

**To:** Bowman, Randal[[randal\\_bowman@ios.doi.gov](mailto:randal_bowman@ios.doi.gov)]  
**Cc:** Kenneth Mahoney[[kmahoney@blm.gov](mailto:kmahoney@blm.gov)]; Ginn, Allison[[aginn@blm.gov](mailto:aginn@blm.gov)]; Chad Schneckenburger[[cschneckenburger@blm.gov](mailto:cschneckenburger@blm.gov)]; Sintetos, Michael[[msintetos@blm.gov](mailto:msintetos@blm.gov)]; Fisher, Timothy[[tjfisher@blm.gov](mailto:tjfisher@blm.gov)]; Christopher McAlear[[cmcalear@blm.gov](mailto:cmcalear@blm.gov)]; Mara Alexander[[malexander@blm.gov](mailto:malexander@blm.gov)]; Rachel Wootton[[rwootton@blm.gov](mailto:rwootton@blm.gov)]; Kathleen Benedetto[[kathleen\\_benedetto@ios.doi.gov](mailto:kathleen_benedetto@ios.doi.gov)]; Michael Nedd[[mnedd@blm.gov](mailto:mnedd@blm.gov)]; Kristin Bail[[kbail@blm.gov](mailto:kbail@blm.gov)]; Timothy Spisak[[tspisak@blm.gov](mailto:tspisak@blm.gov)]; Moody, Aaron[[aaron.moody@sol.doi.gov](mailto:aaron.moody@sol.doi.gov)]; Mali, Peter[[pmali@blm.gov](mailto:pmali@blm.gov)]; Matthew Allen[[mrallen@blm.gov](mailto:mrallen@blm.gov)]; Raymond M Suazo[[rmsuazo@blm.gov](mailto:rmsuazo@blm.gov)]; Perez, Jerome[[jperez@blm.gov](mailto:jperez@blm.gov)]; Edwin Roberson[[eroberso@blm.gov](mailto:eroberso@blm.gov)]; John Ruhs[[jruhs@blm.gov](mailto:jruhs@blm.gov)]  
**From:** Moore, Nikki  
**Sent:** 2017-07-21T16:51:39-04:00  
**Importance:** Normal  
**Subject:** National Monument Review - Comments on 8 Draft Economic Reports  
**Received:** 2017-07-21T16:53:56-04:00  
[Bears Ears Economic Report BLM reviewed Final.docx](#)  
[Canyons of the Ancients Economic Report BLM reviewed final.docx](#)  
[Carrizo Plain Economic Report BLM reviewed final.docx](#)  
[GrandCanyonParashant Ecominc Report BLM reviewed final.docx](#)  
[GrandStaircaseEscalante Economic Report BLM reviewed final.docx](#)  
[Ironwood Forest Economic Report BLM reviewed final.docx](#)  
[Mojave Trails Ecomic Report BLM reviewed final.docx](#)  
[Sonoran Desert Econmic Report BLM reviewed final.docx](#)  
[Vermilion Cliffs Economic Report BLM reviewed final.docx](#)

Hi Randy,

The BLM has reviewed the draft Department of Interior economic reports for the eight BLM managed or co managed National Monuments currently under review (Grand Canyon Parashant, Grand Staircase Escalante, Sonoran Desert, Ironwood Forest, Canyons of the Ancients, Carrizo Plain, Mojave Trails, and Vermilion Cliffs). Our suggested edits are compiled and provided in comments and track changes within the attachments. We also had some additional edits on the Bears Ears draft economic report which I've attached.

We really appreciate the opportunity to review and provide feedback on these reports,

Nikki Moore  
Acting Deputy Assistant Director  
National Conservation Lands and Community Partnerships  
Bureau of Land Management, Washington D.C.  
202.219.3180 (office)  
202.740.0835 (cell)



# Grand Staircase-Escalante National Monument

Economic Values and Economic Contributions

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Monument

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## Introduction

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

## Background information

Grand Staircase-Escalante National Monument, which encompasses 1,866,331 acres in Kane and Garfield counties in Utah, was established in 1996 by President Clinton to protect an array of historic, biological, geological, paleontological, and archaeological objects. It was the first national monument under 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

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, Utah*

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

**Managing agencies:** BLM

**Adjacent cities/counties/reservations:** Dixie National Forest, Capitol Reef National Park, Glen Canyon National Recreation Area, Bryce Canyon National Park, other BLM administered lands, and Kodachrome Basin State Park

**Resource Areas:**

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

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**Commented [GAL2]:** Please ensure consistency in using the monument's name: A hyphen should be added for Grand Staircase-Escalante National Monument in all instances.

The document also alternates the use of the acronym (GSENM) versus the full name (e.g., p.10 under the Timber bullet using the full name and Cultural/Tribal section using the acronym)

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

#### **Local Economy and Economic Impacts**

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

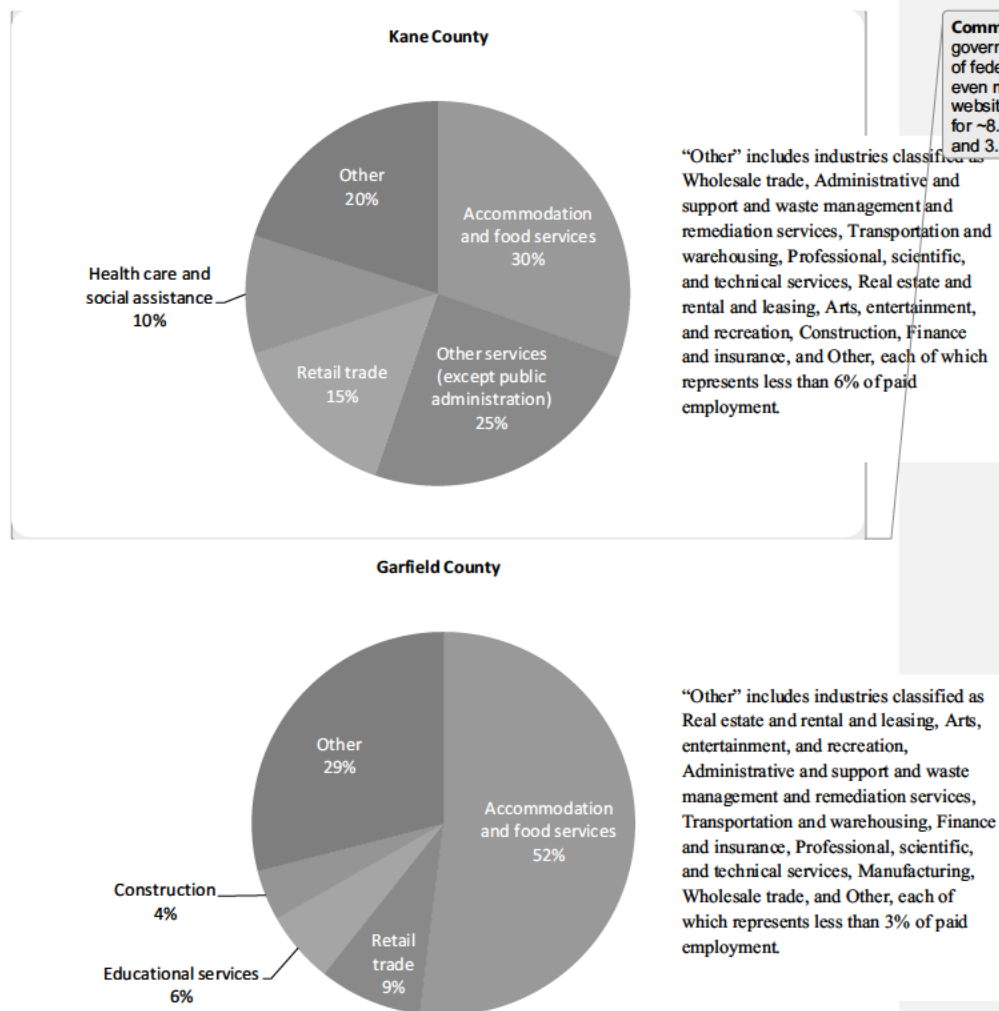
**Table 1. Economic Profile for Kane and Garfield Counties**

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

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

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

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**Commented [GAL3]:** It would be helpful to include government employment in these charts- a breakdown of federal versus state or local employment would be even more meaningful. A cursory review of other public websites indicates that public administration accounts for ~8.7% of employment by industry in Kane County and 3.2% of Garfield County.

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

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

#### Definitions

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

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

**Employment:** The total number of jobs supported by activities.

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

Information on the activities taking place on GSENM are provided below.

- **Recreation:** Grand Staircase-Escalante National Monument

provides a large variety of multiple-use recreation opportunities including traditional hiking and camping, hunting, fishing, horseback riding, mountain biking, as well as motorized activities for off-highway vehicles. Visitation has increased since designation, rising from an estimated

456,369 visits in 1997 to 926,236 visits in 2016 (Figure 2). BLM also issues commercial Special Recreation Permits (SRPs) for GSENM. SRPs are authorizations that allow specified recreation use of the public lands and related waters. At GSENM commercial SRPs cover a wide range of activities including general guide/hiking service, hunting & fishing guides, ATV/vehicle experiences, educational events (geology classes, etc.), horseback riding, and bicycling. The number of permits issued has increased from 35 in 1999 to 115 in 2017.<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 \$51 million in value added and 1,024 jobs (Table 2).<sup>2</sup>

Table 2. GSENM Estimated Economic Contributions, 2016

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

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Commented [WRJ5R4]: Here is what was included in the information previously provided to DOI. In 2016, 45,538.00 bbls of oil, 2,357.00 mcf of gas, and 2,324,769.00 bbls of water were produced from Upper Valley Wells, the only producing unit within the monument. Can we address their question that way? For your convenience: here is the full submitted response: The annual production of oil and gas in the GSENM is currently limited to lands in or adjacent to the Upper Valley (UV) unit in the north-central area of the GSENM (Attachments: 2.b.Upper Valley Unit Map.pdf; 2.b.Upper Valley GSE Production.pdf; 2.b.Upper Valley Wells in GSENM.xls; and 2.b.UDOGMA O&Gprod data Upper Valley.pdf). GSENM shares the Upper Valley Oil Field with the Dixie National Forest; this field accounts for all oil and gas production in GSENM. Attached documents disclose production for the Upper Valley Field. Four wells within the GSENM are currently producing oil and a small amount of gas. The UV Unit 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. There is no other oil and gas production in GSENM, or Kane and Garfield Counties.

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This is true for all generic uses of “BLM data” within this document.

Commented [GAL8]: BLM-Utah requests the exact data sources referenced or information on the process used to estimate the economic values in this document and in the BENM document, if possible. BLM-Utah did provide requested recreation use estimates, but this document appears to insinuate that BLM estimated economic contributions. Thanks!

<sup>1</sup> BLM data.

<sup>2</sup> BLM data.

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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.

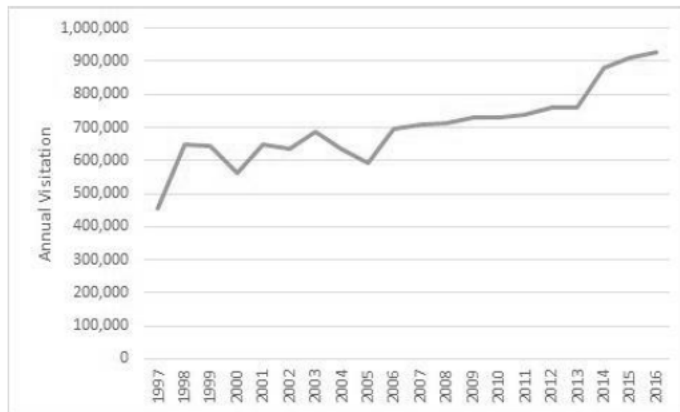


Figure 2. Annual Visitation to Grand ~~Staircase-Escalante~~ National Monument

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- **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.<sup>3</sup>

<sup>3</sup> BLM data.

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#### 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>4</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>5</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 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>6</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>7</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>8</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>9</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>10</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>11</sup> Transportation costs can contribute a large share of the costs associated with using coal as an energy

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<sup>4</sup> 1996-1997 BLM Kaiparowits Coal Report.

<sup>5</sup> Utah Geological Survey. 1997. A Preliminary Assessment of Energy and Mineral Resources within the Grand Staircase-Escalante National Monument. Circular 93.

<sup>6</sup> Vanden Berg, Michael D. 2016. Utah's Energy Landscape. Circular 121, Utah Geological Survey.

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

<sup>10</sup> Vanden Berg, Michael D. 2016. Utah's Energy Landscape. Circular 121, Utah Geological Survey.

<sup>11</sup> U.S. Energy Information Administration. 2016. Utah State Energy Profile.

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resource, and can be a factor in determining the extent to which a given coal resource is economic to develop.

o Oil & Gas.

- As of 1997, 47 wildcat wells had been drilled within the Monument (24 in Garfield County and 23 in Kane County). Oil production is concentrated in the Upper Valley (UV) field; 5 of the 22 wells in the UV field lie within the National Monument. In addition to the producing wells, there are also 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>12</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, 336,313 barrels of oil were produced in the GSENM. No natural gas was produced during that time.<sup>13</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>14</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>15</sup>



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

<sup>12</sup> Utah Geological Survey. 1997. A Preliminary Assessment of Energy and Mineral Resources within the Grand Staircase-Escalante National Monument. Circular 93.

<sup>13</sup> BLM data.

<sup>14</sup> BLM data.

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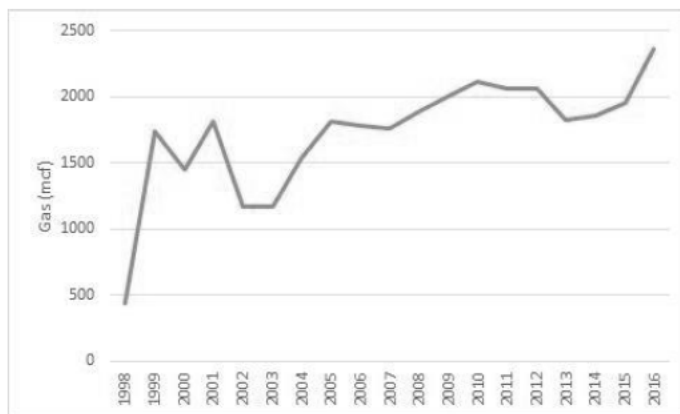


Figure 4. Gas Production on Grand Staircase-Escalante National Monument

- Non-Energy Minerals:** Five small mining operations are permitted within the Monument. Four are active quarries for alabaster, and the fifth is a suspended operation for petrified wood.<sup>16</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 Highway projects, primarily to Utah Department of Transportation.<sup>17</sup>
- Grazing:** Grazing is allowed within Grand Staircase-Escalante National Monument. When the Monument was designated, there were 106,645 total Animal Unit Months (AUMs), with 77,400 Permitted AUMs.<sup>18</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>19</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

<sup>16</sup> Utah Geological Survey. 1997. A Preliminary Assessment of Energy and Mineral Resources within the Grand Staircase-Escalante National Monument. Circular 93.

<sup>17</sup> BLM data.

<sup>18</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>19</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.

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

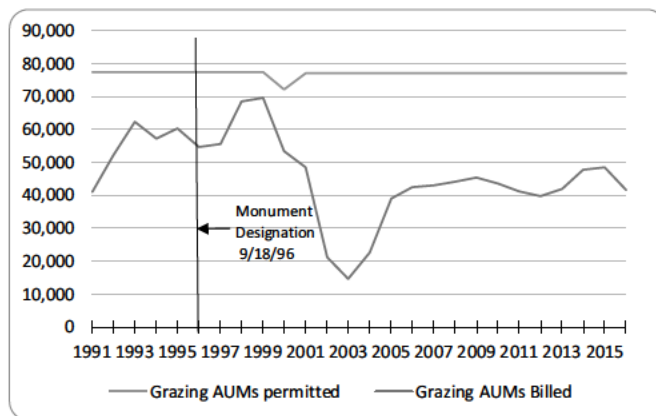


Figure 5. AUMs Permitted and Billed on Grand ~~Staircase-Escalante~~ National Monument

- Timber:** No commercial timber harvest is allowed within Grand ~~Staircase-Escalante~~ National Monument. Non-commercial firewood harvest is allowed in two forest product areas.
- Cultural/Tribal/Archeological:** Archaeological surveys carried out to date show extensive use of places within the Monument by ancient Native American cultures and a contact point for Anasazi and Fremont cultures. Hundreds of recorded sites include rock art panels, occupation sites, campsites and granaries. Cultural sites include historic and prehistoric sites, Traditional Cultural Properties, Native American Sacred Sites and cultural landscapes. According to the Utah State Historic Preservation Office (SHPO), as of March 6, 2017, there are 3,985 recorded archaeological sites within GSENM. However, the GSENM staff estimates that there are more likely around 6,000 recorded archaeological sites within the GSENM, due to a records backlog. This is with only five to seven percent of the Monument surveyed. Prehistoric archaeological sites in the GSENM include pottery and stone tool (lithic) scatters, the remains of cooking features (hearths), storage features such as adobe granaries and subsurface stone lined granaries, prehistoric roads, petroglyphs, pictographs and cliff dwellings. Historic sites include historic debris scatters, roads, trails, fences, inscriptions, and structures. Following the designation of GSENM, consultations were initiated with the Native American tribes associated with the GSENM area, including the Hopi, the Kaibab Paiute, the San Juan Paiute, the Paiute Indian Tribes of Utah, the Zuni, and the Ute, and the Navajo. Over the past 20 years, the Hopi and the Kaibab Paiute have been most closely associated with the Monument and most

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<sup>20</sup> BLM data.

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responsive to continued consultations, as the GSENM area is central to the historic and prehistoric territories of these two tribes.

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

- **Scientific/Paleontological:** Approximately six percent of the area has been surveyed (120,000 acres), with 3,350 documented paleontological sites. Several new discoveries have been made including: 12 new dinosaurs (including four in 2017); 11 new mammal species; three new 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*

This section presents some information to help understand land management tradeoffs. Decision-making often involves multiple objectives and the need to make tradeoffs among those objectives. However, tradeoffs and decision-making are often subject to constraints, such as Monument designations. In general, market supply and demand conditions drive energy and minerals activity; societal preferences and household disposal income affect recreation activity levels; and market prices and range conditions affect the demand for forage. Culturally important sites and unique natural resources, by definition, have limited or no substitutes. A particularly challenging component of any tradeoff analysis is estimating the nonmarket values associated with GSENM resources, particularly the nonmarket values associated with cultural and scientific resources.

Planning for permitted resource use on National Monuments will involve trade-offs among different activities on the land area being managed in order to allow permitted activities that are compatible with monument objects. Once designated, National Monuments continue to be managed under the multiple use mandate outlined in the Federal Land Policy and Management Act of 1976. In some cases, certain areas of the Monument may be appropriate for more than one use. After the careful consideration of tradeoffs, management decisions in those cases 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 the 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. Trust responsibilities and treaty rights are also given consideration.


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In considering any trade-offs, 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 the Monument occur over time and it is the stream of costs and benefits over a given period of time associated with each activity 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. Non-commercial timber harvest may also continue indefinitely as long as the timber resource is sustainably managed. However, the stream of costs and benefits associated with some other non-renewable resources would be finite (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.

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Table 3. Summary of Activities and Economic Values, 2016					
Activities	Level of annual activity	Unit value	Timing	Drivers of current and future levels of activity	<b>Commented [GAL11]:</b> In BENM, this is labeled "Economic Value". See also statement from Bill Stevens, "This column seems mislabeled and mixes apples and oranges. The recreation figure is <i>consumer surplus</i> , which is above and beyond the monetary economic impact of a recreation visitor day. The total recreation value should include the monetary impact <i>and</i> consumer surplus."
Recreation	926,236 visitor days (FY 2016)	\$54.19/visitor day <sup>a</sup>	Visitation could continue indefinitely if landscape resources remain intact and of sufficient quality.	Societal preferences for outdoor recreation; disposable income; changing individual preferences for work and leisure time	
Oil	45,538 bbls (2016)	FY 2016 average price crude oil (WTI): \$41.34/bbl <sup>b</sup>	Development of energy and non-energy minerals is subject to market forces (worldwide supply and demand, prices). Mineral extraction is non-renewable and occurs only as long as the resource is economically feasible to produce.	Market prices of energy commodities affect both supply and demand.	
Gas	2,357 mcf (2016)	FY 2016 average price: \$2.29/mcf <sup>b</sup>			
Coal	None. See "Coal" section for more information.	May 2017 Utah average coal price: \$38.19/ton <sup>c</sup>			
Non-energy Minerals	None. See "Non-energy Minerals" section for more information.	2016 estimated price for gypsum (crude f.o.b mine): \$9.00/metric ton <sup>d</sup>		Market prices of non-energy commodities affect both supply and demand. Mineral production is limited to 200,000 cubic yards over a 10-year period per the existing resource management plan.	
Grazing	41,567 AUMs billed (2016)	2016 grazing fee: \$2.11/AUM	Grazing could continue indefinitely if forage resources are managed sustainably.	Market prices for cattle and sheep and resource protection needs and range conditions (due to drought, fire, etc.) can affect AUMs permitted and billed.	<b>Commented [GAL12]:</b> See also statement from Bill Stevens in BENM document, "The AUM fee is just that; the economic value of an AUM far exceeds the fee charged. There are numerous sources for determining the economic value of an AUM." The \$2.11 fee is what BLM receives for consumption of forage. It is not analogous to economic value.
Cultural/archeological resources	Indigenous communities often use natural resources to an extent and in ways that are different from the general population, and the role that natural resources play in the culture of these indigenous communities may differ from that of the general population. Culturally important sites and unique natural resources, by definition, have limited substitutes. Recognizing this is a critical consideration in land management because it may affect consideration of tradeoffs. Archaeological surveys carried out to date show extensive use of places within the Monument by ancient Native American cultures and a contact point for Anasazi and Fremont cultures. To date, approximately 6% of GSENM has been surveyed.				
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Table 3. Summary of Activities and Economic Values, 2016	
Scientific/Paleontological resources	Approximately 6% of the area has been surveyed. New discoveries include: 12 new dinosaurs, 11 new mammal species, 3 new marine reptile species, 2 new crocodile species, 3 new turtle species, 1 new lizard species, and several new shark and bony fish species.
Benefits of nature	Services provided by nature underpin all sectors of a local economy. As many of these services are not sold in markets, we have limited information on their prices or values. <u>Specific benefits related to GSENM include protection of scenic and geologic resources, cryptobiotic soils, and habitats for mountain lion, bear, desert bighorn sheep, and more than 200 species of birds, and relict plant species as well as riparian corridors</u>
<p><sup>a</sup> This value represents the estimated consumer surplus associated with general recreation for the Intermountain region from the USGS Benefit Transfer Toolkit (<a href="https://my.usgs.gov/benefit-transfer/">https://my.usgs.gov/benefit-transfer/</a>). Consumer surplus represents values individuals hold for goods and services over and above expenditures on those goods and services</p> <p><sup>b</sup> Prices from EIA.gov</p> <p><sup>c</sup> Coal price from ONRR May 2017 Monthly Market Analysis Report</p> <p><sup>d</sup> Gypsum price from USGS <a href="https://minerals.usgs.gov/minerals/pubs/commodity/gypsum/mcs-2017-gypsu.pdf">https://minerals.usgs.gov/minerals/pubs/commodity/gypsum/mcs-2017-gypsu.pdf</a></p>	

**Commented [GAL13]:** The BENM paper included specific examples from the proclamation – these values are specific to GSENM's proclamation