



---

# RESOURCE MANAGEMENT PLAN

FINDINGS, OBJECTIVES, AND POLICY FOR ENVIRONMENTAL RESOURCES

AN ADDENDUM TO THE CARBON COUNTY GENERAL PLAN

---



---

## TABLE OF CONTENTS

Introduction	1
<b>LAND USES</b>	<b>5</b>
Land Use	6
Land Access	10
Wilderness + Special Designations	14
Forest Management	17
Fire Management	19
<b>AGRICULTURAL RESOURCES</b>	<b>21</b>
Agriculture	22
Livestock + Grazing	25
Noxious Weeds	27
<b>MINERAL RESOURCES</b>	<b>29</b>
Minerals	30
Mining	32
Energy	34
<b>WATER RESOURCES</b>	<b>37</b>
Water Quality + Hyrdology	38
Water Rights	40
Wetlands	42
Wild + Scenic Rivers	44
Riparian Areas	46
Irrigation	48
Ditches + Canals	50
Floodplains + River Terraces	52
<b>WILDLIFE RESOURCES</b>	<b>55</b>
Wildlife	56
Threatened, Endangered + Sensitive Species	59
Predator Management	61
Fisheries	63
<b>ECONOMICS + SOCIETY</b>	<b>65</b>
Air Quality	66
Economic Considerations	68
Cultural, Historical, Geological + Paleontological	71
Law Enforcement	75
Recreation + Tourism	77
<b>APPENDICES</b>	<b>79</b>
Works Cited	80
Citizen Input	86
Maps	87



---

# INTRODUCTION

## IMPETUS

The Utah State Legislature recently updated the state code regarding general plans (HB 323 in 2015, and HB 219 in 2016). Accordingly, every county is required to address natural resources on federal public lands within their county in a resource management plan (RMP). This legislation identified 28 items or resources that must be addressed in the RMP, and the requirement to develop findings, objectives, and policies for management of these items and resources. Legislators allocated one-time funding for the initial county RMP process, and Carbon County began the process in early 2016.

This RMP is part of the required general plan. According to state code, a general plan is an advisory document that establishes a vision, influences growth, justifies ordinances, protects private property rights, and anticipates capital improvements. The RMP will identify local knowledge and develop management objectives and policies related to natural resources. The RMP will be based on the needs and preferences of the county, its residents, and property owners. It will be the county's foundational document for management of public lands and the basis for communicating and coordinating with land management agencies on land and resource management issues.

## BEST AVAILABLE INFORMATION

The best available information was gathered in a combined effort by BioWest and Jones & DeMille Engineering in 2016. The county recognizes that new information may always be developing, and future management and use decisions should be based on the latest, best available information. In using data to make evidence-based decisions, it is preferable to analyze resource condition trends over single points of data.

## PROCESS

In 2015, HB 323 was approved by the Utah Legislature, mandating that every county prepare and adopt a general plan that contains an RMP. In 2016, the Southeastern Utah Association of Local Governments (SEUALG) contracted with Bio-West and Jones & DeMille Engineering to gather environmental data for all four counties in the association. Information on current local policy and environmental conditions was gathered and compiled into a database. This information can be found online.

After the data was gathered, the county contracted with Rural Community Consultants to engage the public, develop policy, and prepare the RMP. A widely-accessible, public-facing website (CarbonCountyPlan.org) was developed for the initiative and included background information, a survey, and drafts of the plan. It was advertised through the county's website, and letters were sent to affected entities notifying them of the website and process. As drafts were developed for each issue, they were reviewed and edited by the public and state agency subject matter experts. The planning and county commissions held hearings and meetings that followed state noticing protocol. In the summer of 2017, the RMP was formally adopted by the Carbon County Commission as part of the general plan.

## CITIZEN INPUT

The opinions and values of Carbon County residents and property owners are extremely important to the county commission. Proper noticing procedures were followed throughout the process, and one public open house was held in Price to publicize the initiative and garner input on resource management. The consultant focused on creating access to the website and survey for all residents of Carbon County by utilizing electronic and paper surveys. The county feels that the sentiments and values of residents were well captured in the public engagement and outreach activities.



---

# INTRODUCTION

## PURPOSE

Utah State Statute provides for the development of county-level plans under Title 17-27a-401. Components which are required to be addressed within these plans include land use, transportation, environmental issues, public services and facilities, rehabilitation and redevelopment, economic concerns, recommendations for plan implementation, and “any other elements that the county considers appropriate.”

In 2015, the Utah Legislature amended Title 17-27a-401 to also require that county general plans include a “resource management plan” to provide a basis for communicating and coordinating with the federal government on land and resource management issues. The 2016 Utah Legislature amended the resource management planning requirements and extended the time for the county legislative body to approve the plan until August 1, 2017. This plan has been prepared in response to these requirements, and is known as the “2017 Carbon County Resource Management Plan.”

In all of its planning actions, Carbon County has focused not only on the statutory requirements, but on issues identified by county residents during public work sessions. These issues are addressed in the RMP through statements of policy or position.

## NEED

Carbon County consists of 47.5 percent public lands (44.3 percent BLM and 3.2 percent USFS). Another 11 percent is SITLA, and 2.5 percent other state lands. The remaining 39% is private. The Federal Land Policy and Management Act of 1976 (FLPMA) requires that “Land use plans of the Secretary [of the Interior] under this section shall be consistent with State and local plans to the maximum extent he finds consistent with Federal law and the purposes of this Act.” The National Forest Management Act of 1976 (NFMA) requires the Secretary of Agriculture to “establish procedures . . . to give the Federal, State, and local governments and the public adequate notice and an opportunity to comment upon the formulation of standards, criteria, and guidelines applicable to Forest Service programs.” The Carbon County Master Plan was considered in development of the 2008 BLM Price Field Office RMP, which highlights the importance of maintaining a current, data-based local plan.

This updated county plan will provide clear objectives, goals, and policies that can be applied across agency boundaries, and will be more effective in protecting the customs, culture, and traditional uses of county residents while providing for the conservation and use of the county’s resources.

## COORDINATION AND COOPERATION

To further facilitate coordination between the county and agencies, Carbon County adopted Coordination Resolution 2016-6: A Resolution Requiring Federal and State Agencies with Management, Oversight or Planning Duties to Coordinate with Carbon County on all Land Use and Natural Resource Planning within Carbon County.







---

# LAND USES

---

## LAND USE

*The purpose of this section is to outline the legal framework and county's position for resource management planning and public lands issues. This section is intended to provide a broad outline of the parameters for influence and should not be considered an exhaustive dissertation of all possibilities.*

### DEFINITION

*The designation, modification, and management of land for agricultural, environmental, industrial, recreational, residential, or any other purposes.*

### RELATED RESOURCES

Wilderness, Recreation and Tourism, Energy, Land Access, Wild and Scenic Rivers, Law Enforcement, Water Quality and Hydrology, Threatened, Endangered, and Sensitive Species, Cultural, Historical, Geological, and Paleontological

### FINDINGS

#### *Overview*

Nearly 49 percent of the land in Carbon County is federally administered public land, and 39 percent is private land. Land use decisions concerning public land management directly impact the interests of the county.

Public lands and the associated resources are managed by federal agencies such as the U.S. Forest Service (USFS), Bureau of Land Management (BLM), Bureau of Reclamation (BOR), U.S. Fish and Wildlife Service (USFWS), and National Park Service (NPS). The Utah Division of Wildlife Resources (UDWR) also manages lands in Carbon County. Traditionally, the residents of the county have used public lands and resources for economic growth and stability.

The BLM Resource Management Plans (RMPs) and the USFS Land and Resource Management Plans (LRMPs) are the basis for nearly all natural resource management policy and decision-making activities that affect public lands in Carbon County. Because the Federal Land Policy and Management Act (FLPMA) mandates that these RMPs are to be consistent with state and local plans “to the maximum extent...consistent with federal law...,” it is essential that counties develop their own resource management plans to reflect local perspectives and positions regarding these interests.

#### *Control and Influence*

**Private Property:** Private lands are regulated by land use ordinances and zoning districts, as approved by local and county governments. Zoning districts and the regulations established within the zoning districts are authorized by Utah Code § 17-27a-505 and 10-9a-505. Land use ordinance and zoning maps are legislative decisions and are established through planning processes open to public discussion and adopted by county and

city councils.

**BLM:** The Price Field Office manages BLM-administered lands in Carbon County. Land use decisions for all BLM-administered lands are made according to mandates defined by the FLPMA. FLPMA requires the BLM to manage lands under a multiple-use philosophy. A component of the FLPMA is the requirement for an open and public land use planning process in the development of resource management plans (RMP). Each BLM Field Office must develop an RMP to guide future land use activities on public lands. The RMP defines goals, objectives, and rules for commercial and extractives industries, transportation, recreation, and conservation. To complete an RMP, the BLM follows planning procedures outlined in the National Environmental Policy Act (NEPA).

**USFS:** The USFS manages land use decisions for national forests by developing forest plans under the National Forest Management Act of 1976 (P.L. 94-588). Forest plans provide strategic direction for management of all resources on a national forest for 10 to 15 years. Forest plans require consideration of alternatives and public input under the NEPA process (Council on Environmental Quality 2007). Forest plans describe the desired conditions and provide guidance for projects. They do not make site-specific decisions or require any specific actions, but all projects conducted on a national forest must be consistent with the strategic direction in its forest plan.

**NPS:** The NPS prepares a variety of planning and environmental documents to help guide management of park resources and visitor use and activity. Most plans follow planning procedures outlined in the NEPA.

**State Institutional Trust Lands Administration (SITLA):** SITLA lands are parcels of land throughout the state that were granted by Congress to Utah at the time of statehood. Although trust lands support select public institutions, they are not public lands. Trust lands were allocated specifically to generate revenue to support designated state institutions, including public schools, hospitals, teaching colleges, and universities.

“Land use” is not a resource in the same sense as most other resources to be considered in county resource management plans. In this case, land use is the designated, preferred, or allowable uses of a given piece of land based on the planning preferences of the landowner or manager responsible for the land. The implementation and management of those uses, such as for agriculture, wildlife, motorized recreation, or wilderness, are examined and discussed in their own respective resource planning sections.

#### *Custom and Culture*

Since before the first white settlers arrived in Carbon County in the 1800s, native peoples used the land for hunting, gathering, and possibly agriculture. Original settlers farmed and ranched, bringing livestock from the Sanpete area over the mountain

## LAND USE

for grazing. The land was soon utilized for agriculture and mineral extraction. The discovery of coal brought the railroad and an increase in population, both of which influenced land development patterns. Today, Carbon County still relies on agriculture, mining, and rail transport to sustain the residents' economic needs.

### OBJECTIVES

- a. The use of regulations on lands in Carbon County is stabilized to allow the continuation of cultural, historic, and occupational uses.
- b. Natural resources are available to use and produce in Carbon County.
- c. Jobs are available for residents that allow families the opportunity to remain in Carbon County.

### POLICIES

1. Support responsible development and the long-term health of the land.
2. The county supports land use practices which promote proper ground cover to prevent erosion. The county will promote practices which will decrease the growth of noxious weeds and other undesirable plants.
3. Encourage public land management agencies to restore damaged areas.
4. Work in cooperation with public land management agencies to permit and promote special uses, events, and activities that support the local economy.
5. Establish programs and land uses that promote quality living, employment, and recreation opportunities for the citizens of the county.
6. Both wind and solar energy development (renewable energy) should be considered where possible.
7. Support the development of a public education program to reinforce our citizens' connections to the land.
8. Protect private property rights and agriculture.
9. Encourage public land managers to allow multiple uses where possible, including industrial areas where safety concerns are mitigated by fencing.
10. Adhere to Resolution 2016-06: A resolution requiring federal and state agencies with management, oversight or planning duties to coordinate with Carbon County on all land use and natural resource planning within Carbon County.
11. Carbon County opposes any type of land designation not created with the consent of the local citizens, local elected officials, the governor, and legislature of the State of Utah, and unanimously supported by our congressional delegation.
12. Carbon County opposes the purchase of private lands in Carbon County by government agencies using federal or other funds.
13. In accordance with Section 63J-8-104 (m) of the Utah Code, it is the policy of Carbon County that a BLM visual resource management class I or II rating is generally not compatible with the county's plan and policy for managing public lands, but special cases may exist where such a rating is appropriate if jointly considered and created by state, local, and federal authorities as part of an economic development plan for a region of the state, with due regard for valid existing rights, school trust lands, and private lands within the area.
14. Private property shall be protected from coerced acquisition by federal, state, and local governments.
15. The county shall be compensated for loss of private lands or tax revenues due to land exchanges.
16. Private lands shall not be converted to state or federal ownership in order to compensate for government activities outside of Carbon County.
17. A private property owner has a right to dispose of or exchange property as he/she sees fit within applicable law.
18. Any conversion from private property to public lands shall result in no net loss of private property. No net loss shall be measured both in terms of acreage and fair market value.
19. Whether the agency proposing the acquisition has taken steps to dispose of surplus lands in the county.
20. Carbon County encourages property owners to consult legal counsel before considering a conservation easement on their property and carefully consider the impacts of the loss of certain property rights in perpetuity.
21. Carbon County shall continue to support efforts to legally relieve the federal government of ownership, control, and jurisdiction over public lands in Carbon County (except for designated wilderness areas).
22. It is the policy of Carbon County to closely coordinate with the SITLA to help meet the needs of citizens and companies using trust lands, and to help continue the economic benefits of multiple uses of SITLA lands.
23. Preference for infrastructure rights-of-way will be given to applications that support regional cooperative planning and increased economic opportunity.
24. When feasible, consolidate infrastructure within designated corridors. When necessary and feasible, collocate infrastructure rights-of-way outside of designated corridors.
25. In accordance with Section 63J-8-104 (m) of the Utah Code, it is the policy of Carbon County that a BLM visual resource management class I or II rating is generally not compatible with the county's plan and policy for managing federal lands,

## LAND USE

but special cases may exist where such a rating is appropriate if jointly considered and created by state, local, and federal authorities as part of an economic development plan for a region of the state, with due regard for valid existing rights, school trust lands and private lands within the area.

26. Private property may be converted to public ownership only after written approval by motion of the Carbon County Commissioners. In making exceptions to the “no net loss rule,” the following shall be considered:

- a. The acreage of the proposed acquisition.
  - b. The proximity of the proposed acquisition to existing public lands.
  - c. The proximity of the proposed acquisition to conservation areas on private lands.
  - d. The property tax revenue received by the county under private ownership compared to estimated payment in lieu of taxation under public ownership.
  - e. The private development potential of the subject land, including proximity to public roads and utilities.
  - f. The proposed management scheme for the lands (the extent to which multiple use will be allowed rather than restricted).
  - g. Whether the acquisition is needed to mitigate adverse environmental effects associated with public improvements that have occurred or are proposed.
- Support utilizing public lands for multiple use, for the good of all the people. Vigorously pursue multiple use land policies on federal lands, where traditional and appropriate.
  - Agencies advancing any proposal for an ACEC in the county should actively coordinate and seek approval of the county prior to any formal consideration for ACEC status.
  - Encourage coordination between federal agencies and local governments, public land managers, and private landowners. Support responsible development and the long-term health of the land.
  - Encourage private landowners through contract negotiations, tax incentives, and other voluntary means to make decisions regarding land transactions in such a way as to prevent the net loss of private lands in the county. In furtherance of this policy, the county will encourage federal/state land exchanges that are equal in acreage and/or value, and will encourage private landowners through the afore-mentioned voluntary means to sell land to governments only on condition that (1) those governments make other public lands and water rights in Carbon County available for private acquisition in an equal amount and value, and (2) the county finds that such sale is in the best interests of local citizens. Federal and state agencies considering a purchase of private lands and water rights will be encouraged by the county to make available for private

acquisition an equal amount of public land and water rights as a condition of the purchase of the private land or water rights.

- Adhere to Resolution 2016-06: A resolution Carbon County has a Resolution for Coordination (2016-06). We expect agencies of the federal and state government to acknowledge this document and include Carbon County in any land planning, activity including wildlife, energy, livestock or any other uses as a full partner observing the standard of government to government participation requiring federal and state agencies with management, oversight or planning duties to coordinate with Carbon County on all land use and natural resource planning within Carbon County.
- Carbon County opposes any federal or state trends to impose increasingly burdensome regulations on our citizens, our lands both private and public. Especially those regulations based on questionable science and logic.
- We are also opposed to government overreach by erroneous interpretation of regulations by use of interagency directives or “guidance” that unreasonably restricts, adds costs to or delays grazing to the livestock business or resource companies and any other resource users as well as recreational activities.
- Carbon County supports Congressional legislation that ensures energy and grazing rights to be preserved as a historic and legal right to use federal lands and to keep private land and communities intact.
- We oppose the concept of Monument designations as they allow one person to determine without restraint the fate of rural land use in the United States without any consensus by the public.
- Carbon County would support an ecological conditions survey and land health and productivity survey on any private lands prior to a purchase or management agreement with any public agency taking the land out of private use to establish a baseline that could be used to determine if these lands are being maintained in at least the same condition as they were at the time of purchase. The Legislature should be make this mandatory including regular monitoring reports from qualified third party range conservationists to ensure public funds have been used appropriately.
- The lands in the Price Resource area that are presently identified for disposal in the RMP should be eligible for sales to private owners; first of lands adjacent to the federal lands if they make a request for sales. After an appraisal of the lands is completed the land should be sold to them at that price without additional costs or delays. No additional surveys or environmental reviews should be necessary after the NEPA analysis through the RMP has been completed and the lands are deemed appropriate for disposal.
- Visual Resource Management (VRM)
- BLM and USFS resource management plans also consider an area’s visual values and identify management classes with established objectives for public lands. The BLM’s management

## LAND USE

of visual resources includes identification of visual resource management (VRM) classes, which are categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective that prescribes the amount of change allowed in the characteristic landscape. USFS classes are similar but are referred to as visual quality objectives and include preservation, retention, partial retention, and modification designations.

- VRM Class I objective: To preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.
- VRM Class II objective: To retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Trails maintenance, range improvements and maintenance, motor boat use on the Green River and emergency services needs are defined as low to the landscape.
- VRM Class III objective: To partially retain the existing

character of the landscape. The level of change to the characteristic landscape should be moderate. Mining, oil, gas and shale exploration, development and transportation as well as range improvements motorized use, and utilities construction and maintenance are defined as moderate to the landscape.

- VRM Class IV objective: To provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high.
- In some instances, VRM classifications have been used as substitutes for former Wilderness Inventory Units or so-called Citizens' Proposed Wilderness Units, or as a means to displace valid surface-occupying multiple-use activities. Such designations cause resource waste, serious impacts to other important resources and actions, and are inconsistent with the principles of multiple-use and sustained yield.

CLASS	FEDERAL LANDS BLM & USFS
<b>VRM CLASS I (PRESERVATION)</b>	<b>0</b>
<b>VRM CLASS II (RETENTION)</b>	<b>51,781.38</b>
<b>VRM CLASS III (PARTIAL RETENTION)</b>	<b>330,676.14</b>
<b>VRM CLASS IV (MODIFICATION)</b>	<b>80,075.14</b>



---

## LAND ACCESS

### DEFINITION

*Access to public and private lands.*

### RELATED RESOURCES

Recreation and Tourism, Land Use, Livestock and Grazing, Energy, Law Enforcement, Fire Management

### FINDINGS

#### *Overview*

Carbon County landownership is largely public land with state trust lands checkerboarded within. Private lands tend to occur in consolidated areas. Concerns arise where recreational users once had access but now do not, or where land owned by an entity is surrounded by or accessible only by crossing land owned by a different entity.

Access to land for recreational travel is especially important. Motorized and non-motorized vehicle access, as well as pedestrian and equestrian access, is an issue on and between private, state, and public lands.

#### *R.S. 2477 Roads*

In 1866, the Revised Statute 2477 (commonly known as R.S. 2477) was enacted by the United States Congress. This revised statute encouraged the development of a highway network to facilitate western settlement. This formerly self-executed statute did not require a record of the roadway. Under the Federal Land Policy and Management Act (FLPMA), R.S. 2477 was repealed in 1976 subject to “valid existing rights.”

Because of organized legal challenges and judicial activism, “The uncertainty surrounding R.S. 2477 rights-of-way continues today and has implications for a wide range of entities, including [the Department of the] Interior and other federal agencies as well as state and local governments who assert title to R.S. 2477 rights-of-way, and those who favor or oppose continued use of these rights-of-way” (DOI 2010).

The Memorandum of Understanding between the State of Utah and the Department of the Interior regarding these rights-of-way recognizes that the terms “road” and “highway” are synonymous. Some land routes are mere trails, presently useable only by horse or foot. Others can be used by four-wheeled vehicles. Most can be used by pickup trucks and jeeps. Many others can be used by tractor-trailer vehicles for moving drilling equipment and other materials, or for trailing livestock or crossing watercourses.

The present condition of these rights-of-way depicts their appropriate present uses, until improvements are made to widen, drain, and gravel or hard-surface them. It is important to note the difference between the terms “road” and “right-of-way.” A road is the physical manifestation of a right-of-way. A right-of-way is the right to pass along a specific route, even if the physical

evidence of a road is overgrown or washed away. County road rights-of-way are under the control of the County Commission and continue in perpetuity until vacated by the county and/or state (as described in Statute 72-5-105).

The Utah Automated Geographic Reference Center (AGRC) has been recording county road rights-of-way, and, with local county assistance and support, will continue to further document these rights-of-way.

The county’s preference is to acquire and maintain rights-of-way by deeding, easements, or by judicial fiat across property. Carbon County may also acquire and enforce access by participating in the planning processes of federal and state agencies and via litigation.

The landowner or manager generally controls land access. Some outside entities may influence access of lands that they do not manage.

#### *Best Management Practices (BMPs)*

Gaining or maintaining access to lands is typically accomplished through right-of-way acquisition. The process for obtaining a right-of-way is different for each landowner or management agency, as each has unique administrative procedures and objectives.

The BLM manages rights-of-way through resource management plans authorized by Title V of the FLPMA. Prior to the FLMPA, rights-of-way on BLM-administered lands were enabled by Revised Statute 2477 (Section 8 of the Mining Act of 1866), and are generally considered to be available for accessing property within and across BLM-administered lands. The Price Field Office manages the BLM-administered land within Carbon County.

Rights-of-way on USFS-administered lands are managed through the FLPMA or National Forest Management Act (NFMA).

Utah School and Institutional Trust Lands Administration (SITLA) is mandated by state law to maximize financial gain from their properties through sale, lease, or exchange. Carbon County began a process in 2007 that identified all of the public roads that crossed SITLA lands. Some of these roads were established prior to SITLA’s ownership, and the associated rights-of-way were granted to Carbon County under a disclosure of interest. The remaining routes were purchased by and in behalf of Carbon County. Today, the county owns public easements crossing all of the SITLA lands in Carbon County.

Counties can establish new rights-of-way through private lands in three ways. First, for developing lands, counties can identify rights-of-way on the transportation component of the General Plan. With rights-of-way identified, counties can work with developers to construct roads as the land develops over time. Second, counties can work with willing landowners to negotiate a mutually beneficial solution to purchase a public right-of-way or

## LAND ACCESS

easement across property. Finally, in cases where landowners do not want a public right-of-way or easement across their property, counties can use eminent domain to condemn private property. State law enables the right of eminent domain for roadways for public vehicles, but not for recreational uses (78B-6-501 3f).

### *Broadband Internet*

As high-speed Internet connections become an increasingly critical asset for economic development, education, healthcare, public safety, and general quality of life, the tech industry and governments must work collaboratively to prepare for the growing need. Zoning laws, rights-of-way, preferred corridors and infrastructure requirements, and coordination with federal land agencies will likely all need to be analyzed in the coming years to maximize this utility. The Utah Broadband Outreach Center in the Governor's Office of Economic Development is a state program focused on mapping available broadband services and promoting the development of additional infrastructure in Utah (K. Cole, Governor's Office of Economic Development, unpublished report).

### *Economic Considerations*

Carbon County's economy is closely tied to accessing public lands for resource utilization and recreation. Moreover, corridors needs to be open so that people and goods are able to travel and move statewide, nationally, or internationally. Physical access via roadways, especially for motorized vehicles, is required for the development and utilization of energy, mineral, recreation, or other resources. Of special concern are state inholdings managed by SITLA and private lands surrounded by public lands.

Visitors to wilderness areas or any remote terrain should expect to be self-reliant; however, local governments may pay many millions of dollars on search and rescue operations looking for lost hikers and hunters. Search and rescue operations can be more efficiently executed with better access.

### *Custom and Culture*

Access to and across public land is key to the success of our civilization and to the proper management of the natural resources within the county. Without access to land, water, and natural resources, our citizens cannot maintain their present level of prosperity or experience the quality of life they now enjoy. In recent years, special interest groups have exerted political pressure on federal agencies to reduce access on public lands in the West.

It is the custom and culture of Carbon County to support and protect private property rights, including access to private lands.

Historically and today, Carbon County feels strongly that public landscapes should be accessible by multiple modes of transportation.

Traditionally, citizens of Carbon County and visitors have

enjoyed many forms of outdoor recreation in the non-WSA east Carbon County region, such as hunting, fishing, hiking, family and group parties, family and group camp outs and campfires, rock hounding, OHV travel, geological exploring, pioneering, parking their RV, or just plain touring in their personal vehicles.

### **OBJECTIVES**

- a. Access is protected in Carbon County.
- b. Access routes in the county are federally recognized.
- c. Litigation is pursued if necessary to ensure that public access is legally accepted and never taken away.

### **POLICIES**

1. Work with federal agencies to increase the use of existing trails.
2. Identify all county roads and public rights-of-way on public lands to protect the county's resources and promote public health and safety (i.e., search and rescue, fire protection, resource conservation, law enforcement, emergency medical services).
3. Work with the USFS to upgrade certain National Forest System roads in preparation for turning those roads, when necessary, into Class B County Roads.
4. Develop and promote a pedestrian and bicycle system within the county, providing access to outlying trails on public lands. Form a team with federal agencies for the creation of such trails.
5. All authorized and unauthorized dispersed and developed campsite access routes will be evaluated for inclusion into agency road/transportation systems; and seasonal and wet weather closures will be based on current weather and road conditions, not calendar dates.
6. The county supports the concept of motorized vehicles being used only on designated roadways or routes in order to control erosion and other resource impacts.
7. Allow consideration of new roads and trails by working with the appropriate land management agency.
8. Encourage train transportation to take on a greater role in the Carbon County area.
9. Assist landowners to obtain rights-of-way or easements across public lands when it is in the best interest of the county or landowner.
10. Develop and maintain county rights-of-way.
11. Maintain structures (e.g., bridges, cattleguards) to be structurally sound and safe for use.
12. The county supports public lands management that provides opportunities for a range of motorized recreation experiences

## LAND ACCESS

on public lands while protecting resources and minimizing conflicts among various users. Any fire, military, emergency, or law enforcement vehicle being used for emergency or administrative purposes is exempt from OHV decisions.

13. Achieve and maintain traditional access to outdoor recreational opportunities available in the region.
14. Public access in the non-WSA east Carbon County region should not discriminate in favor of one particular mode of recreation to the exclusion of others.
15. Additional roads and trails may be needed in the non-WSA east Carbon County region to facilitate access to a broad range of resources and opportunities throughout the region, including livestock operations and improvements, solid, fluid, and gaseous mineral operations, recreational opportunities and operations, search and rescue needs, and other public safety needs.
16. BLM policies and standards for management of public land in the non-WSA east Carbon County region should not interfere with the property rights of private landowners in the area, including motorized access to private parcels, consistent with county zoning and land use laws.
17. Carbon County intends to retain all existing road rights-of-way. The county will determine the maintenance and use level of each road, which may range from minimal maintenance for travel within the right-of-way to grading and the addition of drainage structures, gravel, surfacing, and signs to ensure a reasonably safe route for the traveling public.
18. Work with state agencies and organizations such as the AGRC, the Attorney General's Office, the Utah Department of Transportation, and the Utah Association of Counties to build a Geographic Positioning System database consisting of centerline descriptions and other pertinent data (such as width and surface material) for each road, highway, or trail. Complete and maintain mapping of the rights-of-way.
19. Widen and improve existing county roads as needed for safety or economic reasons.
20. Maintain existing access in Carbon County for use without any restrictions or impediments other than those which are naturally occurring, such as winter closures, landslides, or other events which are beyond the control of man.
21. Refer to the R.S. 2477 grants as rights-of way, not roads, paths, or ways. Use established laws, ordinances, and case law and to defend these rights to the maximum extent necessary.
22. Work to keep non-R.S. 2477 roads open on public lands.
23. Encourage more access to public lands in areas where elk can be taken without impacting private property, and where elk hunting would be valuable to the landowners who provide guiding and outfitting opportunities.
24. The county wishes to develop a future transportation and energy corridor oriented east-west across the Green River, and north-south across Nine Mile Canyon.
25. Pertaining to R.S. 2477, Carbon County shall continue to legally enforce and litigate for our citizen's right to access as we have since 1993.
26. Any temporary closures of an existing county road will be accomplished consistent with Utah Code 72-5-105. Formal abandonment by the county shall be consistent with Utah Code 72-3-108. Otherwise, the county road will be open to public use.
27. Rights-of-way under Title V of the FLPMA shall be pursued by Carbon County to ensure public access, but under no circumstances will the acceptance of Title V authorization on public roads be construed as an abandonment of Carbon County's R.S. 2477 right of ownership.
28. Carbon County supports Utah Statute 41-22-12, which states, "Except as provided in Section 79-4-203 and 79-4-304, federal agencies are encouraged and agencies of the state and its subdivisions shall pursue opportunities to open public land to responsible off-highway vehicle use and cross-country motor vehicle travel. A person may not tear down, mutilate, deface or destroy (a) a sign, signboard, or other notice that prohibits or regulates the use of an off-highway vehicle on public land; or (b) a fence or other enclosure or a gate or bars belonging to the fence or other enclosure."
29. Internet connections have become an increasingly critical for economic development, education, healthcare, public safety, and general quality of life, it is essential that any management plan on federal and private lands address and reasonably allow for the development of broadband infrastructure throughout the county. Broadband needs to be reliable and redundant in most cases to address the rapid technology in this communication area. Government agencies shall work with broadband providers collaboratively to prepare for the growing need. Broadband infrastructure needs to be deployed with the capacity to adapt for evolving technologies.

Carbon County supports Title V grants to local county governments or the states in perpetuity. After granting, nothing in Title V gives the Secretary authority to arbitrarily close a road or a corridor once it is granted except by cooperation and coordination with the government entity holding the Grant. In applying for a right of way, or other use of lands under Title V of FLPMA consistent with section 72-3-108 of State Statute Carbon County, does not relinquish its rights to the land, its use or property ownership under RS 2477 or any other law, regulation or Act. Further, it is understood that a federal sanctioned gating, road use prohibition or any other Federal action relinquishing our public's existing rights to access is not acceptable. Carbon



---

## LAND ACCESS

County will not in any manner exchange any of its public or of its individual citizen's rights for any permission or consent from the Federal Government or any of its agencies.

- Carbon County's decision to accept Title V would be based on;
- The BLM fails in its duty to recognize the county's established ROW.
- The BLM would issue the Title V to a private party over the county highway, and
- Because of the economic importance of providing access over the highway.
- Under these circumstances Carbon County is only accepting the Title V on an interim basis because the BLM refuses to recognize the county's established rights under RS 2477, with resulting harm to the county and to the public. This fact in itself would establish a case or controversy that supports the county's filing Quiet Title over the highway to secure Quiet Title for an RS 2477 right-of-way.
- Carbon County shall also continue to support any action to legally dismiss the Federal Government from the public domain, and demand the disposal of Federal title to the land.
- RS 2477 "rights-of-way" may include, but not be limited to, horse paths, cattle trails, irrigation canals, waterways, ditches, pipelines or other means of water transmission and their attendant access for maintenance, wagon roads, jeep trails,

logging roads, homestead roads, mine to market roads and all other ways established and held consistent with section 72-5-104 of Utah Statute and in use prior to October 22nd of 1976.

- Access includes all modes of transportation. Horse paths, cattle trails, irrigation canals, waterways, ditches, pipelines or other means of water transmission and their attendant access for maintenance, wagon roads, jeep trails, logging roads, homestead roads, mine to market roads to name a few. It also includes the construction and maintenance of improvements i.e.; utilities infrastructure, pipelines, substations, electric and communication/broadband sites and any purpose to promote the health, safety and welfare of the public while isolating these impacts in a small and condensed area as reasonable to enable less on the ground disturbance to our area. For these reasons there shall be a no-net-loss of access via any of these methods in Carbon County.
- Keep existing access in Carbon County open for use without any restrictions or impediments other than those naturally occurring, such as winter closures, landslides, or other events which are beyond the control of man.
- Ensure the public that public lands and private property historically accessed by a public county or state road will remain in perpetuity for public use.

## WILDERNESS + SPECIAL DESIGNATIONS

### DEFINITION

*Wilderness areas are special places where the earth and interconnected communities of life have been left relatively undisturbed. According to the Wilderness Act of 1964, federal lands must have specific characteristics to be considered by Congress for wilderness preservation:*

- *They must be in a generally natural condition;*
- *They must have outstanding opportunities for solitude or a primitive and unconfined type of recreation;*
- *They must be at least 5,000 acres or of sufficient size as to make practicable its preservation and use in an unimpaired condition;*
- *They may also contain ecological, geological, or other features of scientific, scenic, or historical value.*

### RELATED RESOURCES

Forest Management, Fire Management, Noxious Weeds, Recreation and Tourism, Land Access

### FINDINGS

#### *Overview*

Many people use “wilderness” to describe any remote, rugged, and undeveloped land. However, the term “wilderness” is a legal definition created under the Wilderness Act of 1964, and is applied to specific parcels of public lands with certain characteristics, and designated by an act of Congress. Wilderness designation enables preservation and protection of “federal lands retaining primeval character and influence,” and as such, severely limits consumptive, motorized, and mechanized uses.

Other federal lands not officially designated as wilderness may be managed under similarly restrictive objectives. These include lands recommended for wilderness designation by the USFS, and wilderness study areas (WSAs) as designated by the BLM. These recommendations have been submitted to congress for a final decision, but congress has not yet acted. The BLM and USFS are mandated to manage these areas under the same requirements as actual wilderness areas, with the goal of preventing the degradation of potential wilderness areas before Congress makes a decision.

Other non-wilderness designations which may have restrictive management objectives include USFS inventoried roadless areas (IRAs) and BLM lands with wilderness characteristics (LWC), natural areas, areas of critical environmental concern (ACEC), and special recreation management areas (SRMA). Each of these management prescriptions has their own set of definitions and management guidelines, and are less restrictive than designated wilderness.

Federal wilderness designation is a legislative action by Congress that sometimes follows a comprehensive National

Environmental Policy Act (NEPA) planning process. In general terms, wilderness designation begins with the adoption of agency planning documents. For Carbon County, this includes the BLM Price Field Office RMP (2008) and the Manti-La Sal National Forest Plan (1986).

The best way for counties to influence future wilderness designation is to enter into a memorandum of understanding (MOU) with the agency that is recommending wilderness. Counties cannot influence current wilderness study areas (WSAs) except by contacting their congressional representative (P. Jarnecke, Bureau of Land Management, personal communication).

There are eleven wilderness study areas identified in the BLM Price Field Office RMP (2008):

- Crack Canyon Wilderness Study Area
- Desolation Canyon Wilderness Study Area
- Devils Canyon Wilderness Study Area
- Horseshoe Canyon (North) Wilderness Study Area
- Jack Canyon Wilderness Study Area
- Links Flat Wilderness Study Area
- Mexican Mountain Wilderness Study Area
- Muddy Creek Wilderness Study Area
- San Rafael Reef Wilderness Study Area
- Sids Mountain/Sids Cabin Wilderness Study Area
- Turtle Canyon Wilderness Study Area

#### *Economic Considerations*

The economic effect of wilderness designation is the subject of ongoing debate. For example, when several proposals were made in the early 1990s to increase acres of wilderness in Utah, a 1992 Government Accountability Office (GAO) study investigated a claim that designating 3.2 million acres of land as wilderness in Utah would cost the state \$9.2 billion annually in future earnings. The debate over the economic impact of designating wilderness areas continues in Utah. An unpublished report from Utah State University in 2010 investigated contradictory claims about the economic impact of designating wilderness areas in Utah (Yonk et al. 2010).

Economic considerations of wilderness designation should include:

- Mineral and energy development potential
- Logging and forest products
- Livestock grazing restrictions - grazing is allowed in wilderness areas but must meet wilderness guidelines.
- Private and state land inholdings
- Land transfers
- Motorized recreational uses

Wilderness designation on public lands has positive effects on:

- Non-motorized and non-mechanized recreation
- Wildlife habitat

## WILDERNESS + SPECIAL DESIGNATIONS

- Drinking water source protection
- Watershed protection
- Native species biodiversity

### *Custom and Culture*

Part of Carbon County's culture is outdoor oriented, with residents and visitors recreating in a variety of ways.

### OBJECTIVES

- a. Maintain a continuing yield of mineral resources from the east Carbon County region at the highest reasonable sustainable levels.
- b. Land that is not designated as wilderness by Congress is not managed like wilderness.
- c. No Wilderness, National Monuments, ACECs, or other special designations will be designated without the support of the Carbon County Commission.

### POLICIES

1. The county affirms the ability of private property owners to use and enjoy private lands located adjacent to wilderness, wilderness study areas (WSAs), buffer zones, and all other special designation public lands.
2. Land use classifications should not establish de facto wilderness management areas outside of the already-identified wilderness areas.
3. Oppose any attempt to curtail the installment or maintenance of rangeland improvements in wilderness or WSAs (i.e., fences and water developments) to maintain and encourage continued use of the prior existing rights in the area.
4. Remove or release all WSAs from consideration that contain non-wilderness characteristics, such as roads or active oil/gas wells, by December 2018.
5. Special land use designations should only be used when they are consistent with surrounding management and contribute to the sound policy of multiple-use, economic viability, and community stability.
6. No change in access to water developments, fences, or other infrastructure located within designated wilderness, WSAs, ACECs, roadless, and other special status areas should be allowed.
7. Accurately represent potential wilderness areas by not mapping around existing, known infrastructure such as roads or water tanks.
8. Support and encourage accurate, on-the-ground mapping of roads, fences, rangeland improvements, and any other anthropogenic influence in lands under consideration for LWC or WSA designations.

9. Remove duplicative land use classifications (i.e., determine if an area should be ACEC or LWC).
10. Encourage historical access and uses on lands already designated as WSA, ACEC, or LWC.
11. Agencies advancing any proposal for an ACEC within the county should actively coordinate and seek approval of the county prior to any formal consideration for ACEC status.
12. The county opposes creation of new wilderness areas in the county.
13. Cooperate with the Utah Association of Counties to pursue the eventual passage by Congress of a Utah Wilderness Act.
14. Monitor progress of any Utah wilderness bills in the United States Congress.
15. Oppose the Red Rock Wilderness Bill, proposing over nine million acres of wilderness in Utah.
16. Support the passage of any wilderness bill that reflects the wishes of the elected commissioners of Utah.
17. Work with the BLM to ensure that previous lease stipulations in the non-WSA east Carbon County region that are no longer necessary or effective, or where flexibility exists, should allow waivers, exceptions, or modifications or they should be removed.
18. Achieve and maintain livestock grazing in the non-WSA east Carbon County region at the highest reasonably sustainable levels.
19. Carbon County supports changes in land designation in accordance with Resolution 2015-01 (A Resolution of the Carbon County Board of Commissioners to Propose that Congress Designate Certain Lands within Carbon County, Utah as Wilderness, Wild and Scenic, and National Conservation Areas, and to Propose that Congress Formally [sic] Recognize Carbon County's Energy Zone).
20. Carbon County opposes the designation of any National Monument within the county.

### WILDERNESS

Carbon County has approved through a public hearing process after the presentation to the Commission by the Public Lands Initiative Committee and supported by the Carbon County Planning Zoning Commission a wilderness area located on the eastern side of Carbon County. This land area lies within the Desolation Canyon Wilderness Study Area. It is 52,004 Acres and runs the entire eastern boundary of Carbon County from the Green River to the edge of the Tavaputs Plateau. This Wilderness area is a part of the Section 603 Desolation Wilderness Study Area reported to Congress in 1992 and found to be suitable for Congressional Designation.

The Carbon County Commission is willing to request the Utah

## WILDERNESS + SPECIAL DESIGNATIONS

Congressional Delegation create a Bill and support the designation of this area for Wilderness under the 1964 Wilderness Act ONLY if the terms and stipulations in Ordinance 2015-01 are approved and placed into a Bill submitted to Congress. It will include the mandate that Congress orders BLM to amend The Price Resource Management Plan in fulfillment of and consistent to Carbon County Ordinance #2016-01. At that point all other areas identified as Wilderness Study Areas or areas with Wilderness Characteristics, Special Management Areas or any other like definition that reduces or takes away Multiple Use and Sustained Yield manage in-lieu of single interest management including the caveats placed by Secretarial Order 3310 be dropped permanently by Hard Release and Carbon County will have permanent exemption from any present or future Wilderness, Monument or other special designation Status.

### *Monuments (The Antiquities Act)*

- Carbon County believes that the Antiquities Act of 1906 was justifiably created by Congress to protect certain unique areas from disturbance prior to Statehood when territories in the west were being homesteaded. But we also believe that it was never intended to be used to lockup millions of acres of land. Today with the passage of many Congressional Acts including National Environmental Policy Act (NEPA) and the Federal Lands Policy Management Act (FLMPA) the act has become unnecessary for the purpose Congress intended. Presently many portions of the Act are not followed but instead it is used only to promote a political agenda of restricting millions of acres of valuable lands and resources for any present or future use. For more that 50 years now these actions have consistently been allowed for purely political reasons against the will of the residents, local elected officials and the state. Those who are most directly affected by these designations have no right to equal treatment under the law.
- Carbon County opposes the continued concept of Monument designations as they allow one person to determine without restraint the fate of rural land use in the United States without any impact analysis or public consensus.
- Carbon County opposes any type of land designation not created with the consent of the local citizens, local elected officials, the Governor and Legislature of the State of Utah and unanimously supported by our Congressional Delegation.
- Carbon County supports any action by Congress to repeal the Antiquities Act or at least restrict the size, acreage and number of Monuments any one President can designate in any state or

local area. Public review and consent of the local citizens, local elected officials, the Governor and Legislature of the State of Utah and unanimously supported by our Congressional Delegation.

- Carbon County supports the complete repeal of the Antiquities Act.
- Carbon County supports reduction of the size and acreage of the Monuments created in Utah.
- Carbon County opposes any additional Monuments being created in Utah and would support the State Legislature petitioning Congress to prohibit this action by Federal Law.

### *America's Great Outdoor Initiative*

- It is Carbon County's position that, America's Great Outdoor Initiative as are many other public land policies of this nature a camouflaged federal land grab initiative nested in an attempt to designate more land under a non-congressionally defined word, "treasured landscapes" allowing this term to be used to define lands for monuments and or other preservation status.
- We conclude that this policy supports the United Nations Agenda 21 giving federal land planners a way to create continuous corridors across the nation. This concept not only stops multiple uses of public lands but threatens confiscation of private property by condemnation and or a reduction of private property freedom by adjacent public land regulations. Through these policies, in time millions of acres of agricultural, energy and mineral resource productive lands would be lost displacing livelihoods, communities and tax base.
- Carbon County strongly opposes America's Great Outdoor Initiative and urges this proposal be immediately repealed by Congress. We would also strongly urge Congress and the Utah Legislature to prohibit all Agencies in the Executive Branch from creating by regulation any additional, "feel good" land designations not specifically approved through the legislative branch of our government.
- Special Designations
- Carbon County adamantly opposes and Special Designation performed by Federal Agency Fiat without Congressional support in ratified law.
- We further oppose any designation without public review, the consent of the local citizens, local elected officials, the Governor and Legislature of the State of Utah and unanimously supported by our Congressional Delegation.



---

# FOREST MANAGEMENT

## DEFINITION

*The actions for the regeneration, use, and conservation of forests.*

## RELATED RESOURCES

Fire Management, Noxious Weeds, Wilderness, Wildlife, Water Quality and Hydrology, Livestock and Grazing, Recreation and Tourism, Agriculture

## FINDINGS

### *Overview*

Unwise management or use of forest resources can cause erosion, water quality degradation, and loss of wildlife habitat. Declines in forest health increases the likelihood of insect infestation, timber disease outbreaks, and wildland fires. Without proper management, forests may be lost from the landscape.

Utah forests are as diverse as the landscape itself. Over 15.1 million acres of forests are administered by federal, state, and local agencies. Another 3 million acres are privately owned (FFSL 2014).

Several factors have contributed to the decline in forest health, including a decline in historic logging, grazing patterns, fire exclusion, and invasive or noxious weeds. Drought conditions can negatively affect forest health, causing detrimental changes in vegetative conditions, especially if combined with these other management practices (FFSL 2014).

Proper forest management techniques, such as selective harvest and thinning projects, create healthier forests that are more resistant to insect damage and less likely to contain fuel loads that can result in catastrophic wildfire.

### *Federal Management*

The USFS administers National Forest System lands (part of the Manti-La Sal National Forest) within Carbon County. The Utah Division of Forestry, Fire and State Lands manages sovereign lands and forests in Utah, while Utah State University contributes forestry research and the developing best practices for private landowners.

### *Economic Considerations*

Visitors from around the world, together with Utah locals, enjoy Utah's renowned forests, which span from Canyonlands to the alpine zone. While Utah is only 29 percent forested, these forests have high scenic, recreation, wildlife, and other forest use values that make forest health very important (FFSL 2014).

The market for forest products is very small in Utah, but it does exist. Forest products may be sold by board feet, by volume, or by piecemeal, depending upon the product and the buyer.

The non-extractive products and benefits that come from Utah's

forests, such as recreation, water quality, wildlife habitat, and aesthetics, are sometimes unquantifiable. These contribute to the quality of life in Utah and should be considered valuable.

### *Custom and Culture*

Many historic photos show areas such as Winter Quarters Canyon where timber was harvested before 1916 that are now heavily forested with conifers.

Lumber for commercial and light construction has been produced in the county off and on for over a century. The local sawmill is presently closed due to a shortage of timber.

The custom and culture of Carbon County is to use healthy forests for a variety of economic, natural, and recreational purposes.

## OBJECTIVES

- a. Maintain a continuous supply of timber and protect watersheds and water quality through minimization of soil erosion and other deleterious effects from insect damage and catastrophic fires.
- b. Forests are healthy and the economy and ecology related to the forest are sustainable.

## POLICIES

1. Preserve watersheds and ensure that reclamation occurs on areas destroyed by fire. USFS-administered lands should be managed for watershed stability.
2. Extinguish all fires on woodlands and forests that endanger natural wildlife habitat or human life and property.
3. We support the Utah Watershed Initiative under the direction of the Utah Department of Natural Resources and the Healthy Forest Restoration Act (HFRA) of 2003. We encourage the creation of healthy forests and actively promote the use of silvicultural tools to prevent the loss of forests due to insect and a disease activity.
4. Manage forests for continuous yields of wood products, wildlife, fisheries, and water while protecting soil resources.
5. Agencies should adopt policies that promote and facilitate local manufacturing of forest products from public lands.
6. Agencies should support a broad range of reforestation and timber stand improvement tools and timber harvesting practices consistent with prudent resource protection practices.
7. Agencies should adopt policies that promote and facilitate early detection and control of insect infestations through the use of biological and chemical agents, including salvage of dead and dying forest stands.
8. Support the management of beetle-killed timber to protect local water resources, reduce fire hazards, and protect soil

## FOREST MANAGEMENT

and vegetation.

9. Promote forest health and sustainability on private forest land by providing education and cost sharing with private forestland owners.
  10. Support the management of non-commercial aspen stands in mixed age groups to provide a source of forage.
  11. Support the use of clearcuts as appropriate on any forest cover type with potential for impact, or impacted by insects or disease.
  12. Support the coordination of timber and fuelwood programs to take advantage of roads constructed for other resource development or use.
  13. Support the use of Christmas tree or other product sales and thinning for stocking control where the opportunity exists.
  14. Support the use of mechanical, chemical, prescribed fire, or wildland fire use to alter or perpetuate timber stands and increase herbaceous yield or cover as appropriate in areas where harvest methods are impractical or demand does not exist.
  15. Support agencies in providing woodland products on a sustainable basis, consistent with maintaining ecosystem health and other resource management objectives to meet local needs where such use does not limit the accomplishment of goals for the management of other important resources.
  16. Support agencies in identifying, maintaining, and restoring forests with late successional characteristics to a pre-fire suppression condition.
  17. Support salvage harvest of wood in beetle-kill areas, when compatible with other resource objectives.
  18. Support agencies in prioritizing fuel reduction treatment in high-value/high-risk areas (wildland-urban-interface, developed recreation facilities including campgrounds, FRCC III).
    - Encourage the removal of drought and beetle killed timber and the appropriate reseedling as soon as practicable after the death of conifer populations to maintain the local timber harvest and production economy and to maintain healthy forests, while protecting our watersheds from catastrophic fires.
    - Cooperate with the staff of the Manti LaSal National Forest to maintain healthy forest systems.
    - Support conifer reduction projects by cutting and harvesting, not by burning, unless not other viable alternate is identified.
    - Improve fire and life safety in the forest land/urban regions of the county.
    - Reduce fuel loading conditions in forests and woodlands.
- Support the State Department of Natural Resources, Division of Forestry, Fire and State Lands.
  - Carbon County GIS and the Commission in 2014 complied with Utah Statute to identify lands in Carbon County that are most susceptible to catastrophic fire regimes. Two areas of highest concern are an area of eastern Carbon County lying parallel to and within the Patmos Ridge traversing through Range Valley into Emery County. The second area and the one with highest risk for fire is located in the area of Fish Creek on on Carbon County's main water source. This land is presently owned by the State of Utah and contains approximately 880 acres of standing conifer timber of which almost 66% is already dead. In 2009 Utah Fire and Forestry recommended that 500 acres of this areas be timbered.
  - Carbon County believes that the State of Utah is required to follow the protocol it has set up and that areas of catastrophic fire should be managed to prevent widespread damage to private property watersheds and rangelands.
  - It is our priority to get areas identified as high risk for catastrophic fires managed appropriately.
  - The ability of all agencies to manage for excessive fuel buildup should be first viewed in the manner of creating local jobs. Timbering by various methods where this timber is paid for to remove should be the 1st consideration before agencies consider spending public funds to accomplish reducing business and work opportunities for local citizens.
  - State and Federal agencies shall allow access to private property for timber management.
  - Pertaining to forest service lands in western Carbon County, all the lands contained in the watershed drainage that constitutes the major proportion of Carbon County's watershed for culinary, agriculture and industrial shall be managed for watershed stability. No areas of roadless or special designation shall impede maintenance and management.
  - Support the removal conifers as determined appropriate, and manage land to promote the establishment of aspen cover and attendant grass, brush and forbs.
  - Encourage timber harvesting to prevent fuel load and bio mass buildup.
  - Encourage the commercial and non-commercial harvesting of forests and woodlands, to the maximum extent possible, through federal agencies' plans and policies.
  - Carbon County encourages federal and state agencies to adopt and maintain scientifically sound forest management policies based on high quality, recently acquired data and to pursue multiple use of public forest resources to provide sustainable and continuous yield of timber, forage, firewood, wildlife, fisheries, recreation and water.

---

## FIRE MANAGEMENT

### DEFINITION

*The actions to control, extinguish, use, prevent, or influence fire for the protection or enhancement of resources as it pertains to wildlands.*

### RELATED RESOURCES

Floodplain and River Terrace, Riparian Areas, Wildlife, Recreation and Tourism, Air Quality, Noxious Weeds, Forest Management

### FINDINGS

#### *Overview*

“Fires are part of a natural process and are needed to maintain a healthy ecosystem. When most of America was still wilderness, wildfires burned 10 times the land that is consumed today. Fires cleanse and regenerate forests, giving new life to the soil, and provide a fresh canvas for biodiversity to paint a new picture” (Utah Department of Public Safety 2014:215).

“Prior to Euro-American settlement in the mid-1800s, fire played an important role in the health and evolution of ecosystems by recycling nutrients, improving soil productivity, and by maintaining biodiversity, community composition, habitat structure, and watershed condition. While the value of fire in ecosystems has only been realized in the recent past, aboriginal Americans noted and made use of fire throughout their time in the region. Historic accounts show that fire was used in localized areas to increase the availability of desirable plants, as a hunting strategy, and to remove available forage in the event that enemies attempted to cross tribal lands. Accounts by friars Domínguez and Escalante, on their exploration into what would become the Utah Territory, reported intentional burning by local Paiute Indians to dissuade the party of explorers that was mistaken for a group of invading Comanche Indians” (USU 2009).

“Due to the alteration of natural fire regimes, significant changes to the vegetation structure, vegetation type, and the natural fire return intervals have occurred. Major ecosystems, including grasslands, sagebrush, sagebrush steppe, and upland forested regions have experienced some of the greatest alterations due to fire suppression policies. The Federal Wildfire Occurrence Dataset indicates that Utah was subject to nearly 24,000 fires between 1980 and 2007. The increased frequency and intensity of fires has had a significant impact on the ecosystems of Utah” (USU 2009).

“Fire suppression efforts have interrupted the natural fire cycle in many intermountain rangeland environments. The frequency, intensity, severity, and seasonality of fire have been altered. Vegetation and wildlife communities have been modified; rangeland productivity has decreased; fuel loads have reached unprecedented levels; fire-tolerant, non-native plants have

proliferated; and catastrophic fires have become common” (USU 2009).

Wildfire is the most prevalent natural disturbance in the state of Utah, and it affects biotic communities statewide (National Interagency Fire Center 2015). It is an integral component of our forest, range, and desert lands and affects thousands of acres on an annual basis.

In less developed areas at lower elevations, a key management concern is the spread of cheatgrass that predominantly invades semidesert shrub communities. Cheatgrass has been blamed for much of the reduction of fire return intervals and the occurrence of larger fires (USU 2009).

Response to fire incidents, especially wildland fires, relies on proper oversight, guidance, and partnership among a variety of trained professional organizations. Establishing a fire management system is a critical step to the protection of both urban and rural communities. Fire management refers to the principles and actions to control, extinguish, use, or influence fire for the protection or enhancement of resources as it pertains to wildlands. It involves a multiple-objective approach strategy including ecosystem restoration, community preparedness, and wildfire response (U.S. Forest Service 2016). Response to a wildland fire can involve a basic monitoring status placed on a remote wilderness fire, or involve multiple agencies overseen by an incident-management team encompassing hundreds of firefighters. Numerous personnel are trained to respond to wildfires throughout the Carbon County area, and the services they provide are dependent upon the role of their organization as assigned during an incident. At a basic level, firefighting resources can be grouped into two broad categories: ground resources and air resources. Often times, both types of resources are dispatched to a fire.

While primarily responsible for structure and accident response, city and town fire departments also provide wildland training and are often the first responders to fires in the urban-interface within incorporated municipalities. These resources are often assigned to structure protection operations.

Wildfires do not adhere to political boundaries, and cooperation among different agencies and jurisdictions covering federal, state, county, municipal, and rural/ volunteer fire departments is essential for successful fire management response. In Utah, the state legislature tasked the Utah Division of Forestry, Fire, and State Lands to devise a comprehensive statewide wildland fire prevention, preparedness, and suppression policy.

#### *Economic Considerations*

Fire suppression is expensive to taxpayers. In the past 30 years, money spent by federal agencies nationwide on firefighting has increased from \$2.5 million in 1985 to well over \$2 billion in 2015 (National Interagency Fire Center 2015). With climate change and expected increases in temperatures and drought

## FIRE MANAGEMENT

periods, fires suppression costs are projected to rise. In Utah, fire suppression costs averaged \$33.4 million per year during the 10-year period from 2003 to 2012 (University of Utah, Bureau of Economic and Business Research 2014). One area of major concern is the wildland-urban interface. As development in this interface continues, firefighting costs will increase (Utah Division of Forestry, Fire, & State Lands 2013).

Wildfires come with serious costs; the cost of fire suppression is only a fraction of the true, total cost associated with a wildfire event. Some of the costs associated with wildfire suppression include the direct costs (resources and structures burned), rehabilitation costs (post-fire floods and land restoration), indirect costs (lost sales and county taxes), and additional costs (loss of life and damage to public health). A synthesis of case studies reveal a range of total wildfire costs anywhere from 2 to 30 times greater than the reported suppression costs (Western Forestry Leadership Coalition 2009).

### *Custom and Culture*

Fire fighting and management is, and always has been, important to citizens in Carbon County. Proper fire prevention, management, and mitigation is critical to protecting the health, safety, and welfare of the county and its residents. As related in A History of Carbon County (1997), fire suppression people have been training and preparing for structure and wildland fires for decades. “After several houses burned down about 1920, Sunnyside established a volunteer fire department and installed fire hydrants throughout the town.”

### OBJECTIVES

- a. Fuels and fires are managed so that the county has no catastrophic wildfires.
- b. All fire management planning within the county, including planning by federal partners, involves active participation from the county.
- c. Fires are managed to protect human life, private property, sensitive species, and the local economy..

### POLICIES

1. Fuel reduction techniques such as conifer reduction, grazing,

prescribed fire, and chemical, biological, and mechanical treatments may be acceptable, given site-specific variables.

2. The county supports comprehensive fire management that helps reduce catastrophic wildfires.
3. Support watershed management, including use of prescribed fire to avoid catastrophic fire, encourage aspen regeneration, remove dead standing trees, manage bark beetle impacts, and increase vegetation and diversity in plant communities.
4. Agencies should avoid scheduling prescribed burns on or around major holiday weekends and whenever the region anticipates significant tourist inflows.
5. Carbon County supports the training and certification of local residents and county personnel as first responders to fires.
  - Work with the private landowner(s), federal, or state agency, in cooperation with Utah Forestry Fire & State Lands to remove fuel load buildup by prescriptive grazing, silviculture prescriptions or mechanical means.
  - Direct the County Forester to contact the Utah Forestry Fire and State Lands, and the US Forest Service regularly to obtain their current inventory of fuel loads.
  - Improve fire and life safety in the forest land/ urban regions of the county.
  - Cooperate with the state and other agencies to adopt forest fire protection plans.
  - BLM and Forest Service should offer funding and opportunities at the local level for many interested in fire training to participate.
  - Carbon County believes that more timbering and other measures to reduce the conifer buildup in our watershed have to be done. Having more than 60 to 70 conifers per acre in our watershed has reduced our water quantity and if this area were to burn it would create a long-term catastrophic effect on our county water supply.
  - Carbon County supports the use of grazing livestock as a most effective and cost efficient way to control fuel load build up and would call upon management agencies to allow the local federal and state land managers the flexibility to increase grazing AUM's as easily as they are decreased to address this problem.





---

## AGRICULTURAL RESOURCES

## AGRICULTURE

### DEFINITION

*Agriculture is the cultivation of plants or animals for fiber, food, fuel, or other products.*

### RELATED RESOURCES

Water Rights, Irrigation, Canals and Ditches, Noxious Weeds, Water Quality, Land Use

### FINDINGS

#### *Overview*

In Carbon County, agriculture provides jobs, local tax base, a variety of environmental benefits, scenic beauty, and food and fiber for human consumption.

According to the 2012 USDA Census of Agriculture, the county maintains 8,260 acres of forage-land, used for all hay and haylage, grass silage, and greenchop. The same study found that 85.9 percent of all farm lands are designated as permanent pasture and rangeland, as opposed to cropland or woodland (USDA 2012). Most agricultural land in the county is involved in the livestock and grazing industry.

There are about 245 farms in Carbon County. About 17 percent of the farms are more than 50 acres. These farms take up close to 20 percent of the total county land cover. The total acreage of irrigated acres in this county is 10,685 (USDA 2012).

“Precipitation across [the area] is equally diverse, but it averages 15 inches annually. The average annual reference evapotranspiration is 12 inches, giving the basin as a whole a net surplus of water. This water balance, however, varies drastically across the basin. Precipitation ranges from 45 inches to just under 7 inches annually across the basin (Utah State University 2009).

In Carbon County, private property owners and farm operators control the agriculture resource. Most crop farming happens on private land with little outside influence. The public agency with the most influence on agriculture in the county is the Natural Resources Conservation Service (NRCS). The county and municipalities have influence over land uses and zoning, which will impact agriculture.

#### *Typical Agronomy Cycle*

“Typical ground preparation for planting alfalfa is begun by spraying Roundup in the fall or early spring to kill the quack grass prior to disking. The ground is then harrowed and planted. The procedure is the same for planting small grains except Roundup is not typically used prior to planting grains. About 98% of all grain is planted in the spring of the year. The most prevalent crop rotation that producers practice is to leave alfalfa in for seven years, plant oats for two years, then replant alfalfa. Producers typically get two to three cuttings of alfalfa each year. About 25% of all inputs (e.g., seed, fertilizer, pesticides, etc.) are purchased

locally while the remaining 75% is bought in a neighboring county” (Utah State University 2005).

#### *State Trends*

Although agriculture plays a significant role in the economic, environmental, and cultural well-being of the county, many farms are in jeopardy. According to the Utah Agriculture Sustainability Task Force (2012), “The number and size of farms and ranches has dramatically changed in Utah. From 1900 to 1990, the number of Utah farms decreased. Beginning in 1990 the number of farms began to increase again. The 2011 Utah Agricultural Statistics report recorded 16,600 farms.”

“Although the number of farms have increased through the 1990s, since 1997 the size of those farms has decreased. Twenty years ago, the average size of a Utah farm was approximately 200 hundred acres larger than it is today” (UDAF 2012).

“The average age of farmers continues to increase nationally and in Utah. Current farmers are aging while still working to maintain their lands. The average age of a Utah farmer is 57. Farming is losing its successors as many children are choosing other occupations. It is more difficult now to transfer the farm to the next generation” (UDAF 2012).

#### *Economic Considerations*

A 2016 report published through Utah State University showed that agriculture contributes more than 15 percent of the state’s total economic output. “Agriculture processing and production sectors combine to account for \$21.2 billion in total economic output in Utah after adjusting for multiplier effects (compared to \$15.2B in 2008)” (Ward and Salisbury 2016). In terms of employment and taxes, the study found, “A total of 79,573 jobs are agriculture related generating compensation \$3.5 billion (compared to 66,500 jobs in 2008),” and that “The agriculture production and processing sectors generate \$497 million in state and local taxes (compared to \$350 million in 2008)” (Ward and Salisbury 2016).

Agriculture in Carbon County is important for the natural, cultural, social, and economic benefits it provides. Agriculture successfully balances those benefits and continues to be a valuable source of jobs and income locally.

The 2012 Census of Agriculture indicated that there were 240,652 acres in farms and ranches in the county, with an average size of 754 acres. The county had 18,247 acres in cropland, of which 5,997 acres were harvested and 10,684 were irrigated. The value of crop sales produced was listed at \$2,433,000 (USDA 2012).

In 2014, total net income from livestock, crops, and associated products inside Carbon County had decreased to \$2.3 million (Economic Profile System 2016).

#### *Custom and Culture*

“While the railroad and coal industry have dominated Carbon

## AGRICULTURE

County's history since the early years of settlement, farming and livestock also have long been important to the economy and have helped to shape the county. County residents often crossed back and forth between mining and farming. Some worked as miners during the fall and winter when the coal mines operated at their peak, then returned to run family farms during the spring and summer. Others worked in the mines for a few years in order to obtain capital to invest in a farm or a herd of sheep and, for a good number of immigrants, a return to the agricultural life they had known before coming to America" (Watt 1997).

"Many farmers in the county experimented with different crops, hoping to obtain higher yields from the soil and better prices from the big processors. The farmers acted as independent businessmen but helped each other with ideas to improve their crops; they also sometimes provided extra labor when their neighbors needed work. Cooperation, trading work, and helping each other were natural parts of farming" (Watt 1997).

Today the county is host to two century farms, owned by Wallace and Gladys Mathis, recognized as operating for over 100 years (UDAF n.d.).

The 2015 Annual Report by the Utah Department of Agriculture and Food states that, "Nearly 95 percent of Utahns believe farming and ranching are important to the future of the state." The preservation of agricultural lands and resources is seen by many to provide tangible value to the state and/or intrinsic character to the lifestyle of its communities.

### OBJECTIVES

- a. Preserve agricultural lands through formation of Agriculture Protection Areas, zoning, and by easing the demand for those lands.
- b. Rural communities have healthy economies that include the agricultural production of food, feed, and fiber.
- c. Agricultural communities within the county are thriving because of innovation and adaptation.
- d. Best agricultural practices, including water saving measures, are standard within the county.
- e. Agricultural land in the county provides open space.
- f. Thriving agriculture helps preserve the culture of the county by providing exposure to traditional Western lifestyle and food production.

### POLICIES

1. Support the development of agricultural products and businesses.
2. Encourage community planning that includes agricultural land preservation.
3. The county recognizes the value of preserving agricultural

land as well as the natural open space that defines the county as a truly unique landscape. As a result, the county will continue to adopt policies and zoning ordinances that reinforce this ethic. This will be balanced with a reasonable-growth-focused approach that recognizes the value of expanded residential and commercial development in the county.

4. Support voluntary efforts initiated by agricultural landowners to create Agriculture Protection Areas covering their properties per state code (Utah Code Title 17/Chapter 41).
5. Preserve agricultural lands through formation of Agriculture Protection Areas, zoning, and by easing the demand for those lands.
6. Pursue ways to preserve open lands and assist farmers to keep these lands in agricultural production if they wish to do so.
7. Carbon County supports legislation requiring that all non-law enforcement or non-military unmanned aircraft, motor vehicle, helicopter, airplane, or camera operators need written permission from the property operator or be considered trespassers and subject to fines and civil penalties.
8. Carbon County shall continue to allow protection zones for agricultural land. Agricultural practices on lands zoned for agricultural use shall have priority use. Any agricultural practice that emits odors, changes to the view shed, or other issues shall be deemed as legal and accepted as long as it is a viable agricultural practice.
9. Carbon County opposes legislation or policy that requires landowners to forfeit any of their property rights to comply with any state or federal programs or actions.
10. Carbon County supports the right of landowners to manage and use their property as they see fit. This might include the right to voluntarily close their private lands to public access.
11. Carbon County opposes the abuse of property rights by trespassing. The county strongly supports property rights and supports legislation or legal actions that would initiate a no-trespass law on all agricultural property in the state.
  - Any animal rights movement to end or restrict production animal agriculture uses the land by attempting to elevate the social status of animals to the same level as humans to accomplish this goal shall not be accepted and deemed a interference of civil rights.
  - Any historical animal husbandry practice pertaining to the breeding, feeding, health, or reproductive care and the slaughtering or euthanasia of livestock and other farm animals used for agricultural purposes will be protected from prosecution.

## LIVESTOCK + GRAZING

### DEFINITION

*Livestock: domesticated animals raised in an agricultural setting to create food, fiber, labor, or other products.*

*Grazing: a method of feeding whereby domestic livestock consume plant material and then convert it into meat, milk, and other products.*

### RELATED RESOURCES

Land Use, Agriculture, Water Quality and Hydrology, Wilderness, Water Rights, Forest Management, Predator Control, Noxious Weeds, Wildlife, Threatened Endangered and Sensitive Species

### FINDINGS

#### *Overview*

At a value of more than \$1 billion, 25 of the state's 29 counties report livestock as the dominant agricultural sector (UDAF 2015b).

The Livestock Grazing in Utah: History and Status (2008) report states, "Rangelands in Utah are primarily administered by the Bureau of Land Management (BLM) and Forest Service (FS). Data from the BLM indicate that use by domestic livestock has declined more than two-thirds over time. Most of this decline has been associated with the reduction of the sheep industry. Similar data for the FS indicate that declines in the use of FS lands have not been as dramatic as on BLM lands, but usage of FS lands today is about half what it was 60 years ago."

Sheep and cattle have been grazed in Carbon County for over 100 years. Rangeland Resources of Utah (2009) describes grazing during the 20th century this way: "The increase in beef cow numbers in Utah has occurred in almost all Utah counties with Box Elder County having the highest numbers . . . It is apparent that some ranchers in counties, such as Utah, Sanpete, Summit, Carbon, Uintah, and Iron, as well as Box Elder (traditionally centers for sheep production), switched to or reallocated their resources to include cattle production" (Godfrey 2008).

As recorded in the 2016 Agricultural Census, there were 11,300 cows in the county; 6,600 were beef cows (Hilton and Gentillon 2016).

- As recorded in the 2016 Agricultural Census there were 11,300 total cows in the County, 6,600 were beef cows retained for breeding. (revised interpretation of the data by Rex Sacco)

In large part, Carbon County private property owners and farm operators control this resource when occurring on private property. Where grazing takes place on public lands, federal land managers are responsible to monitor and enforce regulations and restrictions; however, the allotment operator is still responsible for his livestock and maintaining all range improvements. These improvements are accomplished at the permittee's expense.

#### *Economic Considerations*

Economic trends in Utah are described in Rangeland Resources of Utah (2009): "Utah agriculture is dominated by production of livestock, livestock products, and the production of feed crops utilized in the livestock industry. In nominal terms, agricultural receipts in Utah have increased from \$588 million in 1984 to \$1.3 billion in 2007, a 128 percent increase, while Utah livestock and livestock product receipts have also more than doubled in the same period. The implication is that livestock and livestock receipts have fairly consistently contributed from 71 to 78 percent of all agricultural product receipts over the last 24 years. Beef cattle, dairy cattle, swine, and sheep, in decreasing order, contribute the majority of Utah livestock receipts. In terms of receipts from live animal sales, the cattle and sheep industries' contributions vary from 68 to 79 percent, while the swine industry contributions vary from 20 to 30 percent" (USU 2009).

According to the Economic Profile System via Headwaters Economics (2016), there are approximately 240,652 acres in farms and ranches in the county, with an average size of 754 acres. The county has approximately 206,761 acres of that in permanent pasture and rangeland, making up 85.9 percent of the total agricultural land. The cash receipts from livestock and associated products in the county is about \$9.3 million, which makes up 84 percent of the total agricultural cash receipts (EPS 2016).

As of 2015, farm employment makes up 2.8 percent (312 jobs) of the jobs in the county. 92% of these (288 jobs) are farm proprietors (EPS 2016).

#### *Custom and Culture*

"While the railroad and coal industry have dominated Carbon County's history since the early years of settlement, farming and livestock also have long been important to the economy and have helped to shape the county" (Watt 1997).

"The coal camps became one of the primary consumers of the local farm produce. Local farmers sometimes became peddlers, going from coal camp to coal camp to sell their produce. A few dairy herds were established to supply milk to the camps. Some farmers developed extensive sheep herds and others operated cattle ranches" (Watt 1997).

"[During the 1920s], sheep came to dominate the livestock industry in Carbon County. Large herds, like those of the Star brothers of California and those of some locals, had begun the sheep industry in the county and eastern Utah" (Watt 1997).

"The railroad also brought families of sheepherders to Price. Some sheep owners became prosperous, selling wool and lambs to salesmen who came to town periodically to buy the products. Price became a prosperous western town with freighters, railroad men, sheepmen, and farmers, who were mostly the early Mormon settlers" (Watt 1997).



## LIVESTOCK + GRAZING

“The open public range land was a resource not overlooked by early settlers in Castle Valley. The search for grazing land for the increasing herds in Sanpete Valley brought early visitors into Castle Valley, some of whom, as noted earlier, returned to establish permanent homes. The first domestic herds in Castle Valley were primarily cattle, though horse herds could be found, especially in the eastern part of the county where the large expanses of open land were well suited for horses” (Watt 1997).

### OBJECTIVES

- a. Rural communities have healthy economies with livestock grazing as a contributor.
- b. All resource management planning within the county involves active participation from the county.
- c. AUMs within the county remain at or above current levels unless a scientific need for temporary reduction is demonstrated.
- d. Livestock raising is a vibrant part of the agrarian, Western culture of the county.
- e. Grazing rights are managed under best grazing practices.
- f. All grazing management plans acknowledge and consider the cultural and economic importance of the livestock industry to the county.
- g. AUMs within the county remain at or above current levels unless a scientific need for temporary reduction is demonstrated to the satisfaction of the county.

### POLICIES

1. Encourage upward or stable trends in vegetation and soil condition.
2. Encourage rangeland health, forage, and grazing stability on public lands. Promote the use of good science to establish data used in rangeland decision-making.
3. Encourage the implementation of rangeland improvement projects including brush control, seeding projects, pinion and juniper removal, noxious and invasive weed control, and livestock water developments.
4. Where once-available grazing forage has succeeded to pinion-juniper and other woody vegetation, or where rangeland health has suffered for any other reason, a vigorous program of mechanical treatments such as chaining, logging, seeding, lopping, thinning, burning, and other vegetative treatments

should be applied to remove woody vegetation and stimulate the return of the grazing forage for the mutual benefit of livestock, wildlife, and other agricultural industries.

5. The county supports the ranching industry.
  6. The county values the livestock industry as part of the local economy.
  7. The county encourages livestock operators to keep records of forage yield and utilization rates to help facilitate continued livestock grazing.
  8. The county values livestock grazing as part of the local ranching heritage and culture.
  9. Carbon County supports the concept of multiple-use and sustained yields on public lands. Livestock grazing is an integral part of the multiple-use concept.
  10. Carbon County will support the regional and state Grazing Advisory Boards sanctioned by the UDAF under Chapter 20 of State Code.
  11. Carbon County supports the immediate withdrawal of Department of Interior BLM Policy 1730 – Management of Domestic Sheep and Goats to Sustain Wild Sheep.
  12. Work with the BLM to ensure that the county’s wild horse population is maintained in a vigorous and healthy condition. Allow no more than 100 wild horses, and zero (0) burros.
  13. Work to ensure the continuation and expansion of livestock grazing on public lands. Determine past grazing use in order to assure an equal level of grazing is maintained.
  14. Prohibit the retiring of grazing permits for conservation use on lands found chiefly valuable for grazing by the Taylor Grazing Act, per US Department of Interior Memo M.37008, dated October 4, 2002. Require that any such grazing permits be instead offered to local ranchers first.
- Carbon County requires a No-Net-Loss of active Grazing Permits and AUM’s on a permanent basis. Any AUM’s placed from active to suspended use shall be returned as conditions on the ground support the action. With the use of utilization and trend data this action shall be a local Field Office administrative decision under a Categorical Exclusion (CX) or a Determination of NEPA Adequacy (DNA) if the status change on the AUM’s was less than 5 years.

## NOXIOUS WEEDS

### DEFINITION

*Noxious weeds are plants that are considered harmful to animals or the environment, typically (but not always) nonnative species, which spread rapidly at the expense of native vegetation.*

### RELATED RESOURCES

Forest Management, Fire Management, Agriculture, Livestock and Grazing, Riparian Areas

### FINDINGS

#### *Overview*

There are many species of exotic and invasive weeds in the Utah. Some species have more potential to be “injurious to public health, crops, livestock, land, or other property.” The Utah Noxious Weed Act (2008) defined 28 noxious weed species in three prioritization categories. In 2015, the official State Noxious Weed list was updated to include 54 species, and prioritization categories were modified.

“An increasing threat to rangeland biodiversity and health is the invasion by non-native plant species. Some of the most prevalent and problematic invasive plants include diffuse knapweed (*Centaurea diffusa*), spotted knapweed (*Centaurea maculosa*), yellow starthistle (*Centaurea solstitialis*), leafy spurge (*Euphorbia esula*), and cheatgrass (*Bromus tectorum*). The vast majority of invasive plants have been introduced from other continents. Cheatgrass, the most widespread and dominant invasive plant in the Intermountain West, was introduced during the mid- to late-1800s by means of imported grain from Eurasia. The first records of cheatgrass in the Great Basin came from Provo, Utah, in 1894; Elko, Nevada, in 1905; and Reno, Nevada, in 1906” (USU 2009).

“Invasive plants can have a significant impact on an array of ecological facets. Invasive plants have reduced species richness, plant diversity, and community productivity. Wildlife habitat and forage have been degraded; soil erosion and stream sedimentation have increased; soil moisture and nutrient levels have been depleted; and fire regimes have been altered. As cheatgrass has become a common component of sagebrush steppe vegetation communities, the nutritional quality of forage has been reduced, the intensity and frequency of fires have changed, and water cycles have been altered. Although many factors are involved, several native animals, such as sage grouse, may have declined as a result of these changes” (USU 2009).

“Attempts to manage and eradicate invasive plant species have been made utilizing various control methods. Historically, mechanical and chemical control techniques were the predominant invasive plant management methods; however, biological and cultural control techniques have been implemented and integrated with other practices. Mechanical control techniques include hand-

pulling, hoeing, mowing, tilling, chaining, and bulldozing. Hand-pulling and hoeing are effective in controlling small infestations of shallow-rooted weeds in loose, moist soils. Mowing is commonly used to control invasive range annuals and some perennials; however, the success of mowing is highly dependent on timing. Annuals and some perennials can be suppressed and controlled if mowing occurs before viable seeds form. If not properly timed, mowing can promote the spread of invasive plants by encouraging the spread of seeds and stimulating the production of new stems from vegetative buds. Tilling practices can control annual species, but they rarely provide control of perennial species... More expensive mechanical control techniques, such as chaining and bulldozing, are effective in controlling invasive shrub and tree species. Although these methods require gentler terrain and are becoming increasingly expensive, they are effective in controlling shrubs and trees that do not readily resprout from root systems” (USU 2009).

Noxious weed control and eradication is a top priority for the county. The Noxious Weed Control Plan was adopted in 1998 and is kept current. The county is a transportation corridor for weeds via intra- and inter-state transportation. Weeds are also spread by agriculture, developers, wildlife, light and heavy equipment, and recreation activities. Noxious weeds must be controlled to reduce costs and impacts to taxpayers, property owners, livestock operators, farmers, hunters, fishermen, and backpackers. In Carbon County, the Weed Board is responsible for the control of noxious weeds.

Carbon County is part of the Skyline Cooperative Weed Management Area (CWMA). CWMAs are one of the newest and most effective ways to battle noxious and invading weeds in the United States.

#### *Economic Considerations*

“The invasion of non-native plant species not only produces various ecological modifications, but also results in substantial socioeconomic impacts, particularly to the livestock industry and land management agencies responsible for fire suppression. Invasive plant species cause more economic loss on rangeland than all other pests combined. Invasive plants reduce the carrying capacity for livestock by lowering the forage yield. Consequently, the costs of managing and producing livestock increase” (USU 2009).

“The importance of herbicides in modern weed management is underscored by estimates that losses in the agricultural sector would increase about 500% from \$4.1 billion to \$20 billion per year without the use of herbicides” (Whitesides 2004).

“The implementation of one control method is rarely effective in achieving the desired results for curtailing the spread of invasive plants. Successful long-term and cost effective management programs should integrate a variety of mechanical, chemical, biological, and cultural control techniques. Integrated

## NOXIOUS WEEDS

management involves the deliberate selection, combination, and implementation of effective invasive plant management strategies with due consideration of economic, ecological, and sociological consequences... Presently, there are several examples of integrated strategies used to manage invasive plants and improve rangeland communities. Much attention has been focused on the integration of targeted or prescription grazing with other control methods, as the incorporation of grazing management is an essential component in successfully addressing invasive plant problems” (USU 2009).

Annual economic losses in the United States from weeds are over \$20 billion (Bellison et al. 2009). It is estimated that without the use of herbicides, revenue losses to the agricultural sector would increase by about 500 percent (Whitesides 2004).

The UDWR allocates \$200,000 annually to treat weeds (Berger 2009).

Weeds can reduce range carrying capacity for livestock and grazing, negatively affecting livestock production. For example, Dyer’s woad (*Isatis tinctoria*) infestations can spread 14 percent per year and reduce range carrying capacity by 38 percent (BLM 1985).

According to the Noxious Weeds Field Guide of Utah, “Noxious weeds are currently spreading at a rate of more than 4,600 acres per day on federal lands in the United States” (Bellison et al. 2009).

Wildland fire could also have heavy economic consequences. Contiguous patches of weeds pose significant fire risks, and seeding after wildfire is a necessity to recruit native species rather than weeds.

Agriculture may be negatively impacted by uncontrolled noxious weeds. Costs include direct control costs, crop and seed contamination, and equipment cleaning costs.

### *Custom and Culture*

Early weed control programs are described in A History of Carbon County (1997): “Another New Deal program which benefited the county was the National Youth Administration (NYA), which by the end of the 1930s employed about one hundred youth on several projects. Forty youths worked on a noxious-weed-control program.”

### OBJECTIVES

- a. Comply with the Utah Noxious Weed Act.
- b. Noxious weed infestations are documented, mapped, and being actively managed.
- c. The public is aware of noxious weeds and educated about how to manage noxious weeds.
- d. The county works cooperatively with private, municipal, state, and federal partners to locate and manage noxious

weeds.

- e. Land use practices promote proper ground cover to prevent erosion. Practices which will decrease the growth of noxious weeds, phreatophytes, and high consumptive vegetation are promoted.

### POLICIES

1. Support of the continued use of the tamarisk beetle as a method of controlling the tamarisk species.
2. Remove noxious and invasive vegetation along rivers and streams, followed by revegetation.
3. Agencies should coordinate their pest control regulations and actions with the county.
4. Prevent unacceptable levels of exotic plant damage, using environmentally sound, cost-effective management strategies that pose the least possible risk to people, county resources, and the environment.
5. Control and reduce noxious weeds and poisonous plants using integrated pest management techniques and strategies; including the use of herbicides, biological control agents, and mechanical or hand treatments.
6. Control noxious weeds and poisonous plants in cooperation with public land users and state and local agencies.
7. Treat areas that contain cheatgrass and other invasive or noxious species to minimize competition and favor establishment of desired species.
8. Restoration and rehabilitation activities are required to use certified weed-free seed mixes, mulch, fill, etc.
9. Educate landowners, land users, and recreational visitors about the impacts of noxious and invasive weeds on the land.
10. Increase awareness of the potential devastation to our economy from the spread of noxious weeds.
11. The county supports efforts to secure the agricultural commodities and aesthetic beauty of the county against weed infestations.
12. The county supports wildfire suppression efforts through weed control.
13. Continue to encourage, coordinate with, and participate in public land management agency projects to implement an aggressive noxious weed and invasive species control operation on all of the lands they manage.
14. In an effort to reduce amendments to the county plan, Carbon County will depend on the State of Utah to identify, list, and prioritize in categories noxious weeds in Utah (Rule R68-9-2, November 1, 2016).
15. Monitoring of control measures is necessary to determine

---

## NOXIOUS WEEDS

the effectiveness and costs of management practices.

16. Carbon County recognizes that grazing fees charged on SITLA lands and a portion of the grazing fees charged on public lands go directly to the control of noxious weeds and invasive plants.
17. Where appropriate, using livestock to reduce noxious weeds is encouraged.
18. Assist federal land management agencies in identifying, preventing, and suppressing noxious weeds by:
  - Controlling the spread of noxious weeds;
  - Preventing the establishment of new infestations;
  - Eradicating species of noxious weeds where possible; and
  - Containing areas of infestation.
- The list of officially designated noxious weeds are listed. The authority to enforce the Act is vested in the Commissioner of Agriculture and Food under Section 4-17-3: There are five designated classes of noxious weeds in Utah: Class 1A (EDRR

Watch List), Class 1 (EDRR), Class 2 (Control), Class 3 (Containment), and Class 4 (Prohibited for sale or propagation). To access this list of rules and list go to: <http://www.rules.utah.gov/publicat/codificationsegue.htm>

- Support the use research data as a guide to implementation of ways to control or eradicate noxious and invasive plants. Biased of grazing that promotes more expensive and less productive solutions is not acceptable.
- The county encourages the Agencies to protect public lands bordering private lands from predatory animals, rodents, noxious weeds and vectors.
- Agencies should prepare and implement plans for controlling predatory animals, rodents, Insects, and noxious weeds in accordance with the practices advocated by the Utah Department of Food and Agriculture and Department of Wildlife Resources.





---

## **MINERAL RESOURCES**

---

# MINERALS

## DEFINITION

*Natural resources in the form of minerals (solid inorganic substances).*

## RELATED RESOURCES

Water Rights, Land Use, Air Quality, Water Quality and Hydrology, Energy, Mining, Cultural, Historical, Geological, and Paleontological, Land Access

## FINDINGS

### *Overview*

Mineral resources are deposits or occurrences of inorganic materials with intrinsic economic value (such as ore, aggregate, oil, and gas) that may be extracted from the earth's crust. Mineral resources are regulated and managed based on type, and are grouped into three categories: locatable, leasable, and saleable.

### *Locatable Minerals*

This category includes high-value minerals such as gold, silver, and copper (metallics and non-metallics) that are subject to the Mining Law of 1872 as amended by 30 USC 2. Under the Mining Law, mining claims can be filed for these minerals. The category also includes certain industrial minerals such as gypsum, chemical grade limestone, and chemical grade silica sand. Uncommon varieties of mineral materials such as pozzolan, pumice, decorative rock, and cinders may also be regulated as locatable minerals if demonstrated to have unique market value.

### *Leasable Minerals*

This category includes gas, oil, oil shale, coal, oil sands, phosphate, and geothermal resources, which are subject to the Mineral Leasing Act of 1920, as amended and supplemented (30 USC 181, et. seq.), the Mineral Leasing Act for Acquired Lands as amended (30 USC 351-359), and the Geothermal Steam Act of 1970 (30 USC 1001-1025).

For more information on minerals with an energy potential (oil, natural gas, coal, etc.), see the "Energy" section of the RMP.

### *Saleable Minerals*

This category includes more common mineral resources such as sand, stone, gravel, pumice, clay, and petrified wood. Regulation of these minerals on public lands is authorized by 30 USC 601. State and private lands are regulated by state, county, and local jurisdiction and land use codes.

### *Metallic Mineral Resources*

Carbon County has very few metallic mineral resources. Only very minor production of metallic minerals, mostly copper and

manganese, has occurred in the county. None of the known occurrences has much potential for significant development, and there is very limited potential for discovery of significant new metallic mineral deposits (Gloyn et al. 2003).

### *Gold*

No well-documented occurrences of gold are known in Carbon County (Gloyn et al. 2003).

### *Manganese*

No current exploration or development activity for manganese is known in Carbon County, and there are no active or suspended mine permits, nor any Notices of Intent to Explore for manganese in the area (Gloyn et al. 2003).

### *Copper*

"Undiscovered similar deposits are probably present in Emery County but would be uneconomic. The total amount of copper mined in Carbon and Emery Counties was probably less than 300,000 pounds (140,000 kg), and most was as a byproduct of uranium mining and was not recovered. There is limited, highly speculative potential for 'geologic target types' of copper that, if discovered, would have a better chance for development" (Gloyn et al. 2003).

### *Industrial Rock*

Industrial rocks and minerals are any rock, mineral, or naturally occurring substance of economic value, but exclusive of metallic ores (gold, silver, etc.) and mineral fuels (oil, gas, coal, etc.). Industrial rocks and minerals include clay, phosphate, gravel and sand, salt, fluorite, building stone, potash, zeolite, and many others.

"Good-quality sand and gravel is scarce in Carbon County. Most of the usable sand and gravel is found in a series of pediments related to erosion of the Book Cliffs and Wasatch Plateau . . . A small amount of sand and gravel deposited by active streams is present but is only found on the floors of steep-sided canyons and is commonly inaccessible" (Gloyn et al. 2003).

"Past exploration was driven largely by the need to find suitable material for public works projects in the area. The only known systematic exploration for sand and gravel was done in support of Interstate Highway 70 construction during the 1960s" (Gloyn et al. 2003).

New sand and gravel deposits will be developed as demand grows in Carbon County; however, it is uncertain how much of the demand can be satisfied by deposits within the county, particularly when higher quality material is needed. It may be more economic to import some sand and gravel from surrounding counties (Gloyn et al. 2003).

### *Control and Influence*

## MINERALS

The Utah Legislature has assigned the Utah Division of Oil, Gas and Mining (DOG M) responsibility for regulating mineral exploration, development, extraction, and reclamation on “all lands in the state of Utah lawfully subject to its police power. No political subdivision of this state shall enact laws, regulations, or ordinances which are inconsistent with this act.” This includes federal, state, and private lands, but it does not include land on Indian Reservations (P. Baker, DOGM, personal communication). These regulations are spelled out by The Mined Land Reclamation Act (1975). The BLM and USFS have their own regulations which may vary slightly from those of the state. On public land, mineral surveying and extraction is subject to “dual regulation,” meaning both DOGM regulations and the regulations set by the BLM or USFS must be followed.

“The U.S. Bureau of Land Management (BLM) is the main federal administrative agency for oil and gas, minerals (locatable, leasable, and saleable), and coal. The agency is responsible for administering these resources on BLM land and on selected parts of other federal lands with the concurrence of the surface owner or administering agency” (Gloyn et al. 2003).

“Over half of the acreage in Carbon County...is not held by the Federal Government. This non-federal acreage belongs to either private land holders including individuals and corporations or the Utah School and Institutional Trust Lands Administration (SITLA). Much of this land is or could be available for lease or purchase under conditions set by the owner” (Gloyn et al. 2003).

### *Economic Considerations*

“The majority of Utah’s mineral revenue money, distributed by the state, goes to ‘counties of origin,’ or where revenues are generated. Former Carbon Commissioner Mike Milovich said of the funding, ‘That mineral lease money has literally been the lifeblood of rural Utah’ (O’Donoghue, 2013, March 28)” (Yonk 2013).

All mineral resources have a large impact on Carbon County’s economy.

### *Custom and Culture*

Approximately 77 percent of survey respondents in Carbon and Emery Counties support increasing, or maintaining the current level of, mineral exploration and extraction activities on public lands (Krannich 2008).

Utah’s growing population requires ever-increasing supplies of affordable industrial minerals for construction, agricultural, and industrial uses to maintain the present quality of life.

## OBJECTIVES

- a. Resource extraction such as coal mining and coalbed methane

extraction are the mainstay of the county’s employment and tax base.

- b. Carbon resources and other valuable minerals continue to be a major source of income to residents.
- c. Minerals generally remain open to exploration, extraction, use and transfer to use facilities.

## POLICIES

1. Work with federal agencies to streamline the permitting process locally for extractive industries.
  2. Maintain a continuing yield of mineral resources in the Carbon County region at the highest reasonable sustainable levels.
  3. Encourage extractive industries to be in compliance with federal, state, and county laws and regulations, while protecting multiple-use concepts and rights to access.
  4. Minimize or avoid adverse impacts on surface resources.
  5. Ensure that adequate reclamation of disturbed areas is accomplished.
  6. Allow mineral leasing where it has been determined that stipulated methods of mining will not affect the watershed values to any significant degree.
  7. Carbon County supports the concept of multiple-use and sustained yields on public lands. Use includes mineral exploration, development, extraction, and transportation.
  8. The exploration, development, extraction, and transportation of coal, oil, gas, and gravel provide jobs and services within Carbon County. Carbon County will continue to support and protect these activities.
- Lands shown to have reasonable mineral potential in the Public Lands Region should be open to oil and gas leasing with stipulations and conditions that will protect the lands against unreasonable and irreparable damage to other significant resource values. This should include reasonable and effective mitigation and reclamation measures and bonding for such where necessary.
  - Carbon County is witness to the fact that the science used to inventory the resources on our federal lands is almost exclusively paid for by natural resource productions companies in Carbon County. The federal agencies mandate in FLPMA; to inventory the natural resources on federal lands by the surveys and exploration is in fact done at these production company’s expense. The same is true for cultural and historic properties on federal lands under the National Historic Preservation Act.
  - Work with federal agencies to streamline the permitting process locally for extractive industries.

## MINING

### DEFINITION

*The process or industry of extracting minerals or other geological materials from a mine.*

### RELATED RESOURCES

Water Rights, Land use, Air Quality, Water Quality and Hydrology, Energy, Mineral Resources, Cultural, Historical, Geological, and Paleontological, Land Access

### FINDINGS

#### *Overview*

Several mining companies operate on lands in Carbon County. Coal is by far the most prevalent mineable resource, and no other metal mines were operating as of 2014 (Boden et al. 2014).

The Utah Legislature has assigned the Utah Division of Oil, Gas and Mining (DOG M) responsibility for regulating mineral exploration, development, extraction, and reclamation on “all lands in the state of Utah lawfully subject to its police power. No political subdivision of this state shall enact laws, regulations, or ordinances which are inconsistent with this act.” This includes federal, state, and private lands, but it does not include land on Indian Reservations (P. Baker, DOGM, personal communication). These regulations are spelled out by the Mined Land Reclamation Act (1975). The BLM and USFS have their own regulations, which may vary slightly from those of the state. On public land, mineral surveying and extraction is subject to “dual regulation,” meaning both DOGM regulations and the regulations set by the BLM or USFS must be followed.

For regulation of mineral ore mining, the DOGM administers permitting, inspection, and enforcement procedures under the Utah Mined Land Reclamation Act. All large mining operations within the state are required to have an approved Notice of Intention with the Minerals Program prior to beginning operations. Mining operations are broken up into the three categories: (1) large mine, (2) small mine, and (3) exploration under the Minerals Rules. The DOGM maintains a permit database of active and reclaimed mine sites. The DOGM Minerals Program regulates all mining operations as defined in the Utah Mined Land Reclamation Act.

For coal mining, the State of Utah obtained primacy for regulation and reclamation under the federal Surface Mining Control and Reclamation Act of 1977 (SMCRA).

For oil and gas, DOGM obtained primacy in 1982 from the Environmental Protection Agency (EPA) for regulation of Class II Water Injection Wells; this program regulates disposal of produced water from oil and gas wells, and reinjection of fluids for pressure maintenance and secondary recovery

operations in oil and gas fields.

The State of Utah, the USFS, and the BLM require land reclamation bonds on mining operations. The purpose of these bonds is to create a financial surety that the state or land management agency can use to reclaim the land if the operator is unable or unwilling. Disturbances caused by the mining operation must be rehabilitated to either the original state, or a degree agreed upon by the company and the agency. Mining operations on public land need a bond which may be held by either the federal agency or the state (P. Baker, DOGM, personal communication).

#### *Economic Considerations*

The 2014 report from the U.S. Census Bureau showed that mining and its related activities made up 11.1 percent of the total private employment in Carbon County, nearly all of which came from coal mining. Because of changes in the market, these kinds of jobs often follow a cyclical “boom-and-bust” pattern (EPS 2017).

In 2015, mining contributed just over \$3 billion directly to the gross domestic product (GDP) of Utah, making up about 2.3 percent of the state’s total GDP (National Mining Association 2016). In 2014, Utah produced 1.8 percent of the coal in the United States; 30 percent of that production was shipped out of the state (U.S. Energy Information Administration 2016). Employment in mining especially has changed in recent years; as of March 2016, 9,500 miners were employed in Utah, which was down 12.8 percent from March 2015 (Department of Workforce Services 2016).

#### *Custom and Culture*

“During the early 1880s the Denver and Rio Grande Western Railroad, looking for a route from Denver to Salt Lake City, discovered vast coal fields in Carbon County. Coal mining became a big part of the county. Coal companies built lots of company towns. They brought in southern and eastern European and Japanese laborers to work in the mines and on railroad gangs. Helper became known as the town of “57 Varieties” because of its ethnic diversity. Mine explosions near Scofield in 1900 (200 killed) and at Castle Gate in 1924 (172 killed) and major strikes in 1903-4, 1922, and 1933 brought tragedy, violence, and eventual unionization to the mines” (USDA 2012).

“The story of coal mining in Carbon County began with the most primitive pick and shovel methods and advanced during the next century and a quarter to include the use of the most sophisticated mining equipment in the coal mining industry. As mechanization advanced, the need for thousands of toiling miners declined. Still, coal production increased significantly even with fewer and fewer miners” (Watt 1997).

“Mine engineers laid mines out like a large city. They had a

---

## MINING

main portal with side laterals or tunnels going off from the main entry. In larger mines such as Castle Gate and Sunnyside, side entries took off from the side lateral tunnels, and from these entries men would mine the coal” (Watt 1997).

“Today’s mining operations include constant monitoring of gas levels and extensive use of rock dusting and water sprinkling systems to keep the dust to a minimum. Safety laws, rules, and regulations have helped in making coal mines safer. Shields on the ceiling have also contributed to mining safety” (Watt 1997).

The Carbon County Master Plan (1997) explains, “As evidenced by our name, Carbon County was founded on the industry of coal extraction. It is central to our history, custom, culture and livelihood. Our many carbon resources and other valuable minerals will continue to be the major source of income to residents.”

Utah’s growing population requires ever-increasing supplies of affordable industrial minerals for construction, agricultural, and industrial uses to maintain the present quality of life.

### OBJECTIVES

- a. The county has consistent and successful coordination with federal and state agencies.
- b. The county’s mining economy is stable and provides a steady

tax base rather than quick boom and bust cycle.

- c. All decisions regarding where mineral extraction is permitted within the county involve active participation from the county.
- d. Plans are allowed the flexibility to allow for new technology and scientific information use for exploration, extraction and transfer of mining resources.

### POLICIES

1. Support the long-term viability of the coal industry, while also diversifying and strengthening other economic drivers.
  2. The county supports the mining industry.
  3. The county encourages responsible mineral extraction.
  4. The county values mining as part of the local custom and culture.
  5. Protest and actively challenge any actions that prevent energy development activities in Carbon County, and that result in job losses or the need for our citizens to move in order to find work.
- Continue to support industry and the technical training locally needed for our citizens to keep our population working in Carbon County allowing them the opportunity to have the same quality of life as the rest of the nation.



# ENERGY

## DEFINITION

*Renewable or nonrenewable resources used to obtain energy.*

## RELATED RESOURCES

Mining, Mineral Resources, Cultural, Historical, Geological, and Paleontological, Water Quality and Hydrology, Water Rights, Air Quality, Land Use

## FINDINGS

### *Coal*

“Coal is the remains of plant material preserved in stratified layers in the earth’s crust. Mining of coal beds in Utah is conducted mainly to provide fuel for the electric power generation industry, as well as for some commercial and industrial uses. During 2003, coal mining was conducted at 11 underground coal mines using highly mechanized techniques to recover coal from coalfields in central Utah (Carbon, Emery, Sanpete, and Sevier Counties). Movable coal occurs in beds greater than four feet thick and at depths generally less than 3,000 feet deep” (RPG 2005).

“Carbon and Emery Counties include all or part of three of the state’s 22 coalfields: the Wasatch Plateau, Book Cliffs, and Emery coalfields. These three coalfields, each of which originally contained a resource of over 2 billion short tons of minable coal, make up nearly half of the coal resources of the state’s six major fields, and together contain about one-third of the state’s coal resources” (Boden et al. 2014).

“The Book Cliffs coalfield extends 70 miles (112 km) across northern Carbon and eastern Emery Counties, with an average width of 4 miles (6.4 km) (Doelling 1972). The field parallels a line of the Union Pacific Railroad, which gives mine operators in this field a distinct transportation advantage over the mine operators in other Utah coalfields” (Boden et al. 2014).

“Canyon Fuel Company’s Skyline mine, located in the Wasatch Plateau coalfield, is currently mining in the Lower O’Connor ‘A’ bed on their Winter Quarters lease in Carbon County. Production from this bed increased significantly in 2014 to 4.2 million st [short ton] and should remain at about this level in 2015. Canyon Fuel estimates that about 11.8 million st of coal can be recovered from current leases. Future production at the Skyline mine could come from the adjacent unleased federal Flat Canyon tract, estimated to contain 25 to 30 million st of recoverable coal reserves, and will hopefully be put up for lease during 2015” (Boden et al. 2014).

“Coal resin, or resinite, is a potentially valuable product used by the ink, plastics, paint, and other industries that has been produced as a byproduct of coal mining in Carbon [County] in the past but is not currently being produced” (Boden et al. 2014).

“The Utah coal industry is highly competitive and production has become concentrated among fewer, but larger, mines. In 1982, for example, 29 coal mines were operated by 16 companies, but pg. 34

by 2000 there were only 12 coal mines operated by six parent companies, and all of the operating mines were in either the Book Cliffs or the Wasatch Plateau coalfield” (Boden et al. 2014).

“Coal mining in the state accounted for \$579 million of production in 2013, which was 15.3 percent below the peak production value in 2009 of \$684 million. The price per ton increased 9.5 percent during this time as the amount of coal mined in the state fell 22.7 percent, leading to the decreased total value of production” (Governor’s Office of Energy Development 2014).

The boom and bust cycle that follows the energy extraction economy has recently impacted Utah coal mines. “The demand for Utah coal has sharply decreased over the past few years as power plants have switched from coal- to natural-gas-fired generation. In particular, several coal-fired generation plants in California and Nevada, both significant markets for Utah coal, are closing or converting to natural gas to comply with stricter air quality standards. For example, the Carbon coal-fired power plant outside Helper, Utah, closed in April 2015 as it was cost prohibitive to retrofit the old plant with new EPA-mandated emission reducing technology. This removed about 600,000 st of coal from the Utah market” (Boden et al. 2014). Communities that rely on this resource are exploring new opportunities to export coal internationally, and filling the need for clean coal.

Recognizing that Utah contains a wealth of coal resources, the current state position is one of promoting the prudent and sustainable development of critical coal resources to provide low-cost energy for electric power and industrial needs in Utah, and preserving adequate access to explore and develop those coal resources.

Per Utah Statute at 40-10-1, et seq., coal is regulated by the Division of Oil, Gas, and Mining (DOGGM) under a primacy program for the U.S. Office of Surface Mining (OSM), Department of Interior. Coal development on public land is similarly regulated under the same program and is addressed in a cooperative agreement between the state and OSM. The majority of the monies for coal regulation are from federal sources.

### *Oil, Oil Shale, Oil Sands*

“In 2013, Utah ranked as the 11th largest producer of crude oil in the United States. In 2011, crude oil made up approximately 13% of Utah’s total produced energy resources. Crude oil also accounts for 33% of the energy consumed by Utahns” (Governor’s Office of Energy Development 2014).

“Oil shale and tar sands are two natural resources that can be converted into petroleum products. Utah contains some of the largest deposits in the world of both of these materials. It is estimated that the United States reserves of oil shale are 1.6 trillion barrels, with Utah reserves at approximately 499 billion barrels. The United States estimate for measured reserves of tar sands is 22.6 billion barrels, with 14 to 15 billion barrels of measured reserves in Utah... These oil substitutes become more

## ENERGY

financially-viable resources as the price of traditional oil goes up” (USU 2009).

“Production [of hydrocarbons] in Carbon County is from carbonate, sandstone, shale, and coal reservoirs that range in age from Triassic to Tertiary and occur at depths of 1,300 to 6,500 feet (400- 2,000 m)” (Gloyn et al. 2003).

There are 11 active fields with 496 producing wells in Carbon County. The cumulative lifetime production of oil in the county as of 2016 totals 800,519 barrels. Over 324,000 of these barrels were extracted between 2012 and 2016 (DOGM 2017).

“Fifteen oil-impregnated rock deposits are known in Carbon and Emery Counties. The deposits can be divided into a southern group mostly around the San Rafael Swell and a northern group on the south flank of the Uinta Basin” (Gloyn et al. 2003).

“Total oil shale resources in Carbon County could be as high as 1.5 to 2.0 billion barrels of oil, but the oil shale beds are thin (15 to 40 feet [4.5-12 m]) and low grade, generally less than 25 gallons per ton” (Gloyn et al. 2003).

Oil and gas conservation is enforced by DOGM under Utah Code 40-6-1, et seq. Not only are the environmental effects of oil and gas development and certain aspects of seismic exploration addressed by this DOGM program, the conservation of oil and gas is assured as well. The program prevents the drilling of unnecessary wells, assures that the correlative rights of mineral owners are protected, and that all who are eligible to share in proceeds of production do so proportionately to their ownership interest.

### *Natural Gas*

“Natural gas made the second-largest contribution to the value of fuel commodities produced in Utah during 2014, with an estimated value of \$2.4 billion (including natural gas liquids), a \$245 million (12%) increase from 2013. About 96% of the gas produced in Utah during 2014 came from Uintah, Carbon, Duchesne, and San Juan Counties (in decreasing production order)” (Boden et al. 2014).

As of 2016, Carbon County has the third largest cumulative lifetime production of natural gas in Utah, totalling over 1,588,000,000 thousand cubic feet (MCF). Over 331,000,000 MCF were produced between 2012 and 2016 (DOGM 2017).

“There is good potential in Carbon [County] for significant new gas discoveries and additional development, but the potential for significant new oil discoveries or development is much lower. Oil production should continue to decline, but gas production, particularly from coal-bed gas wells, should continue to increase as more wells are drilled and then level off as the reservoirs become depleted” (Gloyn et al. 2003).

“The known deposits contain an estimated 3,500 to 75,000 million barrels of oil (in-place resource), but most deposits are low grade and unlikely to be developed in the future. The

best deposit in the two counties is the Sunnyside-Jacks Canyon deposit in northeastern Carbon County. It contains an estimated 3,500 to over 6,000 million barrels of oil at an average estimated grade of 13 (Campbell and Ritzma, 1979) to 20.5...” (Gloyn et al. 2003).

### *Coal-bed Methane*

Coalbed methane wells are classified as gas wells in the state of Utah. The first coalbed methane production in Utah occurred in 1987 (DOGM 2017).

“Gas production had been declining in both counties but dramatically increased in Carbon County beginning in 1993 with the exploitation of coal-bed methane from the Ferron Sandstone and Blackhawk Formation. The number of wells and resulting success have increased during this same period” (Gloyn et al. 2003).

“Potential for additional coal-bed methane development in Carbon and Emery Counties exists in: (1) the Blackhawk Formation in western Carbon County, (2) the deeper Ferron Sandstone in western Carbon and Emery Counties, and (3) the Emery Sandstone Member of the Mancos Shale in western Carbon and Emery Counties. There is little or no potential for coal-bed gas development in the Blackhawk Formation in the Wasatch Plateau coalfield or in the Ferron Sandstone in the southern Emery coalfield because the coals are either too shallow, too dissected, or too faulted to have retained any coal-bed gas that might have been generated. The most likely development would be in the Blackhawk Formation in the Castlegate and western Soldier Canyon areas where the coals are thicker and at sufficient depths to retain coal-bed gas” (Gloyn et al. 2003).

As of 2016, Carbon County has the largest reported cumulative lifetime production of coal-bed methane in Utah, totalling over 1,065,000,000 MCF. Over 151,490,000 MCF were produced between 2012 and 2016 (DOGM 2017).

### *Nuclear*

“Since 1988 there has been no uranium or vanadium mining in Carbon [County]” (Gloyn et al. 2003).

### *Wind*

Several potential wind energy sites have been identified in Carbon County by the Utah Department of Natural Resources (DNR). The Ford Ridge site, near the Price River, has a potential to create 200 megawatts of energy because of the high winds along the ridge. The Schofield and Argyle Ridge sites are within Carbon County, and also have high potential production (Berry et al. 2009).

Wind turbine technologies continue to improve and turbines are now able to generate economically competitive electricity in lower wind speed areas through the use of longer turbine blades, taller hub heights, and advanced controls. Also, improvements in

## ENERGY

wind resource forecasting, wind plant control technologies, and energy storage now allow wind plants to generate electricity at a smoother, more consistent rate than in the past. These factors enable more accurate predictions of output for management by the electric utilities that generate and/or purchase the power generated by wind projects (Four Corners Wind Resource Center, unpublished report).

### *Solar*

The landscape of Carbon County is not ideal for solar power production. No priority solar zones were identified in the 2009 Utah Renewable Energy Zones Task Force report.

### *Economic Considerations*

“Coal will continue to be a major economic resource for Carbon and Emery Counties for at least the next 40 to 50 years. In the Book Cliffs coalfield several new mines are in development and production should increase. . . Remaining recoverable reserves in the Book Cliffs coalfield are estimated at 752 million short tons (688 million metric tons) of coal, sufficient for 125 years of production at the planned production rate of 6 MM tpy” (Gloyn et al. 2003).

The 2014 report from the U.S. Census Bureau showed mining, and its related activities, made up 11.1% of the total private employment in Carbon County, nearly all of which came from coal mining. Because of changes in the market, these kinds of jobs often follow a cyclical “boom-and-bust” pattern. U.S. Department of Commerce

“Employment directly related to energy produces earning at a rate almost twice that of other jobs in the state. Energy employment generated \$2.853 billion in wages in 2013. The energy sector generated state and local taxes, fees, and royalties of \$656 Million in FY2013” (Utah Office of Energy Development 2015).

“The energy sector in Utah is also responsible for considerable revenues for state and local governments. In total, approximately \$655.6 million was generated by the energy industry by way of taxes, fees, and federal government distributions. With an estimated \$15.8 billion in property value, the sector generates approximately \$189 million in annual property taxes for state and local governments. Notably, these revenues continued increasing throughout the Great Recession, a time when government revenues were declining and demand for services increased. The energy sector provided increased stability for the state’s finances during a challenging period in history” (Utah Office of Energy Development 2015).

### *Custom and Culture*

“The significance of coal to the Carbon County area is reflected in the choice of Carbon—the primary element of coal—for the name of the county. Coal fueled the early industrial development

of the United States and was a much sought-after resource by Brigham Young and other leaders of pioneer Utah. Coal would heat homes, businesses, and public buildings. It would power Utah’s railroads, and, if a high enough quality could be found and turned into coke, coal would also fuel the smelting and refining of the state’s iron, copper, and other mineral ores. Without coal, there was little chance for Utah to develop industrially or, in the era that preceded natural gas and electricity as sources” (Watt 1997).

Over 90% of survey respondents in Carbon and Emery Counties said that energy resources such as coal, oil, and gas were either moderately or very important to the quality of life for them and their families (Krannich 2008).

The Public Lands Addendum to the Carbon Master Plan explains, “As evidenced by our name, Carbon County was founded on the industry of coal extraction. It is central to our history, custom, culture and livelihood. Our many carbon resources and other valuable minerals will continue to be the major source of income to residents.”

### OBJECTIVES

- a. Lands are managed for multiple uses, including energy development.

### POLICIES

1. Work with federal agencies to streamline the permitting process locally for extractive industries.
2. Encourage extractive industries to be in compliance with federal, state, and local laws and regulations, while protecting multiple-use concepts and rights to access.
3. Challenge any policies that inhibit coal, oil, and gas operations within the realm of good management practices.
  - Oppose any Coal Moratorium actions.
  - Before prohibitions are levied, data to prove a problem needs to be scrutinized by the Federal Data Quality Act
  - Impacts of natural resources use needs to be viewed on a basis that considers not just environmental impact but also impacts to the local communities and its citizens for job losses and infrastructure reductions.
  - Although the majority of the coal rights and most of the mineral rights for gas, oil and coalbed methane are owned by either the State of Utah or the Federal Government. This makes all counties that derive a substantial amount of their employment and income from these industries dependent on federal and or state agency regulations without any input. Carbon County requires adherence to policies and regulations that give equal consideration to the impact to the human environment equally with environmental consequences.





---

# WATER RESOURCES

## WATER QUALITY + HYDROLOGY

### DEFINITION

*Water quality is the condition of water based on biological, chemical, and physical properties. Hydrology is the science of the distribution, effects, and properties of water.*

### RELATED RESOURCES

Land Use, Fire Management, Wild and Scenic Rivers, Wetlands, Water Rights, Canals and Ditches, Irrigation, Livestock and Grazing, Riparian Areas, Recreation and Tourism, Fisheries, Threatened, Endangered, and Sensitive Species, Agriculture

### FINDINGS

#### *Hydrology*

The hydrologic cycle describes movement of water on earth. Some of the processes by which water moves include: precipitation, infiltration (soil moisture and groundwater), and streamflow. In order to account for the distribution of water within a specific area, it is necessary to consider these processes. The watershed is one measure used to quantify and analyze water and its effects at a specific location. A watershed, or drainage basin, is an area of land in which all water within drains to the same outlet. Watersheds are home to a variety of plant life including: bacteria, grasses, forbs, shrubs, and trees. Additionally, the watershed ecosystems in Utah support protozoa, invertebrates, amphibians, reptiles, fish, birds, and mammals.

Carbon County is almost completely within the Lower Green River Basin watershed, which has “the broadest elevation range of any of the basins in the state . . . This basin stretches from the desert to the alpine zones, and the different types of vegetation communities and land uses reflect this diversity . . . Precipitation across this basin is equally diverse, but it averages 15 inches annually. The average annual reference evapotranspiration is 12 inches, giving the basin as a whole a net surplus of water. This water balance, however, varies drastically across the basin. Precipitation ranges from 45 inches to just under 7 inches annually across the basin. Reference evapotranspiration ranges from 5 inches to under 16 inches, with an inverse relationship with precipitation. This means that the upper elevation areas that receive the most precipitation have the least amount of loss due to evapotranspiration” (USU 2009).

As water enters and flows through a watershed, a fraction of the water infiltrates into the ground and recharges underground aquifers. Groundwater from wells is also a critical resource for culinary and agricultural water supplies.

#### *Water Quality*

In Utah, water quality is regulated by the Division of Water Quality. Regulation is based on the source of pollutants entering waterways, defined as either “point source” or “nonpoint source” pollution. Point sources (PS) discharge

pollutants directly into a waterbody, usually through pipes or ditches originating from industries or waste treatment plants. Nonpoint sources (NPS) are pollution sources that do not originate from distinct locations and tend to vary in time and space. Nonpoint source pollution occurs when runoff from rainfall or snowmelt pick up pollutants from the human and natural landscape and transport them indirectly to a waterbody.

Water quality characteristics include:

- Conductivity
- Dissolved oxygen
- Nutrients
- pH
- Suspended sediment
- Water temperature
- Turbidity

The Price River Enhancement Committee was formed to address the growing concern of water quality degradation and noxious weed invasion along the Price River (USU 2012).

#### Control and Influence

Point source pollutants are highly regulated under the Clean Water Act of 1972 and Water Quality Act of 1987 through the issuance of permits and possible fines if permit requirements are not met. The U.S. Environmental Protection Agency (EPA) issues discharge permits within the National Pollutant Discharge Elimination System (NPDES). The State of Utah was granted primacy by EPA to manage the NPDES permitting program as the Utah Pollution Discharge and Elimination System (UPDES) and is operated by the Utah Department of Environmental Quality Division of Water Quality (DWQ).

#### *Economic Considerations*

In 2011, recreational fishing in Utah’s lakes, streams, and rivers brought in \$259 million. This includes the cost of equipment and multipliers like lodging, retail purchases, and dining in restaurants. Fishing relies on good water quality and hydrology. In 2012, a study of outdoor recreation found that \$1.2 billion was spent for water related activities in Utah. It is more cost effective to protect the water resource at its source and prevent contamination than to treat it in a wastewater treatment plant. “Nationwide, every \$1 spent on source water protection saves an average of \$27 in wastewater treatment costs” (Utah Division of Water Quality 2013).

Prepare60, a center established by four water conservancy districts in Utah, published a 2014 report illustrating that \$17.9 billion spent on water infrastructure maintenance alone enables \$5.4 trillion in ongoing economic activity. An investment in water resources of \$15 billion would create 930,000 new jobs, \$93 billion in incremental economic output, and \$71 billion in additional personal income (Aguero 2014).

#### *Custom and Culture*

## WATER QUALITY + HYDROLOGY

According to a 2008 survey, Utah residents “generally considered water resources used for agriculture, homes, and businesses, and that provide fish and wildlife habitat...to be most important for local quality of life” compared to other public land resources (Krannich 2008).

Water quality, hydrology, and watershed systems are essential to sustain life and industry, as well as the built and natural environments in Carbon County. This precious resource has been, and always will be, the lifeblood of the county.

### OBJECTIVES

- a. Carbon County participates in the management of watersheds on public and private lands to optimize quality and quantity of water.
- b. The public understands the importance of managing water resources for future sustainability.
- c. Water quality plans are developed in cooperation with local, county, state, federal, and other partners.

### POLICIES

4. As the main source of virtually all culinary, industrial, and agricultural water in Carbon County, the USFS-administered lands on the western border of the county need to be managed to preserve water flows. Carbon County supports and strongly encourages the USFS to manage this portion of the Manti-La Sal National Forest for watershed enhancement.
5. Work with the federal government to promote conservation of water through such means as public education programs, the lining of canals, and the installation of pipelines.
6. Preserve our watershed and ensure that reclamation occurs on areas destroyed by fire.
7. Support projects that reduce or protect groundwater from total dissolved solids (TDS), selenium, and nitrogen.
8. Support projects and policies that maintain and improve soil ecology and vegetative cover in uplands.
9. Carbon County will participate in the management of watersheds on public and private lands watersheds to optimize quality and quantity of water.
10. Protect surface water.
11. Support projects to increase water quality and or quantity in the county.
12. Maintain and improve freshwater supplies and watersheds, and increase watershed production capabilities.
13. Conserve/preserve water for agricultural uses in the county.
14. Conduct a thorough examination of current county regulations regarding grazing, timber harvesting, and erosion control efforts. Assess the need for additional erosion control efforts; enforce mitigation plans as required by state law.
15. Maintain water storage capacity of reservoirs by reducing sedimentation loading and seek additional storage.
16. Carbon County will not approve of any project that would adversely impact water quality in the county and protest any development outside the county that adversely impacts the water quality of the county.
17. Adequate water quality and availability is the lifeblood of Carbon County and is necessary for future residential, industrial, commercial, agricultural, and recreational development. Carbon County will protect this valuable resource by promoting watershed protection measures and supporting the efficient management and use of water resources. The county supports the development, adoption, and implementation of water storage, distribution, and conservation plans by irrigation companies, industrial users, and municipalities.
18. Where water resources on public lands have diminished because grasses have succeeded to woody vegetation, a vigorous program of mechanical treatment should be applied to promptly remove the woody vegetation and stimulate the return of grasses. These efforts would be intended to provide a watershed that maximizes water yield and water quality for livestock, wildlife, and human uses.
19. Manage watersheds to maintain or improve soil quality and long-term productivity.
20. Prevent or remove unacceptable debris accumulations that reduce stream channel stability and capacity.
21. The county values clean, healthy drinking water.
22. The county supports finding local solutions to water quality and hydrological concerns.
23. The county encourages actions by individuals, groups, and local governments that are aimed at improving water quality and supporting the hydrology of the county.
24. The county values water quality for human health and safety as well as ecological health.
  - Carbon County will participate in the management of watersheds on public and private lands watersheds to optimize quality and quantity of water.
  - To identify and control noxious weeds and invasive plant species, beginning at the head of each natural drainage area of the watershed.
  - Protect surface water.
  - Support projects to increase water quality and or quantity in the county.
  - Oppose any federal and state designations of Recreation Areas or Wild and Scenic Rivers segments, which could result in water reductions that affect water quality.

## WATER RIGHTS

### DEFINITION

*The legal right to make use of water from a stream, lake, canal, impoundment, or groundwater.*

### RELATED RESOURCES

Water Quality and Hydrology, Canals and Ditches, Irrigation, Land Use, Agriculture

### FINDINGS

#### *Overview*

Water is a finite, but renewable resource, and because of varying annual supplies of water, its availability is subject to competition between stakeholders. The coordination of demand to supply water to Carbon County's various interests is expected to always be a complex issue for stakeholders. Water is a resource taken from a dynamic, natural system resulting from a fluctuating cycle. Networks of moving water, above and below ground, extend beyond obvious topographic or political boundaries. Therefore, management and use of water supplies requires coordination between the various jurisdictions of local, state, and federal entities.

All waters in Utah are public property. A "water right" is a right to divert (remove from its natural source) and beneficially use water. The defining elements of a typical water right will include:

- A defined nature and extent of beneficial use;
- A priority date;
- A defined quantity of water allowed for diversion by flow rate (cfs) and/or by volume (acre-feet);
- A specified point of diversion and source of water;
- A specified place of beneficial use (Utah Division of Water Rights 2011).

"Rights for water diversion and use established prior to 1903 for surface water or prior to 1935 for ground water can be established by filing a 'diligence claim' with the Division. Such claims are subject to public notice and judicial review and may be barred by court decree in some areas of the state" (Utah Division of Water Rights 2011).

"Water appropriation issues in specific geographic areas of the state are often administered using policies and guidelines designed to address local conditions. These policies and guidelines are generally developed for all or part of a defined Drainage Basin" (Utah Division of Water Rights 2011).

As water supplies fluctuate from year to year, any water right is subject to available supply. The State of Utah follows the Prior Appropriation System, which grants priority to water rights based upon that water right's chronologic seniority.

"The State Engineer has adopted procedures for enforcing water rights violations. Under the new enforcement procedure, an

action is initiated by the Division of Water Rights (DWRi) after a violation has been observed by an official working in the DWRi or another capacity for the state, or after a complaint is received from a water user, government agency, or other interested party. Private water users can report violations" (Donaldson 2007).

#### *Economic Considerations*

Although water rights are the right to use appropriated water within the requirements of a given beneficial use, water rights are classified as "real property" in the state of Utah and are bought and sold much like real estate.

#### *Custom and Culture*

"The Utah pioneers, in the late 1840's, were the first Anglo-Saxons to practice irrigation on an extensive scale in the United States. Being a desert, Utah contained much more cultivable land than could be watered from the incoming mountain streams. The principle was established that those who first made beneficial use of water should be entitled to continued use in preference to those who came later. This fundamental principle was later sanctioned in law, and is known as the Doctrine of Prior Appropriation. This means those holding water rights with the earliest priority dates, and who have continued beneficial use of the water, have the right to water from a certain source before others with water rights having later priority dates" (Utah Division of Water Rights 2011).

"In the early territorial days, rights to the use of public streams of water were acquired by physical diversion and application of water to beneficial use, or by legislative grant. A "county courts" water allocation system was enacted in 1852 and was in effect until 1880 when it was replaced by a statute providing for county water commissioners" (Utah Division of Water Rights 2011).

Immediately upon their arrival, pioneer settlers in Utah began diverting and damming water for agricultural cultivation. Brigham Young declared in 1848 that streams were not to be privately owned and that they belong to all people. Local church leaders, bishops, were responsible for diverting water equitably for the benefit of the community. Bishops often delegated water management to watermasters. Later, municipal and county governments assumed these responsibilities. "In 1852 the territorial legislature delegated control over streams to county governments" (Donaldson 2007).

It is the custom and culture of Carbon County to protect and preserve water rights.

### OBJECTIVES

- a. Water rights are protected.
- b. Early cooperation occurs between water user groups, energy development companies, land use agencies, and citizens to both protect water rights and ensure opportunities for energy development.
- c. Water rights held by private parties, municipalities, the water

---

## WATER RIGHTS

conservancy district, and the county are protected by the law.

- d. Water is used wisely to sustain the population of the county.
- e. Water rights are managed according to Utah water law.

### POLICIES

1. Support the creation of additional reservoirs in the county to ensure all allocated water is put to beneficial use.
2. Carbon County has as No-Net-Loss Provision. All water and water rights within our county shall be used for the benefit of the owners and the residents of this county.
3. Work to acquire more water rights for the county; additional water may be a necessity to recruit industries and businesses that have higher water demands.
4. Support projects that benefit in-stream uses and protect current water right holders.
5. Encourage cooperation between water user groups, energy development companies, land use agencies, and citizens to protect water rights and ensure opportunities for energy development.
6. The county supports private water rights.
7. The county opposes federal policies that infringe on private water rights.
8. The county encourages water conservation methods, to intelligently use the water that is available.
9. The county values water rights as necessary for growth and survival.
10. The county values existing water rights as part of the local heritage and culture.
  - Ensure that federal agencies recognize the State of Utah's sovereignty over water.
  - Ensure that BLM and Forest Service plans are consistent with the State's and Carbon County's plans for the future needs of culinary, agricultural, industrial, livestock and wildlife water on public lands.



# WETLANDS

## DEFINITION

*A wetland is a land area that is saturated with water, permanently or seasonally, such that it takes on the characteristics of a distinct ecosystem.*

## RELATED RESOURCES

Livestock and Grazing, Land Use, Noxious Weeds, Wildlife, Water Quality and Hydrology, Wetlands, Wild and Scenic Rivers, Canals and Ditches, Irrigation, Riparian Areas, Recreation and Tourism, Agriculture, Water Rights

## FINDINGS

### Overview

Wetlands have been defined in different ways by numerous entities and agencies. However, the U.S. Army Corps of Engineers (Corps) and the U.S. Environmental Protection Agency (EPA) jointly define wetlands as: “Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that do under normal circumstances support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” This definition of wetlands is perhaps the most relevant to local land managers and planners because the Corps and the EPA are the agencies that have legal jurisdiction over wetlands, including those wetlands on private property. Wetlands provide numerous benefits including wildlife habitat, aquifer recharge, and water quality improvements (EPA 2015).

According to the Utah Wetland Information Center, 1 percent of Utah’s landscape is wetlands (Utah Geological Survey, n.d.). Wetlands are among the most productive ecosystems in the world, comparable to rainforests (EPA 2015). The primary factor that distinguishes wetlands from other land forms or water bodies is the characteristic vegetation of aquatic plants, adapted to the unique hydric soil. Wetlands have the ability to improve water quality by acting as filters. In addition, wetlands can lessen the effects of flooding by containing stormwater and releasing it gradually (EPA 2015). Because these critically productive systems are a scarcity in the region, special emphasis is necessary for their management.

Carbon County has an estimated total of 6,515 acres of wetlands. Wetlands adjacent to lakes make up 42 percent of that acreage, and the riverine areas along the Green River account for another 17 percent. The rest of the land comes from emergent, forested, or ponded areas (USFWS 2016).

Best management practices for wetlands include protection of existing wetlands through zoning and other land-use designations, restoration of historic wetlands, proper management of wetlands, and creation of new wetlands in appropriate areas.

The Corps and the EPA have strict guidelines for any activities occurring on or near a wetland. Under Section 404 of the Clean Water Act (CWA), activities that involve excavation or placement of fill in jurisdictional waters or wetlands require a permit issued by the Corps, and may be reviewed by the EPA. Impacts to or near wetlands can require permits from federal, state, and local agencies.

### *Economic Considerations*

Wetlands provide recreational value as well as ecological, social, and economic value. Possibly the most significant economic and social benefit of wetlands is flood control, but wetlands also provide essential functions in filtering water/improving water quality and providing habitat for waterfowl and other wildlife (World Wildlife Fund 2004). Wetlands also recharge aquifers, securing future water supplies.

### *Custom and Culture*

Wetlands are important for the ecological and water quality value they add to the environment.

## OBJECTIVES

- a. Wetlands are protected at the local level.

## POLICIES

1. Establish trail design standards that minimize impacts on sensitive riparian corridors and associated wetlands.
2. Obtain Section 404 permits when needed for proposed activities causing disturbance to jurisdictional waters and wetlands.
3. The water table in wetland and riparian areas will be maintained or restored, when feasible.
4. Encourage the UDWR to identify wetlands and riparian areas with significant wildlife values to aid in their protection. Best management practices should be used to protect and enhance wetlands and riparian areas.
  - Carbon County is opposed to EPA’s attempt to extend its authority and that of the Corp of Army Engineers to include wetlands or any other area Congress did not grant agency authority to manage.
  - Carbon County believes that wetlands are non-navigable water bodies and do not fall within the Clean Water Act’s nor the EPA’s authority.
  - Carbon County believes that Utah Division of Water Quality is best suited to make determinations on CWA and that private property rights are protected by federal interference under the Constitution.
  - Manmade community fishing ponds, livestock and wildlife stock ponds or other similar structures shall not be listed or managed as a wetland in Carbon County.
  - Support Congressional actions that would permanently define

---

## WETLANDS

- the term, “Waters of the United States” by listing all rivers and tributaries that are in fact navigable under maritime standards as historically defined.
- Reduce the authority of EPA and the Corp of Army Engineers to management in regards to only waterways defined as navigable
  - under the historic definition.
  - Wetlands on private property are not to be controlled by the EPA or the Corp of Army Engineers.

## WILD + SCENIC RIVERS

### DEFINITION

*An administrative designation created under the National Wild and Scenic Rivers Act of 1968 applied to preserve certain free-flowing rivers that “possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values.”*

### RELATED RESOURCES

Recreation and Tourism, Land Use, Livestock and Grazing, Irrigation, Canals and Ditches, Water Rights, Water Quality and Hydrology, Wetlands, Floodplains and River Terraces, Riparian Area, Fisheries, Wildlife, Threatened Endangered Sensitive Species

### FINDINGS

#### *Overview*

The Wild and Scenic Rivers Act is notable for preserving the special character of rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection (BLM 2012).

Under the Wild and Scenic Rivers Act, rivers are classified into three categories:

Wild rivers represent “vestiges of primitive America” in that they are free-flowing segments of rivers with undeveloped shorelines that typically can only be accessed via trail.

Scenic rivers are dam-free river segments with undeveloped shorelines but accessible in places by roads.

Recreational rivers are more developed than Wild or Scenic river segments and can be accessed by roads (BLM 2012).

Section 5(d)(1) of the Wild and Scenic Rivers Act directs federal agencies to identify potential additions to the National Wild and Scenic Rivers System through federal agency plans. Under these provisions, federal agencies study the suitability of river sections they manage for designation under the Wild and Scenic Rivers Act. Sections that are determined to be suitable can be managed to preserve their suitability by an agency land management plan while awaiting congressional designation (National Wild and Scenic Rivers System 2017).

Designating river segments as wild, scenic, or recreational would restrict many activities related to the stream and other uses within one-quarter mile of it, and in some cases, these designations could be detrimental to users’ ability to develop and manage water resources necessary to meet future growth needs. The ability to obtain approval for water right change applications on, or upstream of, designated streams by existing water users may also be limited. Similarly, federal permits cannot be issued for

uses on a stream segment that would be in conflict with the wild and scenic designation.

The BLM has determined that the Green River along the eastern edge of the county is eligible for designation as wild (BLM 2009).

Designation of wild and scenic rivers may result in non-use, restricted use, or environmental impacts on public and private lands. These restrictions may prohibit future uses that are necessary to continue to assure economic prosperity, or may adversely affect the operation, management, and maintenance of existing facilities.

Wild and Scenic Rivers are designated by Congress or the Secretary of the Interior. To be eligible for designation, a river must be free-flowing and contain at least one “outstandingly remarkable” value (scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar value). Designated rivers are typically managed by federal agencies, but can also be managed by partnerships of adjacent communities, state governments, and the National Park Service, allowing communities to protect their own outstanding rivers and river-related resources (National Park Service 2016).

#### *Economic Considerations*

At present, the economic implications of Wild and Scenic River designation are not totally understood, nor quantifiable. The tradeoff between increases in recreation and tourism sectors and the potential economic loss of future river development should be considered. An analysis of Wild and Scenic River designation by Utah State University made some observations: primary impacts of designation relate to a reduction in the grazing in riparian areas; and other impacts include further regulations on adjacent public and private land uses (Keith J., et al. 2008).

Healthy rivers provide essential ecological services which would otherwise be engineered and paid for. These services include purification of water, nutrient banking in floodplains, unpolluted fisheries, flood protection, and groundwater recharge.

#### *Custom and Culture*

Carbon County is committed to managing its rivers for the good of the people. Where citizens of Carbon County are not responsible for the designation or management of Wild and Scenic Rivers, and as there is only a short history (since 1968) of this designation in the U.S., no custom or culture can be associated with the federal designation of Wild and Scenic Rivers at this time; however, county residents maintain that rivers in general are an integral element of sustaining and improving the health of the regional economy and ecology. Citizens of Carbon County have always prized rivers for their aesthetic, ecological, recreational, and hydropower value. Managing rivers for multiple uses has historically been, and continues to be, a tradition based on facilitating many users and values.

According to a 2008 survey, Utah residents “generally considered

## WILD + SCENIC RIVERS

water resources used for agriculture, homes, and businesses, and that provide fish and wildlife habitat...to be most important for local quality of life” [compared to other public land resources]. In the Carbon/Emery area, 40.4 percent (the greatest number) of respondents said that the amount of wild and scenic river designations should “stay about the same” on Utah public lands (Krannich 2008).

### OBJECTIVES

- a. Special designations of any kind do not impact the county’s ability to manage freshwater supplies.
- b. River segments that have not been designated as Wild and Scenic Rivers by Congress are not managed as de facto wild and scenic rivers.
- c. River segments that have been designated as wild, scenic, or recreational are adequately protected and functioning.

### POLICIES

1. Carbon County is opposed to any further eligibility studies or any federal actions for the purpose of determining additional rivers for Wild and Scenic River designation.
2. The county opposes river management that exceeds the statutory authority of the Wild and Scenic Rivers Act.
3. All waters that flow from the Manti-La Sal National Forest into Carbon County are significant as sources of water for irrigation, commercial, industrial, and culinary uses. Carbon County has virtually no other source for these purposes and would adamantly oppose any action that would be detrimental to our management of these waters for our own local uses.
4. Carbon County tentatively supports the designation of Wild and Scenic Rivers on the segments of the Green River that bound the east end of Carbon County, provided that:
  5. Such designation would be consistent with the standards and category iterated in the Public Lands Initiative (PLI), and would be designated in conjunction with the approval of Carbon County’s Approved Wilderness Area as mapped in our County Plan and stated in the PLI Ordinance.
  6. There would be no taking or purchase of any privately-owned land for the creation of Wild and Scenic River designation along or adjacent to this corridor.
7. There would be no the curtailment or reduction of grazing or mineral development.
8. Designation would not prohibit maintenance or construction of range improvements or any other action that would have a severe and depressing economic hardship on affected producers and local landowners.
  - Any designation made shall be approved by the Carbon County Commission and supported by the Governor and the State and Federal Legislative body of Utah and only on the Green River as mapped at a Recreational management classification consistent with the Public Lands Initiative Bill by Congressmen Rob Bishop were to be passed and become law in its entirety.
  - Work with fully informed local elected officials to identify impacts to the local economy and lifestyles, then register written and verbal opposition to any Wild and Scenic River designations whatsoever in the County.
  - Carbon County was surveyed during the the 2008 BLM RMP and also in the 2006 USFS Planning action. It was determined that the only river suitable for Wild and Scenic designation should Congress so agree is the segment of the Green River forming the eastern boundary of Carbon County. Carbon County is opposed to any further eligibility studies or any federal actions for the purpose of determining additional rivers for Wild and Scenic River designation.
  - Should designations occur on any river segment as a result of Secretarial or congressional action, existing rights, privileges, and contracts will be protected. Under Section 12 of the Act, termination of such rights, privileges, and contracts may happen only with the consent of the affected non-federal party.
  - A determination by federal agencies of eligibility and suitability for the inclusion of rivers on public lands to the Wild and Scenic Rivers System does not create new water rights for the federal agencies. Federal reserved water rights for new components of the Wild and Scenic Rivers System are established at the discretion of Congress. If water is reserved by Congress when a river component is added to the Wild and Scenic rivers System, it will come from water that is not appropriated at the time of designation, in the amount necessary to protect features which led to the river’s inclusion into the system.
  - The federal agencies intent will leave existing water rights undisturbed and to recognize the lawful rights of private, municipal and state entities to manage water resources under state law to meet the needs of the community.

## RIPARIAN AREAS

### DEFINITION

*Riparian areas are ecosystems formed between the land and a stream or river, often composed of dense vegetation.*

### RELATED RESOURCES

Livestock and Grazing, Wild and Scenic Rivers, Canals and Ditches, Irrigation, Agriculture, Water Rights, Water Quality and Hydrology, Wetlands, Floodplains and River Terraces, Wildlife, Noxious Weeds, Fisheries, Recreation and Tourism, Fire Management, Land Use

### FINDINGS

#### *Overview*

Riparian zones are important in ecology, environmental management, and civil engineering because of their role in soil conservation, their habitat biodiversity, and the influence they have on fauna and aquatic ecosystems, including grasslands, woodlands, wetlands, or even non-vegetative areas.

According to the Utah Wildlife Action Plan (2015), “riparian areas are the richest habitat type in terms of species diversity and wildlife abundance.” These areas provide habitat to a range of wildlife including amphibians, birds, mammals, fish, and insects. Riparian areas also play a significant role in the erosion processes by slowing water, trapping sediment, and stabilizing banks. Finally, riparian areas provide quality forage for livestock and are valued within grazing allotments.

A History of Carbon County (1997) describes the major rivers of the area. “Price River dominates the northern part of Castle (or Price River) Valley. Formed at the confluence of Fish Creek and White River, before 1879 it was lined with Cottonwood trees, and when it flowed naturally it was the only river in the state to crest in May . . . Gordon Creek flows out of the Wasatch Plateau and into the Price River between Helper and Price; Miller Creek flows out of the Hiawatha area and into the river south of Wellington.” All of these river systems have adjacent riparian areas that must be managed to balance human and ecosystem needs.

Riparian areas should be managed to protect vegetation characteristics. Conservation efforts include preserving existing riparian areas as well as restoring damaged areas. Preservation should also include the dedication of sufficient water and groundwater to support vegetation. Limiting the removal of water from the system is essential in maintaining the integrity of the riparian area. Restoration efforts must consider factors like hydrology, floodplain, and adjacent land use. Restoration design of riparian areas should follow a protocol that accounts for stream hydrology, soil characteristics, vegetation, adjacent land use, recreation, and other influences. Stream or river modifications may require permits.

Federal agencies manage riparian areas and floodplains under  
pg. 46

Executive Orders 11988 and 11990, Sections 303 and 404 of the Clean Water Act, and also the Endangered Species Act. Riparian areas are also managed under individual resource management plans and other agency policies and guidelines, such as the BLM’s Riparian Area Management Policy.

The Utah Comprehensive Wildlife Conservation Strategy prioritizes habitat categories based on several habitat criteria important to the species of greatest conservation need. The top key habitat statewide is Lowland Riparian (characterized by riparian areas <5,500 ft elevation; principal vegetation: Fremont cottonwood and willow), while the third most key habitat is Mountain Riparian (characterized by riparian areas >5,500 ft elevation; principal vegetation: narrowleaf cottonwood, willow, alder, birch and dogwood) (Sutter et al. 2005).

Section 73-3-29 of the Utah Code requires any person, governmental agency, or other organization wishing to alter the bed or banks of a natural stream to obtain written authorization from the State Engineer prior to beginning work.

#### *Economic Considerations*

It is difficult to quantify the economic benefits of riparian areas. They are intertwined with nonmarket ecosystems and services like clean water, wildlife habitat, recreation, and tourism. Pre- or post-water treatment methods that utilize passive bioengineering techniques, including riparian area management, can significantly reduce water treatment costs, thereby avoiding some of the costs associated with engineered water treatment plants, which are extremely expensive.

#### *Custom and Culture*

“The Price River Enhancement Committee was formed to address the growing concern of water quality degradation and noxious weed invasion along the Price River. Recently, Russian olive and Tamarisk were removed from nearly 5 miles of stream banks on both public and private land” (USU 2012).

According to a 2008 survey, Utah residents “generally considered water resources used for agriculture, homes, and businesses, and that provide fish and wildlife habitat...to be most important for local quality of life” compared to other public land resources (Krannich 2008).

In the Carbon/Emery area, 72.6 percent of respondents ranked water resources that benefit fish and wildlife habitat as “very important” (Krannich 2008).

It is the custom of the people in Carbon County to conserve riparian areas for the good of natural ecosystems, and for the people that use and enjoy them.

### OBJECTIVES

- a. Private property rights are balanced with the need to preserve and care for riparian areas.



---

## RIPARIAN AREAS

### POLICIES

1. Support the use of good science by federal and state agencies to ensure that riparian areas are functioning on public lands.
2. Prioritize development and implementation of watershed management plans and riparian studies for western and eastern Carbon County.
3. Establish trail design standards that minimize impacts on sensitive riparian corridors.
4. Support integrated species management to accomplish riparian restoration through biological, chemical, mechanical, and manual methods (e.g., tamarisk control, willow plantings).
5. The county values healthy, functional riparian areas.
6. The county opposes riparian policies that infringe on private property rights or state water law and policy.
7. The county supports finding local solutions to riparian concerns.
8. The county values riparian areas for their ecological and aesthetic values.
9. The county values riparian areas for their bank stabilization functions.

# IRRIGATION

## DEFINITION

*Irrigation is the process in which water is supplied to plants at intervals for agriculture.*

## RELATED RESOURCES

Land Use, Agriculture, Water Quality and Hydrology, Wilderness, Water Rights, Forest Management, Predator Control, Noxious Weeds, Canals and Ditches

## FINDINGS

### Overview

Irrigation is the practice of supplemental application of water to land (beyond that water which is directly received by the land from naturally occurring precipitation) for the purpose of increasing the agricultural output of cropland and to sustain additional vegetation growth throughout the landscape. Much of Utah's agriculture would not be possible if not for irrigation. Utah's arid climate provides limited and frequently unreliable annual rainfalls. Many of the canals and ditches remain open, but over time many have been lined or piped to improve operational efficiency.

Dams, canals, and pipelines are constructed to take advantage of the topography of each watershed and redistribute water from rivers and streams outward to lower elevation lands, which are more suitable for crop production.

Carbon County depends heavily on water from the Price River and watershed protection is an ongoing challenge. The county's groundwater is unusable due to the high salinity. The Carbon Water Committee was created to investigate the uses to which Price River water is applied. Coordination with public lands agencies is also a priority in order to represent local economic interests and streamline processes (GOPB 2003).

Proper irrigation helps produce crops, but it also prevents erosion. "Controlling erosion not only sustains the long-term productivity of the land, but also affects the amount of soil, pesticides, fertilizer, and other substances that move into the nation's waters... As a result, erosion rates on croplands and pasturelands [in Carbon County] fell from 0.024 to 0.017 tons/acre/year from 1987 to 1997" (NRCS 2005).

Through mostly private practices, with some assistance from NRCS and Farm Service Agency (FSA) programs, many ranchers or farmers have applied conservation practices to reduce the effects of erosion by water forces.

There are about 245 farms in Carbon County, covering nearly 20 percent of the total county land area. The total acreage of irrigated acres in this county is 10,685 (NRCS 2005).

Canal and irrigation companies are private entities and are outside of the county's control, but could be influenced by private

shareholders. According to the Utah Division of Water Rights (2014), there are 17 companies in Carbon County that provide irrigation, ditch, and canal services.

### *Economic Considerations*

Without irrigation, the agriculture in Carbon County would be almost nonexistent.

### *Custom and Culture*

"Price River dominates the northern part of Castle (or Price River) Valley. Formed at the confluence of Fish Creek and White River, before 1879 it was lined with Cottonwood trees, and when it flowed naturally it was the only river in the state to crest in May. Men have straightened the river, especially in the Helper and Price Canyon area. When Scofield Dam harnessed the river, water flowed into the Price River Valley continuously, except during dry years. The Price River is the lifeblood of the valley, with canals branching off the river to water crops throughout the county" (Watt 1997).

"Another creek of importance in Carbon County is Grassy Trail Creek, which comes from Whitmore Canyon, finally emptying into the Price River south of the Carbon County border. Generally, however, the area is rather barren, with dry washes being more characteristic than flowing streams. Indigenous flora and fauna generally are desert-adapted species that consume little water" (Watt 1997).

A 2008 survey of Utah residents "generally considered water resources used for agriculture, homes, and businesses, and that provide fish and wildlife habitat...to be most important for local quality of life [compared to other public land resources] (Krannich 2008).

In the Carbon/Emery area, 81.6 percent of respondents ranked water resources for irrigation and pastures as "very important" (Krannich 2008).

The Desert Land Act of 1877 allowed settlers to purchase up to 640 acres of land for \$1.25 per acre, provided that some irrigation structures were developed.

The use, upgrade, and maintenance of Utah's network of canals, ditches, and irrigation systems continues today.

## OBJECTIVES

- Irrigation is valued and protected for its contribution to agriculture.
- Irrigation practices and irrigation delivery systems are protected.
- Funding is supported for irrigation use in the county.

## POLICIES

- Conserve or preserve water for agricultural uses in the

---

## IRRIGATION

- county.
2. Ensure that drainage water and the waters off of the backs of the canal systems continue to flow in order to maintain the green strips on the existing creeks that eventually flow into the Price River.
  3. Maintain water sources for wildlife and livestock on rangelands.
  4. Ensure that grazing permittees' livestock water rights are maintained.
  5. The county opposes any plans or policies on public land that might limit access to sources of irrigation water rights.
  6. The county values irrigated agriculture as part of the local economy.
  7. The county will work cooperatively with partners, including the Carbon Water Conservancy District, irrigation companies, conservation districts, and municipalities, to plan for future water needs.
  8. All resource management planning within the county involves active participation from the county.
  9. Water is managed so that growth is not inhibited by water resources.

## DITCHES + CANALS

### DEFINITION

*A man-made depression created to channel water where there is lack of water.*

### RELATED RESOURCES

Land Use, Livestock and Grazing, Irrigation, Agriculture, Water Rights, Water Quality and Hydrology, Wetlands, Riparian Areas, Fisheries, Recreation and Tourism, Wild and Scenic Rivers, Wildlife, Fire Management, Threatened, Endangered, and Sensitive Species

### FINDINGS

#### *Overview*

Water deliveries are an essential component of agricultural production, and may also be relied upon for urban landscape watering and gardens.

“The Price River is the lifeblood of the valley, with canals branching off the river to water crops throughout the county. The Carbon Canal winds thirty-five miles through the southern half of the county” (Watt 1997).

Canal and irrigation companies are outside of the county’s control, but could be influenced by private shareholders. Canal safety plans are protected by law and held private by the irrigation companies. The canals generally are maintained by individual canal companies and a good amount of drainage water has unrestricted access to dump into canals.

#### *Economic Considerations*

Without ditches and canals, the county would have very little irrigated agriculture.

Many organizations holding water rights operate on finite budgets for which regular available funding is limited. These funds typically cover only basic maintenance and intermittent minor upgrades. Occasionally, such organizations can apply for and receive funding to accommodate more extensive upgrades. Funding sources are available for water delivery systems to pay for post-break repairs, maintenance, or the capital upgrades that are necessary to preserve public safety.

The Utah State Legislature has made funding available to assist canal companies in developing and implementing safety management plans.

#### *Custom and Culture*

To sustain early farmers and settlers, canals and ditches were constructed throughout Utah, making agriculture possible despite the semi-arid climate. Subsequent development of agriculture brought further expansion of ditches and canals. Traditionally, irrigation water has been distributed via a network of canals and ditches from rivers and streams, but with time and circumstances

dictating, many have been piped.

A History of Carbon County (1997) describes how, “the area was first settled by subsistence farmers whose primary concern was to dig the canals and ditches and later build the dams and reservoirs that would provide a dependable water supply for their crops.”

Two “pioneer ditches” are still in use today. “At first the early settlers farmed the lowlands along the Price River, hoping the river would not flood their crops. Realizing that they could not raise crops without water, Fred Grames, Caleb Rhoades, and others dug the valley’s first canal, which they called Pioneer Ditch Number One. Later, Grames, Rhoades, Robert and John Powell, and William Z. Warren worked on Pioneer Ditch Number Two. These two ditches flowed through the Carbonville area to the west side of Price. The ditches were surveyed using a crude water level device consisting of a tube about three feet long and an inch in diameter. It contained a small lamp chimney placed at each end so that the surveyor could look over the top of the water” (Watt 1997).

“The Gooseberry Reservoir when finished stored almost 25,000 acre-feet of water, and the new company hired a workman to oversee the dam, which everyone expected to be permanent. With expenses so much greater than anticipated, the old company went broke, and in December 1910 a new company, the Price River Irrigation Company, purchased the entire project. The people of Carbon County at last had solved their problems of storing water throughout the summer, and thus were able to claim more land to irrigate. The reservoir and canal project greatly helped farmers of the county” (Watt 1997).

A 2008 survey of Utah residents, “generally considered water resources used for agriculture, homes, and businesses, and that provide fish and wildlife habitat...to be most important for local quality of life [compared to other public land resources]” (Krannich 2008).

In the Carbon/Emery area, 81.6% of respondents ranked water resources for irrigation and pastures, as “very important” (Krannich 2008).

The use, upgrade, and maintenance of the county’s network of canals, ditches, and dams continues today.

### OBJECTIVES

- a. Ditches and canals are managed for the safety of the public.
- b. Ditches and canals are managed for the delivery of water for agricultural purposes.
- c. Ditches and canals are managed for optimum efficiency and conservation.

### POLICIES

1. Continue to allow ditches to be used and maintained by the water users throughout Carbon County.

---

## DITCHES + CANALS

2. Canals are protected uses of land; however, canal companies and ditch users must respect the rights of landowners and maintain their structures accordingly. Fences, gates, roads, and other features on private property shall be respected by canal companies and those representing their interests, and shall not be damaged.
  - Gates left open where livestock, theft or vandalism is involved would be construed as a crime.
3. Work to secure funding to line and cover canals and use the corridors for recreational trails systems.
4. Work with the federal government to promote conservation of water through such means as public education programs, the lining of canals, and the installation of pipelines.
  - The existing Right-of-way for ditches is that land which is needed to provide water to lands historically adjudicated for.



## FLOODPLAINS + RIVER TERRACES

### DEFINITION

*A floodplain is the low-lying area near a river, stream, or drainage which floods when the water level reaches flood stage. A river terrace is the bench or step that extends along the side of a valley and represents a former floodplain.*

### RELATED RESOURCES

Fire Management, Livestock and Grazing, Land Use, Noxious Weeds, Fisheries, Wildlife, Water Quality and Hydrology, Wetlands, Wild and Scenic Rivers, Canals and Ditches, Irrigation, Riparian Areas, Recreation and Tourism, Agriculture

### FINDINGS

#### *Overview*

Rivers are dynamic systems. River channels can migrate laterally as a result of bank erosion and deposition, and vertically as a result of bed aggradation or degradation. Floodplains, terraces, and other features are formed by these processes, and are therefore part of the river system.

When a river channel reaches its maximum capacity, often during times of heavy rain or snow melt, water overflows the river's banks and floods into nearby areas that would otherwise remain dry land. This is especially true when water is delivered at a rate faster than the associated soils can absorb. Floods also occur when a bank or dam gives way and large amounts of water are released. Under most circumstances, flooding is a natural process. Floodplains are considered a type of riparian zone, supporting rich ecosystems in both quantity and biodiversity. The overflowing water brings nutrients to the soil along the river bank, creating a fertile zone ideal for agriculture. Nevertheless, these areas must be included in resource planning conditions because floods can cause severe impacts to human developments.

Flooding most often occurs from two distinct event types: (1) spring runoff from melting snowpack at high elevations (both local and regional), and (2) summer rainstorms (Hylland and Mulvey 2003). While either event can trigger flooding, the dynamics of each are different. Snowmelt is a relatively predictable occurrence dependant on the amounts of winter snowpack and rising spring temperatures. Snowpack melting in spring contributes to some localized flooding, but more commonly flooding happens along the region's larger rivers. In contrast, summer cloudburst events cause sporadic flooding events in otherwise dry washes. Both kinds of events can have impacts on the communities within the area (Southeastern Utah Association of Local Governments 2003).

At the federal level, the Federal Emergency Management Agency (FEMA) provides flood data that classifies areas based on their different flood hazards through the National Flood Hazard Layer (NFHL) and National Flood Insurance Program (NFIP). This

enables elected officials, emergency responders, and the public to be informed, and to reduce or avoid altogether impacts from floods, to guide development, and to reduce the risk of floods.

The Price River flows along many of the cities in Carbon County, such as Price, Carbonville, Helper, and Wellington. Areas of these cities are within FEMA's Special Flood Hazard Areas (SFHA). SFHA are defined as the area that will be inundated by a base flood or 100-year flood (FEMA 2017).

#### *Economic Considerations*

Utah's State Hazard Mitigation Plan (2014) calculates that between 1980 and 2012, the county's flood losses amounted to one injury, three fatalities, \$6.3 million in property loss, and \$5.5 million in crop losses. These losses highlight the need for strong management practices.

Best management practices typically focus on avoiding placing structures and other development within these dynamic and sensitive areas. For these areas, officials often resort to designating setbacks between potential floodplains and the built environment.

Higher development costs to mitigate flood risks are the major economic consideration for floodplains. Flood-control costs may be passed on to municipal and county governments during emergencies. Another economic consideration is the cost of floodplain insurance to homeowners. Floods also have the potential to cause severe financial impacts in the form of damages to structures, transportation systems, and other infrastructure.

#### *Custom and Culture*

"In 1886 the townsmen surveyed for a cemetery, locating it on a hill near the town in order to protect it from floods that regularly swept through the town. Severin Grundvig and Frederick Hansen reportedly lost their crops several times because of floods. At one time they had to put their children on a bed to protect them from flooding water while they moved their furniture and belongings into a little house on the hill" (Watt 1997).

The Scofield Reservoir was filled in 1946, after completion of the Scofield Dam by the Bureau of Reclamation. The reservoir provides flood protection during variable flows, and serves as a municipal water source. After filling to its current size of over 73,000 acre-feet, the reservoir created 15.5 miles of new floodplains around the shoreline. This land is managed for potential flood events (UDEQ 2006).

"Invasive Tamarisk and Russian olive are widespread throughout the watershed. The impenetrable Tamarisk and Russian olive thickets narrow and channelize waterways reducing access to the floodplain. Without floodplains to absorb high flows, the potential for flooding events in the Price River watershed has increased." The Price River Enhancement Committee was formed to prevent the spread of the noxious weeds and restore the floodplain in order to protect communities (Utah State University Water Quality Extension 2012).

---

## FLOODPLAINS + RIVER TERRACES

Preventing floods and mitigating natural disasters has always been a priority for landowners in Carbon County. Neighbors help neighbors when these disasters occur. The custom and culture of the area is to be responsible about structure and infrastructure placement, and respect the inevitable changes in flowing water.

### OBJECTIVES

- a. Floodplains and river terraces are stable enough to withstand flooding events.
- b. Make funding available to rebuild and strengthen diversions on the Price River to reduce the potential for catastrophic flooding events.

### POLICIES

1. Utilize the existing Carbon County Development Code Floodplain Overlay zone.
2. The county supports thoughtful management of floodplains and river terraces as a way to protect human health and safety.
3. The last few years of flooding have demonstrated that more funding through emergency services, NRCS, and etc are needed to rebuild diversion structures. The failure of these structures through history have proven to cause devastating damage to Helper, Carbonville, and Price.





---

## WILDLIFE

## WILDLIFE

### DEFINITION

*Undomesticated animals usually living in a natural environment, including both game and nongame species.*

### RELATED RESOURCES

Threatened, Endangered, or Sensitive Species, Predator Control, Agriculture, Livestock and Grazing, Land Use, Fisheries, Forest Management, Recreation and Tourism

### FINDINGS

#### *Overview*

Carbon County's size and biological diversity increase the importance of wildlife issues and the impact of management decisions.

"Populations of many species of wildlife have declined over the past 30 years due to a variety of manmade and natural factors. Unless adequate measures are taken to recover and conserve species populations and habitats, some of these species may become federally listed in the future" (Sutter et al. 2005).

Best management practices for wildlife focus on principles and actions that allow people and wildlife to coexist, and on creating or maintaining healthy wildlife populations and habitat.

Species management plans provide guidance and direction for a number of species in Utah. These plans are developed through a public process to gather input from interested constituents and then presented to the Utah Wildlife Board for approval. Species covered by statewide plans include wild turkey, chukar, greater sage-grouse, mule deer, elk, moose, pronghorn, mountain goat, bighorn sheep, Gunnison prairie dog, beaver, northern river otter, black bear, cougar, bobcat, and wolf.

#### *Greater Sage-grouse*

The Conservation Plan for Greater Sage-grouse in Utah (UDWR 2013) was developed to help eliminate threats facing the greater sage-grouse while balancing the economic and social needs of Utahns through a coordinated program that provides for:

- voluntary programs for private, local government, and SITLA lands; and
- cooperative regulatory programs on other state and federally managed lands.

The Conservation Plan is anchored around efforts to conserve the species within eleven specifically identified sage-grouse management areas (SGMAs). The SGMAs represent the best opportunity for high-value, focused conservation efforts for the species in Utah. "This approach recognizes and accepts current use of the land, and identifies potential future uses which may cause conflict with the needs of the species" (UDWR 2013).

Carbon County has over 355,000 acres of sage-grouse habitat, making up 37 percent of the total land area (UDWR 2013).  
pg. 56

The Carbon sage-grouse management area, north of Helper, is administered by the UDWR and many other stakeholders (UDWR 2013).

#### *Deer and Elk*

In the case of mule deer (*Odocoileus hemionus*) and elk (*Cervus canadensis nelsoni*), in addition to the statewide plans required by state law, herd unit plans also have been developed for each mule deer and elk herd unit across the state. Each of these unit plans have been reviewed and approved by the Utah Wildlife Board. In many cases, herd unit plans have been revised multiple times since their initial development in the mid-1990s. The plans establish target herd-size objectives for each herd unit, which UDWR and the Utah Wildlife Board then strive to meet through harvest adjustment and other mechanisms. Habitat needs and other local management considerations are also addressed in these unit plans.

On a seasonal basis, big-game animals migrate among public and private lands. These movements create game management issues as a result of damage to private property and consumption of livestock feed by wildlife. To address these issues, the UDWR plan seeks to enhance forage production through prescribed fire, pinyon-juniper chaining, and conifer thinning, and to protect habitat using tools such as conservation easements, conservation agreements, and cooperative wildlife management units. Utah Code 23-21-2.5 (2) states that "When changing any existing right to use the land, the division shall seek to make uses of division-owned land compatible with local government general plans and zoning and land use ordinances."

Two deer herd units are located in Carbon County: Nine Mile unit 11, and Central Mountains 16B. These units include the western edge of the county and the Book Cliff mountains (UDWR 2015c). Protecting the winter habitat for these animals can bolster their population as a whole.

#### *Feral or Wild Horses*

The Range Creek herd management area (HMA) is approximately 78,638 acres of federal, state, and private lands, and is located on the West Tavaputs Plateau, 28 miles east of Price (BLM 2008). The origin of the wild horse herd is believed to be from ranch horses once owned by the Preston Nutter Ranch. Free-roaming horses on public lands can adversely impact soil, water, wildlife, and vegetation resources, and increase the possibility of equine disease among domestic horses. Wild and free-roaming horses rapidly increase in population, cause overgrazing, negatively impact wildlife and livestock, and burden the land managing agency with unnecessary costs. The introduction of wild horses would adversely affect the county's environment and economy.

The Carbon County Master Plan (2004) calls for the BLM to manage the horse herd at near 100 head. In order to achieve this goal, some of the horses must be rounded up every 2 to 5 years. Excess animals are then offered for adoption through the BLM's



---

## WILDLIFE

wild horse and burro adoption program.

### *Moose*

Carbon County contains the intersection of four big game management units including sections of Nine Mile, San Rafael, Central Mountains, and Wasatch Mountains (USU 2009).

The statewide moose management plan identifies areas in the northern part of the county as quality habitat. Moose populations have been generally trending upward in the last 50 years (UDWR 2009b).

Other species present in Carbon County that are part of the statewide wildlife action plan include the golden eagle, burrowing owl, peregrine falcon, prairie-dog, razorback sucker, roundtail chub, and many more. For more information on threatened and endangered species, see the corresponding resource section.

Another tool for wildlife management is a cooperative wildlife management unit (CWMU). These units can be created by the state as contiguous areas of land open for “hunting small game, waterfowl, cougar, turkey, or big game which is registered in accordance with...the Wildlife Board.” CWMUs can span across private, public, and state land, in an effort to manage based on an animal’s range, rather than man-made borders. These small management areas rely on local knowledge and stakeholder involvement to conserve wildlife and associated habitat. Carbon County has seven CWMUs entirely within its borders, and an additional six that extend into adjacent counties (UDWR n.d.).

Primary control of wildlife management and planning is given to the State of Utah. The UDWR conducts wildlife studies and issues hunting permits. The federal government issues permits for areas in Carbon County where grazing and wildlife compete for forage.

### *Economic Considerations*

The U.S. Fish and Wildlife Service found that Utah residents and non-residents spent over \$1.5 billion dollars in 2011 in Utah on recreation activities associated with wildlife (U.S. Fish and Wildlife Service et al. 2011).

Revenue from hunting and other wildlife recreation is generated for Carbon County through harvest permits, pursuit permits, and guide fees.

### *Custom and Culture*

It is believed the first inhabitants of the Carbon County region hunted animals and gathered edible plants. Pictographs of bighorn sheep, elk, deer, and other animals show their importance to indigenous cultures. Mormon settlers lived off the land and hunted for food, fiber or clothing, predator or nuisance control, and sport. These traditions are part of the custom and culture of Carbon County and are honored today.

“In 1920 the young men of the Knights of Pythias challenged the older men of the Knights to a rabbit hunt. In the late 1920s

the Price Chamber of Commerce sponsored a “bunny” hunt in Clark’s Valley, with the bagged rabbits being distributed to the poor of the community” (Watt 1997).

In the 1930s, Utah Fish and Game officials began scheduling elk hunts, and deer hunters were restricted to one buck deer. Deer hunting became such a popular activity that area schools began to schedule a deer hunter’s holiday—either the last Friday before or the first Monday of deer season—because many boys skipped school anyway and the school district suffered financially because of the extraordinarily high absence rate” (Watt 1997).

Wildlife watching has grown in popularity in recent years. Additionally, hunting has always been a popular pastime in the area. Carbon County is known for its excellent hunting grounds for many species.

### OBJECTIVES

- a. Forest and range health are managed to provide more forage for both livestock and wildlife.
- b. Cooperation between livestock owners and wildlife agencies occurs to manage the lands to the benefit of all species.
- c. Funding increases for the increased quality of habitat for all species.
- d. Information and local input on wildlife numbers and hunting permits issues is collected.

### POLICIES

1. Promote hunting and wildlife photography in the area.
2. Improve management of predators to restore historic populations of wildlife and reduce livestock depredation.
3. Carbon County discourages the introduction or reintroduction of wolves.
4. Agencies should coordinate with the county before eliminating, introducing, or reintroducing any species onto public lands, and should address potential impacts of such an action on private lands, customary use and private property interests in the public land, and the local economy.
5. Support and cooperate with the UDWR for projects related to wildlife management decisions.
6. Maintain parity in the ratio of wild horses and wildlife to domestic animals on the range.
7. Manage wild horse herd consistent with Carbon County’s herd management population levels (from 88 to 100 head).
8. Balance elk numbers in order to protect private farming, grazing, and forest lands.
9. Continue efforts to improve and increase forage through habitat manipulation.
10. Provide compensation to landowners for crop depredation.

---

## WILDLIFE

11. Carbon County is not in favor of and will generally oppose the introduction of exotic or non-native species to the county.
12. Consider wildlife transplants to suitable habitat when it is compatible with the management prescription for the unit(s) concerned and the existing livestock grazing seasons of use and total animal unit months (AUMs) are not reduced or impacted.
13. Support agencies in maintaining or improving habitat carrying capacity for elk or deer.
14. Maintain a hunting program for mule deer that encourages a variety of quality hunting opportunities while maintaining population objectives.
15. The county supports wildlife management that seeks an optimal balance between wildlife, livestock, and human needs.
16. The county opposes any federal land management that infringes on state jurisdiction over wildlife.
17. Support responsible wildlife management; ensure that wildlife interests are given due consideration in all public land use and resource development decisions. Encourage partnerships among county residents, the county administrators, and federal and state agencies to practice watershed and rangeland management principles.
18. Ensure the continued viability of the Gordon Creek Wildlife Refuge as big game habitat.
19. Encourage more public access to public lands in areas where elk can be taken without impacting the private property, and where elk hunting would be valuable to the landowners who provide guiding and outfitting.
20. Find ways to increase the taking of elk in the eastern portion of the county to bring population numbers in line with UDWR management goals and prevent wildlife and livestock competition for forage.
21. We do not support the removal of domestic sheep from private property to increase bighorn sheep management areas.
22. Carbon County supports federal policies that would allow the UDWR to manage wild horse and burro herds as wildlife and based on state law.
23. Carbon County supports and participates with the local sage-grouse working group. We support all efforts to monitor these birds and to manage in the same manner other species as necessary to preserve our private lands and not reduce our citizen's ability to use their lands for livestock raising and for other means.
24. We support the management of buffalo to keep them within their areas. We know that some buffalo seasonally cross the Green River into Desolation Canyon. separate from domestic cattle; it is necessary that domestic cattle and buffalo do not mix to prevent brucellosis.
  - Maintain parity in the ratio of wild horses and wildlife to domestic animals on the range.
  - Manage wild horse herd consistent with Carbon County's herd management population levels (from 88 to 100 head).
  - Balance elk numbers in order to protect private farming, grazing, and forest lands.
  - Continue efforts to improve and increase forage.
  - Support providing habitat for viable populations of the existing vertebrate and invertebrate species found on the Forest after providing for allocated livestock forage needs.
  - The County recognizes the authority of the Utah Division of Wildlife Resources and wildlife board in managing the wildlife in the county.
  - The County values wildlife as an important part of the ecology and beauty of the county.
  - The County hopes to value game hunting as part of its economy as it once could.
  - The County values game hunting as part of the custom and culture of the county.
  - Healthy wildlife populations support local ecology.
  - Thriving wildlife populations provide wildlife viewing and hunting experiences for residents and visitors to the county.
  - Hunting continues to be part of the economy and traditions of the area.
  - Carbon County has a Sage Grouse Management plan for our county. This plan can be updated as needed. Most of the active habitat and all of the lek areas in Carbon County are on private lands. It is reasonable that actions pertaining to Sage Grouse adhere to the county plan.

## THREATENED, ENDANGERED + SENSITIVE SPECIES

### DEFINITION

*Species of plants, animals, and other living organisms which are, to some degree, threatened by extinction.*

### RELATED RESOURCES

Wildlife, Land Use, Fisheries, Livestock and Grazing, Noxious Weeds, Fire Management

### FINDINGS

#### Overview

The Endangered Species Act (ESA) directs all federal agencies to work to conserve endangered and threatened species and to use their authorities to further the purposes of the ESA. Animal or plant species are classified as endangered, threatened, or candidate species.

The State of Utah sensitive species list is prepared pursuant to Utah Administrative Code R657-48 (2016). By rule, wildlife and plant species that are federally listed candidates for federal listing, or for which a conservation agreement is in place, automatically qualify for the list. The additional species on the Utah sensitive species list—wildlife species of concern—are those species for which there is credible scientific evidence to substantiate a threat to continued population viability. It is anticipated that wildlife and plant species of concern designations will act as an “early warning” system to identify species for which conservation actions are needed. Species on the list are not protected by any special state regulations.

The BLM and the USFS maintain their own lists of species for the lands they administer, using their own criteria. These agencies have their own policies and objectives for managing wildlife and plant populations.

In 1997, as part of the state water tax, the Utah Legislature created the Endangered Species Mitigation Fund (ESMF), which significantly expanded the funding base for conservation of wildlife and plant species that are designated as Utah sensitive species or are ESA-listed. The purpose of this fund is to avoid, reduce, and/or mitigate impacts of ESA listings on the people of Utah (UDWR 2015).

The USFWS has published specific recovery plans for many of the listed species in the state, including Mexican spotted owl, southwestern willow flycatcher, razorback sucker, bonytail chub, Colorado pikeminnow, humpback chub, and greenback cutthroat trout.

“Under the Endangered Species Act, the U.S. Fish and Wildlife Service is required to identify species of plants and animals that are endangered or becoming extinct or threatened by their potential for becoming endangered...” (U.S. Fish & Wildlife Service 2015). Federal agencies such as the BLM and USFS are required to manage habitats for such species in a manner that

would promote their recovery.

#### Plant Species

“Utah is home to at least 600 rare vascular native plant species (and subspecies/varieties) including some 25 species that are federally listed as endangered or threatened under the Endangered Species Act of 1973. The 600 taxa represent almost 19% of our currently known flora. Of those, some 180 or almost 6% have been ranked by our rare plant committee as of ‘extremely high’ or ‘high’ concern. Many of these are highly restricted endemics (Utah has 475 endemics, i.e. geographically restricted, with 420 of those only occurring in Utah). Only a handful of states (Hawaii, California, Arizona, Florida, Texas and Oregon) are believed to have as many or more rare plant species as Utah. And this number is growing, since every year new species are still being discovered or recognized” (Utah Native Plant Society n.d.).

Because of its unique biome, Carbon County is home to a wide variety of plant species. The following are rare plants found in the county as listed by the Utah Native Plant Society (2010):

- *Astragalus musiniensis*
- *Cryptantha creutzfeldtii*
- *Cryptantha jonesiana*
- *Dalea flavescens var. epica*
- *Epipactis gigantea*
- *Hedysarum occidentale var. canone*
- *Mentzelia multicaulis var. librina*
- *Penstemon grahamii*
- *Sclerocactus wetlandicus*

#### Economic Considerations

Much of the funding for conservation activities comes from hunter and angler license fees and habitat stamps, as well as federal excise taxes on shooting, boating, and fishing equipment. These sources may indirectly benefit some non-game species, but in general, funding is harder to come by for these species (UDWR 2015).

The ESA prohibits consideration of economic impacts when determining whether to list a species, but it does require consideration of economic impacts when designating critical habitat.

#### Custom and Culture

Species extinctions in the late 19th century and early 20th century triggered national awareness and response in the form of active wildlife and plant management.

For more than a century, local farmers, ranchers, and hunters have managed the lands of Carbon County for long-term biological diversity.

### OBJECTIVES

- a. Local conservation efforts suffice to preclude the need for

## THREATENED, ENDANGERED + SENSITIVE SPECIES

any future listings. Cooperate with affected agencies to prevent species from becoming threatened or endangered.

### POLICIES

1. Cooperate with the USFWS, other agencies, and universities to develop plans for federally listed plant and animal species.
  2. The county opposes introducing any new protected species into the county without full cooperation and approval from the county.
  3. The county support finding local solutions to protect sensitive species in an effort to prevent federal listing.
  4. Support efforts to help ensure that the greater sage-grouse (*Centrocercus urophasianus*) remains under the management of UDWR and does not become listed as threatened or endangered.
  5. Encourage Congressional reform of the Endangered Species Act.
  6. The UDWR has authority to manage all fish and wildlife in the state, including Carbon County. This management shall be conducted in a manner that includes county input and adherence to county policy and plans. Any species which are considered to be sensitive shall be given consideration for protection of habitat in planning decisions. Conditional use and other permits shall be reviewed with this goal in mind.
  7. Carbon County supports the nationwide delisting of all species of wolf, and the return of management of these species to state governments.
- The listing of species should be based on good science, including analysis of the status of the plant or species, a peer review, and a study of the plant or species' range, population trends, and threats. The Secretary of the Interior or Agriculture must then determine if the petition has sufficient biological information to support a recovery plan. Also, private property owners should not be persecuted and have their property rendered valueless when species are found on or near their property.
  - Ensure that the Sage Grouse remains under the management of UDWR and does not become listed as threatened or endangered.
  - Ensure that if this type of action is to be undertaken on any species, Carbon County's policies, objectives, strategies are followed and that the action directly addresses the locally analyzed threats as stated in our Sage Grouse Management Plan #452.
  - Carbon County adamantly supports returning management of Sage Grouse or any other species and its habitat back to the states. The current lack of state management threatens the viability of the species, of livestock and the greater wildlife ecosystem. The management of all species should be first and foremost considered under the state's knowledge and expertise.
  - Technology has advanced to a point that now cameras and unmanned aircraft known as drones are being used to gather information for military, law enforcement, private parties and other agencies including UDWR. Cameras can obtain images without the consent of the property owners or the operator. Also due to the fact that they are unmanned, these aircraft do not need to file a flight plan if flying under 400 feet. Unmanned aircraft fly over private property without written permission of the property's operator.
  - Carbon County supports legislation requiring that all non-law-enforcement or non-military unmanned aircraft, motor vehicle, helicopter, airplane or camera operators need written permission from the property operator or be considered trespassers and subject to fines and civil penalties.



# PREDATOR MANAGEMENT

## DEFINITION

*The strategies and practices to control the actions of predators, or bringing into natural ecological balance predator populations, or reduce the number of conflicts with predator animals.*

## RELATED RESOURCES

Agriculture, Livestock and Grazing, Threatened, Endangered, Sensitive Species, Wildlife, Land Use

## FINDINGS

### *Overview*

Predators in Utah include raptors, mountain lions, bears, wolves, coyotes, foxes, weasels, and snakes. Coyotes, cougars, black bears, golden eagles, and common ravens are the major predators of domestic sheep and cattle.

The USDA established a program in 1895 called Wildlife Services (WS) to assist land managers in predator control activities for the protection of livestock. “Currently, WS operational activities include conducting rabies control and eradication efforts, managing invasive species, completing wildlife disease surveillance, reducing the impact of predation on livestock, preventing wildlife strikes at airports, protecting transportation infrastructure, and protecting threatened/endangered species, rare habitats, and ecosystems” (Animal and Plant Health Inspection Service 2009).

A primary focus of predator control in Utah is protecting mule deer from coyotes. In 2012, the state established the Mule Deer Protection Act, which pays hunters a bounty fee for coyotes that are harvested. Predators can also be a significant threat to endangered species, and counties often support open hunting and taking by other means of predators as a support to other protection efforts.

“Coyotes remain the most problematic predator species in Utah, both in terms of population size and in the amount of livestock they kill. Calves are vulnerable to coyote predation for a short period just after birth, and the majority of the calf protection is concentrated in the early spring calving season. In the absence of predator management, calf losses would be expected to exceed 5%, however, with predation management in place, losses are kept to well below 1%. Sheep and lambs remain vulnerable to predation throughout the year and the WS (Utah Wildlife Services) program works with sheep producers to provide protection on spring lambing range, summer mountain range, and on winter range in the desert. In the absence of protective efforts, it is estimated that lamb losses could be as high as 30%, but the WS program in Utah keeps predation losses to less than 5% on a statewide basis. Cougars and bears are also a significant predator of sheep, especially in the summer when sheep and

cattle are grazed in the mountains. Of the predation on lambs reported to WS, about 40% are by these two predators. Predation management for cougar and bear is implemented on a corrective basis and does not begin until kills are discovered and confirmed by WS. In order to limit losses caused by cougars or bears, the WS program must be prepared to respond quickly when killing occurs” (UDAF 2015a).

Under Utah Code, UDAF is responsible for enforcing the administrative rules pertaining to wildlife services. These rules include:

- Agricultural and Wildlife Damage Prevention Act (Utah Code Annotated: Title 4, Chapter 23)
- Collection of Annual Fees for the Wildlife Damage Prevention Act (R58-15)
- Holding Live Raccoons or Coyotes in Captivity (R58-14)

In Utah, the primary agent for predator control is the Utah Division of Wildlife Resources (UDWR). The UDWR manages predator populations through hunting permits and reimbursement for livestock damaged by predators. Predator control is conducted in cooperation with the Utah Department of Agriculture and Food (UDAF). Animal and Plant Health Inspection Service (APHIS) Wildlife Services conducts predation management for livestock protection statewide (USDA 2015).

Across the West, crows and ravens have affected sage-grouse populations by preying on chicks. “Direct effects of nest predation on nesting productivity of birds are widely recognized, and even in high-quality sage-grouse habitat, most sage-grouse nests are lost to predators” (Dinkins et al. 2012). “An effort is underway to remove ravens from the Migratory Bird Treaty Act, which bans harming or killing the birds” (Gurrister 2014).

### *Economic Considerations*

Losses due to predation can be significant. According to the APHIS (USDA 2015), in Utah, 5,200 sheep and 12,100 lambs were killed by predators in 2014 for a total value loss of nearly \$3 million.

Coyotes were by far the largest contributor to predation deaths (2,800 sheep and 8,500 lambs); bears were second (1,100 sheep and 1,700 lambs); and mountain lions third (700 sheep and 900 lambs).

Utah cattle are also killed by predators. According to the APHIS (USDA 2011), 300 head of cattle and 2,300 calves were killed by predators in 20\_\_ for a total value loss of \$1.1 million.

Coyotes are responsible for the majority of cattle predation, including 58 percent of calf losses and 44 percent of cow losses.

Bears were responsible for 43 percent of cow losses.

### *Custom and Culture*

Hunting and predator management have always been a way of life in Carbon County. Early pioneers and Native Americans



---

## PREDATOR MANAGEMENT

hunted predators for various reasons. This custom and culture is continued and celebrated today within state regulations.

When the pioneers arrived in Utah, wildlife presented both benefits and problems. Fish became a significant part of the pioneer diet, particularly when crop failures occurred. At times, hunting parties were formed to rid the early settlers of “pest” species.

“In 1904 Thomas Walsh of Scofield presented ninety-six coyote and six mountain lion pelts to the county clerk to collect a bounty” (Watt 1997).

Two of the principles that drove for the establishment of the Forest Reserve Act (1891) and Taylor Grazing Act (1934) were to address predator control and overgrazing.

### OBJECTIVES

- a. Predators are managed to be balanced with native plants and animals along with private property rights and economic needs in the county.
- b. The public understands the importance of controlling predators and actively participates in control programs.

### POLICIES

1. The county supports efforts to control predators.
2. The county opposes allowing predators to infringe on private property rights.
3. The county supports finding local solutions to predator concerns.
4. The county opposes introducing any new predators into

the ecosystem without consultation with and consent of the County Commission.

5. The county recognizes the authority of the UDWR and UDAF, in cooperation with APHIS Wildlife Services, for predator control on public and private lands. Opportunities for cooperation between Carbon County, the UDWR, UDAF, and federal agencies will continue to be pursued. The involved agencies will assist Carbon County in disseminating information and implementing methods to decrease predators to a manageable number.
6. Carbon County will continue to coordinate and cooperate with livestock producers and the involved state and federal agencies to effectively manage predators and decrease livestock and wildlife predation.
7. State and federal agencies will coordinate and notify the county sheriff when doing work in Carbon County.
8. To support predator control practices, Carbon County enacted a night hunting ordinance (Ordinance #2016-03).
9. Carbon County will continue to cost-share with the UDAF for predator control (County Budget Line Item; 20-4252-620-000).
10. Carbon County will continue to actively support policies that allow for the taking of coyotes, cougars, black bears, golden eagles, common ravens, and wolves, should such measures become necessary.
11. Carbon County supports all efforts necessary to ensure that programs are in place to deal with wolves should they arrive in the area.

## FISHERIES

### DEFINITION

*The places where fish breed and live. The term includes game and nongame fish species.*

### RELATED RESOURCES

Canals and Ditches, Irrigation, Floodplains and River Terraces, Riparian Areas, Water Quality and Hydrology, Water Rights, Wetlands, Wild and Scenic Rivers, Wildlife, Recreation and Tourism

### FINDINGS

#### *Overview*

Statewide, Utah's fish and wildlife resources are highly diverse. Approximately 647 vertebrate species inhabit the state; of these, 381 are considered permanent residents, including 78 species of fish (Powell 1994).

#### *Federally Protected Species*

Federally protected fish species for the region include humpback chub (*Gila cypha*), Colorado pikeminnow (*Ptychocheilus lucius*), bonytail chub (*Gila elegans*), and razorback sucker (*Xyrauchen texanus*) (UDWR 2015d).

#### *Sport Fishing*

Sport or recreational fishing is an important part of the outdoor recreation industry. The Utah Division of Wildlife Resources (UDWR) is responsible for managing fisheries in Utah with the primary goal of providing quality recreational fishing opportunities (UDWR n.d.). Assisting the UDWR in decision making and establishing management priorities are five Regional Advisory Councils (RACs), who provide local input on fisheries-related issues. Rivers, lakes, and reservoirs that provide exceptional angling experiences are given Blue Ribbon fishery (BRF) status (Utah Code § 23-14-2.6).

In Utah, sport fish species are usually grouped into 1) cold water species, which typically include whitefish, trout, char, and salmon; and 2) warm water-cool water species, which include sportfish such as bass, pike, walleye, perch, catfish, bluegill, and crappie. Rare fish species and those subject to federal listing under the Endangered Species Act (ESA) are referenced more fully in the Threatened, Endangered, and Sensitive Species section. In general, sport fishing for these species is not permitted.

The UDWR maintains community fisheries such as ponds and reservoirs that are stocked with fish. The Gigliotti Pond, Knight-Ideal Pond, and Carbon County Pond are examples of fisheries that may allow for more people to enjoy the sport of fishing (UDWR 2016).

UDWR stocks fish in many waters around the state. Utah's system of state fish hatcheries makes it possible to supply more people with a better quality fishing experience involving higher

catch rates and larger fish specimens than would otherwise be possible given the capacity of our waters to produce fish and the population's demand for fishing opportunities.

#### *Aquatic Invasive Species*

Aquatic invasive species (AIS), also referred to as aquatic nuisance species, are defined by the UDWR as nonnative species of aquatic plants and animals that cause harm to natural systems and/or human infrastructure. Not all nonnative fish species are considered AIS, such as those that are desirable for sport fishing. These may include nonnative rainbow trout (*Oncorhynchus mykiss*), largemouth bass (*Micropterus salmoides*), and catfish (*Ictalurus punctatus*) (UDWR 2009).

Invasive mussels in Utah waters have no natural competitors, so once they are established, they spread quickly, colonizing nearly any and all underwater surfaces. They are currently impossible to remove from contaminated water bodies and are easily spread to other waterbodies. The mussels can clog water transmission and power generation infrastructure, harm water-based recreational equipment, and outcompete both native and nonnative game species for nutrients. All these impacts can have profound impacts on sportfish populations (UDWR 2009).

Preventing the spread of AIS is currently the most effective management action. The UDWR has a statewide system of boat cleaning/decontamination stations, inspection check-points, and angler education efforts.

The UDWR is responsible for managing fisheries in Utah. Fish habitats (that is the state's streams, rivers, lakes, ponds, and reservoirs) are managed by the underlying landowner, which can include state and federal agencies.

#### *Economic Considerations*

"Recreational fishing provides a significant economic impact to the Utah economy and economic benefit to anglers" (Kim and Jakus 2013).

"Economic impacts or contributions are based on anglers' expenditures associated with the fishing trips. Expenditures affect the local and regional economy through the interrelationships among different sectors of the economy. Input-output (IO) analysis of expenditure patterns traces the effects "upstream" and "downstream" through the economy, resulting in the multiplier effects. The angler survey, conducted in the months of March, April, and May of 2012, revealed that a typical angler spent \$84 per trip on a fishing trip in Utah in 2011. Average expenditure to visit a BRF was estimated to be \$90 per trip" (Kim and Jakus 2013).

Fishing of over 78 species in Utah represents a significant sector of Utah's tourism economy. Almost \$400 million was spent in association with fishing, hunting, and wildlife appreciation activities in 1985 (Powell 1994).

---

## FISHERIES

### *Custom and Culture*

A History of Carbon County (1997) describes early fishing practices: “Fishing was an enjoyable sport for many. As early as 1900 the north fork of Fish Creek was used for planting and breeding. In 1902 the Utah Fish and Game Department informed county commissioners that Carbon County had been allotted 50,000 young trout for planting in the county’s streams. In the 1920s Horsley Dam was built at Scofield, and the resulting Scofield Reservoir became another recreation area.”

A 2008 survey of Utah residents “generally considered water resources used for agriculture, homes, and businesses, and that provide fish and wildlife habitat...to be most important for local quality of life [compared to other public land resources]” (Krannich 2008).

In the Carbon/Emery area, 72.6 percent of respondents ranked water resources that benefit fish and wildlife habitat as “very important” (Krannich 2008).

Recreational fishing has been part of the local custom and culture for more than 100 years.

### OBJECTIVES

- a. Fisheries support healthy ecosystems and provide sport fishing.
- b. Fishery management within the county involves active participation from the county.

### POLICIES

1. The county values fish and wildlife as a source of recreation and as a means to provide food.
  2. Carbon County supports recreational activities, including fishing, that add to the lifestyle and culture of the county and bring additional economic benefits to the area.
  3. The county recognizes the authority of the UDWR to manage wildlife and fish, and supports their efforts to maintain and improve habitat. Opportunities for cooperation between the county, the UDWR, and federal agencies will be pursued. The county will assist agencies in disseminating information and implementing methods to increase the usability of public lands for fish and wildlife.
- Fishing in Carbon County is predominantly done at Scofield. Some fishing is on Lower Fish Creek and the upper end of the Price River but more occurs on the Green River and in the basin of the Upper Fish Creek and French Creek Drainages.
  - High economic value is not realized in the majority of Carbon County because of fishing. The full service business in Scofield is the exception to this with the majority of its business done during the summer months that include many recreationists including those fishing and boating on the reservoir.
  - Carbon County does not support the purchase of private property or water rights by state or federal agencies using the land and water conservation funds or any other source for funding spent that takes private property away from our children’s future development and off of county tax rolls reducing Carbon County’s tax base.



---

## **ECONOMICS + SOCIETY**

# AIR QUALITY

## DEFINITION

*The degree to which the ambient air is pollution-free, measured by a number of indicators of pollution.*

## RELATED RESOURCES

Energy, Fire Management

## FINDINGS

### Overview

Air pollutants are those substances present in ambient air that negatively affect human health and welfare, animal and plant life, property, and the enjoyment of life or use of property. Ambient pollutant concentrations result from interaction between meteorology and pollutant emissions. Because meteorology can't be controlled, emissions must be managed to control pollutant concentrations.

The Clean Air Act (CAA) of 1970 and its amendments set the laws and regulations regarding air quality, give authority to the U.S. Environmental Protection Agency (EPA) to set standards and rules, and delegate regulatory authority to individual states with EPA oversight, provided certain criteria are met. The purpose of air quality conformity regulations, enforced by the EPA and the Utah Division of Air Quality (UDAQ) in Utah, is to protect public health and welfare by lowering pollutant concentrations through a reduction in emissions (Utah Division of Air Quality 2015).

The CAA is the main body of legislation regulating air quality in the U.S. It addresses air pollution emissions from stationary (power plants, mines, refineries, etc.) and mobile sources (cars, trucks, trains, etc.), setting maximum concentrations of pollutants that are widespread and harmful to human health, limiting emissions of particularly harmful chemical compounds, improving air quality in areas with poor air quality, keeping the air clean in areas with good air quality, and delegating regulatory authority.

### Economic Considerations

Maintaining air quality is important to Carbon County because of the related economic and health consequences:

Increased time away from work and health care costs associated with stroke, heart disease, chronic and acute respiratory diseases, including asthma, and premature death.

Decreased appeal of tourism.

Deterring new businesses and industries from moving to the area.

Increased operating expenses for significant pollutant sources due to pollution control measures as required by air quality management plans.

Stunted growth and yield of agricultural crops.

Threat of additional federal regulation and potentially reduced

highway funding.

Source: (World Health Organization 2014, Pope et al. 1992, Utah Economic Council 2014, UDAQ 2012, NOAA 2009).

### Custom and Culture

Carbon County has always valued clean air.

As evidenced by its name, Carbon County's economy, history, and culture is closely tied to the coal industry. The economy and coal are considered to be essential parts of the custom and culture. Air quality regulations have impacted the national market for coal, which impacts local production. An historical example is illustrated in A History of Carbon County (1997), "In the early 1970s federal energy and environmental legislation calling for low sulfur emissions from electricity-generating plants created a great demand for low sulfur Carbon County coal. In 1985, however, federal air quality standards required the removal of 85 percent of the sulfur in coal instead of setting a ceiling on emissions from a generating plant. Removing sulfur from an already low sulfur coal was more difficult than removing it from coal with high sulfur content, thus decreasing the demand for Utah coal."

## OBJECTIVES

- a. Reduce the risk of wildland fire.
- b. Utah Division of Air Quality will manage air quality in Carbon County.
- c. Federal planning response to county policy regarding Air Quality.

## POLICIES

1. The county recognizes that one of the threats to their air quality is catastrophic wildfire, and encourages agencies to enact programs that allow prescribed burning, forest improvement techniques such as forest thinning, pruning, and removal of brush and insect-killed trees, and other methods for reducing fire hazard that ultimately protect air quality.
2. Agencies should establish forest management programs that encourage fuel reduction of forests and wildlands by means other than burning, utilizing all means of fuel reduction including but not limited to: logging, forest thinning, brush mastication, livestock grazing, herbicide use, and public firewood utilization.
3. Federal agencies should work cooperatively with the Utah Airshed Group to manage emissions from wildland and prescribed fire activities.
4. Encourage agencies to ensure that prescribed burns will be approved and timed to maximize smoke dispersal.
5. The best available control technology, recommended by



---

## AIR QUALITY

the UDAQ, should be applied as needed to meet air quality standards.

- Federal agencies should continue to work cooperatively with state, federal, and tribal entities in developing air quality assessment protocols to address cumulative impacts and regional air quality issues.
- Carbon County can see that air quality can be used as a way to control lands around or adjacent to national monuments, national parks, wilderness areas or any area deemed necessary by the EPA or the governing Administration with the purpose of reducing the productivity of goods or resources which devalues the area, creating the conditions for catastrophic fires. This in turn directly raise the costs of management and increases economic impacts to area residents and the local government.
- Some emissions poses no health risk but federal agencies never mention this fact to curtail public fear. Regional haze is one of those issues. This should be rectified and agencies and their employees guilty of scaring the public should directly responsible for these actions.
- Actions created by Federal policies create a large portion of our air problems in the west and in Carbon County such as the Seeley Fire and those allowed to start in the Nine Mile

Canyon WSA. The health implications due to the smoke and other atmospheric emission brought on by these and other large fires on federal reservations, parks, BLM and Forest Service lands that occur on an annual basis due to legal challenges by the same groups that support the restrictions and prohibitions of timbering and other treatments should be addressed by the allowance of state prosecutorial discretion and those groups should be made responsible as should the judge that make decisions that stop fire management.

- Carbon County strongly believes that the best and most accurate data to make determinations from is that which is done locally by UDAQ. This agency is well sourced and funded to make determinations and set guidelines based on real data.
- EPA has stated that its actions are based on the data monitored, collected and interpreted by the UDAQ this is not true in many cases. In recent years many of EPA's actions have been found to be driven more by the political expediency. We strongly feel decisions affecting the health, safety and welfare of our citizens is better left to those who are closer and more affected. Given the data and information on the ground, Carbon County is quite sure that the state is better equipped to monitor, regulate and adjudicate the impacts to air quality in Utah.

## ECONOMIC CONSIDERATIONS

*The level of success of a local or regional economy touches every person, family, business, and government organization. Strong economies create jobs and payrolls, and generate tax revenues to provide infrastructure and services. All natural resources and public services described in this plan or otherwise are related to the local economy.*

### FINDINGS

#### Overview

Utah State Code 17-27a-401 states that a general plan “may define the county’s local customs, local culture, and the components necessary for the county’s economic stability.” Because family and self-reliance are core values of county residents, family-sustaining jobs are essential to the custom, culture, and quality of life. Residents want jobs that are full-time, year-round, and pay enough to support a household (the average national household size was 2.64 people from 2011 to 2015, according to the U.S. Census Bureau [2016]). The percentage of jobs that depend on natural resources are disproportionately higher in rural areas than in urban areas; such jobs include mining, tourism, and ranching. Therefore, burdensome federal or state regulations are extremely undesirable when they could lead to, and may have already caused, lower employment opportunities in any industry.

If a disproportionate percentage of jobs in the area depend on one industry, it makes for unstable economic conditions. High unemployment rates have widespread consequences for the health, safety, and welfare of residents and community services (e.g. poverty, domestic violence, lack of resources for health care, etc) (NNEDV 2010). The county desires to increase the number of quality jobs within its borders and champion employment opportunities for the current workforce and future generations.

Carbon County’s economic development objectives are not entirely described here, but they do include diversification. County leaders feel that it is important to diversify from the energy industry, which is the heart of Carbon County. The industries the county is focusing on are:

- Manufacturing
- Fabricating
- Transportation
- Food processing
- Trade jobs, customer service, and engineering tech support
- At-home/telecommuting work that includes customer service or technical

(T. Ursenbach, Carbon County Economic Development, personal communication)

In 1970, Carbon County’s population was 15,750. With advancing mining technology (e.g., the long wall), fewer employees were needed in the mines and many people lost their jobs. In 1990, the population dropped to 20,169, then to 19,965 in 1995. From 1995 to 2015, the population continued to grow and shrink

depending on the economic cycle of coal, with the lowest point in 2005 (19,338 residents) and the highest population in 2011 (21,485 residents). Since 2011, the population in Carbon County has continued to decline; the largest decline was in 2013, with an estimated 500 people leaving the county. 2015 is the most current population estimate of 20,479. In 2015, the population dropped 7 percent from the previous year. (DWS 2017, and T. Ursenbach, Carbon County Economic Development, personal communication).

In 2001 there were 8,652 employees and by 2008 there were 9,657 employees. In 2009, the amount of employees started to decline with 9,574 and this number has fluctuated every year since. (DWS 2017, EPS 2017d, and T. Ursenbach, Carbon County Economic Development, personal communication).

#### Recent Trends in Labor and Non-Labor Earnings

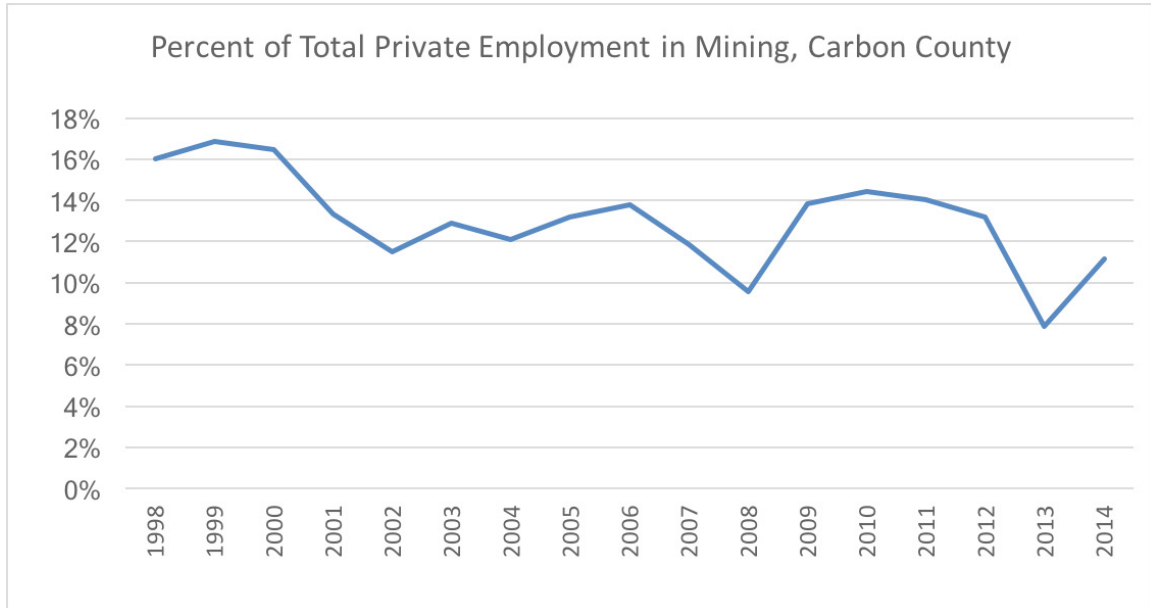
From 1970 to 2015, labor earnings grew from \$238.4 million to \$422.2 million (in real terms), a 77 percent increase (EPS 2017c). This represents net earnings by place of residence, which is earnings by place of work (the sum of wage and salary disbursements, supplements to wages and salaries, and proprietors’ income) less contributions for government social insurance, plus an adjustment to convert earnings by place of work to a place of residence basis.

From 1970 to 2015, non-labor income grew substantially, from \$78.5 million to \$291.2 million (in real terms), a 271 percent increase (EPS 2017c). The Department of Commerce defines non-labor income as dividends, interest, and rent (money earned from investments), and transfer payments (includes government retirement and disability insurance benefits, medical payments such as mainly Medicare and Medicaid, income maintenance benefits, unemployment insurance benefits, etc.) make up non-labor income. Non-labor income is reported by place of residence.

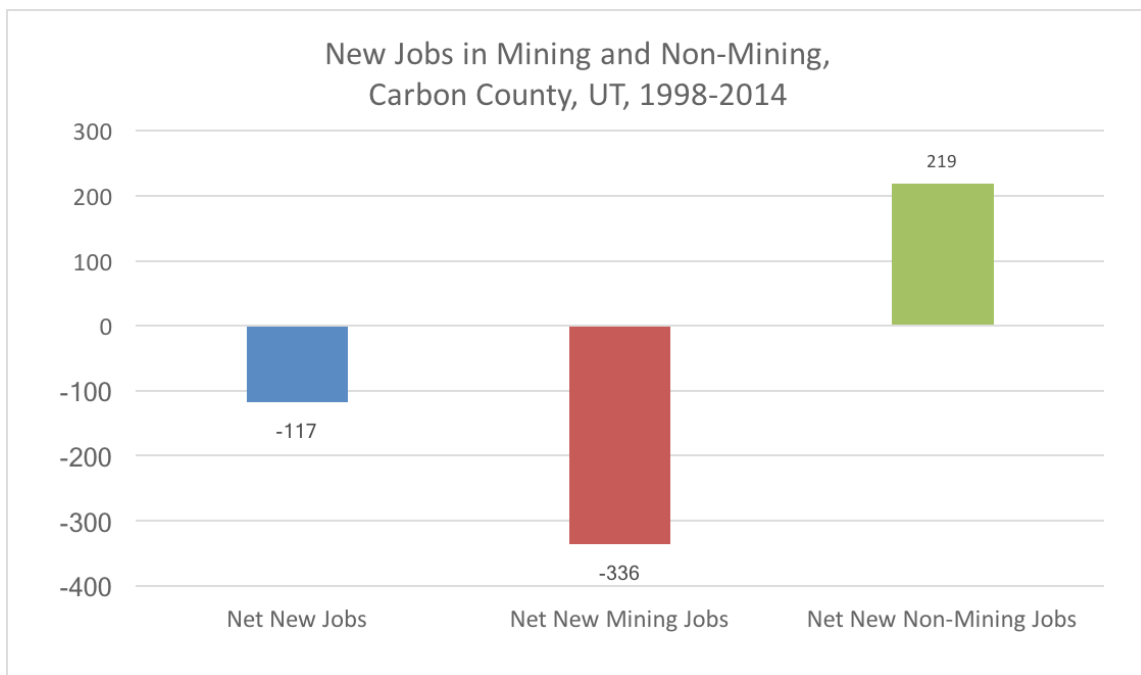
#### Trends in Employment by Industry

“Coal, the state rock of Utah, has dominated Carbon County’s economic history. Its high wages help bolster the entire county economy. During the 90’s the economic base began diversifying into trade, transportation, utilities, government and various services” (Price River Watershed Conservation District 2012).

## ECONOMIC CONSIDERATIONS



In 1998, mining represented 16 percent of total employment in the county. By 2014, this had decreased to 11.15 percent (EPS 2017b). Source: Economic Profile System 2017b



Source: Economic Profile System 2017b

---

## ECONOMIC CONSIDERATIONS

“In 2008, Carbon County had the third-highest employment growth rate in Utah with a growth rate of 4.7 percent. The county held precisely the same position in 2009, but with the second-smallest job loss in Utah. This amounted to roughly 110 jobs lost over the year. Due to the relative stability of the county’s economy, Carbon County continues to resist the current recession” (Price River Watershed Conservation District 2012).

“Wages increased slightly in 2010. The average monthly wage increased from \$3,060 in 2009 to \$3,187 in 2010. Median household income for 2010 was \$45,244. The three largest employers in the county for 2010 were Carbon County School District, the State of Utah, and Canyon Fuels Company” (Price River Watershed Conservation District 2012).

### OBJECTIVES

- a. The county has a strong and diverse tax base.
- b. The county has low unemployment and residents are self-sufficient.
- c. The county retains and preserves quality jobs.

- d. The county is business-friendly and supports improved education, training, and advancing employment opportunities for people who choose to work in Carbon County.
- e. Quality jobs in Carbon County are those that are full-time, year-round, and could support a household.

### POLICIES

1. The county will promote economic development by coordinating with the state and neighboring jurisdictions.
2. The county does not support burdensome business regulations that could negatively impact quality employment opportunities.
  - Carbon County needs to be consulted by agencies or governmental entities setting any regulations to ascertain and more fully analyze the impacts to the community.
  - Federal and State agencies shall consider the relationship locals have with the land and declare this relationship an intricate part of their culture and a resource that must be recognized when setting agency objectives and policies for land planning and land use.

## CULTURAL, HISTORICAL, GEOLOGICAL + PALEONTOLOGICAL

### DEFINITION

*In general terms, this refers to human and natural resources which have intrinsic value because of their age, anthropological, heritage, scientific, or other intangible significance.*

- *Cultural: of or relating to culture; societal concern for what is regarded as important in arts.*
- *Historic: of, or pertaining to, history or past events.*
- *Geological: the study of the Earth, its rocks, and their changes.*
- *Paleontological: includes the study of non-human fossils to determine organisms' evolution and interactions with each other and their environments.*

### RELATED RESOURCES

Land Access, Land Use, Energy, Air Quality, Law Enforcement, Mineral Resources, Mining, Recreation and Tourism, and Water Quality and Hydrology

### FINDINGS

#### *Cultural and Historical*

Cultural resources include archaeological sites, standing structures (e.g., buildings, bridges), and even places of importance under federal regulation that are more than 50 years of age. Many historical and cultural resources are very sensitive and protected by law.

“Anthropologists have divided human occupation of eastern Utah into four general cultures. The first, the Paleo-Indians, existed from about 12,000 to 8,500 years ago. The Archaic peoples who followed are subdivided into several phases over a 7,000-year span from 8,500 to 1,500 years before the present. The Fremont people, who flourished in the area between A.D. 700 to 1300 are the best known of the prehistoric peoples who occupied Carbon County. The fourth group includes Ute tribes and other Numic-speaking Native Americans who occupied the area from the demise of the Fremont Indians to the arrival of nineteenth-century white settlers” (Watt 1997).

The first Euro-Americans to make their way into Utah, by way of Spanish Fork Canyon in Utah County, were members of the 1776 Dominguez-Escalante expedition (Morgan 1948). The area was next entered when General William H. Ashley, a co-owner of the Rocky Mountain Fur Company, entered the region while traveling down the Green River. Ashley cached his supplies where the Green and Duchesne Rivers meet, and continued into Carbon County (Watt 1997).

Shortly after the settling of Salt Lake City by the Mormons in 1847, eager land seekers began moving southward to the rich, open farmland of Utah Valley and then east toward Carbon County. The first permanent settlement in the Carbon County

area was established by Caleb Rhoades in 1877, near the site of Price (Utah Historical Records Survey Project 1940).

In late 1877, construction began on the Utah and Pleasant Valley Railroad (known as the U&PV, incorporated in 1875) from Springville in Utah County to the Winter Quarters Mines in Carbon County (Carr and Edwards 1989). By 1878, 26 miles of track had been laid in Spanish Fork Canyon to a point south of the future town of Tucker, where it headed west toward the mines.

With the system of railroad transportation in place, the Castle Gate, Helper, and Price areas now had access to the resources and materials necessary to support increased mining activity and a larger population. Not only could building materials be delivered easily to Carbon County, but food, clothing, and domestic supplies necessary to survive the harsh winters could also be obtained with a reasonable expenditure of money and effort. The necessity for coal and coal products during the latter portion of the 19th century and the first half of the 20th century made coal exploration a national priority. In addition to providing coal fuel and coal gas, coal and products derived from coal were important to the iron, steel, synthetic rubber, and dye industries (Prinz et al. 1978). Growth in Carbon County slowed rapidly in the mid 1900s with the development of more powerful diesel locomotive engines that made the helper engines obsolete.

In the 1960s, the county attempted to bring in more industry to the region, and had some success with one clothing manufacturer moving to Price in the 1960s (Watt 1997). Since that time, Carbon County has become a transportation hub with access to the energy industries in the county, as well as access to U.S. Interstate 15, U.S. Interstate 17, and rail access. Utah State University Eastern (formerly College of Eastern Utah) is also located in Price. The university focuses on vocational orientation, and providing a well-trained workforce for the county, as well as counties along the Wasatch Front. The area is also starting to be known for its recreation opportunities such as ATV riding, snowmobiling, hiking, and horseback riding.

### GEOLOGICAL

Carbon County is in the eastern central portion of the state, surrounded by the Book Cliff range to the north, the San Rafael Swell to the south, and the Wasatch Plateau to the west. The area topography includes both mountainous regions and desert terrain. Price City sits at an elevation of approximately 5,500 feet above sea level. Mancos shale is abundant, consisting of calcite, aragonite, marine fossils, coal, jet, and carbonized plant life (SUEDD 2015).

The Book Cliffs are made up of Cretaceous rocks and Mancos shale, also known as the Mesa Verde group. The Roan Cliffs are Tertiary lake deposits from the Paleocene and Eocene Epochs. The Roan Cliffs have the largest deposit of tar sand in the United States in beds 10 to 300 feet thick (SUEDD 2015).



## CULTURAL, HISTORICAL, GEOLOGICAL + PALEONTOLOGICAL

“The geologic formation that has had the greatest impact on Carbon County is coal, a rock derived from wood and plant tissues. These plants flourished in swamps which covered the country several hundred million years ago. Most of Carbon County’s coal had its beginning in the Cretaceous period. Generations of plants grew and died, then fell into the shallow waters where they underwent only partial decay. In most cases, plant debris in Carbon County accumulated until it was several feet thick. This debris was inundated with water and eventually covered with clay, sand, or lime mud. In time the plant debris was compressed by the mud, which became limestone, sandstone, and shale. The plant debris changed from peat to lignite to bituminous coal. Periodically the climate became wet and another swamp laid down another layer of coal-forming plant debris, and the process was repeated. Over millions of years the process formed a large coal area that exceeded any other in the western United States” (Watt 1997).

### SOILS

Carbon County soils generally fall under mollisols, entisols, and aridisols (USU 2009).

“Aridisols have a light color because the arid climate typically limits plant biomass production and the accumulation of organic matter. They are moderately to very strongly alkaline, and they often have significant accumulations of calcium carbonate in the subsoil. In many locations they contain a carbonate-cemented hardpan at some depth in the soil profile... Aridisols support drought resistant vegetation. Sagebrush species, saltbush species, and greasewood are the dominant vegetation types, but their presence and distribution are highly dependent on the soil depth, texture, salinity, and alkalinity. Aridisols also support Joshua tree and yucca in the lower elevations of the Mojave Desert in the southwestern corner of the state. Juniper and pinyon pine are found in the intergrade zone of Aridisols and Mollisols. Aridisols are commonly associated with Entisols and areas adjacent to and within playa, sand dune, and rock outcrop formations. Some irrigated farming occurs on Aridisols, but without irrigation they can be managed for livestock grazing, wildlife habitat, and recreation” (USU 2009).

“Mollisols are characterized by a thick, dark, relatively fertile surface soil. They typically form under grassland vegetation, in semiarid to sub-humid shrub steppe, or in forested zones under aspen and where grasses and forbs are important components of the understory. Mollisols are rich in humus (dead and decayed plant matter contributed mainly by the fine root turnover by grasses, forbs, and shrubs). They primarily occur on lake terraces, alluvial fans, foothills, mountains, high plateaus, and valley bottoms. Mollisols are among some of the most important and productive agricultural soils. At higher elevations in Utah, they support rangeland, wildlife habitat, recreation, and timber, while at lower elevations, they support irrigated and non-irrigated

cropland, rangeland, and wildlife habitat” (USU 2009).

### Seismicity

“The Southeastern region’s earthquake threat from the Intermountain Seismic Belt and other crustal rock strain release areas is minimal, with a limited risk due to the large areas of undeveloped lands and smaller number of faults. During historic time the largest recorded earthquake has not reached above 5.3 on the Richter magnitude scale, yet geologic investigation has determined much larger events have happened in the recent geologic past and could happen in the future. These events are associated with numerous faults, which exhibit signs of prior movement during the quaternary time period or last 1.6 million years...” (SEUALG 2003).

Active coalfields near East Carbon/ Sunnyside, Hiawatha, Wattis, Castlegate, and Soldier Canyon may affect seismicity and may be correlated with underground coal extraction methods (SEUALG 2003).

Seismic monitoring in the Utah region is conducted by the University of Utah Seismograph Stations in partnership with the U.S. Geological Survey as part of the Advanced National Seismic System.

### PALEONTOLOGICAL

“Cleveland-Lloyd Dinosaur Quarry contains the densest concentration of Jurassic-aged dinosaur bones ever found. Over 12,000 bones (belonging to at least 74 individual dinosaurs) have been excavated at the quarry. Cleveland-Lloyd Dinosaur Quarry has helped paleontologists learn a great deal about the Jurassic period, yet the site presents at least as many mysteries as it helps to solve. Curiously, more than 75% of the bones come from carnivores, primarily *Allosaurus fragilis*. With more than 46 individual specimens of *Allosaurus*, scientists have been able to deduce much about how *Allosaurus* aged and compare individuals to better understand intraspecies diversity. Yet the sheer density of bones proposes many questions” (BLM 2017).

### *Control and Influence*

“Laws are in place to make sure that federal and state projects don’t carelessly destroy cultural resources... State and federal agencies that undertake projects must ‘take into account’ how their project activities will affect historic and archaeological resources. Common projects include construction, rehabilitation, demolition, licensing, permitting, or transfer of public lands... The State Historic Preservation Office (SHPO) provides guidance to agencies and governments who are affected by these laws” (Utah Division of State History 2016).

The National Historic Preservation Act is legislation intended to preserve archaeological and historical sites in the U.S. The act created the National Register of Historic Places, the list of National Historic Landmarks, and the SHPO. The National

## CULTURAL, HISTORICAL, GEOLOGICAL + PALEONTOLOGICAL

Register of Historic Places, managed by the National Park Service, is the nation's official list of buildings, districts, sites, structures, and objects worthy of preservation, and are officially designated as "historic properties." The SHPO was created in order to coordinate a statewide inventory of historic properties, nominate properties to the National Register, manage the statewide preservation plan, and educate and consult locals.

Building codes that meet seismic standards are controlled by the county, and in some places the individual municipalities.

The Utah Antiquities Act (UCA 9-8-404 et seq.) protects significant paleontological resources and applies to all paleontological resources that are on or eligible for inclusion in the State Paleontological Register.

### *Economic Considerations*

The value of cultural, historical, geological, and paleontological resources is difficult to quantify. However, there is intrinsic value of each resource for its contribution to the shaping of our current civilization, culture, and lifestyle.

Earthquakes along the Wasatch Front will certainly impact the people, economy, and infrastructure of Carbon County. Roads, pipelines, power lines, water resources, telecommunications, and food systems could all be disrupted in the event of a natural disaster in Utah or western Colorado.

Though unmeasured in the economy, the value brought to the county by paleontological research and tourism is important.

Cultural, historical, geological, and paleontological resources are often connected with tourism and recreation. For example, the Utah Geological Survey has created a GeoSites online interactive map to help people explore Utah's geological sites.

Historic buildings and districts provide character, a sense of stability, and a unique marketing angle for businesses; thus, community planners can draw upon local historic resources to stimulate economic development.

A study by the Utah Heritage Foundation found that, "Utah benefited by \$717,811,000 in direct and indirect spending by visitors to Utah heritage sites and special events, and \$35,455,268 in investment that stayed in Utah rather than [sic] sent to Washington, D.C. because of projects that utilized the Federal Rehabilitation Tax Credit" (Utah Heritage Foundation 2013).

Historic preservation in Utah is not about putting a fence around monuments. The historic resources of Utah are part of the daily lives of its citizens. However, the historic resources of Utah are also providing a broad, significant contribution to the economic health of this state (Utah Heritage Foundation 2013).

### *Custom and Culture*

The custom and culture of Carbon County is to respect all cultures and preserve or honor significant historical stories, figures, objects, structures, or events. It is the custom of the county and its

residents to rely on the land and geology for fuel, fiber, food, and minerals. Mining, mineral extraction, and ranching have been a way of life for more than a century. Historic photos and accounts evidence the tradition of resource utilization and dependence in Carbon County.

### OBJECTIVES

- a. Our cultural, paleontological, historic, and prehistoric sites are treasured and are protected.
- b. Cultural, historical, geological, and paleontological resources are identified and adequately protected.
- c. Protected resources contribute to cultural education of the county and also to the economy.

### POLICIES

1. Manage the non-WSA east Carbon County region so as to protect prehistoric rock art, three-dimensional structures, and other artifacts and sites recognized as culturally important and significant by the SHPO.
2. Mineral development can occur if reasonable and effective stipulations and conditions to protect against damage to cultural resources accompany decisions to issue mineral leases, permit drilling, or permit seismic activities in the area. Such drilling and seismic activities should not be disallowed merely because they are in the immediate vicinity of cultural resources if it is shown that such activities will not damage those resources.
3. Encourage federal land management agencies to notify and share information about damage to cultural resources with the county sheriff. Cooperation will improve enforcement and investigation, and may deter future damage and vandalism.
4. Continue to share information with local museums and other learning institutions as more cultural, historical, geological, and paleontological information becomes available.
5. Protect cultural, historical, and paleontological resources from theft and vandalism.
6. Carbon County has an abundance of prehistoric and archeological resources, as well as a strong cultural heritage. Carbon County's past, including dinosaurs, Native Americans, early settlers, and the mining industry, is proudly displayed and depicted in numerous museums and points of interest. Carbon County will work with state and federal agencies to protect these resources.
7. Carbon County views the preservation of its heritage and culture and associated heritage and tourism industries as a critical part of the planning process. The preservation of heritage and cultural resources, including access to the sites and settings of local history, has great significance for the citizens of Carbon County.

---

## CULTURAL, HISTORICAL, GEOLOGICAL + PALEONTOLOGICAL

8. The county supports preserving cultural, historic, geological, and paleontological resources according to state and federal laws.
9. The county opposes public land management actions that restrict public access to cultural, historic, geological, and paleontological resources, except as required by law.
10. The county favors management that makes cultural, historic, geological, and paleontological resources available for educational purposes that can be enjoyed by the public.

---

## LAW ENFORCEMENT

### DEFINITION

*The designated personnel group who has federal, state, or local authority within a jurisdiction to enforce the law or respond to an emergency.*

### RELATED RESOURCES

Recreation and Tourism, Land Use, Land Access, Fire Management, Water Rights

### FINDINGS

#### *Overview*

Law enforcement in Carbon County includes many jurisdictions.

In 2013, the Utah Association of Counties reported that there were 83 law enforcement employees for Carbon County. There were 826 adult arrests and 48 violent crimes in 2013 (Utah Association of Counties 2015).

The elected sheriff is the chief law enforcement officer in the county. The sheriff derives primary jurisdiction and authority over law enforcement matters in Carbon County by virtue of the Constitution of the State of Utah, state statute, and county ordinance.

An example of law enforcement coordination involving public lands is livestock theft. The Livestock Inspection Bureau at the Utah Department of Agriculture and Food deals with cases of livestock theft in close coordination with county sheriff's offices. Cases of livestock theft are eventually prosecuted through the county attorney. Additionally, in situations of disease outbreak, the Livestock Inspection Bureau works with sheriff's offices to help enforce livestock quarantines (UDAF 2017).

#### *Economic Considerations*

An appropriate level of service for law enforcement is essential for all levels of government to protect the health, safety, and welfare of the county, which will in turn positively impact the local industry.

Annual operating costs for local law enforcement (county sheriff's department) are influenced by public land law enforcement activities, including coordination activities with state and federal law enforcement agencies. Costs associated with search and rescue operations are increasing in many areas of the state, particularly with increased recreation use in remote lands. Utah counties have the option to charge people who are rescued and/or can receive reimbursement through the state's Search and Rescue Financial Assistance Program.

The Utah Search and Rescue Assistance Card (USARA Card) offers expense-paid rescue to individuals (hunters, hikers, and other backcountry enthusiasts) for an annual fee. Money raised by the program will support the state's Search and Rescue Financial Assistance Program. County Search and Rescue teams

will receive reimbursement for equipment, training, and rentals from the program. Such expenses are often borne by the counties.

#### *Custom and Culture*

As described in A History of Carbon County (1997), local law enforcement and community values have always been important.

It is part of the custom and culture of Carbon County to handle local law violations on a local level.

### OBJECTIVES

- a. The sheriff's office and the county commission have a close working relationship with open lines of communication.
- b. The county citizens have a familiarity with law enforcement through public outreach by the sheriff's office.
- c. All law enforcement activities in the county are directed by the county sheriff.
- d. State and federal agencies notify the sheriff regarding crimes on the lands they manage, respectively. Agencies cooperate with and notify the sheriff of all investigative or prosecutorial activities.

### POLICIES

1. Adhere to Resolution 2014-03: A resolution pertaining to the proper balance and distribution of jurisdictional power between Carbon County and the government of the United States.
2. Federal employees or agents will be expected to notify and supply a copy of the report on any suspects detained for federal regulation violations in Carbon County. A joint review may be initiated by the sheriff to determine if any statute or law has been violated.
3. The sheriff is the lead law enforcement officer in Carbon County.
4. All law enforcement will be coordinated through the Sheriff's Office. This action includes notification of detainment of suspects for federal regulatory violations.
5. The sheriff will notified prior to any enforcement operations in his jurisdiction.
6. Ensure public safety on public lands.
7. Maintain adequate planning for the ability to provide law enforcement, emergency fire, rescue, and other services to visitors on public lands.
8. Use inter-local and inter-agency agreements to provide planning and funding of emergency services on public lands.
9. It is in the best interest of Carbon County and its citizens that the county sheriff assert his authority on all Carbon County lands, public or otherwise, and continue exercising such

---

## LAW ENFORCEMENT

authority if in his best judgment such is called for, despite any contrary or inconsistent request, demand, or opinion from any federal agency or officer. This policy objective is enhanced if the sheriff and corresponding federal and state law enforcement agencies notify each other immediately concerning any law enforcement activities on public lands. The sheriff must be notified of all law enforcement actions on public land in the county.

10. The county supports the sheriff in protecting the public,

enforcing the laws, and maintaining the peace.

11. Law enforcement should protect the rights of the citizens of the county.
12. Law enforcement should protect the health, safety, and welfare of the citizens of the county.
13. Federal and state law enforcement that needs to take place in the county should be coordinated through the the county sheriff's office.



## RECREATION + TOURISM

### DEFINITION

*Recreation is an activity done for enjoyment. Tourism is the social, cultural, and economic phenomenon of visiting places for pleasure.*

### RELATED RESOURCES

Land Access, Land Use, Wilderness

### FINDINGS

#### Overview

“The abundance and diversity of recreational opportunities and stunning landscapes on Utah’s public lands are a critical component of Utahns’ outdoor heritage in numerous rural communities across the state, and have helped establish outdoor recreation as a vital component of Utah’s economic vitality” (BLM 2016).

“In 2015, American and foreign visitors made over 7.5 million visits to Utah’s public lands, supported 4,447 Utah jobs, and contributed \$460 million in economic activity to the state” (BLM 2016).

Outdoor recreation is a significant and growing part of Utah’s economy. Tourists and travelers spent a record \$7.8 billion in the Utah economy during 2014, and the tourism industry supported an estimated 137,192 jobs (Office of Outdoor Recreation 2013).

“Carbon County has many paleontological, cultural, historical, and recreational assets. Bordered by the Green River on the east and the heavily forested Wasatch Plateau on the west, Carbon County is home to the Cleveland-Lloyd Dinosaur Quarry, the densest collection of Jurassic-age dinosaur fossils, the world’s longest Native American ‘art rock gallery’ at Nine Mile Canyon, and one of the best places in Utah to ice-fish for trout—Scofield State Park. Carbon County also receives some ‘pass-through visitation’ from travelers driving between Salt Lake City and Denver, Moab, and the nearby San Rafael Swell” (Kem C. Gardner Policy Institute 2016).

“Reported levels of participation in these public land recreation activities were uniformly high throughout the state for camping, picnicking, day hiking, wildlife viewing, visiting historic sites, and sightseeing/pleasure driving... participation in camping was reported by between 55% of respondents (Iron/Washington counties) and 76% of respondents (Carbon/Emery counties)” (Krannich 2008).

According to a 2008 survey published by Utah State University, 17.5 percent of Carbon and Emery residents respondents indicated they have mountain biked on public lands in Utah sometime during the preceding 12 months, and 54.6 percent of residents in those two counties reported having hunted on public lands in the previous year. Additionally, 85.9 percent of respondents in Carbon and Emery Counties reported sightseeing or pleasure

driving on Utah public lands, and 76.3 percent of respondents in these counties reported that they had camped on public lands in Utah sometime during the preceding 12 months (Krannich 2008).

The economic impact to the county from recreation and tourism is growing slightly, but is not expected to reach as high a level in the foreseeable future as in some other Utah counties. In fact, there is fear of some negative economic impact from recreation and tourism due to increased demand from local search and rescue and emergency medical services.

Carbon County considers OHV use a part of recreation and has adopted a trails annex to this plan and will continue to revise that plan as conditions change. The county has designated the Dry Valley, Pondtown, and Fish Creek roads located west of Scofield Reservoir as OHV open routes, and are considering other similar designations.

The county can influence recreation by providing adequate recreation infrastructure (showers, campsites, trails) and advertising recreation resources. The county cannot control consumers nor influence competing destinations.

#### *Economic Considerations*

Carbon County had an 11.3 percent leisure and hospitality share of total private jobs in 2014, placing it at 19th in the state (EPS 2016).

“Total tourism-related tax revenues increased 5.6% in fiscal year 2014, with notable increases in both county and municipal (Price) transient room tax revenue. In 2014, even though total taxable sales in the leisure and hospitality sector increased 6.3%, sales had still not surpassed 2011 and 2012 totals. Winter quarter sales in arts, entertainment, recreation and accommodations experienced the greatest year-over increases, while those same subsectors reported year-over sales decreases in the spring and summer months. As for tourism-related jobs, Carbon added a total of 30 combined accommodations and food service jobs, while losing 27 gas station jobs. Since 2010, Carbon County’s spring/summer leisure and hospitality job sector has grown by about 6% — or around 40 jobs — from the fall/winter months.

“In 2013 and 2014, Carbon and Uintah County hotel occupancy rates rose steadily, peaking from June to September, followed by steady declines through the winter. Carbon and Uintah Counties’ average annual occupancy rate and revenue per available room declined slightly in 2014, while the average daily room rate remained flat. Scofield State Park reported 19,885 visitors during the first nine months of FY2015, up 30% from the same me period in FY2014” (University of Utah 2015).

#### *Custom and Culture*

On July 4th, 1918, a regional rodeo was held as a means of recreation; according to A History of Carbon County (1997), it was a success. Dances, baseball, rodeos, wrestling, parades, holiday celebrations, fishing, and hunting are all described as part

---

## RECREATION + TOURISM

of the past and present culture of the county.

“Hunting has long been a popular diversion. Rabbit hunts often turned into competition between groups of hunters. In 1908 W.F. Olson and his small army of hunters bagged seventy-six rabbits; Carl Gunderson and his group shot seventy-five” (Watt 1997).

For more than a century, citizens and visitors have been taking advantage of the unique landscape in Carbon County for recreation. Outdoor pastimes add to the quality of life for the area and are essential in attracting new residents and visitors.

### OBJECTIVES

- a. Positive working relationships exist between all interested and affected parties in public lands recreation.
- b. Local recreation opportunities are promoted.
- c. Public lands are safe for recreation.
- d. The development of tourism infrastructure will be an important component of the county’s overall economic development strategy.
- e. Carbon County supports responsible public land recreation and tourism.

### POLICIES

1. The county views recreation and tourism as an additional economic opportunity. The county believes this opportunity may only be in its infant stage. The county will continue to assist the travel council in promoting the county’s tourist industry. Carbon County believes and encourages private sector development of recreational facilities and services. The county will also continue to support and work in partnership with agencies, entities, and interest groups to promote recreation and tourism in Carbon County.
2. Participate as an active partner with public land management agencies to ensure that public land recreational resources are managed in ways that contribute to the protection of resources, the overall quality of life, and the recreational experience of county residents and visitors.
3. Support or develop camping sites, both developed sites (for cars and R.V.s) and remote sites (for hikers, backpackers, and equestrians).
4. The county supports locating camping areas at a reasonable distance from streams to protect water quality.
5. Provide a diversity of high-quality hunting and viewing

opportunities for mule deer throughout the county.

6. Recreational OHV opportunities should be designed and presented in ways that encourage and promote responsible participation, while also ensuring that wildlife and habitat impacts are kept at acceptably low levels.
  7. Support the management of recreational activities so they do not conflict with wildlife use of habitat by restricting snowmobile use to designated routes if conflicts with wintering animals occur, and restricting vehicular travel on non-roaded areas if conflicts with habitat needs develop.
  8. Snowmobile use should be allowed on all public lands except where specifically restricted or prohibited by statute or land use designation.
  9. Plan and develop recreational trails and extended ATV access roads throughout the county. Work closely with the public land management agencies to develop off-road trails for ATV use.
  10. Work with the public land management agencies to develop mountain biking opportunities in the county.
  11. Prohibit rock climbing above or within 300 feet horizontally of cultural sites. Rock climbing activities will be authorized only in areas where there are no conflicts with cliff-nesting raptors.
  12. Where unacceptable damage to natural or cultural resources by recreational use is anticipated or observed, federal agencies should seek to reduce or eliminate the adverse impact while maintaining the economic benefits associated with a wide range of recreation uses.
  13. Provide for current recreation uses that do not conflict with watershed improvement objectives.
  14. Involve municipal governments, local clubs, groups, the chamber of commerce, travel bureau, business interests, and subject matter experts in recreation planning.
  15. Water sports activities at Scofield Reservoir are an advantage to the economy of the county and its residents.
  16. Recreation based on Carbon County’s western heritage is supported by our population.
- Recreation is a prominent use and supported by Carbon County. It is our position that all recreation use be treated in the same manner and allowed using management guidelines that have logical outcomes.



---

# APPENDICES

# APPENDIX A

## WORKS CITED

- Agüero, J. 2014. Utah's water dependent economy. Prepare60. <<http://prepare60.com/Content/EconomicsWater.pdf>>. Accessed 5 Jan 2017.
- Animal and Plant Health Inspection Service [APHIS]. 2009. Partnerships and progress. U.S. Department of Agriculture. <[https://www.aphis.usda.gov/wildlife\\_damage/downloads/partnerships%20in%20progress.pdf](https://www.aphis.usda.gov/wildlife_damage/downloads/partnerships%20in%20progress.pdf)>. Accessed 5 Jan 2017.
- Bellison, N., R. Whitesides, S. Dewey, J. Merritt, S. Burningham. 2009. Noxious weed field guide for Utah. Utah State University Cooperative Extension. <[http://extension.usu.edu/files/publications/publication/pub\\_\\_8746541.pdf](http://extension.usu.edu/files/publications/publication/pub__8746541.pdf)>. Accessed 9 Jan 2017.
- Berger, R. 2009. Information document for invasive and noxious weed control project on Utah's waterfowl management areas 2006-2018. Utah Division of Wildlife Resources. <[https://wildlife.utah.gov/waterfowl/pdf/Invasive\\_weed\\_control.pdf](https://wildlife.utah.gov/waterfowl/pdf/Invasive_weed_control.pdf)>. Accessed 28 Mar 2017.
- Berry, J., D. Hurlbut, R. Simon, J. Moore, and R. Blackett. 2009. Utah renewable energy zones task force phase I report. Utah Geological Survey Miscellaneous publication 09-1. <<https://energy.utah.gov/wp-content/uploads/UREZ-Phase-I.pdf>>. Accessed 15 Oct 2016.
- Blue Ribbon Fisheries Advisory Council [BRFAC]. 2009. Blue ribbon fisheries advisory council handbook. <[https://wildlife.utah.gov/blueribbon/pdf/council\\_handbook.pdf](https://wildlife.utah.gov/blueribbon/pdf/council_handbook.pdf)>. Accessed 15 Oct 2016.
- Boden, T., K. Krahulec, D. Tabet, A. Rupke, and M. Vanden Berg. 2014. Utah's extractive resource industries. Utah Geological Society Circular 120. <<http://files.geology.utah.gov/online/c/c-120.pdf>>. Accessed 3 Nov 2016.
- Brown, M. J., and R. A. O'Brien. 1997. Forest resource statistics for northern Utah, 1993. U.S. Forest Service. <[http://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1071&context=govdocs\\_forest](http://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1071&context=govdocs_forest)>. Accessed 28 Mar 2017.
- Bureau of Land Management [BLM]. 1985. Northwest area noxious weed control program: environmental impact statement. U.S. Department of the Interior. <<https://babel.hathitrust.org/cgi/pt?id=mdp.39015025238505;view=1up;seq=1>>. Accessed 28 Mar 2017.
- Bureau of Land Management [BLM]. 2008. Price field office record of decision and approved resource management plan. <[https://www.blm.gov/style/medialib/blm/ut/price\\_fo/Planning/rod\\_approved\\_rmp.Par.58259.File.dat/Price%20Final%20Plan.pdf](https://www.blm.gov/style/medialib/blm/ut/price_fo/Planning/rod_approved_rmp.Par.58259.File.dat/Price%20Final%20Plan.pdf)>. Accessed 24 Feb 2017.
- Bureau of Land Management [BLM]. 2009. Wild and scenic river eligibility report. U.S. Department of the Interior. <[https://www.blm.gov/style/medialib/blm/co/field\\_offices/grand\\_junction\\_field/RMP\\_Library.Par.47348.File.dat/Final%20Wild%20and%20Scenic%20Eligibility%20Report%20original%20signature%20web.pdf](https://www.blm.gov/style/medialib/blm/co/field_offices/grand_junction_field/RMP_Library.Par.47348.File.dat/Final%20Wild%20and%20Scenic%20Eligibility%20Report%20original%20signature%20web.pdf)>. Accessed 30 Oct 2016.
- Bureau of Land Management [BLM]. 2012. Manual transmittal sheet 6400 – wild and scenic rivers – policy and program direction for identification, evaluation, planning, and management (public). U.S. Department of the Interior. <[https://www.blm.gov/style/medialib/blm/wo/Information\\_Resources\\_Management/policy/blm\\_manual.Par.76771.File.dat/M6400\\_WildScenicRivers\\_Final%20071312.pdf](https://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.76771.File.dat/M6400_WildScenicRivers_Final%20071312.pdf)>. Accessed 30 Oct 2016.
- Bureau of Land Management [BLM]. 2016. Connecting with Utah communities; BLM-Utah's recreation and visitor services strategy 2016-2020. U.S. Department of the Interior. <[https://www.blm.gov/style/medialib/blm/ut/natural\\_resources/recreation/frontpagephotos.Par.73300.File.dat/CWUCstrat2016.pdf](https://www.blm.gov/style/medialib/blm/ut/natural_resources/recreation/frontpagephotos.Par.73300.File.dat/CWUCstrat2016.pdf)>. Accessed 18 Jan 2017.
- Bureau of Land Management [BLM]. 2017. Cleveland Lloyd dinosaur quarry. <<https://www.blm.gov/learn/interpretive-centers/cleveland-lloyd-dinosaur-quarry>>. Accessed 27 Mar 2017.
- Carbon County Commission. 2004. Carbon County master plan. <<https://www.carbon.utah.gov/Administration/Building-Planning-Zoning/County-Plans>>. Accessed 17 Oct 2016.
- Carr, S. L. and R. W. Edwards. 1989. Utah ghost rails. Western Epics. Salt Lake City, Utah, USA.
- Council on Environmental Quality. 2007. A citizen's guide to the NEPA. Executive Office of the President. <[https://www.blm.gov/style/medialib/blm/nm/programs/planning/planning\\_docs.Par.53208.File.dat/A\\_Citizens\\_Guide\\_to\\_NEPA.pdf](https://www.blm.gov/style/medialib/blm/nm/programs/planning/planning_docs.Par.53208.File.dat/A_Citizens_Guide_to_NEPA.pdf)>. Accessed 18 Jan 2017.
- Department of the Interior. 2010. Salazar lays groundwork for Utah pilot project to resolve old road claims on public land [Press release]. Retrieved from <<https://www.doi.gov/news/pressreleases/Salazar-Lays-Groundwork-for-Utah-Pilot-Project-to-Resolve-Old-Road-Claims-on-Public-Land>>. Accessed 2 Jan 2017.
- Donaldson, F. J. 2007. Farmer beware: water rights enforcement in Utah. *Journal of Land, Resources, and Environmental Law* 27:367-380.



---

## WORKS CITED

385. <<http://www.epubs.utah.edu/index.php/jlrel/article/viewFile/56/49>>. Accessed 30 Oct 2016.
- Economic Profile System [EPS]. 2016. A profile of agriculture. Headwaters Economics. <<https://headwaterseconomics.org/tools/economic-profile-system/>>. Accessed 31 Oct 2016.
- Economic Profile System [EPS]. 2017a. A profile of agriculture. Headwaters Economics. <<https://headwaterseconomics.org/tools/economic-profile-system/>>. Accessed 31 Mar 2017.
- Economic Profile System [EPS]. 2017b. A profile of mining, including oil & gas. Headwaters Economics. <<https://headwaterseconomics.org/tools/economic-profile-system/>>. Accessed 3 Apr 2017.
- Economic Profile System [EPS]. 2017c. A profile of non-labor income. Headwaters Economics. <<https://headwaterseconomics.org/tools/economic-profile-system/>>. Accessed 3 Apr 2017.
- Economic Profile System [EPS]. 2017d. A profile of socioeconomic measures. Headwaters Economics. <<https://headwaterseconomics.org/tools/economic-profile-system/>>. Accessed 3 Apr 2017.
- Federal Emergency Management Agency [FEMA]. 2017. Flood zones. <<https://www.fema.gov/flood-zones>>. Accessed 28 Mar 2017.
- Gloyn, R. W., D. E. Tabet, B.T. Tripp, C.E. Bishop, C.D. Morgan, J.W. Gwynn, and R.E. Blackett. 2003. Energy, mineral and ground-water resources of Carbon and Emery Counties, Utah. Utah Geological Survey. Bulletin 132. <<http://ugspub.nr.utah.gov/publications/bulletins/B-132.pdf>>. Accessed 28 Feb 2017.
- Godfrey, B. E. 2008. Livestock grazing in Utah: history and status. Utah State University, Logan, Utah.
- Governor's Office of Energy Development. 2014. Utah's 10-year strategic energy plan 2.0. <[http://energy.utah.gov/download/reports/10%20Year%20Strategy\\_2.0\\_03042014.pdf](http://energy.utah.gov/download/reports/10%20Year%20Strategy_2.0_03042014.pdf)>. Accessed 9 Jan 2017.
- Governor's Office of Energy Development. 2015. Energy and energy-related mining in Utah. <[https://energy.utah.gov/wp-content/uploads/UtahsEnergyEconomy\\_EconomicImpactAssessment.2015.compressed.pdf](https://energy.utah.gov/wp-content/uploads/UtahsEnergyEconomy_EconomicImpactAssessment.2015.compressed.pdf)>. Accessed 9 Jan 2017.
- Governor's Office of Planning and Budget [GOPB]. 2003. Carbon County local planning summary. <<http://planning.utah.gov/usfs/4B%20County%20Profiles/4BCarbonPlanning.pdf>>. Accessed 28 Mar 2017.
- Gurrister T. 2014. Ravens ravaging sage grouse in Box Elder. Standard Examiner. <<http://www.standard.net/Environment/2014/05/29/Ravens-harassing-sage-grouse-in-Box-Elder-elsewhere>>. Accessed 2 Feb 2017.
- Hilton, J., and J. Gentillon. 2016. Utah agricultural statistics and Utah department of agriculture and food 2016 annual report. Utah Department of Agriculture and Food, and USDA. <[https://www.nass.usda.gov/Statistics\\_by\\_State/Utah/Publications/Annual\\_Statistical\\_Bulletin/Pdf/ab16/Utah\\_Annual\\_Bulletin2016\\_Nass\\_Only.pdf](https://www.nass.usda.gov/Statistics_by_State/Utah/Publications/Annual_Statistical_Bulletin/Pdf/ab16/Utah_Annual_Bulletin2016_Nass_Only.pdf)>. Accessed 28 Mar 2017.
- Hylland M. D., and W. E. Mulvey. 2003. Geologic hazards of Moab-Spanish Valley, Grand County, Utah. Special Study 107. Utah Geological Survey. <<http://www.riversimulator.org/Resources/farcountry/Geology/GeoHaz/SS-107.pdf>>. Accessed 15 Oct 2016.
- Keith J., P. Jakus, J. Larsen, S. Burr, D. Reiter, and J. Zeitlin. 2008. Impacts of wild and scenic rivers designation. Utah State University. <<http://digitallibrary.utah.gov/awweb/awarchive?type=file&item=27530>>. Accessed 15 Oct 2016.
- Kem C. Gardner Policy Institute. 2016. Utah travel & tourism profile: state and counties. University of Utah. <[http://gardner.utah.edu/wp-content/uploads/2016/10/profiles\\_2015.pdf](http://gardner.utah.edu/wp-content/uploads/2016/10/profiles_2015.pdf)>. Accessed 18 Jan 2017.
- Kim, M., and P. M. Jakus. 2013. The economic contribution and benefits of Utah's blue ribbon fisheries. Utah State University. <[http://csee.usu.edu/files/uploads/CSEE\\_RR\\_4\\_Kim\\_and\\_Jakus\\_Feb\\_2013.pdf](http://csee.usu.edu/files/uploads/CSEE_RR_4_Kim_and_Jakus_Feb_2013.pdf)>. Accessed 15 Oct 2016.
- Krannich, R. S. 2008. Public lands and Utah communities: a statewide survey of Utah residents. Utah State University. <<http://apecextension.usu.edu/files/uploads/Environment%20and%20Natural%20Resources/Public%20Lands/General%20Population%20Final%20Report.pdf>>. Accessed 30 Oct 2016.
- Krannich, R. S., Lilieholm, R. J., and Unger J. 2012. Utah angler survey. Utah State University. <[https://csee.usu.edu/files/uploads/CSEE\\_RR\\_1\\_Krannich\\_et\\_al\\_Nov\\_2012.pdf](https://csee.usu.edu/files/uploads/CSEE_RR_1_Krannich_et_al_Nov_2012.pdf)>. Accessed 15 Oct 2016.
- Messmer, T. A., R. Drake, and A. McElrone, editors. 1998. Utah endangered and threatened animals. Berryman Institute Publication No. 17, Utah State University. <<https://wildlife.utah.gov/habitat/pdf/endgspec.pdf>>. Accessed 28 Jan 2017.
- Morgan, D. 1949. Kingdom in the west. University of Oklahoma Press, Norman, USA.
- National Interagency Fire Center. 2015. Federal firefighting costs (suppression only). U.S. Department of the Interior. <<https://www>>.



---

## WORKS CITED

- nifc.gov/fireInfo/fireInfo\_documents/SuppCosts.pdf>. Accessed 18 Jan 2017.
- National Network to End Domestic Violence [NNEDV]. 2010. The impact of the economy on domestic violence. <[http://nnedv.org/downloads/Stats/NNEDV\\_DVandEconomy.pdf](http://nnedv.org/downloads/Stats/NNEDV_DVandEconomy.pdf)>. Accessed 3 Apr 2017.
- National Park Service. 2010. Partnership wild & scenic rivers. <<https://www.nps.gov/pwsr/index.htm>> Jan 3 2016.
- National Oceanic and Atmospheric Administration [NOAA]. 2009. State of the science fact sheet: air quality. <<https://esrl.noaa.gov/csd/factsheets/airqualitysos.pdf>>. Accessed 27 Feb 2017.
- National Wild and Scenic Rivers System. 2017. A compendium of questions and answers relating to wild & scenic rivers. <<https://www.rivers.gov/documents/q-a.pdf>>. Accessed 17 Jan 2017.
- Natural Resources Conservation Service [NRCS]. 2005. Carbon County resource assessment. <[https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs141p2\\_032005.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs141p2_032005.pdf)> Accessed 12 Oct 2016.
- Office of Outdoor Recreation. 2013. The state of Utah outdoor recreation vision. Governor's Office of Economic Development. <<https://www.utah.gov/governor/docs/OutdoorRecreationVision.pdf>>. Accessed 28 Feb 2017.
- Price River Watershed Conservation District. 2012. Carbon County resource needs assessment. <[https://media.wix.com/ugd/9bdf1b\\_fa94031db39949959813993f60f4f321.pdf](https://media.wix.com/ugd/9bdf1b_fa94031db39949959813993f60f4f321.pdf)>. Accessed 28 Feb 2017.
- Prinz, M., G. E. Harlow, J. Peters, A. Mottana. 1978. Simon & Schuster's guide to rocks and minerals. Simon & Schuster. New York, USA.
- Pope, C. A., J. Schwartz, and M. R. Ransom. 1992. Daily mortality and PM10 pollution in Utah Valley. Archives of Environmental Health: A International Journal 47(3).
- Powell, A. K., editor. 1994. Utah history encyclopedia. Coal mining in Utah. The University of Utah Press. Salt Lake City.
- Powell, A. K., editor. 1994. Utah history encyclopedia. Mining. The University of Utah Press. Salt Lake City.
- Powell, A. K., editor. 1994. Utah history encyclopedia. Wildlife management in Utah. The University of Utah Press. Salt Lake City.
- Rural Planning Group [RPG]. 2005. Extractive industries: coal. <<http://ruralplanning.org/crmp/coal.html>>. Accessed 28 Feb 2017.
- Southeastern Utah Association of Local Governments [SEUALG]. 2003. Natural hazard pre-disaster mitigation plan. <<http://wfrcc.org/programs/pdmplans/SE/Part%2010.%20San%20Juan%20County.pdf>>. Accessed 3 Nov 2016.
- Southeastern Utah Economic Development District [SUEDD]. 2015. Comprehensive economic development strategy. Southeastern Utah Association of Local Governments. <[http://www.seualg.utah.gov/2015-2019\\_SEUEDD\\_CEDS-Web\\_Version.pdf](http://www.seualg.utah.gov/2015-2019_SEUEDD_CEDS-Web_Version.pdf)>. Accessed 3 Nov 2016.
- Sutter, J. V., M. E. Andersen, K. D. Bunnell, M. F. Canning, A. G. Clark, D. E. Dolsen, and F. P. Howe. 2005. Utah comprehensive wildlife conservation strategy (CWCS). Utah Division of Wildlife Resources Publication Number 05-19. <[http://iwjv.org/sites/default/files/utah\\_strategic\\_wildlife\\_action\\_plan.pdf](http://iwjv.org/sites/default/files/utah_strategic_wildlife_action_plan.pdf)>. Accessed 7 Jan 2017.
- University of Utah. 2015. Utah travel & tourism profile: state and counties 2013-2014. <<https://travel.utah.gov/wp-content/uploads/CombinedTourismProfiles.pdf>>. Accessed 28 Feb 2017.
- University of Utah, Bureau of Economic and Business Research. 2014. An analysis of a transfer of federal lands to the state of Utah. <<http://publiclands.utah.gov/wp-content/uploads/2014/11/1.%20Land%20Transfer%20Analysis%20Final%20Report.pdf>> Accessed Jan 18 2017.
- U.S. Census Bureau. 2016. 2011-2015 American community survey 5-year estimates. U.S. Department of Commerce. <<https://www.census.gov/quickfacts/table/HSD410215/49007,49037,00>>. Accessed 3 Feb 2017.
- U.S. Department of Agriculture [USDA]. 2011. Cattle and calves nonpredator death loss in the United States, 2010. USDA-APHIS-VS-CEAH. Fort Collins, CO. #631.1111. <[https://www.aphis.usda.gov/animal\\_health/nahms/general/downloads/cattle\\_calves\\_nonpred\\_2010.pdf](https://www.aphis.usda.gov/animal_health/nahms/general/downloads/cattle_calves_nonpred_2010.pdf)>. Accessed 5 Jan 2017.
- U.S. Department of Agriculture [USDA]. 2012. Carbon County profile. Census of Agriculture. <[https://www.agcensus.usda.gov/Publications/2012/Online\\_Resources/County\\_Profiles/Utah/cp49007.pdf](https://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/Utah/cp49007.pdf)>. Accessed 1 Jan 2017.
- U.S. Department of Agriculture [USDA]. 2015. Sheep and lamb predator and nonpredator death loss in the United States. USDA-APHIS-VS-CEAH-NAHMS Fort Collins, CO. #721.0915.. <[https://www.aphis.usda.gov/animal\\_health/nahms/sheep/downloads/](https://www.aphis.usda.gov/animal_health/nahms/sheep/downloads/)>

---

## WORKS CITED

- sheepdeath/SheepDeathLoss2015.pdf>. Accessed 7 Jan 2017.
- U.S. Department of Agriculture [USDA]. 2015. Wildlife services protects resources. Animal and Plant Health Inspection Service. <[https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/SA\\_Protected\\_Resources](https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/SA_Protected_Resources)>. Accessed 7 Jan 2017.
- U.S. Department of the Interior, U.S. Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau. 2011. National survey of fishing, hunting, and wildlife-associated recreation. <<https://www.census.gov/prod/2012pubs/fhw11-nat.pdf>>. Accessed 18 Jan 2017.
- U.S. Energy Information Administration. 2016. Utah state energy profile. <<https://www.eia.gov/state/print.cfm?sid=UT>>. Accessed 30 Dec 2016.
- U.S. Environmental Protection Agency [EPA]. 2015. What are wetland functions? <<https://www.epa.gov/wetlands/what-are-wetland-functions>>. Accessed 21 Oct 2016.
- U.S. Fish & Wildlife Service. 2015. Endangered species act: overview. U.S. Department of the Interior. <<https://www.fws.gov/engaged/laws-policies/>>. Accessed 7 Jan 2017.
- U.S. Fish & Wildlife Service. 2016. National wetlands inventory. U.S. Department of the Interior. <<https://www.fws.gov/wetlands/data/Mapper.html>>. Accessed 12 Oct 2016.
- U.S. Forest Service [USFS]. 2002. FY 2002 budget justification. <[https://www.fs.fed.us/database/budgetoffice/NFP\\_final32601.pdf](https://www.fs.fed.us/database/budgetoffice/NFP_final32601.pdf)>. Accessed 3 May 2017.
- U.S. Forest Service [USFS]. 2008. Record of decision and forest plan amendments, wild and scenic river suitability study for National Forest system lands in Utah. U.S. Department of Agriculture. <[https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb5122056.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5122056.pdf)>. Accessed 27 Feb 2017.
- U.S. Forest Service [USFS]. 2016. Wildland fire touches every part of the nation. <<http://www.fs.fed.us/fire/management/index.html>>. Accessed 12 Oct 2016.
- U.S. General Accounting Office. 1992. Wilderness: effect of designation on economy and grazing in Utah. <<http://www.gao.gov/assets/220/217154.pdf>>. Accessed 18 Jan 2017.
- Utah Association of Counties. 2015. Utah counties fact book. <<http://uacnet.org/wp-content/uploads/2014/08/2015-Utah-Counties-Fact-Book.pdf>>. Accessed 28 Mar 2017.
- Utah Department of Agriculture and Food [UDAF]. n.d. Century Farm registration. <<http://ag.utah.gov/licenses-registrations/41-licenses-regulations-and-registration/201-century-farm-registration.html>>. Accessed 4 Jan 2017.
- Utah Department of Agriculture and Food [UDAF]. 2012. Planning for agriculture. Utah Agriculture Sustainability Task Force. <<http://ag.utah.gov/documents/Agtaskforce.pdf>>. Accessed 4 Jan 2017.
- Utah Department of Agriculture and Food [UDAF]. 2015a. Annual report. <<http://ag.utah.gov/documents/annualreport2015web.pdf>>. Accessed 3 Nov 2016.
- Utah Department of Agriculture and Food [UDAF]. 2015b. Animals. <<http://ag.utah.gov/animal.html>>. Accessed 28 Mar 2017.
- Utah Department of Environmental Quality [UDEQ]. 2006. Scofield reservoir. <<https://deq.utah.gov/ProgramsServices/programs/water/watersheds/watersheds/docs/2006/08Aug/SCOFIELD.pdf>>. Accessed 15 Oct 2016.
- Utah Department of Public Safety. 2014. State of Utah hazard mitigation plan. <<https://sites.google.com/a/utah.gov/utah/>>. Accessed 28 Feb 2017.
- Utah Department of Workforce Services. 2016. Utah's employment summary. <<http://jobs.utah.gov/blog/post/2016/04/15/utah-s-employment-summary-march-2016>>. Accessed Nov 1 2016.
- Utah Department of Workforce Services. 2017. Economic data. <<https://jobs.utah.gov/wi/data/index.html>>. Accessed 3 Apr 2017.
- Utah Division of Air Quality [UDAQ]. 2012. It's up to all of us (Video File). <<https://www.youtube.com/watch?v=Vi9WF1FptG4>>. Accessed 27 Feb 2017.
- Utah Division of Air Quality [UDAQ]. 2015. Annual report. Utah Department of Environmental Quality. <[http://www.deq.utah.gov/Divisions/daq/info/annualreports/docs/2015/02Feb/Final\\_Annual\\_Report\\_2015.pdf](http://www.deq.utah.gov/Divisions/daq/info/annualreports/docs/2015/02Feb/Final_Annual_Report_2015.pdf)>. Accessed 17 Jan 2017.
- Utah Division of Forestry, Fire, & State Lands [FFSL]. 2013. Master cooperative wildland fire management and Stafford Act response

---

## WORKS CITED

- agreement. Utah Department of Natural Resources. <[https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb5409791.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5409791.pdf)>. Accessed 18 Jan 2017.
- Utah Division of Forestry, Fire & State Lands [FFSL]. 2014. Utah forest health highlights. Utah Department of Natural Resources. <<http://www.ffsl.utah.gov/images/forestry/health/StateHighlights2014.pdf>>. Accessed 18 Jan 2017.
- Utah Division of Forestry, Fire & State Lands [FFSL]. 2015. Utah forest health highlights. Utah Department of Natural Resources. <<http://www.ffsl.utah.gov/images/forestry/health/StateHighlights2015final.pdf>>. Accessed 28 Mar 2017.
- Utah Division of Oil, Gas, and Mining [DOGMM]. 2017. Live data statistics. Utah Department of Natural Resources. <<http://www.oilgas.ogm.utah.gov/Statistics/Statistics.cfm>>. Accessed 3 Nov 2016.
- Utah Division of State History. n.d. Carbon County. <<http://ilovehistory.utah.gov/place/counties/carbon.html>>. Accessed 3 Nov 2016.
- Utah Division of State History. 2016. SHPO compliance. Utah Department of Heritage & Arts. <<https://heritage.utah.gov/history/shpo-compliance>>. Accessed 10 Oct 2016.
- Utah Division of Water Rights [UDWRi]. 2011. Water right information. Utah Department of Natural Resources. <<http://www.waterrights.utah.gov/wrinfo/>>. Accessed 15 Oct 2016.
- Utah Division of Water Rights [UDWRi]. 2014. Canal companies and contact information. Utah Department of Natural Resources. <[https://www.waterrights.utah.gov/canalinfo/canal\\_owners.asp](https://www.waterrights.utah.gov/canalinfo/canal_owners.asp)>. Accessed 15 Oct 2016.
- Utah Division of Water Quality. 2013. Nutrient pollution in Utah. Utah Department of Environmental Quality. <<http://www.deq.utah.gov/Topics/FactSheets/docs/handouts/nutrients.pdf>>. Accessed Jan 9 2017.
- Utah Division of Wildlife Resources [UDWR]. n.d. Participating CWMU properties. Utah Department of Natural Resources. <[https://wildlife.utah.gov/maps/public/list\\_cwmus.php](https://wildlife.utah.gov/maps/public/list_cwmus.php)>. Accessed 18 Jan 2017.
- Utah Division of Wildlife Resources [UDWR]. 2009a. Utah aquatic invasive species management plan. Utah Department of Natural Resources Publication No. 08-34.. <[https://wildlife.utah.gov/pdf/AIS\\_plans\\_2010/AIS\\_mgt\\_plan\\_full.pdf](https://wildlife.utah.gov/pdf/AIS_plans_2010/AIS_mgt_plan_full.pdf)>. Accessed 15 Oct 2016.
- Utah Division of Wildlife Resources [UDWR]. 2009b. Utah moose statewide management plan. Utah Department of Natural Resources. <[https://wildlife.utah.gov/hunting/biggame/pdf/moose\\_plan.pdf](https://wildlife.utah.gov/hunting/biggame/pdf/moose_plan.pdf)>. Accessed 7 Jan 2017.
- Utah Division of Wildlife Resources [UDWR]. 2013. Conservation plan for greater sage-grouse in Utah. Utah Department of Natural Resources. <[https://wildlife.utah.gov/uplandgame/sage-grouse/pdf/greater\\_sage\\_grouse\\_plan.pdf](https://wildlife.utah.gov/uplandgame/sage-grouse/pdf/greater_sage_grouse_plan.pdf)>. Accessed 7 Jan 2017.
- Utah Division of Wildlife Resources [UDWR]. 2014. Utah's predator control program summary: Program activities and data from July 1, 2013 through June 30, 2014. Utah Department of Natural Resources. <[https://wildlife.utah.gov/pdf/predator\\_program\\_summary\\_2014.pdf](https://wildlife.utah.gov/pdf/predator_program_summary_2014.pdf)>. Accessed 7 Jan 2017.
- Utah Division of Wildlife Resources [UDWR]. 2015a. Blue ribbon fisheries map. <<https://wildlife.utah.gov/hotspots/blueribbon.php>>. Accessed 8 Sep 2016.
- Utah Division of Wildlife Resources [UDWR]. 2015b. Deer herd unit management plan: unit #14. <[https://wildlife.utah.gov/hunting/plans/deer\\_16.pdf](https://wildlife.utah.gov/hunting/plans/deer_16.pdf)>. Accessed 7 Jan 2017.
- Utah Division of Wildlife Resources [UDWR]. 2015c. Unit deer management plans. <<https://wildlife.utah.gov/hunting-in-utah/hunting-information/big-game/408-unit-deer-management-plans.html>>. Accessed 7 Jan 2017.
- Utah Division of Wildlife Resources [UDWR]. 2015d. Utah's state listed species by county. <<http://dwr.cdc.nr.utah.gov/ucdc/ViewReports/sscounty.pdf>>. Accessed 7 Jan 2017.
- Utah Division of Wildlife Resources [UDWR]. 2015e. Utah wildlife action plan; 2015-2025. Utah Department of Natural Resources. DWR publication 15-14. <[https://wildlife.utah.gov/wap/Utah\\_WAP.pdf](https://wildlife.utah.gov/wap/Utah_WAP.pdf)>. Accessed 3 Nov 2016.
- Utah Division of Wildlife Resources [UDWR]. 2016. Utah community fisheries map. <[https://wildlife.utah.gov/cf/community\\_fisheries/index.html](https://wildlife.utah.gov/cf/community_fisheries/index.html)>. Accessed 8 Sep 2016.
- Utah Economic Council. 2014. Utah economic outlook. <<http://www2.eccles.utah.edu/sites/default/files/media/outlook.pdf>>. Accessed 27 Feb 2017.
- Utah Geological Survey. n.d. Wetland information center. Utah Department of Natural Resources. <<http://geology.utah.gov/resources/wetlands/>>. Accessed 12 Oct 2016.

---

## WORKS CITED

- Utah Heritage Foundation. 2013. Profits through preservation: executive summary. <<http://www.utahheritagefoundation.com/preservation-resources/econstudy#.WH7MV1UrKpo>>. Accessed 3 Nov 2016.
- Utah Historical Records Survey. 1940. Inventory of the church archives of Utah. <<https://catalog.hathitrust.org/Record/000871648>>. Accessed 27 Mar 2017.
- Utah Native Plant Society. n.d. Rare plants introduction. <<http://www.unps.org/index.html?PAGES/rare.html>>. Accessed 10 Jan 2017.
- Utah Native Plant Society. 2010. Utah rare plant guide: species by county. <<http://www.utahrareplants.org/pdf/SpeciesCounty.pdf>>. Accessed 14 Mar 2017.
- Utah State Parks. 2013. Utah state comprehensive outdoor recreation plan. Utah Department of Natural Resources. <<http://static.stateparks.utah.gov/docs/SCORP2014.pdf>>. Accessed 18 Jan 2017.
- Utah State University [USU]. 2005. Carbon County agricultural profile. USU Cooperative Extension Service. <[http://extension.usu.edu/files/publications/publication/AG\\_Econ\\_county-2005-07.pdf](http://extension.usu.edu/files/publications/publication/AG_Econ_county-2005-07.pdf)>. Accessed 4 Jan 2017.
- Utah State University [USU]. 2009. Rangeland resources of Utah. USU Cooperative Extension Service. <[https://extension.usu.edu/utahrangelands/files/uploads/RRU\\_Final.pdf](https://extension.usu.edu/utahrangelands/files/uploads/RRU_Final.pdf)>. Accessed 3 Nov 2016.
- Utah State University Water Quality Extension. 2012. Improving Utah's water quality - Price River watershed. <[https://extension.usu.edu/waterquality/files-ou/Watershed-information/Main/NR\\_WQ\\_2011-PriceRiver.pdf](https://extension.usu.edu/waterquality/files-ou/Watershed-information/Main/NR_WQ_2011-PriceRiver.pdf)>. Accessed 3 Nov 2016.
- Ward, R. A. and K. Salisbury. 2016. The economic contribution of agriculture to the Utah economy in 2014. Utah State University. Economic Research Institute Report #2016-01. <<http://www.ag.utah.gov/documents/Economic%20Contribution%20of%20Agriculture%20to%20the%20Utah%20Economy%202014.pdf>>. Accessed 27 Jan 2017.
- Watt, R. G. 1997. A history of Carbon County. Utah State Historical Society; Carbon County Commission. <<http://digitallibrary.utah.gov/awweb/awarchive?item=34154>>. Accessed 1 Nov, 2016.
- Western Forestry Leadership Coalition. 2009. The true cost of wildfire in the Western US. Lakewood, Colorado. <[https://www.blm.gov/or/districts/roseburg/plans/collab\\_forestry/files/TrueCostOfWilfire.pdf](https://www.blm.gov/or/districts/roseburg/plans/collab_forestry/files/TrueCostOfWilfire.pdf)>. Accessed 18 Jan 2017.
- Whitesides, R. E. 2004. The Utah strategic plan for managing noxious and invasive weeds. Utah Weed Advisory Council and The Utah Weed Control Association. <[http://www.utahweed.org/PDF/strategic\\_plan.pdf](http://www.utahweed.org/PDF/strategic_plan.pdf)>. Accessed 31 Jan 2017.
- World Health Organization. 2014. Ambient (outdoor) air quality and health: fact sheet N°313. <<http://who.int/mediacentre/factsheets/fs313/en/>>. Accessed 25 Feb 2016.
- World Wildlife Fund. 2004. The economic values of the world's wetlands. <<http://d2ouvy59p0dg6k.cloudfront.net/downloads/wetlandsbrochurefinal.pdf>>. Accessed 4 Jan 2017.
- Yonk, R. M., and R. T. Simmons. 2013. The role of oil and gas amenities in county economic development. American Petroleum Institute. <<http://www.api.org/news-and-media/docs/~media/files/news/2013/13-august/liberty%20final%20report%205.pdf>>. Accessed 4 Sep 2016.

## APPENDIX B

---

### CITIZEN INPUT

*Satisfaction with Carbon County planning*

Residents were asked, “Are you satisfied with the current Carbon County land management plans i.e. grazing, oil, gas, coal extraction, recreation, roads, and utilities corridors on Federal Lands.”



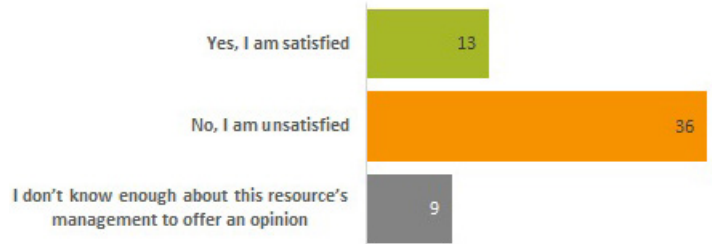
*Satisfaction with federal planning*

Residents were asked, “Are you satisfied with the current federal management plans for natural resources i.e. timber, vegetation, on federal lands in Carbon County?”



*Satisfaction with level of extractive management*

Residents were asked, “Are you satisfied with the current level of Oil, Gas and Coal management in Carbon County?”



*Satisfaction with wildlife management*

Residents were asked, “Are you satisfied with the current level of wildlife management in Carbon County?”

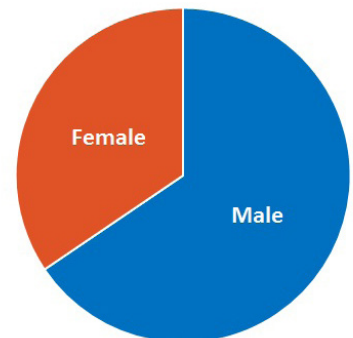
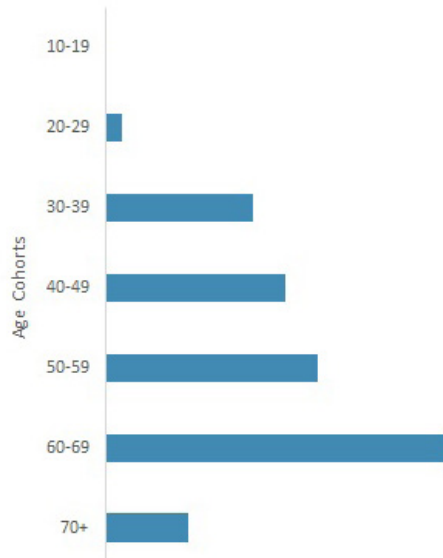


*Occupational impact*

Residents were asked, “Has regulation of federal lands both BLM and Forest Service in Carbon County affected your occupation?”

*Cohorts*

Respondents self identified their age and gender





# APPENDIX C

---

## MAPS