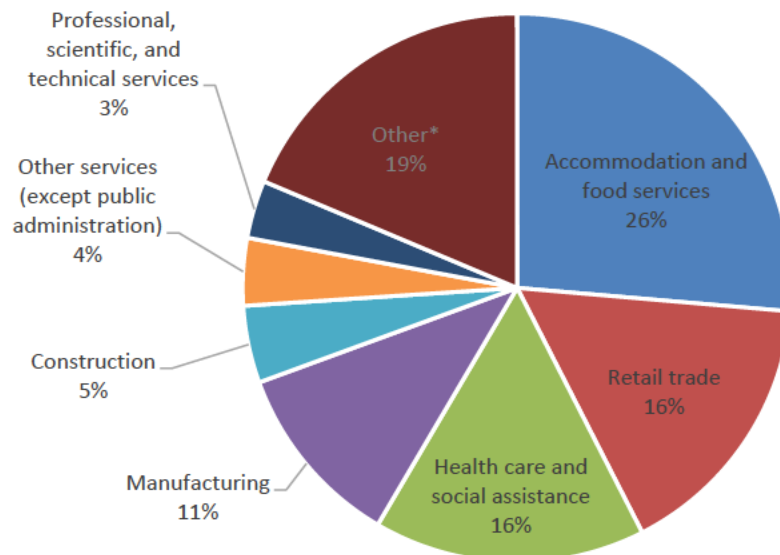
Table 2. VCNM Estimated Economic Contributions, 2016

Activities	Economic output (\$ millions)	Value added (net addition to GDP, \$ millions)	Employment supported (number of jobs)
Recreation <sup>a</sup>	\$23.3	\$14.1	246
Grazing <sup>b</sup>	\$1.0	Not available	27
Cultural Resources	Not available; some values would be included in recreation		

<sup>a</sup> Draft Regional Economic Contributions of National Monuments and National Conservation Areas, BLM, 2016

<sup>b</sup> BLM data.

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



\*Other includes arts, entertainment and recreation; transportation and warehousing; administrative and support and waste management and remediation services; wholesale trade; finance and insurance; real estate rental and leasing; information; education 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 these represents less than 4% of total employment. While this data source covers most NAICS industries, it excludes crop and animal production; rail transportation; National Postal Service; pension, health, welfare, and vacation funds; trusts, estates, and agency accounts; private households; and public administration. Most establishments reporting government employees are also excluded. Source: 2015 County Business Patterns, U.S. Census Bureau.

Figure 2. Annual Visitation to Vermilion Cliffs National Monument

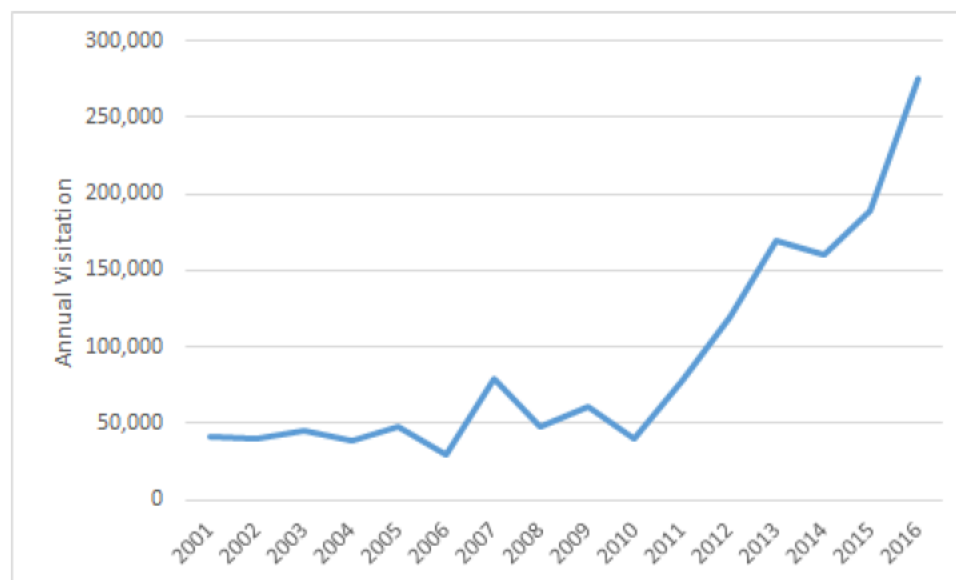


Figure 3. AUMs Permitted and Billed on Vermilion Cliffs National Monument, 1992-2016

