# LEADVILLE INFILL + HOUSING DESIGN GUIDELINES

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### **Introduction: Project Overview and Client Information**

Lake County and the City of Leadville are currently experiencing unprecedented housing pressure. As neighboring Summit and Eagle Counties become too expensive to live for service workers at ski resorts and related businesses, many of these workers are moving to Lake County for a lower cost of living. Leadville, too, is becoming an outdoor hub in its own right, as its recreation opportunities and extreme endurance races continue to rise in popularity. All of this is creating a rise in housing costs for existing and potential future residents, and housing development is both inevitable and necessary to create quality affordable homes for the growing population.

The scope of this project is to provide an affordable infill housing plan for Leadville's vacant parcels. There are multiple approaches through which to promote affordable housing, and ensure that it will be compatible with the character of the town and with the surrounding environment. This report will incorporate three goals to promote affordable, sustainable, and compatible housing within Leadville:

- 1. Create infill and redevelopment guidelines for developments outside of the National Historic Landmark (NHL) District.
- 2. Generate city-wide landscape guidelines.
- 3. Create a mixed-use zone district along Highway 24.

Pursuing these three goals will give Leadville, Lake County and private developers a clear path towards quality, affordable infill development. The infill and redevelopment design guidelines will ensure that new housing will be aesthetically compatible with the rest of the city, and the proposed landscaping guidelines will ensure the future landscaping is respectful of the unique environmental factors that affect Leadville. These goals will promote a more diverse array of housing types within Leadville, and will accommodate different types of households, many of which are already represented in Leadville and Lake County. The team will also show how zoning can be a tool for promoting diverse and affordable housing options, and will make recommendations for Leadville's future zoning to create a mixed-use zone district that will align more closely with Leadville's Future Land Use Plan.

This project was requested by a combination of Leadville and Lake County leaders, including city and county planners, city and county administrators, and directors from several non-profits, including the Lake County Build a Generation and the Leadville Economic Development Corporation. This project was completed by University of Colorado-Denver Master of Urban and Regional Planning students for their Summer Studio class in Summer 2019, Alison Blaine, Jason Hanson, Samantha Lasher, Reilly Rosbotham, and Shannon Terrell.



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## **Demographics**

To adequately describe the current state of housing in Leadville, it is important to understand the physical and occupancy characteristics of the existing housing and how it affects affordable housing development.

Single-family detached homes are the predominant housing type, making up 82 percent of homes in Leadville, as seen in **Figure 1**. The other 18 percent of homes consist of single-family attached homes, multi-unit apartments, and manufactured homes. The success of affordable housing depends on diverse types of housing; therefore, increasing housing types in Leadville is essential.

Similarly, 67 percent of Leadville homes contain two or three bedrooms, as seen in Figure 2, compared to 20 percent of studio and one bedroom homes and 13 percent of homes with four or more bedrooms. Therefore, Leadville residents who only need a studio or one-bedroom may be forced to rent or buy a larger and more expensive home than they can afford. In turn, this can lead to residents becoming cost burdened by their home payments. The United States Department of Housing and Urban Development (HUD) defines families as being cost burdened when they are spending more than 30 percent of their household income on rent or mortgage payments. By this definition, 21 percent of Leadville residents are cost burdened, as seen in Figure 3.

Relatedly, 58 percent of Lake County residents own their homes compared to only 45 percent of Leadville residents, as seen in Figure 4. This may imply that Leadville housing is too expensive and Leadville residents can only afford to rent. Aiding in the development of affordable housing can promote affordability, decrease the percentage of cost burdened Leadville residents, improve the feasibility of homeownership, and accommodate families of all sizes in Leadville.



Figure 1: Predominant Housing Type In Leadville



Figure 2: Number of Bedrooms in Leadville Homes



Figure 3:Cost-Burdened Residents in Leadville



Figure 4: Housing Occupancy Chart

## **Existing Documents**

While Leadville already has a wealth of information regarding existing design guidelines for the NHL district and well-defined housing strategies from outside consultants, this project's aim is to take inventory of existing plans and guidelines to help fill in any gaps for new housing.

## Existing Housing Strategies and Guidelines

Leadville has various existing plans that guide their current housing strategies, including affordable housing development. First, Economic & Planning Systems, Inc. from Denver, Colorado, prepared the Lake County Housing Needs Assessment in 2018. The report presents an assessment and action plan for Lake County, home to 7,900 people, focusing on tools and strategies to address the housing needs in the county. The report defined affordable housing as housing that costs a household no more than 30 percent of its income. Defining affordability was difficult in Lake County and Leadville because although portions of the housing are technically affordable, factoring in age, condition, and maintenance of the older homes shows that affordable housing options are limited. Accordingly, the assessment identified five issues regarding the state of housing:

- 1. Inadequate housing supply
- 2. Challenges facing new housing development
- 3. Location and regional context of Lake County
- 4. Continuing pressure on pricing
- 5. Links to employment and economic development

One of the goals to address these issues was for the city to identify and commit publicly owned parcels of land for affordable housing development. Cost and land are two critical components of affordable housing development. Lake County and the City of Leadville own land with significant development potential, and this land should be utilized, when possible, to increase affordable housing inventory. The team expanded on the assessment's goal by identifying available parcels for the development of affordable housing, which is discussed later in this report. Housing development was also discussed in the *City of Leadville 2015 Comprehensive Plan*. The comprehensive plan created a future land use plan, which is advisory in nature, laying the foundation for making changes to zoning. Principles that guided the future land use plan include balancing housing and commercial development so people can work and live in Leadville, enhancing downtown Leadville as the historic and pedestrian-oriented heart of the community, and encouraging infill and redevelopment with a diversity in housing types, to name a few. The plan designates six future land uses, including:

- 1. Developed Residential
- 2. Highway Commercial
- 3. Town Site Mixed-Use
- 4. Downtown
- 5. Town Site Residential
- 6. Public Land

The Town Site Residential designation covers neighborhoods that were built on the original grid patterns, and have good potential for residential infill and redevelopment. Some of the lots in this area are small and may need to be combined to adequately accommodate incremental infill and redevelopment. Additionally, the designation is the largest and most widely used future land use. Duplexes, multi-family units, and accessory dwelling units, should match the scale and size of the existing neighborhood, and better utilization of the alleys will expand access and parking. The desire for incremental infill and redevelopment will provide ample opportunity for the implementation of affordable housing.

#### **Existing Design Guidelines**

Leadville has a very extensive and thorough document for design guidelines within the historic district, which encompasses a large portion of Leadville's city limits. The team analyzed the *Design Guides of Harrison Avenue* and the *Infill Guidelines and Standards for the NHL District* and found detailed descriptions of characteristics for buildings such as height, setbacks, windows and doors, building form, architectural character, etc. Along with the previously mentioned documents, the team also found documentation for a historic color palette

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and a windshield survey for historic buildings from the Historic Resources Survey. While these design guidelines are effective and adequate for new development within the NHL district, there were little to no standards for any buildings in the extended boundaries. The team has identified this as an area for opportunity.

#### **Existing Landscaping Guidelines**

Currently, Leadville has no citywide landscaping guidelines. However, the city's comprehensive plan expresses a desire for the adoption of a landscape manual and landscape standards for the "Highway Commercial" designated future land use, as previously discussed.

The Highway Commercial designation is located along the highway entering and exiting Leadville, and is characterized by a flexible mix of retail, commercial, and office uses with convenient vehicle access and parking, in addition to safe pedestrian and bicycle facilities. One recommendation is for the city to add landscaping standards, including xeriscaping provisions, for all commercial developments. The standards would improve the visual aesthetics for travelers entering and exiting the city, and aid in preserving adequate sight distances at access points along the highway. The type and amount of landscaping will depend on the types of roads adjacent to the commercial properties. Similarly, it is also recommended that the city develop and adopt a landscape manual, with recommendations for plant species, seasonal planting schedules, and xeriscaping alternatives that are specific to the climate and elevation of Leadville.

The team recommends extending these landscaping guidelines and standards to other areas of the city, including public right of ways, city owned properties, infill and redevelopments, and parking lots. This will ensure that landscaping is streamlined and responsible landscaping practices are utilized. Additionally, the *Railyards at Leadville Phase 1 Planned Unit Development (PUD)* implemented its own landscape guidelines, with some that mirror the recommendations set forth in Leadville's comprehensive plan. The entire Railyards PUD will cover 38.9 acres, but Phase 1 covers 15.8 acres, owned by High Country Developers. Current

landscape design standards include:

- 1. All unpaved ground will be landscaped in a manner that is complementary to the architecture, provides required screening, and forms an attractive transition to the natural landscape features of the site. A combination of street trees, trees, grass, flowers, ground cover, and shrubbery,
- 2. Landscaping materials should reflect the physical, functional, and aesthetic qualities of the site.
- 3. Trees and plants shall be native or tolerant of the Leadville climate, invasive species are prohibited, and drought tolerant species are encouraged.
- 4. Landscaping shall provide a variety of plant and tree species such that a species-specific blight shall not dramatically impact the overall appeal of the overall landscaping.

The landscaping standards for the Railyards PUD is a great precursor to citywide landscaping standards.



## Current and Future Housing Inventory

Building upon the existing literature of housing and design guidelines, the team further explored the existing housing inventory in terms of redevelopment potential and vacant parcels.

#### Harrison Avenue Housing Survey

The historic buildings along Harrison Avenue represent the densest concentration of multifamily housing within Leadville, including a large percentage of the single-bedroom and studio options available. The team surveyed housing options available along Harrison Avenue to assess the opportunity that may exist there in the form of unoccupied or underutilized upper floors that might be converted into apartments or affordable housing units.

The survey found that there are between 130 and 140 residential units on the upper floors above the businesses that front Harrison Avenue. Of these, 37 units in the Tabor Grand Apartments are affordable units. More important than determining the exact number of units above the street, questioning building owners, business proprietors, and residents revealed that the vast majority of these residences are currently occupied. Approximately 17 new units are under construction or in planning. The team could find evidence that only two of the units along Harrison are short-term rentals.

In short, the residences above Harrison Avenue provide a model for the diverse housing types well-suited to mixed use areas, but the solution to Leadville's affordable housing challenges will not be found solely along this historic main street.

#### Vacant Parcels Windshield Survey

The windshield survey was an effort to take an inventory of all vacant parcels in the City of Leadville and understand the lot characteristics of each vacant parcel. The intention of the survey was to get a comprehensive understanding of vacant parcels that are ripe for infill development.

#### Methodology

The team divided the city limit of Leadville into five sections, as seen in Figure 6. The blue zone is the northernmost section of the study area and includes 12th Street in the north, 9th Street to the south, Ash Street to the east, and Mcwethy Drive to the west. The red boundary is the northwest section of the study



Figure 6: Windshield Survey Sections

area and includes 9th street to the north, 6th street to the south, the west side of Harrison Avenue to the east, and Washington Street to the west. The yellow boundary mirrors the red section, and includes 9th Street to the north, 5th street to the south, the eastern side of Harrison Avenue to the west, and Ash Street to the east. The pink boundary borders 6th street to the north, Highway 24 to the south, Spruce Street to the east, and Washington Street to the west. The green boundary included a portion of 5th and 6th street to the north, Highway 24 to the south, Spruce Street to the west, and Alder Street to the east.

The group divided into two teams and the survey sections were divided among the two teams. Each team drove or walked down each block face in the survey sections to gather information on vacant parcels. The vacant parcels were collected individually using a Google Form entry with smartphones. The vacant parcels were assessed based on the following criteria: terrain, proximity to downtown, walkability, and lot characteristics. The location was collected using the dropped pin feature on google maps. The team walked two block faces together to ensure data collection was consistent and concise.

#### Results

#### Initial Analysis

The team collected 56 data points on vacant parcels using the criteria provided above. The results of the survey were analyzed using a spatial analysis. The red zone had the highest percentage of vacant parcels (40%), as seen in Figure 6, followed by the yellow zone, with 18% percentage of vacant lots. Further analysis of lot characteristics suggested that significant open space and/or vacant land is continuing to be



Figure 7: Future Land Use Plan, Comprehensive Plan (2015)





Figure 8: All Vacant Parcels

developed in the northeastern part of town in the blue zone, and provides important information regarding new infill development for the city. Overall, approximately 58% of the surveyed parcels were primarily flat, while 42% were sloped. In terms of walkability, the vast majority of parcels did not have a sidewalk (84%).

#### Spatial Analysis

A challenge presented with the windshield survey was not knowing the exact boundary of each vacant portion of land. To ensure that the vacant parcels were indeed vacant and not attached to an existing residence, the results of the Google Form survey were mapped using the pinned location from the data collection and compared to Leadville and Lake County Assessor Parcel information. First, the Google Map pinned location of the vacant parcels were analyzed based on proximity to Leadville Parcels. The 54 collected data points matched with 69 Leadville parcels. Further, the 69 Leadville parcels were analyzed based on whether the parcel lot had a building. Of the 69 Leadville parcels, only 28 of them were without a building, and were defined as vacant (Figure 7).

While the vacant parcel analysis provides the team with comprehensive information regarding residential infill, it does not address the priority parcels identified in the Capstone project nor the full extent of the vacant parcels throughout the City. Using the Leadville Parcels Data, Capstone Students Site Data, and the results of the windshield survey, the team identified the parcels in Figure 8 as the parcels for infill development guidelines.

#### **Vacant Parcels Potential**

Although the windshield survey was not entirely comprehensive, the team identified five areas of interest during this windshield survey and through subsequent study of GIS data. These parcels, some of which are publicly owned, and some of which are privately owned, present above-average opportunities for infill development, especially for housing types other than single-family residential, and for increasing the stock of affordable housing. There are opportunities and challenges to development in each of these areas, and this report will recommend a variety of strategies to promote development in each of these areas.'

#### 8th and Ash



This site is located on the eastern end of 8th street, where there are several vacant blocks. There are 16 county-owned lots and 16 privately owned lots. The county-owned lots are currently leased to the Bureau of Land Management (BLM), and once these are released back to the county, they will be developable.

#### 8th and Maple



The south block face of 8th Street between Maple and James Streets is almost entirely vacant, with two new houses and several more under construction. This area appears to be developing rapidly. The block has an excellent location, midway between Harrison Ave and the Lake County Aquatic Center and Intermediate School; it is also fairly close to the Lake County High School. Five of these lots were recently listed for sale for approximately \$35,000 each.

#### Southeast Downtown



The area east of Harrison and south of 2nd Street is mostly vacant, and has been identified in the future land use plan as a mixed-use district. It is currently zoned Transitional-Commercial, meaning that there is some opportunity for residential development. These parcels are located within a subsection of the California Gulch Superfund Site. While this area was partially deleted from the National Priorities List in 2016, Lake County still has a land use code stipulation requiring that all building permits in this area be approved by the State. The development restrictions on these parcels mean that they may be better suited for development of government buildings. City staff have proposed building a new police station on this site.

#### **Brooklyn Circle:**



This subdivision is located south of downtown on a bluff overlooking the city, and is only partially developed, with nearly 30 vacant lots. Five of these lots are currently for sale at about \$36,000 each; all of these lots advertise hookups for water, sewer,



and electricity. The entire central area of this site, consisting of 13 lots, is completely vacant. While connectivity to downtown is not ideal compared to the other areas of interest, it still presents a good opportunity for affordable housing.

#### **Climax and School District Parcels**



These parcels, located northwest of downtown, are currently being studied for their potential for affordable housing development. The area is currently zoned R1 (Low-Density Residential), limiting the amount of multi-family development, but it is a good opportunity for denser housing, and a greater variety of unit types.

#### Disclaimer

In order to ensure concise and accurate data collection, the team worked together to survey two block faces in order to ensure that data collection was consistent throughout the five zones. An issue that was prevalent during data collection was determining vacant lots that were not the side yard or attached to a residential home. Other issues included mapping the location of address points and matching them to existing GIS parcel data for the City of Leadville and Lake County. The team found that 28 out of the 69 data points collected were actually vacant parcels and contribute to the growing information needed to understand infill development within the city of Leadville.

#### **Allowed Uses for Priority Parcels**

The allowed uses for each of the previously mentioned priority parcels are shown in Figure 9. It is important to understand how the allowed uses, based on the current zoning, will affect affordable housing development. Overall, all five sets of parcels allow single and two-family developments, yet there are significant barriers to building multi-family units, which is crucial for successful affordable housing development. Disregarding other circumstances that play into the development potential of these parcels, the Climax and School District parcels would be the most difficult to develop because any multi-family unit is prohibited under the current zoning. A Planned Unit Development (PUD) or a rezoning would be needed to allow for these types of units. Alternatively, developing

	Single family	Two-family	Multi-family (3-4)	Multi-family (5+)		
Climax & School (R1)	$\checkmark$	√	Х	Х		
E. 8th and Ash St. (R2)	$\checkmark$	V	С	С		
W. 8th and Maple (R2)	$\checkmark$	$\checkmark$	С	С		
SE Downtown (TC)	$\checkmark$	$\checkmark$	$\checkmark$	С		
Brooklyn Heights (TR)		√	С	С		
Conditional use/permit req. R1: Low-Density Residential R2: Traditional Residential TR: Transitional Retail & Residentia Use prohibited						

Figure 9: Allowed Uses



## **Future Land Use and Zoning**

While land prices continue to increase and outside buy-in and development opportunity continues to explode in Leadville, there is increased pressure from city and planning staff to address the concern for maintaining growth, infrastructure, and the small-town character of Leadville. Fortunately, the city already has a great tool in regulating development: the zoning code. While the zoning code is comprehensive, the 2015 Comprehensive Plan has expressed concern for updating the code. Outdated zoning can cause a number of problems, including excess staff time, outdated procedures, insufficient processes, and increased cost for developers. If affordable housing is a major goal for the city of Leadville, the team recommends making changes to the zoning code that allows for a variety of uses, thoughtful transitions from low density single family to medium density small scale development, and new and clearly defined zone districts.

#### **Implementing the Future Land Use**

The 2015 Leadville Comprehensive Plan details a Future Land Use Plan (Figure 10) that suggests the direction the city can take in terms of physical planning (Comp Plan, pg. 50). While the plan is advisory and thematic in nature, the Future Land Use Plan sets a foundation for future planning and development within the city of Leadville. The team finds that the implementation of the future land use plan is critical in helping to streamline future zoning and development review processes, while also helping to assist developers in infill development and designing the future built environment. The team hopes to assist Leadville in maintaining its rugged character and sense of place, while also helping to alleviate concerns for development processes and contentious zoning.

As mentioned previously, the current zoning does not allow for the type of uses that would make affordable housing feasible - particularly diverse housing that encourages higher density, residential development.

Projects like the Climax site have recommended PUDs in order to expand the current density restrictions as dictated by the zoning code. PUDs are great tools for larger development and offer flexibility to develop sites beyond what the current zoning code allows. However, if the City of Leadville wants to implement a clear and consistent zoning code that supports the future land use plan as described in the 2015 Comprehensive Plan, PUDs are not the best solution in the long-term. The more PUDs that are allowed, the more inconsistent the zoning becomes and the more difficult it is for future development. The team therefore recommends considering amending the zoning code to allow for higher density residential and mixed use in these areas to offer more diverse housing stock.

While the majority of the town is single-family residential, the future land use map does not intend to change the existing character. Instead, it is designed to introduce a new mixed-use land use along Highway 24 that acts as a proper transition from Highway Commercial to low density single family residential. However, the plan recognizes that the existing zone districts of Transitional Commercial (TC) and Transitional Retail and Residential (TR) have confusing zone district definitions and do not allow uses that enhance or promote a thoughtful transition or encourage a variety of building types and land uses. Consistent with the comprehensive plan, the team recommends adding a new zone district that clearly defines mixed-use infill and sets the dimensional standards to give developers clear and consistent development guidelines.

Implementing a mixed-use zone district along Highway 24 would streamline the zoning process, act as a continuation of Harrison Avenue that promotes a more walkable pedestrian environment and connect outside neighborhoods, specifically Colorado Mountain College, to downtown proper. Further, this zone district would introduce a new commercial and retail corridor and further the team's vision of providing more diverse housing types.



Figure 10: Future Land Use Plan, Comprehensive Plan (2015)

#### **Recommended Zoning Amendments**

The 2015 Comprehensive Plan details zoning challenges and changes that could address development review process and gaps within the zoning code. Updating the zoning code to include "general development standards" and "use-specific development standards" is recommended not only from the 2015 Comprehensive Plan but from stakeholder concern and analysis pertaining to gaps and challenges from the zoning code. Researching applicable housing types and addressing dimensional standards for existing zoning code and potential new builds could help address the problem of mismatch development from the existing historic character of older victorian homes and the concern of bulky new development. Stakeholder concerns include reducing building height from 35 feet to a more appropriate height for new developments, examining the existing

building envelope in the current code, and suggesting new dimensional standards for new developments. In addition, the introduction of more mediumdensity housing types, such as duplexes or attached townhomes, could also include adding transitional zones from high to low density developments to allow for a thoughtful transition. Further research is needed to understand which housing types and transitional zones would best address the concern for new infill development.



## **Case Studies and Conclusion**

To inform future infill and design guidelines for Leadville's housing development, the team has researched several case studies. These are not intended to be exact models for Leadville's future development, but rather, to help conceptualize Leadville's approach to infill and design.

#### Design Case Study: Canal Flats Infill Design Guidelines

Canal Flats is a small town in the Rocky Mountains in British Columbia that is undergoing similar development pressures to Leadville. Canal Flats has a similar setting to Leadville. It lies in a wide valley surrounded by mountain peaks, and is the gateway to several major outdoor tourism destinations. It has a similar small-town feel to Leadville as well, with many narrow lots and a predominance of modest singlefamily housing.

The Canal Flats Infill Design Guidelines promote a "Mountain Modern" theme, which could be appropriate for future design in Leadville. They recommend simple, traditional building forms, with allowances for larger buildings as long as they are broken into "smaller wings and additions with discernible accent elements." This would allow for a diverse array of housing types, and would help Leadville incorporate duplexes, townhomes, and apartment buildings without disturbing its fundamentally small-town character. The Canal Flats guidelines also call for pitched roofs on most buildings, with relatively steep pitches, in order to facilitate snow removal, and prevent an overly modern aesthetic from taking hold. The guidelines also call for natural exterior elements, and colors that are complementary to the natural environment. This is certainly something that should be adapted with care for Leadville, since part of Leadville's identity lies in the bright and unique color combinations of its Victorian homes.

Given Lake County's extreme climate, environmental considerations are very important to take into account. The Canal Flats guidelines are helpful because they address this as well - they call for roof design elements and materials that prevent ice-damming in the eaves. Overall, these guidelines provide a helpful guide to designing buildings in concert with a dramatic mountainous environment and an existing small-town aesthetic, and many of these ideas are relevant to Leadville's future development.

#### Infill Case Study: The Infill Design Guidelines Toolkit, Portland, OR

Looking ahead to the next phase for developing infill and design guidelines for development outside of the NHL district, the team referenced the City of Portland's infill design toolkit for medium-density residential development. The toolkit is broken down into the following sections:

- Strategies Best practices for integrating new development that fits in with neighborhood patterns
- Prototypes Approved housing types that meet the demands of infill situations, meet City regulations and design objectives, and are market feasible
- Technical Pages Technical information for quality infill
- Project Profiles Completed projects with design features that meet the community's design objectives
- Neighborhood Design Policies

The toolkit, while Portland-specific, can be amended to fit the context of Leadville. The toolkit focuses more on neighborhood patterns and less on details in order to determine compatibility. The toolkit focuses on infill development that adds density to neighborhoods, which implies a certain amount of change, but ensures that established neighborhoods can accommodate this change, and preserve their unique elements and charm. The team uses this toolkit as a guide in providing strategies and best practices for infill housing guidelines that considers compatibility and context of the area.



#### Conclusion

The team thoroughly analyzed housing pressures in Leadville, as well as opportunities for development. Through background research, the team evaluated techniques that like-minded communities have used to solve their own housing problems creatively. Approaching the issue of infill development requires a multi-faceted approach. Infill development, as well as redevelopment, needs to respect the existing character of Leadville, and must take into account the unique environmental conditions of the area. This is reflected in our vision statement:

Expand the diversity of housing to increase affordability while honoring Leadville's unique community identity, historic architecture, and natural environment.

Demographic data showed that there was a preponderance of single-family, two- and threebedroom homes in Leadville. This housing stock only serves a few demographic sections of the population, and is especially ineffective in addressing the housing needs of the growing population, many of whom are young, seasonal workers, who are not looking to buy a single-family home in the near future. Many Leadville residents are cost-burdened, and without increased housing this number will continue to grow.

Fortunately, there are many engaged citizens and public servants in Leadville who are looking for solutions, and there is in fact significant infill development potential in Leadville. Through a windshield survey and analysis of geographic data, the team found a significant number of developable parcels that are currently vacant, and studied a variety of techniques for providing a diverse array of housing types on these parcels.

One significant finding was that the southern stretch of Highway 24, which serves as a gateway into the town, is potentially ripe for redevelopment. In Leadville's existing Comprehensive Plan, the future Land Use Plan recommends that this area be designated for mixeduse, which is something the team has addressed in the recommendations segment of this report. respectful of the existing town, the team studied Leadville's own NHL design guidelines. Many similar towns in Colorado and other mountain communities have recommendations for context-conscious infill development, as well as landscaping guidelines that are both environmentally sensitive and aesthetically pleasing. The recommendations section of the report details the ways the team believes these can be applied in Leadville to create a more inclusive community, that retains its existing character.

To ensure that future development in Leadville is









## **Project Vision**

The comprehensive existing conditions research and analysis provided insights that ultimately informed the central vision for this project. The team's vision is to **expand the diversity of housing to increase affordability while honoring Leadville's unique community identity, historic architecture, and natural environment.** 

In order to achieve this vision, the team developed the following three goals:

- Creating infill and redevelopment guidelines for developments outside of the NHL District
- Creating city-wide landscape guidelines
- Creating a mixed-use zone district along Highway 24

#### Infill Development Opportunity Parcels

There is a need identified for more diversity of housing types and affordable housing options. Based on the team's initial existing conditions survey, there are dozens of vacant lots outside of the NHL district that could be developed. Design guidelines for these developments can help ensure development maintains the character and scale of the existing neighborhoods.



Figure 8: All Vacant Parcels

#### **Housing Types**

Before delving into the team's design guideline recommendations, it is essential to identify the different types of housing that will offer more diversity for infill and mixed-use development, which is one part in achieving the team's project vision.

#### Duplex

While this housing type is already allowed in Leadville's zoning code (except the commercial district), duplexes can be better utilized. A duplex consists of two separate housing units that exist within one structure. The units can be either stacked or positioned sideby-side, depending on the dimensions of the lot. One benefit of duplexes is that they blend within the context of single family houses and maintain character and scale while accommodating more people. The team understands that parking is a major concern for new developments in Leadville. Duplex structures allow for off-street parking below or behind the building.

#### Fourplex

Like duplexes, fourplexes do not disrupt the context and character of the area because the building form blends well with single family houses. While fourplexes tend to be larger than a duplex, they can still fit on a wide range of lot sizes. Fourplexes can be narrow or wide and still stay under the maximum building height allowances. Due to larger structures and more units, off-street parking can be a bit more challenging but it is still feasible. Options for parking include a garage underneath the structure in a semi-excavated basement or parking behind.

#### Rowhouse

Rowhouse, Townhome, or Attached Dwelling Units are side-by-side homes. This type of housing is a good option for "missing middle housing," or a transition from commercial uses in a mixed-use area to residential. Rowhouses are ideal for narrow lots where development may be limited due to lot dimensions. Off-street parking is possible either in the front of a unit or in a structure behind the rowhouses. The team recommends that in situations where a rowhouse is located in a higher pedestrian-trafficked area that parking be prioritized for the rear for a more pedestrian-friendly street frontage.



Duplex in Leadville, CO



Fourplex in Portland, OR



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Rowhouses in Steamboat Springs, CO





Old Boarding House in Leadville, CO



ADU in Portland, Oregon



Residential Above Retail Along Harrison Avenue

#### **Co-Housing**

Co-housing projects that provide residents with private rooms around shared common spaces such as kitchens can be well-suited to larger lots, providing a right-sized housing option for some residents without disrupting the character of the surrounding neighborhood. The benefits of co-housing is that they offer both long-term or short-term rental options, which could be good for seasonal workers or employee housing. Additionally, co-housing tends to be a less expensive option because of shared spaces like kitchens or bathrooms. Last, this type of housing would add diversity to the current housing stock in the form of studio or one-bedroom units, which Leadville is lacking.

#### Accessory Dwelling Units (ADUs)

Accessory Dwelling Units (ADU) are secondary units to a primary structure, such as a single-family home. An ADU can exist in several forms: internally in a basement or attic, attached, or detached (carriage home). ADUs are actually encouraged in the Future Land Use Map of the Comp Plan for Town Site Residential and could be better utilized in future development. Like co-housing, they offer more opportunities for rental options. ADU's can be more affordable for both homeowners because of the rental potential, and for renters because they are typically modest in size and have fewer amenities that drive up the price. ADUs are cheaper to permit and to rent. Last, ADUs can further contribute to adding studio and one-bedroom housing options to the current Leadville housing stock.

#### **Residential Above Retail**

The final housing type is recommended specifically for the proposed mixed-use district. Parts of Harrison Avenue already offer housing above retail/commercial buildings, but the team would like to see these housing types further extended. This type of housing makes efficient use of pre-existing space. Because of the close proximity to amenities like shops and restaurants, residential above retail provides the chance to enhance vibrancy in the city core. This style of housing is also conducive for live-work units, where residents have a storefront or office, and live upstairs. And last, this housing type continues to diversify housing in Leadville by providing studio and onebedroom options.

## Infill Housing Strategy and Design Guidelines

This section provides details regarding the team's recommendations for infill and redevelopment design guidelines. Should the Leadville decide to create design guidelines, the team recommends prioritizing the following give guidelines.

#### **Pitched Roofs**

The Infill Housing Design Guidelines for the NHL District provide specific policy recommendations for roofs, including hip, gable, and shed roofs (Figure 11). Similarly, the NHL design guidelines recommend a minimum roof pitch of 8:12 and a maximum roof pitch of 15:12 (Figure 12). For simplification purposes, the team suggests using these same standards for infill and redevelopments outside of the NHL district. This will also ensure that the character and urban fabric remains in tact and snow management remains possible.

#### **Off-Street Parking**

For residential infill and redevelopment sites, off-street parking is recommended near the front or sides of homes, based on feedback received from Leadville officials and residents. Most existing alleys are not



Figure 11: Roof Types for Infill Housing



Figure 12: Roof Pitch Minimum and Maximum for Infill Housing

paved, and are only plowed every two weeks during the winter, creating difficulties for alley loaded rear off-street parking. Therefore, front parking, accessible from the main street, is the best and safest option for residents. The team also encourages the use of covered garages, essential for residents in Leadville during the winter season. Garages can be designed in various forms. First, as seen in Figure 13, top, the garage can be located to the side of the main house. This design would be most suitable for wider lots. As seen in Figure



Top: Side Garage Model, Bottom: Side Garage in Leadville, CO Figure 13, 14, and 15: Garage Styles





*Top: Setback Garage Model, Bottom: Setback Garage in Leadville, CO* 





Top: Front Garage Model, Bottom: Front Garage in Leadville, CO



13, bottom, Leadville has utilized this style in some areas of town. Garages can also be set back slightly from the main street, attached or detached, as seen in Figure 14, top. This design allows the architecture of the house to stand out along the streetfront. This design is common within Leadville's historic district, as seen in Figure 14, bottom. Last, garages can be placed on the front of the house, as seen in Figure 15, top. This design provides easy access for residents and minimizes the size of the driveway, ensuring simpler snow removal. As seen in Figure 15, bottom, new townhomes in Leadville, located just west of Colorado Mountain College, utilize this design.

#### **Dimensional Standards**

The team has developed guidelines for regulating height and lot coverage of new infill development as well as redevelopment in Leadville, which are designed to bring the character of development in line with the character of Leadville currently. These regulations will also provide more space for snow storage than is currently required by Leadville's land use code.

#### Height

The maximum height limit across Leadville is 35 feet, which has allowed some new development that is not in character with surrounding buildings and neighborhoods. With the exception of Harrison Ave, existing roofs in Leadville typically only reach 24 feet, and roofs are mostly pitched. The team proposes two changes to height codes in Leadville to promote



Figure 16: Height Measurement



Figure 17: Max Height Calculations





consistency with surrounding buildings, respect the views of these buildings, and promote pitched roofs.

- Height Measurement: Measure a building's height from the lowest grade where the building edge touches the ground to the midpoint of the roofline. This will result in new building heights that respect views of neighbors. This will also encourage pitched roofs, since builders will be able to build rooflines slightly above the max height, as long as the roof is pitched and the roof midpoint meets the max height guidelines.
- Max Height Calculations: Max Height Calculations: Measure the heights of all primary structures within a 200 foot radius of the center of the parcel to be developed (calculate these heights based on the above height measurement standards) and take the mean of these heights. Max developable height for the parcel in question is 120% of this average, or 30 feet, whichever is lesser. This will ensure that new development is in character with surrounding buildings.

Additionally, the vast majority of existing developed parcels in Leadville fall well below the maximum lot coverages required in Leadville's land use code. There are very few parcels in Leadville with greater than 60% lot coverage, and in the R-1 zone, most parcels have less than 30% lot coverage.

Regulating lot coverage also provides good incentives to encourage different housing types that will serve the growing housing needs in Leadville, and help fill the gaps in Leadville's housing stock. In order to bring Leadville's lot coverage regulations more in line with the existing conditions in Leadville, and to promote a greater diversity of housing types, the team proposes the following max lot coverage table, which adjusts the maximum lot coverage based on zoning and housing type. Red numbers represent percentages more restrictive than existing regulations, and black numbers represent existing max lot coverages.

#### Lot Coverage

Lot coverage maximums in Leadville are currently quite high, even in the R-1 zone, where the maximum lot coverage is 67%. For most lots in Leadville, the required setbacks effectively restrict lot coverage to well below the maximum lot coverages. For example, for a typical 25 x 120' lot in the R-2 zone district, the required setbacks restrict lot coverage to 66%, whereas the maximum lot coverage in the R-2 zone is 75%.

		HOUSING TYPE						
		Single Family	Townhome (shared wall)	Duplex/ ADU	3-4 Units	5+ Units		
	R-1	45%	50%	55%	-	-		
ZONE DISTRICT	R-2	50%	60%	60%	70%	75%		
	Mixed-Use	-	70%	-	70%	80%		
	с	50%	60%	60%	70%	85%		
	RC	-	-	-	-	80%		

Figure 19: Maximum Lot Coverage Table

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Recommendations: Infill Housing Strategy and Design Guidelines

Figure 20, 21, 22: Lot Coverage Models



#### Denver

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#### **Building Orientation**

Throughout Leadville, the majority of residential buildings are rectangular structures oriented to the lot lines (as seen in the aerial view above), with primary entrances clearly demarcated and facing the street. To respect and protect the unique character of Leadville, new buildings should follow the same patterns.

While buildings should be positioned for passive solar gain and cooling through optimal air flow where possible (which can contribute to affordability by lowering heating costs), this may not always be possible due to the orientation of the lot. Likewise, homes should be situated to offer vistas of the area's spectacular scenery and mountain skylines when possible; however, care should be taken not to disrupt the rhythm of the streetscape with buildings akimbo to lot lines.

Buildings should be situated to face lot lines, but window placement can be more flexible. New construction that considers the direction of the sun throughout the day can take advantage of natural and passive solar gain by deliberate window placement. Strategic window placement can further contribute to affordability by lowering heating costs.

Similar to window placement, overall design and structure of new development should consider taking advantage of natural forces like wind in order to circulate air and provide ventilation. This passive way of bringing in fresh air and removing stale air can reduce costs created by running air conditioners or fans.

#### **Building Materials**

As Leadville grows and provides more housing options, new residential construction can break out of the mold of historic architecture, but new projects can maintain and enhance the existing character of the built environment by using certain building materials. The historic heart of the city features a preponderance of wood-sided and brick structures, and these materials should be encouraged in new construction.

While new construction does not need to mimic historic buildings, new structures should honor



Figure 23: Buildings Oriented to Lot Lines

and fit with the existing context. In addition, more contemporary materials such as sheet metal and concrete can lower construction costs and increase durability, two key factors in creating housing that can be priced at affordable levels and lower maintenance costs.

Creating design guidelines that consider building materials is not only important for the aesthetics and character of the neighborhood, but also for energy efficient buildings. New development in any town or city should consider reducing environmental impacts created by the built environment. Selecting building materials like concrete and brick maintain character but also play a role in reducing utility costs and naturally regulating indoor temperatures to stay comfortable year-round. Both lower utility costs and lower maintenance costs contribute to housing affordability.

In addition to their selection of building materials, developers and homeowners should consider color as an important element of any new project. Leadville features a number of brightly colored homes that contribute to a vibrant streetscape, particularly during the long winters when snow whitewashes much of the landscape. Incorporating eye-catching, bold, contrasting color schemes into new structures, preferably chosen from the extensive palette of historic colors already identified by the city, will maintain and enhance the town's existing character and contribute to a beautiful winterscape.

Last, window type should be considered in future design guidelines to be more energy efficient. Places like Aurora, Colorado call for triple-paned windows instead of the usual double-paned in their Sustainable Infill and Development Design Guidebook. Like brick and concrete building materials, energy efficient windows will reduce utility costs and help maintain a more comfortable temperature inside.



Figure 24: Brick



Figure 25: Wood



Figure 26: Metal

## Landscape Design Guidelines

In addition to generating design guidelines for Leadville's built form, the team proposes creating landscape guidelines. Leadville's 2015 Comprehensive Plan expresses a desire for landscape guidelines for their Highway Commercial land use. The team recommends expanding these guidelines to encompass other areas of Leadville as well. The vision for Leadville's proposed landscape guidelines and objectives are as follows:

Generate landscaping guidelines for infill and redevelopments, public right-of-ways, parking lots, and publicly owned properties to advance sustainable landscape practices and to produce a coherent city-wide design.

Objective 1: Implement xeric standards Objective 2: Use adapted and non-invasive species Objective 3: Achieve 60 percent on-site snow and stormwater management

The Colorado Native Plant Society created a guide that outlines appropriate adapted plants for high elevation climate above 7,500 feet in Colorado. The guide lists dozens of appropriate trees, grasses, shrubs, groundcovers, and perennials. Utilizing these species



Figure 27: Top: Redtwig Dogwood, Bottom: Boulder Raspberry

provides various benefits. First, these species not only look beautiful in the spring and summer, but are hardy during the winter season as well. For example, Redtwig Dogwood and Boulder Raspberry maintain their color and shape during the winter, which is crucial. Additionally, these plants work well together in

various combinations to create aesthetically pleasing designs, as seen below in gardens in Breckenridge, Colorado and Blackhawk, Colorado. All plants are wildlife friendly, so they support native bee, bird, and butterfly populations. For example, Redtwig Dogwood provides nectar and pollen for bees and butterflies. Lastly, these aforementioned plants require less water



Figure 28: Top: Blackhawk, CO, Bottom: Breckenridge, CO

than typical high water use plants, such as turf grass. After they are established, these plants will require no more precipitation than the natural climate provides. We recommend Leadville utilize these plants to best achieve objectives 1 and 2. A comprehensive list of these plant species can be found in the Appendix.

Leadville receives over 140 inches of

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snowfall annually and 14 inches of rainfall, on average. Rain and snowfall runoff can carry trash, bacteria, oil, and other pollutants into urban waterways. Large precipitation events can lead to high stormwater runoff causing erosion, flooding, and damage to properties and infrastructure. Therefore, sufficient stormwater and snowmelt management is paramount. As seen in Figure 30 green infrastructure in urban areas complements traditional piped water drainage systems. The vegetation and soil capture and infiltrate water before it enters the underground piped system, and this reduces pressure on the existing system. Therefore, green infrastructure can help reduce flooding and filter out storm pollutants. Additionally, it improves the street aesthetic and provides numerous social benefits to the community.

Green infrastructure can come in many different forms. One example, as seen in Figure 31, is swales. Swales are shallow open channels designed to slow water flow and remove sediments to improve water quality. They





Figure 29: Example of Stormwater Management

are versatile, and can be used as an alternative to or in conjunction with a piped drainage system.

A second example is rain gardens, which have a special soil filter media that can remove pollutants from road runoff. They can be designed to allow water to infiltrate or to collect treated water and move the clean water downstream. A third example is street trees or tree trenches, which can take on many different forms. Trees provide shade and cool the air. One example, as seen in Figure 31, is a curbless continuous tree trench in Portland, Oregon. Continuous tree pits can increase the plantable surface area and provide more space for tree roots. The installation





Figure 30: Swale

Figure 31: Street Trees

of these curbless swales along public right of ways can functionally and aesthetically link parts of Leadville.

Additionally, it is important to note that all three of these green infrastructure techniques not only



Figure 32: Stormwater Management in Parking Lots



effectively manage stormwater, but provide excellent storage areas for snow as well. The curbless profile allows snow to be shoveled or plowed into the landscaped areas with ease to ensure roadways and walkways are kept clear. Areas specifically designated for snow storage should use appropriate plants, like perennials or grasses that are dormant in the winter.

Furthermore, as seen in Figure 32, green infrastructure techniques can be utilized in parking lots. Tree trenches and vegetated swales can be installed among parking spaces to effectively capture stormwater and trap vehicle pollutants. Additionally, pedestrian walkways should be installed to create connectivity and safe passage for pedestrians. Currently, Leadville's municipal code states that "Each off-street parking lot containing more than 50 parking spaces shall provide one or more landscaped areas" (City of Leadville Municipal Code, 2019). The team proposes revising this statement to ensure that these landscaped areas not only provide aesthetic appeal, but also provide effective snow and stormwater management. This would be a great first step for Leadville in achieving these proposed landscape guidelines.

## **Mixed-Use Zone District**

In the existing conditions analysis, the team found that the 2015 Comprehensive Plan determined this area in the Future Land Use Map as 'Town Site Mixed Use'. The Comprehensive Plan highlights the inconsistencies with two zone districts that currently define this area. While the Transitional Commercial (TC) and Transitional Residential (TR) help to preserve single-family homes and provide a thoughtful buffer and transition, these zone districts do not allow for a medium-dense housing types that will aid in affordability (City of Leadville, 2015, p.104). To further Goal 3, the team encourages Leadville to consider eliminating the Transitional Commercial and Transitional Residential zone districts and adopting a new Mixed-Use Zone District along this southern portion, as designated by the Future Land Use Map.

As Harrison Avenue already provides a vibrant downtown retail core, the built environment becomes inactive south of 2nd street as you turn the corner onto Highway 24. While this area has largely been occupied by light industrial use, there is potential to redevelop this part of town and create a new mixed use zone district that acts as an extension of Harrison Avenue. The implementation of the future land use plan and creation of a new mixed-use zone district is critical in helping to streamline future zoning and development review processes and will assist developers in infill development along Highway 24.

This section of the report highlights existing zoning tools found in other municipalities that help create a vibrant mixed-use zone district without taking away the unique character of Leadville. Preservation of viewsheds, architectural design and compatibility are considerations in the creation of a new mixed-use zone district.

#### **Building and Dimensional Standards**

Preserving the existing built environment of Leadville and the mountain views is essential when creating more density. Therefore, this mixed-use zone district should feature buildings no larger than 3 to 2-stories tall, and be developed using "storefront" or "main street" building forms that mimic the existing building forms along Harrison Avenue (Figure 33).

These types of buildings allow for a vertical mix of retail/commercial on the first floor to activate the street, while providing residential units above retail that allows for more studio and one-bedroom options. Like traditional mixed-use zone districts, the setbacks







Figure 34: Sidewalk Zones

would be 0'-5' and the building forms could be built out almost entirely to the lot, with transparency requirements for the first floor.

Creating a better pedestrian environment is also important in a mixed-use zone district. In the *City of Edmonton Winter Design Guidelines*, they designed their street specifically with people and snow storage/ removal in mind. As seen in Figure 34, to allow for more space for business, pedestrians, and snow removal, they encourage sidewalks to be about 15' wide, including a 5'"frontage" zone for outdoor seating, a 5'"through zone" for pedestrian walkway, and a 5' "amenity zone," that allows for planters, trash cans or snow storage. This designates a place for everyone no matter the season (City of Edmonton, 2013, p. 42)

#### **Housing Types**

One strategy for creating more diversity is to allow for medium-dense housing types. Currently, Leadville only allows apartments with three to four units and duplexes in the residential zone district, and multi-family apartments greater than five units are a conditional use in all zone districts. While this helps keep density low, current housing constraints have deterred developers from building affordable housing. While apartments and more units help to create an incentive for development, design is still a major concern. While the intention of a new mixeduse district is to bring more density, an emphasis on architectural design will help preserve the existing single-family character of Leadville. New apartments with more than five units should be designed in a manner that uses facade variations, roof pitches, and other architectural elements that blend in with the existing character.

Within this mixed-use district, the team recommends including or amending the Use Table, to allow for the following medium-density housing types (Figure 35): Residential Above Retail, Attached Rowhouse/ Townhome, Fourplex, and prohibit Single-Family Detached. Prohibiting single-family detached homes promotes a greater diversity of housing and affordability.

#### **Height Transition**

The location of this mixed-use zone district has the potential to intensify the existing built environment of Leadville. A tool that many municipalities use to ensure compatibility between adjacent large developments and single-family neighborhoods is by adopting a height transition to preserve viewsheds. A height transition mandates that any building directly adjacent or within a certain distance from a residential



RESIDENTIAL ABOVE RETAIL Apartment Units on second or third floor Live/Work MULTI-FAMILY Smaller-scale multi-family unit including four-plex and 5+ CO-HOUSING Inexpensive, shared spaces ATTACHED TOWNHOMES Great for narrow lots

Figure 35: Medium-Density Housing Types



Mixed-Use Zone District

Figure 36: Height Transition

zone district must step down in height (Figure 36). For Leadville, the team is suggesting a step-down from the maximum height of 35' to a height of 25' or 2 stories. Adding a height transition will help break up the large building form and create a thoughtful buffer to low density residential.

#### Parking – Structure and Rear

The main source of transportation for Leadville residents is parking given the context and lack of alternative modes of transportation. Therefore, parking will always be in demand. Through stakeholder engagement, adequate parking is a current and future concern for existing and new development within the city. The team encourages Leadville to consider expanding the existing parking regulations in the zoning code and creating design recommendations. One recommendation is small-scale parking structures that blend in with the surrounding buildings (Figure 37). This will help preserve the existing main street feel and provide snow-free covered parking for Leadville



Figure 37: Structured Parking



Figure 38: Rear Parking

#### **R-2 Traditional Residential**

residents and visitors.

In addition to parking structures, rear surface parking lots are a cheaper alternative to structured parking (Figure 38). Rear parking allows the main street to remain active, while providing sufficient parking for the businesses and residential uses. The team recommends implementing the previously discussed landscape design standards and updating the current code to require snow storage buffers within parking lots, regardless of the number of spaces.



#### Implementation

As Leadville considers next steps moving forward with implementation, the team recommends the following action plans to develop a comprehensive design guidelines manual and a mixed use zone district (Figure 40). Implementing these infill and redevelopment guidelines will require updates to the municipal and zoning code, in addition to a design guidelines document for developments outside of the NHL District.

## CATEGORY ACTION

Design Guidelines	Match roof design, style, and pitch to the historic character.					
	Encourage off-street parking with access from the main street.					
	Change height measurements and maximum height standards to promote development that respects Leadville's existing character.					
	Reduce the max lot coverages to reflect existing residential character in Leadville.					
	Maintain traditional patterns of development by orienting rectangular buildings to lot lines.					
	Use building materials that maintain and enhance the existing character of the built environment.					
Landscape Guidelines	Utilize plants adapted to Colorado's mountain climates.					
	Rewrite Leadville's municipal code to provide stormwater & snow management.					
Mixed-Use Zone District	Combine TR and TC to create one mixed-use zone district.					
	Encourage a height transition adjacent to a residential district or single-family detached land use.					
	Require surface parking lots to be behind buildings, and encourage structured parking garages to be designed to blend in with existing buildings.					
	Design wide sidewalks to provide clear, barrier-free pedestrian walkways free from furnishings and snow storage.					

#### **Conclusion**

An initial survey of existing conditions helped inform the direction the team took in conducting further research and crafting recommendations. The team identified a need for more diverse and affordable housing types in Leadville, which informed the central vision: Expand the diversity of housing to increase affordability while honoring Leadville's unique community identity, historic architecture, and natural environment.

Three goals were established to achieve this vision:

- 1. Create infill and redevelopment guidelines for developments outside of the NHL District.
- 2. Generate city-wide landscape guidelines.
- 3. Create a mixed-use zone district along Highway 24.

Housing types that will increase the diversity of housing in Leadville include duplexes, fourplexes, rowhouses, co-housing, ADUs, and residential above retail. Collectively, these housing types blend well with existing single-family homes, and diversify housing options to accommodate families of varying sizes and incomes.

In addition to providing guidelines for the types of homes that are most appropriate for Leadville, it is also important to establish design guidelines for these types of homes that will be built outside of the city's NHL district. The team generated five recommended design guidelines, partly inspired by the existing NHL design guidelines. First, the team encourages pitched roofs, with a minimum roof pitch of 8:12 and a maximum of 15:12 to provide effective snow management and to align with the NHL's roof design guidelines. Second, the team encourages front parking, with access from the main street, for all infill and redevelopment properties. Currently, rear parking is difficult for residents to access during the winter season. Most alleys are unpaved and only plowed twice a month. Covered garages are also encouraged to reduce snow maintenance, and can be designed in a multitude of ways.

The third design guideline is dimensional standards, which includes changing the height measurement and maximum height standards to promote development that respects Leadville's existing character. Maximum

height standards would be reduced from 35' to 30', or 120% of the mean value of the surrounding building heights. Similarly, the team recommends reducing maximum lot coverages to reflect the existing residential character in Leadville. The fourth recommendation is maintaining traditional patterns of development by orienting rectangular buildings to the lot lines, ensuring the primary entrances face the street, and positioning buildings for passive solar gain, when possible. Lastly, the team recommends establishing guidelines related to building materials and energy efficiency. This includes matching existing building materials, like brick or wood siding, for new infill and redevelopments, utilizing contemporary building materials, using colors from Leadville's historic color palette, and installing energy-efficient windows.

In addition to generation infill and redevelopment guidelines, landscape guidelines should also be established for infill and redevelopment properties, public right-of-ways, parking lots, and publicly owned properties to advance sustainable landscape practices and to create a coherent city-wide design. Three objectives to achieve this vision are as follows:

- 1. Implement xeric standards
- 2. Use adapted and non-invasive species

3. Achieve 60 percent on-site snow and stormwater management.

Utilizing plants adapted to Colorado's high mountain climates comes with many benefits, such as supporting native biodiversity, requiring less water, and providing color year-round, helping to achieve objectives 1 and 2. Additionally, green infrastructure can be installed to provide effective stormwater and snow management. Green infrastructure works in conjunction with existing underground stormwater piped systems by capturing and infiltrating water before it reaches the piped system, thus, reducing pressure on the underground system. Green infrastructure, like swales, rain gardens, and tree trenches not only effectively capture stormwater, but provide excellent snow storage areas too, which is especially crucial for Leadville. Similarly, Leadville should revise their municipal code to ensure that the landscaped areas that are required to be installed for all off-street parking lot with more than 50 spaces, also provide effective snow and stormwater management.



Lastly, the team proposes creating a new mixeduse zone district along Highway 24 that acts as an extension of Harrison Avenue, provides additional multi-family residential housing, such as attached townhomes and residential above retail, and acts as a gateway connection from the south into Leadville. The establishment of a new zone district will also streamline the zoning process and prevent the need for PUDs. The new district will have a maximum height of 35', with an established height transition for adjacent single-family homes, and provide a friendly pedestrian environment with large sidewalks and active street fronts. Additionally, rear parking, with designated snow storage areas, or structured parking that blends in with the existing facades, are encouraged. The utilization of these recommendations will ensure Leadville is affordable, welcoming, and accessible for current and future residents.

Common Name	Scientific Name	Mature Size	Water	Exposure	Flower Color	Bloom Time	Wildlife Value
GROUNDCOVERS							
Pussytoes	Antennaria spp.	6″ x 18″	low	sun/part shade	cream/pink	SP-S	np/bee, btf, o
Kinnikinnick	Arctostaphylos uva-ursi	12″ x 24″	low	sun/ part shade	pink	SP-S	np/bee, btf; frt/birds, wl
Sulfur Buckwheat	Eriogonum umbellatum	10" x 12"	low	sun/part shade	yellow	S	np/bee, btf
PERENNIALS							
Common Yarrow	Achillea millefolium (lantana)	18″ x 18″	low-med	sun	white	S	np/bee, btf, o
Pearly Everlasting	Anaphalis margaritacea	18″x18″	low	sun	white	S	np/bee, btf, o
Rocky Mountain Columbine	Aquilegia caerulea	24" x 12"	med	sun/part shade	blue	S	np/bee, btf; n/hummbr
Harebell	Campanula rotundifolia	8″ x 15″	low	sun/part shade	purple	S	np/bee
Scott's Sugarbowls	Clematis scottii (hirsuitissima var. scottii)	12″ x 18″	low	sun/part shade	purple	SP-S	np/bee, btf
Rocky Mountain Bee Plant (Annual)	Cleome (Peritoma) serrulata	3-6' x 3-6'	low	sun	pale purple	S	np/bee, btf; n/hummbr
Showy Fleabane	Erigeron speciosus	18″ x 12″	low	sun/part shade	lavender/blue	S	np/bee, btf, o
Wallflower	Erysimum capitatum	18″x 18″	low	sun/part shade	yellow/orange	S	np/bee, btf
Blanketflower	Gaillardia aristata	12″x 12″	med	sun	yellow/red	S-F	np/bee, btf
Richardson's Geranium	Geranium richardsonii	12″x 12″	med	sun/part shade	white		
Sticky Geranium	Geranium viscosissimum	12″x 18″	med	sun/part shade	pink/rose	S-F	np/bee, btf, o
Prairie Smoke	Geum triflorum	6″ x 12″	med	sun/part shade	cream/pink	S	np/bee, btf, o
Sneezeweed	Helenium (Hymonoxys) hoopesii	24" x 18"	med	sun/part shade	yellow/orange	S	np/bee, btf
Showy Goldeneye	Heliomeris (Viguera) multiflora	48" x 48"	low	sun	yellow	S	np/bee, btf
Scarlet Gilia	Ipomopsis aggregata	12″x 12″	low	sun/part shade	red/pink	S-F	n/hummbr
Silvery Lupine	Lupinus argenteus	24" x 12"	low	sun	purple/white	S	np/bee, btf, o
Bee Balm/Horsemint	Monarda fistulosa	24" x 24"	low-med	sun/part shade	pink/lavender	S	np/bee, btf; n/hummbr
Showy Locoweed	Oxytropis lambertii	12" x 12"	low	sun	pink	S	np/bee, btf
Rocky Mountain Penstemon	Penstemon strictus	30" x 24"	low	sun/part shade	blue/purple	S	np/bee, btf; n/hummbr
Blue Mist Penstemon	Penstemon virens	12" x 12"	low	sun/part shade	blue/purple	SP-S	np/bee, btf; n/hummbr
Whipple's Penstemon	Penstemon whippleanus	24" x 12"	low-med	sun/part shade	wine purple	S	np/bee, btf; n/hummbr
Silky Phacelia	Phacelia sericea	16" x 12"	low	sun	purple	S	np/bee, btf; n/hummbr
Jacob's Ladder	Polemonium viscosissimum	18″x 12″	med	sun/part shade	blue	S	np/bee, btf
Pasque Flower	Pulsatilla (Anemone) patens	6" x 6"	low	sun	lavender	SP-S	np/bee
Black-eyed Susan	Rudbeckia hirta	24" x 12"	low	sun/part shade	yellow	S	np/bee, btf; s/birds
Golden Banner	Thermopsis divaricarpa	18" x 24"	low	sun/part shade	yellow	S	np/bee, btf

Appendix A

Common Name	Scientific Name	Mature Size	Water	Exposure	Flower Color	Bloom Time	Wildlife Value
GRASSES							
Indian Ricegrass	Achnatherum (Oryzopsis) hymenoides	24" x 12"	low	sun		S	s/birds
Junegrass	Koeleria macrantha	18" x 18"	low	sun		SP	s/birds
SHRUBS							
Western Serviceberrry	Amelanchier alnifolia	12'x 6'	low-med	sun/part shade	white	SP	frt/birds
Redtwig Dogwood	Cornus sericea	5'x 5'	med-high	sun/part shade	white	S	np/bee, btf, o
Mountain Spray	Holodiscus dumosus	7′ x 3′	low	part shade	pink/white	S	np/bee, btf
Shrubby Cinquefoil	Potentilla fruticosa	3'x 3'	low	sun	yellow	S-F	np/bee, btf, o
Chokecherry	Prunus virginiana	15'x 8'	low	sun/part shade	white	SP	np/bee, btf; frt/birds, wl
Golden Currant	Ribes aureum (Ribes odoratum)	5' x 4'	low	sun/part shade	yellow	SP	np/bee, btf; frt/birds
Wax Currant	Ribes cereum	4'x 3'	low	sun/part shade	pink/white	SP	np/bee, btf; frt/birds
Western Wild Rose	Rosa woodsii	3'x 4'	low-med	sun/part shade	pink	SP-S	np/bees; frt/birds
Boulder Raspberry	Rubus (Oreobatus) deliciosus	4'x 4'	low	sun/part shade	white	S	np/bee, btf/frt/birds
TREES							
Colorado Blue Spruce	Picea pungens	45' x 15'	med-high	sun/part shade			seeds/birds, wl
Quaking Aspen	Populus tremuloides	60' x 25'	med	sun			shelter/birds

CSU Extension, Gilpin County Garden in Blackhawk at 9,300'



Blanketflower, Rocky Mountain Penstemon, Sticky Geranium, Shrubby Cinquefoil Photo by Irene Shonle



Hummingbird and Rocky Mountain Bee Plant Photo by Charlie Turner



Rocky Mountain Bee Plant, Black-Eyed Susan, Blanketflower Photo by Irene Shonle

Appendix A

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