Annie Beall, MEM

Whetstone Resiliency Strategy
Gunnison County Colorado

Image 1: Whetstone Mountain and Gunnison County owned parcel.

Introduction

Research & analysis on climate impacts and equity issues related to the location of affordable housing.

Gunnison County owns 13-acres of undeveloped land in the North Gunnison Valley, next to the Riverland Industrial Park. County officials are thoughtfully considering how these 13-acres can be developed into a dynamic neighborhood for community members to live close to their work in the North valley. The county is invested in research and analysis on the climate impacts and equity issues related to the location of affordable housing.

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Executive Summary

This report contains resiliency priorities to consider as the project development phase continues with partnering agencies, local jurisdictions, funding collaborators, developers and future tenants. The report author, Annie Beall, utilizes tools from the Colorado Resiliency Framework, a product of the Department of Local Affairs, to determine how the 13-acre parcel can be developed to support social equity and community needs, mitigate risks from climate change, and encourage economic vibrancy and diversity. The report author has identified that the important location of the Whetstone parcel, the application of compact design, and the strategic invitation of South Valley <80% AMI commuters to North Valley jobs, are all necessary components to build a low-carbon community to promote the community resiliency of the Gunnison Valley. These beginning details illustrate frameworks to apply to the Whetstone community development scenario.Through research and analysis, the following components are identified as design needs to build in resiliency for the Whetstone community:

Social Equity & Community Needs

- Location to work and time-saved commuting
- Collaboration with North Valley schools
- Community center
- Home ownership opportunities

Risks from Climate Change & GHG Emissions

Buildings & Transport

- Ultra-high performance design
- Passive survivability
- Grid-Interactive Efficient Buildings (GEB)
- High Performance District/Community
- Transit-Oriented Development (TOD)

Economic Vibrancy & Diversity

- <80% AMI occupancy median
- Small scale industrial, small business mixed-use
- Cooperative commercial kitchen
- Corner store, *tienda*
- Co-design and co-management with future tenants

Background & Context

The Gunnison Valley spans 27-miles from the City of Gunnison north to the Town of Crested Butte and an additional 3-miles to Crested Butte Mountain Resort (CBMR). A wide variety of jobs are associated with CBMR and the destination tourism attractions of the North Valley, such as hospitality and hotel services, food and beverage services, construction and maintenance, and retail. HWY 135, a two-lane, 27-mile long state highway, is the only year-round paved access to Crested Butte. This singular transportation corridor had an annual average daily traffic count of 8,880 vehicles in 2013 (CDOT Traffic Counts, 2021), with similar averages to date.

High work demand in the North Valley is directly tied to transportation demand as more attainable housing is located in the South Valley. The divide between work and home serves as an important basis for assessing strategies to correlate housing location as it relates to social equity and community, greenhouse gas emissions, and economic sustainability. Completed in 2016, the Gunnison Valley Needs Assessment presents the details of distribution of jobs and available housing.

> *"The North and Mid-Valley must import workers who commute from the South Valley to help fill approximately 845 jobs, whereas a much lower 370 South Valley jobs are filled by North and Mid-Valley residents. Approximately 12% of South Valley residents want to live in the North Valley" (Williford, 2016).*

With the Housing Needs Assessment's findings that 12% of South Valley residents are interested in living in the North Valley, there is a need to consider developing attainable housing on the Whetstone property. This report continues to assess the potential impact of development using frameworks of social equity and community, preparing for risks and hazards associated with climate change, and how the community design can best elicit economic vibrancy and diversity.

Visual Orientation

Figure 1: Overview map of the Gunnison Valley. The Whetstone parcel is indicated by a yellow star near Crested Butte. HWY 50 highlighted in Red on the North to South axis, 27-miles one-way from Gunnison to Crested Butte.

Figure 2: The Whetstone parcel, 13-acres outlined in blue. Adjacent to the Riverland Industrial Park, HWY 135, and the Slate River.

Figure 3: A birds-eye view of the Whetstone parcel, shaded in light blue, and it's relative location to Crested Butte. HWY 135 is highlighted in red. Whetstone to the Town of Crested Butte is 1.8 miles one-way.

Resiliency Recommendations

For the Whetstone community development scenario, the following recommendations outline resiliency planning priorities as the project enters its next phases of public engagement and development. These will be further detailed throughout the report.

I. **Design for Beyond Electrification:**

   A. Prioritize ultra-high performance design (leading to net zero with renewable installation), build in resiliency back-up mechanisms

   B. Start thinking about grid interactive capabilities, zero carbon

II. **Follow the 5 D's of Compact Development Design:**

   A. Density: with approximately 143-195 gross units, maximum area median income (AMI) of 80% with rental and ownership opportunities

   B. Destination: micro-grocery, childcare, community center, destination amenities for other North Valley residents, branch offices of South Valley community services

   C. Distance to travel: RTA integration, interconnected streets & pedestrian throughways, transit oriented district

   D. Design: mountain community design utilizing regional case studies, Beyond Electrification, culturally relevant neighborhood, co-design & co-management

   E. Diversity: mix of uses, planning to foster belonging, spatial justice, landscape links (connection with the Slate river and Whetstone mountain ecology)

The Whetstone location, compact development design, and strategic invitation of South Valley <80% AMI commuters to North Valley jobs, are all necessary components to build a low-carbon community to promote the community resiliency of the Gunnison Valley. These beginning details illustrate frameworks to apply to the Whetstone community development scenario.

Overview, Goals, & Potential Impact

Social Equity & Community

Current conditions of housing are only magnified in 2021 from the 2016 Housing Needs assessment. The COVID-19 pandemic has altered the work-home landscape, and remote work has brought increased year-round tenants to the North Valley. Already at-risk community members who work in hospitality industries experienced economic strain during the stay-at-home orders. The 2016 Housing Needs Assessment states that due to the lack of housing availability in the North Valley, renters are forced to look for rentals in the South Valley, which have poorer conditions and building energy inefficiency.

> *"Rental vacancies are lower than 1%. Availability is so limited that renters who want to reside in the North Valley are forced to live in the South Valley where many rental units are not well maintained" (Williford, 2016)*.

At the same time, a 2014 economic report found that 52% of all residential units in Gunnison County had non-resident property owners (Bowlin, 2021). While property is owned by a majority percent of second-home owners, full-time community members are experiencing displacement in their own neighborhoods.

It is critical to consider the racial and socioeconomic demographics of the people that commute from the South Valley to the North Valley. Some planners may dub this group of people as 'workforce' and plan for associated 'workforce housing', however it is important to reconsider this name and consider that these groups are *working families*, people who have lived and worked in the valley for decades.

> *"Members of our immigrant community clean houses, clean rooms at the local hotels, work in the restaurants, also do construction jobs, also work at ranches in the area," said Marketa Zubkova, a legal representative with the Hispanic Affairs Project. Gunnison has several sizable mobile home parks [in the South Valley], where much of the community's Spanish-speaking population lives, according to Zubkova and other housing advocates. (Bowlin, 2021)*

Goals in understanding the social and community needs as applied to the Whetstone property examine what community members are we targeting to house in this potential neighborhood? What would be the AMI and other demographic indicators? These questions are analysed in the findings of this report.

Case Study Offers Example of Potential Impact

While the inequities of housing and work are multi-faceted and daunting, many Colorado mountain communities have faced similar scenarios, and offer approachable examples of potential impacts of developing the Whetstone property with social equity and community as a priority design component. From Breckenridge, Aspen-Basalt, Telluride, Buena Vista, Edwards and Frisco, and other similar climate zone communities in North America, cold climate attainable housing for mountain tourism economies hold good practices and potential leapfrog scenarios.

Basalt Vista, defined their workforce as teachers, and designed 27 homes for workforce families. With a diverse mix of financial support, the homes will be affordable to buy and affordable to operate. Basalt Vista was built in collaboration with the local utility, Holy Cross Energy, The Roaring Fork School District, Pitkin County, Habitat for Humanity, the Community Office for Resource Efficiency (CORE) and many other material suppliers to provide state of the art energy efficiency systems and appliances.

Image 2: Basalt Vista affordable housing project, 2019.

Risks & Hazards (Climate Change & Greenhouse Gas emissions impacts)

Gunnison Valley recently produced its 2020 Climate Action Report, identifying its in-boundary greenhouse gas (GHG) emissions by sector, finding buildings and surface transportation account for 90% of our total greenhouse gas emissions (Cattles, 2020). These identified sectors prioritize buildings and transportation as critical emissions hazards and also as opportunities for emissions reductions.

Transportation

Due to the higher proportion of jobs in the North Valley, and better availability of attainable housing in the South Valley, workers are commuting from the South Valley to the North Valley, a 56-mile round trip with an average of 261 working days per year.

> *"Locally, surface transportation (vehicles) account for 29% of carbon dioxide equivalent or CO_2e" (Cattles, 2020).*

One of the greatest challenges to reducing carbon emissions in Gunnison County is decreasing vehicle miles traveled (VMT). Gunnison County contains 17,622 registered vehicles, slightly more than one vehicle per person based on the 2018 United States Census population estimate of 17,246. The Gunnison Valley Climate Action Conference identified a goal of reducing VMT by 8% over the next 10 years (Williford, 2020).

Buildings

In Gunnison Valley, buildings account for 61% of total emissions, with residential building emissions accounting for 35% of total CO_2e, and commercial buildings accounting for 26% of total CO_2e (Cattles, 2020). Nationwide, residential energy use accounts for roughly 20% of CO_2e in the United States (Goldstein, 2020), bringing Gunnison Valley's residential buildings to be 15% higher than the national average of residential energy use.

"Carbon dioxide equivalent" or "CO_2e" is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO_2e signifies the amount of CO_2 which would have the equivalent global warming impact.

Here it's critical to consider Gunnison's climate zone 4a: -30F to -25F, equivalent to Anchorage Alaska, a Zone 4b: -25°F to -20°F hardiness zone. Alaskans face a severe climate, lack of infrastructure, and energy bills five times higher than the average American (Rettig, 2021). While Alaska seems like a distant parallel, Gunnison Valley experiences:

> *"Nighttime temperatures can drop below zero for weeks at a time, causing exorbitant heating bills for people living in trailers with insufficient insulation or broken windows. This creates what [Loren] Ahonen describes as an "energy justice" issue: According to Department of Energy data, the lowest-income residents spend the most, relative to their*

income, on utility and heating bills. Gunnison County also has some of Colorado's highest rates of inadequate plumbing, according to Kaiser Health News" (Bowlin, 2021).

Shocks and stresses associated with residential buildings include water infrastructure, electricity reliability, natural gas costs, safety and overall building inefficiency.

In considering the Whetstone community development opportunity, this resiliency strategy prioritizes the following climate resilient components to meet Gunnison County's GHG emissions goals:

1. Reduction of Vehicle Miles Traveled (VMT) through Compact Development
2. Avoided Emissions through Decarbonized Buildings and Energy Efficiency

"Developers of affordable housing are pursuing all-electric designs more frequently because of the climate impact, simplicity and avoided costs of building without gas, and numerous other benefits to residents. BHP [Boulder Housing Partners] indicated they don't expect to build a new property with fossil fuels ever again. As communities continue to increase ambition to combat climate change, the importance of eliminating fossil fuels will become more apparent. Housing authorities and governments can prioritize all-electric affordable housing to ensure that low- and moderate-income families are among the first to benefit from the improved air quality and comfort these systems provide compared to gas." (Fieldman, 2021).

Case Study Offers Example of Potential Impact

In Denver, buildings and homes represent 64% of Denver's 2019 GHG emissions and have been identified as a key component to addressing climate change. In January 2021, Denver office of Climate Action, Sustainability & Resiliency, issued Denver's Net Zero Energy (NZE) New Buildings & Homes Implementation Plan. The milestones to reach this goal are:

- ➔ Net zero energy, all-electric new homes in the 2024 Building Code
- ➔ Net zero energy, all-electric new buildings in the 2027 Building Code
- ➔ New buildings perform as designed with performance verification in the 2030 Building Code

However, code and building use often conflict with multifamily buildings.

"Multifamily buildings pose a conundrum for advancing energy performance. As a building type, they are caught somewhere between commercial buildings and single-family residences – they are often constructed like commercial buildings, yet used as residential buildings. Energy-efficient technologies and design strategies that work for commercial or single-family homes are often ineffective for multifamily buildings," (Denniston, 2017).

Fortunately, there are many devoted experts in this field, offering solutions to common development issues. ASHRAE offers Advanced Energy Design Guides Strategies– with a soon

to be published guide Net Zero for Multifamily Residential. Models show that implementing efficiency measures in a multifamily building could achieve savings of 15-25% over the 2015 International Energy Conservation Code, (Denniston, 2017). These steps offer not only electrification of buildings, but prioritize energy efficiency improvements, significantly reducing demand on renewable energy production.

Economic Vibrancy & Diversity

Due to the discrepancies between location of jobs and location of housing, local economies are separated between the North and South valleys.

Goods and services are primarily located in the South Valley, such as preferred grocery stores, Health and Human Services, community services, vehicle services, and the Western Colorado University complex. The focus is on serving tourists in the North Valley, whereas the focus on serving full-time community members is more rooted in the South Valley.

In conversation with Marketa Zubkova, Hispanic Affairs Project, and community advocate with the immigrant population of Gunnison Valley, Marketa considers if the immigrant workforce who work in the North Valley would like to relocate to live in the North Valley. From her experience as a gatekeeper, she shared that families would prefer to live in the South Valley, as it offers community, access to goods and services, and established connections with the school system and teachers. Marketa shares that some families drive to Montrose to purchase food at its most affordable rate. This furthers the complexity of living, working, driving, food access, and the many other amenities associated with home.

This critical perspective brings into examination how to equitably approach the Whetstone development, and its potential role in attending to the racial and economic divide between the North and South valleys. A major goal of this analysis is to understand how to consider priority amenities within the design of a housing community that could support working families and replicate valued components of the South Valley.

The economic vibrancy and diversity components of the resiliency strategy prioritizes:

1. Compact development (inclusion of community services)
2. Transit Oriented Development (TOD)

Compact development offers GHG reductions between 10-16%, as it prioritizes design, density, diversity, destination and distance to transit, (Urban Land Institute, 2010).

Transit Oriented Development (TOD) not only reduces VMT and GHG, it also helps reduce the cost of living, helps protect property values, and helps connect households with economic opportunity. TOD can help communities meet fair housing goals by prompting mixed-income living through a designed environment that promotes interaction and diversity.

Case Study Offers Example of Potential Impact

"The traditional measure of affordability recommends that housing cost no more than 30% of household income. Under this view, a little over half (55%) of U.S. neighborhoods are considered "affordable" for the typical household. However, that benchmark fails to take into account transportation costs, which are typically a household's second-largest expenditure. When transportation costs are factored into the equation, the number of affordable neighborhoods drops to 26%, resulting in a net loss of 59,768 neighborhoods that Americans can truly afford." (Housing + Transportation Index, 2009)

"As households drive less, they spend less on transportation, freeing up money for things like childcare, education, health care, conventional down payments, and savings. Through this connection to job opportunities via transit, economic mobility increases. Greenhouse gases go down. Neighborhoods become more economically and fiscally resilient. And many of these benefits accrue at an even greater rate when transit-oriented development (TOD) includes units for all incomes," (Advocating for TOD, 2015).

Image 3: Riverland Industrial Park, adjacent to HWY 135, looking toward Elk Mountain.

Methods

Colorado Resiliency Framework

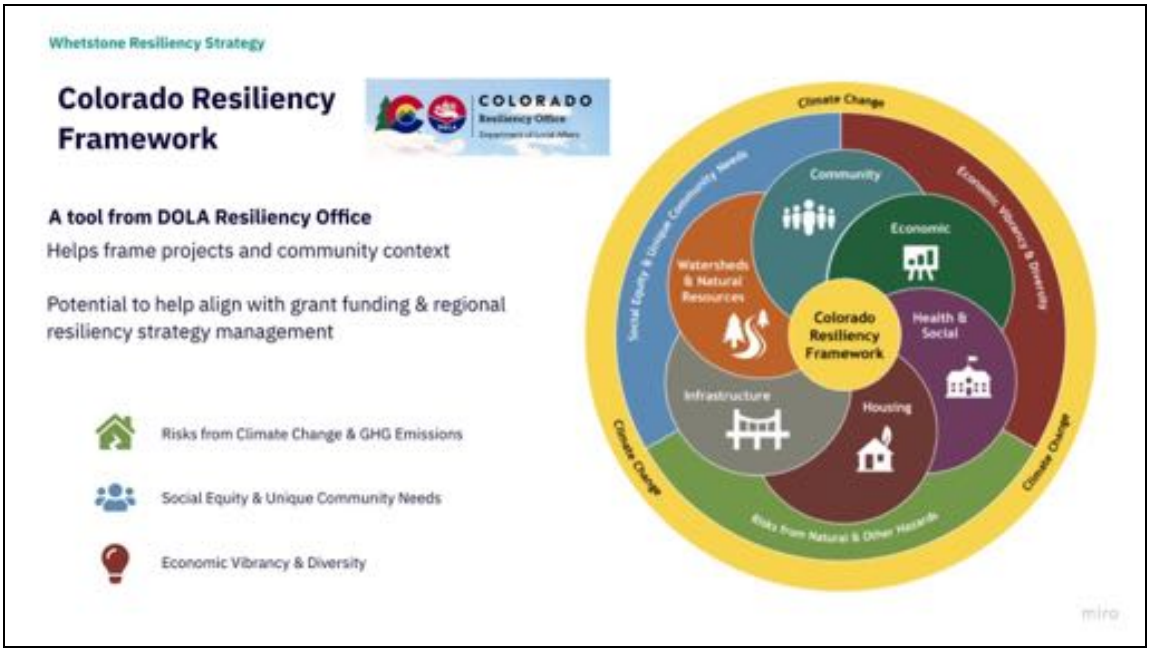

Figure 4: Graphic from 2020 Colorado Resiliency Framework

Report author, Annie Beall, brings her approach as a sociologist and environmental manager, to conduct analysis of the Whetstone property with a socioeconomic justice and environmental planning framework. Annie found alliance with the newly published 2020 Colorado Resiliency Framework, and has utilized this framework and its associated tools as a methodological approach to analyzing the Whetstone scenario with the goals of Gunnison County.

The Colorado Resiliency Framework helps develop strategies for six resiliency sectors: community, economy, health & social, housing, infrastructure and watershed, all within the contexts of climate change. The themes of social equity, climate risks and economic vibrancy are consistent throughout this report. Many tools and resources are available on the CO Resiliency website: Colorado Resiliency Office Webinar Series

Findings

Data & Analysis: Compact Development

A major study utilized in this analysis is Land Use and Driving: The Role Compact Development Can Plan in Reducing Greenhouse Gas Emissions, produced by the Urban Land Institute in 2010. This study concluded that:

> *"Compact development can reduce vehicle miles traveled by 20 to 40 percent compared to conventional development, and by investing in transportation it's possible to reduce greenhouse emissions by up to 19 percent," (Urban Land Institute, 2010).*
>
> *"GHG emissions compared to VMT account to a 9:10 reduction, modeling scenarios produce GHG reductions between 10-16% (Urban Land Institute, 2010)."*

This means that through the implementation of compact development, greenhouse gas emissions as related to VMT are a 9:10 reduction ratio, offering potential GHG reductions ranging from 10-16% while VMT can be reduced 20-40%.

Successful compact development is a land use settlement pattern that features most or all of the following:

- ➔ Concentrations of population and/or employment;
- ➔ Medium to high densities;
- ➔ A mix of uses;
- ➔ Interconnected streets;
- ➔ Innovative and flexible approaches to parking;
- ➔ Pedestrian-, bicycle-, and transit-friendly design; and
- ➔ Proximity and connectivity to transit.

In compact development, one component is not weighted more heavily than another. Therefore, in determining the features available for Whetstone, these should be weighted equally in planning and development.

While compact development focuses on a neighborhood land use design, it indicates that the transportation sector is key in reducing emissions. The National Household Travel Survey indicates that “Compact development can help people reduce car use for errands, shopping, and other personal trips” (National household travel survey, 2017).

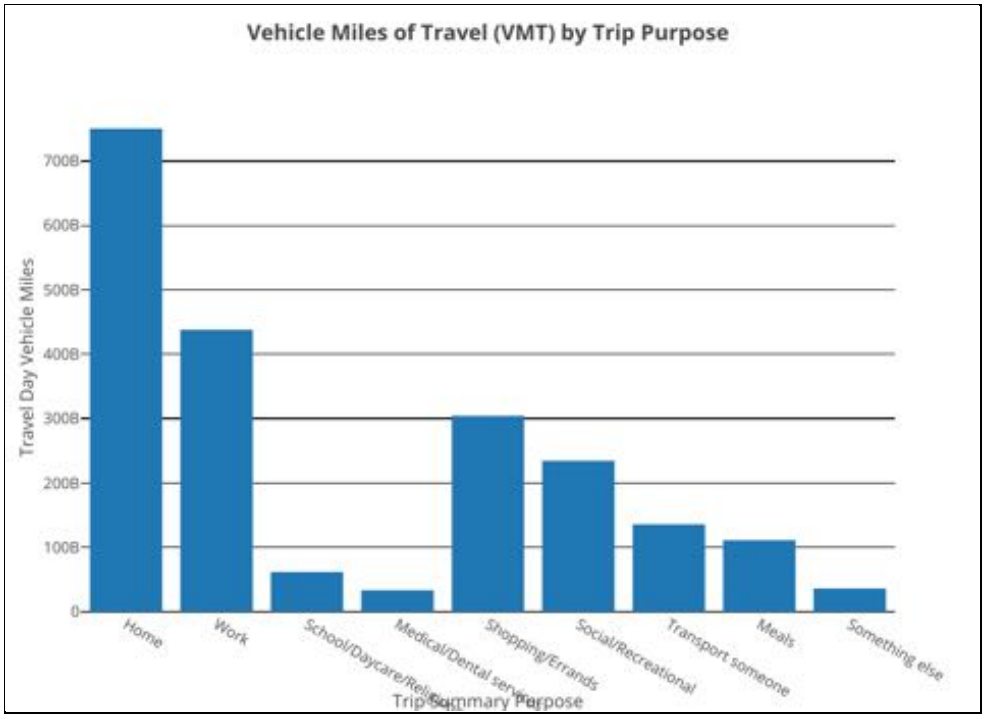

Figure 5: Vehicle Miles of Travel (VMT) by Trip Purpose, National household travel survey, 2017

Most national trips are for home, work, shopping and errands. This reflects the local scenario of the South Valley and North Valley work-live divide. For the Whetstone property to be developed for a community, and in order to receive the climate benefits of compact development, it must consider the **5 D’s of compact development: density, diversity, design, destination and distance to transit**. This brings a focus to not only developing units of housing, but also designing for mixed-use to meet the family/personal, work and social needs of the community members, and consider destination services for other North Valley residents.

This approach seems well suited for the Whetstone 13-acres, as it closely neighbors the Riverland Industrial Park and has several nearby RTA transit stops. The property sits 1.8 miles from the Town of Crested Butte and 6.2 miles from Mount Crested Butte. These circumstances offer a collaborative opportunity to involve Riverland Industrial Park in business development to meet broader needs of food and everyday errands.

As the vision for the number of units develops, residential density on the 13-acres will be a mix of science, art, and political savviness, possible by planners and developers who are devoted to co-produced, intercultural place making. The unit mix should support the demographics of working families and individuals, provide space for economic diversity and vibrancy, elicit space for community and involvement with unique edge integrations with the Riverland Industrial Park, the Slate River, Highway 135, and the neighboring residential homes.

*"Studies of compact development define the residential density component of compact development to average in the range of **11 to 15 dwelling units per net acre**. Compact residential development could consist of townhouses, apartment buildings, and single-family houses on small lots in a wide variety of combinations", (Urban Land Institute, 2010).*

In applying this to Whetstone's available 13 acres, the potential unit averages could occur:

11 units/acre x 13 acres = **143 units**
15 units/acre x 13 acres = **195 units**

These unit numbers, balanced with forward thinking design, planning for diversity, destination and distance to transit, can bring 10-16% GHG reductions, based on compact development strategies alone *(Urban Land Institute, 2010)*. This offers a great match for the desired unit development, and offers one framework for moving forward regarding density mix and its counterparts.

Locally, in applying Compact Development, assumptions can be made about potential reduced VMT. If assumptions are made that each potential dwelling unit developed is occupied by a household from the South Valley who commutes one car trip to the North Valley, the round trip is approximately 56 miles, and there are an average of 261 working days/year, we can assume the following potential VMT reductions:

100% South Valley Occupancy

56 miles x 143 units x 261 working days = 2,090,088 VMT reduction
56 miles x 195 units x 261 working days = 2,850,120 VMT reduction

The average fuel economy for vehicles in Gunnison County is 21.83 mpg and the emissions factor of gasoline is 8.87 kg/CO_2e per gallon.

CO_2e is found by the VMT/ fuel economy x emission factor = CO_2e

These VMT reductions equate to the following *CO_2e avoided emissions:*

143 units at 100% south valley occupancy = 849,248 *CO_2e*
195 units at 100% south valley occupancy = 1,158,065 *CO_2e*

To consider that not all units may be developed for South Valley residents and some North Valley residents, the following conversions account for 75%, 50% and 25% south valley occupancy rates, and the associated VMT reductions:

<u>75% South Valley Occupancy</u>

143 units at 75% south valley occupancy = **107 units = 1,563,912 VMT reduction**
195 units at 75% south valley occupancy = **146 units = 2,133,936 VMT reduction**

50% South Valley Occupancy

143 units at 50% south valley occupancy = **71.5 units = 1,045,044 VMT reduction**
195 units at 50% south valley occupancy = **97.5 units = 1,425,060 VMT reduction**

25% South Valley Occupancy

143 units at 25% south valley occupancy = **35.75 units = 522,522 VMT reduction**
195 units at 25% south valley occupancy = **48.75 units = 712,530 VMT reduction**

These VMT reductions are now converted into CO_2e, carbon dioxide equivalent, which can be potentially avoided with reduced vehicle miles traveled. Table 1 shows the summaries of CO_2e reducations with compact development unit density & South Valley (s.v.) occupancy rates.

	Min Units	Max Units
100% s.v. occupancy	**849,248 CO_2e, 143 units**	**1,58,065 CO_2e, 195 units**
75% s.v. occupancy	**635,451 CO_2e, 107 units**	**867,064 CO_2e, 146 units**
50% s.v. occupancy	**424,624 CO_2e, 71.5 units**	**579,032 CO_2e, 97.5 units**
25% s.v. occupancy	**212,312 CO_2e, 38 units**	**289,516 CO_2e, 49 units**

Table 1: CO_2e Reductions as associated with min/max units and south valley occupancy rate

As the ratios of unit infill change from 100% south valley residents to different mixes of south valley and north valley, it can be assumed that with compact development, transportation from home to work in the north valley at 261 working days will be limited, and other errands for shopping will be reduced as the Whetstone neighborhood and potential development with the Riverland Industrial park, could reduce additional VMT.

Regional examples of compact development include a new community, The Farm, built in Buena Vista by Fading West. "Our mission is to develop communities of attainable, high quality, architecturally interesting, fee simple homes for the essential workforces of Rocky Mountain towns," (Fading West, 2021). These buildings are all electric with no natural gas.

Figure 6: The Farm at Buena Vista | Attainable Housing (Fading West, 2021).

Image 4: "Fading West Development has created turnkey packages that can be licensed to other developers or municipalities," (Fading West, 2021).

Data & Analysis: National Household Travel Survey & Associated Area Median Income (AMI)

Conducted by the Federal Highway Administration (FHWA), the National Household Travel Survey (NHTS) is the authoritative source on the travel behavior of the American public. It is the leading source of national data that allows one to analyze trends in personal and household travel. It includes daily non-commercial travel by all modes, including characteristics of the people traveling, their household, and their vehicles.

For this analysis, It is helpful to look at Vehicle Miles of Travel (VMT) by Household Income.

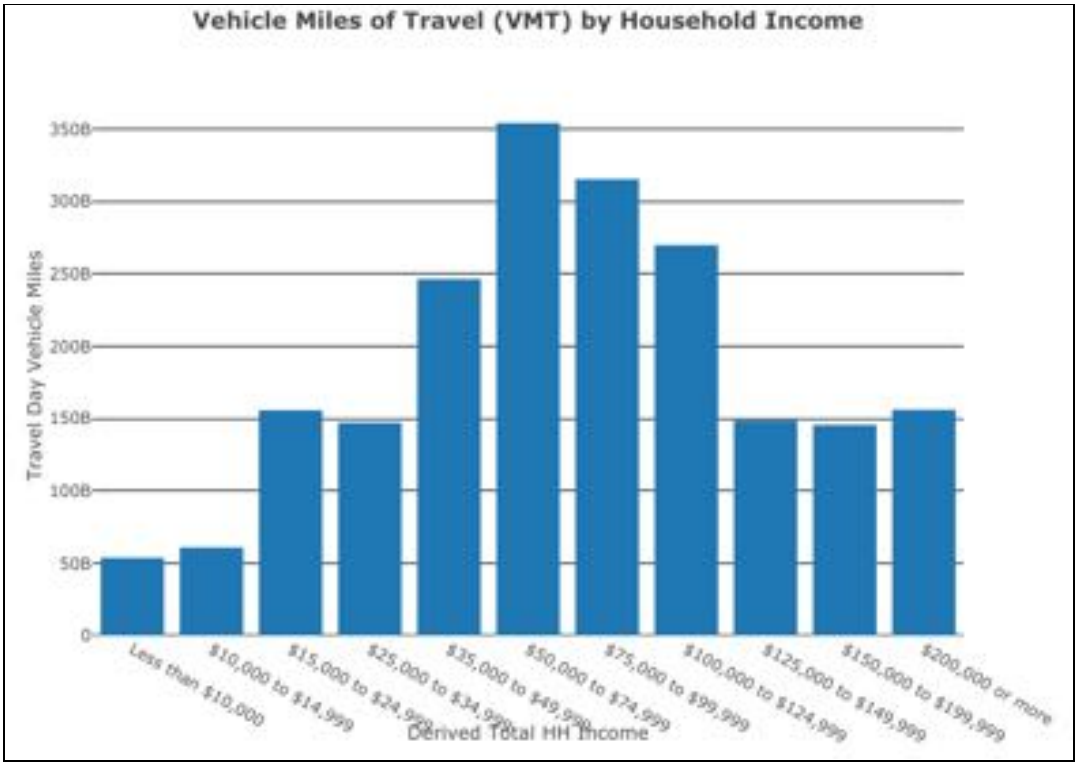

Figure 7: VMT by Household Income, National household travel survey, 2017

Vehicle Miles of Travel (VMT) statistics are correlated with Household Income (HHI), showing that the highest national VMT are attributable to the $50,000 to $74,999 HHI range.

The $35,000 to $49,999 HHI range has the fourth highest VMT by HHI, bookmarked by the 3rd highest VMT by HHI, falling at $100,000 to $124,999, (National household travel survey, 2017).

These top four highest VMT income ranges, spanning from $35,000 to $124,000, offer a range to focus on housing households with local AMI's ranging from 50% to 140%, depending on household size, as illustrated in the subsequent table.

Here is how these national household income averages translate to Gunnison County's 2020 AMI:

Household Income by Four Highest VMT to AMI by Household Size

HHI with Highest VMT	1 Person HH AMI	2 person HH AMI	3 Person AMI	4 Person AMI	5 Person AMI	6 Person AMI
$50,000 to $74,999	100% - 140%	**80%- 125%**	**80%- 110%**	**70%- 100%**	**50% - 95%**	**65%- 85%**
$75,000 to $99,999	150% - 190%	125%- 165%	110%- 145%	100%- 130%	95%- 120%	85%- 115%
$100,000 to $124,999	195% - <200%	165% - <200%	145% - 185%	130% - 165%	125%- 150%	115%- 145%
$35,000 to $49,999	**65%- 95%**	**60%- 85%**	55%-75%	45%-65%	40%-65%	30%-60%

Table 2: Highest VMT Households Translates to Local AMI, Analysis by Annie Beall

Meeting the valley-wide housing needs, as identified in the 2016 Housing Needs assessment below, plus the information from the transportation emissions sector, related to location of work, could help determine dwelling unit size and unit mix based on AMI.

If considering relocating South Valley residents to the North Valley closer to their work, and to meet the 12% interest of South Valley residents wanting to move to the North Valley, it would be essential to focus on South Valley ownership and rental AMI, mortgage and rental prices, at maximum 80% AMI. This 80% and 100% rental AMI is derived from Table 3, Recommended Upper Income & Price targets, from the 2016 Housing Needs Assessment. 80% AMI households are reflected in the above table as highlighted in blue. Maximum 100% AMI from the mid valley is also highlighted in orange.

This indicates that it is possible to house the highest transportation emitting population, which matches the maximum household incomes to be served.

Upper Income and Price Targets

	North Valley	Mid-Valley	South Valley
Ownership	200% AMI $450,000	120% AMI $260,000	80% AMI $170,000
Rental	80% AMI $1,100/month	100% AMI $1,200/month	80% AMI $1,000/month

Source: Consultant team

Table 3: Recommended Upper Income & Price Targets, Housing Needs Assessment, Williford, 2016

An important remaining question exists, as to who are the 80% AMI working families and individuals, who currently live in the South Valley and commute to the North Valley for work? This will require additional demographic data and public engagement.

True 80% AMI in 2020 Gunnison County holds the following HHI details:

80% AMI	1 Person	2 Person	3 Person	4 Person	5 Person	6 Person
Maximum	$42,240	$48,320	$54,320	$60,320	$65,200	$70,000

Table 4: True 80% AMI in 2020 Gunnison County

Again based on 2017 Transportation data, this $50,000 to $74,999 HHI group holds the highest vehicle miles traveled.

"Scenarios demonstrate this [housing] sector cannot achieve the Paris Agreement 2050 target by decarbonizing electricity production alone. Meeting this target will also necessitate a broad portfolio of zero emission energy solutions and behavioral change associated with housing preferences. To support policy, we estimate the reductions in floor space and increases in density needed to build low-carbon communities, (Goldstein, 2020)."

The Whetstone location, compact development design, and strategic invitation of South Valley 80% AMI commuters to North Valley jobs, are all necessary components to build a low-carbon community to promote the community resiliency of the Gunnison Valley. These beginning details illustrate what this can look like.

Recommended Resiliency Priorities

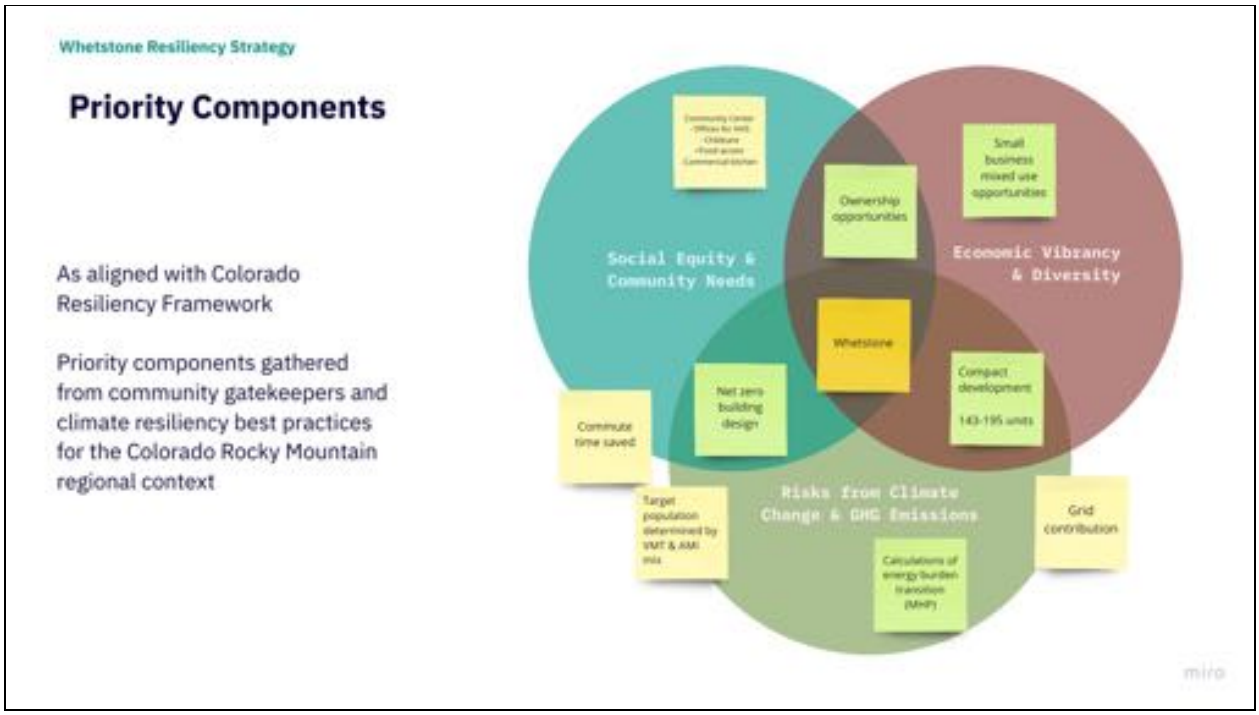

Figure 8: Priority Components for the Whetstone community, designed by Annie Beall, 2021

Social Equity & Community

While the highest VMT population resides with the 80% AMI group, it is essential to understand that this maximum AMI does not reflect a full scope of long-term North Valley workers.The low-income immigrant community of the Gunnison Valley, who hold many essential roles in the North Valley and experience housing insecurity and energy burden in the South Valley, also hold some of the lowest VMT.

This is due to many reasons: low car to family member ratio, the utilization of the RTA bus system, and carpooling networks, among others. In working towards community equity and tending to the racial divide of the North and South Valleys, the notion of building a community at Whetstone will be critical. Priority social equity and community components to consider in developing Whetstone can include:

> **Time**: Commute time saved. With about a 1-hour commute each way, it is important to consider how families are separated by 26 miles and 1-hour RTA commute. If people are going to move to the North Valley, they will regain a significant amount of their daily commute duration and be closer to respond to their families' needs.

Connection with North Valley Schools: As the Whetstone property is developed, an important stakeholder will be the North Valley Schools. South Valley families are connected with South Valley resources, and special Bringing School Home-type partnerships can be designed to support learners in their Whetstone neighborhood. This would include ESL (English as a Second Language) efforts in the North Valley for families and schools alike.

Community Center: A community center can serve as a central hub for gathering, economic innovation, childcare and youth services, as well as possible North Valley offices for community services that are primarily located in the South Valley. This could include flexible offices for Health & Human Services, Hispanic Affairs Project, GV Mentors, the Food Pantry, and other important community services that are not yet available to North Valley residents. While these concepts can serve the Whetstone neighborhood, they can also serve as a *destination* for other North Valley residents seeking community services.

Home Ownership Opportunities:Careful design of covenants that protect local investments with opportunities for economic mobility, intergenerational wealth development, and intergenerational occupancy.

Risks & Hazards (Climate Change & GHG emissions impacts)

Buildings

Ultra-high Performance Design: Leading to Net Zero with renewable installation.
Utilize Advanced Energy Design Guides for Multifamily Homes. Local code determines the minimum building requirements, and ASHRAE resources offer additional resources to achieve further efficiencies. These are educational resources to support land owners in understanding the importance of making advanced energy improvements. The Zero Energy guide for multifamily homes will be published soon, as the COVID-19 pandemic extended the publishing date.

Passive survivability: Consider design strategies to support passive survivability and resiliency. Passive survivability is the ability to prolong operation during times of grid outage, or limited access to services.

Grid-Interactive Efficient Buildings (GEB): Start thinking about grid interactive capabilities, zero carbon. The Department of Energy (DOE) Connected Communities offers up to $65 million in funding through its Connected Communities funding opportunity announcement (FOA) to expand DOE's network of grid-interactive efficient building communities nationwide.

> *"A Connected Community (CC) is a group of grid-interactive efficient buildings (GEB1) with diverse, flexible end use equipment and other distributed energy resources (DERs) that collectively work to maximize building, community, and grid efficiency,"* (Office of Energy Efficiency & Renewable Energy, U.S. DOE)

High Performance District/Community: Partnership opportunities exist with the National Renewable Energy Laboratory (NREL) residential building partnership program. The NREL Residential Buildings group is an innovative, multidisciplinary team focused on accelerating the adoption of cost-effective energy efficiency technologies and practices into the U.S. home building and retrofit markets. In addition to their core partnership with the U.S. Department of Energy, their team works with leading manufacturers, utility programs, federal agencies, universities, and other organizations to evaluate and deliver innovative solutions to residential building technical challenges. By partnering with NREL and the Connected Communities opportunity, there is potential to make the Whetstone a high performance district and community.

Transport

Transit-Oriented Development (TOD): The Center for Neighborhood Technology (CNT) is a leader in promoting more livable and sustainable communities. The CNT is a national hub with resources on transportation and community development, water, sustainable economic development, climate and policy. Their Housing and Transportation (H+T®) Affordability Index hosts a suite of tools, including the National Transit-Oriented Development (TOD) database, available for planners, developers, government officials and academics to provide economic and demographic information for existing transit zones, transit sheds and transit regions. The CNT offers tools for planning TOD, advocating TOD and developing TOD. These resources will be valuable for next steps of the Whetstone development.

With the existing RTA bus stops and additional bus systems of the North Valley, there is much potential to build on additional bus transportation systems for the Whetstone and Riverland Industrial park communities.

Economic Vibrancy & Diversity

As a part of the compact development framework, the Whetstone's neighboring proximity and potential connectivity to the Riverland Industrial Park, and the innovative vibrancy of a proposed max 80% AMI occupancy, the context is ripe for economic diversity and creativity.

It is recommended to develop small scale industrial spaces and small business mixed-use opportunities in the community design and regional partnered approaches. This can include small garages, a cooperative commercial kitchen, corner store or *tienda*, and other spaces that will be suitable for business innovation, shared-use, for all ages and abilities. Most of all, the design for these considerations must be co-designed and co-managed with future tenants.

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