



Lander County
MASTER PLAN
Draft June 2021

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Acknowledgements

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EXECUTIVE SUMMARY

Executive Summary

Pursuant to NRS 278, the Lander County Master Plan with the accompanying tables, diagrams, figures and charts represents the County’s comprehensive long-term plan for growth and development.

Special Note: This Master Plan was prepared while Lander County and the Nation were in the midst of the COVID-19 pandemic and constraints were imposed on the process as a result. It remains uncertain what potential changes in the conduct of business and society our county will experience. As such, county officials should be encouraged to reexamine changing data and behavior, and support revisions in the Master Plan as warranted.

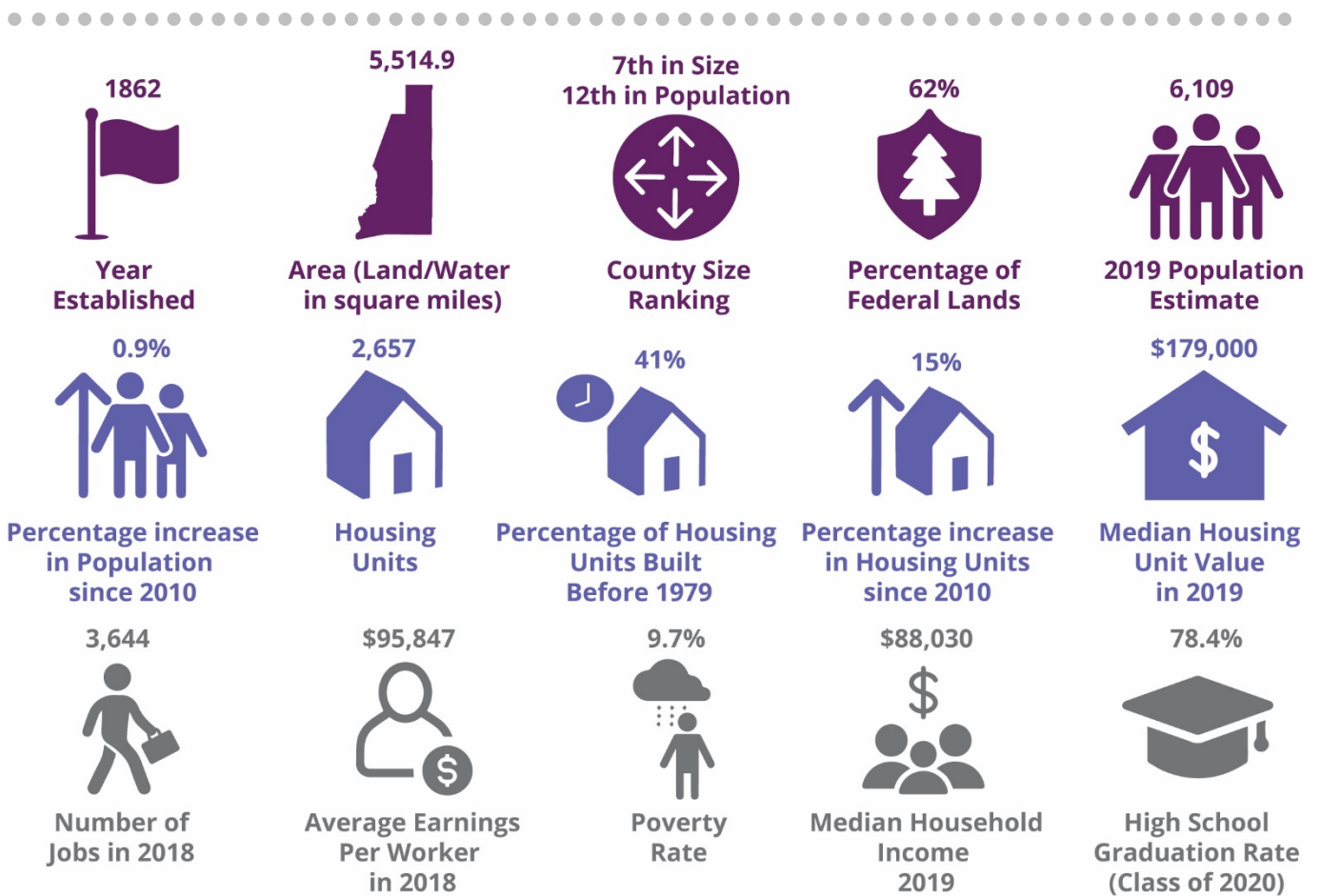


Figure 1: Lander County at a Glance

Sources: American Community Survey 5-Year Estimates, years between 2013-2019, Table S2201, DP03, DP05;

Nevada Economic Assessment Project- Socioeconomic Baseline Report (2021);

Nevada State Demographer (2021)

University Center for Economic Development, College of Business, University of Nevada, Reno, 2021

Geography

Lander County is located within central Nevada, an arid desert landscape characterized by dramatic basins and ranges. Elevation within the county ranges between 11,473 feet at Bunker Hill in the Toiyabe Range to 4,510 feet at Battle Mountain in the northwest corner of the county. Portions of Lander County are among the most arid areas in the United States, with an average of 12.3 inches of precipitation in Battle Mountain. Most of the vegetation in the area is composed of desert shrubland, generally consisting of sagebrush, with some pinyon pine and juniper woodland areas near mountain ranges. Although water is generally scarce in this climate, several surface water features exist, including the Humboldt River, Reese River, Rock Creek, and Groves Lake. Rich mineral deposits of gold, silver and other minerals lie within Lander County, generating the largest continuous industry in the County.

Recreational opportunities abound, primarily located on publicly owned lands that compose over half of the land in the county, providing areas for hiking, mountain biking, fishing, hunting, wildlife viewing, and a wide variety of other outdoor activities.

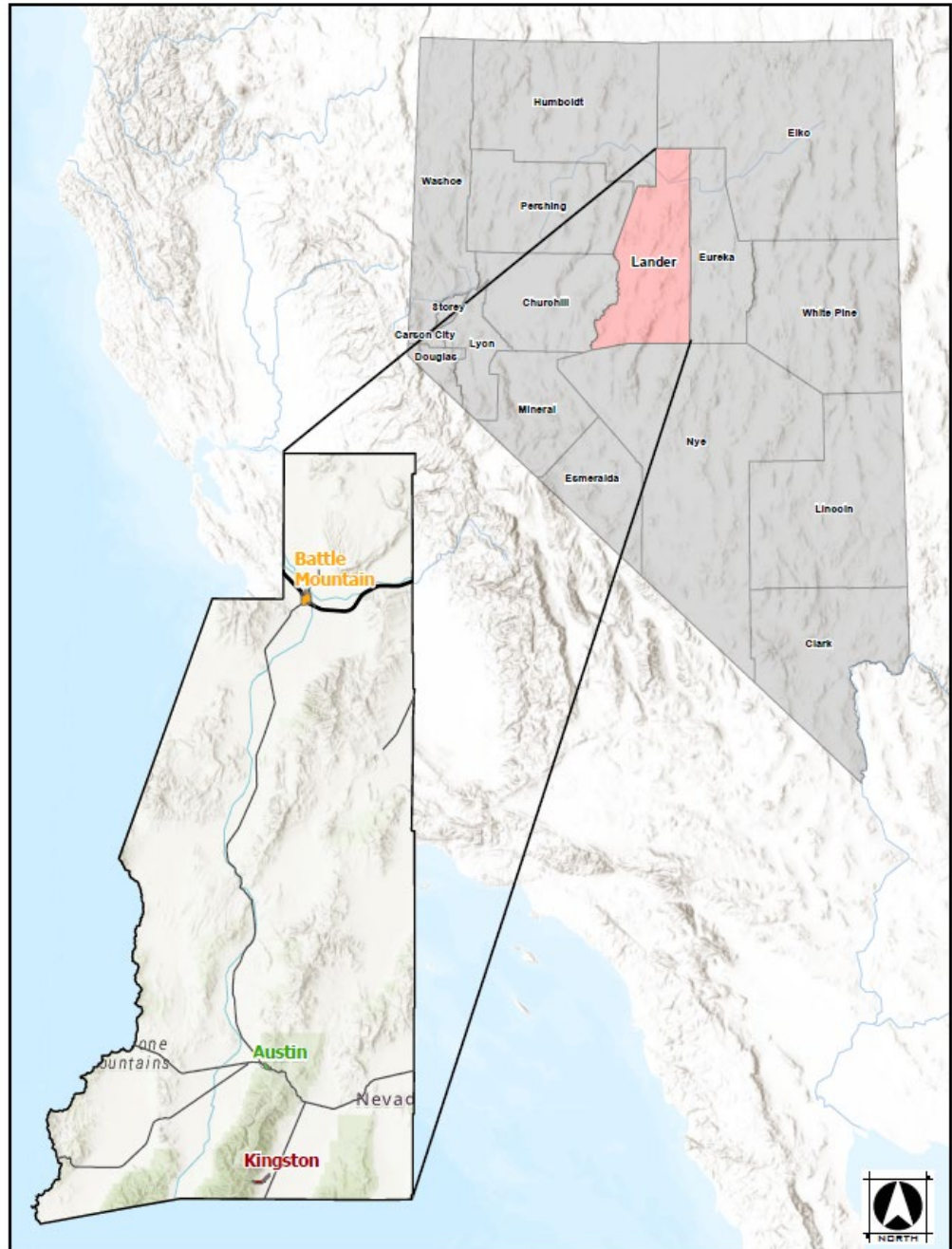


Figure 2: Vicinity Map of Lander County

History



Historic Lander County Courthouse, Austin, Nevada
Source: [Ken Lund, 2007](#) (Licensed by [CC BY-SA 2.0](#))

Known as the “mother of countries”, Lander County has retained mining, agriculture, truck transportation and government service industries.



View of Austin, Nevada | Source: [Austinnv.com](#), date unknown

Lander County, formed in 1862, has been known as the “mother of counties”, spawning three other counties from its original lands, Elko, Eureka and White Pine¹. However, the history of human occupation in this area extends back thousands of years as the ancestral lands of the “Newe”, also known as the Western Shoshone. The Battle Mountain region was the boundary between the Shoshone and the Northern Paiute tribes and provided an important area for rabbit and antelope drives for the indigenous population². Rich archaeological evidence and oral histories of the indigenous population reflect the lengthy and continued occupancy of the area by the Shoshone and their ancestors. Currently tribal lands encompass 834 acres within Lander County, governed by the sovereign nation of the Te-Moak Tribe of the Western Shoshone.³

In the mid to late 19th century, a booming mining industry and the expansion of the railroad into Austin, Kingston and Battle Mountain created a rich and vibrant mining community. The mining industry has continued into the modern day, but has generally extended away from Austin and Kingston, turning the sites into living ghost towns with limited population and growth. Historical buildings and artifacts from this time period remain on the landscape, including the Austin historical district that encompasses most of the town.

Over the decades, Lander County industry has surrounded mining, agriculture, truck transportation and government services. Most of the population has shifted to Battle Mountain and resulted in some residential and commercial growth in the town.

¹ (Zapata 2021)

² (Te-Moak Tribe of Western Shoshone 2018)

³ (Te-Moak Tribe of Western Shoshone 2018)

Government

The Lander County is governed by a five-member elected Board of County Commissioners. Other elected officials include the District Attorney, Sheriff, Assessor, Recorder, Public Administrator, District Court Judges, Justices of the Peace, and Clerk. Lander County is the administrator of approximately 5,783 acres of land. In the fiscal year 2019-2020, total revenues were over \$42.4 million with total expenses of approximately \$30.7 million.⁴ In fiscal year 2019–2020, there were 461 local government employees in Lander County.⁵



Lander County Courthouse & Administration Building
Source: Eleventhjudicialdistrict.com, date unknown

Emergency medical services are provided by the Battle Mountain Ambulance Department, the Austin Volunteer Ambulance Department, the Battle Mountain General Hospital, clinics in Battle Mountain and Austin and Lander County Community Health Nurse. Emergency fire services are provided by the Battle Mountain and Austin Volunteer Fire Departments. The U.S. Forest Service (USFS) and the Bureau of Land Management (BLM) are the primary respondents to fires on federal lands. Water and wastewater services are provided by the Lander County Water and Sewer Districts #1 and 2 and the Kingston Water District.

Demographics

Between 2013 and 2019 the southern portion of the County experienced a decline in residential population overall.

Population	2013	2019	Net Change	% Change
Lander County Overall	6,343	6,109	-234 residents	-3.7%
Battle Mountain	3,657	3,391	-266 residents	-7.2%
Austin	169	156	-13 residents	-7.7%
Kingston	124	122	-2 residents	-1.6%

Source: Nevada State Demographer – Final Governor’s Certified Series of Population of Nevada’s Counties and Incorporated Cities; Years - 2013 and 2019

The previous master plan predicted the following, a) increase in population in northern Lander County, b) total County population rising to 7,540 by 2020, and c) Battle Mountain population increasing to 3,730, Austin population to 3,800, and Kingston population to 450. The projections did not match actual population in 2019, with a net decrease in population in all parts of Lander County. Another important change in the community revealed during this Master Plan Update was the aging of the community, both in demographics (Figure 1) and in housing stock (Figure 7).

⁴ (Hinton Burdick 2020, 8)

⁵ (Borden, et al. 2021, 51)

Population Projections

Lander County’s projected population is expected to grow slightly between 2019 and 2039. Figure 3 provides population projections for Lander County.

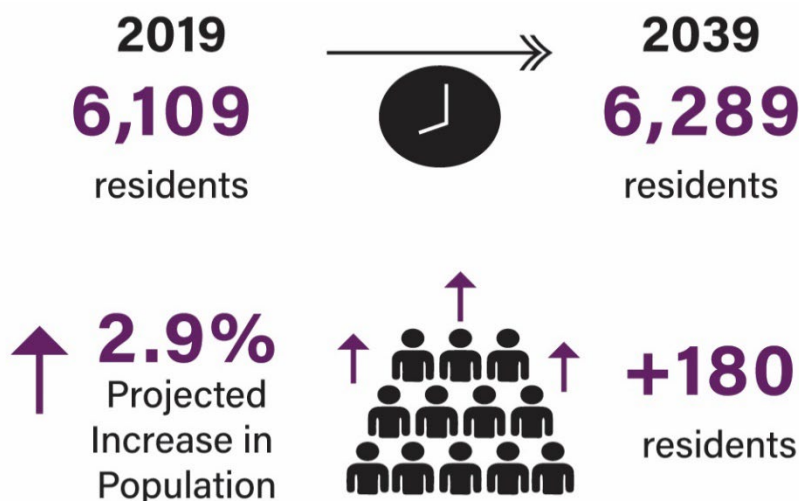


Figure 3: Population Projection using Census Bureau Low International Migration Scenario
Source: Nevada County Population Projections 2020 to 2039 by Nevada State Demographer (2021), page 11

Although projections are developed by the Nevada State Demographer with the best available data, all projected numbers are estimates dependent on the conditions of the County and Nation. Notably, projections from the previous year estimated a loss in population in Lander County by 2038. The new projection model does not show this same loss in population. Due to the ongoing COVID-19 pandemic, the demographer developed several different growth scenarios using different variables (Figure 4). Generally, the trend shows a moderate increase in population in the mid-2020s, followed by a decline. A full overview of each model and projection is available in the Nevada County Population Projections 2020 to 2039 report by the Nevada State Demographer.

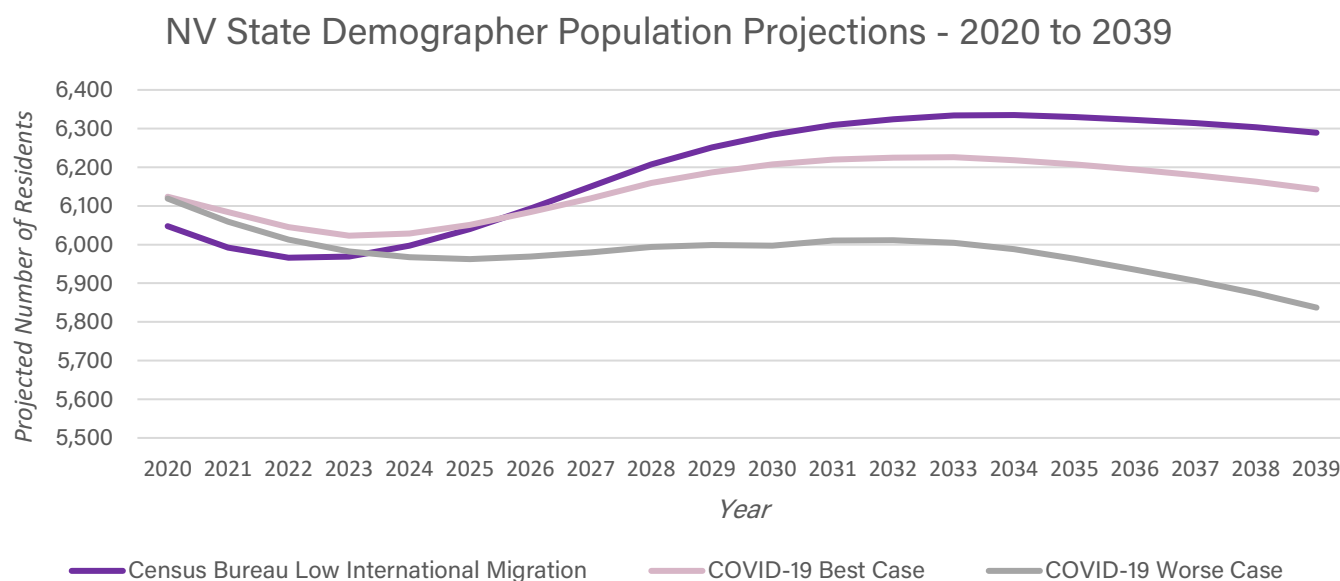


Figure 4: NV State Demographer Population Projection Scenarios
Source: Nevada County Population Projections 2020 to 2039 by Nevada State Demographer (2021), pages 11 & 20

Many surrounding counties will also experience a shift in population, as detailed in Table 2.

Table 2 - Population Projections 2019 to 2039				
Population	% Change	Net Change	2019	2039
Lander County	2.9%	180 residents	6,109	6,289
Eureka County	-8.6%	-168 residents	1,955	1,787
Elko County	-0.8%	-428 residents	55,116	54,688
Humboldt County	6.7%	1,149 residents	17,079	18,228

Source: Nevada County Population Projections 2020 to 2039 by Nevada State Demographer (2021)

Median Age

The median age of the population fluctuated between 2013 and 2019. Overall Lander County has consistently matched the median state average for the state of Nevada. However, the individual towns of Battle Mountain, Kingston and Austin were generally above the state average. In particular, Kingston and Austin have a median age far exceeding other communities and the state average, although the median age has decreased over time, likely attributed to migration from the area or mortality. This rising median age is important, as aging populations typically require more public services or assistance (e.g. public transportation options, medical facilities). The Housing chapter of this Master Plan includes a discussion of possible ways to accommodate this population change.

Median Age of Lander County Residents

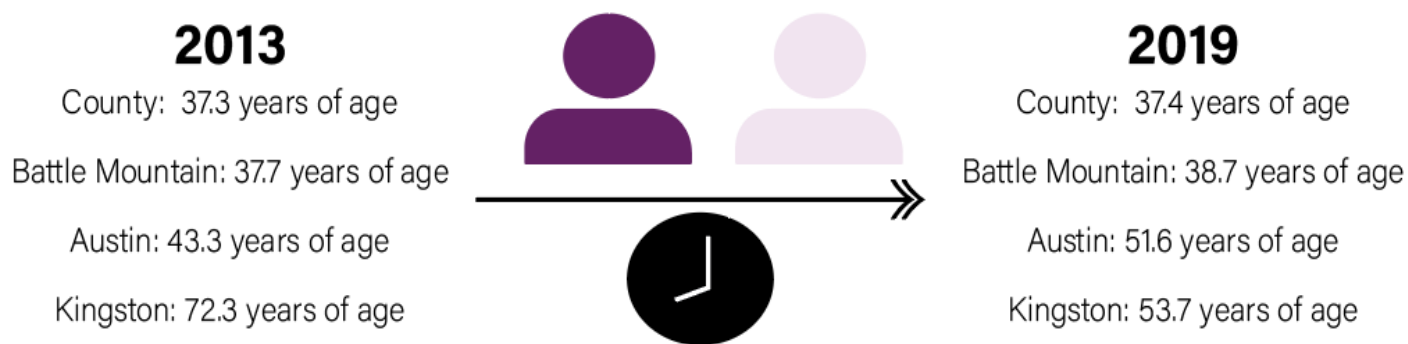


Figure 5: Median Age of Residents
 Source: University Center for Economic Development, College of Business, University of Nevada, Reno, 2021

Housing

Approximately 2,657 housing units exist in Lander County.⁶ A distribution of housing types is located in Figure 6. Generally, the housing in Lander County is composed of Manufactured Homes and Single Family Residences, with <5% of housing composed of multiple units.⁷ Few multifamily (medium to high density) housing options exist within Lander County.

Aging Housing Stock

Housing stock is aging in Lander County overall, with a substantially older housing stock in certain areas. 41% of housing in Lander County was built prior to 1979. Austin has the oldest housing stock with approximately 93% of the housing built prior to 1979. Although older housing stock is not inherently negative, this condition creates issues as these houses approach the 50 year depreciation schedule in Nevada (Figure 7).

Nevada law directs assessors to subtract depreciation at a set rate of 1.5% of the cost of replacement for each year of adjusted actual age of the improvement, up to a maximum of 50 years (NRS 361.227 (1)(b)). Coupled with the overall aging of this population requiring more county resources, this condition will create issues with the long term viability of the area if not mixed with newer housing to counteract the reduced tax base.

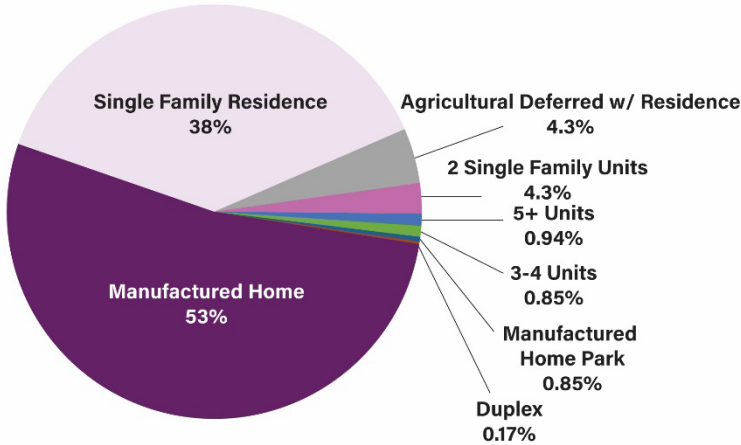
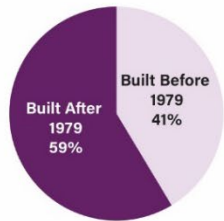
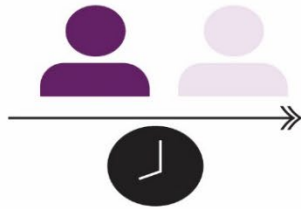
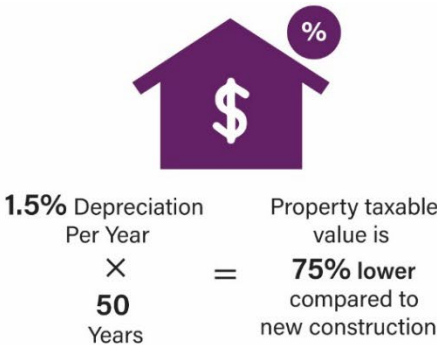


Figure 6: Composition of Residential Uses
Source: Lander County Assessor Parcel Data (2021)

Household Characteristics



Overall Lander County Housing Ages



Growing Senior Population will require additional public facilities, services and infrastructure improvements like:

- Accessible sidewalks & recreation facilities
- Public transportation & ride share options
- Emergency medical and hospital services
- Public housing assistance



In some states, property taxable value is reset when the house is sold



In Nevada, the lower property taxable value is maintained when sold to a new owner

Figure 7: Tax Depreciation in Nevada and Connection to Aging Population

⁶ (Steinmann 2020)
⁷ (Lander County Assessor's Office 2021)
Lander County Master Plan **DRAFT**

The overall number of households increased from 2,010 between 2013 and 2019, a percent increase of 9.35%. Interestingly, household sizes decreased in the county overall and Austin and Battle Mountain during this same time period. Austin saw a drop in average household size from 2.5 to 1.74 people per household. A large increase in total household was seen in Austin during this time period, although a drop in overall population in these areas, possibly due to a shift in the type of individuals living in this area (i.e. families versus retirees or single workers). Median household income rose in the county overall, but dropped slightly in Battle Mountain.

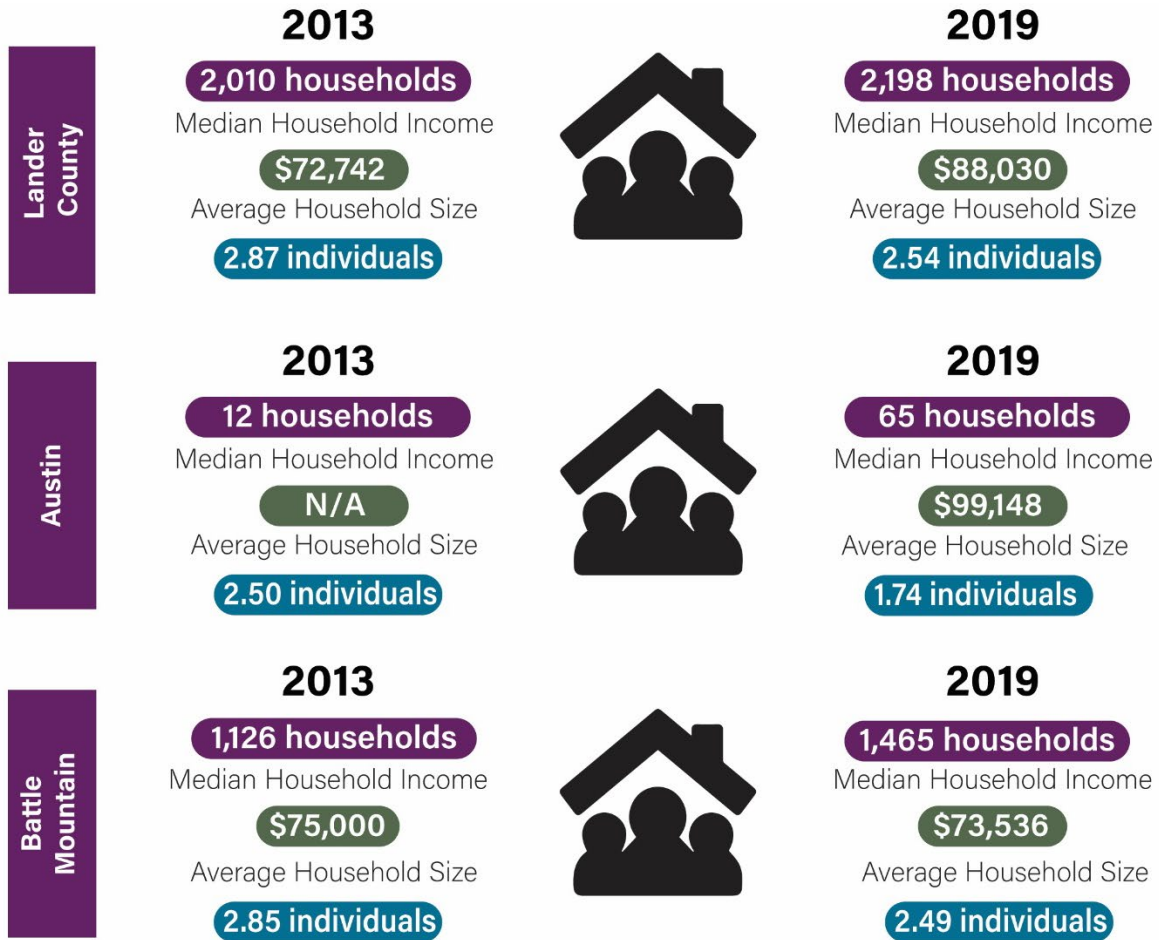


Figure 8: Household Statistics for Lander County, Austin, and Battle Mountain
 Source: Census Bureau -American Community Survey Estimates 2013 and 2019, Tables S1101 and S1901

Poverty Rates

The percentage of the population living below the poverty level is a measure used by the government to characterize the economic situation of an individual and community. Generally, Lander County has a lower percentage of individuals living below the poverty line compared to surrounding counties and the state of Nevada (Table 3).

Poverty Rate

The poverty rate is the ratio of the number of people (in a given age group) whose income falls below the poverty line. The poverty line (or threshold) is determined by the Census Bureau each year and is dependent on household size.

(US Census Bureau, 2019)

Table 3 – Median Household Income & Poverty Rates in Northeast Nevada (2019)

Overall	Lander	Elko	Eureka	Humboldt	State
Median Household Income ¹	\$88,030	\$74,801	\$67,882	\$66,009	\$54,763
Unemployment Rate ²	8.2%	4.7%	0%	3.4%	6.2%
Poverty Rate ¹	9.6%	9.1%	12.4%	10.6%	12.7%

Sources: ¹ University Center for Economic Development, College of Business, University of Nevada, Reno, 2021

²American Community Survey 5-Year Estimates, years between 2013-2019, Table S2201 and DP03

The percentage of individuals and households living below the poverty level remained well below the state average until 2018, when it spiked to 15.4% before declining to 9.7% in 2019 (Figure 9). Figure 10 combines the poverty rate and unemployment rates in the state and County. While the State unemployment and poverty rates have been

% of Individuals Below Poverty Level

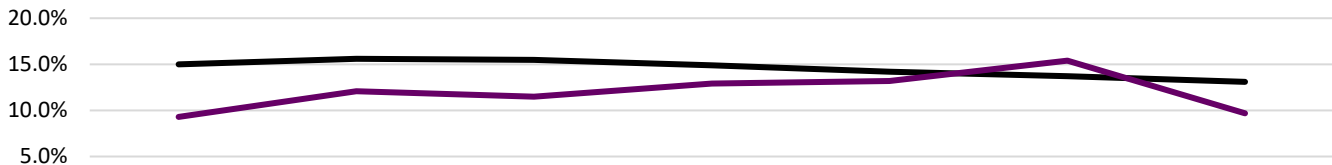


Figure 1-9: Poverty Rate Graph 2013-2019

Source: American Community Survey 5-Year Estimates, years between 2013-2019, Table S2201

Unemployment Rate and Poverty Rate

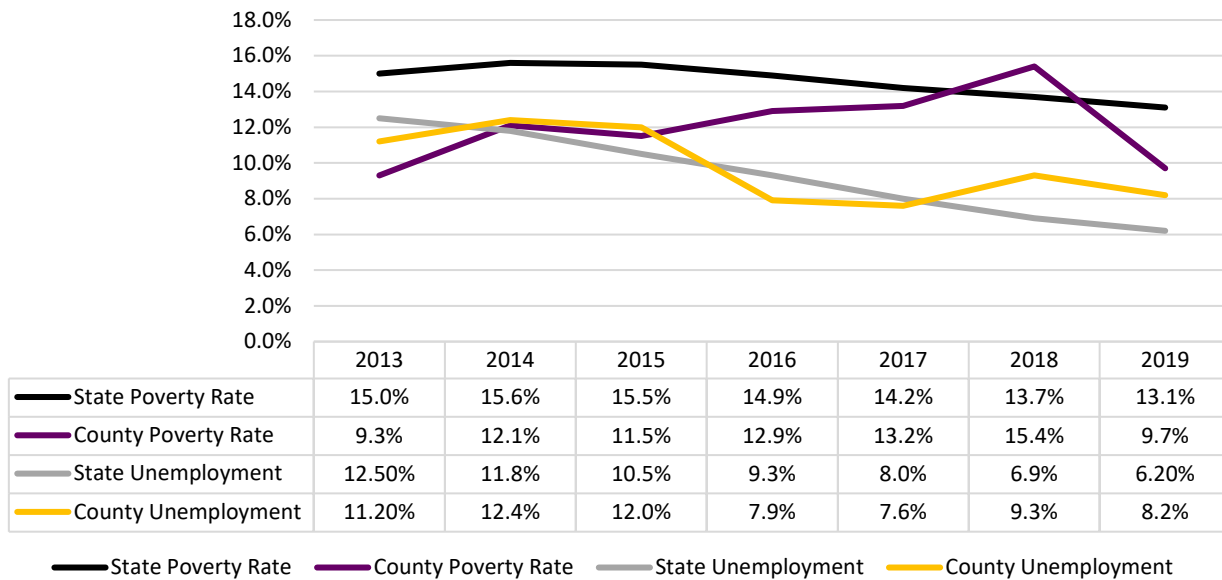


Figure 10: Unemployment and Poverty Rates

Source: American Community Survey 5-Year Estimates, years between 2013-2019, Table S2201 and DP03

steadily declining, Lander County has more variability. In several years, there is a visible increase in the percentage of individuals living below the poverty line and a higher unemployment rate. However, this is not a consistent trend. The Economic chapter discusses poverty rates in greater depth.

Housing Affordability

Although the percentage of cost burdened households is below most other counties in Nevada (Refer to Figure 11), housing affordability is an important component to consider when analyzing poverty levels and the need for social services and interventions in Lander County. Of note is the significant difference between cost burdened renters versus homeowners, with an estimated 20.2% of renters in Lander County experiencing cost burden, with few rental options (120 units).

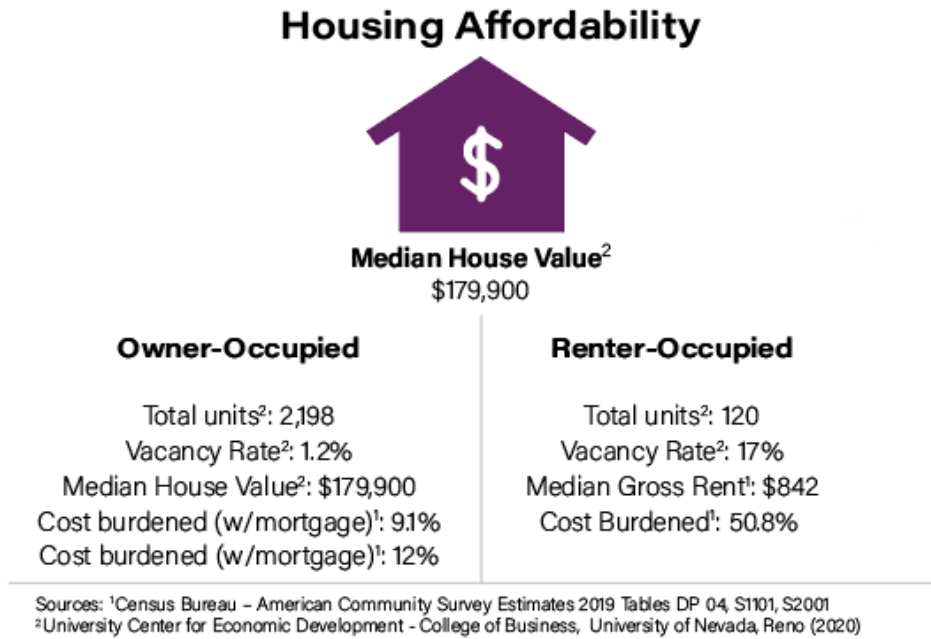


Figure 11: Lander County Housing Affordability

Other nearby counties have relatively similar affordability statistics, although Lander County has the lowest amount of cost-burdened renters compared to other comparable counties. The median home value is generally in the middle of the other counties, neither the most or least expensive.

Table 4 – Rural County Affordability Statistics ¹				
Renters	Elko County	Eureka County	Humboldt County	Lander County
Median Gross Rent	\$952	N/A	\$841	\$842
Cost Burdened %	22.3%	N/A	41.4%	50.8%
Homeowners	Elko County	Eureka County	Humboldt County	Lander County
Median Housing Value	\$212,500	\$120,100	\$180,600	\$179,900 ²
Cost Burdened % (with mortgage)	16.8%	8.3%	17.6%	9.1%
Cost Burdened % (without mortgage)	16.1%	3.2%	11.3%	12%
Source: ¹ Census Bureau – American Community Survey Estimates 2019 Tables DP 04, S1101, S2001 ² University Center for Economic Development – College of Business, University of Nevada, Reno (2020)				

Housing Projections⁸

Based on population projection and estimated job growth, the total number of new housing units needed to satisfy and meet future housing demand between 2020 and 2025 is 346 new units of housing. An estimated 270 new units of housing built between 2020 and 2025 will be needed to satisfy future workforce housing demand over the next five to six years and an estimated 76 new units of housing built between 2020 and 2025 will be needed to satisfy future non-workforce housing demand over the next five to six years in Lander County.

346
Total number of new housing units needed in Lander County to satisfy and meet projected housing demand between 2020 and 2025.

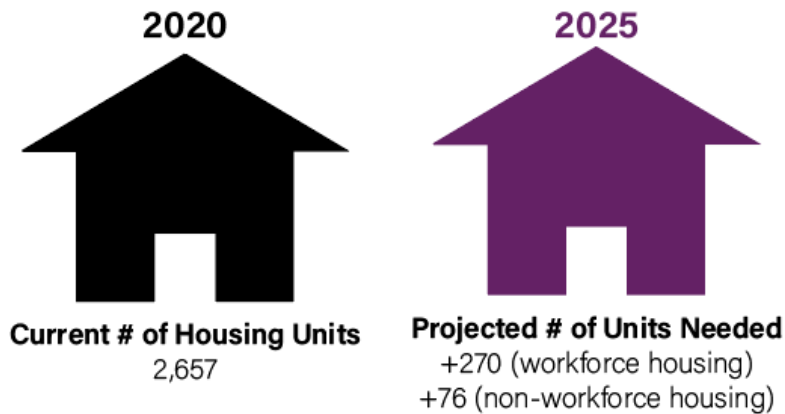


Figure 12: Current and Projected Housing Units

Source: University Center for Economic Development – College of Business, University of Nevada, Reno (2021).

⁸ University Center for Economic Development – College of Business, University of Nevada, Reno (2021).
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Land Use

The land use of Lander County maintains its historic rural and agricultural character, with the majority of parcels classified with a “Rural” master plan category, meaning they have limited infrastructure and services available. The majority of land within the county is federally administered by the Bureau of Land Management (BLM). Figure 13 provides a breakdown of public versus private lands within the county.

Agricultural lands have historically been important to the area and continue to be important for the economy and livelihood of the County. 117 farms, with a total of 329,373 acres of land, are classified as agricultural lands.⁹ These lands are included within the Rural master plan category.

In the populated areas of Battle Mountain, Austin, and Kingston, there is a greater mixture of residential, commercial, and industrial uses. The Land Use chapter provides maps and tables breaking down the Master Plan categories for these areas. Figure 14 provides a breakdown of the percentage of parcels with each Master Plan category. Refer to Land Use Chapter for maps and other details.

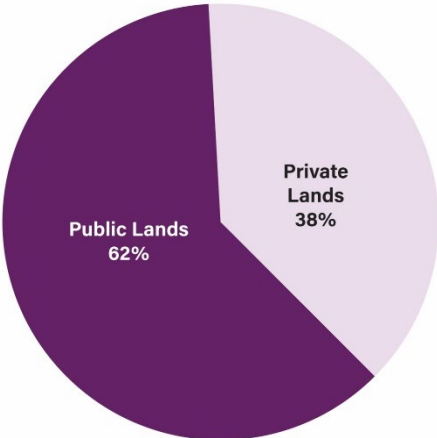


Figure 13: Public versus Private Lands
Source: Lander County Assessor Parcel Data (2021)

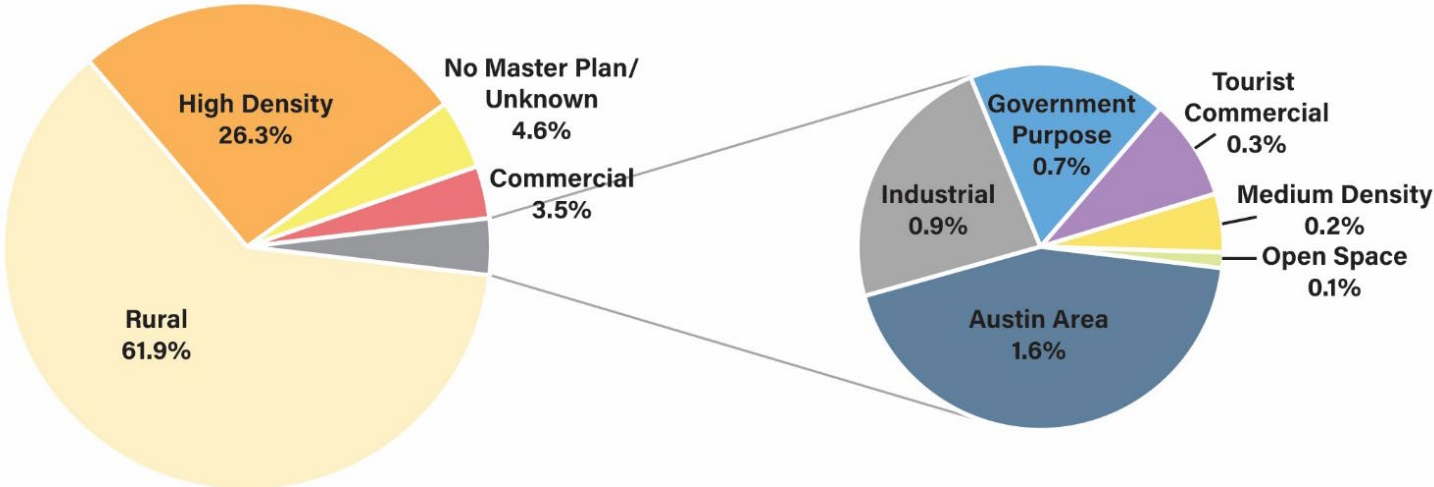


Figure 14: Master Plan Categories of Parcels
Source: Lander County Assessor Parcel Data (2021)

**Note this graph depicts a percentage of the count of Lander County parcels, not the percentage of acreage of all parcels. Tribal lands excluded, as these parcels are within a sovereign nation and outside of the jurisdiction of Lander County and this Master Plan.*

⁹ (US Department of Agriculture 2012-2017)
Lander County Master Plan **DRAFT**

Economy

Economic Sectors¹⁰

The top 6 industries that employ Lander County residents are within or nearby the county. A substantial amount of the workforce is employed by the various gold, silver and other precious mineral mines in the area (Figure 15). Other important industries include government, truck transportation and agriculture, fishing, hunting and forestry.

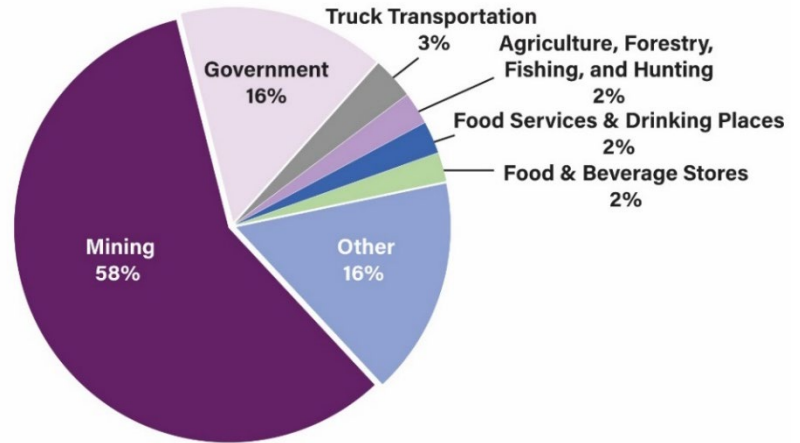


Figure 15: Top Industries in Lander County

Source: Nevada Economic Assessment Project- Socioeconomic Baseline Report (2021); industries lumped by Wood Rodgers, Inc. for graphics/analysis

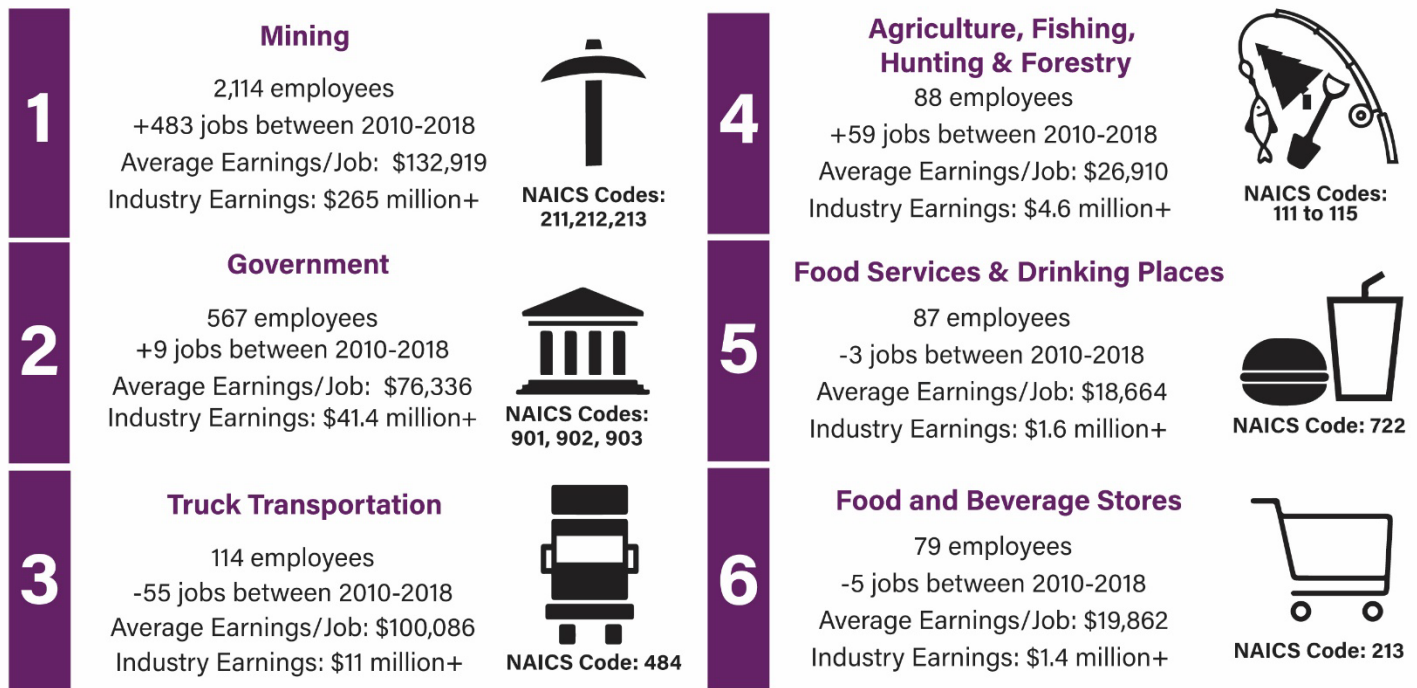


Figure 16: Facts on Top 6 Industries in Lander County

Source: Nevada Economic Assessment Project- Socioeconomic Baseline Report (2021)
Industries lumped by Wood Rodgers, Inc for graphics/analysis

¹⁰ (Borden, et al. 2021)

Workforce¹¹

The majority of residents living in Lander County also work within Lander County (Figure 17). The unemployment rate decreased from 11.2% to 8.2% between 2013 and 2019, although this rate varies from year to year. Median household income also increased substantially during this time period (Figure 18).

The number of employees decreased slightly in these years; however, a better picture of total employment in industries is available by looking at the overall economic sectors (Refer to Economic Sectors section and the Economic Development chapter). The information for this section is centered on employees living within Lander County.

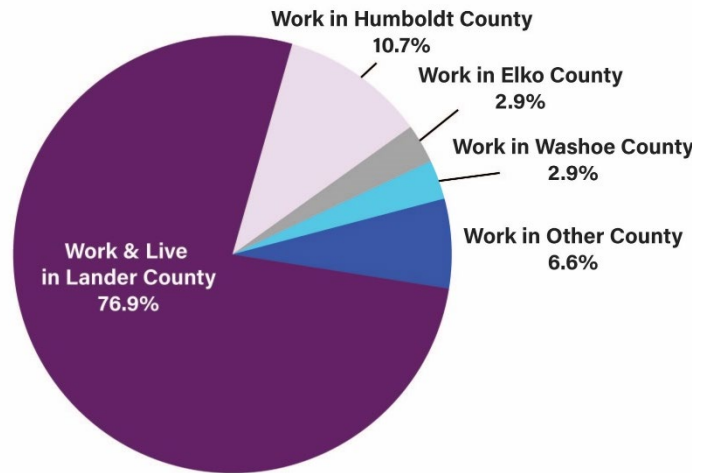


Figure 17: Commuting Patterns of Workforce
Source: University Center for Economic Development, College of Business, University of Nevada, Reno, 2021



Figure 18: Workforce Statistics
Source: American Community Survey 2013 & 2019, Tables S1901, S1903

Movement of Workforce throughout Northeastern Nevada

Lander County and northeastern Nevada overall are unique in the movement of employees. For example, a mine may employ or move a certain amount of miners within different counties of northeastern Nevada from year to year depending on mining activities, generating widely different numbers of employees in each county. For this Master Plan update, it is important to note differences between the total number of employees employed in certain sectors and the overall workforce population living in the County in 2019. In 2017, approximately 1,486 individuals were living outside the county and employed inside, while 2,290 worked and lived in Lander County.¹²

Workforce Trend

Overall, Lander County has seen a trend towards a greater population working inside Lander County but living elsewhere.

¹¹ (Steinmann 2020) (University Center for Economic Development, College of Business, University of Nevada, Reno 2021)

¹² (Borden, et al. 2021, 44)

Schools

Lander County presently has six schools including three elementary schools, one middle school, one high school, and one K-12 school in Austin. Enrollment has fluctuated slightly between 2014 to 2019, but has remained fairly consistent¹³. No new schools are planned for the future.

Educational Attainment

Educational attainment refers to the highest level of education completed in terms of the highest degree or level of schooling. A higher percentage of higher-end educational attainment helps indicate the type of available labor force in the area. Between 2010 and 2017, 31.9 to 39.2% of the population over the age of 25 had a high school degree or equivalent. This percentage has been rising steadily, and the percentage of this population with less than a high school diploma dropped from 25% to 16.8% between 2010 and 2017. Although fewer bachelor’s degrees were obtained during this period, the number of individuals with associates degrees and graduate or professional degrees doubled.

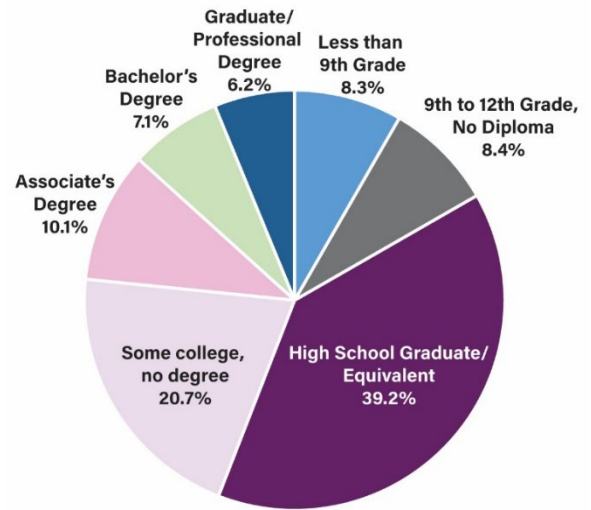


Figure 19: Educational Attainment of Population Over 25
Source: Nevada Economic Assessment Project, University of Nevada, Reno, 2021

Graduation Rates

Graduation rates varied between 2014 and 2019, but generally exceed state graduation rates with the exception of 2018-2019. The highest enrollment was between 2017 and 2018, coincidentally the year with the highest graduation rate. 2019-2020 was the first year Lander County graduation rates fell below the overall state rates. Graduation rates can influence the ability for residents to obtain employment or progress to higher education.

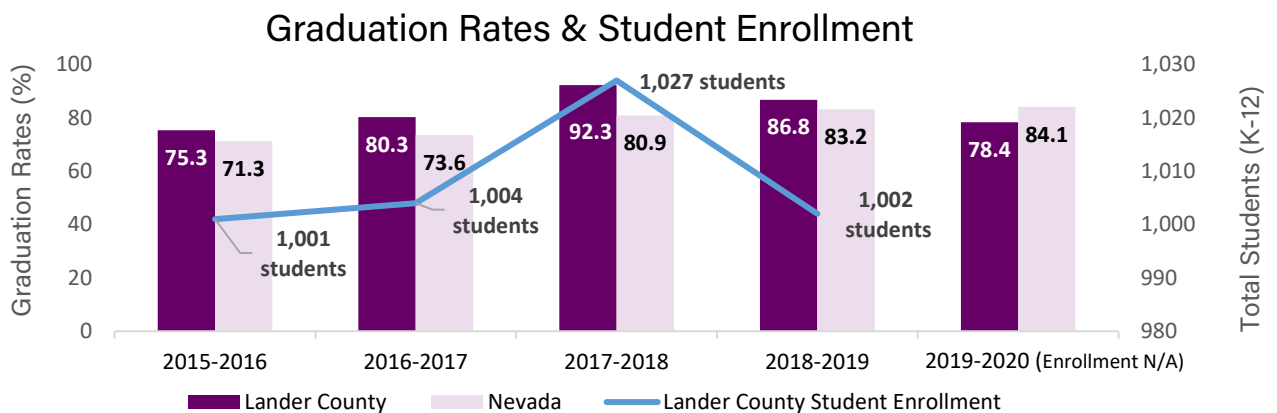


Figure 20: Graduation Rates and Student Enrollment
Source: Nevada Economic Assessment Project - Socioeconomic Baseline Report (2021), pages 23 & 30

¹³ (Nevada Department of Education 2014-2020)
Lander County Master Plan **DRAFT**

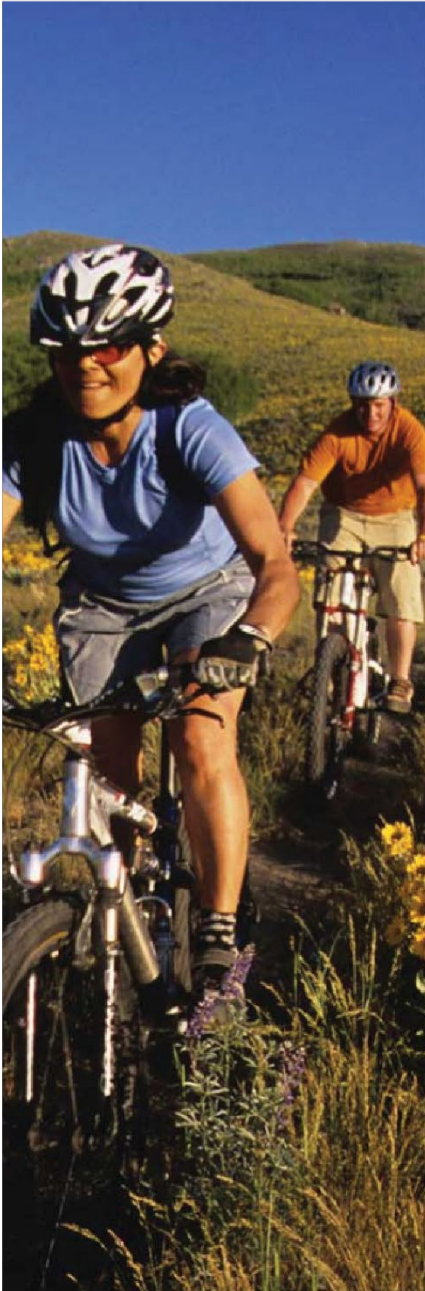
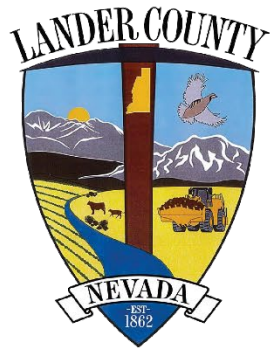
Data Limitations

Throughout this Master Plan, most data provided to characterize the existing population and demographics were estimates provided by the Census Bureau or the Nevada State Demographer. Population projections were determined by the Nevada State Demographer. Final figures may differ slightly from the recently completed 2020 Census Data, which will be completed and data publicly available in mid-2021. Other Census data, including the information in the affordability section, may also differ compared to the 2021 Census or differ slightly from a more comprehensive affordable housing study if Lander County or another entity chooses to examine affordability more closely. In addition, Census methods and sampling are regularly changed to follow advancements and best practices in surveying, and therefore may contain slight differences when data is looked at historically.

Additionally, it is important to note the potential for undercounting in Lander County.¹⁴ The U.S. Census Bureau strongly encourages households to return their 2020 census questionnaire online. However, approximately 15.6% of Lander County households between 2014 and 2019 did not have internet access or dial-up only in their homes, with 19.8% using a cellular data plan only. Due to this low access to internet, there is potential the census questionnaire will not be returned in this format and require a physical census to be mailed back to the Census Bureau or in-person follow up. The Census Bureau acknowledges these areas are at risk of being undercounted. The deadline for self-response ended on October 15, 2020; at that time, the self-response rate of Lander County was 45.3% (the number of individuals who responded online, by phone or mail), a smaller rate than 2000 and 2010. There was a higher risk of undercounting in 2020 compared to the 2000 and 2010 census efforts, due to a number of factors, including a shorter window for follow up for nonresponses.

In sum, the best available data was used to arrive at the existing conditions and predictions of future populations and housing needs. However, as with any data, there are limitations to consider. Updates of the data within this Master Plan may be warranted as new information is available.

¹⁴ (Census Hard to Count Maps 2020)
Lander County Master Plan **DRAFT**



LAND USE

Land Use

The Land Use section addresses conditions and trends that influence growth in Lander County, analyzes the distribution and interrelationships of the various land use types, and contains policies and action plans which establish a development pattern for the next twenty years.



Goals

1. Facilitate orderly development consistent with available resources and services in Lander County.
2. Minimize conflicts among land uses.
3. Provide adequate lands to support economic development and population growth.
4. Create a development pattern that is cost effective to serve with municipal services.
5. Create stable and compatible land uses among residential areas.



Policies

LU.1 Future land uses shall be consistent with the adopted land use plans for Battle Mountain, Austin, and Kingston plans to the extent practical

LU.2 Minimize conflicts between rural land uses and higher density land uses. Medium to high density land uses generally shall not be allowed adjacent to active farm and ranch operations and areas suitable for agricultural operations without approval of a Special Use Permit or similar entitlement process.

LU.3 Maintain irrigated agriculture on lands outside Community areas of Battle Mountain, Kingston and Austin. Cluster development maintaining the overall allowed density can be utilized in order to maintain the balance of lands in agricultural production.

LU.4 For lands proposed for development and within close proximity of municipal water and sewer services, Lander County will evaluate requirements for service line extension to the site.

LU.5 Tourist commercial and general commercial land uses should be encouraged along main transportation routes. General commercial (C-2) should not be allowed adjacent to residential neighborhoods without approval of a Special Use Permit or similar entitlement process.

LU.6 Lands located in remote areas without deeded access shall not be parceled or subdivided. Subdivision or parceling of lands where slopes are more than 15 percent shall be discouraged. Access to remote lands shall meet the rural road standards and provide adequate drainage. New rural roads and drainage must be reviewed by the County Engineer.

LU.7 Prevent new residential subdivisions from locating directly adjacent to Highway and Railroad easements without adequate landscape buffering.

LU.8 No structure shall be erected, constructed, altered or maintained, and no tree shall be allowed to grow to height in excess of the applicable height limit established by Federal Aviation Regulation (FAR) Part 77 - "Objects Affecting Navigable Airspace" unless the Federal Aviation Administration (FAA) issues a determination of "No Hazard to Air Navigation" and Lander County determines that the structure does not place restrictions on airport operations or have the potential to limit future operations.

LU.9 Areas subject to land disposal provide a variety of development opportunities. Appropriate development include:

- Residential development providing a variety of housing opportunities including second home and vacation home opportunities.
- Industrial development and tourist commercial which provide employment opportunities for local residents.
- General Government and Public Uses.

LU.10 Development of lands within critical flood zones and floodways shall not negatively impact their hydrologic function. Critical flood zones include the Reese River near the confluence of the Humboldt River and Lands within the Humboldt River Corridor. Lander County will consult appropriate flood maps to determine location of other critical flood zones and floodways in Lander County. Maintain low density development within areas subject to floodways and flood zones.

LU.11 Lander County will support important redevelopment areas within Battle Mountain, Austin and Kingston.

LU.12 Lander County needs to ensure availability of lands, public services and facilities to support development and job creation.

LU.13 For workforce and employer sponsor housing associated with a business expansion or new operations in Lander County requiring at least 25 new residential structures, Lander County may allow the employer, under a special use permit or similar entitlement process, to establish temporary and short-term housing units under a special use permit or PUD. The development may include a variety of housing units to meet the unique needs of short-term or temporary workers and to adjust development standards to reflect the employer housing needs.

LU.14 Identify, recognize and increase historic resources by encouraging and incentivizing the addition of properties to state and national registers.

LU.15 Foster a balance between new development and preservation of historic, archaeological, and cultural resources.

LU.16 Encourage design of development and community improvements complementary to the surrounding historic landscape, including adaptive reuse and integration of historic properties into new projects where possible and

appropriate.

LU.17 Maintain a system for the survey and inventory of local historic resources. Establish a local register of historic places and ordinances to designate and protect historic and cultural resources.

LU.18 Facilitate public participation in the local preservation, including participation in the National Register listing process.

LU.19 Establish a Historic Resources Commission.

LU.20 Establish Lander County as a certified local government (CLG) with the National Park Service to provide the county with additional opportunities for funding for preservation activities, technical assistance from the State Historic Preservation office and other agencies, and demonstrate community commitment to preserving historic resources and landscapes.

Current Conditions

The land patterns of Lander County are generally consistent with its rural history, with primarily large rural swaths of land and some concentrated areas of medium and higher density residential land uses as well as supportive industrial and commercial uses. Since the 2009 Master Plan, the County development patterns have been relatively consistent. The 2021 update of the Land Use Map provided a land use for the majority of parcels within Lander County, compared to the 2009 Master Plan that contained several blank areas. This mapping process created a substantial amount of parcels with a Rural land use designation, primarily in areas further from the towns of Battle Mountain, Austin and Kingston. Refer to Figures 1-2 through 1-5 of this document for the updated 2021 Master Plan Update Land Use Maps.

Inventory of Land

Table 1-1 - Overall Inventory of Land Uses			
Residential			
Master Plan Category	# of Parcels	Acreage	% of # of Parcels
Rural (R)	4809	4,597,976.03	61.87%
Medium Density (MD)	15	89.55	0.19%
High Density (HD)	2042	1092.38	26.27%
Austin Area	127	39.94	1.63%
Non-Residential			
Master Plan Category	# of Parcels	Acreage	% of # of Parcels
Commercial (C)	270	390.79	3.47%
Tourist Commercial (TC)	26	452.27	0.33%
Industrial (I)	67	3076.36	0.86%
Other			
Master Plan Category	# of Parcels	Acreage	% of # of Parcels
Open Space (OS)	4	31.21	0.05%
Government Purpose (GP)	51	2320.42	0.66%
Tribal (T)	2	834.05	0.03%
No Master Plan / Unknown	360	97,086.98	4.31%
Total	7773	4,703,389.97	100%

Master Plan Categories

The Land Use Element provides the vision for the future development pattern in Lander County. Land use groups were determined by analyzing the typical intensity, location and distribution of land uses in Lander County. It is expected that these land use groups provide opportunities for growth that is desired in Lander County and will dominate throughout the scope of this plan. As part of this master plan update land use categories were reorganized to better fit the current land patterns as well as providing more clarity moving forward. The reorganization was primarily related to better aligning density with zoning designations and renaming of land use categories to provide more clarity. New Master Plan Land Use Categories are described in the following table.

RESIDENTIAL			
Master Plan Category	Uses & Density	Characteristics & Development Guidelines	Equivalent Zoning Category
RURAL (R)	<p>Primary Uses: Generally remote lands with very low-density development (1 dwelling unit per 20 acres) agriculture or mining and milling. Expected to remain relatively undeveloped or in agricultural use or mining and milling use.</p> <p>Other Uses: Remote but unique developments (e.g., outdoor recreational resorts, renewable energy facilities, agri-business, mining facilities). Employee housing uses may be allowed only for agricultural uses.</p> <p>Density: 1 dwelling unit per 20 acres or more</p>	<p>Intended to preserve agriculture, grazing, and/or open space areas. These lands also include mining and milling uses. These areas generally lack essential infrastructure and services for intensification, are larger swaths of land used for mining or agriculture, or they have constraints such as steep slopes, flood zones, and other sensitive environmental areas.</p> <p>This designation identifies areas that may have one or more of the following characteristics:</p> <ul style="list-style-type: none"> ▪ Within the 100-year floodplain identified on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM). ▪ Within a "potential wetland area" as identified by the U.S. Army Corps of Engineers (COE). ▪ Within active mining areas or near active mine sites. ▪ Moderate slopes (between 15 and 30 percent) or steep slopes (30 percent or steeper) based on interpretation of the topographic information on the United States Geological Survey (USGS) maps for the County. ▪ Is in agricultural use or directly adjacent to agricultural areas. ▪ Within a remote location that does not have public infrastructure adjacent to or near the site and public services are located significant distances from the proposed development and creates a financial burden on local government to serve. 	A-3

RESIDENTIAL			
Master Plan Category	Uses & Density	Characteristics & Development Guidelines	Equivalent Zoning Category
		<p>Public service standards: Estimated water generation: Water right dedication is 2.0 acre- feet/dwelling unit/individual wells in a designated basin for newly created parcels. Development will be served by individual appropriate water right dedication requirements apply.</p> <p>Estimated sewer generation: Development will be served by individual septic systems.</p> <p>In many areas of Lander County, meeting minimum public service and facility standards will be difficult to achieve.</p> <p>Design standards: Clustered development in exchange for a conservation easement shall be encouraged to maintain irrigated agriculture and beneficial use of water rights within Lander County.</p> <p>The natural terrain, groundwater recharge capabilities, scenic qualities, ranching and agricultural uses, and other natural surroundings shall be conserved.</p>	
RURAL RANCHETTES (RR)	<p>Primary uses: Single family detached residential uses on parcels in semi-rural setting</p> <p>Secondary uses: Livestock and agricultural uses</p> <p>Density: 1 dwelling unit per 4.5 acres or more</p>	<p>Identifies single family detached residential uses on parcels in a semi-rural setting. Livestock and agricultural uses are common secondary uses.</p> <p>Public service standards: Estimated water generation: 2.0-acre feet/dwelling unit/individual well. For lower density, 1.12-acre feet/dwelling unit/connection with community water system for all others.</p> <p>Typically served by individual sewage disposal system unless public sewer services are available.</p>	<p>RR-4.5 (Proposed change to zoning code Previously A-2, also max density will change from 5.0 acres to 4.5 acres)</p>

RESIDENTIAL			
Master Plan Category	Uses & Density	Characteristics & Development Guidelines	Equivalent Zoning Category
		<p>Design standards: The natural terrain, groundwater recharge capabilities and scenic qualities shall be conserved.</p>	
LOW DENSITY (LD)	<p>Primary Uses: Single family detached residential uses</p> <p>Other Uses: Limited livestock and agricultural uses.</p> <p>Density: 1 dwelling unit per 2.5 acres or more</p>	<p>Identifies single family detached residential uses on parcels in a semi-rural setting. Livestock and agricultural uses are common secondary uses.</p> <p>Public service standards: Estimated water generation: 2.0-acre feet/dwelling unit/individual well. For lower density, 1.12-acre feet/dwelling unit/connection with community water system for all others.</p> <p>Typically served by individual sewage disposal system unless public sewer services are available.</p> <p>Design standards: The natural terrain, groundwater recharge capabilities and scenic qualities shall be conserved.</p>	RR-2.5 (Proposed change to zoning code, new zoning designation)
MEDIUM DENSITY (MD)	<p>Primary Uses: Single family detached homes</p> <p>Other Uses: Public, semipublic facilities, parks, open space</p> <p>Density: 1 unit per 2 acres to 2 units per acre</p>	<p>Intended for a residential lifestyle near population centers with access or future access to community water and wastewater systems.</p> <p>Public service standards: Developments less than 2 acres shall be served by municipal water/wastewater systems.</p> <p>Estimated water generation: 1.12-acre feet/dwelling unit/connection with community water system. Estimated sewer generation: 325 gpd/dwelling unit.</p>	R-4 (Proposed change to zoning code Previously A-1) R-3

RESIDENTIAL			
Master Plan Category	Uses & Density	Characteristics & Development Guidelines	Equivalent Zoning Category
		<p>Design standards: The natural terrain, groundwater recharge capabilities, scenic qualities and other natural surroundings must be conserved.</p> <p>Conventional cul-de-sac development is discouraged due to lack of connectivity. Traditional and conventional interconnected development patterns are appropriate for this area.</p>	
HIGH DENSITY (HD)	<p>Primary Uses: Single family detached and attached houses</p> <p>Other Uses: Temporary or short-term housing options may be appropriate in certain areas.</p> <p>Density: 3 to 5 units per acre</p>	<p>Intended to provide an overall mix and intensity of residential uses.</p> <p>MRC zoning shall be limited to existing MRC zoned lands. Future zone changes to MRC are not allowed.</p> <p>Public service standards: Developments shall be served by municipal water/wastewater systems.</p> <p>Estimated water generation: 1.12-acre feet/dwelling unit for single family; 1.0-acre feet/dwelling unit for mobile home parks; connection with community water system for all others.</p> <p>Estimated sewer generation: 300 gpd/dwelling unit for higher density residential development with community sewage disposal system; 250 gpd/dwelling unit for multi-family and connection with community sewage disposal.</p> <p>Design standards: Higher density and redevelopment of vacant parcels is encouraged. Development should be compatible with existing neighbors. The character of existing residential areas shall be maintained.</p>	R-1 R-2 MS

RESIDENTIAL			
Master Plan Category	Uses & Density	Characteristics & Development Guidelines	Equivalent Zoning Category
		<p>Standards should minimize conflict that may occur due to the compact form of this land use, including minimum setbacks, building heights, landscaping, lighting, parking and noise. Pedestrian needs are important.</p> <p>For workforce housing proposals, Lander County will evaluate the need for modified development standards.</p> <p>Higher density residential areas may be appropriate for short-term or temporary employer sponsored workforce housing opportunities with:</p> <ul style="list-style-type: none"> ▪ Gravel driveways and parking areas ▪ Municipal sewer and water service to the site ▪ One unit per lot or site ▪ Limitations on outdoor accessory buildings and storage units ▪ Licensed and functional RV's, trailers, and mobile homes ▪ Bonding requirements for site cleanup or reclamation that are established and enforced. ▪ Adequate separation between existing residential neighborhoods. Landscaping and screening may be required. 	
MULTI-FAMILY (MF)	<p>Primary Uses: Multi-story living, smaller multi-family buildings, single family attached/townhouses</p> <p>Other Uses: Temporary or short-term housing options may be appropriate in certain areas.</p> <p>Density: 6 to 30 units per acre</p>	<p>Intended to provide multi-family residential opportunities near existing infrastructure and services. Typically located near transportation corridors, parks and school sites. Residences shall be buffered from adjacent roadways.</p> <p>Public service standards: Developments shall be served by municipal water/wastewater systems.</p> <p>Estimated water generation: 1.12-acre feet/dwelling unit for single family; 1.0-acre</p>	<p>MF (Proposed change to zoning code Previously R-4)</p>

RESIDENTIAL			
Master Plan Category	Uses & Density	Characteristics & Development Guidelines	Equivalent Zoning Category
		<p>feet/dwelling unit for mobile home parks; connection with community water system for all others.</p> <p>Estimated sewer generation: 300 gpd/dwelling unit for higher density residential development with community sewage disposal system; 250 gpd/dwelling unit for multi-family and connection with community sewage disposal.</p> <p>Design standards: Multi-family development and redevelopment of vacant parcels is encouraged. Development should be compatible with existing neighbors. The character of existing residential areas shall be maintained.</p> <p>Standards should minimize conflict that may occur due to the compact form of this land use, including minimum setbacks, building heights, landscaping, lighting, parking and noise. Pedestrian needs are important.</p> <p>For workforce housing proposals, Lander County will evaluate the need for modified development standards</p> <p>Multi-family residential areas may be appropriate for short-term or temporary employer sponsored workforce housing opportunities with:</p> <ul style="list-style-type: none"> ▪ Gravel driveways and parking areas ▪ Municipal sewer and water service to the site ▪ One unit per lot or site ▪ Limitations on outdoor accessory buildings and storage units ▪ Licensed and functional RV's, trailers, and mobile homes 	

RESIDENTIAL			
Master Plan Category	Uses & Density	Characteristics & Development Guidelines	Equivalent Zoning Category
		<ul style="list-style-type: none"> ▪ Bonding requirements for site cleanup or reclamation that are established and enforced. ▪ Adequate separation between existing residential neighborhoods. Landscaping and screening may be required. 	

NONRESIDENTIAL LAND USES			
Master Plan Category	Uses and Density	Characteristics and Development Guidelines	Equivalent Zoning Category
COMMERCIAL (C)	<p>Primary Uses: Wholesale and retail centers, specialty shops, personal services</p> <p>Other Uses: Business parks and supportive commercial activities and hotels where appropriate</p>	<p>Create and preserve areas for businesses that provide a variety of wholesale and retail goods and services, serving neighborhood or community markets.</p> <p>Public service standards: Water requirement will vary by individual development; connection with community water system shall be required.</p> <p>Sewer requirement will vary by individual development; connection with community disposal system shall be required.</p> <p>Design standards: Buffering standards should be required adjacent to residentially zoned parcels. Commercial activity proposing 24-hour operations should not encroach upon established residential areas.</p> <p>Pedestrian access and connection to adjoining residential areas should be encouraged.</p> <p>Parking areas should have adequate landscaping to discourage expansive hardscapes and paved areas.</p> <p>Transportation and circulation systems shall allow for direct access by adjoining</p>	<p>MF</p> <p>C-1</p> <p>C-2</p>

NONRESIDENTIAL LAND USES			
Master Plan Category	Uses and Density	Characteristics and Development Guidelines	Equivalent Zoning Category
		neighborhoods while discouraging cut through traffic.	
TOURIST COMMERCIAL (TC)	<p>Primary Uses: Wholesale and retail centers, specialty shops, personal services, automobiles services, motels, RV parks, traveler related services.</p> <p>Other Uses: Business parks and supportive commercial activities. More intense commercial uses than Commercial (C)</p>	<p>Tourist Commercial uses are strongly encouraged in areas that support other urban and commercial uses that are associated with Lander County communities of Battle Mountain, Austin and Kingston. Generally intended for major transportation routes through Lander County.</p> <p>Design Standards: Best suited for areas adjacent to major highway and interstates. Broad Street, Front Street, Muleshoe Road, and areas adjacent to Interstate 80 as well as U.S. 50 and State Route 305 support tourist commercial activity.</p> <p>Public service standards: Water requirement will vary by individual development; connection with community water system shall be required.</p> <p>Sewer requirement will vary by individual development; connection with community disposal system shall be required.</p> <p>Design standards: Buffering standards should be required adjacent to residentially zoned parcels. Commercial activity proposing 24-hour operations should not encroach upon established residential areas.</p> <p>Parking areas should have adequate landscaping to discourage expansive hardscapes and paved areas.</p>	C-2 TC
INDUSTRIAL (I)	<p>Primary Uses: Industrial operations</p> <p>Other Uses: Supportive commercial uses may be appropriate</p>	<p>Intended to provide for activities such as manufacturing, warehousing, mining, and construction.</p> <p>Employment and job creation opportunities are priority.</p>	I (Proposed change to zoning code Previously M)

NONRESIDENTIAL LAND USES			
Master Plan Category	Uses and Density	Characteristics and Development Guidelines	Equivalent Zoning Category
		<p>For industrial proposals, the requirement to be served by public water/sewer system will vary by individual development.</p> <p>Design Standards: Each parcel is allowed one access point. Adjoining properties will share common access. Alternative access will be from less impacted of the two streets. No access to local streets that primarily serve residential uses. Proposal for industrial development must have direct access to existing or planned arterial road, unless 60% of proposal’s transport is served by rail, then existing or planned collector is acceptable.</p> <p>Industrial uses are discouraged adjacent to residential or should provide large buffering to reduce impacts.</p>	
OPEN SPACE (OS)	Primary Uses: Conservation areas, recreation	Intended to retain certain critical lands in the County. This designation applies to open areas with limited or no road access, water, sewer, and emergency services.	OS
GOVERNMENT PURPOSE (GP)	Primary Uses: Depends on parcel	Intended for public facilities to serve Lander County residents, visitors and industries.	GP

Public Land

The initial Lander County Public Lands Policy Plan was developed between 1983 and 1984 as part of a state-wide effort resulting from the passage of Senate Bill 40. Nevada Division of State Lands (NDSL), in concert with local governments, developed a public lands policy plan for each of Nevada’s 17 counties as well as a statewide element. The Plan was adopted on October 4, 1984 by the Lander County Board of Commissioners (LCBC). The LCBC working under advisement of the Lander Public Land Use Advisory Planning Commission (PLUAPC) adopted an update to the Plan on November 8, 1999 and again in 2005. The 2017 Plan represents a review of existing and emerging public lands issues that are of importance to Lander County as it works with federal agencies under the National Environmental Policy Act (NEPA) and other public processes.

The majority of public land in Lander County is owned by the Bureau of Land Management. Below is table highlighting the breakdown of Public Lands within Lander County. Refer to Figure 1-1 for a map.

Table 1-2 – Public Lands Inventory		
Administered By	Acreage	%
Bureau of Land Management	2,646,848.78	91%
US Forest Service	234,192.504	8%
University of Nevada	8,006.26	0.3%
Lander County	5,783.264	0.2%
Nevada Department of State Lands	3,383.7	0.2%
Bureau of Reclamation	120	0.004%
State of NV	75	0.003%
Nevada Department of Transportation	37.47	0.001%
USDA / USFS	19.62	0.001%
Nevada Rural Housing Authority	6.52	0.0002%
Total	2,898,473.12	100%

Within the 2021 Master Plan Update, these public lands were generally master planned “Rural” to plan for future opportunities to convey public lands into county ownership. The lands are generally without necessary infrastructure to support significant development and/or have resource constraints such as steep slopes, flood zones, and other sensitive environmental areas, fitting with the definition of the “Rural” master plan category.

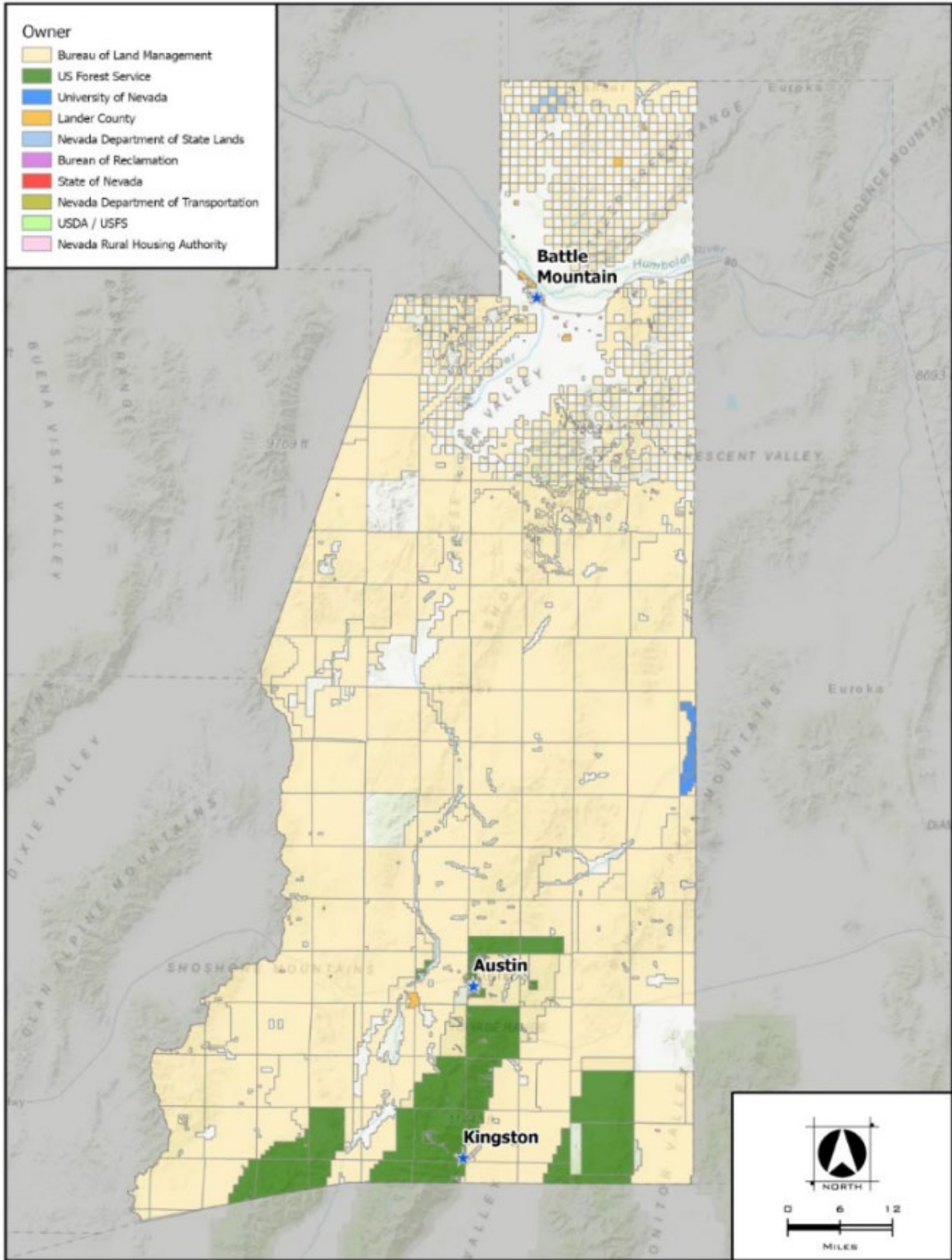


Figure 1-1: Public Lands Map

Looking to the Future

Land Use Mapping Gaps

The Master Plan update has revealed some issues with the mapping and categorization for both zoning and land use/master plan designations. A master plan GIS layer did not exist prior to this update. The project team created a master plan layer using parcel data from the Lander County Assessor that contained zoning for the majority of parcels. A master plan designation was assigned to each parcel depending on the existing zoning. As development patterns within Lander County change over the years, Lander County staff should revisit the Master Plan on a 5-year basis to ensure the Plan is reflective of current conditions. Future master plan amendments should be reflected in the GIS mapping going forward.

New Master Plan Categories

Several master plan categories were added to the 2021 Master Plan Update including Rural Ranchettes (RR), Low Density (LD), Multi-Family (MF) and splitting Commercial and Tourist Commercial designations into their own categories. These additions and modifications will help clarify land use types and better organize the categories with the type of development desired for each.

Work with Political Entities to Pass a Lands Bill

As discussed in the “Public Lands” section, the conveyance of public parcels could provide for additional space for development and recreational or public opportunities for Lander County. The National Defense Authorization Act (Act) was signed in to law (Public Law 113-291) in 2014 allowing a process for conveying BLM and BOR public lands for future public uses. If Lander County seeks to use public lands in the future, an avenue for acquiring these lands is the conveyance process.

In April 2021, a draft bill (FLO212209) was introduced to Congress outlining the Lander County conveyance process. Two specific uses for conveyed federal lands are included within the bill, 1) conveyance for watershed protection, recreation and parks, and 2) conveyance for airport facilities. Additional discussion of wilderness areas is included in the bill and discussed within the Conservation chapter of this Master Plan. With this bill, Lander County has the opportunity to convey certain parcels into County ownership and develop them for uses outlined in the bill. This process would create additional available, valuable land for the County to use for public purposes such as parks or recreation facilities. Future efforts by the County with this Lands Bill will include endeavoring into the conveyance process and re-envisioning the use of these public lands to suit the needs of the current and future population and visitors or industries.

Area Plans

Lander County is divided into three towns with distinct histories, population and thereby differing goals and visions for their communities. The following section describes Battle Mountain, Austin and Kingston Canyon.

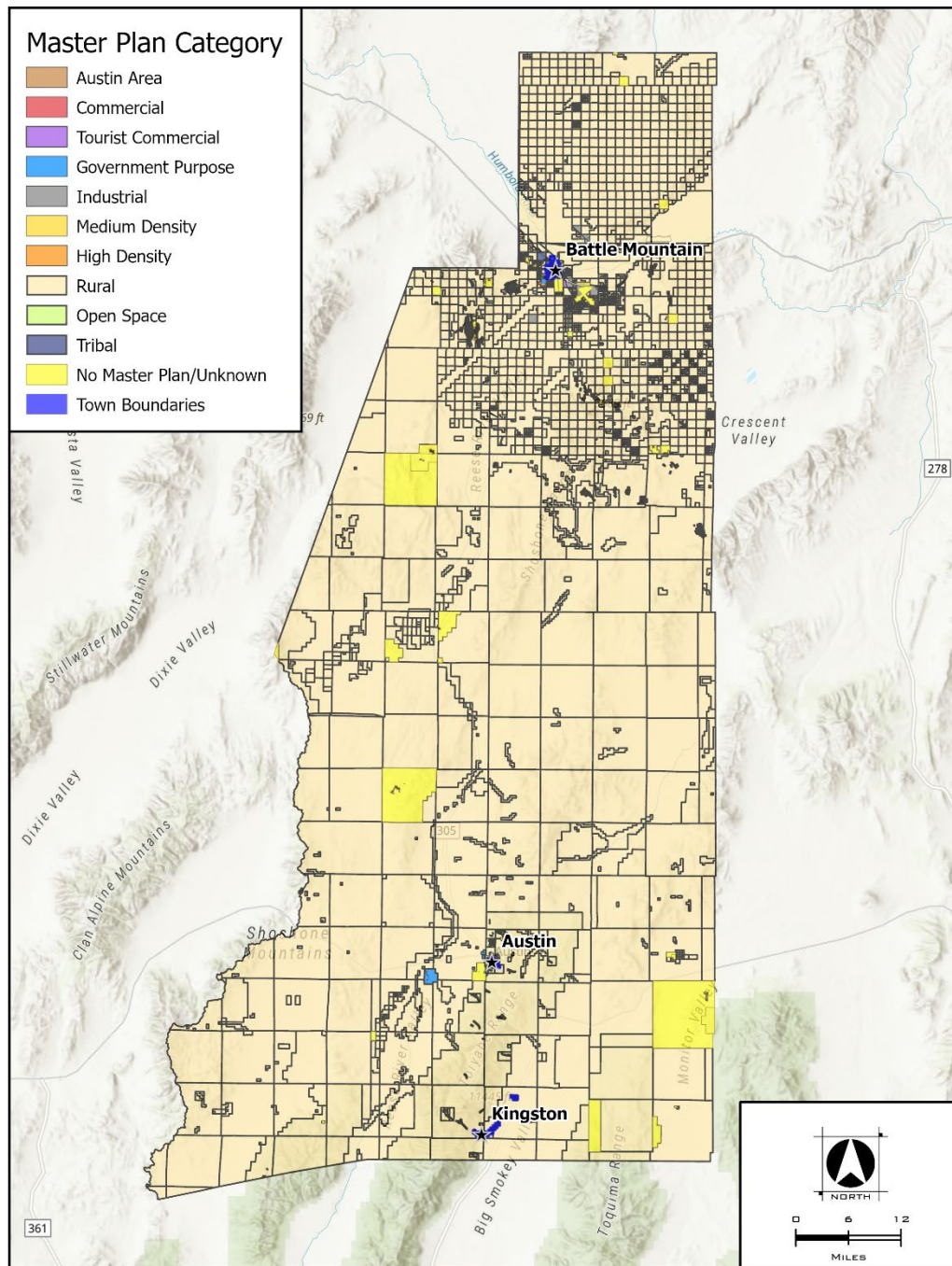


Figure 1-2: Overall Master Plan Map
 (Refer to Figures 1-3 through 1-5 for Battle Mountain, Austin, and Kingston Maps)

Battle Mountain^{1,2}

The Battle Mountain and Lander County region is part of the ancestral lands of the “Newe”, later renamed to “Shoshone” by white settlers during the 1820s. The traditional Western Shoshone territory covered southern Idaho, the central part of Nevada, portions of northwestern Utah, and the Death Valley region of southern California. The Battle Mountain region was the boundary area between the Newe (the ancestors of the Shoshone) and the Northern Paiutes, known to the Newe as “Tonomudza.” A focal point for this area were rabbit and antelope drives for the indigenous population. Beginning in the early 19th century, overland emigrants began exploiting this region for fur trading, mining and cattle ranching. Mining and shipping activity was further spurred by the establishment of the Central Pacific Railroad. Tourism grew in the region beginning in 1930, the start of the paving of the major highways. Mining, livestock and tourism continue to be important parts of the Battle Mountain economy and lifestyle.



Quick Facts about Battle Mountain

Founded In:	1870
Population:	3,698 residents
Recreational Opportunities:	Mountain biking Motocross and OHV Raceway Recreation Center Parks Hunting and trapping Swimming and Fishing Wildlife viewing Heritage tourism

Master Plan	Acres	%
High Density	33.49%	448.31
Government Purpose	29.58%	395.956
Tourist Commercial	19.42%	259.95
Commercial	9.53%	127.554
Industrial	4.29%	57.47
Rural	3.16%	42.32
Medium Density	0.52%	7.002

Development Considerations

Battle Mountain is the main population center within Lander County. This area has the largest amount of High Density and Commercial parcels compared with other parts of the County, suitable to accommodate residential and employment needs. It is anticipated that Battle Mountain will continue to see growth over the next 20 years in both population and employment opportunities. As growth occurs Lander County shall continue to promote adequate buffering between land use types. There are growing concerns of individual sewage disposal systems and water quality. Lander County should monitor this over the next few years and promote expansion of public water and sewer service for more intense development areas.

¹ (Te-Moak Tribe of Western Shoshone 2018)

² (Marschall 2010)

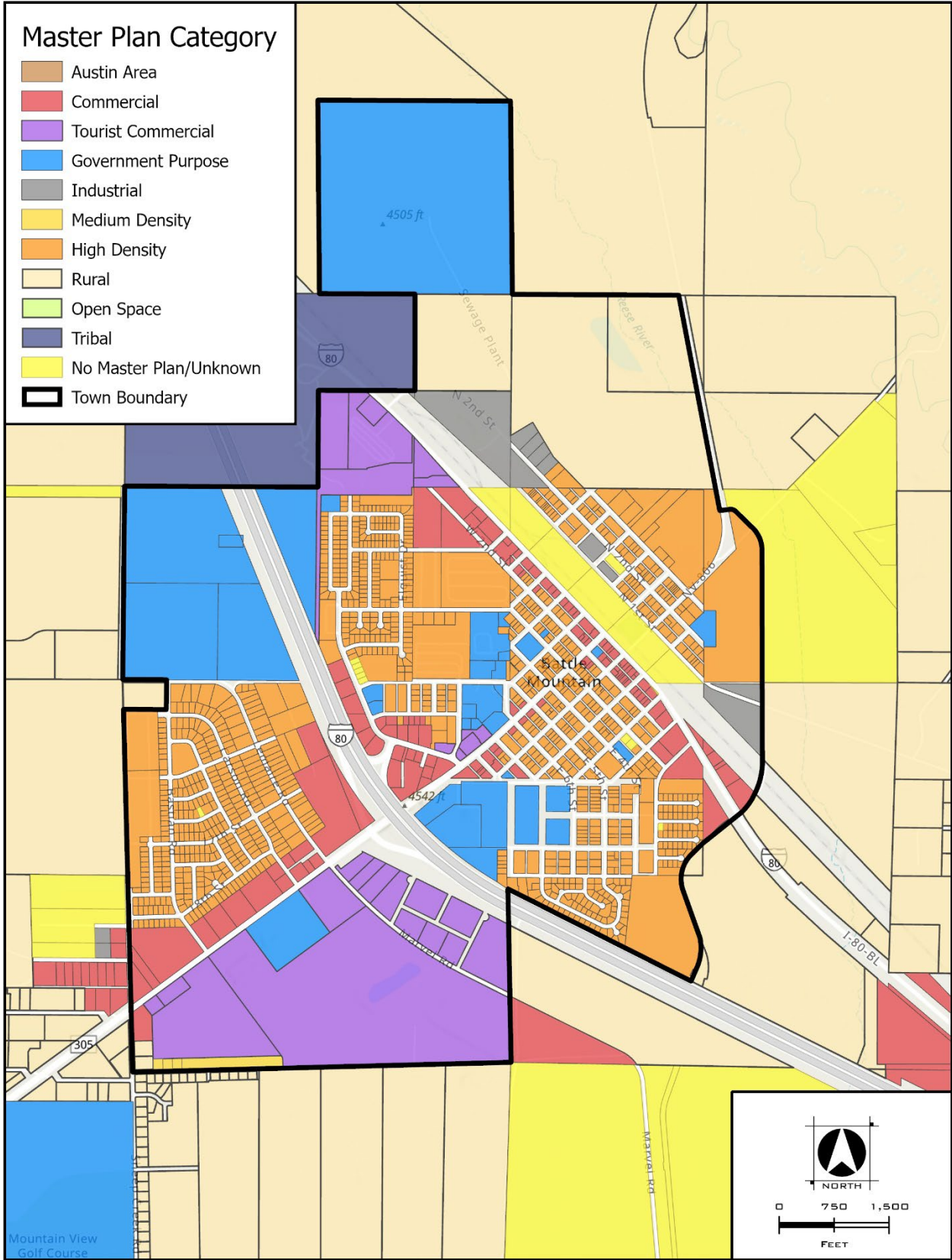


Figure 1-3: Battle Mountain Master Plan Map

Austin

Austin is located in the geographic center of Nevada on U.S. Highway 50. The city was incorporated in 1864 and the early history surrounded the extraction of its rich mining resources. The mining industry peaked in the late 1860s and early 1970s. The Nevada Central Railroad extended to Austin in 1880, aiding mining developments and enhanced Austin’s position as a commercial center. Despite this new railroad connection, mining activity diminished in the late 19th century and caused the population to dwindle significantly by 1890. Today, Austin has 113 residents reported in Census data in 2019. The historic district within Austin preserves the town’s mining history.



Gridley Store, Austin, Nevada
 Source: [Ken Lund](#) (Licensed by [CC BY-SA 2.0](#))

Quick Facts about Austin

Founded In:	1862
Population:	113
Average rainfall:	13.4 inches annual rainfall 89.5 inches snowfall
Average Temperature:	July – High 88°, Low 54° January – High 42°, Low 19°
Growing Season:	104 days
Recreational Opportunities:	Parks, Ball fields, Swimming Pool Equestrian/Mountain Bike, OHV trails Hiking, Camping Hunting/Fishing Heritage Tourism
Important Features:	37-acre historic district 9 sites and buildings listed on the National Register of Historic Places

Master Plan	Acres	%
High Density	39.939	41.93%
Government Purpose	32.574	34.20%
Tourist Commercial	13.319	13.98%
Commercial	7.612	7.99%
Industrial	1.35	1.42%
Rural	0.453	0.48%

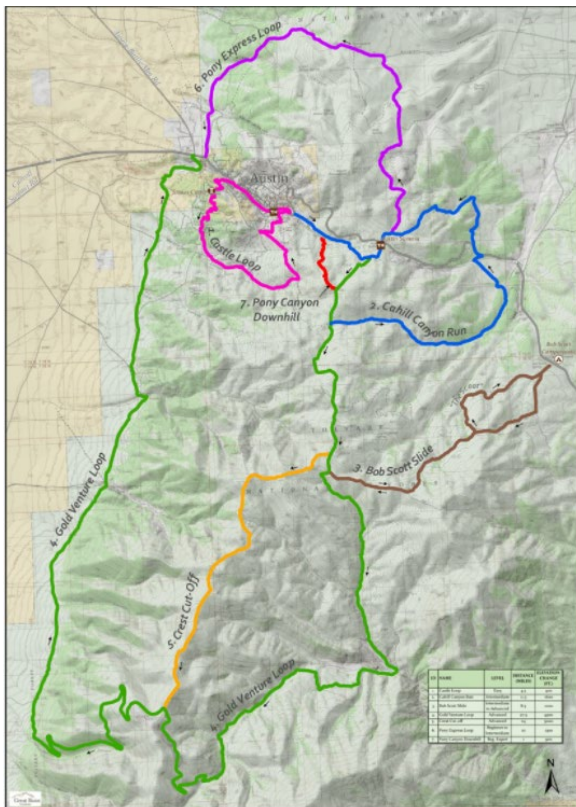
Development Considerations

Historically, the major environmental constraint in Austin is its topography. Steep hillsides on both the north and south sides of town present a development challenge as well as a natural viewshed that is vitally important to the character of Austin. Pony Canyon’s drainage runs directly through the center of town from east to west, culminating in the Reese River Valley. FEMA has mapped the canyon for flood hazard potential and placed a burden on development. The State has developed drainage improvements that should have eliminated the flood potential for Austin. The FEMA maps should be amended to reflect these improvements. The presence of many important

historic buildings and landscapes in Austin, including many within the Austin Historic District, provide limitations, but also opportunities for adaptive reuse and heritage tourism.

Recreation in Austin, Nevada

Austin is rich in recreational opportunities, including mountain biking, hiking and wildlife viewing trails. Seven mountain biking trails are located in the area, ranging from easy to expert/advanced trails.³ Other amenities include a hot springs, camping, hunting areas and a historic district.



Mountain Biking Trails in Austin, NV

Source and Full Size Map: <https://austinnevada.com/biking/>



Spencer's Hot Springs

Source: [Michael Pujals, 2016](#); Licensed by: [CC0 1.0](#)



Camping at Austin, NV

³ (Austin Nevada n.d.)

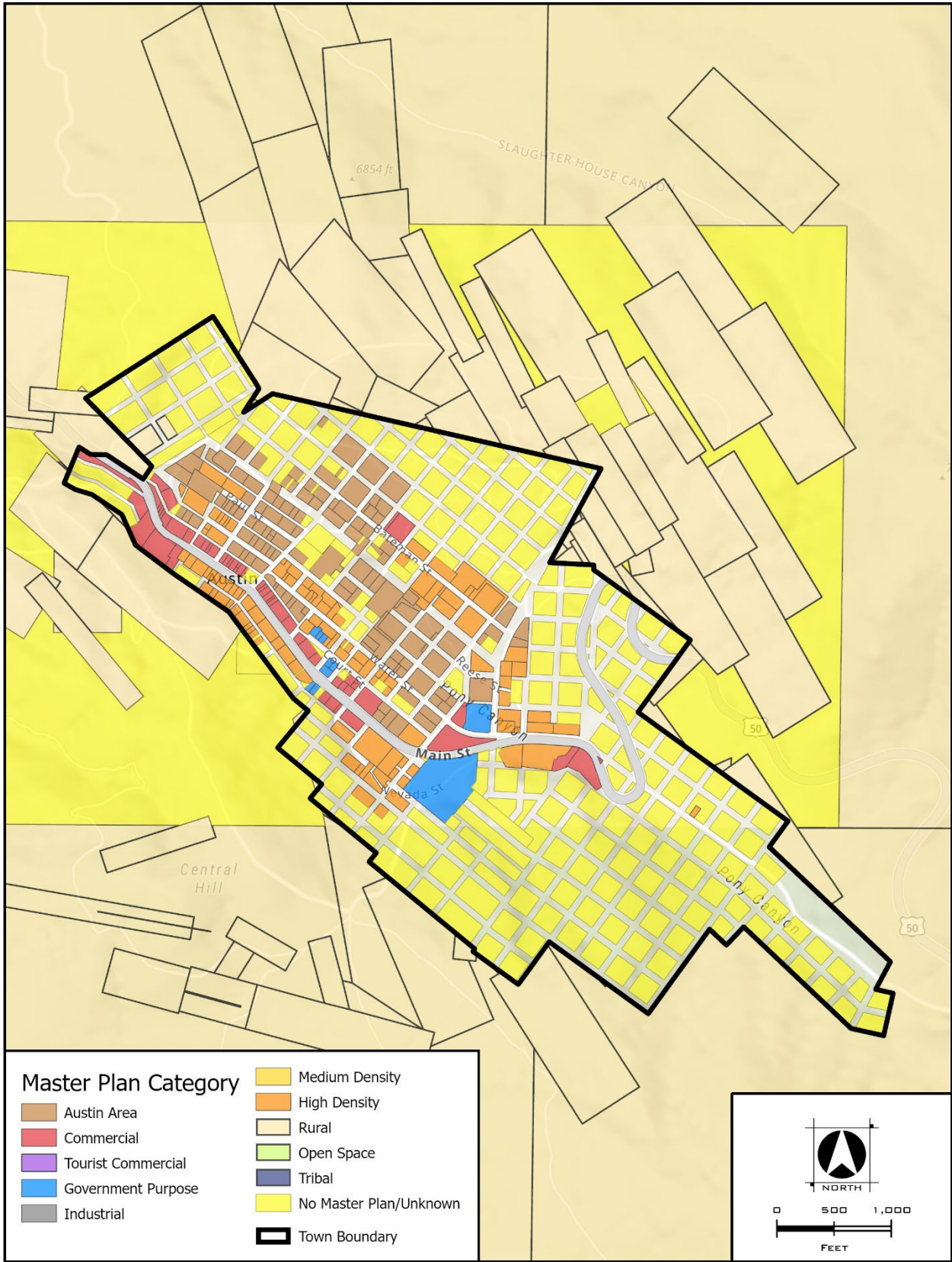


Figure 1-4: Austin Master Plan

Kingston Canyon

Kingston Canyon, a historic mining district, is a short 30-mile drive south of Austin. It is named after the Kingston Mine discovered in 1863 and was the location of several silver mines in the 1860s. Remnants of these are scattered throughout the canyon and one large stone mill can be seen across from the Kingston Lodge. Kingston hosts some of the best varied trout fishing in the state. Some of the most beautiful scenery in Lander County can be seen here, from the Kingston Canyon Creek campgrounds to Groves Lake.



Quick Facts about Kingston

Founded In: 1865

Population: 154

Recreational Opportunities: Trout fishing
Horseback riding
Hiking
Chucker/Deer Hunting
Camping

Important: Kingston Canyon

Features: Kingston Canyon Creek
Groves Lake

Master Plan	Acres	%
Rural	38993.707	98.00%
High Density	611.496	1.54%
No Master Plan/ Unknown	162.493	0.41%
Commercial	22.705	0.06%

Development Considerations

The Kingston Town Board formed a separate master plan in 2005 intended to guide the community for fifty years. The goal of the 2005 Kingston Master Plan is sustained, envisioning a “viable plan that will serve our citizens in keeping their rural lifestyle intact, without putting undo strain on our resources, such as fire protection, medical, and water, but still allow for positive future growth” (pg. 3). It is worth noting that while the Kingston master plan has been incorporated into this Master Plan it does not supersede the existing Kingston Area Plan but serves as a supplement to the 2005 plan. By incorporating the two plans, the County can include any vital information from the surrounding community that may affect the growth and future of Kingston.

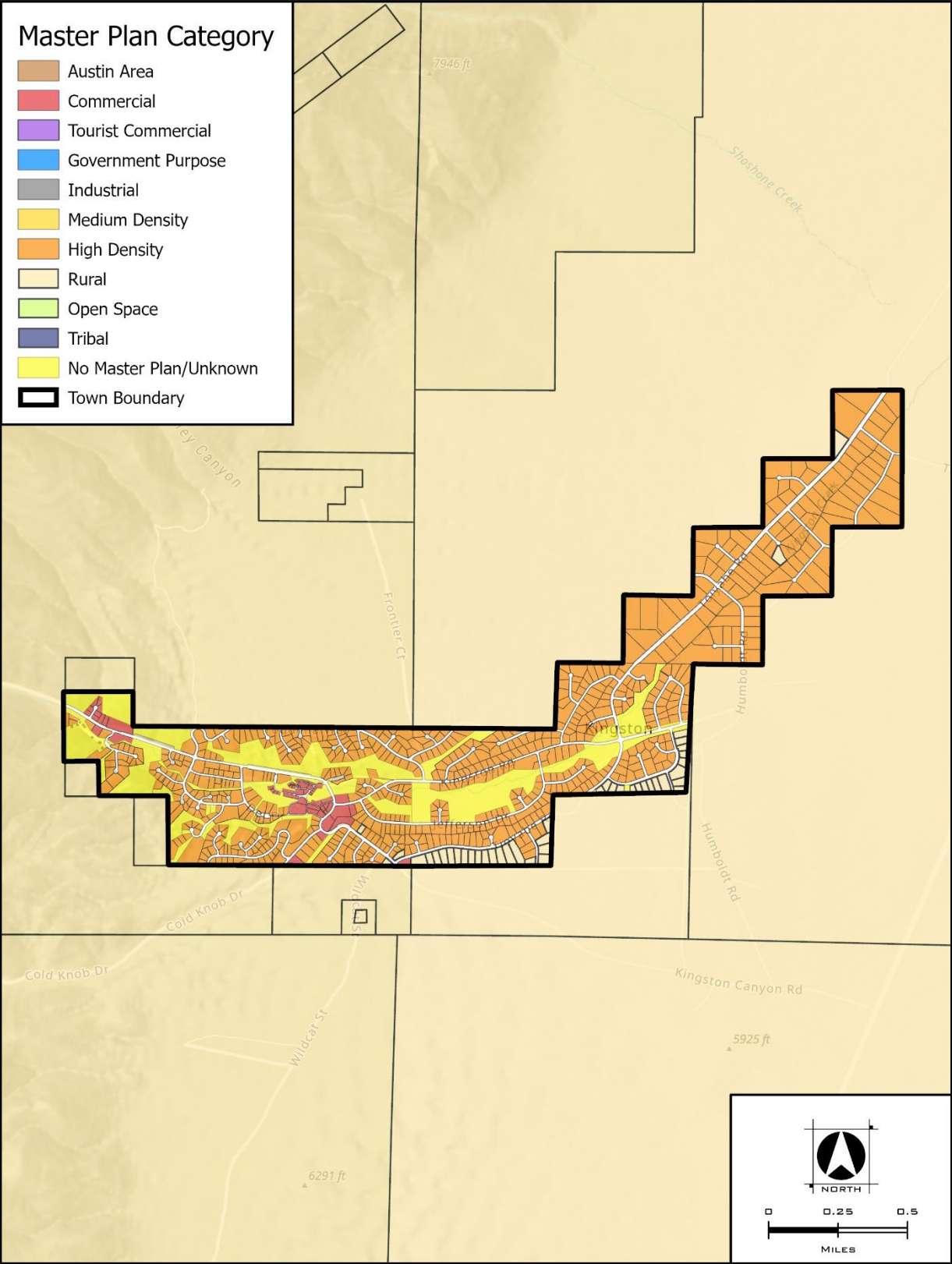


Figure 1-5: Kingston Master Plan

Historic Preservation

A rich history is embedded within the landscape of Lander County, its archaeology reflecting thousands of years of human occupation in the mountains and basins and historic resources reflecting the influence of westward expansion on Nevada. The persistence of these invaluable cultural and historical landscapes are dependent on the stewardship of their communities. This section of the master plan provides a brief overview of some of the known cultural resources within Lander County (refer to Figure 1-6 - Historic Preservation Map) and a framework for balancing historic preservation with the need to accommodate growth and change in this community for current and future generations. Due to the length of occupancy of this area, this list is not comprehensive, but provides some locations and relevant information on its history and any known or anticipated preservation priorities or concerns. The National Register of Historic Places lists 13 sites throughout Austin, and the Nevada State Register lists 3. In addition, the Nevada State Historic Preservation Office lists 10 Historical Markers throughout Lander County.

A section of the California Trail has been identified within Lander County. Lander County is continuing to identify the details of this historic trail and its future preservation.

Hickison Petroglyph Recreation Area⁴

Hickison Summit is located on Highway 50, approximately 30 miles southeast of Austin at the northern end of the Toiyabe Range and situated within a pinyon forest. The site is located on the road to the ranch of John Hickerson (also an alternative spelling of the site name) after whom the site was named. This site was interpreted as a hunting locality by Trudy Thomas because the most common motif at the site was thought to represent “hoof prints.” An alternate interpretation identifies the marks as vulviforms (representations of female genitalia), possibly indicating that the site was the location of puberty or reproductive rituals. Hickerson Summit has been developed by the Bureau of Land Management for public enjoyment, with a scenic interpretive trail, camping and picnic facilities, and restrooms.



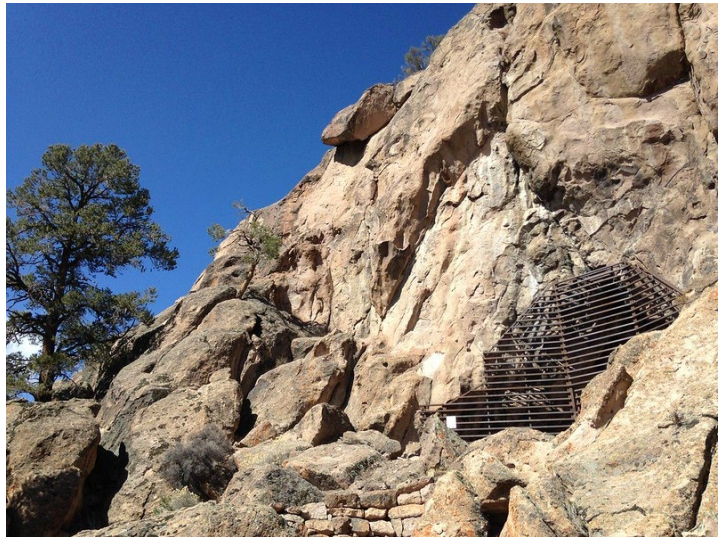
Hickison Petroglyph Area

Source: [Famartin, 2014](#), Licensed by: [CC BY-SA 4.0](#)

⁴ (Woody, Online Nevada Encyclopedia 2009)

Toquima Cave⁵

Toquima Cave is a cave site believed to be utilized by indigenous peoples as a temporary dwelling between 3,000 and 1,500 years ago. This site is located within the Humboldt-Toiyabe National Forest, about twenty-five miles southeast of Austin. The site was listed in the National Register of Historic Places in 2002 and was excavated as part of a larger study conducted by the American Museum of Natural History throughout the Monitor Valley. Toquima Cave is one of several pictograph sites in Nevada. Native peoples consider it a sacred site and continue to use the location for ceremonial activities. A campground is located near the site and a chain-link fence across the mouth of the cave keeps visitors at a safe distance.



Toquima Cave | Source: [WildEarth Guardians, 2016](#);
Licensed by: [CC BY-NC 2.0](#)

Stokes Castle⁶



Ruins of Stokes Castle

One of the most recognizable historic landmarks in Lander County is Stokes Castle, built in 1897 for Anson Phelps Stokes, an important individual to the Nevada Central Railroad and Austin mining history. The original building was modeled off a family painting of the Roman Campagna and featured balconies cantilevered on railroad rails, plate glass picture windows, a castellated parapet, and a rooftop terrace shaded by a canvas awning. The building was occupied by Stokes, his sons, a Chinese cook, and other guest between 1897 and 1898. The ruins of Stokes Castle remain, heavily vandalized and missing many of its original elements, but preserved by a family member in 1950 against plans to remove and transport the castle to the Las Vegas Strip.

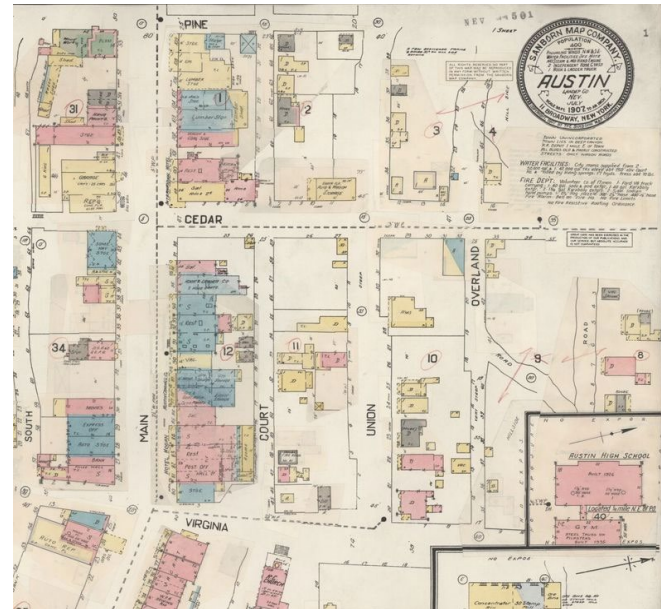
⁵ (Woody, Online Nevada Encyclopedia 2009)

⁶ (Department of the Interior, National Park Service 2003)

Austin Historic District

Austin contains numerous historical buildings associated with its mining history. A section of Austin was designated a historic district in 1971. Refer to Figure 1-6 for a map of locations. This historic district includes buildings and sites associated with the growth of the town into a mining and commercial center within Nevada during the late 19th century. Eight buildings or sites are located within the historic district (National Park Service – National Register of Historic Places Database 2021), listed below:

Historic Buildings	
Building / Site	Built / Period of Significance
Lander County High School	1926
St. Augustine’s Catholic Church	1866
Austin Masonic and Odd Fellows Hall	1876
St. George’s Episcopal Church	1878
Austin City Hall	1866
Gridley Store	1863
Austin Methodist Church	1866
Lander County Courthouse	1871



Portion of Sanborn Map – Austin, NV 1907
Source: Library of Congress

Conservation Priorities/Concerns for Sites

Each building or site within the Austin Historic District has a different history of maintenance and repair. Current buildings undergoing rehabilitation and reconstruction include the Austin Community Center.

The Nevada Division of Forestry determined the below historic properties are at increased risk of fire (CWPP pg. 19⁷):

- Austin Historic District (all sites)
- Stokes Castle
- Toquima Cave

Overall measures to protect the County from fire hazards can mitigate this risk to resources, including reducing vegetation communities that are a known fuel risk surrounding these areas.

⁷ (Associates 2008)

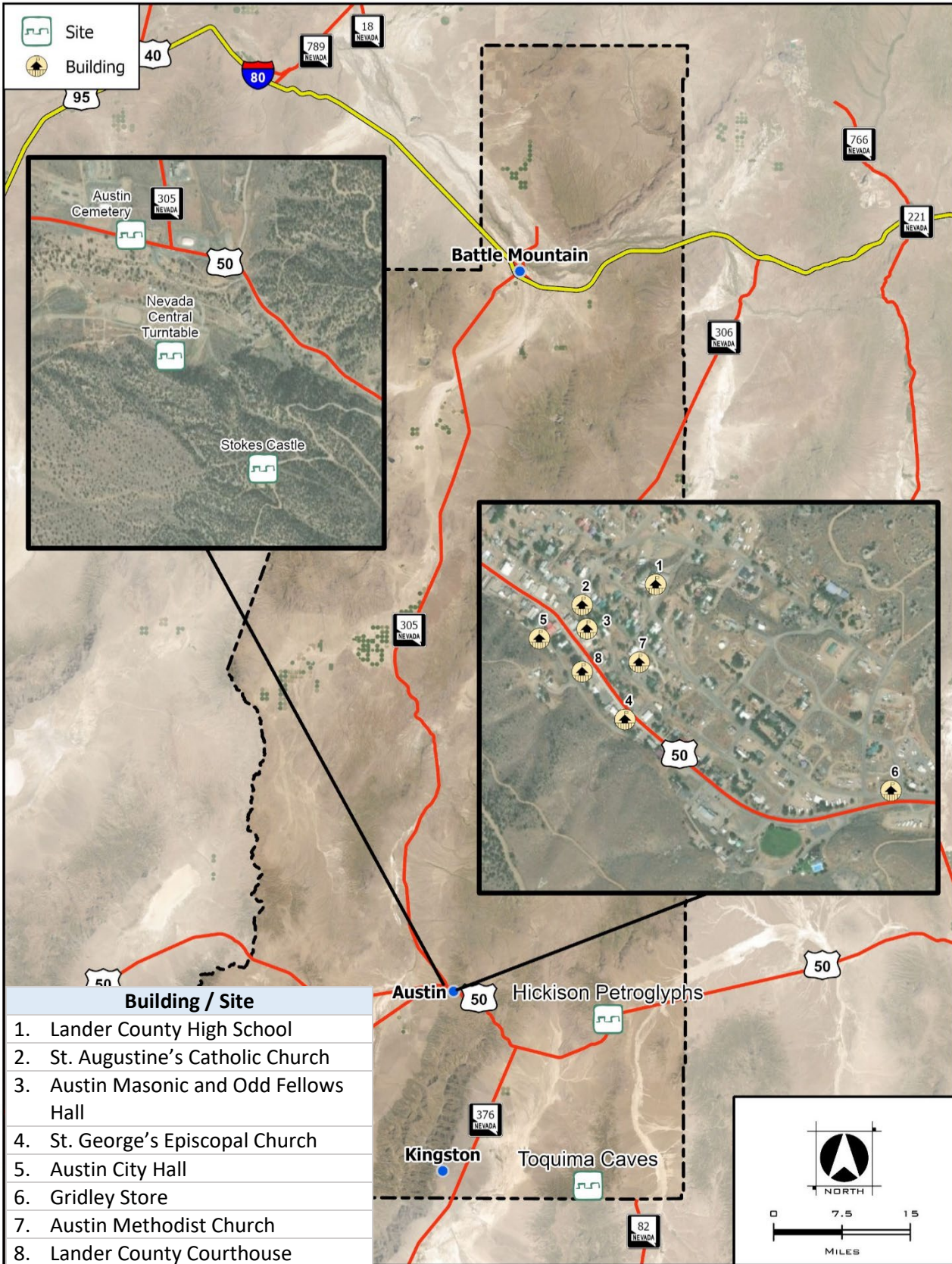


Figure 1-6: Historic Preservation Map, Source: National Register of Historic Places Geodatabase, Accessed April 2021

Future Directions for Historic Preservation^{8,9}

A substantial number of prehistoric and historic cultural resources are located within Lander County and listed within the National Register of Historic Places (NRHP). This register provides a list of districts, sites, buildings, structures and objects significant in American history, architecture, archaeology, engineering or culture. State Historic Preservation Officers, Federal Preservation Officers, Tribal historic preservation officers nominate sites to be on the register, a list administered by the National Park Service. Private individuals or organizations, governments, or tribal members often initiate the listing process and prepare the documentation for review by a professional review board. Listing generally provides honorific recognition of property, but can ensure properties are considered during planning efforts for any federally funded, permitted, or assisted projects. The listing can also qualify the property for tax credits or grants.

However, it is a common misconception that private property owners are restricted from altering or demolishing properties listed on the historic register. No rules, restrictions or regulations for historic properties apply to private property owners who do not have a “federal nexus”, which is any project involving federal monies, permitting or other discretionary oversight.



Portion of Sanborn Map – Battle Mountain, NV, 1890
Source: Library of Congress

Certified Local Government / Ordinances



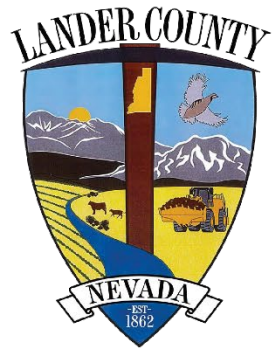
NEVADA
**STATE HISTORIC
PRESERVATION OFFICE**

Some municipalities, to take an active role in historic preservation of private properties, have included historic preservation ordinances that require an additional oversight process by the local government, generally an established “historic resources commission.” These types of ordinances can range from very restrictive (requiring approval of external modifications prior to building permit) to minimally restrictive (e.g. notice of proposed demolition to the public, generally to ensure adequate time is available to take photographs or document the building prior to destruction.) A variety of options are available depending on the role Lander County wishes to take in preservation of cultural resources. To further protect publicly and privately held cultural resources important to the community, the County has the ability to become a “certified local government.” Certified local governments (CLGs) are recognized entities by the National Park Service and State Historic Preservation Office that serve as a demonstration of the community’s commitment to historic preservation and provides funding and technical assistance to protect resources. The general requirements to become a CLG include establishing a qualified historic preservation commission, enacting local legislation for the designation and protection of historic properties, creating a survey and inventory of local resources, and engaging with the public in local preservation. CLG certification happens jointly with the local government and the State

⁸ (Service, National Register of Historic Places FAQs 2021)

⁹ (Service, Become a Certified Local Government (CLG) 2021)

Historic Preservation Office and the National Park Service. For example, Storey County, a rural county with a similarly important archaeological and mining history similar to Lander County, is a certified local government and has additional oversight and funding for cultural resource management in their county.



CONSERVATION & NATURAL RESOURCES

Conservation & Natural Resources

The Conservation and Natural Resource Element of the Master Plan outlines policies and action programs for protecting the County’s land, water and air resources as growth and development occurs. The Conservation Element provides guidelines for conserving the County’s important natural resources while satisfying the requirement for a conservation plan as outlined within Nevada Revised Statutes.

.....



Goals

1. Protect and encourage ranching, farming, agricultural activities, and supportive industries.
2. Limit conflicts and encroachment from developing lands on agricultural lands and areas with sensitive natural resources.
3. Promote development of renewable energy projects.
4. Protect important environmental resources and open space.
5. Balance the importance of the mining industry to the vitality of the economy and livelihood of the population with conservation goals, policies and requirements.



Policies

CNR.1 Known fault lines should be located on all parcel and subdivision maps. Adequate setbacks from faults shall be required.

CNR.2 Lander County will review areas that possess severe geologic hazards and in which public safety may be jeopardized and, if appropriate, plan these areas for minimal or no development.

CNR.3 Coordinate with BLM, USFS and Soil Conservation Service to minimize the spread of noxious weeds. Coordinate road grading policy for Lander County to minimize noxious weeds.

CNR.4 New development activities will be encouraged to limit total ground clearing activities.

CNR.5 Lander County will continue to work with the U.S. Forest Service and/or Bureau of Land Management (BLM) to adopt consistent and complementary road standards for developments within the boundaries of the National Forest and or public lands.

CNR.6 Lander County encourages maximum retention of trees and other vegetation which stabilize steep hillsides, retain moisture, prevent erosion, and enhance the natural scenic beauty, and, where necessary, require additional landscaping and/or revegetation.

CNR.7 All private and commercial Renewable Energy Facilities (REFs) shall comply with all applicable Lander County, Nevada State, and Federal codes, regulations, and necessary permits.

CNR.8 Minimize Impacts from Alternative Energy and Geothermal Development.

CNR.9 Lander County shall establish adequate monitoring and mitigation measures to offset any potential impacts created by geothermal development and development of other REFs.

CNR.10 Lander County will promote geothermal development, except where mitigation measures will not protect the existing environmental standards. Lander County will apply adequate standards for all phases of geothermal exploration and development, including the restoration of all such areas once the resource becomes nonproductive.

CNR.11 Lander County will require the developer of geothermal resources to comply with local, state and federal laws and regulations governing the disposal of geothermal fluids. Before approval is given for resource development, a disposal plan must be submitted to and approved by the Lander County Board of County Commissioners.

CNR.12 In addition to impacts to resources, REF development will require adequate bonding to insure site restoration and clean-up be incorporated into special use permit requirements.

CNR.13 Lander County shall support policies and programs identified in the Lander County Policy Plan for Federally Administered Lands, 2005 and incorporate such policies into the Master Plan.

CNR.14 Lander County encourages BLM to minimize impacts from land exchanges or sales in the Humboldt River Basin. Due to the checkerboard pattern of ownership, land transactions in the Humboldt River corridor have the potential to impact farm and livestock operations as well as increases to the cost of public services to serve private lands.

CNR.15 Development proposals will be encouraged to incorporate the standards contained in “Wildfire Threat Reduction Recommendations for Nevadans” (published by the Living With Fire Program, <http://www.livingwithfire.info/>), where appropriate.

CNR.16 Develop and implement the policies of a Lander County Water Resources Plan.

CNR.17 Natural groundwater recharge areas shall be defined, identified and protected for aquifer recharge. Proposed projects and proposed land use changes in areas with good recharge potential shall be required to include project features or adequate land for passive recharge.

CNR.18 When adverse surface or groundwater impacts occur as a result of a concentration of septic systems, alternative sewage disposal, groundwater treatment, or other techniques shall be implemented. The selection of

techniques to achieve this performance standard shall be based on cost, longevity of the solution, and existence of a credible entity to be responsible for the continuing performance of the selected system. Future individual septic systems shall not be allowed when ground or surface water contamination will result from their use.

CNR.19 Water conservation programs shall be considered to the extent that they are shown to be cost effective when water, wastewater, and environmental benefits are weighed against implementation costs.

CNR.20 New water resources, including imported water, may be developed provided they further the goals of the Master Plan and Water Resources Plan. Imported water includes water from basins which have origins within Lander County.

CNR.21 Subject to existing state and local regulatory review, new water supply commitments, including utility will-serve letters and the creation of domestic well lots and parcels, may be limited when a water resource or combination of resources exceed the perennial yield.

CNR.22 The use of reclaimed wastewater for irrigation, recharge or other permitted uses shall be pursued to the extent that such use is an efficient use of water resources and water rights. To the extent that reuse water is available to meet a new proposed non-potable water demand that is consistent with the use of reclaimed water, potable water shall not be supplied to meet the demand. Potable reclaimed water (A+ reuse category) is allowed if a project follows all restrictions and regulations of Nevada Administrative Code and receives all applicable NDEP permitting.

CNR.23 Protect water quality, minimize erosion and sedimentation, and preserve natural drainage functions, riparian habitat and aesthetic values. Lander County shall review development proposals and implement appropriate mitigation measures, if necessary.

CNR.24 Adequate water resources should be available to maintain the variety of important uses in Lander County such as agriculture, mining, municipal and industrial, and geothermal development. Projects which reduce or eliminate water resources available to support uses in Lander County shall be opposed.

CNR.25 Lander County shall monitor and track any changes which diminish the groundwater recharge and relationship among groundwater aquifers in Basins 56, 57, 58, and 59. Lander County should consider a watershed management plan which examines the hydrologic relationships between groundwater aquifers.

CNR.26 Lander County shall prepare land use plans for selected hydrographic basins. The land use plans will consider current uses of water and resources needed to maintain healthy and viable basins. Once prepared, the land use plans will be incorporated into the Master Plan.

CNR.27 Prohibited Floodway Encroachments. Every new encroachment, including fill, new construction, substantial improvement and other development, is prohibited in a designated floodway, except as provided below:

- Exceptions. Improvements may be allowed in the floodway if it is demonstrated through hydrologic and hydraulic analysis and certified by a Nevada registered engineer that the proposed improvements will not result in any increase in flood levels during the occurrence of the base flood discharge, and that the

improvements meet County standards.

- Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result

CNR.28 Restrict development in floodplains that would constrict or otherwise result in higher floodwater levels or peak flows, or impact to floodplain functions.

CNR.29 Lander County shall use the Federal Emergency Management Agency (FEMA) Flood Insurance maps as the basis for delineation of floodplains and floodways, unless more recent research and surveys are presented which establish a more accurate delineation.

CNR.30 Lander County shall develop and implement water conservation measures.

CNR.31 Minimize the use of high water demand vegetation for decorative uses on public and private project landscaping.

CNR.32 The Lander County Board of County Commissioners shall adopt landscaping ordinances requiring that people pay for the full cost of the water they use and providing for drought resistant, low water consuming vegetation and efficient irrigation systems in all developments. The Lander County Planning Department will develop and adopt standards for water conservation devices.

CNR.33 Encourage new public and private development to use water conservation landscaping and fixtures.

CNR.34 The Lander County Planning Department shall include xeriscaping provisions in the Lander County Development Code. The provisions will provide economic incentives to developers by adjusting the water rights dedication requirements to reflect the reduced water demand of water conservation landscaping and fixtures.

Regulating Laws and Statutes Relevant to Conservation

This Master Plan is intended to provide guidance and vision for the conservation of resources in Lander County. No portion of this document may supersede federal and state regulations, statutes, or permitting requirements. Relevant regulating information and entities for Lander County include:

Nevada Revised Statutes (NRS)

- [NRS Chapter 548 – Conservation](#)
- [NRS Chapter 407 – State Parks and Monuments](#)
- [NRS Chapter 445A – Water Controls](#)
- [NRS Chapter 445B – Air Pollution](#)
- [NRS Chapter 445D- Environmental Covenants \(Uniform Act\)](#)
- [NRS Title 45 – Wildlife](#)
- [NRS Title 46 – Mines, Minerals and Gas](#)
- [NRS Title 47 – Forestry; Forest Products and Flora](#)
- [NRS Title 48 – Water](#)
- [NRS Title 49 - Agriculture](#)

Federal Environmental Laws

- [Endangered Species Act of 1973](#)
- [Clean Air Act of 1990](#)
- [Clean Water Act of 1972](#)
- [Comprehensive Environmental Response, Compensation and Liability Act of 1980](#)
- [Federal Migratory Bird Treaty Act of 1918](#)
- [National Environmental Policy Act of 1969](#)
- [Resource Conservation and Recovery Act of 1976](#)

Physical Environment

Topography

Lander County is characterized by its dramatic basins and ranges. Elevation within the County ranges from 11,473 feet at Bunker Hill in the Toiyabe Range to 4,510 feet at Battle Mountain in the northwest corner of the County. Crossing Lander County from west to east, one encounters the following mountain ranges:

- Desatoya Mountains
- Shoshone Mountains / Shoshone Range
- Battle Mountain Range
- Shoshone Mountains
- Fish Creek Mountains
- Toquima Range
- Toiyabe Range
- Cortez Mountains

Climate¹

Many areas of Nevada, including portions of Lander County, are among the most arid areas in the United States. Potential annual water loss through evaporation exceeds the annual precipitation rate even at the higher elevations (BLM 2006). Most of the land in Lander County is desert shrubland, although sufficient water is available to allow livestock to graze in some locations. Development has been limited by a scarcity of recoverable freshwater. The individual basin-fill aquifers, which together compose the largest known ground-water reserves, receive little annual recharge and are easily depleted. Precipitation in the mountain ranges may be 20 inches or more depending on the year, while precipitation in Battle Mountain averages about 12.3 inches per year. March to May is the wettest period in Battle Mountain with 1 ½ inches of precipitation per month. August and September are the driest months, averaging 0.47 inches per month. Temperatures, on the average, range between 18°F and 40°F in January and from 53°F to 87°F in July.

Cultivated and Extracted Natural Resources

Agricultural Lands - Farms & Ranching in Lander County²

The Agriculture industry (NAICS Sector 11) includes growing crops, raising animals, harvesting timber, and growing and harvesting fish and other animals. Crop production job numbers rose approximately 38% between 2010 and 2020 in Lander County from 15 to 20 jobs. Animal production and aquaculture decreased by approximately 28% between 2010 and 2020, from 69 to 50 jobs. Agriculture establishments include, but are not limited to, farms, ranches, dairies, greenhouses, nurseries, orchards, and hatcheries. The two basic activities associated with this land use are agricultural production and agricultural support activities.

Agriculture in Lander County primarily includes alfalfa hay production, beef cattle, and sheep. Important agricultural areas include farm and ranch operations concentrated in the Reese River Valley, Antelope Valley, Humboldt River Basin and Big Smoky Valley. Outside these areas, farm and ranch operations are scattered throughout the County. Public lands and forest service lands are used for livestock grazing. The Lander County cattle and calves inventory has decreased from 2012 to 2017. In 2012, inventory was 21,066 head and decreased to 15,771 by 2017. This trend follows the decrease overall in this economic sector of Lander County away from animal production.

As of January 1, 2016, farmers in Nevada are required to obtain a Producers Certificate to sell their farm products directly to the public. At present, there are only four certified producers in Lander County as compared to 205 certified producers statewide.

The 2012 Census of Agriculture (U.S. Department of Agriculture) reports a total of 124 farms in Lander County. The 2017 Census shows that number dropped slightly to 117 farms. However, alfalfa production and overall farming cultivation grew in Lander County between 2012 and 2017. Alfalfa hay and other hay production averaged just over 90,000 tons in 2002 and 2003. By 2008, Lander County had 28,000 acres under cultivation producing 144,000 tons of hay. In 2017, 153,278 tons of hay and haylage was cultivated, with 33,633 acres harvested.

¹ (Lander County 2010)

² (US Department of Agriculture 2012-2017)

Table 2-1 includes information on the number of farms and farm acreage for Lander County and select other counties in Nevada.

Table 2-1 – Farms within Nevada Counties

County	Number of Farms	Land in Farms (acres)
Lander	117	329,373
Eureka	86	578,711
Elko	526	2,180,039
Humboldt	298	990,113
Churchill	504	249,832
Douglas	239	118,320
Lyon	312	181,354
Washoe	353	501,310

Source: U.S. Department of Agriculture, Census of Agriculture³

Minerals and Mining⁴

Mining continues to be a growing and vital component of the Lander County economy due to rich natural resource deposits. Table 2-2 provides information on the current mines, operators and their associated commodities. This list is not comprehensive; Lander County is extremely rich in mineral deposits and has a lengthy history of mining claims. Active mines are shown on Figure 2-1 as cataloged by the Nevada Bureau of Mines and Geology at the University of Nevada, Reno.

Table 2-2– Active Mining Operators and Commodities

Project/Permit	Operator	Commodity
Argenta Mine	Baker Hughes Oilfield Operations, Inc.	Barite
Cortez Hills (open pit & underground)	Barrick Cortez, Inc.	Gold, silver
Cortez Hills Pipeline Mine	Barrick Cortez, Inc.	Gold, silver
Fire Creek Mine	Hecla Mining Co.	Gold, silver
Greystone Mine	M-I Swaco	Barite
May Turquoise Mine	Red Widow Mine Co.	Turquoise
Mountain Springs Mine	M-I- Swaco	Barite
Phoenix Mine	Newmont Mining Corp.	Gold, copper, silver

³ (US Department of Agriculture 2012-2017)

⁴ (Bureau of Land Management - Battle Mountain District Office 2012)

Alternative Energy Resources

Geothermal Resources

Hot Springs and wells are scattered over the entire State, with at least 300 thermal wells, springs, and spring clusters. Almost all of these waters have been appropriated for some beneficial use under Nevada water laws. There are several Known Geothermal Resource Areas (KRGAs). Lander County has the potential to develop additional geothermal resources. Figure 2-2 provides an overview of the geothermal wells and areas with geothermal energy potential. In recent years, exploration and possible development activity has increased in and around Lander County. Potential project sites include Jersey Valley, Pumpernickel Valley, Reese River, and Grass Valley in Lander County.



McGinness Hills Geothermal Plant | Source: Nevada BLM

An area of high heat flow, compared to the rest of the State, is the "Battle Mountain High". The Beowawe Geysers located in Lander and Eureka Counties, have some of the highest reported subsurface temperatures of all geothermal areas within Lander County. Other geothermal areas are found at Smith Creek Valley, Buffalo Valley, Hot Springs Ranch south of Battle Mountain, and Spencer Hot Springs⁵.

Below provides a list of geothermal resources providing energy resources to NV Energy⁶:

- **Beowawe Power – 17.7 megawatts:** This geothermal power station is owned by Terra-Gen Power and operates within Eureka and Lander counties of Nevada has produced energy since 2006.
- **Jersey Valley – 22.5 megawatts:** This geothermal project is owned by Ormat Technologies and is located in a remote area in both the Lander and Pershing counties of Nevada. The project came on line in 2012.
- **McGinness Hills - 96 megawatts:** The McGinness Hills geothermal project is owned by Ormat Technologies Co. and is located in a remote area in both the Lander and Pershing counties of Nevada. Two unique attributes were present for the McGinness Hills geothermal project: 1) within this area, no modern hot springs or other thermal features exist, making it a “blind” geothermal system and 2) the site was located within Category 1 sage grouse habitat.⁷

⁵ (Lander County 2010)

⁶ (NV Energy 2021)

⁷ (Nordquist and Delwiche 2013)

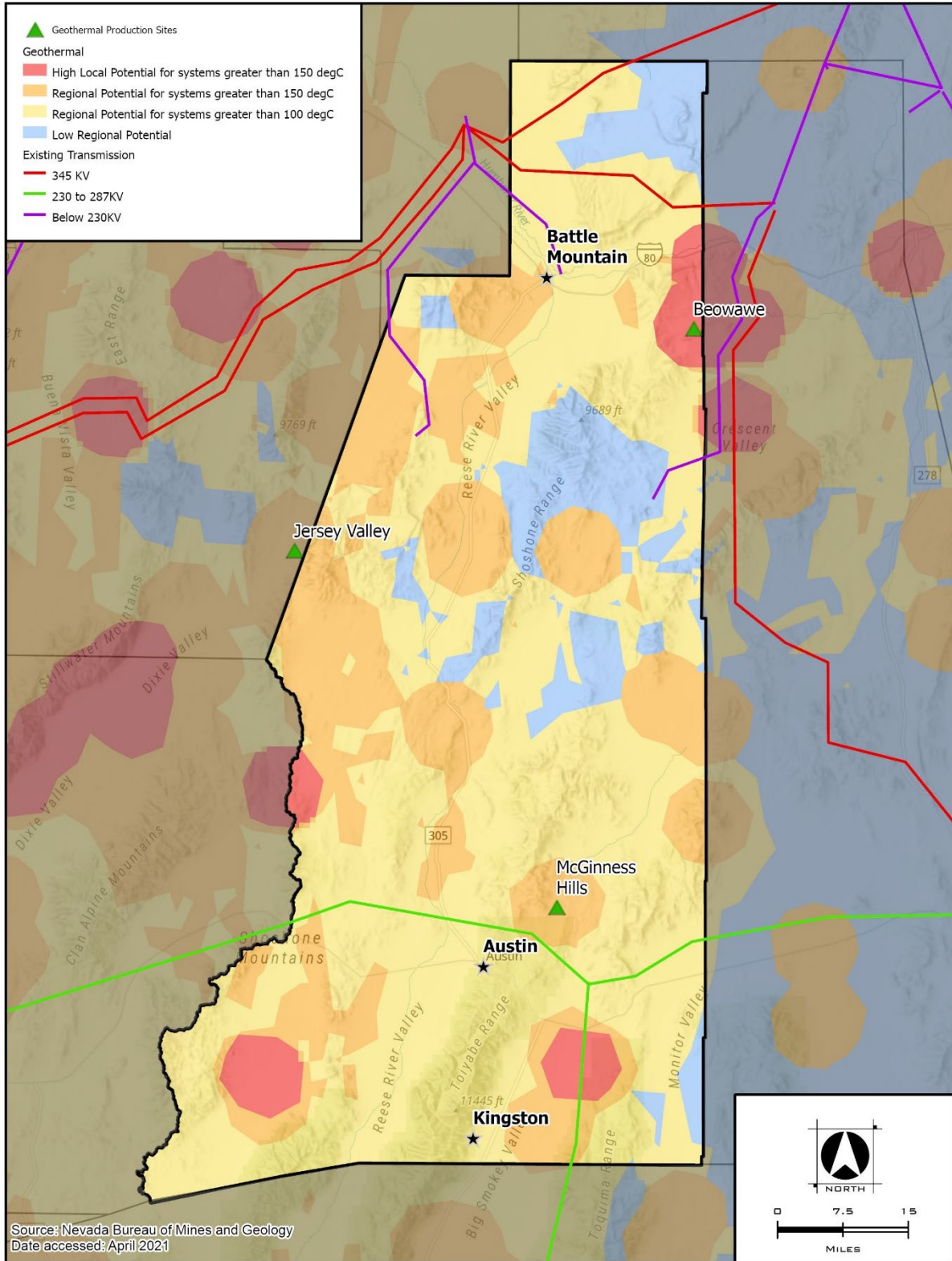


Figure 2-2 – Existing and Potential Geothermal within Lander County

Solar and Wind Energy

Lander County has the potential to expand other alternative energy sources and develop more sustainable options to support the current and future residents and development of the County. One solar facility is being developed within Lander County, the Battle Mountain Solar project.

This solar photovoltaic project, located near Battle Mountain, will produce 100.1 megawatts of energy with a 25 megawatt battery. It is being developed by Cypress Creek Renewables, and will be the nation's largest DC-coupled combined solar and battery storage system. It is expected to declare commercial operation in July 2021.⁸ Other areas for solar potential, per Figure 2-3, may be located in some flatter areas of the County between mountain ranges.

Wind energy potential is limited within Nevada, but certain locations within Lander County may have potential for wind energy. Figure 2-3 displays areas with solar and wind potential. Most areas for wind potential are generally along the east side of the Toiyabe Range, with some other potentially suitable areas interspersed.

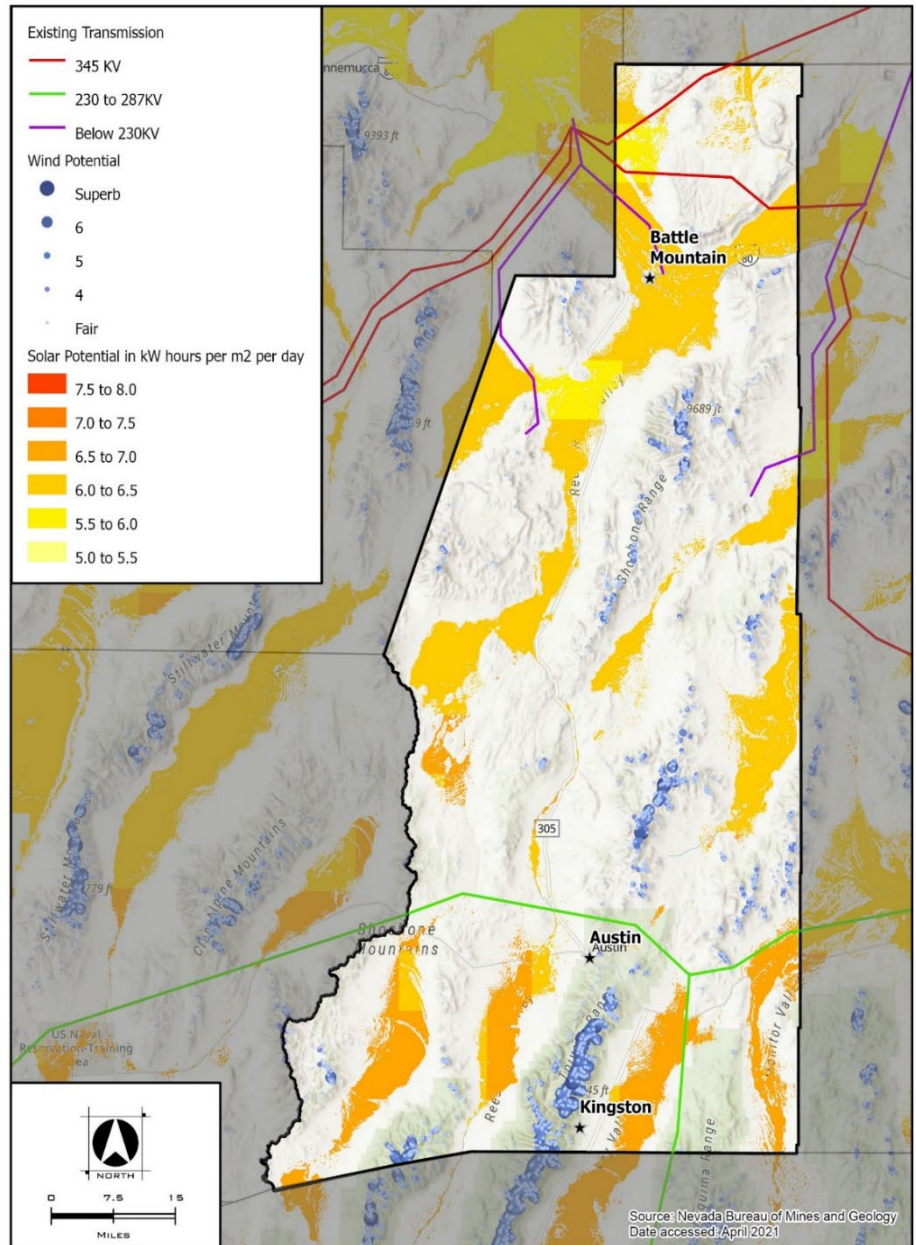


Figure 2-3 - Solar and Wind Potential within Lander County

⁸ (NV Energy 2021)

Non-Living Resources

Water Resources

The major wetlands in Lander County follow the flow of the Humboldt River through a meandering path across the northern part of the County from east to west. Historically this area has been a source of irrigation water for the ranching interests along both sides of the river and is dependent primarily on the climatic changes in rainfall and winter snow pack of the mountain tributaries⁹. Refer to Figure 2-4.

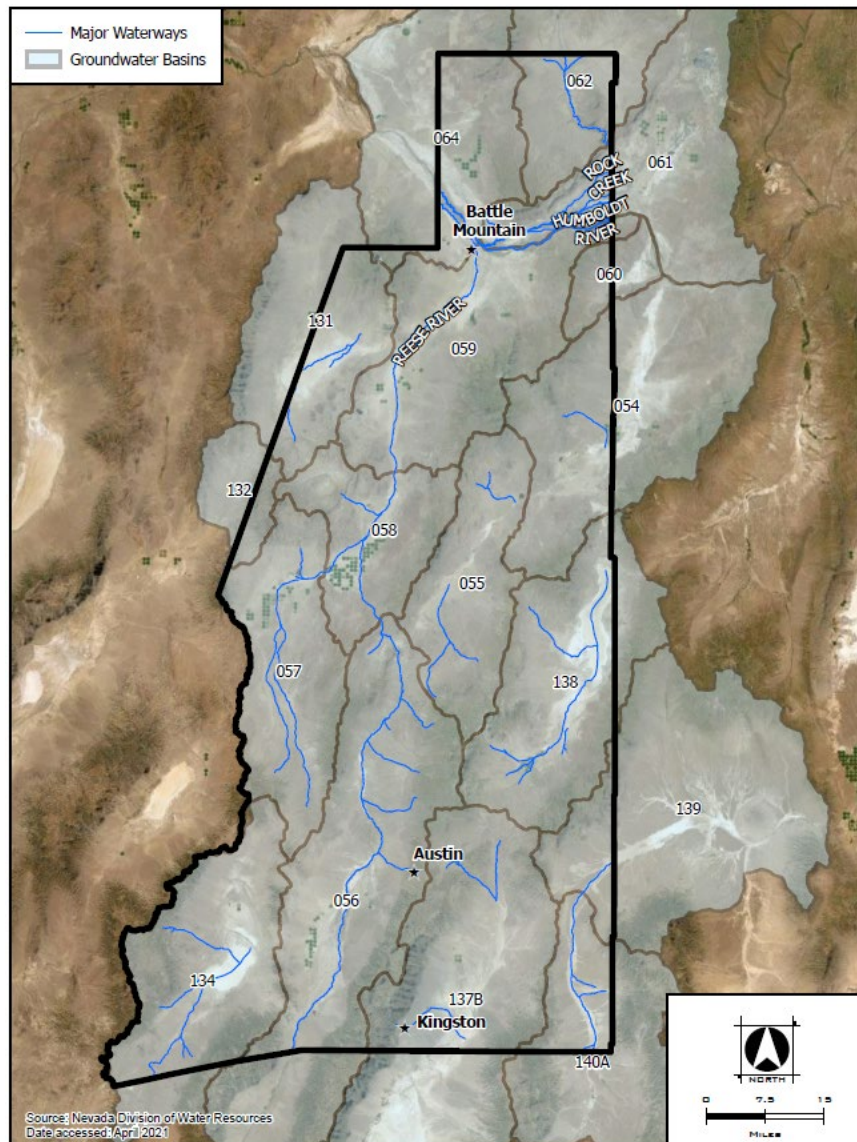


Figure 2-4 – Hydrographic Basins and Waterways

⁹ (Lander County 2010)

Surface Water¹⁰

The hydrology of Lander County is typical of the basin and range environment. Precipitation is seasonal with rain or snow in the winter and thunderstorms in the summer. Stream flows are seasonal with the peak flows typically occurring in the spring. Major surface water features in Lander County are shown in Figure 2-4. There are three major streams in Lander County. They include the Humboldt River, the Reese River, and Rock Creek.



Groves Lake

Humboldt River

The dominant hydrologic feature in the region is the Humboldt River, which has had a significant impact on the history of the development of Battle Mountain. Water records kept sporadically for flow in the River since 1896 show an average discharge of 302 cubic feet per second (cfs), or 218,600 acre-feet per year. The drainage area above Battle Mountain is an impressive 8,870 square miles, which can cause serious flooding during unusual conditions. Several irrigation diversions exist upstream which have some impact on flow in the Humboldt River during the growing season. During the 1990s, the highest peak flow occurred on June 13, 1995 when the Humboldt River reached a flow of 4,010 cfs. High flows in the River begin to build in February and March, with the onset of spring snowmelt. Peak flows historically occur in June and rapidly decrease in July, to base flow conditions by August. Base flows continue until February of the following year.



*Reese River | Source: [Famartin, 2015](#)
(Licensed by: [CC BY-SA 3.0](#))*

Reese River

The Reese River in contrast, has a drainage area of 2,330 square miles at Battle Mountain, and an average discharge of 10.4 cfs or 7,530 acre-feet (measured at Lone, upriver). Peak flow on the Reese River during the 1962 flood was estimated at 4,760 cfs, compared to 167 cfs at Lone. It has a similar hydrograph as the Humboldt River with peak flows occurring in June in most years. Periods of no flow are recorded in some years. The Reese River is fed by several tributaries draining the west slopes of the Toiyabe Mountains including Cottonwood Creek, Big Creek, Italian Creek, Silver Creek and Boone Creek. During intense or unusual storm events surface flows from Antelope Valley can reach the Reese River.

Rock Creek

Rock Creek and its tributaries drain much the area west of the Tuscarora Mountains. The headwaters of Rock Creek are in the unnamed mountain range on the northern side of Willow Creek Valley in Elko County. Rock Creek is joined by Willow Creek and flows southward in a rugged canyon to Rock Creek Valley. Flows of each stream are influenced by irrigation diversions and releases from Willow Creek Reservoir. Rock Creek is then joined by Antelope Creek, cuts through the Sheep Creek Range by way of another rugged canyon, and enters Boulder Flat. Rock Creek at the gaging station where it enters Boulder Flat discharges about 29,000 acre-feet/year. Flow of the stream probably enters Humboldt River in years of above- normal runoff. Rock Creek is joined by Boulder Creek in the lowlands between

¹⁰ (Lander County 2010)

the Sheep Creek Range and the Argenta Rim and then enters the Humboldt River about 2 miles east of Battle Mountain. Rock Creek has no baseflow near the Humboldt River.

Other Surface Water Features

Other significant surface water features include a number of smaller streams located throughout the County, most of which are perennial in the upper reaches then becoming ephemeral near the valley floors. There are no major lakes or reservoirs in the County with the exception of Groves Lake which is approximately 10 acres in size. There are a host of smaller reservoirs associated with local ranching operations. Two of the largest are located at Iowa Creek Ranch and Smith Creek Ranch.

Groundwater¹¹

Groundwater occurs in porous alluvial basins adjacent to the Humboldt and Reese Rivers, as well as Rock Creek and other water courses in the region. Groundwater also occurs associated with fractures in the bedrock of upland mountain ranges. Recharge occurs primarily from precipitation, and infiltration in the case of the Humboldt River. Ground water discharge from the Humboldt River Basin is estimated to be about 30,000 acre-feet per year. Figure 2-5 shows groundwater basins contained in whole or in part within Lander County. There are a total of 18 groundwater basins in Lander County. Only three of the groundwater basins in Lander County are hydrologically closed units.

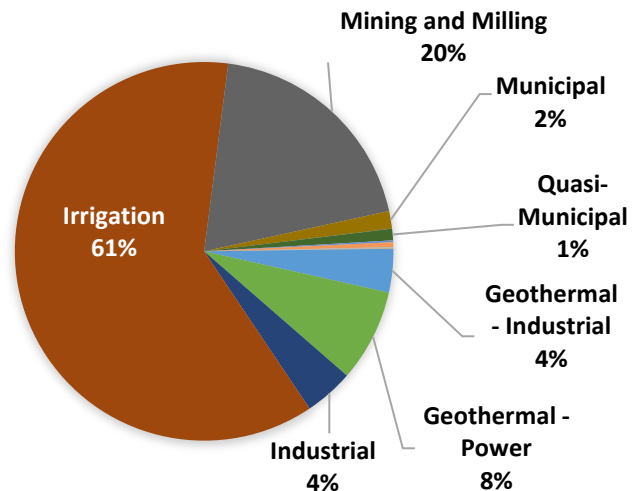


Figure 2-5: Distribution of Water Uses within Lander County Hydrographic Basins

Note: Slices less than <1 % not labeled. Refer to table for basins with additional uses (e.g. recreation, domestic, etc.)

Allocated Groundwater¹²

Eighteen hydrographic (i.e. groundwater) basins are entirely or partially within the bounds of Lander County. Lander County has a variety of water users (Refer to the Figure 2-5). Table 2-3 provides information on each basin and the allocated amount for each use within the basin. Note that Lander County is not the only water recipient of these basins, but the basin may provide water resources for a variety of users within adjacent counties.

¹¹ (Lander County 2010)

¹² Nevada Division of Water Resources – Hydrographic Area Summaries

Table 2- 3 - Hydrographic Basins Providing Water to Lander County¹³

Basin	Area of Basin (sq.mi.)	Annual Allocated Amount (Acre Feet Per Year - AFY)	Manner of Use (in order of total AFY)	Counties within Hydrographic Basin
054 – Crescent Valley	752	17,088.64	Mining and Milling Municipal Irrigation Stockwater Quasi-Municipal	Eureka Lander
055 – Carico Lake Valley	376	3,989.78	Irrigation Mining and Milling Stock Water	Lander
056 – Upper Reese River Valley	1138	39,528.02	Irrigation Mining and Milling Quasi-Municipal Stock Water Municipal	Lander Nye
057 – Antelope Valley	452	31,444.76	Irrigation Stock Water Quasi-Municipal	Lander
058 - Middle Reese River Valley	319	41,007.06	Irrigation Stockwater	Lander
059 – Lower Reese River Valley	588	22,211.46	Irrigation Mining and Milling Municipal Industrial Stockwater Construction Domestic Commercial	Lander Eureka
060 – Whirlwind Valley	94	31,366.94	Geothermal - Power Irrigation Mining and Milling Industrial Stockwater	Eureka Lander
062 – Rock Creek Valley	444	2260.43	Mining and Milling Stockwater	Elko Lander Eureka
064 – Clovers Area	720	29,447.41	Irrigation Industrial Mining and Milling Municipal Recreation Stockwater Environmental Construction	Humboldt Lander Elko

¹³ Nevada Division of Water Resources – Hydrographic Area Summaries
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Table 2- 3 - Hydrographic Basins Providing Water to Lander County¹³

Basin	Area of Basin (sq.mi.)	Annual Allocated Amount (Acre Feet Per Year - AFY)	Manner of Use (in order of total AFY)	Counties within Hydrographic Basin
128 – Dixie Valley	1303	15,218.88	Geothermal - Industrial Irrigation Industrial Wildlife Quasi-Municipal Stockwater	Churchill Pershing Lander
131 – Buffalo Valley	504	22,040.13	Mining and Milling Irrigation Stockwater	Pershing Lander Humboldt
132 – Jersey Valley	142	267.25	Irrigation Stockwater	Pershing Lander
134 – Smith Creek	582	3,195.57	Irrigation Stockwater Mining and Milling	Lander Nye
137B – Big Smoky Valley Northern Part	1323	56,846.52	Irrigation Mining and Milling Quasi-Municipal Stockwater Other Commercial Domestic Recreation	Nye Lander
138 – Grass Valley	595	13,321.86	Mining and Milling Irrigation Stockwater	Lander Eureka
139 – Kobeh Valley	139	15,920.70	Mining and Milling Irrigation Stockwater Domestic	Eureka Lander
140A – Monitor Valley – Northern Part	529	287.58	Irrigation Stockwater	Nye Lander Eureka

Living Resources

Landcover/Vegetation Habitats

Landcover within Lander County varies depending on geography, but largely is composed of the arid desert climate characteristic of central Nevada, with some areas of variation. The Southwest Regional Gap Analysis Project (SWReGAP) is a multi-institutional cooperative effort that provides land cover information for Arizona, Colorado, Nevada, New Mexico and Utah¹⁴. The land cover database reveals the majority of Lander County is comprised of Inter-Mountain Basins Big Sagebrush Shrubland (1,430,491 acres or 40.5%) followed by Great Basin Xeric Mixed Sagebrush Shrubland (515,719 acres or 14.6%).



Desert Shrubland in Lander County

These types of ecological systems are characteristic of semi-arid climates and are dominated by *Artemisia tridentata ssp. tridentate*, commonly called big sagebrush or Great Basin sagebrush and are generally located in shrublands with limited annual precipitation, with most precipitation falling as snow¹⁵.



Pinyon-Juniper Woodlands

Source: [Famartin, 2013](#) (Licensed by: [CC BY-SA 3.0](#))

Great Basin Pinyon-Juniper Woodland (434,311 acres or 12.3%) is generally located on dry mountain ranges of the Great Basin region, generally found on warm, dry sites of mountain slopes, mesa, plateaus and ridges at elevations ranging between 5200 to 9100 feet. The tree canopy of these areas is largely composed of *Pinus monophylla* (Pinyon pine) and *Juniperus osteosperma* (Utah Juniper)¹⁶. The remaining landcover is largely comprised of similar desert ecology, with some variation, as displayed on Figure 2-6 – Landcover.

¹⁴ (Southwest Regional Gap Analysis Project (SWReGAP) 2005)

¹⁵ (NatureServe Western Ecology Team 2015)

¹⁶ (NatureServe Explorer 2015)

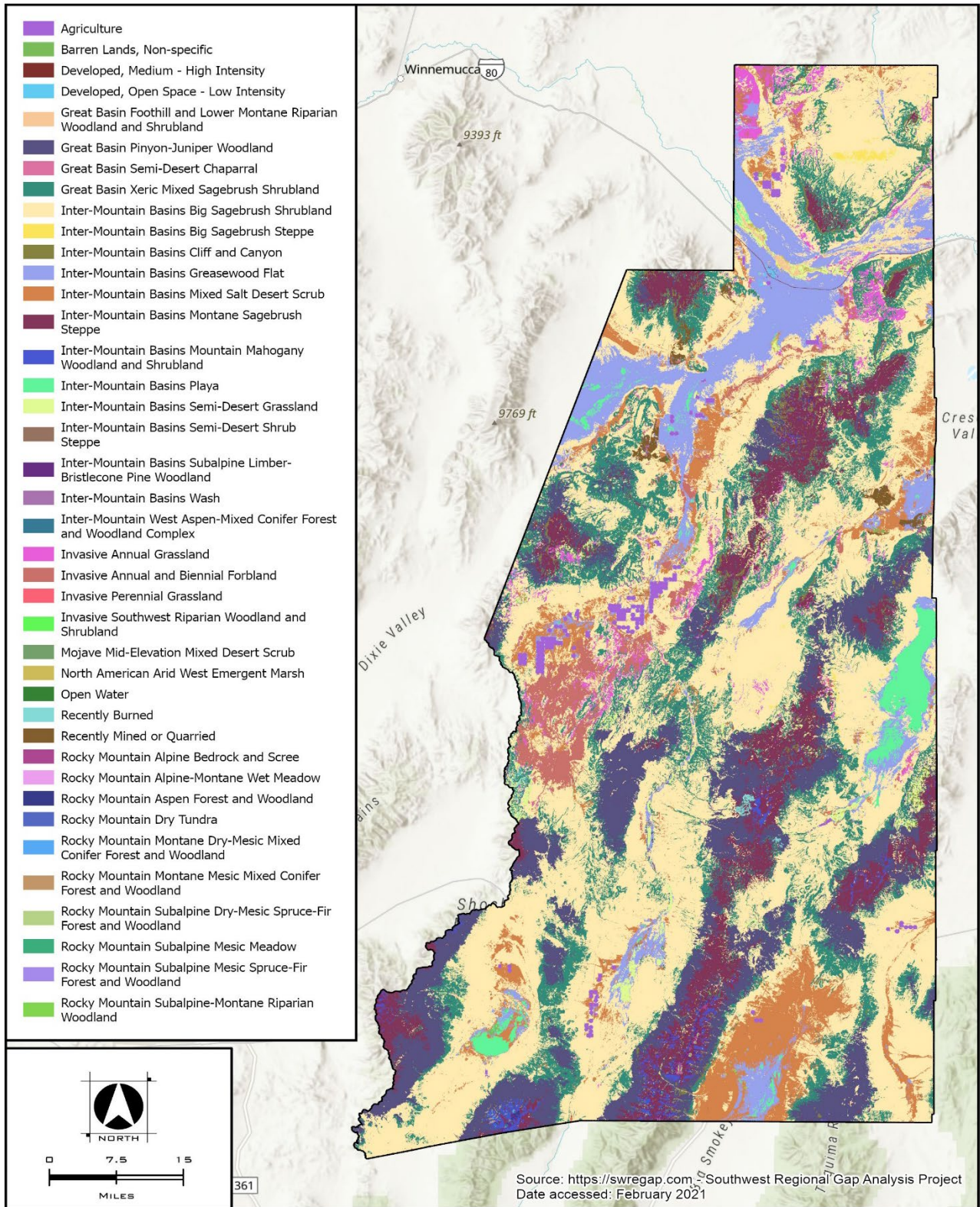


Figure 2-6 - Landcover Found within Lander County

Sensitive, Threatened and Endangered Vegetation¹⁷

The Nevada Natural Heritage Program tracks and provides a list of at-risk species within the state. Within Lander County, 27 vascular plants are included on the at-risk list. A list of sensitive plants are included in Table 2-4. Note many species may be considered at-risk or considered sensitive by other agencies; however, no plant species on this list are subject to the Endangered Species Act. Development proposals within Lander County are encouraged to consult with a certified botanist or arborist to determine if any endangered, sensitive or threatened plant species are located on a property.

Table 2-4 – Sensitive Plant Species in Lander County

Cusick hyssop (<i>Agastache cusickii</i>)	Toiyabe buckwheat (<i>Eriogonum esmeraldense</i> var. <i>toiyabense</i>)
Eastwood milkweed (<i>Asclepias eastwoodiana</i>)	Heavenly buckwheat (<i>Eriogonum ovalifolium</i> var. <i>caelestinum</i>)
Winged milkvetch (<i>Astragalus pterocarpus</i>)	Lahontan Basin buckwheat (<i>Eriogonum rubricaula</i>)
Elko rockcress (<i>Boechnera falcifruca</i>)	Sand cholla (<i>Grusonia pulchella</i>)
Ophir rockcress (<i>Boechnera ophira</i>)	Sharsmith stickseed (<i>Hackelia sharsmithii</i>)
Goodrich biscuitroot (<i>Cymopterus goodrichii</i>)	Toiyabe gilia (<i>Ipomopsis congesta</i> var. <i>nevadensis</i>)
Desert whitlowcress (<i>Draba arida</i>)	Holmgren smelowskia (<i>Nevada holmgrenii</i>)
Snake Range whitlowcress (<i>Draba serpentine</i>)	Watson spinecup (<i>Oxytheca watsonii</i>)
Watson goldenbush (<i>Ericameria watsonii</i>)	Lahontan beardtongue (<i>Penstemon palmeri</i> var. <i>macranthus</i>)
Windloving buckwheat (<i>Eriogonum anemophilum</i>)	Tiehm beardtongue (<i>Penstemon tiehmii</i>)
Beatley buckwheat (<i>Eriogonum beatleyae</i>)	Reese River phacelia (<i>Phacelia glaberrima</i>)
Rollins clover (<i>Trifolium rollinsii</i>)	Saltmarsh allocarya (<i>Plagiobothrys salsus</i>)
Dainty moonwort (<i>Botrychium crenulatum</i>)	Alpine goldenheads (<i>Tonestus alpinus</i>)

¹⁷ (Nevada Natural Heritage Program 2021)
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Conservation Strategies for Sensitive, Threatened and Endangered Vegetation

Preserving the unique and sensitive species of Lander County is vitally important to maintaining the diversity of the County's landscape for current and future residents. Prior to development, particularly any large scale development in the County, a clear understanding of the environmental conditions will aid in determining appropriate mitigation measures. On public lands, the responsible federal or state agency is able to provide guidance and review of proposals as well as advise of any legal permitting requirements that would guide the development process. On private lands, sensitive areas can be protected through fee simple purchases, purchase of development rights, or conservation easements. NRS 111.390 through 111.440 is the Nevada Conservation Easement law and provides state regulatory guidance on the conservation easement process.

Final conservation strategies will vary depending on the land owner and the situation. Conservation strategies and goals within this chapter are intended to shape the County development code to also ensure the costs and benefits of disrupting or preserving sensitive species, particularly plant species, are weighed accurately.

Invasive Species¹⁸

Noxious weeds and invasive plants occur throughout Lander County. Two species, Hoary Cress and Russian Napweed, are found along gravel and dirt roads in the County. Hoary cress, also called whitetop, is a deep rooted, invasive mustard perennial that poses a threat to both crop and rangelands in the Western U.S. Accidentally introduced to North America from western Asia and eastern Europe as a seed contaminant, Hoary Cress currently infests more than a quarter million acres of public and private land and is found on the noxious weed lists of 14 states and one Canadian province. They are commonly found on alkaline and disturbed soils and are highly competitive with other plant species. The plants usually bloom in mid-June, with pod development being completed by the third week of July. A single plant established in the absence of competition has been reported to spread over an area 3.7 miles in diameter during its first year of development.



Hoary Cress

Source: Nevada Department of Agriculture



Russian Knapweed

*Source: Colorado State University,
Cooperative Extension*

Russian knapweed is a creeping perennial that reproduces from seed and vegetative root buds. It emerges in early spring, bolts in May to June, and flowers through the summer into fall. Russian knapweed is toxic to horses. The key to Russian knapweed control is to stress the weed and cause it to expend nutrient stores in its root system.

¹⁸ (Lander County 2010)

Forests

Wilderness Areas

Lander County currently has no designated wilderness areas, but does have several areas being studied for the potential to become wilderness areas (Figure 2-7).

Wilderness areas are special locations on public lands that retain a primitive character, without permanent improvements and are generally unaffected by human actions or occupation. Commercial uses, motorized vehicles, and the construction of any structure or installation area is restricted within wilderness areas.

Federal agencies are required to create an inventory and review public lands that fulfill certain characteristics of wilderness, namely roadless public lands 5000 acres or larger in size and roadless islands of the public lands that contain characteristics of the Wilderness Act of 1964¹⁹.

Wilderness characteristics include areas that,

- (1) generally appear to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;
- (2) have outstanding opportunities for solitude or a primitive and unconfined type of recreation;
- (3) have at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and
- (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.²⁰

Wilderness Study Areas are places with wilderness eligibility characteristics (meeting minimum size, naturalness, and outstanding opportunities for recreation) and are treated like designated wilderness areas unless released by an act of Congress stating the area is not eligible for designation. Wilderness and wilderness study areas are protected by the National Wilderness Preservation Act²¹. Wilderness areas can be suggested by the President, but are officially designated through an act of Congress.

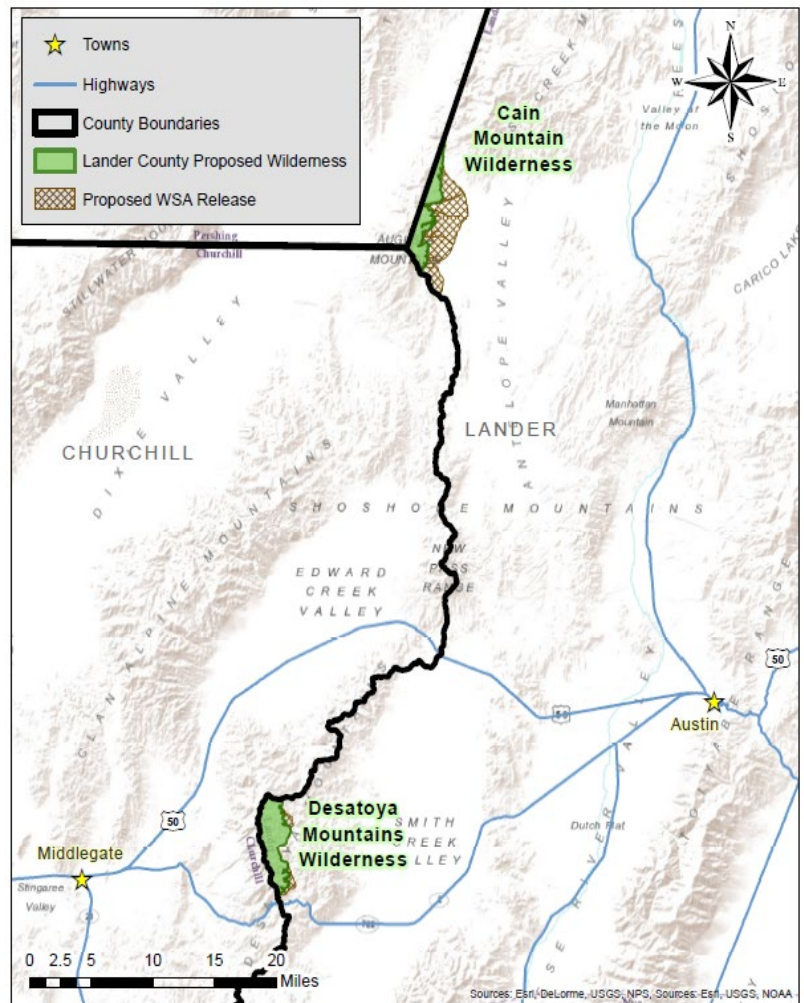


Figure 2-7: Proposed Wilderness Areas

Source: Lander County Land Management and Conservation Act

¹⁹ (Bureau of Land Management 2016)

²⁰ (Wilderness Act 1964)

²¹ (Bureau of Land Management 2021)

The “Lander County Land Management and Conservation Act” (2021) officially designates two wilderness areas, the Cain Mountain Wilderness and the Desatoya Mountains Wilderness. Two previous wilderness study areas will be released, the Augusta Mountain wilderness study area and a 1,088 acre section of the Desatoya wilderness study area. The act states these areas were sufficiently studied and determined not suitable for designation, to be released for other uses.²² Figure 2-7 provides a map of the wilderness areas and the proposed wilderness release areas.

Wildlife

A variety of animal habitats are located within Lander County. The Nevada Department of Wildlife provides public data on several wildlife species in Nevada. These animals include: ruffed grouse, wild turkey, mountain quail, California quail, dusky grouse, white-tailed jackrabbits, mule deer, elk, pronghorn and big horn sheep. NDOW tracks these particular wildlife, as they are important for hunting and trapping recreation and subsistence in Lander County as well as the health and diversity of the overall environment.

Figures 2-8 and 2-9 note the boundaries of big and small game wildlife, as categorized by NDOW. This map is not a comprehensive inventory of all types of animals existing in Lander County, but provides an overview of habitats deemed important to the state of Nevada for planning and other purposes²³.



Pronghorn Antelope

Source: USDA Agricultural Research Service



White-tailed Jackrabbit

Source: United States Fish and Wildlife Service



Dusky Grouse

Source: United States Fish and Wildlife

²² (LandsBillFinalPlaceholder)

²³ (Nevada Department of Wildlife 2021)

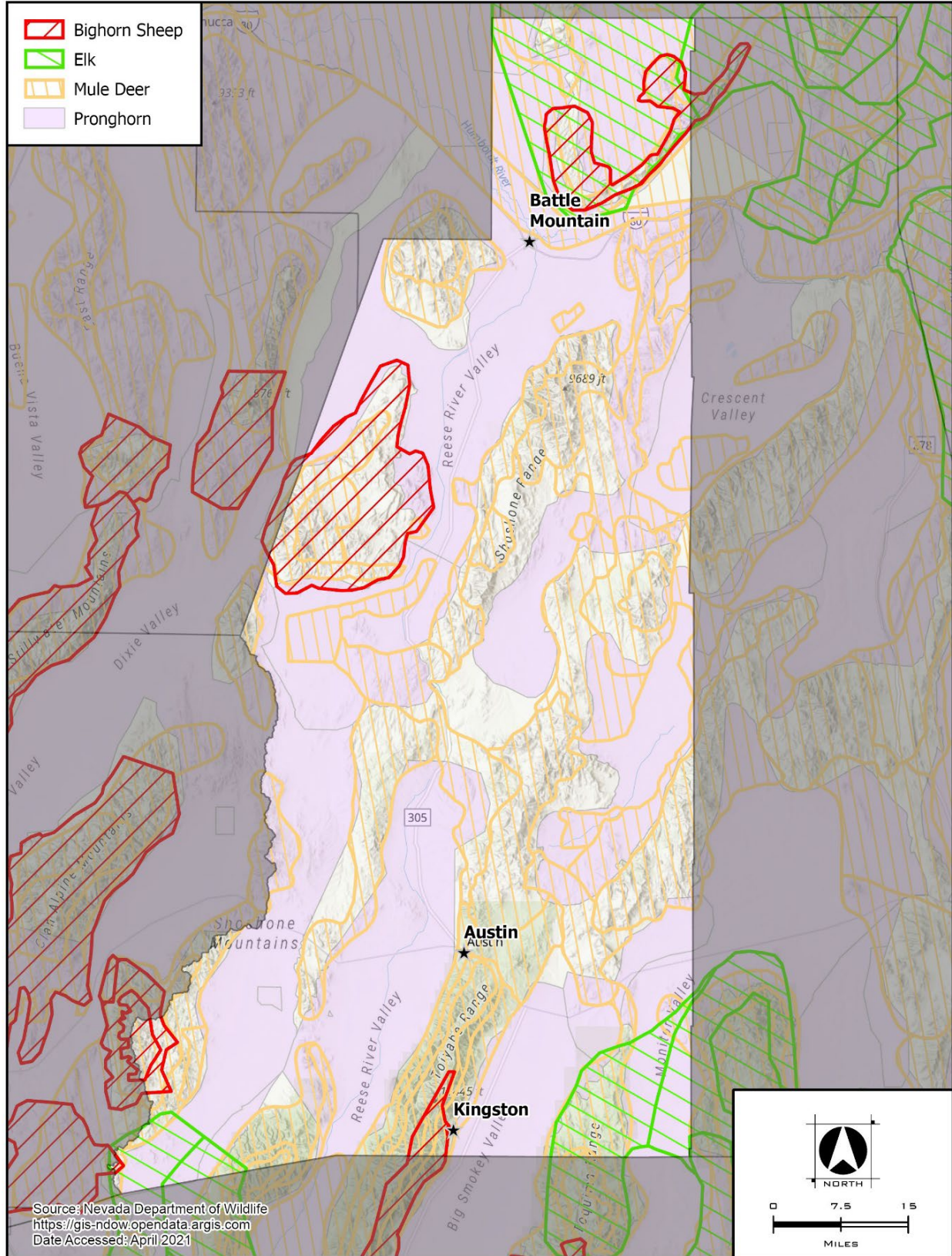


Figure 2-8 – Big Game Habitat

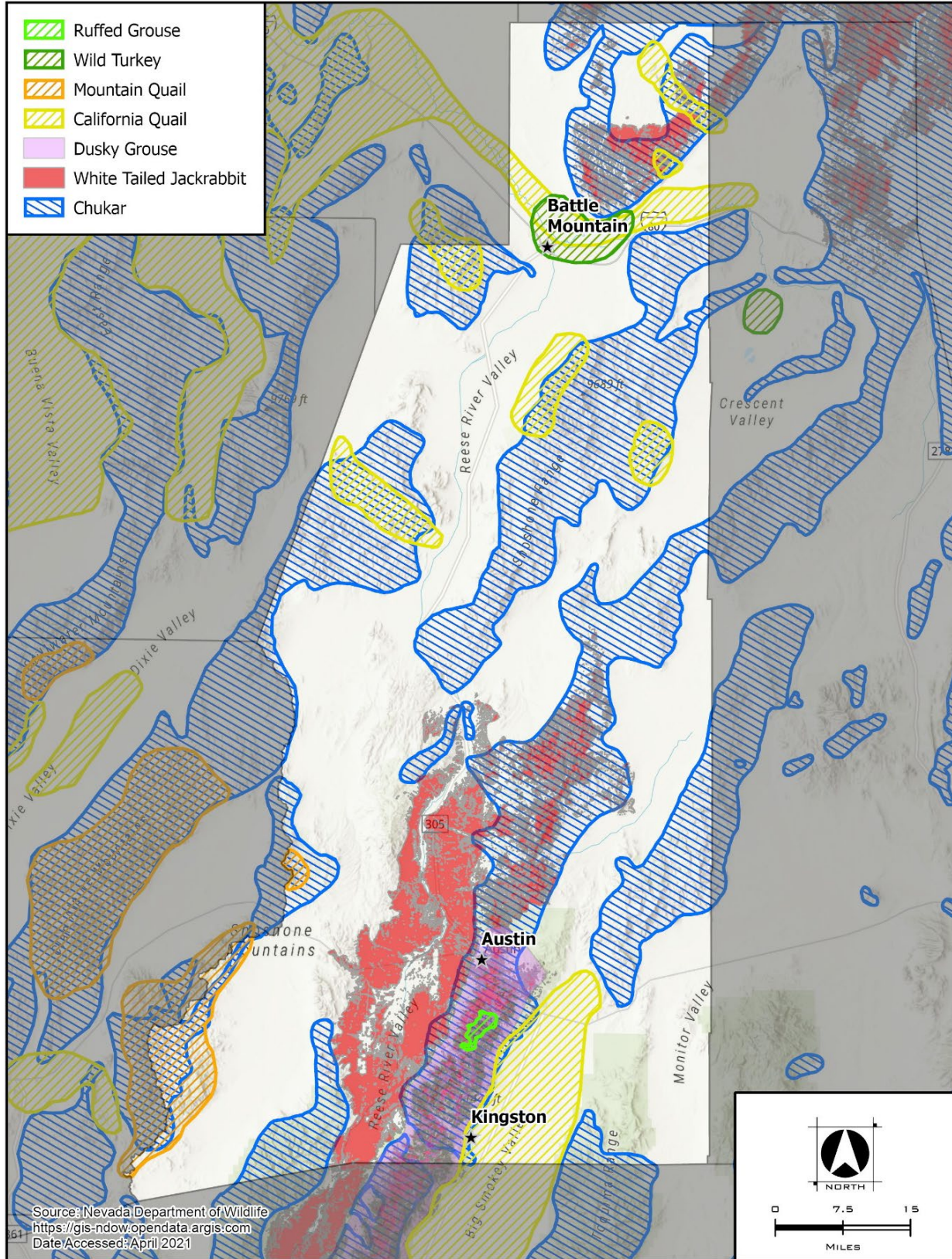


Figure 2-9 – Small Game Habitats

Sensitive, Threatened and Endangered Wildlife

United States Fish and Wildlife indicate several species of wildlife are endangered, threatened, or proposed endangered within Lander County.²⁴ Table 2-5 provides the wildlife, status, and notes if critical habitat is located within Lander County.

Table 2-5 – USFWS Endangered, Proposed Endangered, and Threatened Species			
Species	Status#	Critical Habitat	Source
Gray wolf (<i>Canis lupus</i>)	Proposed Endangered	None for this species	USFWS
Southwestern Willow Flycatcher (<i>Empidonax traillii extimus</i>)	Endangered	Yes, portion of lower Lander County	USFWS
Yellow-billed Cuckoo (<i>Coccyzus americanus</i>)	Threatened	Proposed critical habitat	USFWS
Lahontan Cutthroat Trout (<i>Oncorhynchus clarkia henshawi</i>)	Threatened	None for this species	USFWS

Lander County overall has 52 sensitive vertebrate animal species and 11 sensitive invertebrate species per the Nevada Natural Heritage Program, including the species above as well as dozens of other mammals that may be at risk or sensitive due to environmental or human interactions.

Table 2-6 – Sensitive Wildlife within Lander County	
Amphibians / Reptiles / Fish	
northern leopard frog (<i>Lithobates pipiens</i>)	Columbia spotted frog (Great Basin pop) (<i>Rana luteiventris pop. 3</i>)
Lahontan cutthroat trout (<i>Oncorhynchus clarkii henshawi</i>)	desert horned lizard (<i>Phrynosoma platyrhinos</i>)
northern rubber boa (<i>Charina bottae</i>)	Great Basin collared lizard (<i>Crotaphytus bicinctores</i>)
long-nosed leopard lizard (<i>Gambelia wislizenii</i>)	pygmy short-horned lizard (<i>Phrynosoma douglasii</i>)
Birds	
Olive-sided Flycatcher (<i>Contopus cooperi</i>)	Black Rosy-Finch (<i>Leucosticte atrata</i>)
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	Pinyon Jay (<i>Gymnorhinus cyanocephalus</i>)
Northern Goshawk (<i>Accipiter gentilis</i>)	American Pipit (<i>Anthus rubescens</i>)
Greater Sandhill Crane (<i>Antigone canadensis tabida</i>)	Gray-crowned Rosy-Finch (<i>Leucosticte tephrocotis</i>)

²⁴ (U.S. Fish & Wildlife Service 2021)
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Table 2-6 – Sensitive Wildlife within Lander County

Birds, continued

Golden Eagle (<i>Aquila chrysaetos</i>)	Lewis's Woodpecker (<i>Melanerpes lewis</i>)
Short-eared Owl (<i>Asio flammeus</i>)	Long-billed Curlew (<i>Numenius americanus</i>)
Long-eared Owl (<i>Asio otus</i>)	White-faced Ibis (<i>Plegadis chihi</i>)
Western Burrowing Owl (<i>Athene cunicularia hypugaea</i>)	Flammulated Owl (<i>Psiloscoops flammeolus</i>)
Ferruginous Hawk (<i>Buteo regalis</i>)	Bank Swallow (<i>Riparia riparia</i>)
Buteo regalis (<i>Buteo swainsoni</i>)	Pine Siskin (<i>Spinus pinus</i>)
Greater Sage-Grouse (<i>Centrocercus urophasianus</i>)	Brewer's Sparrow (<i>Spizella breweri</i>)

Bats

pallid bat (<i>Antrozous pallidus</i>)	Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)
hoary bat (<i>Lasiurus cinereus</i>)	spotted bat (<i>Euderma maculatum</i>)
California myotis (<i>Myotis californicus</i>)	silver-haired bat (<i>Lasionycteris noctivagans</i>)
western small-footed myotis (<i>Myotis ciliolabrum</i>)	long-eared myotis (<i>Myotis evotis</i>)
long-legged myotis (<i>Myotis volans</i>)	little brown myotis (<i>Myotis lucifugus</i>)
fringed myotis (<i>Myotis thysanodes</i>)	Mexican free-tailed bat (<i>Tadarida brasiliensis</i>)
canyon bat (<i>Parastrellus hesperus</i>)	

Mammals

Pygmy rabbit (<i>Brachylagus idahoensis</i>)	sagebrush vole (<i>Lemmiscus curtatus</i>)
American pika (<i>Ochotona princeps</i>)	American water shrew (<i>Sorex palustris</i>)
Inyo shrew (<i>Sorex tenellus</i>)	kit fox (<i>Vulpes macrotis</i>)
western jumping mouse (<i>Zapus princeps</i>)	

Table 2-6 – Sensitive Wildlife within Lander County

Invertebrates	
Apache silverspot butterfly (<i>Speyeria nokomis apacheana</i>)	elongate Cain Spring pyrg (<i>Pyrgulopsis augustae</i>)
large gland Carico pyrg (<i>Pyrgulopsis basiglans</i>)	small gland Carico pyrg (<i>Pyrgulopsis bifurcate</i>)
ovate Cain Spring pyrg (<i>Pyrgulopsis pictilis</i>)	Sadas pyrg (<i>Pyrgulopsis sadai</i>)
pallid wood nymph (<i>Cercyonis oetus pallescens</i>)	Nevada viceroy (<i>Limenitis archippus lahontani</i>)
Nevada viceroy (<i>Limenitis archippus lahontani</i>)	dark sandhill skipper (<i>Polites sabuleti nigrescens</i>)
pallid skipper (<i>Polites sabuleti basinensis</i>)	California floater (<i>Anodonta californiensis</i>)

Sage-grouse

Sage-grouse are a Nevada protected game bird found throughout the west including in fifteen of Nevada's 17 counties, including Lander County. The species habitat stretches from central Washington, southern Idaho, Montana, to parts of southern Canada and Great Plains, south to eastern California, south-central Nevada, southern Utah, western Colorado and northern New Mexico. Sage grouse were historically very abundant across Nevada and the west. However, due to diminishing habitat of slow growing sagebrush due to development, fire, invasive weeds and other factors, an effort is being made to list the sage grouse as an endangered species. To help avoid such a listing, Nevada governor Kenny Guinn appointed a team of approximately 25 people from diverse backgrounds and interests to a sage grouse conservation team in June of 2000. The mission of the team, as defined by Governor Guinn, is "to conserve and protect Nevada's sage grouse and their habitat." The NDOW team has worked to provide research and guidance on the conservation of this species. While Greater Sage-grouse still thrive in much of the species' range in Nevada, the conservation team is attempting a pro-active strategy to find solutions to localized problems before the species truly reaches a threshold of vulnerability from which recovery might be difficult²⁵.



Sage-grouse male displaying at lek | Source: USFWS

Sage-grouse have a unique conservation concern, as the species only breeds between late February through May within certain areas called "leks." These leks are generally in the same location each year and can comprise large areas of land, up to 20 hectares. There is evidence some leks in the United States have persisted in the same

²⁵ (Nevada Department of Wildlife 2021)
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Sage-grouse only breed in areas called “leks.” Leks are generally in the same location every year and can comprise **up to 20 hectares**. There is evidence some leks in the United States have persisted in the same location for up to 67 years.

Disturbance or alteration of vegetative cover can cause a lek to shift or be abandoned. The size and sensitivity of these areas make this species uniquely challenging to conserve.

locations between 28 to 67 years²⁶. Sage-grouse may abandon or shift lek locations due to persistent disturbance or alteration of vegetative cover. Encroachment of pinyon-juniper woodlands also affects sage-grouse habitat, fragmenting the shrub-steppe ecosystems of the species.²⁷ NDOW tracks the location of leks and sage-grouse habitat to monitor development that may affect the breeding and livelihood of the species. Although not endangered, the particularity of their breeding and nesting locations as well as the vast areas that comprise their habitat makes this species especially susceptible to the threats of human encroachment and development if not considered in planning and growth efforts of Lander County.

Conservation Strategies for Sensitive, Threatened and Endangered Wildlife

Preserving the unique and sensitive species of Lander County is vitally important to maintaining the diversity of the county’s landscape for current and future residents. Prior to development, particularly any large scale development in the County, a clear understanding of the environmental conditions will aid in determining appropriate mitigation measures. On public lands, the responsible federal or state agency is able to provide guidance and review of proposals as well as advise of any legal permitting requirements that would guide the development process. On private lands, sensitive areas can be protected through fee simple purchases, purchase of development rights, or conservation easements. NRS 111.390 through 111.440 is the Nevada Conservation Easement law and provides state regulatory guidance on the conservation easement process.

Fisheries/Harbors

Fishing is a popular activity within Lander County, with 124 lakes, rivers and other fishing spots²⁸. Groves Lake is a popular fishing destination, stocked regularly by the Nevada Department of Wildlife (NDOW). The lake/reservoir was constructed in 1969 for recreational uses and provides a location for primarily angler fishing. Normal selection of fish includes rainbow and brown trout. Unfortunately, the lake has been progressively leaking and the water level no longer reaches full capacity²⁹.



*Rainbow Trout (top), Brown Trout (bottom)
Source: USFWS*

²⁶ (Connelly, Hagen and Schroeder 2011)

²⁷ (Coates, et al. 2017)

²⁸ (Fishing Works 2021)

²⁹ (Nevada Department of Wildlife 2021)

Resource Threats and Hazards

Fire Hazards³⁰

The Nevada Division of Forestry develops Community Wildfire Protection Plans (CWPPs) that address wildfire and hazard protection, specifically the challenges between the wildland-urban interface. The last update of the CWPP occurred in 2008. To mitigate fire risk, the CWPP states that, “the highest priority should be given to protecting and enhancing existing stands of native vegetation and to adopting a holistic approach to ecosystem management. Well-managed stands of vegetation will protect resources and values at risk from the impacts of catastrophic wildland fire and provide needed habitat for flora and fauna and the people that call Lander County and the Great Basin their home.”³¹ The plan suggests larger scale projects may be cost prohibitive, but smaller scale projects can be undertaken to break up fuel continuity or protect water resources.

Large scale fire mitigation projects may be cost prohibitive, however, small scale fire projects can help, focused on:

- 1) breaking up fuel continuity
- 2) protecting water resources and native vegetation

Pollution Control – Water and Air

Surface water quality is generally good in Lander County. Surface water have variable amounts of total dissolved solids (TDS), but generally have less than 325 milligrams per liter (mg/l) making them suitable for all uses. Specific conductance, a good measure of water quality typically ranges from 300-500 micromhs. The pH of local surface water is in the mildly alkaline range around 8.0 with dissolved calcium, sodium, and sulfate. Suspended sediments can be very high at times during runoff events.

The State Air Quality Planning Division monitors and reports on air quality for all Nevada counties, including Lander County. Under the 1970 Clean Air Act, the Environmental Protection Agency (EPA) is required to set National Ambient Air Quality Standards (NAAQS) for six common criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. Any use that will result in significant emissions from these pollutants is required to obtain a permit from the Nevada Department of Environmental Protection (NDEP). Locally, the County controls for air quality with a dust ordinance controlling the disruption of dust and soil during development or other activities.

Flood Control³²

Lander County is a participant in the National Flood Insurance Program (NFIP) and is therefore required to adopt and enforce a floodplain management ordinance that meets minimum NFIP requirements. Communities that do not enforce these ordinances can be placed on probation or suspended from the program. When a community is placed on probation, an additional \$50 charge is added to the premium for each policy sold or renewed in the community.

Flood insurance is not available within a community that does not participate in the National Flood Insurance Program. Federal agencies are prohibited from approving any form of financial assistance for acquisition or construction purposes in a Special Flood Hazard Area in a non-participating community, i.e., loans guaranteed by

³⁰ (Wildland Fire Associates 2013)

³¹ (Wildland Fire Associates 2013, 69)

³² (FEMA 2021)

the Department of Veterans Affairs, insured by the Federal Housing Administration or secured by the Rural Housing Services. If a presidentially declared disaster occurs in a non-participating community, no federal financial assistance can be provided for the permanent repair or reconstruction of insurable buildings.

The following standards of construction are required in all special flood hazard areas:

- Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities must be designed or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
- Nonresidential construction must either be elevated to or above the base flood elevation.
- All new construction with fully enclosed areas below the lowest floor (excluding basements) that are usable solely for parking of vehicles, building access or storage, must be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters.
- All new and replacement water supply systems must be designed to minimize or eliminate infiltration of floodwaters into the system.
- All new and replacement sanitary sewage systems must be designed to minimize or eliminate infiltration of flood waters or discharge from the systems into flood waters.

On-site waste disposal systems must be located to avoid impairment to them or contamination from them during flooding.

Flood Mapping³³

In 2000, a request was submitted by the Army Corps of Engineers (ACE) to the Federal Emergency Management Agency (FEMA), for an evaluation of the effects that modifications to an existing levee (from State Route 18 [SR 18] to just downstream of Interstate Highway 80 [I-80]) and construction of a new levee along the Reese River (from just upstream to approximately 7,000 feet upstream of I-80) would have on the flood hazard information shown on the effective FIRM and FIS report. The modifications to the existing levee will include raising it to meet the minimum freeboard requirement of 3.0 feet.

This proposed project will have a major impact not only on the reclassification of the flood plain and flood insurance of residents of Battle Mountain, but will provide a positive impact for recruiting future businesses and prospective industries to the area. Currently, Lander County is obtaining easements and has secured funding for the local share of the project. State representatives in Congress are being encouraged to move the ACE to follow through with their previous commitment to fund the project.

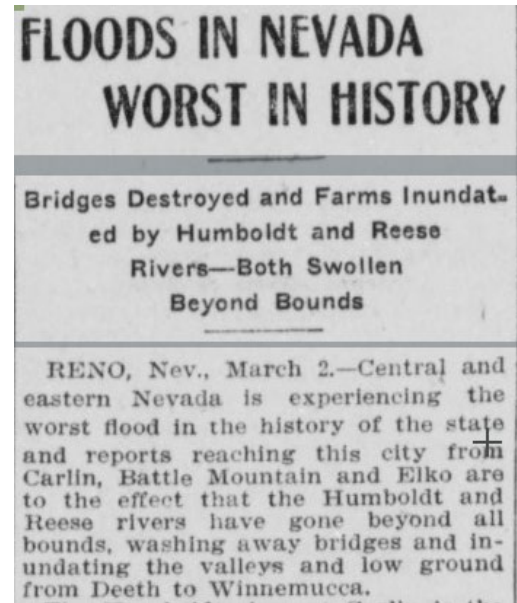
Extensive flooding occurred at Battle Mountain in February 1962, before construction of the US Army Corps of Engineers (COE) levee (FEMA, 1990). Flood waters were impounded by the Southern Pacific Railroad line, and the embankment was breached. The levee now extends along the western bank of the Reese River from Interstate 80 to State Highway 305. It is important to note, however, that the levee does not meet the current FEMA evaluation criteria for the no Special Flood Hazard Area, as it does not provide 3 feet of minimum freeboard during the 100-year flood. As a result, growth is hampered because of the high cost of insurance and businesses are reluctant to locate in a floodplain. Resolution to the flood plain issue in Battle Mountain is not expected to be resolved for several years. The current flood zone designations remain in place for the foreseeable future.

³³ (Lander County 2010)

Areas with Flooding Potential³⁴

The greatest flood potential exists along the Humboldt River. Battle Mountain is located very near the confluence of the Humboldt and Reese Rivers. Historical data for this area indicates property damage from flooding has been a long-term occurrence (Image 10). Flow in these rivers is highly variable. Peak flows of 5,800 cubic feet per second (CFS) occurred in the Humboldt River in May of 1952. Peak flows to the Reese River occurred in June 1963 with peak flows of 2,140 cfs. No flow was recorded in September and October 1948, September 1949, and September 1959. During a wet year, like 1962, annual discharge was 331,000 acre-feet on the Humboldt River. Peak flow of 221 cfs occurred in Kingston Creek in May of 1984, resulting in washed out roads in this area. A maximum of 385 cfs was measured a year earlier on May 28, 1983. Kingston Canyon reservoir has a moderating effect on peak flows in this watershed. Proper spillway functioning has always been a concern for Groves Lake.

Severe flooding last occurred at Battle Mountain in May 1984, when a sudden warming trend rapidly melted snow pack. This flow was estimated between the stations at Elko and Imlay by the US Geological Survey (USGS) to be about 7,500 cfs. This is close to the 100-year peak flow for the Humboldt River. The resulting 100-year flood plain (See Figure 2-10) as defined by the Federal Environmental Management Agency covers most of Battle Mountain and all of the Humboldt and Reese River Valleys.



Flooding Article

Source: Los Angeles Herald, March 2, 1910

³⁴ (Lander County 2010)

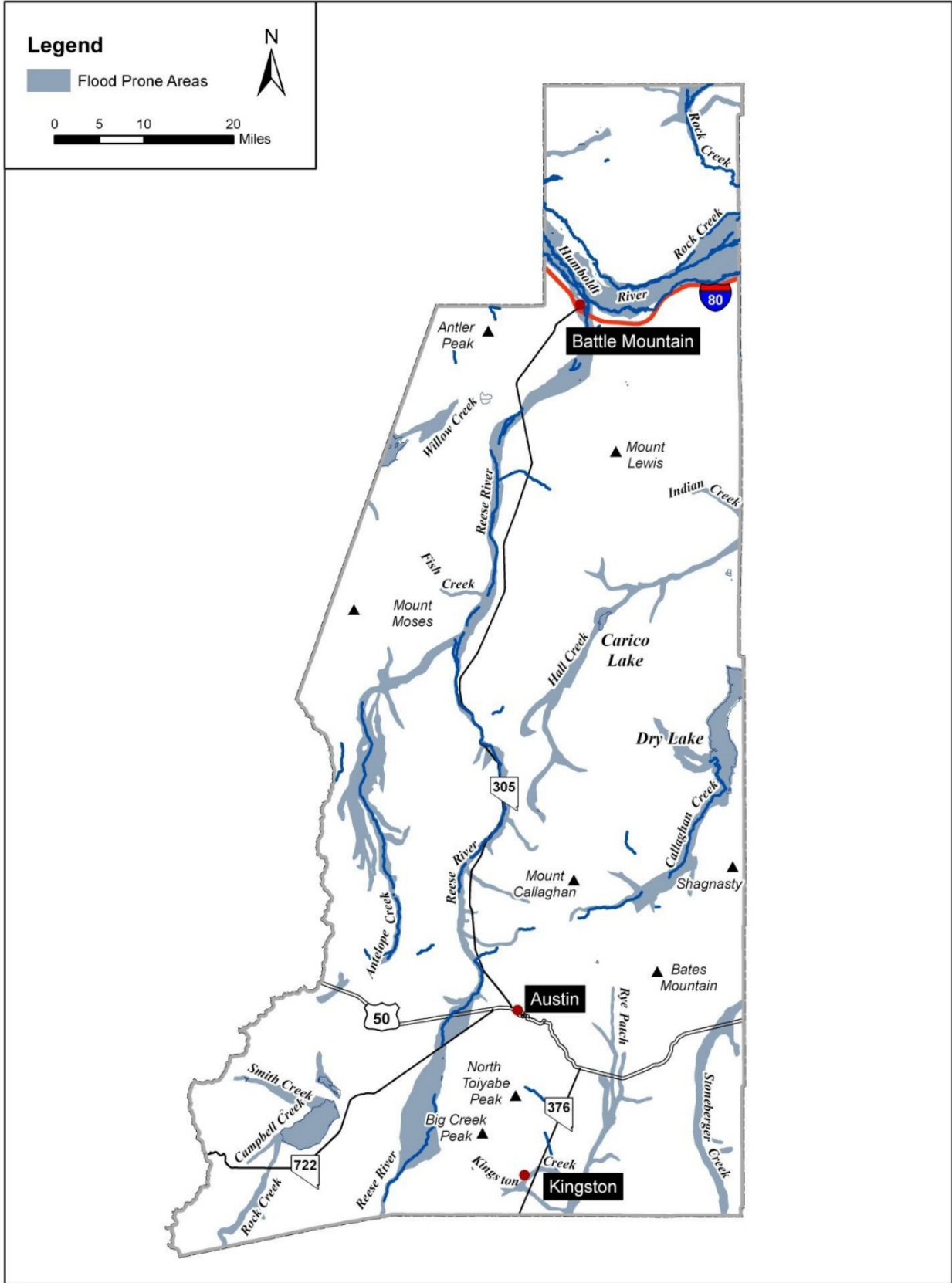


Figure 2-10 – Flood Prone Areas –Source: Lander County Master Plan 2010

Earthquakes and Seismic Risk³⁵

Recorded substantial magnitude earthquakes in eastern Nevada have been associated with surface fault rupture along a north-south trend near the western boundary of Lander County. Many faults occurring in the County displace Quaternary alluvium, making them potentially active. Between 1970 and 1981, approximately 100 earthquakes ranging from Mercalli (M) 3.0 and M 6.0 have occurred within 60 miles of northern Lander County. In 2008 the City of Wells, approximately 100 miles east of Battle Mountain experienced a 6.0 earthquake with major damage to many historic structures in the downtown. The U.S. Geological Survey (USGS) reports that there is a large, 39-mile-long fault located in this region, known as the Independence Valley Fault Zone; but that this fault was probably not the source of the earthquake as its location is too far southeast of the epicenter of the Well's earthquake.

In the northern Shoshone Range for example, southeast of Battle Mountain, a predicted maximum credible event (largest possible) on a local active fault could produce a M7.0 earthquake. This level of seismic risk should be considered in local development codes. Major fault lines should be located on all parcel and subdivision maps. Lander County should establish adequate setbacks from faults.

Seismic activity in Nevada can be uncertain. How can good planning protect against earthquakes?

- Note major fault lines on parcel/subdivision maps
- Create adequate setbacks from faults to protect citizens and their property

³⁵ (Lander County 2010)

Looking to the Future

Conservation of natural resources are fundamental to the long term sustainability of any region, but in particular natural resources are vital to the recreational tourism of Lander County. Future priorities will consider how to balance the need for land development to provide housing and employment opportunities for residents, while still maintaining the wide open spaces and natural diversity that characterize the County.

Preservation of Agricultural Lands/Heritage

Lander County has a rich history of agricultural uses and the majority of water usage within the hydrographic basins of Lander County are used for irrigation. One way that Lander County seeks to promote and preserve agriculture and livestock uses is through the introduction of the “Rural Ranchettes” land use category. This category was designed to provide a middle ground between larger rural uses and primarily residential uses, creating a new land use that promotes residential uses mingled with supportive agricultural and livestock uses. As Lander County assesses suitable lands to receive this land use designation, the County is able to take an active role in preserving the smaller-scale agricultural and ranch lands that may be lost by the creation of larger, corporate farms. Other avenues the County can explore include encouraging farmers and ranchers to place conservation easements on properties to preserve existing irrigated agricultural lands in perpetuity.

Alternative Energy Potential

As detailed in the Alternative Energy section, Lander County has potential to create alternative energy plants, providing resilient energy sources to residents and industries in the County with the potential to export to other counties. The State of Nevada Renewable Portfolio Standard, as set forth in NRS 704.7801, has set a goal of 50 percent renewable energy by 2030. The portfolio standard requires each electric utility in Nevada to sell a percentage of electricity from renewable sources. This percentage increases every year until reaching the 50 percent standard. For calendar year 2020, not less than 22 percent of the total amount of electricity sold by the provider to its retail customers in Nevada must be from renewable sources. The Governor’s Office of Energy manages several tax incentive, grant, and loan programs to encourage the development of clean energy in Nevada. Lander County may be interested in pursuing these programs in the future to support these state-wide efforts and take advantage of incentives. Lander County supports the growth of these utilities to create a more resilient energy system for the county and state.

Resource preservation

Lander County can create some regulatory mechanisms to aid in the conservation of resources. As development applications are reviewed, the County should utilize maps and information in this master plan to analyze potential impacts to resources. Nevada does not require any environmental review for development proposals, although legislation has been proposed in the past (e.g., Senate Bill 277 in the 2015 Legislative Session). Environmental review under the National Environmental Protection Act (NEPA) is only triggered if a project involves a “federal nexus”, or federal funding, permits or other discretionary oversight by a federal entity. It may be appropriate for the County to develop measurable environmental review criteria within the future zoning code update to review significant development proposals, and/or projects proposed in sensitive development areas. The establishment of specific environmental review criteria could include information on prime farmland soils, wildfire hazards, geologic hazards, riparian areas, historic and cultural resources, floodplains and wetlands, threatened or endangered species, wildlife habitat and wildlife migration corridors, wellhead protection areas, and other environmental resource matters addressed in the Master Plan and other County adopted documents.



HOUSING

Housing

The purpose of this element is to provide a method for entities to identify the projected growth in population and to set forth plans, policies and action programs through which the needs of the projected population will be met, including housing.

.....

Goals

1. To keep growth in Lander County at a sustainable level that natural and fiscal resources can support.
2. Direct development to locations with existing public services, including municipal water and wastewater connections.
3. Increase awareness of the affordable housing needs in Lander County and increase diversity of homeownership opportunities available.
4. Increase housing opportunities for households with special needs, including persons with physical and mental disabilities, the elderly, and at-risk children as well as support veteran housing.

Policies

H.1 Support redevelopment efforts in central Battle Mountain which meet a variety of housing needs, both temporary and long-term.

H.2 Maintain the integrity of established residential neighborhoods. Adjacent and infill residential housing shall be consistent with existing development in terms of improvements and design. Mobile homes, modular homes, and manufactured housing not contained within a mobile home park shall comply with the same standards as site built homes including density, lot standards, building placement standards, parking and foundations. Exterior siding and roof structure will not be made of non-reflective material.

H.3 Promote development that enhances the quality, desirability, and integrity of neighborhoods.

H.4 Continue to support and retain Nevada Rural Housing Authority and USDA first time homebuyer programs in Lander County.

H.5 Pursue state and local home rehabilitation and weatherization programs in order to reduce ownership expenses and improve health and safety concerns.

H.6 Promote cooperative efforts to preserve and expand current attainable and workforce housing.

H.7 Promote the provision of a variety of housing options throughout the County.

H.8 Support cost-effective options for the development of new affordable housing, including pre-fabricated, modular and manufactured housing, with proper site design and infrastructure improvements including connection to municipal water and wastewater service.

H.9 Work with local housing groups to assist disabled persons with accessibility modifications. Encourage housing finance agencies such as, USDA, Nevada Housing Division and the Rural Nevada Housing Authority to make available housing rehabilitation funds for accessibility projects in Lander County.

H.10 Work with local housing groups to assist disabled persons with accessibility modifications. Encourage housing finance agencies such as, USDA, Nevada Housing Division and the Rural Nevada Housing Authority to make available housing rehabilitation funds for accessibility projects in Lander County.

H.11 Cooperate with developers in the production of dwelling units accessible to persons with disabilities and shall encourage developers to consider incorporating minimal changes in the percentage of new units, which would make them more usable for persons with disabilities while not otherwise affecting their marketability.

Housing Conditions

Lander County’s existing housing stock is dominated by manufactured homes and single family residence as well as owner-occupied housing. The overall housing profiles differ between the population centers located along the U.S. Interstate 80 corridor in the north (Battle Mountain) and the population centers located along the U.S. Highway 50 corridor in the south (Austin and Kingston).

Overall Housing Inventory

Lander County has a total of 2,657 total housing units. Of these housing units, 2,198 are occupied, with a homeowner vacancy rate of approximately 1.2%. and a rental vacancy rate of 17%. Table 3-1 provides information on total occupied units in Lander County.

Table 3-1 – Select Statistics on Lander County Housing				
Overall County Household Characteristics				
Population of County	6,534			
Median Household Size	2.54 per household			
Median Age	37.4			
Median Household Income	\$88,030			
Housing Characteristics				
Overall	Battle Mountain	Austin	Kingston	Overall County
Population*	3,698	113	94	5,643
Total Housing Units	1,707	166	N/A	2,657
Vacant Housing Units	242	101	0	459
Owner Occupied Housing Units	1,465	65	58	2,198
Homeowner Vacancy Rate %	1.2%	0.0%	0.0%	1.2%
Renter Occupied Housing Units	113	0	0	120
Rental Vacancy Rate %	22.3%	0.0%	0%	17%

Source: University Center for Economic Development – College of Business, University of Nevada, Reno

Over 50% of the housing stock in Lander County consists of manufactured homes, with slightly over 1/3 consisting of other single family residences. Few multifamily units exist in Lander County. Figure 3-1 provides a breakdown of existing housing stock, per the land use codes present in 2021 Lander County Assessor Parcel Data.

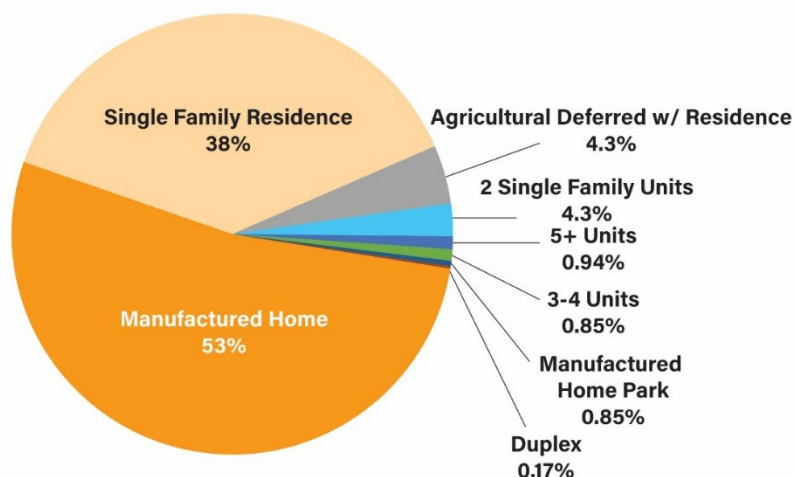


Figure 3-1: Housing Stock Breakdown | Source: Lander County Assessor Office Parcel Data 2021

Aging Housing Stock

Due to the existing property tax structure of Nevada, a significant percentage of the existing housing stock throughout Lander County will be at the end of its 50-year depreciation schedule by 2029. This means the assessed taxable value of the houses will be worth a quarter of a new house of equal value. Figure 3-2 provides a breakdown of the age of housing stock within each area of the County.

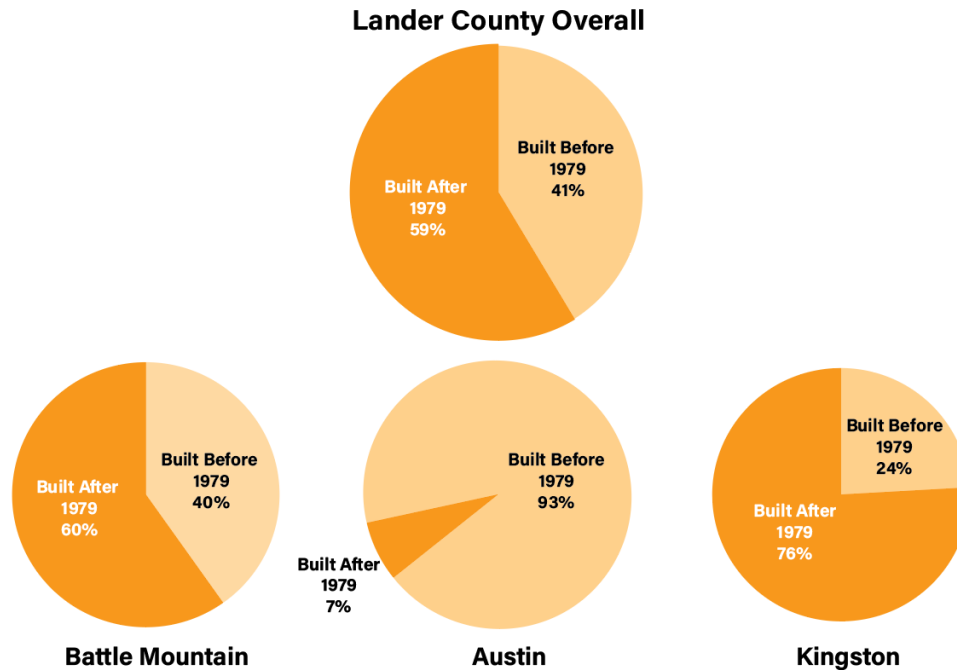


Figure 3-2: Age of Existing Housing Stock

Source: University Center for Economic Development – College of Business, University of Nevada, Reno (2020)

Affordable Housing

Affordable housing has a variety of definitions. The federal guideline for housing affordability is when a household spends no more than 30% of their income on housing costs, including rent or mortgages and utilities. The US Department of Housing and Urban Development (HUD) considers households who exceed this 30% limit “cost-burdened” and these households may experience challenges paying housing costs as well as other necessities like food, clothing, transportation or medical care (U.S. Department of Housing and Urban Development, 2018). For Nevada, the specific definition of affordable housing is “housing affordable for a family with a total gross income that does not exceed 80 percent of median gross income for the county” (Nevada Revised Statute 278.0105).

Cost-Burdened

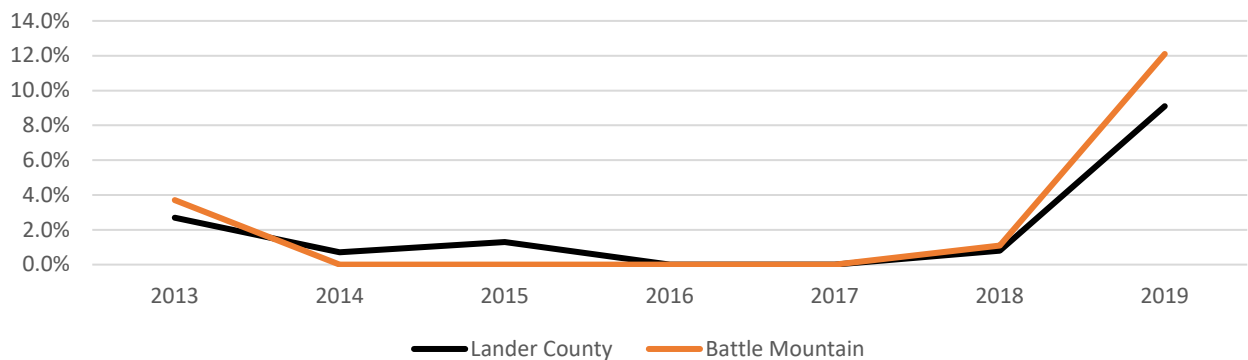
Households who spend more than 30% of their income on housing costs, including rent, mortgages and utilities.

(US Department of Housing and Urban Development, 2018)

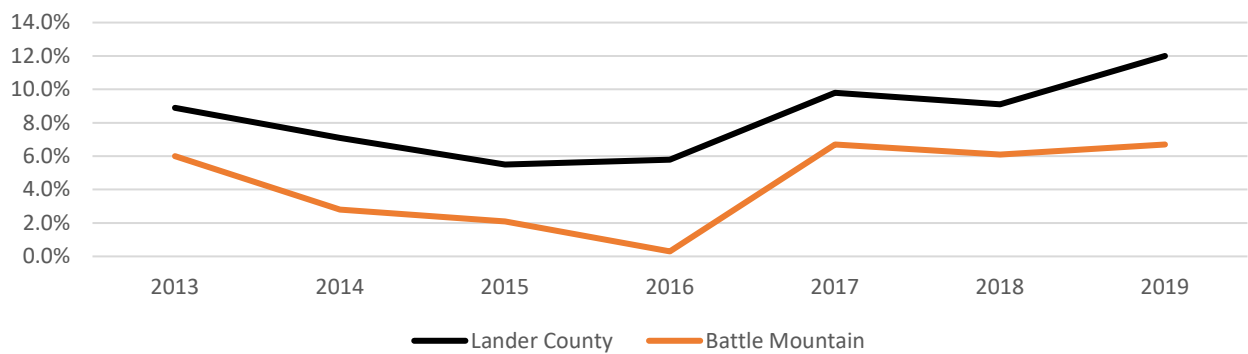
Within Lander County, a substantial difference exists between the percentage of cost burdened homeowners versus cost burdened renters. Figure 3-3 illuminates issues with affordable rental properties in Lander County and specifically Battle Mountain. Between 2013 and 2019, the percentage of cost burdened renters ranged between 32% and 51% of the renter population, while the percentage of cost-burdened homeowners with and without

mortgages ranged between 0% and 12%¹.

2013-2019 : Cost Burdened Homeowners (with mortgage)



2013-2019: Cost Burdened Homeowners (without mortgage)



2013-2019: Cost Burdened Renters

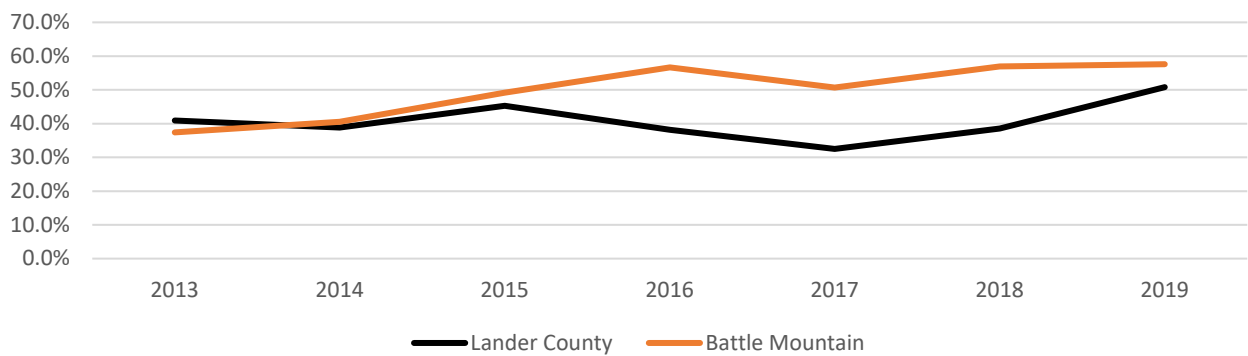


Figure 3-3: Cost Burdened Homeowners and Renters in Lander County

Table 3-2 provides a comparison of these affordability statistics in surrounding rural counties.

¹ (United States Census Bureau 2013-2019)
Lander County Master Plan **DRAFT**

Table 3-2 – Rural County Affordability Statistics				
Renters	Elko County¹	Eureka County¹	Humboldt County¹	Lander County¹
Median Gross Rent	\$952	N/A	\$841	\$842
Cost Burdened %	22.3%	N/A	41.4%	50.8%
Homeowners	Elko County¹	Eureka County¹	Humboldt County¹	Lander County
Median Housing Value	\$212,500	\$120,100	\$180,600	\$179,900 ²
Cost Burdened % (with mortgage)	16.8%	8.3%	17.6%	9.1% ²
Cost Burdened % (without mortgage)	16.1%	3.2%	11.3%	12% ²

Source: ¹Census Bureau – American Community Survey Estimates 2019 Tables DP 04, S1101, S2001
²University Center for Economic Development – College of Business, University of Nevada, Reno

Within Lander County, the agency responsible for promoting affordable housing and related programs is the Nevada Rural Housing Authority. This quasi-public entity is responsible for planning, construction, purchasing and managing properties with a variety of affordable housing programs. Three government-subsidized or subsidized tax credit projects are located in Lander County, providing a total of 68 units². In addition to supporting new construction of government-subsidized housing, the Nevada Rural Housing Authority also provides rental assistance to low-income households, the disabled, elderly and veterans through the Housing Choice Voucher Program and the Security Deposit Program. The Home at Last Homeownership Program also provides services for prospective homeowners to secure affordable mortgages and down payment assistance.

Housing Projections

Housing projections were generated by the University Center for Economic Development using the Nevada State Demographer estimates, incorporating the effect of expected job growth in regional mining projects and the Tesla gigawatt factory in Storey County. Based on projected generated, 346 housing units are estimated to be needed to accommodate the addition of new residents and workforce housing for growing mining industry jobs.

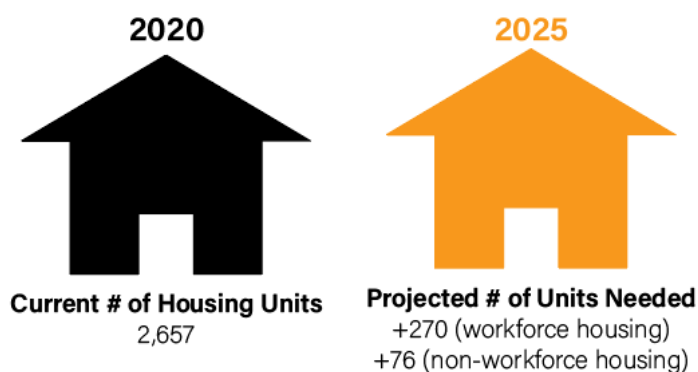


Figure 3-4: Projected Housing Units Needed

Source: University Center for Economic Development College of Business, University of Nevada, Reno (2020)

² (Vogt Santer Insights 2014)

Looking to the Future

Housing Opportunities and Constraints

Encouraging Diversification and Affordability of Housing Stock

Housing stock contains more than 91% single family or manufactured houses. The County lacks a substantial stock of multifamily and diversity of housing from the predominant detached, single family and manufactured housing. To encourage more multifamily options, Lander County reorganized the land use category calling out a new designation of “Multi-Family” with this Master Plan Update that will allow for higher density housing options in appropriate areas. Lander County will have the option to add this master plan designation to certain areas of the county or private property owners may submit a master plan amendment to facilitate development of a new project. Future update to the zoning code will include additional guidelines for scale, density, and placement of different types of housing, including multi-family, townhouses, duplexes and accessory dwelling units. An increase in multi-family and diversity of other housing types may provide additional rental housing stock for this area and alleviate cost burden on rental households in Lander County. Lander County will also continue to work with Rural Housing Authority and other local, state and federal entities to provide subsidies and other funding to support affordable housing efforts.

Redevelopment Opportunities

Redevelopment opportunities are most likely to occur within Battle Mountain and Austin, where revitalizing city centers like downtown corridors can create more walkable and accessible options for services. Encouraging adaptive reuse and redevelopment of properties has the potential to bring new life to existing commercial corridors or create new opportunities in areas with existing infrastructure while bringing employment opportunities closer to residents.



Austin, Nevada | Source: [Jasperdo, 2014](#), Licensed by: [CC BY-NC-ND 2.0](#)

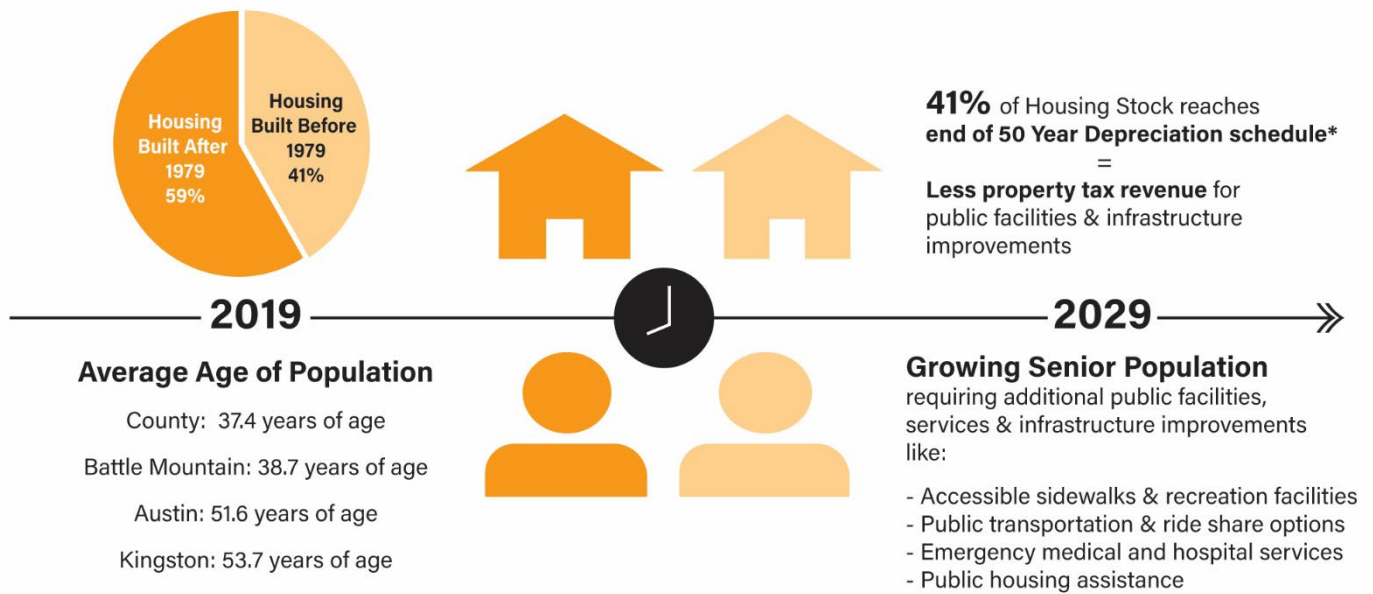
Aging Population and Housing Opportunities

Coupled with the rising average median age of residents, Lander County will require concentrated attention to aging-in-place planning strategies to ensure adequate quality of life for current and future residents, with a likely smaller property tax base (Refer to Figure 3-5). In addition, housing affordability is an important concern for this region as members of the population move into retirement and fixed income, creating the potential for affordability issues and increasingly cost-burdening residents.

As populations age, adjustments to the existing community services may be necessary to accommodate demographic changes in the community. Age-friendly communities can be encouraged in any city or county, including rural communities. Nationally, research shows most rural senior citizens (57%) prefer to remain in their current residence as long as possible, rather than move into a senior care facility during retirement. Rural residents show the highest desire to remain in their homes as they age compared to suburban and rural counterparts.³ Compared to urban and suburban adults, 45% of rural adults intend to stay in their current residence and never move, but are more likely to explore building accessory dwelling units or explore a shared living situation with a family member or caregiver to help with everyday activities as they age.⁴

³ (AARP 2019, 13)

⁴ (AARP 2019, 19-20)



* In Nevada, houses ≥ 50 years old pay 1/4 of the property taxes of a new home of equal value. Assessed taxable value of improvements on a property depreciates at 1.5 percent per year to a maximum 50 years (NRS 361.227).

Figure 3-5: Aging Population and Housing Stock
 Source: University Center for Economic Development College of Business, University of Nevada, Reno (2020)

Rural communities face unique risk factors for aging populations compared to urban or suburban communities, namely access to health care, support services like accessible transportation options (public transit or ADA accessible routes), aging housing, and social isolation⁵. Most rural adults in the United States drive, walk, or have others drive them within their communities and indicate they are more likely to continue driving as they age. Table 3-3 includes specific risk factors for Lander County residents and strategies to improve aging-in-place and the livelihoods of the senior population in the community.

⁵ (AARP 2019) (Skoufalos, et al. 2017)
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Table 3-3 – Aging Population and Housing Stock

Rural Risk Factor	Existing or Proposed Strategies
Lack of Accessible transportation to complete activities of daily living	<ul style="list-style-type: none"> - Explore public transportation methods, including safe and easy to use ride share options - Improve walkability by improving ADA accessible pathways/connectivity
Lack of new housing options	<ul style="list-style-type: none"> - Promote development of housing in unconstrained areas - Encourage maintenance of existing housing through code enforcement - Establish guidelines to allow a mix of housing types - Create opportunities for shared living spaces and accessory dwelling units
Social isolation	<ul style="list-style-type: none"> - Improve parks and recreation areas to include accessible or universally designed amenities - Work to ensure public facilities are accessible to all age ranges
Healthcare	<ul style="list-style-type: none"> - Ensure emergency services and local medical and hospital resources can accommodate a growing senior population and are located in reasonable proximity to community members - Encourage mobile medical facilities to provide healthcare to rural areas
Source: AARP 2018, Skoufalos et al , 2017	



ECONOMIC DEVELOPMENT



Economic Development

Economic growth of a community is fundamental to the vitality of a community and affects all other master plan elements, influencing public facilities, conservation efforts, land use decisions, and housing/population needs.

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Goals

1. Foster a diverse regional economy that adapts to changing needs of the workforce and supports resiliency.
2. Capitalize on outdoor recreation, lifestyle, and agriculture as business opportunities to diversify the economy.

Policies

ED.1 Enhance, and Protect Existing non-cyclical Economic Activity or sectors. Such sectors include:

- Tourist Commercial Relationship to Interstate 80:
 - Hotel/Motels and Traveler Services
 - Interstate Truck and Vehicle Traffic
 - Rail Operations
- Government Functions
- Ranching and Agricultural Operations
- Outdoor Recreation/Tourism
- Basic Services and Trade
- Power Plant Operations

ED.2 Conduct industrial site inventory/evaluation for Lander County communities.

ED.3 Lander County shall initiate a capital planning effort that addresses the improvements needed to support economic development and expansion of business activity.

ED.4 Continue to support efforts to enhance and develop outdoor recreational opportunities on public lands that increase visitors and tourists to Lander County. The recreation element identifies specific development efforts.

ED.5 Provide recreational development recommendations to public land management agencies for resource management plan and forest service plan updates.

ED.6 Recreation development should minimize conflicts with existing public land users such as livestock operators, mining, other commodity based users, and establish outdoor recreational use areas which minimize conflicts with traditional users.

ED.7 Development of public lands for tourism based recreation should be consistent with the Lander County Plan for Public Lands.

ED.8 Support Development of Industrial Sites in Lander County.

ED.9 Identify sites that are located within close proximity to municipal services. Infrastructure support expansion to sites where adequate lands and infrastructure is available.

ED.10 Rail served industrial development is particularly important in northern Lander County. Lander County needs to identify site where additional rail use and development can occur.

ED.11 Alternative energy development will be encouraged where such development does not encroach upon community areas or existing residential and commercial/business establishments. Impacts from such development shall be minimized.

Current Trends

In general, Lander County has outperformed most of the other communities and counties within the northeastern Nevada region and even outperformed the state of Nevada and the entire United States in-terms of overall size and growth in median household income, median family income, and per capita income. Lander County also had one of the lowest percentages of residents living below the poverty level rates in northeastern Nevada and lower than state and national poverty rates, although certain groups are experiencing poverty at a higher level than the overall community. The county also has a much higher civilian unemployment rate than other communities throughout northeastern Nevada over the seven-year, 2013 to 2019, period.

Local Economy and Outlook

Economic Sectors

Historically, the Lander County economy has relied on cyclical, resource-based industries like mining and agriculture. Table 4-1 provides information on the top 10 industries in Lander County (ranked by the number of jobs), with median average salary, and total industry earnings. A substantial difference exists between the total industry earnings of the mining industry, average job earnings and total jobs, when compared to other industries underpinning the importance of the mining industry to the economy of Lander County (Table 4-1).

Table 4-1 – Top 10 Lander County Industries in 2018 by Total Jobs

Rank	Industry	# of Jobs	Average Annual Earnings per Job ¹	Total Industry Earnings ¹
1	Mining ²	2,114	\$132,919	\$265,344,762
2	Government (Federal, State, Local) ³	567	\$76,336	\$41,424,954
3	Truck Transportation	114	\$100,086	\$11,517,553
4	Agriculture, Forestry, Fishing, and Hunting ⁴	88	\$26,910	\$4,666,753
5	Food Services and Drinking Places	87	\$18,664	\$1,646,862
6	Food and Beverage Stores	79	\$19,862	\$1,465,089
7	Gasoline Stations	75	\$29,109	\$2,488,413
8	Repair and Maintenance	58	\$84,552	\$5,398,789
9	Accommodation	56	\$17,447	\$1,608,915
10	Amusement, Gambling, and Recreation Industries	45	\$27,600	\$1,278,885

Source: Nevada Economic Assessment Project, University of Nevada, Reno, 2021

¹**Note:** Average annual job earnings are included in this table; however, this data may be skewed depending on the standard deviation (i.e. the amount of variation in the dataset) of average salaries, with extremely low or high paying individual jobs potentially skewing the average earnings per job for the industry. For combined subsectors, Sectors with <10 jobs in Emsi 2019.4 were excluded from # of Jobs and average annual earnings per job columns. Average Annual Earnings is the average of all combined jobs in sector. Total Industry Earnings is combination of all earnings in subsector.

²NAICS Sector 21 combined subsectors including 211, 212, and 213.

³NAICS Sector 90 combined subsectors including 901, 902, 903

⁴NAICS Sector 11 combined subsectors including 111, 112, 113, 114, and 115

Overall Employment Statistics

Given Lander County’s small residential population base and relatively high average annual median age, Lander County’s existing and available civilian workforce has remained small. The relatively small workforce requires employers in Lander County to ‘import’ workers from larger population centers within the region, including from the City of Winnemucca in Humboldt County and from the City of Elko in Elko County.

Table 4-2 – Select Statistics on Household / Family Income and Employment - 2019

Overall	Lander	Elko	Eureka	Humboldt	State
Median Household Income	\$81,006	\$74,801	\$67,882	\$66,009	\$54,763
Median Family Income	\$88,463	\$82,709	\$97,831	\$77,157	\$64,567
Per Capita Income (per individual per year)	\$30,874	\$31,279	\$32,578	\$28,713	\$28,128
Percentage of families with income below poverty level	9.6%	9.1%	12.4%	10.6%	12.7%
Civil labor force unemployment rate	8.2%	4.7%	0%	3.4%	6.2%

Source: University Center for Economic Development, College of Business, University of Nevada, Reno, 2021

Unemployment Rates

Compared to the state average that consistently dropped between 2013-2019, the Lander County unemployment rate has varied year to year, which may be attributed to the cyclical nature of some of the economic sectors (e.g. mining, agriculture). Figure 4-1 provides a chart of unemployment rates over time.

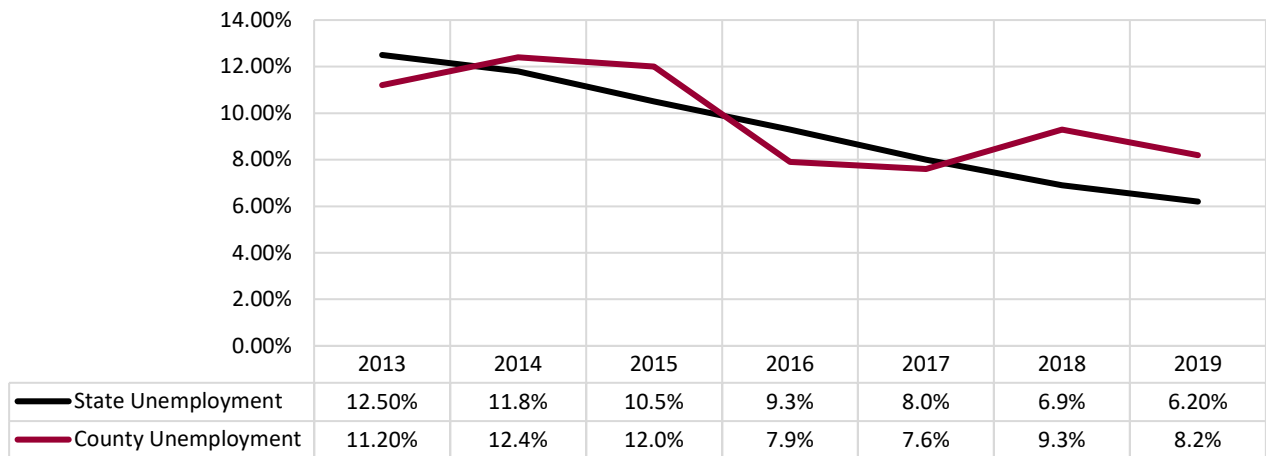


Figure 4-1: Lander County Employment Rates

Source: American Community Survey 5-Year Estimates, years between 2013-2019, Table DP03

Poverty Rates

The percentage of individuals and households living below the poverty level remained well below the state average until 2018, when it spiked to 15.4% before declining to 9.7% in 2019. However, two populations have seen a substantial increase in the percentage living below the poverty level – children under 18 and individuals over the age of 60. The poverty rate percentage in both populations exceeded the state percentage in 2016 and has trended upward. (Figure 4-2).

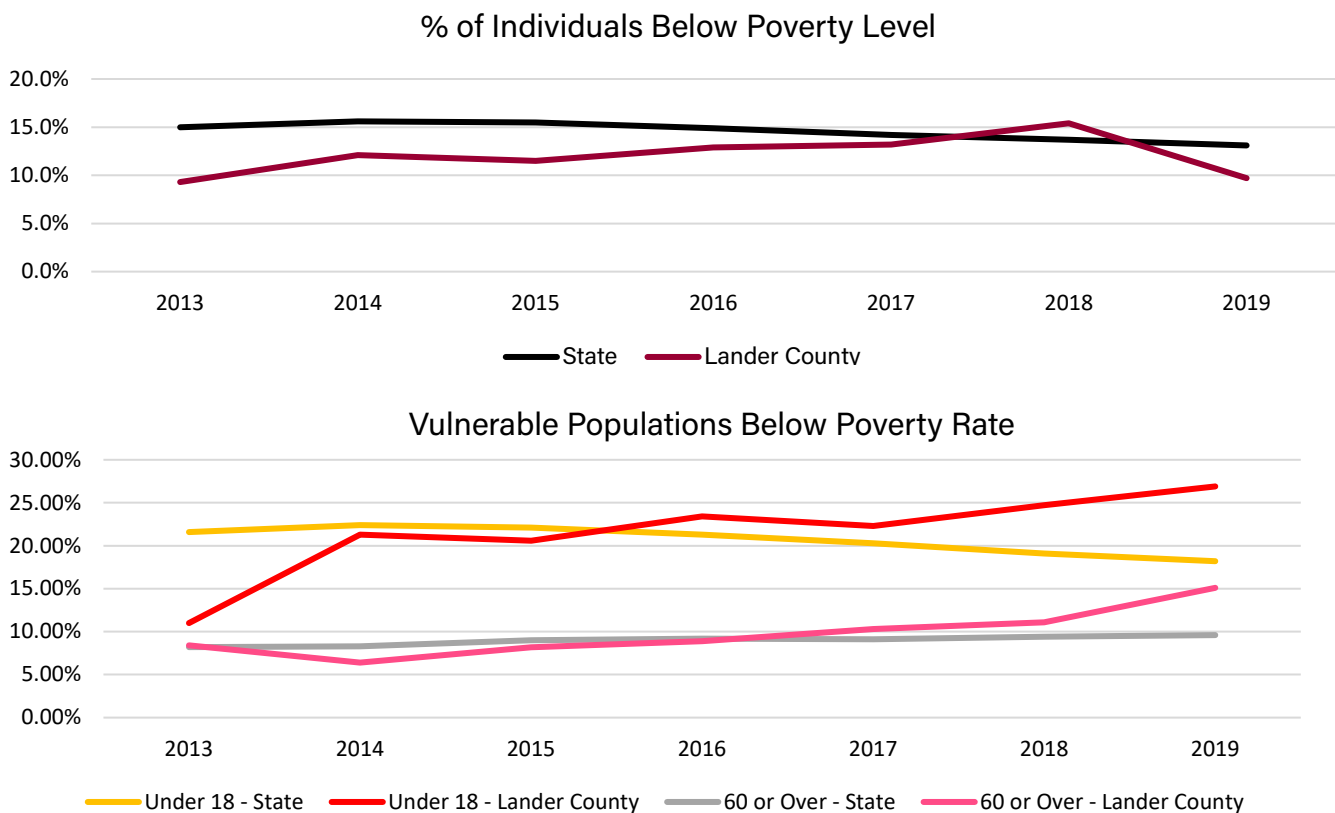


Figure 4-2: Poverty Rate Graphs 2013-2019
 Source: American Community Survey 5-Year Estimates, years between 2013-2019, Table S2201

Building Permits

Residential building permits spiked considerably in 2013, with a total of 80 units constructed, including 15 single family structures and 65 multi-family structure with 3 to 4 units. However, since 2013, building permits have dropped considerably, with a range of 2 to 7 units built, all single-family structures, and several years without any building permit activity. In 2021 so far, one residential building permit has been issued for a single-family structure in Lander County¹ (Refer to Figure 4-3). Presently there are no commercial or industrial parcels under construction, with the exception of one professional office associated with the Lander County Hospital District currently under construction.²

¹ (U.S. Department of Housing and Urban Development 2013-2021)

² (Lander County Assessor's Office 2021)

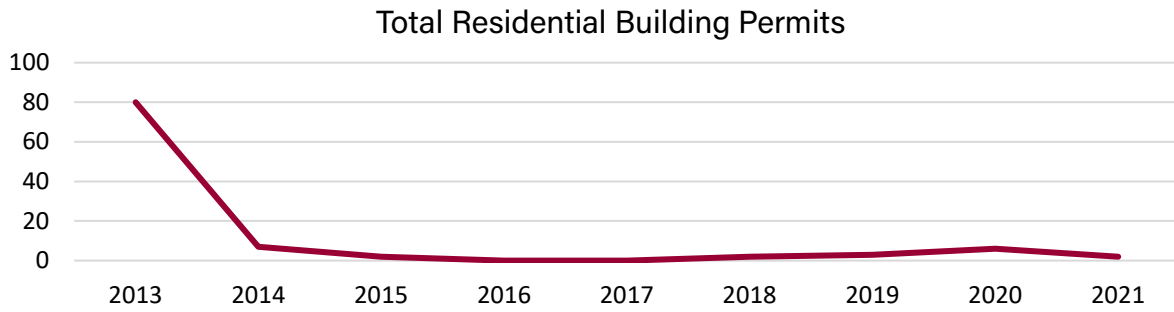


Figure 4-3: Total Residential Building Permits 2013-2021
 Source: SOCDs Database, U.S. Department of Housing and Urban Development, 2021

Commercial and Industrial Parcels

Lander County currently has a total of 214 parcels used for commercial purposes and 46 used for industrial purposes.³ Figure 4-4 provides a breakdown of the various commercial and industrial uses for these parcels.

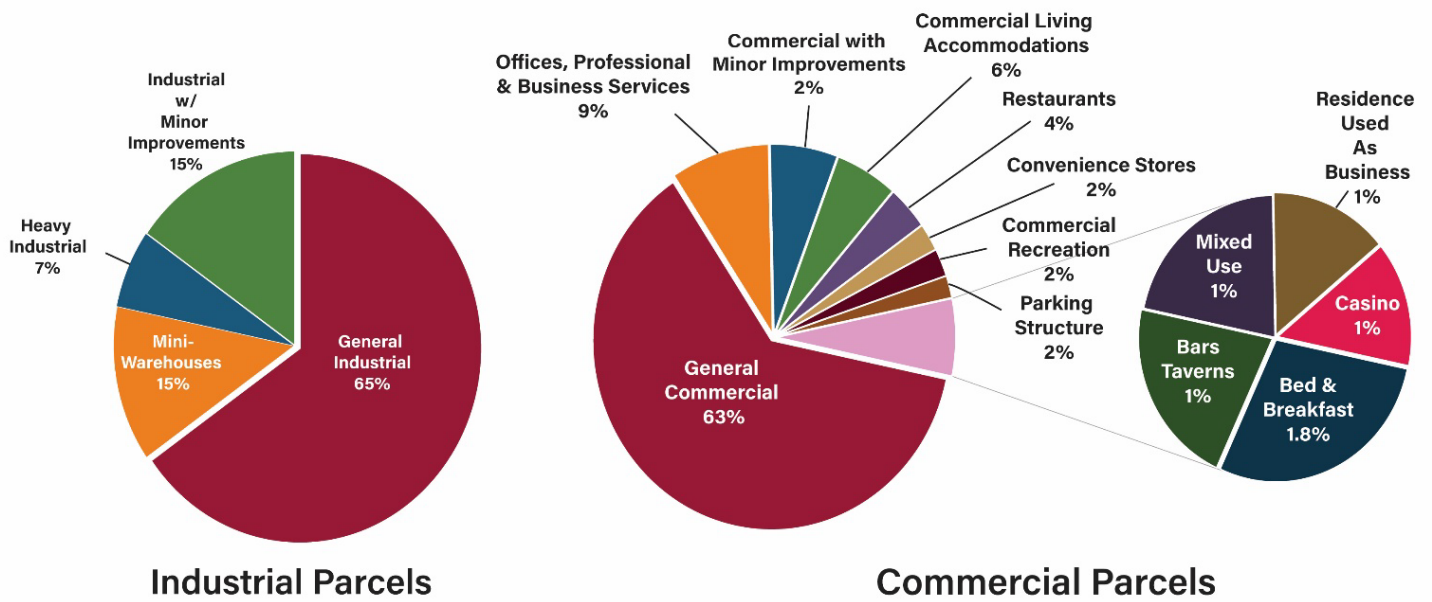


Figure 4-4: Industrial and Commercial Uses for Lander County Parcels
 Source: Lander County Assessor Parcel Data (2021)

³ (Lander County Assessor's Office 2021)
 Lander County Master Plan **DRAFT**

Focus Areas for Economic Development

In 2020, Lander County updated its comprehensive economic development strategy (CEDS), partnered with the University Center for Economic Development. This plan is meant to guide economic development in Lander County between 2020 and 2025. Several priority goals were established and analyzed for feasibility and opportunities and constraints (Refer to Figure 4-5).



Figure 4-5 Consolidated CEDS Goals 2020-2015

Source: University Center for Economic Development, College of Business, University of Nevada, Reno, 2020

Looking to the Future

Implement CEDS Goals and Priorities⁴

The Comprehensive Economic Development Strategy outlines specific strategies to improve economic conditions in Lander County between 2020 and 2025. Several areas of the report, including expanding broadband service throughout the County, are currently in the planning phases. Future economic development efforts should use the CEDS report to guide decision-making. Implementing the majority of the goals in the report will require careful collaboration with other entities and measuring progress based on the conditions outlined in the report.

Expand Tourism/Recreation

Through development of the CEDS, Lander County created a goal to increase tourism revenue by 20% in the next five-years, a 4% increase per year. To meet this goal, the County will need to develop a new 5-year comprehensive marketing and advertisement strategy, design and construct visitor amenities (visitor's center, museum information station, community ambassador program) and create other tourism infrastructure and tools including signage, mobile applications, improved website, and tourism guides. This process also includes the development of a reuse plan for the historic County Courthouse to encourage heritage tourism and reuse of this building for tourist or entrepreneurial workspace amenities. The overall effort will require collaboration between the chambers of commerce for Austin and Battle Mountain and the Lander County Convention and Tourism Authority as well as other public and private entities (e.g. hotel and motel owners).

Alternative Agricultural Industries – Hemp

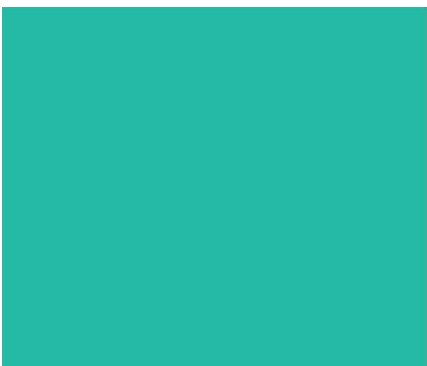
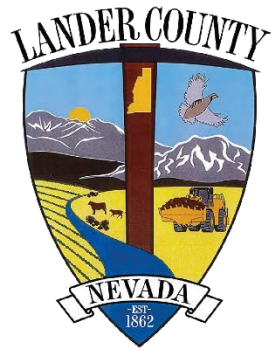
Exploration of alternative agricultural manufacturing, including hemp, are a section of the agricultural sector that Lander County is interested in pursuing and included as a CEDS goal. Hemp is a growing industry in the United States and particularly the west coast. This goal will require outreach and education of existing farmers on this commodity and the creation of Grower's Co-op to facilitate the cultivation of this crop. A regional processing plan will also further this goal, allowing for in-county processing and production various products from hemp. This goal will require collaboration between the Lander County Development Authority, Lander County and agricultural producers in Lander and Eureka Counties to promote regional development of this industry.

Renewable Energy Development – Reusing Reclaimed Mining Areas⁵

In February 2012, the Lander County Economic Development Authority contracted with Telesto Nevada Inc to create a feasibility evaluation report to determine how renewable energy could be installed on existing or reclaimed mine sites. This report resulted from collaborative efforts with the Bureau of Land Management, The Lander Economic Development Authority, and the Nevada mining Industry, forming a group called the Renewable Energy Development Feasibility Study (REDS). The report determined geothermal energy was the most feasible renewable energy type on these sites in Lander County; however, geothermal resources are currently not coexisting with active mine sites. Other renewable resources like solar and wind also have potential to be located on existing or previous mine sites. Lander County, partnered with the REDS participants, may consider exploring the opportunities presented in this report further to expand renewable energy resources that may bring employment and other economic opportunities to the County.

⁴ (Steinmann 2020)

⁵ (Telesto Nevada Inc. 2012)



PUBLIC FACILITIES

Public Facilities, Services & Recreation

The intent of this section is to provide a guide for orderly and planned extension of the public services and facilities needed for the present and future residents of Lander County.



Goals

1. Provide adequate public services and facilities commensurate with future needs in Lander County in a manner that is cost effective and efficient to construct and operate.
2. Provide adequate public services and facilities that support development and improve the overall quality of life in Lander County.
3. Identify future major public facility and service improvements required in Lander County.
4. Minimize the creation of new domestic wells and septic systems within urbanizing areas where groundwater recharge occurs and where the existing density of individual well and septic systems at or nearing state recommended standards.

Policies

PF.1 Lander County shall have planning, design, construction, plus operation and maintenance responsibility for all water supply facilities outside the existing or proposed Austin and Kingston water service areas. Ensure that a safe and dependable water supply is available.

PF.2 Lander County and municipal water service providers will ensure that all capital improvements programming, funding, and construction for municipal water facilities shall be consistent with the goals, objectives and policies contained in the Lander County Master Plan and appropriate service and facility plans.

PF.3 Prohibit the creation of new private water and wastewater utility companies in Lander County. Water services to be provided by local government agencies in Lander County.

PF.4 Require the use of water meters in Lander County. Water meters are essential to provide for water conservation, equity in billing for water use and effective management of water resources.

PF.5 Areas planned for urban or suburban development (residential densities greater than one unit per 2.5 acres or more units or comparable nonresidential development) will be served by a community water supply system in accordance with adopted and existing County policies and ordinances. All new systems and facilities shall be dedicated to Lander County or the appropriate water service provider.

PF.6 Ensure that sufficient water rights are dedicated to Lander County or appropriate water service provider when new parcels are created. Water rights will be of the type and quantity required by water service providers in Lander County.

PF.7 Lander County shall have planning, design, construction, plus operation and maintenance responsibility for all water supply facilities in Lander County outside Austin and Kingston.

PF.8 Municipal Water service shall be required in all existing service areas and areas planned for future service expansion.

PF.9 Development proposals within designated well head protection areas shall not create the potential for groundwater contamination. Lander County will establish well head protection areas for municipal wells.

PF.10 Lander County will review applicable wellhead protection plans and consult with the water purveyors when reviewing development proposals to determine if there is a conflict between the proposed development and a wellhead protection zone that poses a risk that cannot be reasonably mitigated or addressed in the development process. Water purveyors are encouraged to develop wellhead protection programs that can be integrated with local government new business or development review processes.

PF.11 Proposed water facilities to be installed by developers shall be reviewed and approved by the County Engineer prior to dedication. All new water facilities must meet county standards as determined by the County Engineer.

PF.12 The County Engineer shall review plans for proposed facility improvements to ensure that such facilities meet Lander County standards.

PF.13 The County Engineer or a Nevada licensed engineer designated by Lander County shall provide construction management services for facilities to be constructed by parties other than Lander County.

PF.14 Lander County will ensure that the costs to provide water services are paid by those receiving services.

PF.15 Lander County shall ensure that development requiring water service shall pay for the cost associated with facilities, capacity utilization, and treatment requirements.

PF.16 Off-site improvements including water line extensions to serve new development created as a result of a Lander County Master Plan **DRAFT**

parcel map or subdivision map or an existing parcel or parcels shall be paid for by those requiring such service and at the actual cost to construct the improvement.

PF.17 The cost to expand or improve storage, pumping or water treatment to serve new development created as a result of a parcel or subdivision map or an existing parcel or parcels shall be properly accounted for and allocated to those requiring such improvements.

PF.18 Lander County shall review utility operating policies and ordinances to ensure that accurate cost recovery methods exist. Appropriate changes to policies and ordinances shall occur.

PF.19 Well-Head Protection Areas shall be established for municipal water supply wells.

PF.20 Coordinate all wastewater management facilities in Lander County outside the communities of Austin and Kingston.

PF.21 Public utility system operators in Lander County shall have planning, design, construction, plus operation and maintenance responsibility for all wastewater treatment and collection facilities. Lander County is responsible for wastewater treatment and collection in unincorporated areas.

PF.22 Wastewater treatment and collection facilities shall be developed in accordance with a capital improvements program. Lander County Sewer and Water District #1 and #2 shall update and or maintain current facility plans for wastewater treatment and sewer collection facilities.

PF.23 Construct sewage treatment and collection facilities concurrent with development of land uses generating demand for those facilities. Providing sewer collection to commercial and industrial zoned areas east of State Route 305 toward the airport could increase the prospects for additional economic development.

PF.24 All planned urban and suburban development with residential densities of more than one unit per 2.5 acres shall be included in the service area of a community sewage treatment facility. Sewage treatment facility service areas shall not overlap. Centralized/community sewage treatment facilities shall not be provided to areas planned for rural development (density less than one unit per 5.0 acres or a density equal to or less than the Rural Land Use category)

PF.25 The provision of sewage treatment services shall not be used to alter the adopted pattern or timing of development in Lander County.

PF.26 Lander County shall establish programs for the provision of centralized service to those areas with failing septic tanks or other service inadequacies to meet existing needs, and areas with the potential to pollute the water supply if developed on septic systems.

PF.27 Lander County shall monitor the performance of individual septic systems. Areas identified which have a history of failing systems shall be considered for municipal wastewater collection and treatment.

PF.28 Update sewer and water master plans for community areas in Lander County. The expansion of the water system to south Battle Mountain will create a need for major improvements to the existing collection and pumping facilities.

PF.29 All new projects within or adjacent to the existing or proposed service areas may be required to connect to a sub-regional or regional wastewater treatment plant, to provide dry sewers in anticipation of being connected to such a facility, or to design the project so that the residences can be served by sewers installed in the public rights-of-way.

PF.30 Lander County shall evaluate relocation of court functions and District Attorney's office to an area near the public safety complex.

PF.31 Additional lands shall be acquired for expansion of Battle Mountain cemetery. Lander County shall work with adjacent landowners to secure additional sites for expansion. If land is not available for the expansion of the existing site, a new location shall be selected and secured for future development.

PF.32 Maintain wildland fire prevention activities in Lander County communities.

PF.33 Fuel management programs should be maintained for communities with agencies such as the Nevada Division of Forestry, Bureau of Land Management and U.S. Forest Service.

PF.34 Support fire management policies established in the Lander County Policy Plan for Federally Administered Lands.

PF.35 Lander County shall plan for the location of transmission lines designed and or/designated to operate at 200 kv or greater that is consistent with any Bureau of Land Management Plan, any transmission plan prepared by the Office of Energy, and is coordinated with the plans of adjacent jurisdictions. Utility providers are required to locate transmission lines within an established corridor, as shown on the Above Ground Utility Map and within all zoning, permitting, and other local, state and federal requirements.

PF.36 Amendments or additions to the Above Ground Utility Map can be made, allowing for the location outside of established corridors, if the applicant holds at least one public workshop and coordinates with Lander County, adjacent jurisdictions, the Nevada State Office of Energy, and the Bureau of Land Management. The following findings must be made by the Lander County Board of Commissioners prior to approval:

- 1) Coordination occurred between the Nevada State Office of Energy, the Bureau of Land Management, and any adjacent jurisdictions to establish consistency with any applicable transmission or resource management plans or any above ground utility plans of adjacent jurisdictions.
- 2) Corridors cannot conflict with existing or planned infrastructure or utility projects
- 3) Project must be designed to ensure safety and minimize impacts to the community.

PF.37 Facilitate development of recreational improvements on Public and Forest Service Lands

PF.38 Board of County Commissioners, the Lander County Public Land Use Advisory Planning Commission and the Planning Commission should have the opportunity to review and comment on improvements and management initiatives proposed for Lander County.

PF.39 Recreational improvements should limit conflicts with traditional users such as grazing, mining, and hunting/fishing interests.

PF.40 Recreational improvements should provide direct benefits to local residents and the quality of life in Lander County.

PF.41 Maintaining access to and use of Forest Service and public lands is very important for Lander County residents.

PF.42 Encourage federal and state agencies to develop/update improvement plans for Big Creek and Kingston Canyon Recreation Areas. Additional winter recreational opportunities such as snowshoeing, cross country skiing, backcountry accommodations, and snowmobiling should be encouraged.

PF.43 Protect and enhance recreation activities on public lands enjoyed by Lander County residents.

PF.44 Lander County needs to integrate recreation improvements to a general county capital improvements plan.

PF.45 Pedestrian safe access and trails should be available from residential development to park and recreation sites as well as school sites.

PF.46 Support efforts to develop more indoor/winter structured recreational opportunities in Lander County.

PF.47 During development review, land for additional recreational site(s) and improvements should be identified as well as needed access for recreational purposes such as OHV, equestrian use, and hiking and biking to and from surrounding undeveloped lands.

PF.48 Work with local school districts to coordinate development of recreational facilities that have mutual benefit to schools and Lander County residents.

PF.49 Evaluate the feasibility to develop Spencer's Hot Springs and trail system.

PF.50 Continue to work with US Forest Service to rehabilitate Kingston Administrative site for use and rental by the general public.

PF.51 Lander County shall develop a transportation capital improvements plan that addresses priority street and roadway improvements. Such improvements might include:

- Alignment of Sheep Creek Road, Pleasant Hill Drive and SR 305 to eliminate offset intersections.
- Extension of Bastian/Sheep Creek Road to Allen Road

- Community Information Center on SR305 north of Interstate 80.
- Pedestrian Safety Improvements at Broyles Ranch Road and SR 305.
- Extension of street enhancements south along SR305 to Lamaire Rd. Enhancement will include landscaping, appropriate signage and decorative lighting.
- Streetscape enhancements tying SR305 to Front St drawing circulation through Battle Mountain commercial areas. Streetscape improvements should be extended to Broyles Ranch Road and SR305 south of Interstate 80.
- Construction of a connector road between SR 8A and Hilltop road.

PF.52 Lander County supports streetscape improvements along U.S. Highway 50 through Austin.

PF.53 Discourage the creation of offset intersection when such intersections are 200 feet or less apart.

PF.54 Ensure that new development requiring public streets are adequately funded and that adequate funding is also available to maintain a new system of streets and roads.

PF.55 New parcels created within the Town of Battle Mountain will be required to meet existing standards which are consistent with the surrounding areas/neighborhoods.

PF.56 Lander County shall limit encroachment and development on lands adjacent to public airports.

PF.57 Railroads are important assets for industrial development. Lander County should evaluate how best to utilize railroads and sidings to promote industrial development and job creation.

PF.58 Streetscape Improvements should be undertaken in Battle Mountain to achieve the following outcomes:

- a. Improve the aesthetic for residents and visitors to the area through the use of landscaping and lighting.
- b. Increase pedestrian safety particularly school age children walking to and from schools in Battle Mountain.
- c. Unify and connect commercial areas in Battle Mountain.

PF.59 Update County-Wide Road Plan.

PF.60 Support transportation goals and policies in the Lander County Plan for Public Lands.

PF.61 Develop a county-wide road map which designates all transportation related facilities, rights-of-way, and roads which are included in the county system.

Available Public Facilities and Services

Over the next 20 years, some locations in Lander County are expected to grow in population and size, while other locations are expected to continue declining. Future efforts by the County will take into account new growth and development and scale efforts for capital and infrastructure improvements to provide the greatest investment of public funding and resources for the community. Growth in population and certain economic sectors can substantially influence the amount of demand and availability of resources within the County. Although Lander County is not



Overlooking Town of Austin, NV at Sunset

projected to grow significantly, replacing aging infrastructure and providing adequate facilities and services to encourage growth are two important focal points for public facilities planning in the Master Plan.

Table 5-1 provides a summary of the facilities and improvements required for areas with residential master plan categories. Commercial and industrial master plan categories will vary depending on the use and location. More information on specific requirements for each master plan category is located in the Land Use chapter.

Table 5-1 – Facilities and Improvements Required						
Master Plan Category	R	RR	LD	MD	HD	MF
Legal Access	X	X	X	X	X	X
Grants of ROW and Easements	X	X	X	X	X	X
Curb, Gutter & Sidewalks				X	X	X
Electricity	X	X	X	X	X	X
Water						
Municipal	X	X	X	X	X	X
Domestic Well	X	X				
Wastewater						
Municipal	X	X	X	X	X	X
Septic	X	X				
- Service requirements for non-residential uses (Commercial, Tourist Commercial, Industrial, Government Purpose) will vary depending on project and location. - This table is intended to provide guidance moving forward. Special cases may exist that do not completely follow this guidance. Lander County should use its discretion when applying this table.						

Current Conditions and Trends

Water Resources

Lander County Combined Sewer and Water General Improvement District

The Lander County municipal water system is a well-functioning system with stable and consistent water pressures and supply. Approximately 1,234 water connections exist in Battle Mountain. The potable water system consists of four groundwater wells, two water storage tanks, a booster pumping station, two pressure regulation valve (PRV) stations and several miles of transmissions and distribution mains. The water system has available excess capacity in groundwater supply, water storage, transmission, and distribution of water rights. Lander County Public Works designs, plans and monitors these systems. The existing municipal water service area and proposed service area of Battle Mountain are shown in Figure 5-1. Figures 5-2 and 5-3 provide maps of the existing water infrastructure in Battle Mountain.

Table 5-2 - Population and Water Demand	
Users	2016/2017
Total Active Customers	1,234 customers
Residential	1,064 customers
Commercial	170 customers
Water Pumped	311,814,016 gallons
Average per customer per day	692.4 gallons
Source: Water and Sewer Master Plan Update, Day Engineering, 2017	

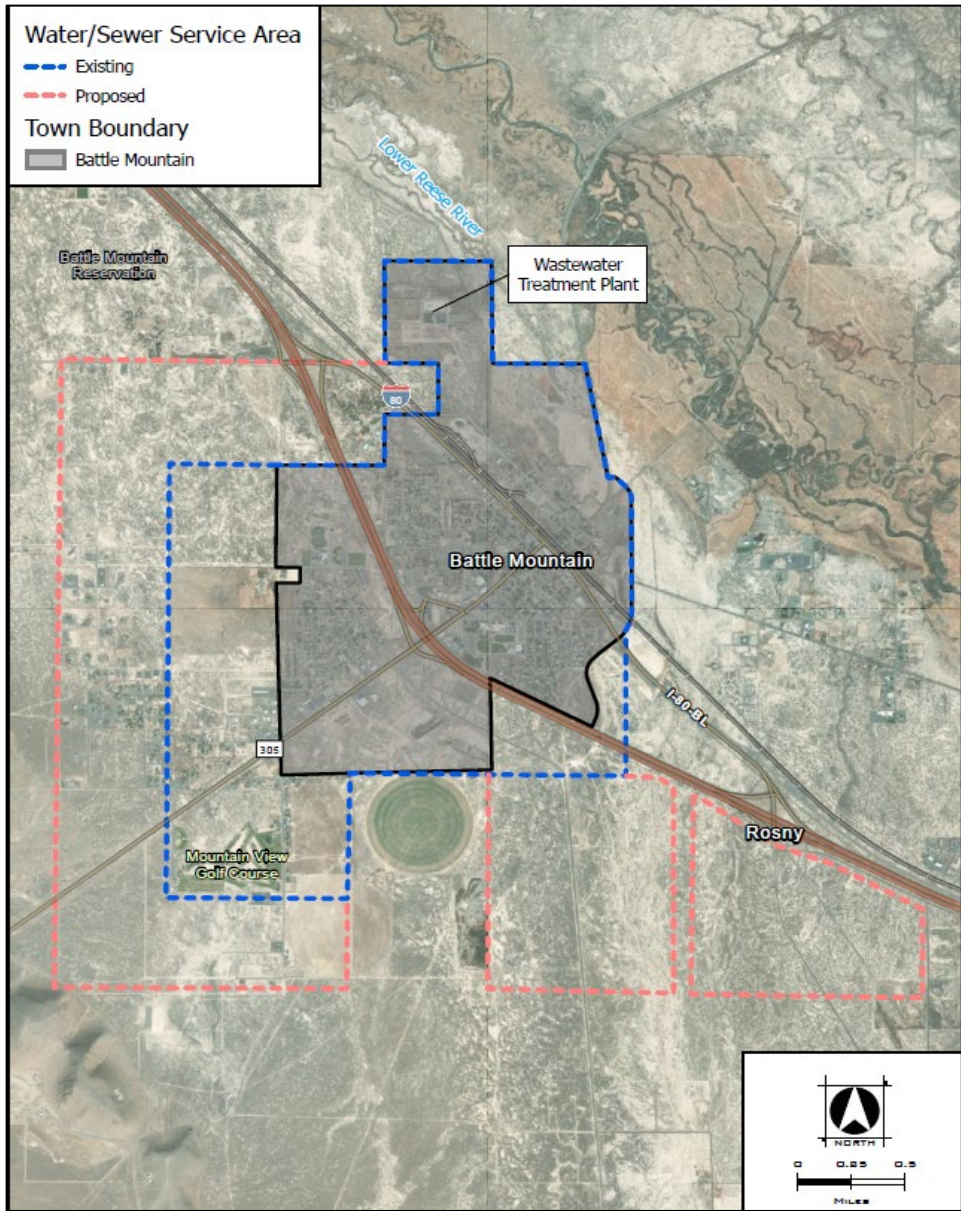


Figure 5-1: Lander County Water/Sewer Service Area
 Source: Water and Sewer Master Plan Update, Day Engineering, 2017

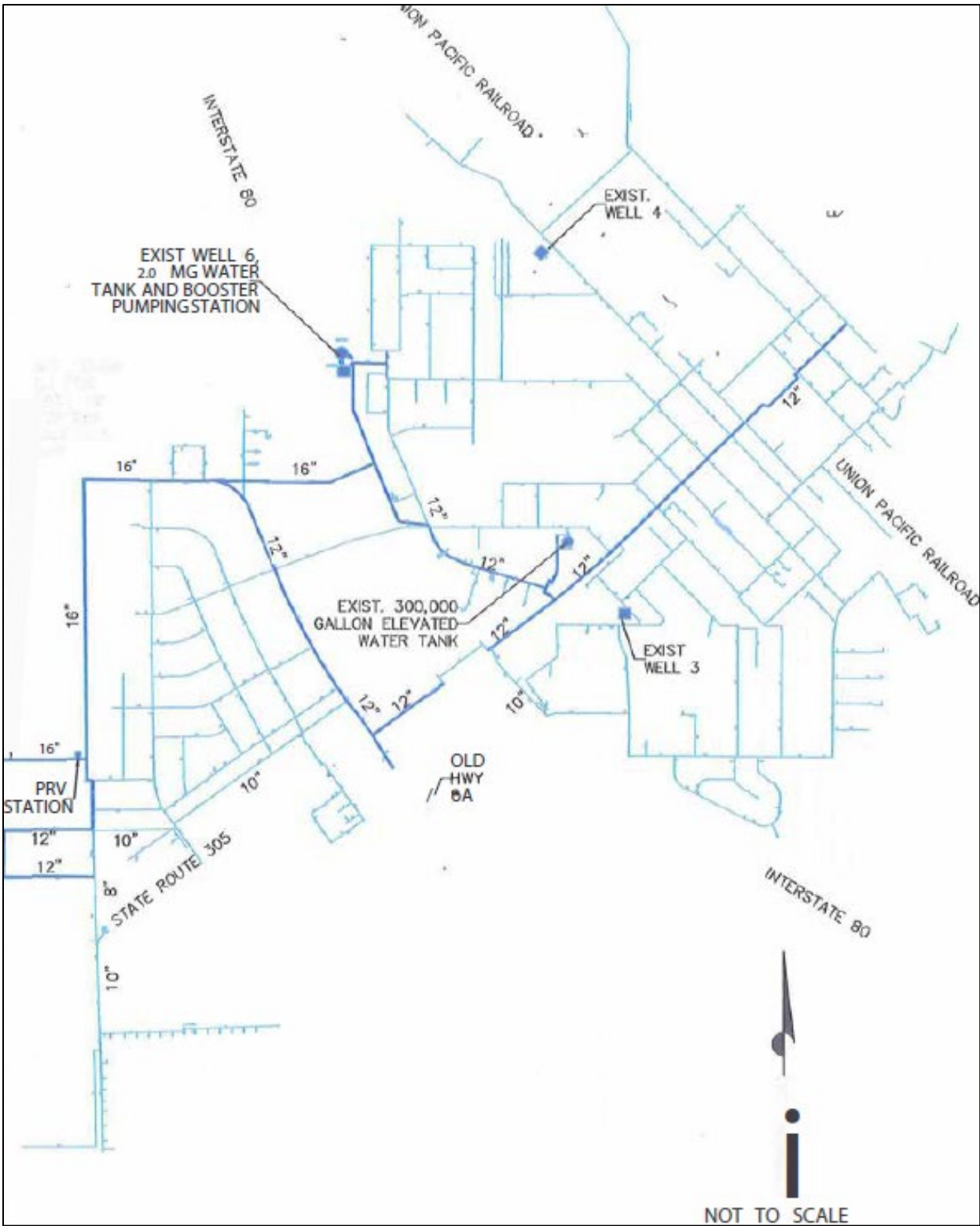


Figure 5-2: Battle Mountain Water Facilities Location Map
Source: Water and Sewer Master Plan Update, Day Engineering, 2017

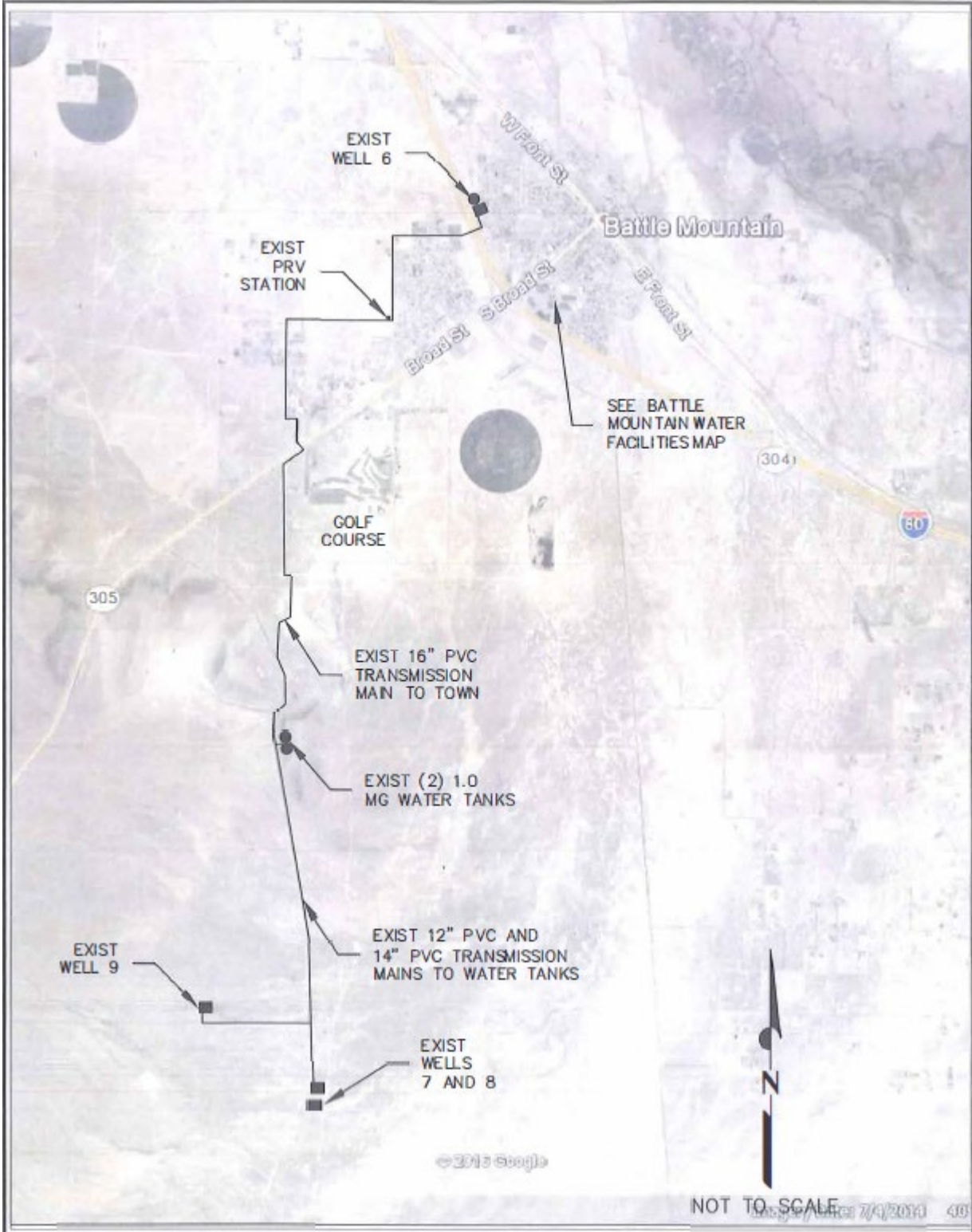


Figure 5-3: Overall Water Facilities Location Map
Source: Water and Sewer Master Plan Update, Day Engineering, 2017

Water Rights

Groundwater is the sole source used to meet water demands in Battle Mountain. Battle Mountain has water rights in two basins, Basin 64 – Clovers area, which includes all of the non-potable town wells, and Basin 59 – Lower Reese River Valley. Both basins are overallocated, meaning the existing water rights exceed supply. Basin 59 is a designated basin, meaning the State engineer will no longer permit new appropriations (or water rights) in that basin. Table 5-3 provides the status of existing water rights in the Battle Mountain service area.

Well	Basin	Amount Allocated (acre-feet)	Status
1	64	724	Abandoned
2	59	---	Abandoned – Moved to Wells 7 & 8
3	64	0	Certified / Active
4	64	448	Certified / Active
6	64	1,091	Certified / Active
7	59	645	Permitted / Active
8	59	423	Permitted / Active
9	59	222 (temporary)	Temporary permit, expired after 1 year; reverted to Well 8
Airport	59	12.3	Certified / Active

Source: Water and Sewer Master Plan Update, Day Engineering, 2017, page 30

To maintain the rights of wells 7 and 8, Lander County will need to change the status of these water rights from “permitted” to “certified” with the State Engineer. Certified water rights are rights where the owner has provided proof of beneficial use. Permitted water rights have been permitted by the State Engineer, but proof of beneficial use has not been provided. Within Nevada, the doctrine of prior appropriation is used for water rights. The foundation of this doctrine are two principles – first in time, first in right and beneficial use. Simply, this concept means the oldest water right holders (priority right holders or senior rights holders) are entitled to their allocated water amount before newer (or junior water rights holders.) To maintain a water right, the water right holder must prove to the State Engineer that the water is being diverted and used for a beneficial purpose (or beneficial use)¹.

Water rights are a critical factor in future growth and full utilization of wells in Basin 59. The County may be able to purchase additional existing groundwater rights in Basin 59 and transfer these rights to Well 9, using an existing groundwater permit rather than an additional appropriation (the basin is “designated” meaning no new appropriations are allowed within it). Purchasing water from the mines and irrigation rights may be the best way to provide additional water in this basin².

¹ (Welden, 2003)

² (Day Engineering, 2017)

Austin Water System³

Austin is within the Lander County Sewer and Water General Improvement District. Formerly this district was separate from the remaining Lander County district, but has since been consolidated. The Austin portion of the district has few customers and is primarily focused on reducing operational costs while maintaining safe and accessible water supply for the customers of Austin. Municipal water service was expanded into Austin by a 1986 Pipeline Project. Major expansions have included connecting the pipelines in 1988 to the school in the Reese River Valley and connecting to U.S. Forest Service area in 2004. Proposed improvements are included in the “Looking to the Future” section of this document as well as the Austin Preliminary Engineering Report prepared by Day Engineering in 2016⁴

Table 5-4 - Population and Water Demand	
Users	Year – 2009*
Total Active Customers	311 customers
Residential	225 customers
Commercial	49 customers
Water Pumped	19,152,300 gallons
Average per customer per day	471 gallons
Source: Austin Preliminary Engineering Report – Day Engineering, 2016 (page 10)	
*More recent water use data was not available at the time of this Master Plan Update	

Existing number of components and capacity of the Austin water system are included in Figure 5-4 below.

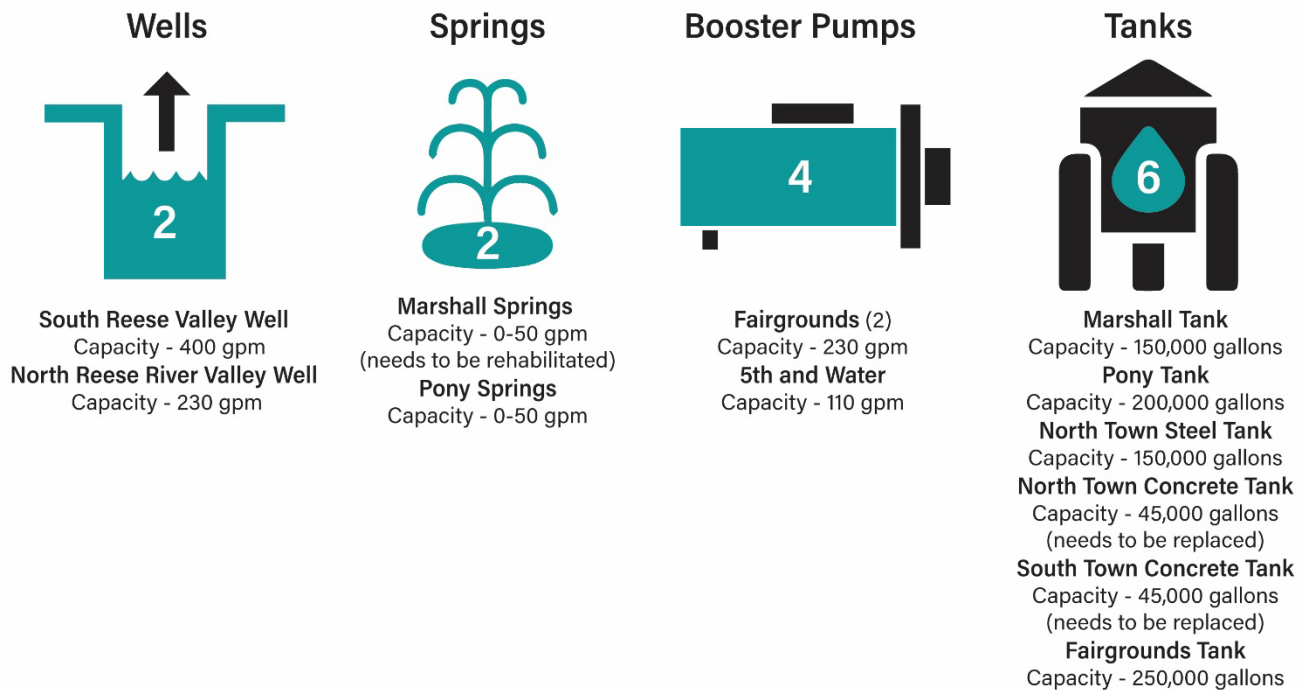


Figure 5-4: Austin Water Supply System Components
Info Source: Austin Preliminary Engineering Report – Day Engineering, 2016 (page 10)

³ (Day Engineering, 2016)

⁴ (Day Engineering, 2016)

Challenges

Several conditions of Austin make repairing and maintaining the water system challenging. The remoteness of Austin creates issues, as the town is 110 miles from an electrician, contractor or qualified help and parts to repair any issues with the water system. An as-needed contract certified operator is available, but seldom works in Austin due to the expense. The water district in Austin is directed by a five-person, volunteer board and the operation of facilities is managed by one full-time operation employee and a part time office employee. Additionally, the board has term limits determined by state law, making previous board members ineligible to serve after several years. The lack of personnel and continuity with the board members makes planning and directing activities for the water system challenging. Monitoring progress towards goals is also challenging due to the loss of institutional knowledge as employees and board members resign and are replaced.

Water Quality

Water quality is a major issue for Austin. Austin water supply is provided by two springs and an underground well (an additional underground well is also available for emergency purposes). Uranium is naturally found within the spring water supplies, above the minimum regulations of the Nevada Department of Environmental Protection (NDEP), but is blended with well water to dilute to an allowable level. Water also is non-compliant with arsenic NDEP Bureau of Safe Drinking Water standards. Projects to remedy these issues are included in the “Looking to the Future” section of this document and the Austin Preliminary Engineering Report prepared by Day Engineering in 2016.⁵

Kingston Water System

The Town of Kingston is served by its own community water system. The service area had a population of approximately 331 in 2009. There are another 214 property owners in the area paying a standby fee for undeveloped parcels that could connect to the system in the future. The system’s two main groundwater wells produce approximately 350 gallons per minute. As a result, the current per capita daily demand ranges from 150 to 200 gallons. However, per capita usage is probably somewhat less due to the amount of leakage from the system. Total water delivered to customers could be as little as one-third (current estimates) of the total amount pumped each year.

In a five-year period, the Town of Kingston nearly doubled in size based upon utility hook-ups. In 1995 there were approximately 66 users compared to 115 users in December of 2000 and 144 users in 2010. The level of growth between 1995 and 2010 was been substantial. Commercial development in the Kingston area is somewhat limited. There are several parcels in the Town’s service area that are currently used for tourist commercial and general commercial related activities such as a store, restaurant, lodging, real estate office, and a church. The total number of active (144) and inactive(115) water customers utilize approximately 68 percent of the water currently under permit for two groundwater wells.

The Kingston Water storage system has one new 225,000-gallon storage tank. The distribution system is currently in good condition with some leakage among old meters. In the past, breaks in the distribution system accounted for the relatively high pumping rates. The main line in the core community area was replaced in 2001. In the past several years approximately 50,000 feet of water distributions line has been replaced and new fire

⁵ (Day Engineering, 2016)

hydrants installed.

There are no treatment requirements for the system at this time. The Town’s water quality is generally characterized as good and meets primary and secondary drinking water standards. It is important to note that the Town operates an induction well that receives infiltration from Kingston Creek. The current permit allows for diversion of 1.35 cubic feet per second or 605 gallons per minute and a total withdrawal of 231.8 acre feet per year. The Town is currently permitted to pump 2,500 gallons per minute for a total of 268.2 acre feet annually from a second groundwater well. Both wells are located at a depth of approximately 80 feet. The Town has rights to two springs that have a total diversion rate of .0259 cfs or 11.6 gallons per minute. The Town’s 2 wells are capable of pumping approximately 350 gallons per minute. A new water source may be needed in the future.

Wastewater Treatment and Collection

Battle Mountain Sewer System

The Battle Mountain sewer system is publicly owned and operated. The system has approximately 1,080 connections. The system consists of six sewer lift stations, several miles of gravity mains and interceptors, and was recently upgraded to a sequencing batch reactor (SBR) treatment plant (Figure 5-5 displays the basics of this type of plant).

Because of the topography of Battle Mountain, the reach of gravity sewer mains is limited and require several lift stations through the town. In the previous 2010 Lander County Master Plan and a study by Shaw Engineering in 2002, the sewage collection system was described as leaking and aging. Since that time, several parts of the system have been upgraded as part of improvements projects designed in the Shaw Engineering study in 2002.⁶

Basics of the Battle Mountain “Sequencing Batch Reactor” (SBR) System

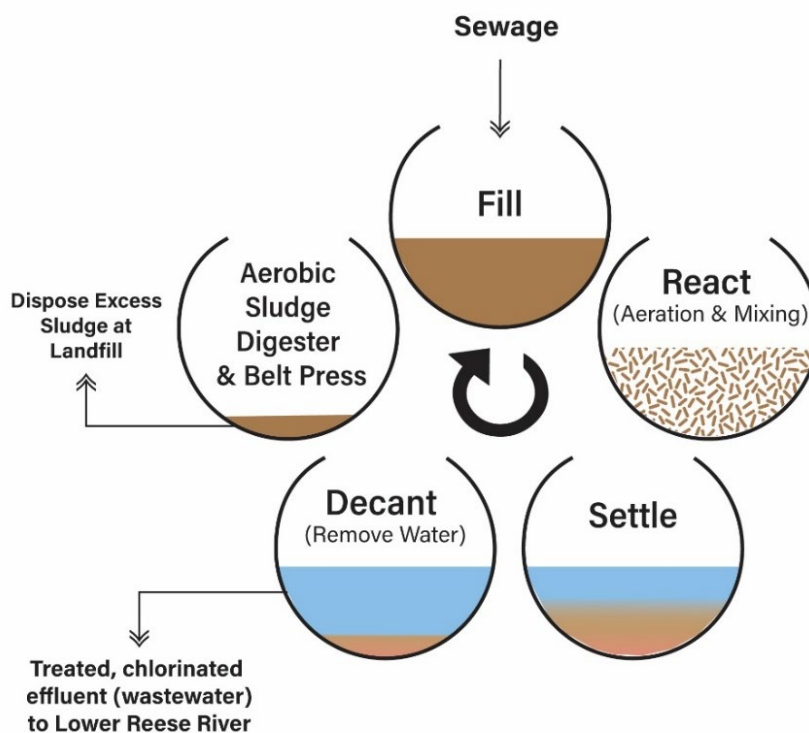


Figure 5-5: Basics of SBR Wastewater Treatment Plant
Info Sources: Day Engineering, 2017 (pages 79-78); Tu, 2016

The treatment plant is capable of treating 0.80 millions of gallons per day (MGD) and may be expanded in the future to 1.2 MGD. All sewage from the town of Battle Mountain is discharged to the headworks at the treatment plant north of town on Animal Shelter Road. Chlorinated, treated effluent (or treated wastewater) is discharged to the Lower Reese River approximately 1,000 feet from the plant and eventually flows 14.5 miles to

⁶ (Day Engineering, 2017, p. 68)
Lander County Master Plan **DRAFT**

the Humboldt River. However, sampling (as required by permit) is completed in the river upstream of the plant and 12 miles downstream to test how far effluent has travelled. The maximum distance of the treated effluent has travelled is 4.5 miles and it is not expected measurable levels of effluent will reach the Humboldt River. Figure 5-6 provides a map of the wastewater facilities and infrastructure in Battle Mountain.

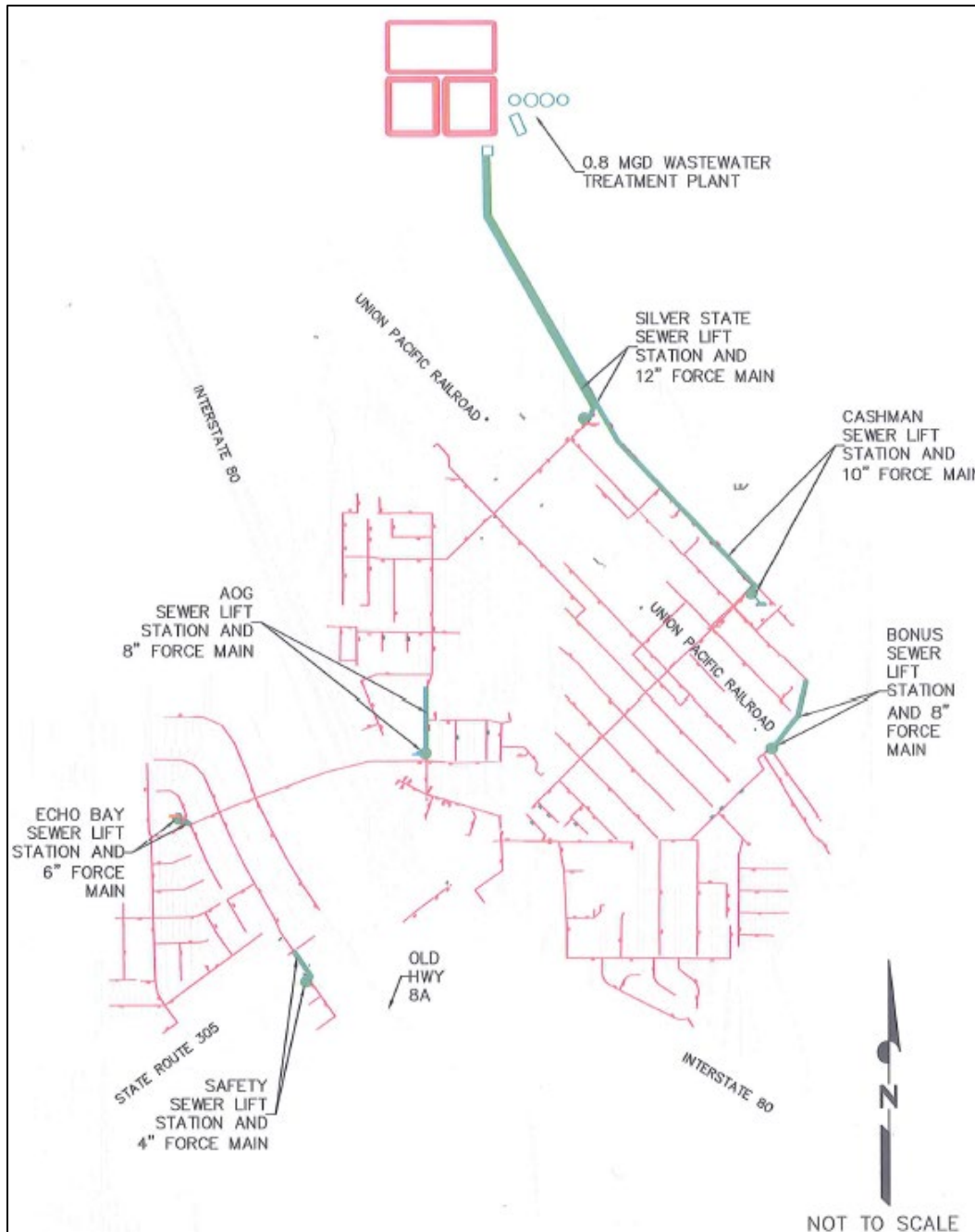


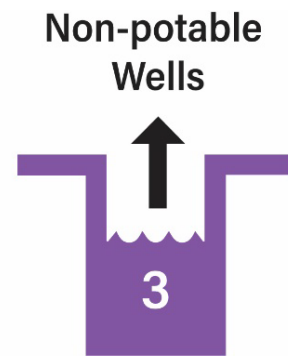
Figure 5-6: Battle Mountain Wastewater Infrastructure Map
Source: Water and Sewer Master Plan Update, Day Engineering, 2017

Austin Sewer System⁷

The Austin Sewer District serves approximately 166 customers (commercial and residential) with a build-out capacity of 800, which leaves the community with ample room to expand services. In the past two decades, the District relocated existing settling ponds approximately two miles further to the west to accommodate further anticipated growth in the area west of the town of Austin. The current system is capable of treating approximately 240,000 gallons per day. Effluent management occurs through the use of evaporation ponds. With the relocation of the sewer ponds, additional areas west of Austin can be developed utilizing municipal wastewater collection and treatment. Expansion of the system to the west of the treatment ponds will likely require construction of new collection facilities including pumping facilities. Development in the area down gradient requires close coordination with the District in order to plan and finance required improvements.

Non-Potable Water Sources

A non-potable water (or water not suitable for drinking water, but suitable for other uses) system is located in Battle Mountain and includes three deep wells, one water storage tank, and a booster pumping station. Non-potable water is available from Wells 3, 4 and 6 (Refer to Figure 5-2 – Battle Mountain Water Facilities Location Map). Water from these non-potable sources helps relieve demand on potable sources for the peak months in the summer. Figure 5-7 and Table 5-5 provide information on this supply.



Well 3 - Irrigation
Elquist Park,
Junior High School Football and Baseball fields,
Altenburg Little League

Well 4 - Truck Filling
Truck filling for construction activities

Well 6 - Potable/Non-Potable
Potable 3 months/year
during peak demand
(mixed with other well water)

Non-potable 6 months/year
due to arsenic levels
(May be used for irrigation/storage in the future)

Figure 5-7: Non-potable Well Uses in Lander County
Source: Day Engineering, 2017

Table 5-5 Non-Potable Irrigation Usage	
Users	May – November 2016
Elquist Park	2,529,000 gallons
JR HS Baseball Field	101,000 gallons
JR HS Football Field	3,501,000 gallons
JR HS Sprinklers	3,132,000 gallons
Altenburg Little League	803,000 gallons
Source: Water and Sewer Master Plan Update, Day Engineering, 2017, page 42	

Septic Systems and Water Quality

Water quality is impacted in several groundwater basins in Lander County due to the density and proximity of septic systems to personal wells and other groundwater resources. Historically, individual wastewater disposal systems (septic systems) have been used in Lander County for areas outside of municipal wastewater infrastructure. Although out of the 7774 parcels in Lander County, only 1038 (or 12%) are on septic systems, these systems are still a contributing factor to poor groundwater quality in certain areas.

⁷ (Lander County, 2010)

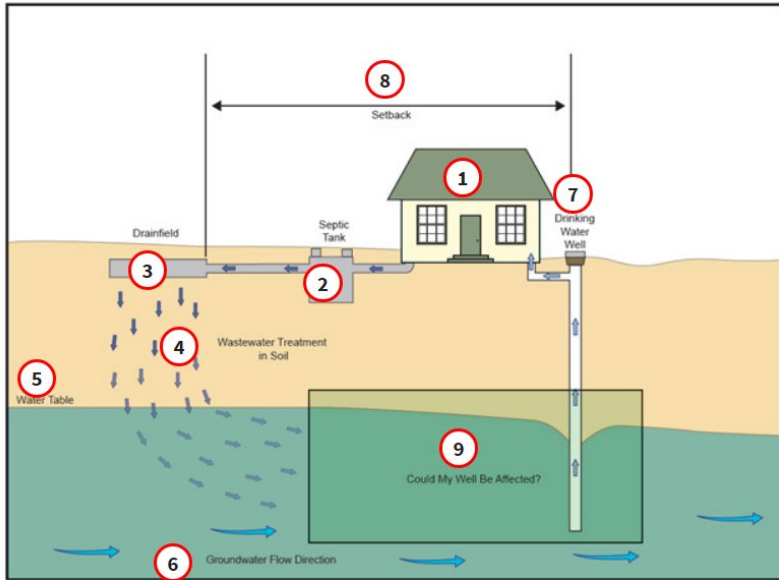
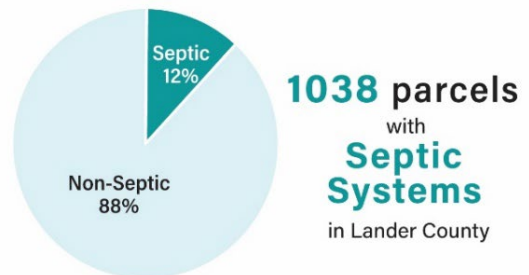


Figure 5-8: Septic Systems and Drinking Water | Source: [EPA 2021](#)

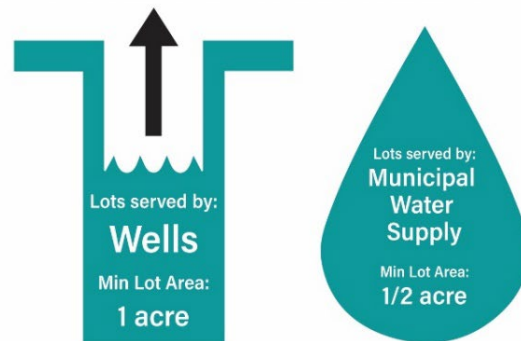
As Lander County grows, it is vital to understand the impact of septic systems on groundwater and particularly drinking water resources. Although the County encourages all new development to connect to the municipal wastewater infrastructure, existing septic systems and development outside of the municipal wastewater service area can contribute to water quality issues if not carefully mitigated. Areas within closed groundwater basins are particularly challenging in Lander County, as any wastewater generated must either be treated within the basin or exported to a different basin for treatment. Figure 5-8 demonstrates how residential septic systems operate.

In the State of Nevada, individual wastewater disposal systems are regulated by Nevada Administrative Code (NAC) Chapter 444 and permits for individual septic systems are approved by the Nevada Department of Environmental Protection (NDEP). Septic system permits are considered temporary until a community sewerage system is installed and available to service the area and passes through or is in physical contact with the property line or located adjacent to the property in a street or right-of-way that abuts the property line. Additionally, septic systems are only permitted on properties that meet certain size, setback and location requirements per NAC Chapter 444. Lander County may adopt more stringent standards should any issues become evident with ground water sampling. Figure 5-9 provides an overview of total parcels with septic systems and lot size requirements in Nevada.



Septic System Requirements

(Refer to NAC Chapter 444 - Individual Sewage Disposal System Requirements)



All Lots:
Septic system must be located on same lot as building or structure it serves

Figure 5-9 Septic Systems and Requirements
Info Sources: Lander County Assessor Parcel Data (2021); NAC Chapter 444

Transportation

Lander County’s large land area and low population results in a transportation network that is made up of interstates, U.S. highways, state highways, airports, and railroads focusing heavily on the movement of freight. Most transportation infrastructure is located within one of the three (3) census-designated towns: Kingston, Austin, and Battle Mountain. The major roadways (I-80, US Route 50, NV State Routes) connect to the state and nation physically and economically, providing a vital transportation network to distribute resources to and from the County. Preserving and improving these routes is crucial for the future of the County.

Figure 5-10 illustrates the existing transportation network through Lander County and each of the towns. Kingston and Austin have limited transportation options, with a large percentage unpaved roads. I-80 and the rail line bisect Battle Mountain with mostly paved local streets and state highways and to a designated bicycle lane along NV State Route 305/Broad Street.

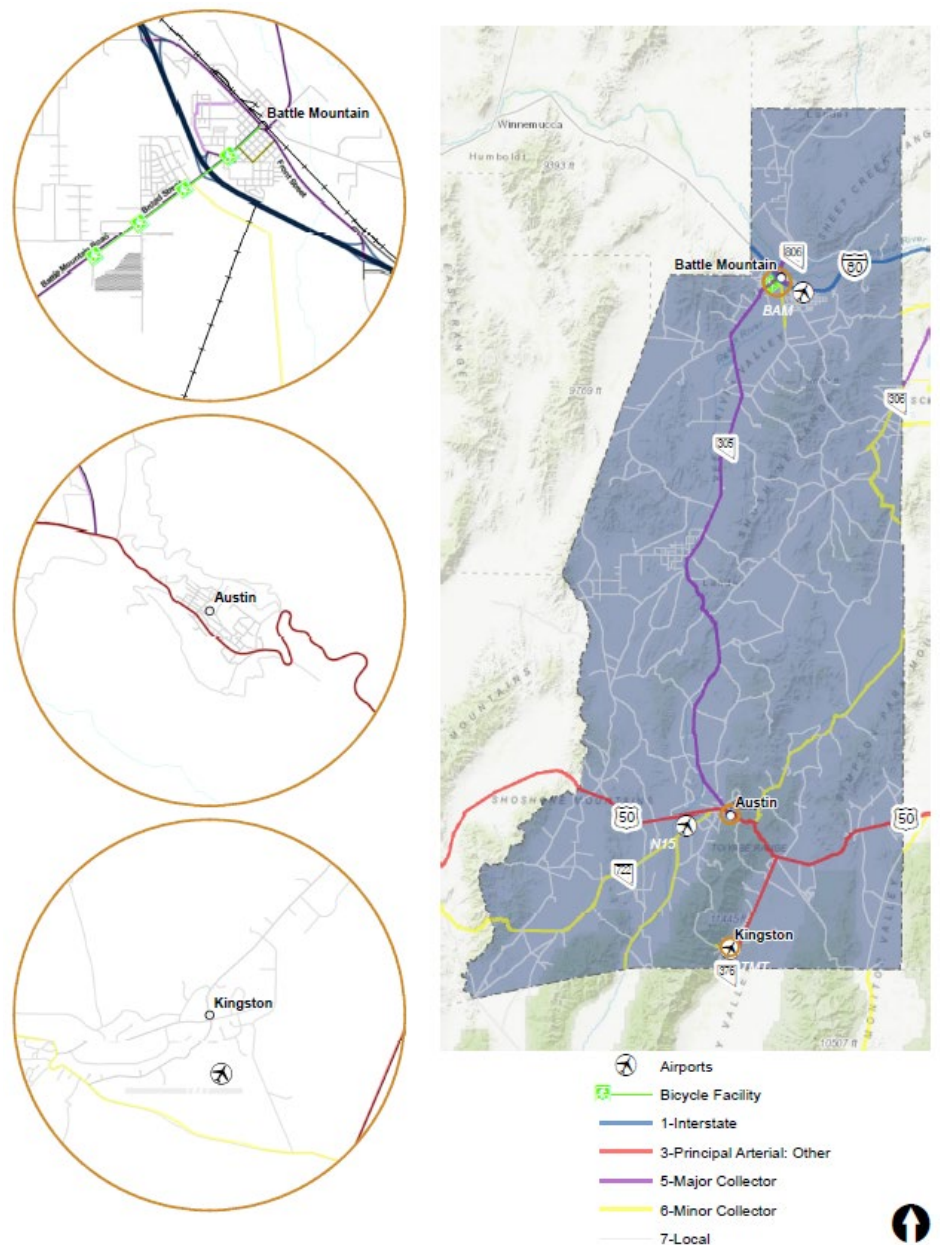


Figure 5-10: Transportation Infrastructure in Lander County

Rail – Freight⁸

The Union Pacific Railroad (UPRR) operates the northern Nevada east-west corridor. As a condition of the merger with UPRR, BNSF Railway has trackage rights (i.e. an agreement between railroad companies in which the owner of tracks grants another railroad company some use of them). The two-route northern corridor serves Reno, Lander County, and connects with Salt Lake City, Utah and Denver, Colorado to the east and Sacramento, California and

⁸ (Nevada Department of Transportation, 2021)
Lander County Master Plan **DRAFT**

San Francisco, California to the west. Amtrak also operates once-a-day passenger rail service along this northern Nevada rail, which generally parallels I-80.

Highway – Freight⁹

There are four (4) roadways that traverse Lander County that are considered freight corridors, including:

- I-80: Primary Highway Freight System (PHFS); 2019 Truck Percentages vary from 40% to 44%
- US Route 50: Critical Multistate Freight Corridor; 2019 Truck Percentages vary from 9% to 16%
- NV State Route 305: Other Nevada Freight Corridor; 2019 Truck Percentages vary from 4% to 20%
- NV State Route 376: Other Nevada Freight Corridor; 2019 Truck Percentages are 12%

Truck percentages are the percentage of trucks on a road compared to other vehicles. The truck percentages along these routes tend to be high compared to the rest of the country. The truck percentages were calculated utilizing the Nevada Department of Transportation’s (NDOT) 2019 Vehicle Classification Distribution Report and the Traffic Records Information Access (TRINA).

Traffic Volumes¹⁰

Between 2010 and 2019, the Lander County roadway network experienced a 0.3% increase in traffic per year for the 10-year period. The seven (7) NDOT functionally classified and identified roadways within the Lander County network and their corresponding 10-year and 5-year average percent volume changes is illustrated in Figure 5-11. A map showing the ten-year change in volume along the Lander County roadways can be viewed in Figure 5-12.

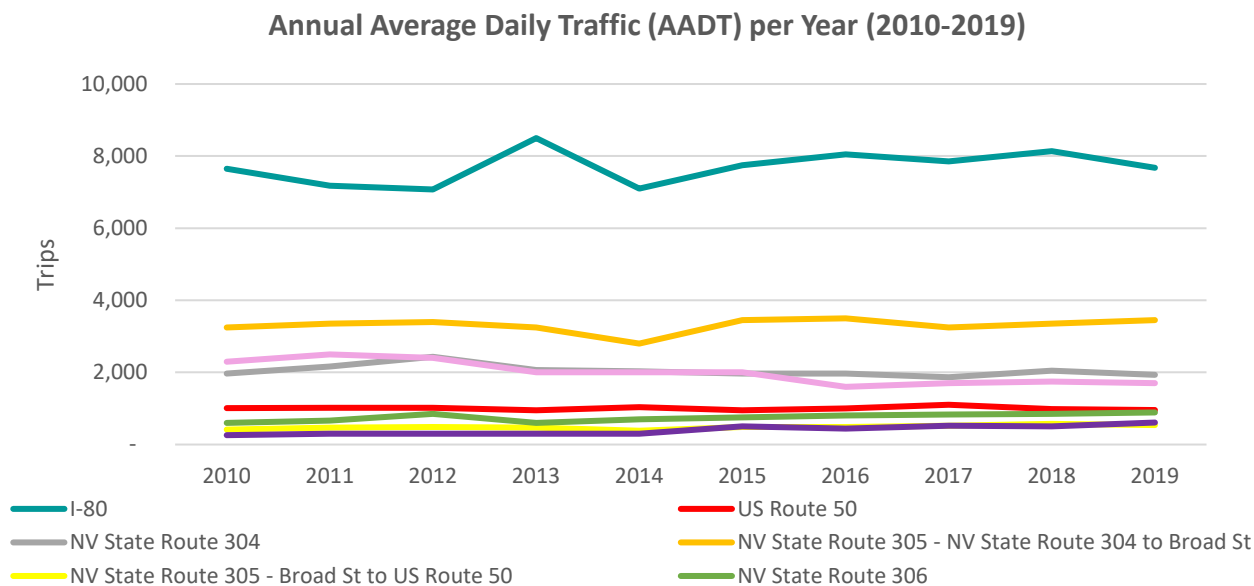


Figure 5-11: Annual Average Daily Trips (AADT) in Lander County

⁹ (Nevada Department of Transportation, 2016)
¹⁰ (Nevada Department of Transportation, 2019)

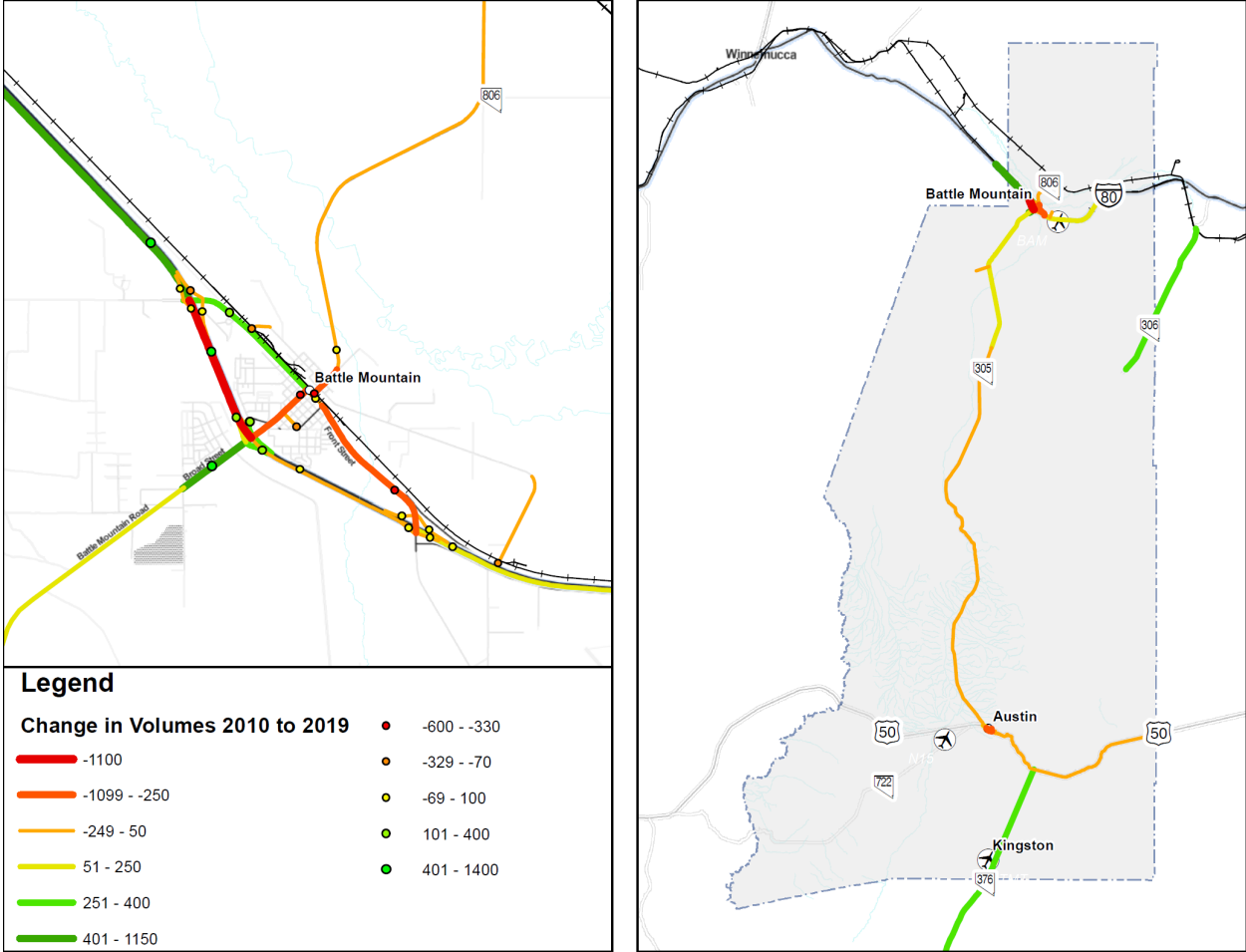


Figure 5-12: Traffic Volume Change between 2010 and 2019

Above Ground Utilities

Lander County has several above ground utility transmission lines that run across the county, crossing over the north and south areas (Refer to Figure 5-13). In addition, NV Energy currently has an initiative called “GreenLink Energy”, a new transmission and clean energy initiative that will, “ensure reliable service, position the state to cost-effectively achieve its renewable energy and carbon reduction goals, promote economic development and create thousands of jobs.”¹¹ Part of the proposed transmission line will pass through the southern portion of Lander County¹².

Additionally, an Above Ground Utility Corridor Plan is in progress, as part of this Master Plan Update. As required by NRS 278.160 (e) 93), Lander County will ensure the location of any new transmission lines operating at over 200 kilovolt or greater are consistent with any Bureau of Land Management Resource Management Plans, any transmission plans prepared by the Office of Energy, and the plans of adjacent counties/jurisdictions.

¹¹ (NV Energy)

¹² (NV Energy)

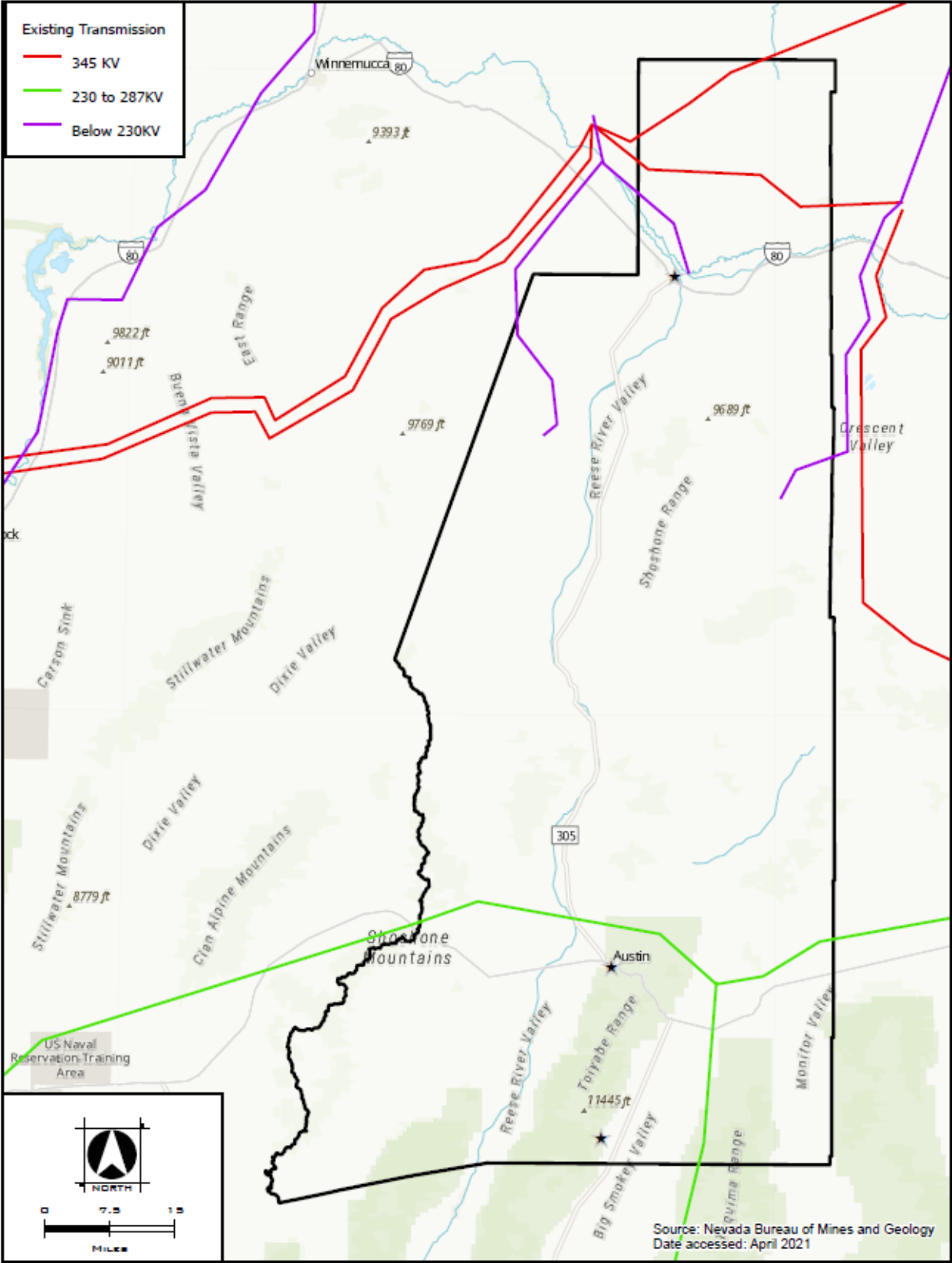


Figure 5-13: Aboveground Utility Locations

Other Facilities

Broadband Internet Access¹³

The Lander County Broadband Action Committee (LBAC) was formed to address the lack of scalable broadband access in the county. This lack of adequate internet access infrastructure is present in the higher density areas like Battle Mountain as well as the more rural locations of the county. If improvements are not made to this area, it has the potential to affect future employment, education, healthcare, public safety, and the overall economic vitality of the region. A survey completed by LBAC in March 2020 found the majority of residential respondents (98.07%) and business respondents (93.02%) were interested in faster broadband speeds. The majority also indicated they believed the government and county should be involved in attracting better broadband service. Several funding sources and subsidies are anticipated to be used for expanding broadband infrastructure, including funding from the Federal Communications Commission (FCC) Connect American Funding, USDA Community Connect Grant Funding, and the Rural Digital Opportunity Fund. Lander County is currently working with several providers to determine the size and scope of a project in the area.

Solid Waste Disposal and Landfills

The Battle Mountain Sanitary Landfill provides waste disposal for Lander County. Lander County is the owner and operator of this facility, located approximately 3.5 miles southwest of Battle Mountain on an 83.3-acre area of county land. The facility has been expanded twice, increasing the landfill disposal capacity. The facility now operates with a total capacity of 1,138,000 square yards^{14,15}. The facility is a Municipal Solid Waste (MSW) area-fill disposal site and is authorized to accept MSW, Construction and Demolition (C&D) waste, and various other special wastes.¹⁶ The maximum amount of solid waste accepted at this site is not anticipated to exceed 20 tons per day during the active site life.¹⁷ This facility was exempted from groundwater monitoring with the approval of the original permit application in January 1998.¹⁸ It is anticipated this landfill will serve the needs of the Lander County population for the next 50 years.¹⁹

Cemetery²⁰

The Battle Mountain cemetery has just over 4 empty sections. Each section contains approximately 140 plots. It takes approximately 5 years to fill one section. As a result, the cemetery has just over 20 years before it is filled. Because the facility is land locked it is important to obtain additional lands to meet future capacity needs or Lander County will need to develop another site. Each section requires approximately 7,600 square feet. An additional section would require 45,600 square feet and provide expand the total remaining capacity to



Austin, NV Cemetery

Source: [Ammodramus, 2014](#), Licensed by: [CC0 1.0](#)

¹³ (Lander County, 2020)

¹⁴ (Nevada Department of Environmental Protection, 2018, p. 1)

¹⁵ (Nevada Division of Environmental Protection)

¹⁶ (Nevada Department of Environmental Protection, 2018)

¹⁷ (Nevada Department of Environmental Protection, 2018)

¹⁸ (Nevada Department of Environmental Protection, 2018, p. 1)

¹⁹ (Lander County, 2010)

²⁰ (Lander County, 2010)

approximately 50 years. Because the site is currently undeveloped, expanding the cemetery to the south onto the Newmont property would appear to be the most reasonable approach. Austin, NV also contains a cemetery, but is projected to have sufficient capacity for future needs.

General Government and Public Safety²¹

General Government

Lander County general government functions are located in the Austin Courthouse, the Battle Mountain Courthouse and Administrative Offices in Battle Mountain.

Public Safety

Sheriff's Department

The Lander County Sheriff's Office is located in Battle Mountain with a substation in Austin. Response times to outer lying areas of Lander County can be significant. The public safety complex was designed and constructed in 2000. The Sheriff's Department does not anticipate the construction of expansion of facilities in the near future. Expansion or construction of new facilities in the southern portion of the county is not anticipated over the next 5-year period without significant population gains.



*Austin Sheriff's Department (left) and Old Lander County Courthouse
Source: Ken Lund, 2007; Licensed by CC BY-SA 2.0*

Fire Protection/EMS

Fire protection for private property in Lander County is provided primarily through local fire departments and fire districts in Austin and Battle Mountain. Kingston maintains a volunteer fire department. Response times outside the communities of Austin, Battle Mountain, and Kingston can be significant.



Wildland Fire Department | Source: Nevada Fire Info

Wildland fires are common throughout Lander County. The proximity of Kingston and Austin to wildland areas requires careful management of surrounding fuels and vegetation. Most wildfires in Lander County are caused by lightning strikes. Increasing use of public lands increases the threat from human caused fires. The Bureau of Land Management and the Nevada Division of Forestry have primary responsibility for wildfires in the area. Mutual aid agreements exist with the BLM and USFS.

²¹ (Lander County, 2010)

Austin

The Austin all volunteer fire department/EMS is composed of 8-11 members. Austin has 1 EMT. Response times to remote regions of the District can be as long as 2 hours – usually in cases of mutual aid involving BLM or USFS requests for help. For all practical purposes the District serves the southern portions of Lander County. Five major pieces of firefighting equipment (1 type 2 engine, 1 type 3 engine, and 3 type 1 water tenders) are sufficient to provide reasonably good fire protection for the area. Several of the current volunteers have been trained by the State Fire Marshal’s Office or in-house programs. Austin has the following community plans in effect; Emergency Hazardous Materials Plan, Pre-Attack Plan for Austin, All Risk County-Wide Disaster Plan, and Fuels Reductions Plan. The Austin Volunteer Fire Department is funded by the Town of Austin through their General Fund.

Battle Mountain

Battle Mountain’s fire protection needs are served by a 25-member all-volunteer department organized under NRS 266.310. Its jurisdiction is principally the Town of Battle Mountain and area 5 miles around it. The Town supports the department financially through the General Fund. There is one fire station with two type three engines, one type 1 engine, one water tender and a command officer vehicle. Some members of the department have had State Fire Marshal’s Firefighter I and II training along with BLM wildfire training. Ambulance service is not provided by the volunteer fire department. Battle Mountain has the following community plans in effect; Emergency Hazardous Materials Plan, Pre-Attack Plan for Battle Mountain, All Risk County-Wide Disaster Plan, and Fuels Reductions Plan. Battle Mountain Ambulance Service maintains 11 EMTs and two new ambulance units.



Wildland Fire | Source: Nevada Fire Info

Kingston

The Kingston all-volunteer fire department is composed of 7 members. Response times to immediate areas is usually short, however in cases of mutual aid involving BLM or USFS requests for help response time can be 1-2 hours. Three major pieces of firefighting equipment (1 type 1 engine, 1 type 3 engine, and 1 water tender) are sufficient to provide reasonably good fire protection for the area. Kingston Volunteer Fire Department is funded by the Town of Kingston through their General Fund. Growth in the community may require additional financial support to maintain and improve capabilities.

Schools

Lander County presently has six schools including three elementary schools, one middle school, one high school, and one K-12 school in Austin. Enrollment has fluctuated slightly between 2014 to 2019, but has remained fairly consistent²² (Refer to Figure 5-14). No new schools are planned for the future.

Table 5-6 – 2019 Education Statistics		
Overall	Lander	State
Total Students	1,002	485,768
Graduation Rate	78.4%	84.1%
Per Pupil Expenditures	\$13,211	\$9,601
Student Teacher Ratio	21 students/ teacher	24 students/ teacher
Students Eligible for Free and Reduced Lunch	44.1%	51.2%

Source: Nevada Economic Assessment Project - Socioeconomic Baseline Report (2021)

Overall Student Enrollment in Lander County School District

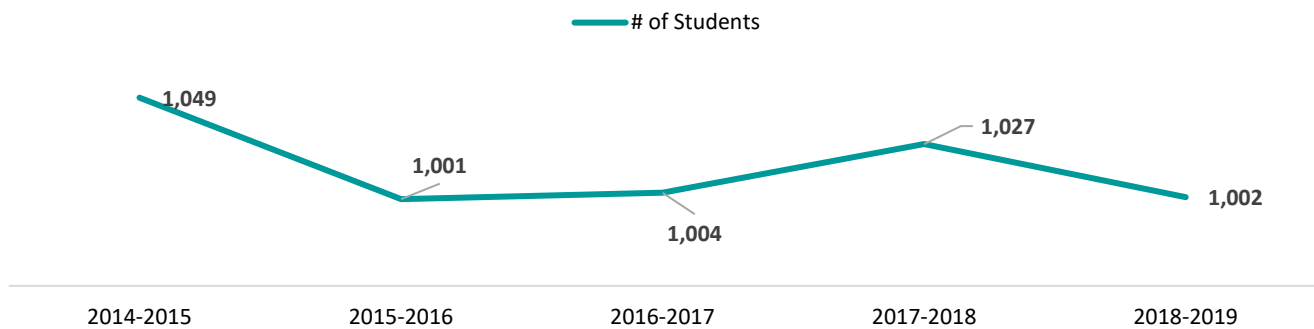


Figure 5-14: Student Enrollment in Lander County School District
Source: Nevada Economic Assessment Project - Socioeconomic Baseline Report (2021)

Special Populations²³

Between 2014 and 2019, the amount of students eligible for free and reduced meals increased substantially, with 29.27% eligible students in 2014 growing to 42.65% in 2019²⁴. This matches a trend in Nevada overall. The trend also correlates with a growing percentage of children under the age of 18 experiencing poverty in Lander County. In terms of other student populations, Lander County saw a decrease in the English Language Learners population and an increase in the Individual Education Program population between 2012 and 2019. English Language Learners (ELL) are students learning English in addition to their native language; this population decreased from 10.4% in 2012 to 7.4% in 2019. The individualized education program (IEP) is a program for students with a disability receiving special education services or accommodations in the school district. The percentage of students with an IEP rose from 10.4% in 2012 to 13.3% in Lander County, marginally higher than the state average of 12.2%. Lander County has also seen a substantial increase in educational attainment for veterans, with nearly 80% pursuing education beyond high school and a decrease from 120 to 1 veteran without a high school diploma between 2010 and 2017.

²² (Nevada Department of Education, 2014-2020)
²³ (Borden, Lednický, Rebori, Thomas, & Zapata, 2021)
²⁴ (Nevada Department of Education, 2014-2020)

Recreation

Recreational use is an important element of the Lander County economy. The County is looking for opportunities to increase tourism and recreation facilities for residents and visitors as well as provide a means to diversify the economy and offset the cyclical impacts of mining. Abundant recreational opportunities are available for nature-based activities within Lander County. Lander County has made improvements in the last decade to construct and enhance trails for hiking, equestrian and OHV uses and camping facilities in the County. In addition to county parks, playfields, swimming pools, and sport facilities, the area around the county has over 500 miles of motorized and non-motorized trails and over 100 miles of mountain bike trails. Lander County presently draws in Nevada residents from western and southern Nevada as well as out of state and international visitors interested in the unique and scenic outdoor recreational opportunities. Figure 5-15 provides a map of some of the parks and recreational opportunities in Battle Mountain and Figure 5-16 provides an overview of larger recreational facilities in the County. Austin recreation is described in the Land Use chapter of this document.



Figure 5-15: Battle Mountain Parks/Recreation Map

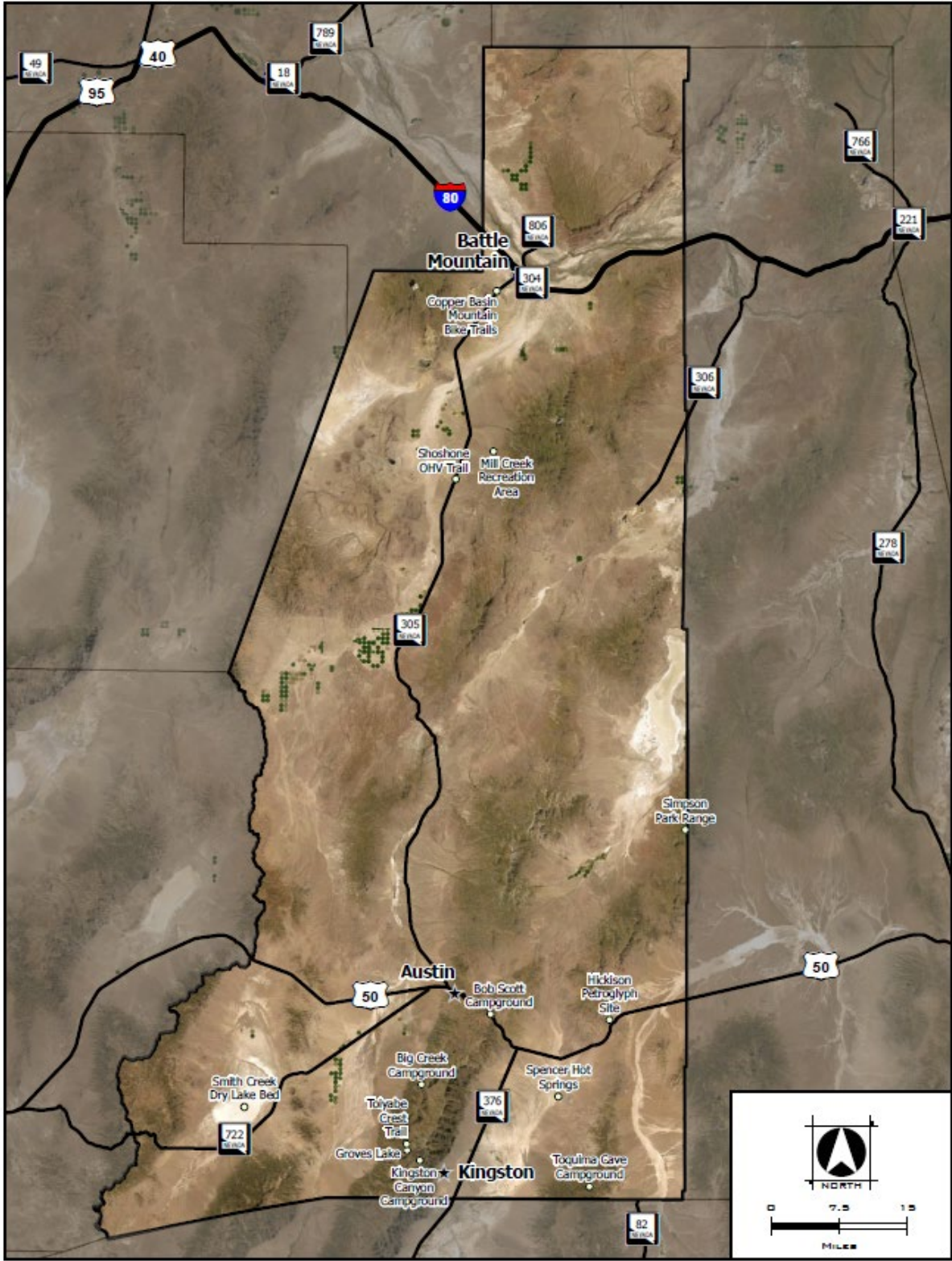


Figure 5-16: Recreational Opportunities in Lander County

Looking to the Future

Expanding Existing Infrastructure

In 2020, Lander County updated its comprehensive economic development strategy (CEDs), partnered with the University Center for Economic Development. This plan is meant to guide economic development in Lander County between 2020 and 2025. Several goals related to infrastructure were developed in this plan including,

- Establish broadband connectivity throughout the county by July 2021 in partnership with the Northeastern Nevada Regional Development Authority and other communities throughout northeastern Nevada and the state of Nevada.
- Expand the existing water line, sewer system, and three phase power to the Battle Mountain Airport industrial area to increase the overall size and capacity of the industrial park by 20%.

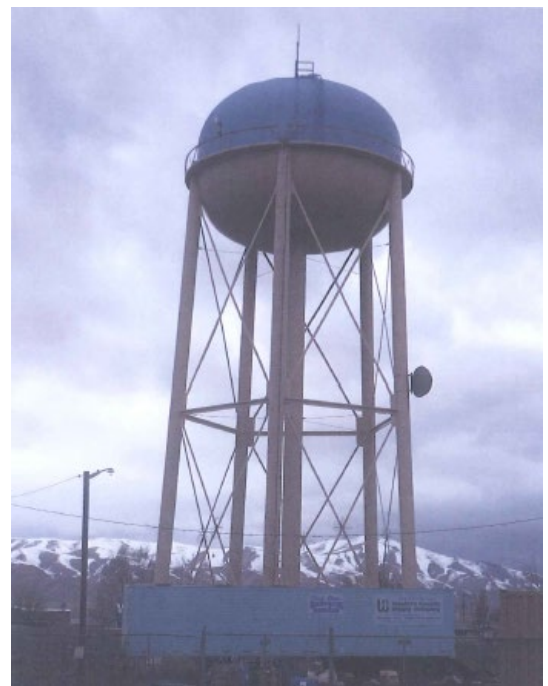
Improvements to Existing Water and Wastewater Systems

Battle Mountain

Proposed capital improvements to the water and wastewater systems were included in the Battle Mountain Water and Sewer Master Plan. The proposed improvements included the purchase of water rights, investigation of water quality and water loss, expanding non-potable infrastructure, water quality and wellhead protection plans, improvements to a booster pump station, expansion of pipeline to serve the airport, and dismantling or improving an abandoned water tank. These capital improvements would cost a total of \$6.87 million dollars to implement.

Required or suggested improvements to the wastewater system in Battle Mountain included installing a lined pond and overflow pipe at the facility, constructing a site to accommodate septic pumping truck, removing grease from traps and wet wells, inspecting the sewer collection system, and upgrading sewer mains and creating new lift stations to accommodate growing demand. These capital improvements would cost a total of \$6.39 million dollars to implement.

Full information on the proposed improvements, cost and rationale for water and wastewater treatment projects are included in the Lander County Water and Sewer Master Plan Update, completed by Day Engineering in 2017²⁵.



Abandoned 300,000 Water Tank, to be demolished or repurposed for non-potable uses

²⁵ (Day Engineering, 2017)

Austin

Proposed capital improvements to the Austin water systems were included in the Austin Preliminary Engineering Report (2016). Existing physical conditions of the water system components are in operable condition, but need some rehabilitation and replacement, primarily to replace the asbestos-cement pipe as well as improve Marshall Springs and replace the wood roofs of two concrete tanks.

Water quality is a major issue for Austin. Austin water supply is provided by two springs and an underground well (an additional underground well is also available for emergency purposes). Uranium is naturally found within the spring water supplies, above the minimum regulations, but is blended with well water to dilute to an allowable level. Revised arsenic standards push the current water quality to non-compliance with the NDEP Bureau of Safe Drinking Water standards. A project is proposed to create a new water storage tank to provide adequate suction pressure for the existing booster pump station. Previously the District has experienced operational problems at the existing booster pumping station, eliminating the groundwater supply that service the station and reduces the reliability of the supply.

The total cost for all capital improvements would be approximately \$4,747,000, including cost for the tank, pipeline, rehabilitating the spring, and administration/contingency costs. A full breakdown of the project needs, costs and other information can be found in the Preliminary Engineering Report prepared for Austin, NV by Day Engineering in 2013²⁶.

Individual Wastewater Disposal Systems (Septic Systems) and Water Quality

Water quality is impacted in several groundwater basins in Lander County due to the density and proximity of septic systems to personal wells and other groundwater resources. Historically, individual wastewater disposal systems (septic systems) have been used in Lander County for areas outside of municipal wastewater infrastructure. Areas within closed groundwater basins are particularly challenging in Lander County, as any wastewater generated must either be treated within the basin or exported to a different basin for treatment. Currently Lander County is in the process of updating zoning code to provide additional regulations for the disposal of wastewater, reducing the amount of septic systems that may be constructed to prevent future water quality issues in areas with a high density of these systems. Lander County should continue monitoring ground water in areas of dense septic systems. Lander County should also focus on infrastructure improvements to these areas to eliminate the need for additional septic systems.

Expanding Reclaimed Water/Non-Potable Water Infrastructure

Lander County, like most counties in Nevada, will likely grapple in the future with issues related to securing adequate water supply in a climate prone to drought, and treating wastewater in closed basins. A solution of some municipalities is the exploration of expanding the use of reclaimed water for other applications. Within Lander County, reclaimed water is used for irrigation and for construction activities. Within Nevada, Nevada Revised Statutes allows for the use of reclaimed water for a variety of other purposes depending on the level of treatment, with recently expanded uses for potable (drinking water) purposes²⁷. For areas within an excess of wastewater or compromised water quality due to individual septic systems, exploration of additional treatment options solves two problems at once, 1) increasing water supply and 2) resolving the issue of excess wastewater disposal. Expanding

²⁶ (Day Engineering, 2016, p. 121)

²⁷ (Ormerod, Redman, & Singletary, 2020)

reclaimed water usage at a municipal level will require investment into advanced treatment systems and creating additional non-potable infrastructure.

Transportation

The future of transportation in Lander County is anticipated to heavily focus on freight as the overall population of the county continues to decrease. A workshop completed by NDOT for Lander County in 2020 established several goals (Figure 5-17). Many goals from the 2010 Lander County Master Plan are still applicable and included in Figure 5-17 below.

Overall Goals

Goals established during 2020 NDOT Lander County Workshop:

- Safety first
- Cultivate environmental stewardship
- Efficiently operate and maintain the transportation system in Nevada
- Promote internal and external customer service
- Enhance organization and workforce development



Road & Highway Goals

- Establish and enforce Lander County street and road standards for future development and improve traffic flow, pedestrian facilities, and community aesthetics.
- Maintain a transportation network supporting economic development and growth in Lander County while minimizing fiscal impact for future maintenance and required improvements.
- Develop streetscape improvements in Battle Mountain.
- For rural roads not likely to serve development, a shoulder of 4 ft in width, preferably 8 ft on primary highways, should be provided. Surface material should provide stable, mud-free walking surface.



Railroad & Airport Goals

- Evaluate how best to utilize railroads and sidings to promote industrial development and job creation.
- Limit encroachment and development on lands adjacent to public airports



Pedestrian & Accessibility Goals

- Improve and provide pedestrian enhancements including sidewalk and curb and gutter within 2 blocks of schools, new roads/subdivisions, and along all main roads.
- Identify transportation needs that serve pedestrian and ADA-accessibility needs.



Plans/Documents to Develop

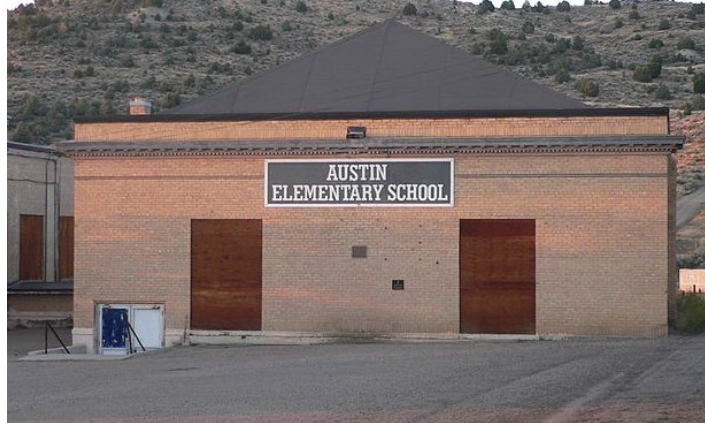
- Establish Lander County street and road drainage standards
- Create streetscape improvement plans in Battle Mountain, NV
- Create pedestrian enhancement plans
- Update Lander Countywide Road Plan
- Create Lander Countywide Road Map with all transportation related facilities, rights-of-way and roads.
- Develop transportation capital improvements plan to address priority street, roadway and pedestrian improvements.

Figure 5-17: Lander County Transportation Goals

Source: Overall Goals – Lander County NDOT Workshop (2020); All other goals – Lander County 2010 Master Plan

Schools

Lander County should continue to work with the School District to coordinate infrastructure improvements and planned growth.



Austin Elementary School / Lander County High School Gym

Parks/Recreation

Parks and Recreation play an important role in Lander County's economy. Lander County should prepare a formal Parks and Recreation plan to preserve these amenities as well as plan for new opportunities.



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