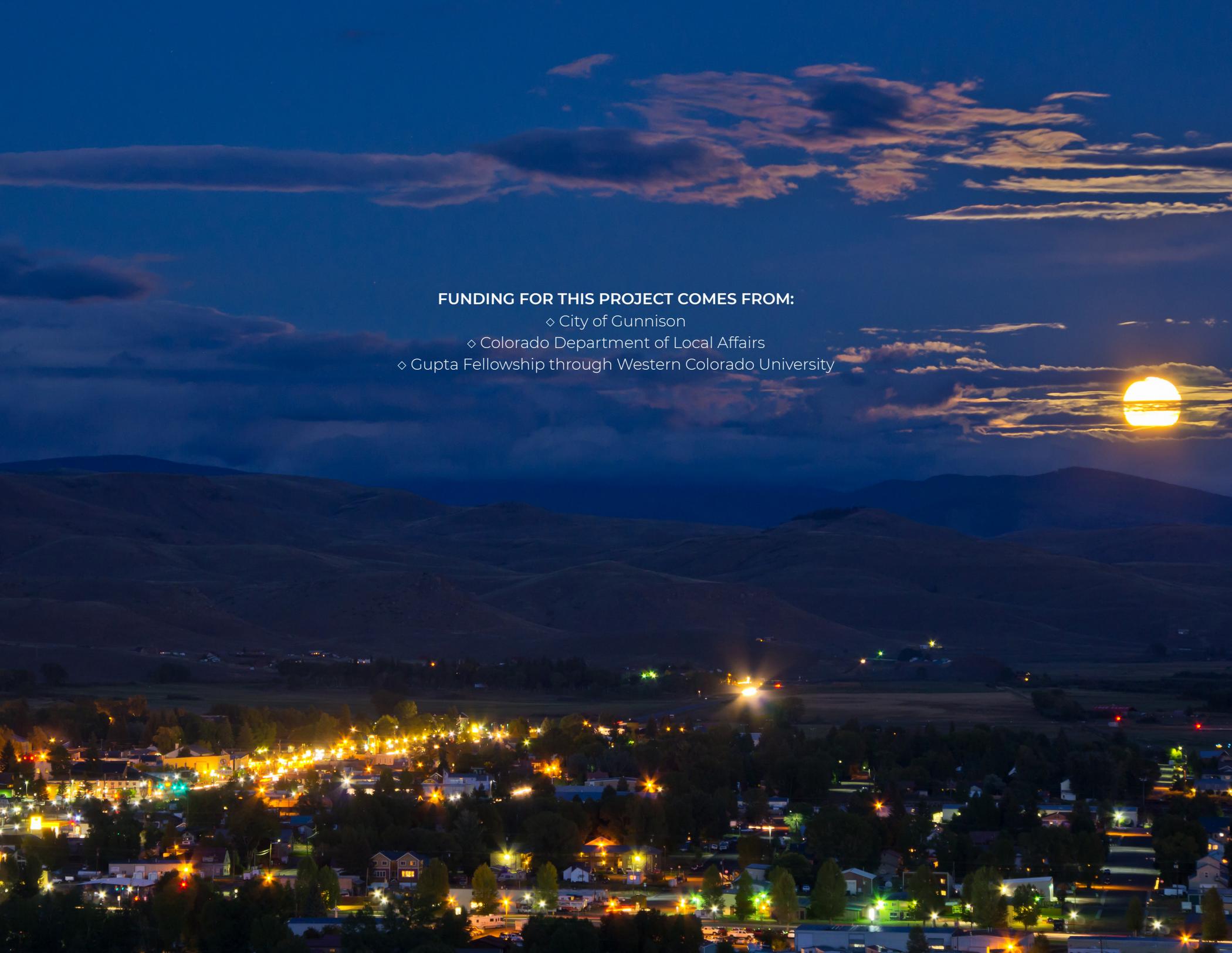


An aerial photograph of Gunnison, Colorado, showing a town with red-roofed buildings and green trees. In the background, there are rolling hills and large mountains, some with snow. Several colorful hot air balloons are floating in the sky. The text 'GUNNI CARES 2030' is overlaid on the left side of the image.

GUNNI CARES 2030

CLIMATE ACTION, RESILIENCY, & ENVIRONMENTAL SUSTAINABILITY

THE CITY OF GUNNISON'S ROADMAP TO 2030 TO HELP
REDUCE EMISSIONS AND ADAPT TO A CHANGING CLIMATE

A nighttime photograph of a town and mountains. The town in the foreground is illuminated with warm yellow and white lights, showing houses and streets. The background features rolling mountains under a dark blue sky with scattered clouds. A bright full moon is visible on the right side of the sky, partially obscured by a thin layer of clouds. The overall scene is peaceful and scenic.

FUNDING FOR THIS PROJECT COMES FROM:

- ◇ City of Gunnison
- ◇ Colorado Department of Local Affairs
- ◇ Gupta Fellowship through Western Colorado University

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- ◇ Bella Biondini, *Photographer*
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EXECUTIVE SUMMARY

Part college town, part outdoor recreation mecca, and part traditional ranching community, the City of Gunnison is an extraordinary place. The mix creates a community that is heavily dependent on natural resources. A shared value of the Gunnison Community is its strong stewardship and care of these outstanding natural resources. **Given the previous community feedback and our values, the purpose of this plan is to achieve measurable results in addressing climate change, waste management, water management, and community resiliency in the City of Gunnison.** In the Comprehensive Plan, the community challenged local government to provide leadership on climate change and solid waste management and develop responsible stewardship of our water resources. Through support from the City, the Department of Local Affairs through the State of Colorado, and Western Colorado University, Gunni CARES 2030 was developed. This Climate Action **(CA)**, Resiliency **(R)**, and Environmental Sustainability **(ES)** plan provides a Roadmap to achieving specific and measurable Results in each area.

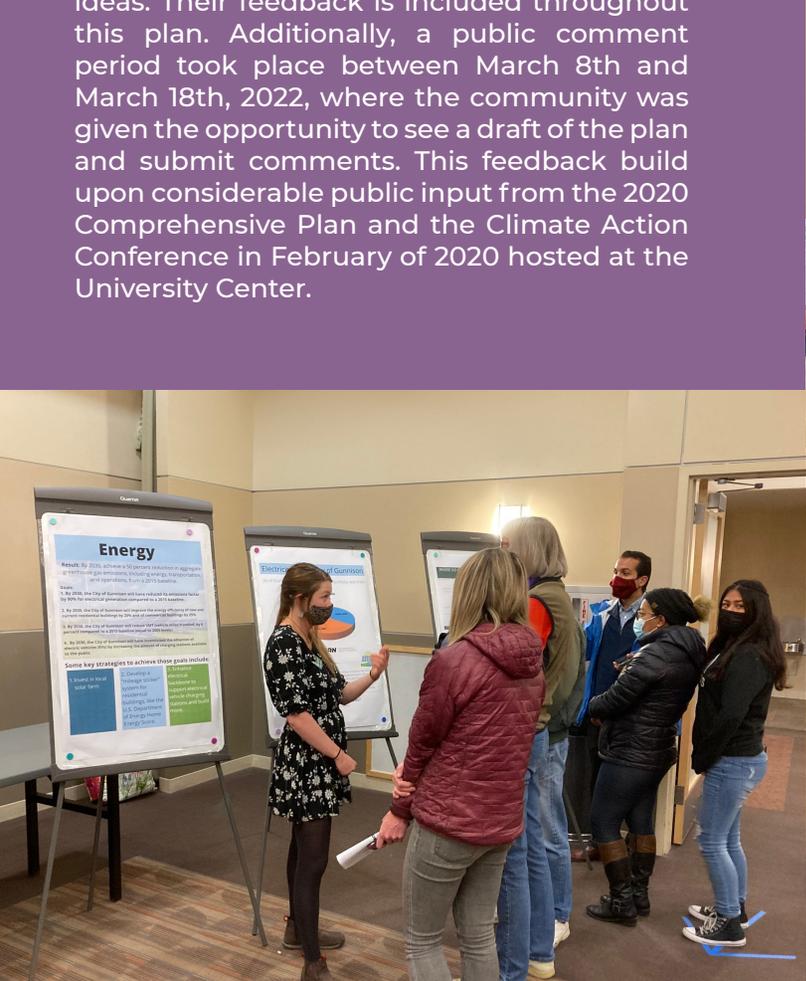
As a small, rural mountain town already seeing the impacts of climate change, the City needs to plan and prepare. Global climate change is caused by human activities, such as burning fossil fuels for energy, that produce greenhouse gas (GHG) emissions.¹ Climate Action Plan focuses on mitigating emissions from potent greenhouse gases, such as carbon dioxide and methane, and adapting to some of the inevitable impacts of climate change. The **CA** in CARES stands for **Climate Action**.

The second section, **Resiliency (R)**, focuses on increasing our community's ability to prepare, adapt and recover. Disasters affect members of our community differently, and the resiliency section focuses on building equity and justice to prepare for the effects of climate change and other types of disasters.

The **Environmental Sustainability (ES)** section of the plan focuses on three central components, **Energy, Water, and Waste**. The definition of environmental sustainability is a "practice of using natural resources responsibly today, so that they are available for future generations tomorrow."² These sectors were determined as three of the most essential areas for local government to focus efforts for environmental sustainability. Other elements, such as transportation and land use, show up throughout the plan due to their inherent ties with these three major components.

COMMUNITY CONTRIBUTIONS

On November 17th, 2021, over 70 community members attended a Sustainability Open House held at Western Colorado University (WCU). Participants were able to comment on the initial Results and Goals developed by the City Sustainability Interns and expert stakeholders as well as voice their concerns and priorities for action towards the goal of this Roadmap, using sticky notes to share ideas. Their feedback is included throughout this plan. Additionally, a public comment period took place between March 8th and March 18th, 2022, where the community was given the opportunity to see a draft of the plan and submit comments. This feedback build upon considerable public input from the 2020 Comprehensive Plan and the Climate Action Conference in February of 2020 hosted at the University Center.



LETTER FROM THE MAYOR

The scientific evidence is clear: the effects of climate change are impacting communities across the world at alarming rates. In order to help prevent and prepare for future natural disasters, we must put into place a plan of action. Gunni CARES 2030 addresses key areas of Climate focus for the residents of the City of Gunnison:

- Climate Action
- Resiliency
- Environmental Sustainability

This plan outlines actions and commitments for our organization to prevent, adapt to, and mitigate climate impacts to our community. The goals, actions, and strategies are ambitious guidelines focused on doing our part. In a closely knit community that is the Gunnison Valley, we must also work with other entities to drive change forward for our collective community, and we look forward to the collaboration.

Inaction and denial are no longer options, and we must work diligently to catch up on deferred actions, and ensure that future generations reap the benefits of this Plan.

We, the Gunnison City Council, proudly support and present to the Public: Gunni CARES 2030.



Councilor Jim Gelwicks, Councilor Jim Miles, Mayor Pro Tem Mallory Logan, Mayor Diego Plata, City Manager Russ Forrest, Sustainability Interns Shannon Hessler and Jenny Nitzky, Councilor Boe Freeburn

Handwritten signature of Diego Plata in black ink.

Diego Plata
Mayor, City of Gunnison

BACKGROUND

The City's Vision Statement calls for "a sustainable, carbon-neutral future addressing energy and water resource consumption to be resilient to climate change".³ City leaders determined the need to create an environmental, sustainability, and resiliency plan to build upon the work completed in the Comprehensive Plan. A key focus of the plan will be to refine Goals and create concrete actions.

In 2015, greenhouse gas (GHG) emissions forecasting for Gunnison County (County) was developed by Dr. Abel Chavez as part of the 2015 Emissions Baseline Report for the Gunnison County watershed area utilizing the Baseline Accounting and Forecasting Tool (BAFT). The One Valley Prosperity Project (OVPP) was created to implement actionable items to combat some of the Valley's most pressing issues, such as affordable housing and economic resiliency. In 2019, the One Valley Leadership Council (OVLC) created a sub-group made up of representatives from each local government to explore the addition of climate action and environmental sustainability as an additional focus area of the collaborative One Valley Prosperity Project. In 2020, a Climate Action Conference was held at WCU to begin the development of a valley wide framework for the reduction of carbon emissions via waste diversion, improved public and electrified transportation, and renewable energy utilities. In October 2020, a City Strategic Plan was created to identify the most important issues to Gunnison residents, thus directing the City to focus time and resources addressing these in the next 1-5 years. The Strategic Plan indicated that the City should "Engage a highly qualified intern(s) to help support the creation of holistic environmental sustainability plan for the City of Gunnison by December 31, 2021."



Shannon Hessler, MEM, and Jenny Nitzky, MEM
City of Gunnison Sustainability Interns

CREATING A SUSTAINABILITY PLAN: In April 2021, the City hired Shannon Hessler and Jenny Nitzky, two Master in Environmental Management students at Western Colorado University. With the help of City Manager Russ Forrest, Community Development Director Anton Sinkewich, and City Clerk Erica Boucher, along with many other City officials, the two students worked with key stakeholders

in the community to craft this plan. After much deliberation, it was determined that the plan would revolve around climate change, local resiliency, energy, water resource management, and solid waste, due in part to previous community input, and specifically input from the 2020 Comprehensive Plan.

ADDRESSING GREENHOUSE GAS EMISSIONS & CLIMATE CHANGE: Over the course of the planning process, a GHG emissions inventory was conducted for the City for the year 2020. This shall serve as a baseline moving forward where data did not exist before for emission reduction Strategies. This inventory will also help the City align its goals with the County, as they both strive to achieve science-based targets in emission reduction.

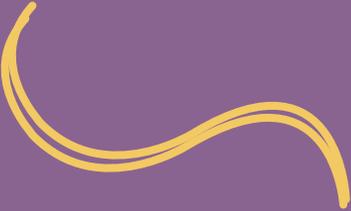


PRINCIPLES APPLIED TO THIS ROADMAP

THIS PLAN INTEGRATES FUNDAMENTAL PRINCIPLES ALSO REFLECTED IN THE CITY'S STRATEGIC PLAN. THESE PRINCIPLES INCLUDE:

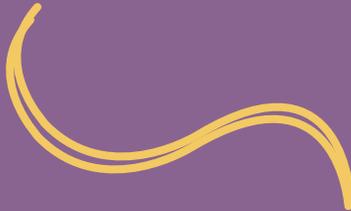
ENVIRONMENTAL & ECONOMIC STEWARDSHIP

This Roadmap recognizes that the City of Gunnison will be a responsible steward of natural resources within the City limits and as part of the larger global community. The City also has a fiduciary responsibility to ensure the Strategies in this Roadmap are economically responsible and can be implemented, while not creating an undue burden on vulnerable populations in the community. Strategies also recognize the need to balance priorities, such as affordable housing, and strive to find opportunities to optimize strategies to create (for example) affordable housing which also reduces carbon emissions.



CLIMATE JUSTICE

Climate change and environmental degradation have disproportionately severe impacts on already marginalized communities. Climate justice “insists on a shift from a discourse on greenhouse gases and melting ice caps into a civil rights movement with the people and communities most vulnerable to climate impacts at its heart,” says Mary Robinson in her book *Climate Justice*. “Addressing climate change and building resiliency within our community will require solutions that simultaneously face the challenges of environmental degradation and civil injustice. It is critical to acknowledge these differential impacts to our vulnerable populations. All Results, Goals, Strategies and Actions consider their environmental impact as well as the social and economic impacts. The Roadmap strives to make greener, healthier changes affordable and accessible to the entire community.



ADAPTATION & MITIGATION

The Roadmap has a strong focus on both reducing our greenhouse gas emissions and the impacts these have on the environment, while also facing the reality of drought, more dramatic weather events, and more severe natural disasters. Residents need to be increasingly self-sufficient as both a community and individuals. However, this principal includes supporting vulnerable populations, neighbors, and stakeholders in the valley. In other words, if support or help from outside the valley is limited, the City needs to enhance its ability to support its residents.

MAP: CITY OF GUNNISON & BEYOND

LOCAL FARMS & PRODUCERS

1. Calder Farm, Private Business
2. Parker Pastures, Private Business
3. Gunnison Gardens, Private Business
4. Mountain Roots Food Project, Non-Profit Organization
5. Iola Valley Farm, Private Business
6. GunniGal Aquaponics, Private Business
7. Recreation Center Community Garden

COMPOST DROP-OFF

8. Chipeta Gardens, Western Colorado University
9. Bill's Park Community Garden, City of Gunnison

WASTE PROCESSING FACILITIES

10. Recycling Center, Gunnison County
11. Rocket Composter, Western Colorado University
12. Gunni Gold at Waste Water Treatment Plant, City of Gunnison

13. Tree Dump, City of Gunnison
14. Chamber of Commerce Green Business, Non-Profit Entity

LAND MANAGEMENT

15. Coldharbour Institute, Non-Profit Organization

ENERGY PROJECTS

16. Airport Solar Project, City of Gunnison, Gunnison County, Western Colorado University
17. Equitable Solar Solutions, Program of Coldharbour Institute

EV CHARGING STATIONS

18. 777 E Georgia Ave
19. 201 W Virginia Ave
20. 37250 US-50



GUNNISON RIVER

TOMICHI CREEK

2

6

13

1

7

COMMUNITY SCHOOL

WAL MART

ROCKY MTN

ESCALANTE

DENVER

DENVER

11

WCU CAMPUS

9

8

18

VIRGINIA

VIRGINIA

19

7 MI. TO COLDHARBOUR + MOUNTAIN ROOTS FARM

4

15

17

TOMICHI / HWY 50

TOMICHI / HWY 50

SAFEWAY

NEW YORK

NEW YORK

GUNNISON

GUNNISON

SAN JUAN

SAN JUAN

3

5

17 MI. TO IOLA VALLEY FARM
4 MI. TO WWTP + GUNNI GOLD

2 MI. TO CHARGING STATION

10

1 MI. TO RECYCLING CENTER

16

AIRPORT

RIO GRANDE

BIDWELL

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PINE

WISCONSIN

MAIN / HWY 135

IOWA

TAYLOR

WAL MART

ROCKY MTN

ESCALANTE

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3 MAIN SECTIONS:

CLIMATE ACTION,

RESILIENCY,



CLIMATE ACTION & GREENHOUSE GAS EMISSIONS REDUCTIONS

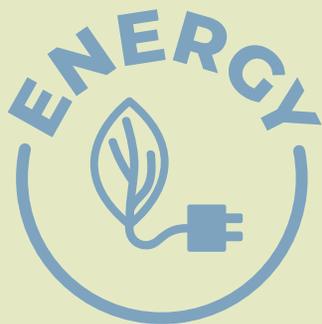
An overview of the 2020 GHG emissions inventory, including science-based targets and high-impact actions to ground truth the results, goals, strategies, and actions of this plan.



CLIMATE RESILIENCY

How the city will improve its self-sufficiency and prepare for impacts of climate change regarding all demographics. Targeted to minimize impacts on vulnerable populations and ensure the safety of all our community members.

& ENVIRONMENTAL SUSTAINABILITY



ENERGY

How the city will reduce its dependence on fossil fuels, improve energy efficiency of buildings, electrify transportation, and increase local energy generation.



WATER

How the city will focus on water resources management including storage, ecosystem protection, conservation, and connection to land-use practices.



WASTE

How the city will reduce waste from our landfill through different methods of diversion and adopting policies and incentives to reduce waste generated.

HOW TO USE THIS DOCUMENT



In each of the three sections, **Climate Action, Resiliency,** and **Environmental Sustainability,** you will find an overview of the issue at hand, and an Action Plan for the City to address it. This will be followed by an overarching Result with Goals to achieve that desired Result. The **Result** can be seen as the City's target, whereas the **Goals** can be seen as the steps to achieving that target.



Following the result and Goals are a series of Action Plans. These outline **Strategies**, with very specific **Actions**, to achieve Goals. Each Action in the Action Plan includes responsible stakeholders (those to whom the strategy pertains), an estimated implementation timeline, an estimated cost, and estimated emissions reduction potential (if relevant). Each Action Plan has starred * action items, deemed as priorities by the City. See the example on the next page.

In the Action Plans associated with each aspect of **Environmental Sustainability,** a GHG reduction potential will be associated with relevant action items. Each relevant action item will be given an emissions reduction potential score. Climate action is inherently tied to the resiliency of a community. The next section will feature adaptation and climate preparedness Strategies and Actions.

After the Action Plans there are community spotlights to recognize great efforts towards local resiliency and environmental sustainability already taking place in the valley. These community leaders should be looked to, acknowledged, and followed to continue creating a healthy, resilient place for generations to come. With Gunni CARES 2030, Gunnison will take an aggressive approach to tackle climate change and environmental sustainability.

For the purpose of this document, entities are defined both individually (i.e. The 'City' of Gunnison or Gunnison 'County') and as a whole (Gunnison 'Valley' or the Community). The scope of the Actions and Results are defined to bring focus to the need for participation and collaboration between residents, government entities, businesses, and all other participants who'd benefit from a more sustainable future. Certain portions of the plan pertain to the City limits as the jurisdictional boundary, while others have more overlap and impact Valley-wide. This will be discussed in further detail in the introduction of the components and sectors.

HOW TO USE THIS DOCUMENT

RESULT: THE CITY'S TARGET
Description of the overall result.



THE STEPS TO ACHIEVING THE RESULTS, OR TARGET

PARTICIPATING STAKEHOLDERS

- ◆ Government agencies
- ◆ Local businesses
- ◆ Non-profits, etc.

STRATEGY:
CONTAINS SPECIFIC ACTIONS TO ACCOMPLISH THE GOALS.

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	COST	CO-BENEFITS	DEADLINE
★ Action 1	Each Action in the Action Plan includes responsible stakeholders (those to whom the strategy pertains), an estimated implementation timeline, an estimated cost, and estimated emissions reduction potential (if relevant). Each Action Plan has starred ★ action items, deemed as priorities by the City.	Measurable number or (Y/N) completed by deadline	rated on scale of I, II, or III, III being the greatest reduction potential.	\$, \$\$, or \$\$\$	EQ, CC, EP	2030
Action 2	Description					
Action 3	Description					

GHG Reduction Potential is only applicable to the energy and waste action plans.

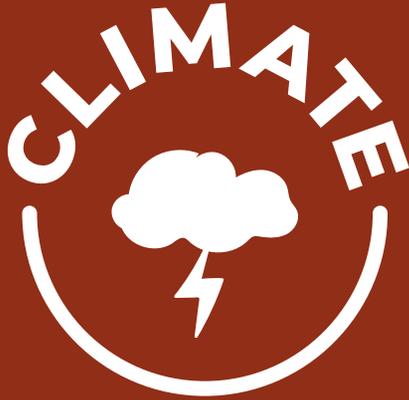
Positive co-benefits are affiliated with each action in the resiliency section. These co-benefits include:
Environmental Quality (EQ);
Economic Prosperity (EP);
Public Health (PH);
Public Safety (PS);
Justice, Equity, Diversity, and Inclusion (JEDI);
Community Collaboration (CC)

All actions show the relative cost, deadline, and participating stakeholders. When applicable, each action has an associated greenhouse gas emission reduction scale.

ACTION PLAN GUIDE

SCORE	GHG EMISSIONS	SCORE	COST
I	1-2,000 MT CO ₂ e	\$	\$0-\$10,000
II	2,001-5,000 MT CO ₂ e	\$\$	\$10,000-\$100,000
III	5,001-10,000 MT CO ₂ e	\$\$\$	\$100,000-\$1,000,000
IIII	10,001+MT CO ₂ e	\$\$\$\$	\$1,000,000+





RESULT

**REDUCE ANNUAL GHG EMISSIONS
BY 30,000 MT OF CO₂ EQUIVALENTS
BY 2030 FROM ELECTRICITY AND
TRANSPORTATION SECTORS,
INCLUDING SCOPE 1 & 2 EMISSIONS.**

Scope 1 emissions include all emissions directly generation from energy, fuel, and operations within the boundary. Scope 2 emissions are calculated from the generation of purchased energy and electricity for the city.⁵



CLIMATE CHANGE, MOUNTAINS, & THE CITY OF GUNNISON

Natural resources in the City and the entire Gunnison Valley are already facing significant impacts from climate change.

The 6th IPCC report states that certain aspects of climate change are irreversible, and the planet is “locked-in” to a certain amount of warming.⁶ The Northern Rocky Mountains in the United States are highly sensitive to the impacts of climate change and are warming more quickly than other areas of the globe.⁷ Here in Colorado, average temperatures have increased 2 degrees Fahrenheit over the past 30 years, with an additional 2 to 5 degrees Fahrenheit of warming expected by 2050.⁸

Mountain communities like Gunnison will continue to grapple with the negative effects of increasing temperatures: decreased snowpack, increased drought, and changes in timing and type of precipitation. It is evident each year as there is an increase in extreme weather events like the September 2020 ice storm, and longer, hotter summers. There will be shorter winters and an increase in the amount of precipitation that falls as rain, not snow. Blue Mesa Reservoir water levels will continue to drop.

Climate change acts like a magnifying glass on already strained systems. Increased frequency and intensity of fires, storms, and heatwaves increases stress on infrastructure and systems such as health care. These changes will affect multiple sectors, including public health, infrastructure, water, ecosystems, outdoor recreation, tourism, agriculture, and energy.⁹ All is not lost, however. Steps taken now can still prevent catastrophic warming.¹⁰

Preparing for the climate change will require action by all, especially local governments

as these entities are less prone to being stymied by political polarization seen at the Federal level. Each community has its own localized climate risks, and local governments are positioned to take the most effective actions for their community. The City has an opportunity to be a leader in decisive climate action for communities across the west. “Local government action to reduce local risks has been important for as long as we have had local government.”¹¹ Climate action planning for the City, therefore, should include adaptation to these changes, as well as mitigation to reduce future impact.

CLIMATE ADAPTATION & PREPAREDNESS

Climate adaptation is essential on the local level. Climate adaptation means taking action to prepare for, and adjust to, both the current and projected impacts of climate change. Climate preparedness is addressed in the Resiliency section of this Roadmap.

CLIMATE MITIGATION

Reducing GHG emissions is required to keep the globe below levels of catastrophic warming. The City set targets and desired Results for emissions reductions based on science and adhere to state, national, and global emissions reductions Goals. The Paris Agreement, an international treaty on climate change from the United Nations Framework Convention on Climate Change, states that parties need to reach a 45% decrease in overall emissions as compared to 2010 levels.¹² Countries like the United States, which is a large emitter, are advised to reach at least a 45-50% reduction in emissions. After thorough calculations, the City decided on the following result:

BY 2030, ACHIEVE A 50% REDUCTION IN AGGREGATE GREENHOUSE GAS

EMISSIONS, INCLUDING ENERGY, TRANSPORTATION, & OPERATIONS, FROM A 2020 BASELINE

The City of Gunnison has been working with ICLEI, otherwise known as Local Governments for Sustainability, throughout this planning process to identify where our GHG emissions are coming from. They also helped identify some high-impact actions to address climate change via adaptation and mitigation policies and actions. In the following section, the City's GHG emissions are outlined, and throughout the rest of the Roadmap specific Results, Goals, Strategies, and Actions will address how to reduce them.

GUNNISON'S GHG EMISSIONS 2020 BASELINE

In 2015, Gunnison County completed a greenhouse gas emissions inventory using the Baseline Accounting & Forecasting tool (BAFT),¹³ which was developed by Dr. Abel Chavez at Western Colorado University. In 2020, the sustainability interns completed an emissions inventory for both the City of Gunnison and Gunnison County separately using ICLEI's ClearPath Tool.¹⁴ An emissions inventory is a way to aggregate all the GHG emissions produced from buildings, transportation, and waste, to understand how best to target emissions reductions.

Having a baseline for the City allows for specific, science-based targets to reach overall reduction goals as well as track progress. The emissions reductions are compared to a business-as-usual (BAU) scenario, or continuing to produce GHG emissions at current projected rates.

The geographic boundary for this emissions inventory is drawn to the City limits but includes some emissions that are generated outside the City, like the airport and the landfill.

Transportation and mobile sources include a percent of emissions from the airport based on the number of private planes registered to people in the City of Gunnison versus the entire County. Airport emissions are based on 2019 data because the airport was closed for periods of 2020. A more detailed description of the methodology behind the emissions inventory can be found in Appendix 3.

In 2020, the City of Gunnison produced ~55,000 Metric Tons of carbon dioxide equivalents per year, which is the equivalent of 12,000 passenger cars on the road per year.

GHG EMISSIONS BY SECTOR

Most emissions in the City of Gunnison come from commercial and residential buildings. These emissions are generated from burning fossil fuels to turn on lights in homes, schools, and offices. Approximately

24% comes from residential buildings, while 43% of our total emissions come from energy used in commercial buildings. Transportation and mobile sources, such as cars, buses, and planes, account for about a quarter of our total emissions. These emissions are calculated based on vehicle miles traveled (VMT) within the City limits. The remaining 7% comes from solid waste. Most of those emissions come from organic waste breaking down in the landfill.

GHG EMISSIONS BY SOURCE

Most emissions come from mobile gasoline, natural gas, and electricity production.

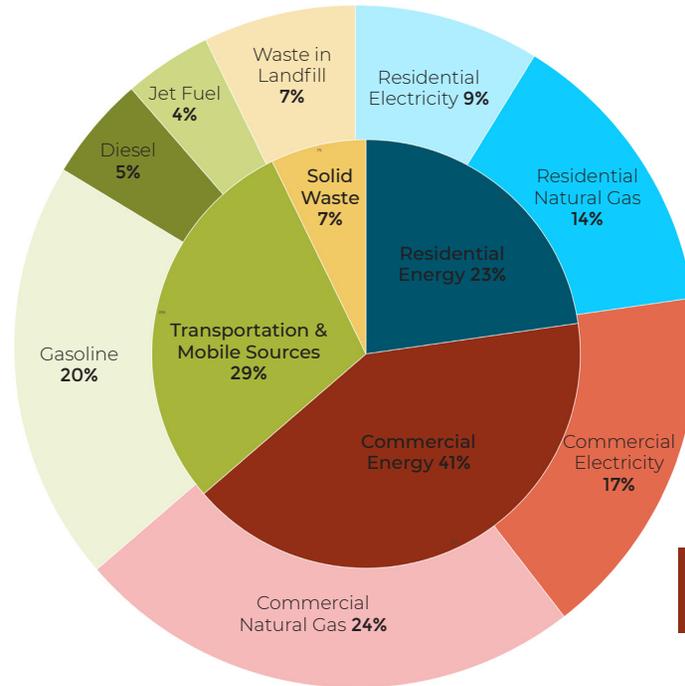
WHY DO A 2020 INVENTORY? WAS 2020 NOT AN ANOMALY OF A YEAR?

In much of 2020, the City of Gunnison and the entire world faced major shutdowns due

to the COVID-19 pandemic. These shutdowns led to a small decrease in global emissions; however, concentrations of GHGs in the atmosphere continued to rise throughout 2020. According to a United Nations report on the Global Sustainable Development Goals (SDGs), “despite the temporary reduction in emissions overall in 2020, real-time data from specific locations, including Mauna Loa, United States, and Cape Grim, Australia, indicate that concentration levels of CO₂, methane and nitrous oxide continued to increase in 2020. By December 2020, emissions had fully rebounded and registered 2% higher than the same month in 2019.”¹⁵ Overall, 2020 may have some slight decreases in emission trends, but is still viable as a baseline year for this work.



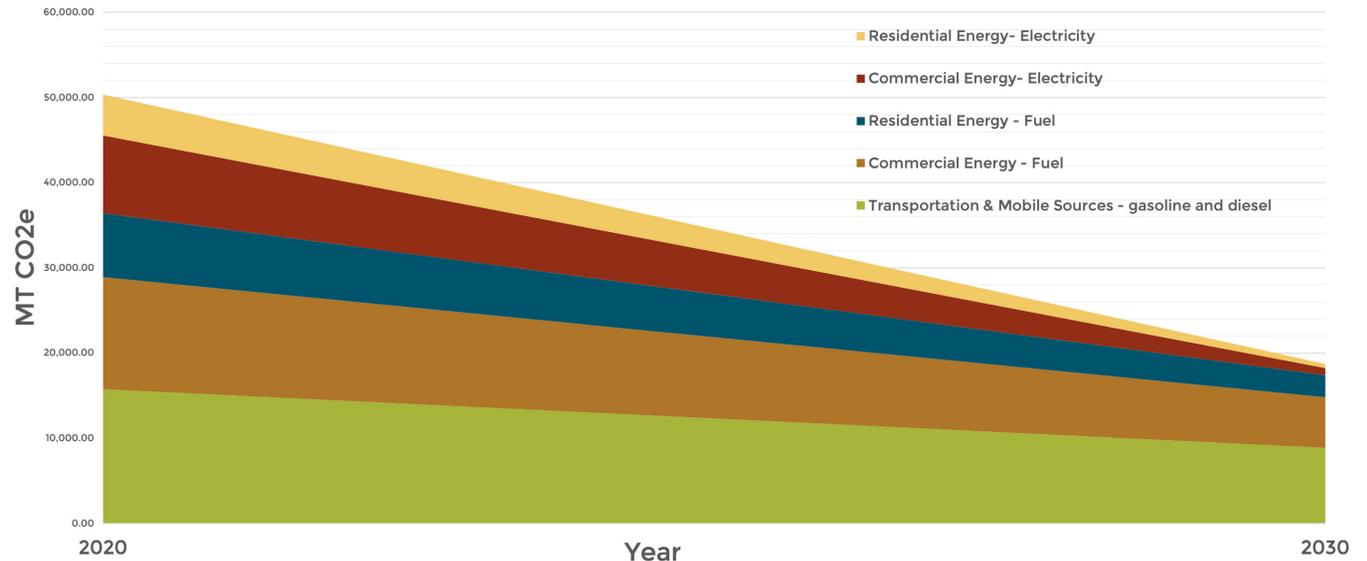
2020 EMISSIONS INVENTORY



*Figure 1: 2020 Emissions Inventory

CURRENT AND PROJECTED EMISSIONS WITH HIGH IMPACT ACTIONS

*Figure 2: Airport data is not included due to no affiliated actions to reduce emissions. Waste is also not included in this graph because no High-Impact Actions from ICLEI have been determined that can prove a decrease in emissions. This does not consider City-determined actions outlined in this Roadmap, which might have an impact on GHG emissions reduction. Airline travel and waste emissions are not incorporated with their Business-as-usual (BAU) scenario so as to normalize graph data. Airline travel and jet fuel sales may grow, but to an unknown extent. Calculating emissions for waste is challenging due to factors of growth rate, participation rates, lack of methane capture and other calculable metrics.



HIGH IMPACT ACTIONS

The target areas for emissions reduction strategies are in the energy and waste sectors. In collaboration with ICLEI, the City developed a series of science-based targets to inform the emissions reduction result of 50% overall reduction by 2030. Targeted high-impact actions can be taken to mitigate our GHG emissions in the coming years. Below is a chart outlining these specific actions, listed in order of highest to lowest impact on Net Reduction of GHG emissions. Some of the City's targeted actions aim higher than these specified actions, including the adoption of the 2021 International Energy Conservation Code (IECC), over the 2018 IECC.

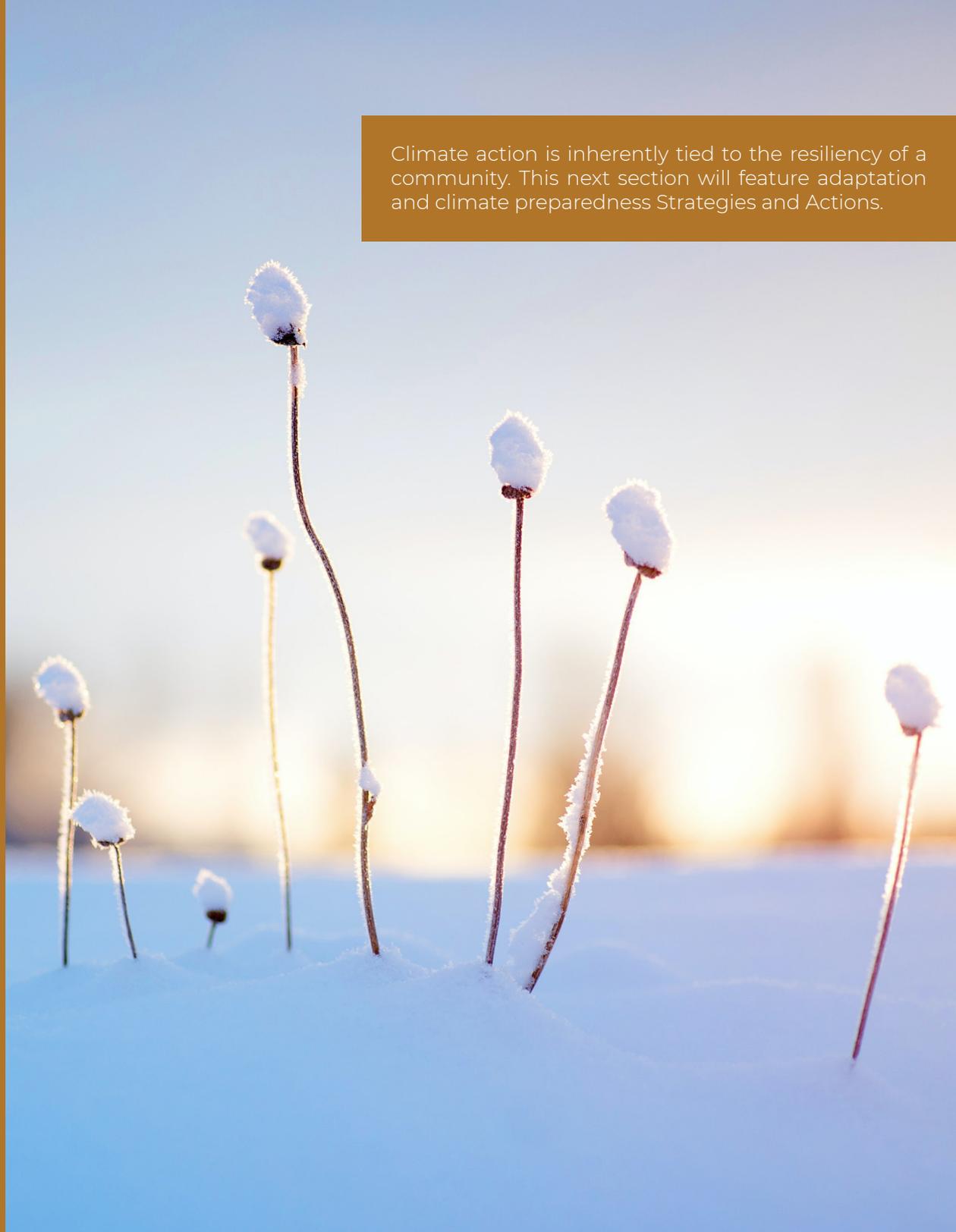
HIGH IMPACT ACTIONS		
TYPE	SPECIFIC ACTION	NET REDUCTION GHG EMISSIONS (MT CO ₂ E)
Grid Decarbonization	The change in carbon intensity (kg CO ₂ /MWh) from the baseline year (2020) to 2030. This equates to a 90% reduction in grid carbon intensity.	13,533
Commercial Building Electrification	All new building and 6% of existing square feet per year are electrified.	7,177
Residential Building Electrification	All new building and 6% of existing square feet per year are electrified.	5,020
On-Road Electric Vehicle Adoption	15% of VMT is EV by 2030. This action influences an increase in residential and commercial buildings electricity emissions.	1,525
Vehicle Miles Traveled Reduction	5% reduction in total VMT.	547
Commercial Building Efficiency	All new buildings and 1% of existing square feet (renovations and turnover) will meet IECC 2018 (36.95% reduction in building EUI (Energy Use Intensity)) and 5% Existing sq. ft. (renovations and turnover) EUI is reduced by 20%.	140
Residential Building Efficiency	All new buildings, including 1% of existing sq. ft. (renovations and turnover), will meet IECC 2018 (36.95% reduction in building EUI).	21



RESULTS

- 1** The Gunnison Valley Residents can support themselves with basic needs (food, water, shelter, fuel) for 5-7 days if distribution/delivery systems are disrupted.
- 2** The City of Gunnison continues to provide reliable clean water as the Valley faces hotter temperatures, lower water levels in the Gunnison River, and peak flows that occur earlier in the year.
- 3** Vulnerable populations will have equal access to resources and support during natural disasters, emergencies, and climatic events.
- 4** Gunnison residents, public institutions, and private businesses will continue to support each other and their community on a day-to-day basis and during emergencies to experience a high level of mutual support.

Climate action is inherently tied to the resiliency of a community. This next section will feature adaptation and climate preparedness Strategies and Actions.



"The Colorado Climate Network recommends that local governments "assess their local climate related risks and undertake preparedness planning and management actions to improve resilience in their communities."¹⁶ According to research done by the Nature Conservancy, Colorado Natural Heritage Program, Western Water Assessment, University of Colorado, Boulder and University of Alaska, Fairbanks and published in a report titled Gunnison Basin Climate Change Vulnerability Assessment for the Gunnison Climate Working Group in 2011, the impacts of climate change are already occurring, and will continue without the mitigation of GHG emissions.¹⁷

To paint a picture of Gunnison in 2030 and beyond without an aggressive approach to reducing global emissions, the anticipated effects will be:

RISING TEMPERATURES

"The average annual temperature of the Upper Gunnison Basin is projected to increase by approximately 3°C (5.4°F) from the late 20th century to the middle 21st century. Average summer temperatures are projected to increase by approximately 4°C (7°F)."¹⁸ Temperatures will be, on average, 3.6 degrees hotter than 1971-2000 and there will be 6-16 days warmer than 85 degrees, versus 1 day on average during 1970-1999.¹⁹

REDUCED SNOWPACK

"...A 10-25% decrease in the average annual runoff, more precipitation falling as rain rather than snow, earlier snowmelt, and spring runoff peaks, and changes in the seasonality of flooding."²⁰ Timing of runoff will be earlier in the spring and ski season shortened from December through March and there will be a decrease in skier visits.²¹

EXTREME WEATHER & WILDFIRE

Rising temperatures across the globe will increase the frequency and likelihood of extreme weather, including flooding, mudslides, ice storms and drought. Climate change is leading to more severe, longer fire seasons. The number of days with poor air quality in the summer will increase due to smoke.²²

INCREASED ECOSYSTEM DISTURBANCE & VULNERABILITY

Many terrestrial and aquatic ecosystems are at risk or considerable risk from factors of climate change. "Key factors contributing to the vulnerability of terrestrial ecosystems include increased pest attacks, increased invasive species, barriers to dispersal ability, fire and drought. Key factors contributing to the vulnerability of freshwater ecosystems include decreasing base flows, dependence on timing and magnitude of snowmelt, and restriction to specific locations on the landscape."²³ Soil degradation is also a concern from drought and overuse.

SPECIES DISTURBANCE & VULNERABILITY

Many native flora and fauna are considered threatened by impacts of climate change, especially increasing temperatures, and decreasing snowfall.²⁴

SOCIAL IMPACTS

Many different sectors of society will be impacted by climate change. These include our ranching communities from the stress of drought on soil and livestock, our recreation and tourism industries from decreased snowpack, shorter river seasons, and increased concern of heat-related illnesses. Low-income populations will be impacted disproportionately, with more variable storms increasing the difficulty of the day-to-day, and increasing barriers to access to healthy, affordable food, among other outcomes of inequity. Impacts from diseases, like the COVID-19 pandemic, will also continue to worsen, as climate change, social equity, and community health are all interrelated. Communities under these stresses can often observe unrest unless well prepared to handle potential threats.²⁵

PUBLIC HEALTH THREATS

The World Health Organization (WHO) cites that climate change is the single biggest health threat facing humanity.²⁶ Harmful effects include “air pollution, disease, extreme weather events, displacement, food security, and pressures on mental health.”²⁷

OTHER IMPACTS

Water conservation measures may be required for all domestic and agricultural uses. The drought in the greater west will impact the cost and availability of food.

These resiliency results and Action Plans address four priority issues. The solutions are rooted in reliance on local systems, equity, and community values. Functions of our local government that are essential for climate preparedness include providing access to local goods and services in a rural environment, preparing and responding to emergencies, land and water use planning, ensuring equitable access to resources, and protecting public health and safety.

RESILIENCY RESULT 1

THE GUNNISON VALLEY RESIDENTS CAN SUPPORT THEMSELVES WITH BASIC NEEDS (FOOD, WATER, SHELTER, FUEL) FOR 5-7 DAYS IN THE EVENT THAT DELIVERY SYSTEMS ARE DISRUPTED.

Self-sufficiency means being able to rely upon our own community to ensure the continued prosperity of the City of Gunnison. According to Maslow’s Hierarchy of Needs, physiological needs and safety needs are the two baseline foundations of human wellbeing. These include access to food, drinking water, shelter, clothing, health and health care, financial stability, and personal security, among others.

Whether in a state of emergency or not, the City needs to be adequately prepared to support the needs of its inhabitants. With the current and future impacts of climate change, and diseases like COVID-19, there are visible shortcomings as a result of dependence on outside providers, such as the global supply chain crisis and droughts impacting access to affordable produce. To be resilient in the face of inevitable challenges, the goods and services, particularly those pertaining to the needs outlined above, should be regionally accessible. The City realizes the gravity of this issue and is working with emergency responders to increase the preparedness of the valley, in addition to supporting other organizations that help to ameliorate the lack of access to basic needs.

 = Deemed a priority by the city.



BY 2030, CREATE SUPPLY CHAIN REDUNDANCY AND IMPROVED RESILIENCY FOR FOOD SUPPLIES.

PARTICIPATING STAKEHOLDERS

- ◆ Emergency response teams
- ◆ Gunnison County Health & Human Services
- ◆ Food providers

STRATEGY A:

FOOD: WORK WITH GROCERY STORES AND OTHER FOOD PROVIDERS TO DEVELOP ALTERNATIVE LOCATIONS AND SOURCES FOR BASIC NEEDS.

ACTIONS		CO-BENEFITS	DEADLINE
Action 1	Provide support to local farms, Community Supported Agriculture (CSA) programs, food hubs and community kitchens, small food business startups, and organic/local markets so that more food can be raised/grown, produced, aggregated, distributed in the Gunnison Valley.	EQ, CC, EP	2030
Action 2	Work with the Red Cross and Food Pantry to store disaster food supplies to better serve our vulnerable populations.	JEDI, PH, PS	2030
Action 3	Determine the ability to process local meat in Gunnison County.	EP, CC	2025
Action 4	Work with the community to help bolster existing gardening and cooking classes.	JEDI, CC, PH	2023

STRATEGY 2: CREATE INCENTIVES FOR LOCAL FOOD PRODUCTION & FOR LOCAL BUSINESSES TO BUY LOCAL FOOD SOURCES.

ACTIONS		CO-BENEFITS	DEADLINE
Action 1	Implement Green Business Program for restaurants and retailers.	EQ, CC, EP	2022
★ Action 2	Pledge to purchase a portion of food from local producers for all City-hosted events.	EP, PH	2023
★ Action 3	Support the Massive Passive greenhouse being built at WCU and the startup and expansion of other food production initiatives.	EQ, EP	2030



BY 2030, IMPROVE OUR RESILIENCY BY CREATING LOCAL PRODUCTION OF ENERGY & FUEL.

PARTICIPATING STAKEHOLDERS

- ◆ Local Food Producers
- ◆ Gunnison County Health and Human Services
- ◆ Municipal Energy Agency of Nebraska (MEAN),
- ◆ US Forest Service
- ◆ Western Colorado University

STRATEGY A: CREATE MORE EV CHARGING STATIONS TO ENCOURAGE THE USE OF ELECTRICAL VEHICLES TO BE MORE FUEL INDEPENDENT.

ACTIONS		CO-BENEFITS	DEADLINE
Action 1	See Goal 4 in Energy sector.	EQ, EP	2023
Action 2	Convert to electric vehicles over the next 5 years in the City Fleet where the technology supports that use. Use batteries paired with renewable energy sources to reduce dependence on gasoline and diesel.	EQ	2027

STRATEGY B: CREATE A BIOFUELS PLANT TO BE MORE ENERGY INDEPENDENT.

ACTIONS		CO-BENEFITS	DEADLINE
Action 1	Identify and utilize buildings that can use woody biomass, such as Taylor Hall at WCU.	EQ, EP	2030
Action 2	Work with partners to acquire woody biomass from surrounding region.	CC, EQ, PH, PS	2030

STRATEGY C: CREATE EMERGENCY ENERGY SOURCES (WHERE POSSIBLE) WITHIN THE GUNNISON VALLEY SO THAT CRITICAL SYSTEMS CAN BE POWERED IN TIMES OF EMERGENCY.

Action 1	Obtain emergency generators for Public Works and connect the on-site generator to the Recreation Center. Evaluate battery technology before purchasing new generators to see if renewable energy with battery systems would be an alternative to diesel generators.	EQ, PS	2027
Action 2	Negotiate with local fuel filling stations so they maintain a minimum supply for public use in the event an emergency.	PS, JEDI	2027

STRATEGY D: EXPAND LOCAL RENEWABLE ENERGY USAGE FOR THE COMMUNITY SO THAT THE CITY BECOMES INCREASINGLY ENERGY INDEPENDENT.

 Action 1	Create a MEAN-owned renewable distributive generation system in Gunnison to be more energy independent.	EQ	2025
Action 2	Provide backup generators to provide backup power for critical City infrastructure (Public Safety, Water Wells, Buildings, Public Shelters, Wastewater Treatment Plant).	PS	2025
Action 3	Develop a significant renewable energy project in conjunction with a new Water Treatment Plant.	EQ	2030
Action 3	Avoid or delay the need for air conditioning through building design and management.	PS, JEDI, EQ	2030

GOAL
3

IMPROVE SYSTEMS FOR COMMUNITY RESILIENCY & CONTINUITY OF OPERATIONS TO MAINTAIN BASIC SERVICES IN THE CITY.

PARTICIPATING STAKEHOLDERS

- ◆ City of Gunnison Public Works
- ◆ Fire & Police Departments
- ◆ Municipal Energy Agency of Nebraska (MEAN)
- ◆ County Emergency Management

STRATEGY A: INDIVIDUAL SURVIVAL/MEDICAL: CREATE AN EDUCATIONAL PROGRAM & PROVIDE RESOURCES FOR 1 WEEK "GO KITS" TO BE SELF-SUFFICIENT DURING EMERGENCIES.

ACTIONS		CO-BENEFITS	DEADLINE
★ Action 1	Fund the creation and distribution of 7 day "go kits" for high needs residents so they can be more self-sufficient in times of emergency.	JEDI, CC	2023
Action 2	Create a surplus of food for Departments to support City functions.	PS, JEDI, CC	2023

STRATEGY B: PRIORITIZE RESOURCES & INCREASE RESILIENCY WITHIN PUBLIC WORKS, LAW ENFORCEMENT AND FIRST RESPONDERS, WHICH FACE HEIGHTENED POLITICAL POLARIZATION, LACK OF ESSENTIAL GOODS, INCREASED RESPONSES TO COMMUNITY MENTAL HEALTH CHALLENGES, AND LOWER STAFFING LEVELS.

Action 1	Develop meaningful hiring and retention programs for all critical public employees. Train employees on deed-restricted housing.	PS, JEDI	2024
Action 2	Develop a Wildland Fire Interface Plan with agency partners.	EQ, PS, CC	2026
Action 3	Create contingency plan for picking up garbage including ensuring fuel sources.	PS, PH, EQ	2025
Action 4	Ensure City has back up water sources for fighting fires. Purchasing new water tanks or additional surface water storage will provide more resiliency for firefighting in the future.	PS	2025
Action 5	Plan for and train for increased security challenges in the future.	PS	2030

ACTIONS		CO-BENEFITS	DEADLINE
Action 6	Review and update agency continuity of operations plans.	PS, CC	2025
Action 7	Create a mutual aid agreement for support of utility, IT, emergency response, and other City operations and create a list of rates for equipment and labor costs.	PS, CC	2025
Action 8	Develop a communication plan that includes how to communicate emergency messages (with translation) rapidly and accurately in multiple ways i.e. Code Red, Reverse 911, radio, and social media.	PS, JEDI, CC	2024
Action 9	Developers will need to show that there is adequate capacity of energy and water resources to support new growth and new annexation.	EQ, PS	2025



RESILIENCY RESULT 2

THE CITY OF GUNNISON CONTINUES TO PROVIDE RELIABLE CLEAN WATER AS THE VALLEY FACES HOTTER TEMPERATURES, LOWER WATER LEVELS IN THE GUNNISON RIVER, AND PEAK FLOWS THAT OCCUR EARLIER IN THE YEAR.

Climate change is already visible in the bathtub rings that show where the water levels have dropped in Blue Mesa. Currently, there is a “megadrought” in the Western U.S. It is time to plan for significant decreases in our water resources. In terms of water, resilience means that we have enough water and storage to use in homes and on farms without destroying our river water ecosystems. This comes from both conservation and reduction, as well as implementing water storage.



GOAL 1

ENSURE ADEQUATE WATER RESOURCES FOR DOMESTIC WATER USE, RANCHING/AGRICULTURE, & ENSURE THE SUSTAINABILITY OF THE AQUATIC ECOSYSTEM.

PARTICIPATING STAKEHOLDERS

- ◆ UGRWCD
- ◆ City Water and Wastewater
- ◆ Colorado Rural Water Association
- ◆ City Public Works Department

STRATEGY A:

BEGIN IMPLEMENTATION OF THE CITY OF GUNNISON 2021 WATER MASTER PLAN WHICH WILL HELP ENSURE AVAILABLE WATER FOR DOMESTIC USE AND PROTECT DRINKING WATER QUALITY.

ACTIONS		CO-BENEFITS	DEADLINE
★ Action 1	Quantify the amount of additional water storage needed and work with partners to develop additional storage by 2030.	EQ, PS	2030
Action 2	Implement a source water/well-head protection program.	EQ, PH, PS	2022

ACTIONS		CO-BENEFITS	DEADLINE
★ Action 3	Implement water conservation ordinances to reduce water consumption where needed given the City's well system.	EQ, PH	2025
Action 4	Pair a water management plan and drought management plan with an educational program.	EQ, PS, JEDI, PH	2025
Action 5	Create a policy as part of the 2022 Land Development Code update that would require demonstrating how available (wet) water could be sustainably provided to support new annexations.	EQ, PS	2022
Action 6	Leverage existing resources (WCU, UGRWCD) to begin long-term watershed and climate monitoring study.	EQ, PH	2023



PROVIDE RESIDENTS WITH POTABLE WATER DURING EXTREME DROUGHT EVENTS AND CREATE SYSTEMS TO PROTECT AGAINST WATER CONTAMINATION (I.E., FIRES, SPILLS, MUDSLIDES).

PARTICIPATING STAKEHOLDERS

- ◆ City Water and Wastewater
- ◆ Emergency Services
- ◆ UGRWCD

STRATEGY A:

DEVELOP A SPECIFIC ACTION PLAN AS A FOLLOW UP TO THE CITY'S WATER PLAN ON MANAGING WATER RESOURCES IF THERE IS INADEQUATE WATER FOR ALL USES OR IF THERE OR IF THERE IS A THREAT TO DRINKING WATER QUALITY.

ACTIONS		CO-BENEFITS	DEADLINE
Action 1	Secure a grant to financially support the development of a water emergency plan and complete that plan with the input of water stakeholders.	EQ, PS, PH, CC	2025
★ Action 2	Create a 2022 Drought Management Plan and implement the policies during extreme drought events. (in cooperation with UGRWCD and other governmental agencies Valley-wide).	EQ, PS, PH, JEDI	2025
Action 3	Practice responses to the drought Action Plan mentioned in Action 3 and ensure adequate resources are available to implement the Action Plan.	EQ, PS, PH	2026



RESILIENCY RESULT 3

VULNERABLE POPULATIONS WILL HAVE EQUAL ACCESS TO RESOURCES AND SUPPORT DURING NATURAL DISASTERS, EMERGENCIES, AND CLIMATIC EVENTS.

Climate change will disproportionately affect different people in our community. For example, increased smoke from wildfire and the associated health risks will be higher for children and the elderly. Homes without proper insulation and sealed windows and doors will offer less protection on an especially low air quality day. Currently, critical needs in the community are not being met, and part of this Action Plan is to address these injustices as well as focus on future needs of vulnerable populations.



BY 2023, IMPLEMENT PROGRAMS AND PROVIDE RESOURCES TO AID VULNERABLE POPULATIONS WHICH ARE DISPROPORTIONATELY IMPACTED BY CLIMATE CHANGE.

PARTICIPATING STAKEHOLDERS

- ◆ GV Heat
- ◆ Habitat for Humanity
- ◆ Community Outreach Liaison

STRATEGY A:

DEVELOP A COMMUNICATION STRUCTURE TO BUILD TRUST AND FACILITATE TWO-WAY COMMUNICATION WITH OUR IMMIGRANT COMMUNITY.

ACTIONS		CO-BENEFITS	DEADLINE
Action 1	Fund and fill a full-time position to provide ongoing two-way communication and translation of emergency communications for our immigrant community.	JEDI, CC	2022
★ Action 2	Assess who our vulnerable populations are and what is needed to support them.	JEDI, EQ, EP, CC, PH	2023
★ Action 3	Integrate needs identified from Action 2 (above) into appropriate City budgets and plans.	JED, EQ, EP, CC, PH	2024

STRATEGY B: INCREASE HOUSING SECURITY FOR OUR IMMIGRANT COMMUNITY & LOW-INCOME POPULATIONS.

ACTIONS	CO-BENEFITS	DEADLINE	
★ Action 1	Expand and fund GV- HEAT so that 100 homes per year can be improved for energy efficiency and livability in the next 3 years.	JEDI, EQ, EP, CC	2025
★ Action 2	Review regulatory structure for protecting renters’ rights and develop policies to support renters. Identify who will enforce renter rights policies.	JEDI, PS	2030
★ Action 3	Ensure access to new affordable housing projects are energy efficient and have access to the benefits of clean, renewable energy.	JEDI, EQ, PH	2030
Action 4	Identify specific actions with our immigrant community to improve housing security as part of an overall housing strategy for the City.	JEDI, PS	2025

STRATEGY C: PROVIDE SPECIFIC PROGRAMS FOR OUR IMMIGRANT COMMUNITY ON EMERGENCY PREPARATION.

Action 1	Provide education/presentation and “go kits” for our immigrant community on how to prepare for and survive future emergencies/natural disasters.	JEDI, EQ, EP, CC, PH	2024
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STRATEGY D: DIVERT PARKS & RECREATION STAFF TO SUPPORT SENIORS & OTHER VULNERABLE POPULATIONS WITH MEALS & WELFARE CHECKS.

Action 1	Continue to fund and prepare to expand the senior meal program, especially during emergency situations.	JEDI, PS	2024
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RESILIENCY RESULT 4

GUNNISON RESIDENTS, PUBLIC INSTITUTIONS, AND PRIVATE BUSINESSES WILL CONTINUE TO SUPPORT EACH OTHER AND THEIR COMMUNITY ON A DAY-TO-DAY BASIS AND DURING EMERGENCIES TO EXPERIENCE A HIGH LEVEL OF MUTUAL SUPPORT.

In recent years, political divisiveness has caused increased polarization of communities all over the country, tarnishing the sense of belonging and comfort that is indicative of the

places people call home. In recent years, stakeholders from around Gunnison Valley, including: Gunnison County, City of Gunnison, Western Colorado University, Community Foundation of the Gunnison Valley, Gunnison Valley Health, Crested Butte South Property Owner’s Association, Town of Crested Butte, Town of Mt. Crested Butte, Crested Butte Mountain Resort, Gunnison-Crested Butte Tourism Association, REI-J School District, ICELab at Western Colorado University, and the Gunnison Valley Regional Housing Authority collaborated on the One Valley Prosperity Project (OVPP) to achieve a more successful future for all residents of the valley. This collaboration needs to continue in order to prepare and adapt to any new threat to community wellbeing, including political disturbances, pandemics, etc. Resilience means the ability to bounce back in the face of adversity,²⁸ and with a strong, tight knit yet welcoming community, this will be possible.



CREATE A FRAMEWORK TO IDENTIFY COMMON GOALS AND COMMON GROUND TO WORK COLLABORATIVELY ACROSS THE VALLEY ON STRATEGIC ISSUES TO SUPPORT RESIDENTS AND GUESTS.

PARTICIPATING STAKEHOLDERS

- ◆ One Valley Prosperity Project
- ◆ One Valley Leadership Council
- ◆ COVID-19 EOC

STRATEGY A:

USE THE ONE VALLEY LEADERSHIP COUNCIL (OVLC) AND THE RESILIENCY PROJECT (A PROJECT THAT BEGAN WITH THE ONSET OF COVID-19 TO REINFORCE COMMUNITY VALUES) THAT WILL BE COMPLETED IN 2022 TO IDENTIFY AREAS OF STRATEGIC PARTNERSHIP FOR THE VALLEY.

ACTIONS		CO-BENEFITS	DEADLINE
★ Action 1	Complete a scope of work with the OVLC to complete the 2022 Resiliency Project.	JEDI, CC	2022
Action 2	Complete the OVLC Resiliency Project planning phase and begin implementation.	JEDI, CC	2023

GOAL
2

AS NEIGHBORS AND AS A COMMUNITY WE CONTINUE TO SUPPORT EACH OTHER AND CONTRIBUTE TO OUR MUTUAL SUCCESS.

PARTICIPATING STAKEHOLDERS

- ◆ One Valley Prosperity Project
- ◆ Emergency Response Teams

STRATEGY A: EXPAND AND CONTINUE THE RESILIENCY PROJECT TO PLAN EVENTS AND PROGRAMS THAT CONNECT NEIGHBORS AND NEIGHBORHOODS. THE GOAL IS TO CREATE A HIGH SENSE OF COMMUNITY IN GOOD TIMES AND BAD TIMES.

ACTIONS		CO-BENEFITS	DEADLINE
Action 1	Identify shared values in our community and use those values for our decision-making.	CC	2023
★ Action 2	Expand the Resiliency Project, particularly micro-grants for neighborhood events that support connections to neighbors.	CC, JEDI, PH, PS, EQ, EP	2025
Action 3	Create and utilize effective two-way communication systems between local government, community non-profits and our residents to rapidly address issues and concerns and to build trust.	CC, JEDI, EQ	2025





COMMUNITY SPOTLIGHTS

HABITAT FOR HUMANITY OF GUNNISON VALLEY

BY CILLIAN BARRETT

The Habitat for Humanity Gunnison Valley [HHGV] is reexamining historical patterns within the design and construction industry to increase opportunities for positive outcomes. Through their building program they provide affordable homes to our community members that are resilient, efficient, and healthy. Their processes offer a multitude of benefits to local social, economic and ecological environments.

HHGV achieves this by using a framework called “Resource Conscious Construction” [RCC]. It is an inclusive array of methods through which to understand the systems and impact of the construction industry in a holistic manner. The intention of RCC is to seek the most effective solutions to address the current and unforeseen challenges in our industry through the lens of community resiliency and equity.





This unique approach highlighted their achievement of constructing a home that effectively sequestered more carbon than it omitted by the time of initial occupancy. It captured 2 tons of carbon compared to a conventional build of the same design that would have emitted 14 tons. Using solar power, it currently produces more energy than it uses and has the ability to power an average electric vehicle to drive 60 miles a day for no fuel cost. The construction cost was within 1% of a conventional build.

Homeowners Edward Morrison and Ellie Fortune said of their new home, "We were excited to live in an energy efficient and ecologically conscious home but we didn't expect the level of comfort, quiet and peace that it comes with. We love sharing our home and folks always comment on it. Also, when the temperature outside is below 0, we have no idea as even the inside face of the high-performance windows are warm to the touch!"

For their latest 3-bedroom 2-bathroom home, HHGV committed to designing to universal access standards of the American Disabilities Act (ADA) to meet the needs of their homeowner's family. Going forward they intend for all their homes to meet this

standard. "The air is constantly refreshed, the temperature is consistent, and it is so quiet, my daughter has never slept so well," shared the homeowner.

HHGV is working with Western Colorado University and various local/national organizations and professionals to monitor their homes as they are occupied to learn from their endeavors and examine their hypotheses. HHGV monitors solar energy production, energy consumption of individual appliances and building systems, temperature/humidity throughout the home/structure/ground and indoor air quality. They use Life Cycle Analysis (LCA) tools to evaluate total build impact. To date, the flagship project in West Gunnison has exceeded their expectations in terms of performance and they are excited to build upon its success and work with others looking to do the same.

Their goal is to use building projects as a classroom for teaching and developing a skilled labor force using Resource Conscious Construction to strengthen the local economy, lower greenhouse gas emissions and increase local sustainability in a broad range of categories.



PRODUCER'S GUILD

BY MOLLY MAZEL & SUE WYMAN

The Gunnison Valley Producers' Guild promotes sustainable agriculture and food self-sufficiency. They host numerous events that support Guild members and the community at large with resources to grow, cook, preserve, and share our local harvests. In the spring, the Guild brings us two Spring Plant Sales, where hardy seedlings started in local greenhouses are available for purchase. The Guild also hosts a spring Farm-to-Table Conference, full of inspiring speakers and workshops. Come fall, join in on Fermentation Fest, where participants create their own fermented kimchee

and sauerkraut under expert instruction, and Farm-to-Table for the People Potluck Dinners which celebrate the local harvest season.

Current Guild president and owner of Gunnison Gardens, Sue Wyman, offers an annual Cold Climate Gardening Course through WCU and internship program throughout the summer. These courses are open to the community and provide a comprehensive hands-on education in growing a successful garden in the Gunnison Valley.



Producers in the Guild typically join together to offer a vegetable CSA each spring (April/May/June) and fall (Oct/Nov/Dec). The CSA provides a box of fresh local produce to subscribers each week, while providing a distribution outlet for local farm produce before and after the local Farmers Market season.

Molly Mazel, a Master of Environmental Management student at Western conducting food systems work through a fellowship at Mountain Roots said, "I can't overstate the value that the Gunnison Valley Producers' Guild brings to this community in terms of food resiliency. This group is not interested in holding proprietary information about successful farming practices. On the contrary, the Guild exists so you and I and all of us can

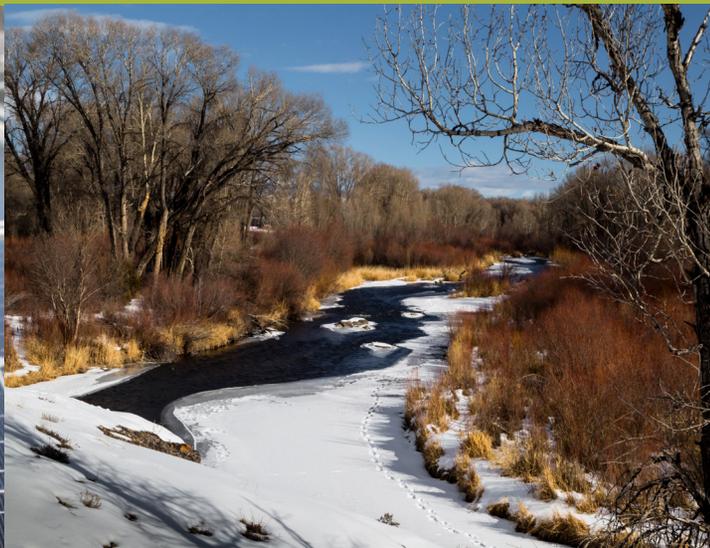
grow more of our own food, access more local, regeneratively raised food, and learn how to use and preserve that food. All of this moves the valley toward reduced reliance on products imported by the big industrialized agricultural system."

Want to get involved? Membership is open to Producers (working farmers and ranchers) and Co-Producers (backyard gardeners, chefs, value-added producers, local food supporters, and eaters). -Guild Producers include Calder Farm, Gunnison Gardens, Gunni Gal Aquaponics, Iola Valley Farm, Mountain Roots Food Project, Parker Pastures, and the Western Organics Guild. Joining as a Co-Producer costs just \$10 per year. Events are open to the public and are free or low-cost to attend. Learn more at gvpg.org.



ENVIRONMENTAL SUSTAINABILITY

There are three identified components of priority in Environmental Sustainability in this Roadmap based on community feedback: Energy, Water, and Waste. Environmental sustainability focuses on ensuring clean air, water, and productive land²⁹, and using our natural resources in a way that provides for the next generation. Although the Roadmap is targeted at the City of Gunnison, some areas of environmental sustainability have a scope larger than the City limits. The scope of each sector is noted.



3 COMPONENTS WITHIN ENVIRONMENTAL SUSTAINABILITY



The energy component focuses on reducing emissions from electrical and energy generation and usage within the city limits of Gunnison.



The water component focuses on reducing water consumption and improving our aquatic ecosystem health. Water Result 1 is set at the municipal level, while Result 2 encompasses the entire watershed.



The waste component seeks to reduce the amount of waste sent to the landfill through decreased production of waste and improved recycling and compost. This is focused on waste produced within the City of Gunnison, however, waste is managed on a regional level and so some Actions are to be implemented at the County Level.

GUNNISON GREEN BUSINESS PROGRAM

INTERSECTIONAL PARTNERSHIP

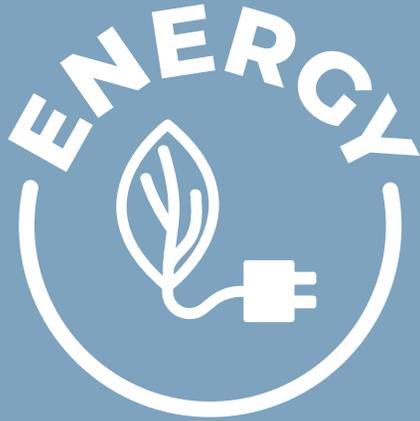
BY SIERRA RICHARDSON, JACK DAVES,
CAMPBELL MIXON, & TRENTON MCKALKO

In a collaborative effort to promote sustainability in the Gunnison Valley, the Gunnison Chamber of Commerce, Western Colorado University, the City of Gunnison, and the Colorado Department of Public Health and the Environment (CDPHE) have partnered to establish a Green Business Certification program for local organizations. By definition, a sustainable business strives to both reduce its environmental impact and its costs of operation. Through enrollment in the program, business owners can learn how to track metrics of environmental impacts—like their energy, water, and waste usage—that will help them set goals, track progress, and reduce their ecological footprint. Technical assistance can be provided once businesses register and complete the initial baseline assessment. Businesses that enroll become members of the Colorado Green Business Network, a statewide network of business leaders sharing similar sustainability goals and values.



COLORADO
Department of Public
Health & Environment





RESULT

**BY 2030, ACHIEVE A 50%
REDUCTION IN AGGREGATE GREENHOUSE
GAS EMISSIONS FROM ENERGY,
TRANSPORTATION, & OPERATIONS
COMPARED TO A 2020 BASELINE.**

GOALS

- 1** Reduce City of Gunnison's emissions factor (kgCO_2/MWH) by 90% for electrical generation compared to a 2020 baseline.
- 2** Improve energy efficiency of new and current residential buildings by 20% and of commercial buildings by 25%.
- 3** Reduce VMT (Vehicle Miles Traveled) by 8% compared to a 2015 baseline (equal to 2005 levels).
- 4** Incentivize the adoption of electric vehicles (EV) by increasing the amount of charging stations available to the public.



CURRENT CONDITIONS

◆ Energy use is a primary source of emissions in the City of Gunnison. Due to extreme temperatures, energy access is a critical safety and social justice issue.

◆ As of March 2021, 78% of the utility portfolio came from renewable sources.

◆ The City of Gunnison is an electrical utility provider through the Municipal Energy Agency of Nebraska (MEAN), an electric cooperative. There are 69 total cities that purchase electricity from MEAN. Each city has a voting member on MEAN's board. The City of Gunnison purchases a mix of nuclear, hydroelectric, wind, landfill gas, and fossil fuels from MEAN to power residential and commercial buildings within city limits. This is augmented by locally produced electricity sourced from solar panels installed at the Recreation Center and the Jorgeson Ice Arena.

CITY OF GUNNISON'S
ELECTRIC PORTFOLIO 2021

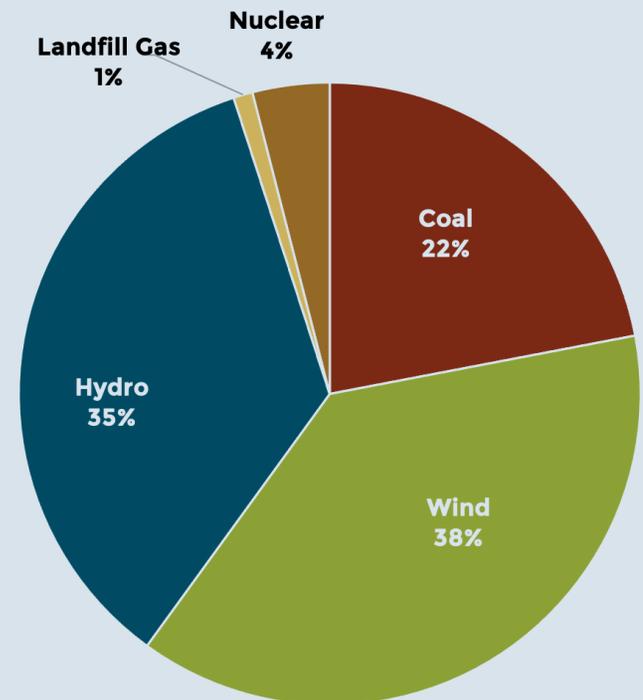


Figure 3: City of Gunnison's Electric Portfolio 2021³⁰



TRUE COST OF ENERGY: ENERGY BURDEN

A priority of this Roadmap is to emphasize equity. It is critical during winter to have energy to heat and light one's home. The average energy burden in the City of Gunnison, especially for the lowest income brackets, is especially high, shown in Figure 4, despite having some of the lowest rates per kWh in the state, as shown in Figure 5. This data is pulled from the Low-Income Energy Affordability (LEAD) Tool produced by the U.S. Department of Energy and the National Renewable Energy Laboratory³¹ and the Colorado Association of Municipal Utilities.³² Residents of Gunnison are paying proportionally high percentages of their income for energy compared to the state average, even with extremely low costs. This suggests that residents in Gunnison use a lot of energy, which affects all income brackets, but is especially burdensome on the lower income brackets. A solution is to do energy

efficiency upgrades of buildings. This can be high-performing appliances, light fixtures, insulation, and more. A more energy-efficient home requires less energy and decreases costs, as well as lowers overall emissions.

Goal 2 and its associated Action Plan details the necessary steps to increase building efficiency and decrease emissions. The energy community spotlight also highlights local organizations currently working on energy efficiency projects.

2030 CONDITIONS

The established result to begin addressing these problems by 2030 is to achieve a 50% reduction in aggregate GHG emissions, including energy, transportation, and operations, from a 2020 baseline.

The energy section contains four high-level Goals and 14 Strategies to achieve this

result. They are focused in the areas of grid decarbonization, building efficiency, reducing VMT, and the adoption of EV's.

Grid decarbonization means reducing the overall amount of carbon produced from our energy portfolio. Goals are focused on reducing the emissions factor, or carbon intensity, of our grid-supplied electricity. An energy portfolio of mostly wind and solar power would have a much smaller emissions factor than a grid with mostly fossil fuels. The City is allowed to request that as much of our portfolio come from renewables as possible. The contract with MEAN allows the City to generate 5% of its own electricity- this does not include what residents are allowed to produce themselves. In the future, the City is aiming to generate more local electricity, including the possibility of a MEAN-owned solar project in the Gunnison Valley.

ENERGY BURDEN FOR COLORADO VS. GUNNISON

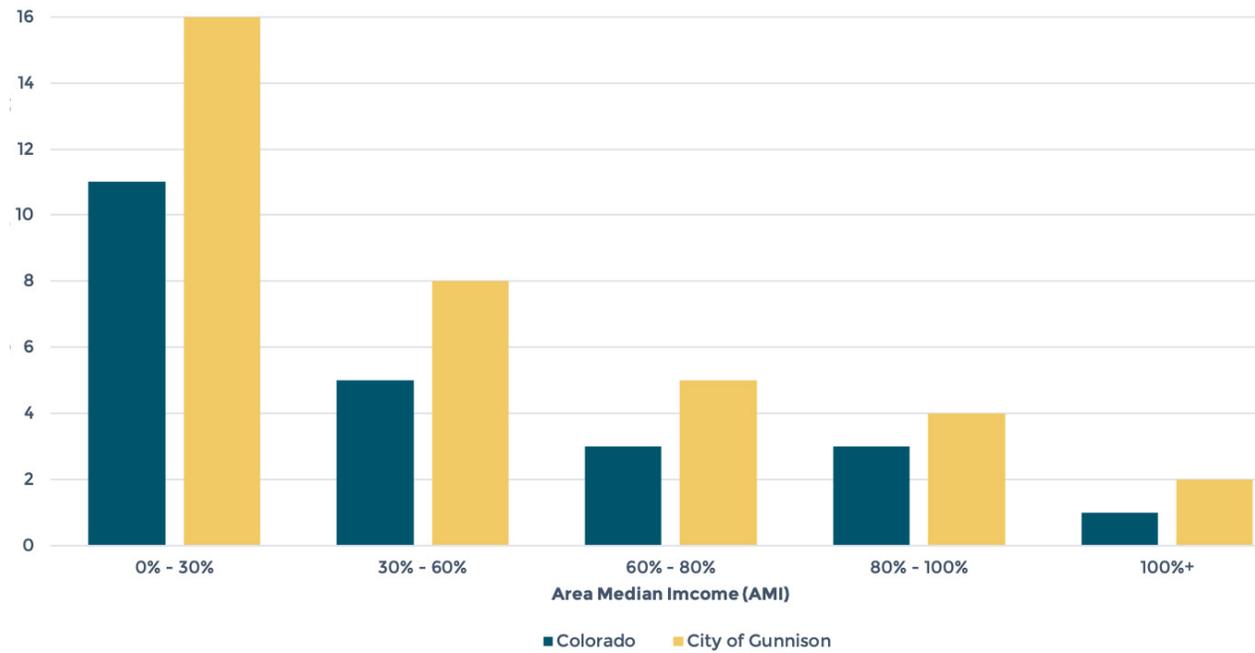


Figure 4: Energy Burden for Colorado vs. Gunnison³¹

COLORADO ASSOCIATION OF MUNICIPAL UTILITIES (CAMU) INDUSTRIAL SURVEY JULY 2021- COST OF 700 KWH

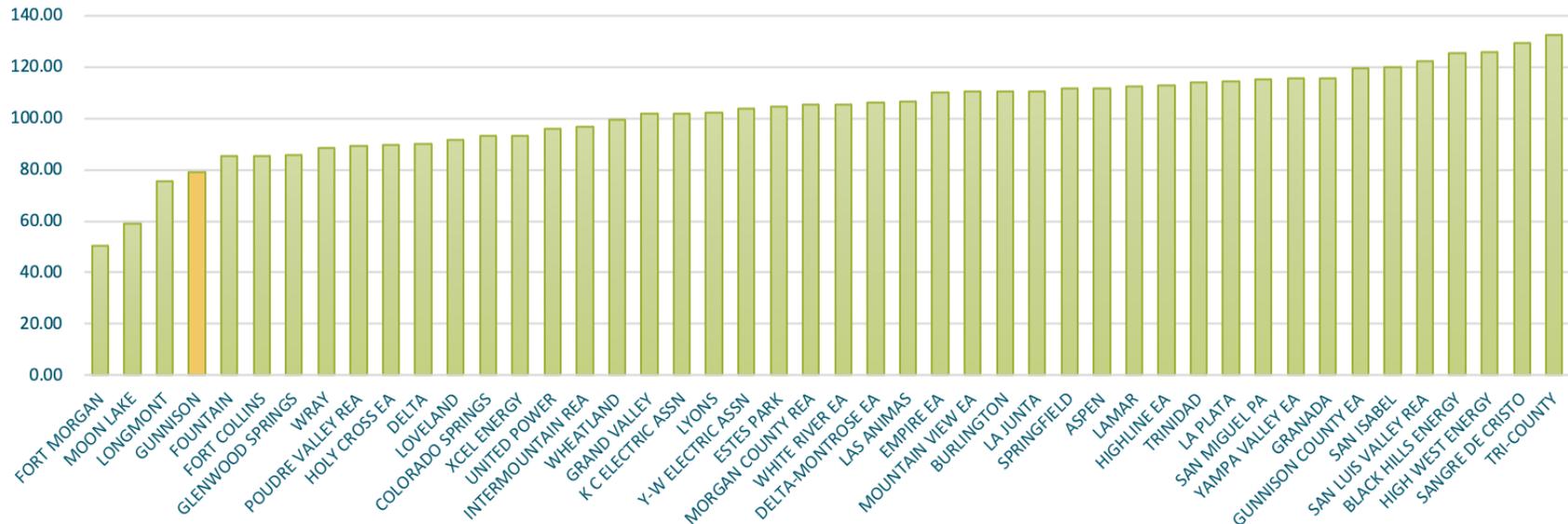


Figure 5: Average Cost of Residential Energy for Cities in Colorado, 2021³²

ENERGY RESULT

BY 2030, ACHIEVE A 50 PERCENT REDUCTION IN AGGREGATE GHG EMISSIONS, INCLUDING ENERGY, TRANSPORTATION, AND OPERATIONS, FROM A 2020 BASELINE.

★ = Deemed a priority by the city.



REDUCE CITY OF GUNNISON'S EMISSIONS FACTOR (KG CO₂/MWH) BY 90% FOR ELECTRICAL GENERATION COMPARED TO A 2020 BASELINE.



STRATEGY A:

INCREASE CARBON-FREE ELECTRICITY FROM THE UTILITY PROVIDER.

ACTIONS	INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEADLINE	COST	PARTICIPATING STAKEHOLDERS
★ Action 1 Purchase 100% carbon-free electricity from the utility provider, MEAN, by 2024. Carbon-free means that generation either does not use fossil fuels or does not emit carbon. Gunnison will be carbon-free when all its electricity is from clean energy sources like wind, solar, and nuclear.	% Carbon-free energy	III	2024	\$\$	MEAN, City Electric Superintendent, City Manager, City Council
Action 2 Continue to lobby MEAN to create more renewable energy sources prior to 2030 and to support distributive energy generation where MEAN creates renewable generation facilities in member communities.	GHG reduction (CO ₂ E) and % renewable energy	III	2030	\$	City Electric Superintendent

**STRATEGY B:
INCREASE LOCAL SOLAR ENERGY GENERATION.**

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
 Action 1	Pursue additional 1MW of solar at new Surface Water Treatment Plant (SWTP) to maximize 5% generation cap- as defined by a contract with MEAN- the utility provider.	% renewable energy	III	2030	\$\$\$	MEAN, City Electric Superintendent, City Council, City Manager
 Action 2	Advocate for a distributive energy policy from MEAN so that a MEAN-owned solar farm in the Gunnison Valley could be built and not count towards our 5% generation cap.	Solar farm built (Y/N)	III	2030	\$\$\$	MEAN, Electric Superintendent
Action 3	Install renewable systems on municipal facilities as part of its power purchase program initiated in 2022.	% renewable energy	I	2030	\$\$\$	Contractor from Request for Proposals (RFP)
Action 4	Review the rate structure and policy related to private and other public entities generating renewable energy in the City. The goal of this review would be to identify if further incentives could be created to use renewable energy while not unfairly impacting energy rates for lower-income populations of the City.	Policy assessment completed (Y/N)	I	2025	\$	City Manager, County Sustainable Operations Manager
Action 5	Continue to promote ease of solar installation for residents by providing information about tax credits for renewable energy on the city's website.	Bilingual educational opportunities about solar, increase in # of residential solar installations	I	On-going	\$	City Public Works Department
Action 6	Support expansion of solar & other renewable programs for low-income households (e.g., GRID Alternatives, ESS).	% of affordable and low-income housing with solar energy	I	2025	\$\$	City and Western Colorado University

STRATEGY C: INCREASE LOCAL RENEWABLE ENERGY GENERATION (SOLAR AND OTHER).

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Pilot biomass energy through partnership with Western Colorado University and other entities throughout the Gunnison Valley, including land management agencies.	Energy generated from biomass (MW/year)	I	2030	\$\$\$	City and Western Colorado University
Action 2	Create differential utility fees for new housing which produces renewable energy to encourage the development of local energy generation, similar to the differential fee structure for affordable housing projects.	Fee implemented (Y/N)	I	2024	\$	City Community Development Department and City Public Works Department

STRATEGY D: UPDATE GREENHOUSE GAS EMISSIONS INVENTORY BIANNUALLY USING ICLEI'S CLEARPATH.

Action 1	Engage WCU Master in Environmental Management (MEM) students to complete 2022 emissions inventory in 2023. This will continue every two years.	Inventory completed (Y/N)	N/A	2023+	\$	City and Western Colorado University MEM Sustainability and Resilient Communities Track Director
Action 2	Analyze progress on emissions reductions goals, evaluate and update strategies and actions.	% reductions and updates to strategies	N/A	2023+	\$	City Manager



IMPROVE ENERGY EFFICIENCY OF NEW AND CURRENT RESIDENTIAL BUILDINGS BY 20% AND OF COMMERCIAL BUILDINGS BY 25%.

STRATEGY A: IMPROVE THE ENERGY EFFICIENCY OF NEW BUILDINGS.

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
 Action 1	Require that new residential and commercial buildings, and new renovations will meet the International Energy Conservation Code (IECC) 2021 and continue to remain up to date with the latest IECC.	# of buildings up to code	1	2022	\$	City Community Development, City Building Inspector, construction community
Action 2	Implement a builders' forum to share ideas and best practices for improving energy efficiency in the Valley.	# of community members participating in forum	1	2023	\$	City Community Development, City Building Inspector, construction community
Action 3	Build capacity within City Community Development and construction community to standardize the development process and assess buildings meeting IECC 2021 by 2022. Once a year, host an educational day to share policy updates and best practices from community members	Educational opportunity hosted annually. # of new homes meeting the standard	1	2026	\$	City Community Development, City Building Inspector, construction community, Habitat for Humanity
Action 4	Require new affordable housing complexes to meet the latest IECC (they would have to meet the minimum building standard regardless) and the new municipally adopted standard. This is to ensure those living in affordable housing have equitable access to the benefits from clean energy and efficient homes.	Implemented policy (Y/N)	1	2023	\$	City Community Development, City Building Inspector, construction community, City Council

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 5	Reduce building fees for projects that exceed the IECC until 2026.	Implemented policy (Y/N)	I	2022-2026	\$	City Community Development, City Council
Action 6	Evaluate / research most feasible and equitable building standards (variety of third-party certifications that target energy use and other environmental impacts- LEED, IECC, Passive House, others) on which to base new building standards and then adopt it.	Selected Building Standard (Y/N)	I	2023	\$	Gunnison Resiliency Task Force, City Community Development, City Building Inspector, construction community
Action 7	Require all new buildings and new renovations meet standard after 2026.	Implemented policy (Y/N)	II	2026+	\$	City Community Development
Action 8	Reassess efficiency standards every 2 years to adapt to new technology.	Policy implemented (Y/N), assessments every 2 years	I	On-going	\$	City Manager, County Sustainable Operations Manager, City Council

STRATEGY B: IMPROVE THE ENERGY EFFICIENCY OF EXISTING BUILDINGS.

Action 1	Research standards for maximum building EUI.	Implemented policy (Y/N)	II	2023	\$	City Community Development, City Council
Action 2	Incentivize remodels to meet the current energy code by creating annual awards for the best energy conservation project on an existing building, the most impactful companies working in the field, and best individual retrofits.	Implemented award (Y/N)	I	2023	\$	City Community Development
 Action 3	Increase Gunnison Valley-Home Energy Advancement Team (GV-HEAT) retrofits from 30-40 per year to 100 per year by increasing the capacity of staff.	% increase in GV Heat participants	I	2025	\$	City Community Development

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 4	Publicize MEAN's current rebate programs for energy efficiency upgrades.	Bilingual educational campaign completed (Y/N), # of inquires for MEAN rebates	I	2022	\$	MEAN, City Electric Superintendent, City Manager's Office, City Community Outreach, Finance Department
Action 5	Complete an energy performance contract for all city facilities to increase energy efficiency.	# of buildings retrofitted	I	2023	\$\$\$	City Manager's Office, City Community Development, City Building Inspector, City Public Works

STRATEGY C: CO-LOCATE AFFORDABLE, ATTAINABLE HOUSING WITH JOB LOCATIONS TO REDUCE VMT.

Action 1	Implement the City's enhancement for its electrical systems so that we can support additional electrification, including planning for home electric vehicle (EV) charging capabilities in new houses.	Program implemented (Y/N)	III	2023	\$\$	City Community Development
 Action 2	Require all new residential buildings and half of residential remodels to be electric by 2030.	% of new and existing buildings electrified	III	2030	\$\$\$	City Community Development
 Action 3	Require all new commercial buildings and half of commercial remodels to be electric by 2030.	% of new and existing buildings electrified	III	2030	\$\$\$	City Community Development

STRATEGY D: PILOT ENERGY USE BENCHMARKING PROGRAM—THIS WOULD REQUIRE ENERGY USE INTENSITY (EUI) DISCLOSURE AT TIME OF SALE OR LEASE.

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Research and decide upon best standards to use for benchmarking.	Research proposal completed (Y/N)	I	2022	\$	City of Gunnison, Gunnison County, WCU, Habitat for Humanity
Action 2	Involve relevant stakeholders (realtors, construction workers, rental owners, etc.).	# of stakeholders involved	I	2023	\$	City of Gunnison, Gunnison County, realty community, local construction workers, local building scientists and designers, City Chamber of Commerce
Action 3	Build capacity for construction workers and others to do the benchmarking.	Training program for benchmarking occurs (Y/N)	I	2024	\$	City of Gunnison, Gunnison County, realty community, local construction workers, local building scientists and designers, City Chamber of Commerce
Action 4	Disclose EUI to pilot the energy benchmarking program with real estate, rental owners, and property management companies. Then, implement requirements for EUI benchmarking based on the demonstration of the successful pilot program.	Pilot occurs (Y/N)	II	2025	\$\$	City of Gunnison, Gunnison County, realty community, local construction workers, local building scientists and designers, City Chamber of Commerce

STRATEGY E: ESTABLISH GREEN BUSINESS CERTIFICATION.

Action 1	Establish a green business certification program to recognize buildings that achieve energy efficiency and sustainability threshold. *See waste section 3	# of businesses participating	II	2022	\$	City Chamber of Commerce, WCU
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REDUCE VMT (VEHICLE MILES TRAVELED) BY 8% COMPARED TO A 2015 BASELINE (EQUAL TO 2005 LEVELS).

STRATEGY A: INCREASE ALTERNATIVE TRANSPORTATION.

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Complete feasibility assessment for a circulator bus in City of Gunnison.	Assessment completed (Y/N)	I	2023	\$	City Community Development, RTA, County Planners
★ Action 2	Implement circulator bus for City of Gunnison.	Bus (Y/N)	I	2030	\$\$	City Community Development, RTA, County Planners
Action 3	Pilot car share program with ZipCar or other car share service, using EVs.	# of community members and students using car share	I	2025	\$\$	City Community Development, WCU

STRATEGY B: INCREASE WALKABILITY AND BIKEABILITY.

Action 1	Encourage biking for all city residents.	Yearly outreach campaigns (Y/N)	I	2023	\$	WCU
Action 2	Discourage students from bringing cars to campus.	Yearly outreach campaigns (Y/N)	I	2023	\$	WCU
Action 3	Promote commuter bike rental program at Western and through the City.	Yearly outreach campaigns (Y/N)	I	2023	\$	WCU and City Manager's office
Action 4	Implement bike share program that is accessible to affordable housing developments.	# of city bikes	I	2023	\$	City Manager's Office, City Community Development, City Community Outreach

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 5	Increase number of bike racks in town and in all new housing developments.	% increase in bike racks	I	2023	\$	City Manager's Office, City Community Development, City Community Outreach
Action 2	Implement Bike to Work Week City event.	% participation	I	2023	\$	City Manager's Office, City Community Development, City Community Outreach

STRATEGY C: CO-LOCATE AFFORDABLE, ATTAINABLE HOUSING WITH JOB LOCATIONS TO REDUCE VMT.

Action 1	Work with different government entities-County, Town of Crested Butte, Town of Mount Crested Butte—to build more homes where jobs are located.	# of affordable housing projects	II	On-going	\$	City Community Development
★ Action 2	Ensure mixed-use designations comprise of multistory structures featuring	% of new and existing buildings with plans for increased housing density	I	On-going	\$	Private developers, business community





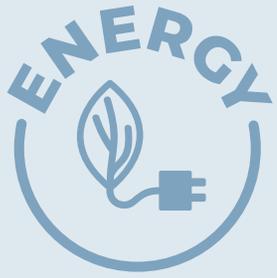
INCENTIVIZE THE ADOPTION OF EVS BY INCREASING THE AMOUNT OF CHARGING STATIONS AVAILABLE TO THE PUBLIC.

STRATEGY A: INCREASE CHARGING INFRASTRUCTURE.

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
★ Action 1	Identify and install needed infrastructure improvements to support electrical vehicle charging stations and increase electrification of residential and commercial buildings via state and federal grants for this purpose.	Completed grid improvements (Y/N)	I	2023	\$\$\$\$	City Electric Superintendent, City Public Works Department
★ Action 2	Increase EV charging stations in visible, accessible locations.	# of charging stations	I	2030	\$\$	City Electric Superintendent, City Community Development
Action 3	Encourage Western to install more EV charging stations.	# of new charging stations	I	2030	\$\$	WCU
Action 4	Update new building code to ensure new houses can charge plug-in electric vehicles.	Policy update (Y/N)	I	2026	\$	City Electric Superintendent, City Community Development, City Council
Action 5	Work with MEAN and State of Colorado Energy Office's EV charger rebate program to incent EV charging stations.	Charging rebate system implemented (Y/N)	I	2022+	\$	City Electric Superintendent, City Community Development

STRATEGY B: 22.5% OF TOTAL VMT ARE BY EVS BY 2030.

Action 1	Increase public education about EVs and potential rebates	# of electric vehicles registered in Gunnison County, # of tourists using EVs to access County	II	2022+	\$	City Public Works Department, Gunnison County Public Works
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COMMUNITY SPOTLIGHTS

LOCAL SOLAR GENERATION PROJECT PARTNERSHIP AT GUNNISON CRESTED BUTTE REGIONAL AIRPORT

When it came time to upgrade the Gunnison-Crested Butte Regional Airport, sustainability was integrated into the design.

The existing building is being retrofitted with air sealing insulation to create a high-performing building envelope which will decrease overall energy use. The building will be heated and cooled via a new ground source heat pump (geothermal) HVAC system. The HVAC system includes sophisticated controls that respond to occupancy levels of the building to ensure that ventilation and temperature requirements are met but not exceeded or used when the building is not occupied. The goal of the envelope, lighting, and HVAC improvements is to lower energy

needs as much as possible so the building's entire energy requirements can be met by the County's share of energy generated from the new solar array that is being built on-site.

In the spring and early summer of 2022, an 847kW solar array will be built at the airport as part of a Power Purchase Agreement (PPA). A PPA is a third-party agreement where the project developer installs, owns, and operates the energy system.³³ Western Colorado University, the City of Gunnison, and Gunnison County will each get 1/3 of the power production. The power will go directly into the City grid and the County will allocate their 1/3 towards the airport terminal to account for all electrical needs for a net-zero facility.



GV HEAT

The young woman, Ms. A, called the GV-HEAT office, because she was already feeling cold at night and was seeking solutions. It was only the end of September, when the Gunnison days were still exceptionally pleasant. Ms. A rents one of Gunnison's historic homes built around 1940 together with her mother who is of Hispanic origin. The house has no significant insulation, is drafty, and the furnace is unreliable. Because this family earns less than 80% of the Gunnison County Area Median Income (AMI) GV-HEAT was able to approve them through Colorado's Affordable Residential Energy (CARE) state funded program to receive a free energy assessment and free energy upgrades. GV-HEAT, a program of the Gunnison Valley Regional Housing Authority (GVRHA) that assists income-qualified households with weatherization upgrades, then hired a contracting team to insulate the walls, ducts and pipes; to air seal the cracks to reduce air-leakage to the outside; to replace their old refrigerator; to clean the furnace; and to add storm windows. The City of Gunnison and Atmos Energy's rebate programs significantly contributed to these much-needed upgrades.

The measures had an immediate impact. The next day the tenants felt a much warmer interior, they did not see the cold steam when exhaling after waking up. They could discard that extra blanket previously needed to ward off the cold earlier, and they could finally turn off that highly inefficient electric standalone radiator.

In 2021 GV-HEAT was able to serve 30 homes through CARE, saving each household approximately \$450 in annual energy costs. That is money that can now be spent on other necessities. The biggest money savers are replacing regular lightbulbs with LEDs, adding insulation to floors or attics, sealing

air leaks, and replacing refrigerators that are older than 10 years. Health and safety measures are addressed as well through the identification of gas leaks or mold by cleaning and tuning furnace systems and fixing moisture issues. Through the 2020 CARE program energy modeling calculations, the 2020 energy measures resulted in 38,924 kWh and 7,064 therms saved for all 27 participating households.

Anybody who receives bill pay assistance through Colorado's Low-income Energy Assistance Program (LEAP) - apply through the Gunnison County Health & Human Services 970-641-3244 - is automatically eligible to participate in the CARE program. While LEAP helps with paying energy bills, CARE helps with the actual reduction of annual energy costs, as well as an increase of health, safety, and comfort in one's home. Every household that receives LEAP is also eligible to call the HEAT-HELP line 1-855-469-4328 through the Crisis Intervention Program in case their heating system fails, so that help is on its way within 24 hours.

GV-HEAT facilitates additional program opportunities to all income levels. "Call us to see if you are qualified to participate in any of the free energy upgrade programs that GV-HEAT has available. The applications are easy to fill out and we are seeking applicants year-round," says Gesa Michel, GV-HEAT Coordinator with GVRHA, "take advantage of enrollment for these programs today to keep you warm in winter!"

For more information and to sign up, please visit GVRHA's website at: <https://gvrha.org/gv-heat-program/> or contact Gesa Michel, the GVRHA GV-Heat Coordinator, at info@gvrha.org or 970-234-5613.





RESULT

BY 2030, THE CITY OF GUNNISON PROVIDES AN ADEQUATE DOMESTIC WATER SUPPLY (EXCLUDING IRRIGATION) WHILE SUPPORTING A HEALTHY AQUATIC ECOSYSTEM IN THE GUNNISON RIVER.

GOALS

1 By 2025 the City will realize an actual 15% reduction in SFE (Single-Family Equivalents) water usage as compared to a 2022 baseline
*normalized by the water audit/water loss study.

2 Ensure the long-term viability of quantity and quality of water resources.



CURRENT CONDITIONS

The City of Gunnison is located in the headwaters of the Gunnison River Basin, where water flows through the Gunnison River and through the City's irrigation ditch system during summer months, recharging our alluvial aquifer. With snowpack becoming more variable due to rising temperatures and climate change, the City needs to mitigate potential threats to decreasing water levels and adapt to imminent changes by way of more water storage and diversified water sources. The City water and sewer system consist of approximately 34 miles of water lines, 30 miles of sewer lines, 3 water storage tanks that hold over 2 million gallons of water, 9 water wells, and 25 miles of irrigation ditches. The City takes its water responsibility seriously and invested in a 2021 Master Water Plan and continued relationships with local organizations specializing in water resources management. This includes water conservation and education programs, like Upper Gunnison River Water Conservancy District's (UGRWCD) Water Doesn't Grow on Trees campaign. The Wastewater Treatment Plant is currently producing class A exceptional quality biosolids a byproduct of the wastewater treatment process. The City composts the biosolids along with a mixture of woodchips from the local tree dump to create a safe and nutrient-rich compost product called Gunny Gold.

Opportunities for improved water resources management and adaptation are detailed in this section. These range from opportunities in reduced water consumption, such as indoor and outdoor water conservation and improved efficiency of water usage; improving connections to water and land use; improving partnerships with local organizations working to conserve, mitigate, and adapt; and implementing new codes and management Strategies.

2030 CONDITIONS

The result in this area is to provide an adequate domestic water supply (excluding irrigation) while supporting a healthy aquatic ecosystem in the Gunnison River.

With careful and improved management of surface water, ground water, ditch water, and aquifer replenishment areas (e.g. Van Tui), as well as participation in watershed resiliency initiatives, this is possible.

The water section contains two high level Goals and seven Strategies to achieve the result in the areas of municipal water conservation and water resources preservation.

WATER RESULT

THE CITY OF GUNNISON PROVIDES AN ADEQUATE DOMESTIC WATER SUPPLY (EXCLUDING IRRIGATION) WHILE SUPPORTING A HEALTHY AQUATIC ECOSYSTEM IN THE GUNNISON RIVER.

★ = Deemed a priority by the city.



BY 2025 THE CITY WILL REALIZE AN ACTUAL 15% REDUCTION IN SFE (SINGLE-FAMILY EQUIVALENTS) WATER USAGE AS COMPARED TO A 2022 BASELINE *NORMALIZED BY THE WATER AUDIT/WATER LOSS STUDY.



STRATEGY A: 40% LOSS TO 20% LOSS BY 2025 IN MUNICIPAL WATER SYSTEM.

ACTIONS		INDICATOR OF SUCCESS	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Conduct a water audit to determine where loss is coming from.	Audit conducted (y/n)	2024	\$	UGRWCD, City Water and Wastewater, Colorado Rural Water Association
Action 2	Collaboration between the Water Department and Finance Department to ensure that billing is conducted properly.	Water accountant hired (Y/N)	2024	\$\$	City Water and Wastewater, City Finance Department
Action 3	Implement water usage block rate to encourage water conservation and reduce billing errors.	Block rate implemented (Y/N)	2022	\$	City Water and Wastewater, City Finance Department

STRATEGY B: INCREASE EFFICIENCY & ENCOURAGE CONSERVATION OF OUTDOOR WATER USE.

ACTIONS		INDICATOR OF SUCCESS	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
★ Action 1	Write grants and develop programming to implement a water efficiency conservation ordinance to control irrigation during drought years.	Ordinance implemented (Y/N)	2024	\$	City Public Works Department, City Council
★ Action 2	Support farm and ranch operations in instituting water-conservation irrigation methods, like drip irrigation, and the now-legal rain barrels.	Bilingual Educational Campaign (Y/N)	2024	\$	City Public Works, UGRWCD, Local agriculture community
Action 3	Assist UGRWCD in implementing an educational campaign supporting water conservation and encouraging efficient outdoor water use.	% change in SFE	2023	\$	UGRWCD, City of Gunnison Water and Wastewater
Action 4	Encourage the use of the City's irrigation system which increases the availability of water resources for potable needs and allows irrigated water to be reinjected into the City's aquifer- (for residences with access to ditch water).	% change in of lawns using potable water	2023	\$	City of Gunnison Water and Wastewater
Action 5	Create bilingual educational campaigns about how you should be irrigating or xeriscaping* based on the ditch.	% change in of lawns using potable water	2023	\$	City of Gunnison Water and Wastewater, WCU, UGRWCD
Action 6	Promote xeriscaping* and native plants (short-term) and irrigation from ditches.	% change in of lawns using potable water	2023	\$	City of Gunnison Water and Wastewater WCU, UGRWCD, real estate community
★ Action 7	Develop and adopt water-efficient landscape codes for new development, including installation of efficient timed sprinkler systems, minimizing turf grass, and requiring water-efficient landscaping.	Implemented policy (Y/N)	2026	\$	City of Gunnison Community Development, City Council

*Xeriscape is a style of landscape design that requires little or no irrigation or other maintenance.

STRATEGY C: INCREASE EFFICIENCY AND CONSERVATION OF POTABLE WATER.

ACTIONS		INDICATOR OF SUCCESS	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
★ Action 1	Assist with water conservation campaigns for households to encourage the use of water efficient fixtures.	% change in SFE	2023	\$	UGRWCD, City of Gunnison Water and Wastewater
Action 2	Measure SFE for Western Colorado University students living on campus.	Data obtained (Y/N)	2025	\$	UGRWCD, City of Gunnison Water and Wastewater, WCU
Action 3	Encourage individual water usage conservation campaigns for campus students.	% change in SFE on campus	2023	\$	UGRWCD, City of Gunnison Water and Wastewater, WCU
Action 4	Adopt the International Building Code (IBC) 2020.	Implemented policy (Y/N)	2023	\$	City of Gunnison Community Development, City Council





ENSURE THE LONG-TERM VIABILITY OF QUANTITY AND QUALITY OF WATER RESOURCES.

STRATEGY A: ALL FUTURE LAND-USE DECISIONS WILL BE BASED ON AVAILABLE WATER RESOURCES.

ACTIONS		INDICATOR OF SUCCESS	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	City and county update of the Three Mile Plan: research and framework decision making for future land use patterns, density planning, etc.	Update occurs (Y/N)	2023	\$	City of Gunnison, Gunnison County
Action 2	Update the city land use code to link land use with water resources.	Update occurs (Y/N)	On-going	\$\$	City of Gunnison Community Development
Action 3	Implement land use restrictions aimed at water conservation.	Restrictions successfully implemented; land conserved	On-going	\$	City of Gunnison Community Development, UGRWCD

STRATEGY B: INCLUDE CLIMATE CHANGE PROJECTIONS IN ALL FUTURE WATER MANAGEMENT PLANNING.

★ Action 1	Update city strategic documents related to water on a semi-regular basis with most current runoff projections and local climate change projections provided by expert entities like the Colorado Water Conservation Board (CWCB), the Gunnison River Basin Roundtable (GRBR), and the UGRWCD.	Update occurs (Y/N)	On-going	\$	City of Gunnison Community Development, UGRWCD, CWCB, GRBR
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Action 2	Update water management operations on an annual basis according to the same sources, as well as real time water availability data provided by the US Geological Survey and monitoring performed by Western Colorado University.	Update occurs (Y/N)	On-going	\$	City of Gunnison Community Development, UGRWCD
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STRATEGY C: IMPLEMENT & CONTINUOUSLY UPDATE MUNICIPAL WATER MANAGEMENT STRATEGIES.

ACTIONS		INDICATOR OF SUCCESS	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Implement Source Water Protection Plan.	Implemented plan (Y/N)	2024	\$	City of Gunnison, Colorado Rural Water Association
 Action 2	Implement recommendations from the 2021 City of Gunnison Water Master Plan including diversifying water sources with new surface water treatment plant.	Implemented plan (Y/N)	On-going	\$\$\$	City of Gunnison Public Works, City of Gunnison Community Development

STRATEGY D: WORK IN PARTNERSHIP WITH EXTERNAL STAKEHOLDERS TO PROTECT THE RESILIENCY OF THE WATERSHED.

ACTIONS		INDICATOR OF SUCCESS	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Quantify additional water storage needs to meet future use.	Estimate of future need	2024	\$	City Engineer
Action 2	Work collaboratively with UGRWCD to identify solutions for additional water storage particularly during the drier times of the year.	Creation of plan for additional water storage	2030	\$\$\$	City Manager's office, UGRWCD, WCU
Action 3	Work with UGRWCD and Trout Unlimited (TU) to reconstruct City irrigation diversion to allow irrigation during drought conditions.	Project implemented	2030	\$\$	Public Works Department, UGRWCD, TU
Action 4	Collaborate with the Upper Gunnison River Water Conservation District (UGRWCD) on Phase II of its Water Management Plan for the Gunnison River.	Implemented plan (Y/N)	2022+	\$	City Manager's office, UGRWCD, WCU



COMMUNITY SPOTLIGHT

GUNNISON DITCH SYSTEM

BY SUE UERLING

DID YOU KNOW? The City ditch system plays a vital role in providing non-potable water for properties adjacent to the city ditch system. This water is often used for watering food gardens or other plants and trees in yards.

THIS MEANS: If you have access to the ditch, you should use the water to grow native plants and trees and grow some of your own food in a garden or greenhouse. This is because when the water is used, it will seep into the ground below the City, be naturally filtered, and refill Gunnison's water table. This eventually feeds the City's wells—where the water is pulled up from the ground with electric pumps, tested, and sent out to residents as the potable water that comes out of the tap.

"The water that flows through the ditch is discharged back to the Gunnison River with the stormwater." —Courtesy of JDS Hydro, consultants for the 2021 Master Water Plan. While the City ditch system can help recharge the Gunnison River and our natural aquifers, it is important to remember that Gunnison's climate is "high desert" and all residents and visitors should take steps to conserve water, a valuable and limited resource for the area. One way to help conserve water is to xeriscape residential and commercial landscaping. Xeriscape is a style of landscape design that requires little or no irrigation or other maintenance. For more information on low-water native plants, shrubs and trees, please check out this guide from Colorado Native Plant Society.³⁴



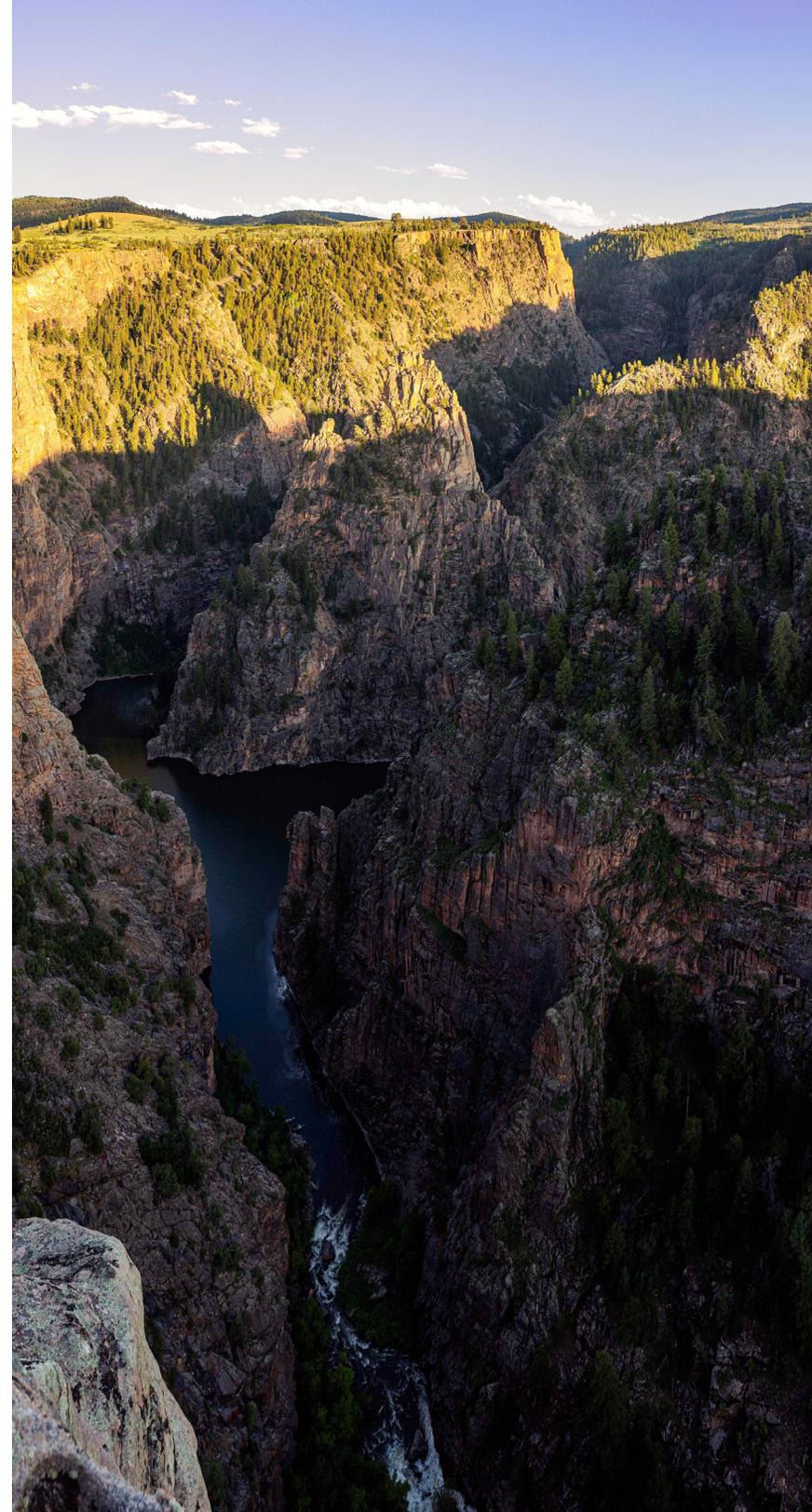
UPPER GUNNISON RIVER WATER CONSERVATION DISTRICT (UGRWCD)

BY SUE UERLING

The mission of the Upper Gunnison River Water Conservancy District (District) is to be an active leader in all issues affecting the water resources of the Upper Gunnison River Basin.

The District was established in 1959 by a vote of area taxpayers. The UGRWCD's mission has evolved over the years from originally serving as the legal entity tasked with coordinating with the US Bureau of Reclamation for the construction of the Upper Gunnison Project (a project that was never completed) to becoming a much broader support system and advocate for any issues involving the waters of the Upper Gunnison River Basin. The District boundaries are located in south-central Colorado at the headwaters of the Gunnison River Basin. The main stem of the Upper Gunnison River forms at the confluence of the East and Taylor Rivers in Almont and converges with other tributaries on its way into Blue Mesa Reservoir. Seven tributary mountain watersheds make up most of the Upper Gunnison River Basin. These seven are the Gunnison River Mainstem; Ohio Creek; East River, which includes the Slate River; Taylor River; and Tomichi Creek, which includes Quartz Creek; Cochetopa Creek; and the Lake Fork of the Gunnison.

The District strives to develop, promote, and implement water conservation, augmentation, and management Strategies to protect water resources for the benefit of its citizens, the economy, and the environment. More specifically, the UGRWCD has worked to oppose any new transfers of water from the basin that might interfere with existing beneficial uses of basin waters for current and future water rights holders in the District. In addition, the District supports wise land-use policies by government entities to protect water resources in the basin. The District strives to achieve an optimal balance among competing waters users within the District to minimize conflict. The District oversees and seeks to maintain high water quality standards and provides management and funding for programming and collaborations that enhance water supply or improve stream conditions. Finally, the District is an active participant in state and federal processes to address challenges like climate change, drought, population growth and water shortages to guard against detrimental effects to water users in the Upper Gunnison Basin.





RESULT

BY 2030, THE CITY OF GUNNISON WILL HAVE IMPROVED ITS WASTE MANAGEMENT METHODS BY INCREASING DIVERSION RATES FROM THE LANDFILL FROM 2% TO 5% FROM A 2020 BASELINE EVEN WITH A GROWING POPULATION.

GOALS

- 1** Adopt measures to decrease residential waste sent to the landfill.
- 2** Adopt measures to decrease commercial waste sent to the landfill, including waste from construction and demolition.
- 3** Divert at least 50% of food waste coming from the City of Gunnison from going to the landfill annually.



CURRENT CONDITIONS

While the year 2020 was an anomaly, the amount of waste generated was similar to 2019. In 2020, the City of Gunnison generated 2,399.49 tons of waste between 2000 households and 125 businesses, while in 2019 2,326.32 tons were generated. The City offers recycling of corrugated cardboard, aluminum cans, tin cans, glass, and #1 and #2 plastic and trash to residents picked up on a weekly basis. Trash is taken to the Gunnison County landfill and recyclables are taken to the Gold Basin recycling center, also operated by the County. To recycle, there needs to be a market where goods can be sold—this is the reason so few types of plastic can be recycled in the valley. Recyclables must be cleaned and sorted very carefully since the County is running its own operation.

GUNNISON COUNTY POTENTIAL FOR DIVERSION THROUGH TYPICAL RECYCLING PROGRAMS (2018)³⁵

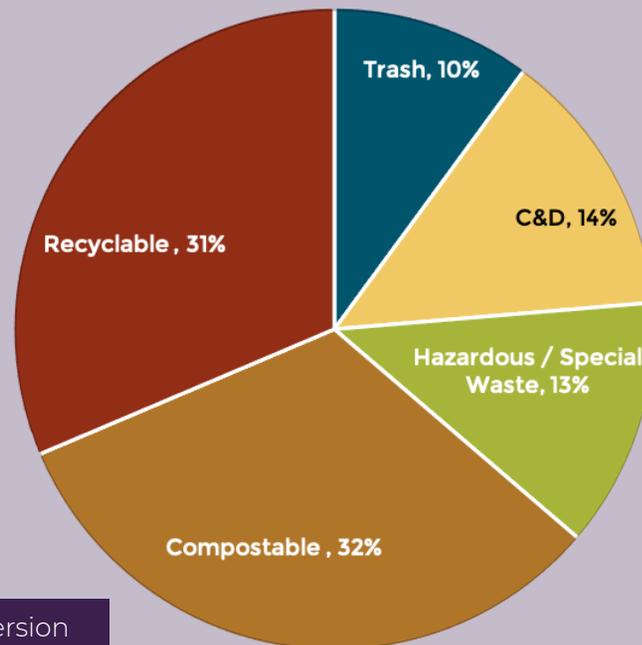


Figure 6: Gunnison County Potential for Diversion Through Typical Recycling Programs (2018)

ON AVERAGE, ONLY ABOUT 2% OF ALL CITY WASTE IS DIVERTED FROM THE LANDFILL THROUGH CURRENT RECYCLING EFFORTS.

Over the next decade, the City will aim to increase the amount of waste diverted from the landfill, in addition to reducing the emissions generated from solid waste. In 2020, 7%, or 3,918 metric tons of the City's emissions came from waste generated that was sent to the landfill. To date, there has been no official waste audit conducted at the City level. However, according to a 2018 waste audit at the county level, about 30% of waste was organic material that could have been composted. The assumption is that there are similar findings as the emissions profiles for County and City are similar.

WHY IS DIVERTING FOOD WASTE IMPORTANT FROM AN EMISSIONS PERSPECTIVE?

Think about the banana peel you recently threw in a trash can. What is going to happen to it? When food and other organics are disposed of, they are slowly decomposed by tiny microbes. These microbes produce gasses as a waste product while they are breaking down the organic materials. When food waste or other organic material is dumped into a landfill, it is quickly buried by trash, and breaks down without oxygen. In this situation, the organic material and tiny microns produces methane. Methane is a GHG that has a global warming potential (GWP) 28 times

more potent than carbon dioxide. Most of the emissions coming from solid waste are from methane produced by the decomposition of organic materials. Here is where compost contributes as a climate solution.²⁵

When organic materials are broken down in the presence of oxygen, as happens in compost piles or windrows, the decomposition does not produce methane, and has a significantly smaller carbon emissions footprint. Industrial compost facilities which operate in anerobic (without oxygen) conditions can capture methane emissions to use as power. Using that same compost to grow plants sequesters carbon from the atmosphere.

2030 CONDITIONS

By 2030, The City of Gunnison will improve its waste management methods by increasing diversion rates from the landfill from a 2020 baseline even with a growing population.

Opportunities for waste mitigation and diversion are detailed in this section. These range from opportunities in composting, improved residential and commercial recycling through ordinances and incentives, and reducing construction and demolition waste that ends up in the landfill. Through a combination of different actions, both emissions from waste and waste itself will be reduced over the next eight years and beyond.

WASTE RESULT

BY 2030, THE CITY OF GUNNISON WILL IMPROVE ITS WASTE MANAGEMENT METHODS BY INCREASING DIVERSION RATES FROM THE LANDFILL FROM 2% TO 5% FROM A 2020 BASELINE EVEN WITH A GROWING POPULATION.

★ = Deemed a priority by the city.



ADOPT MEASURES TO DECREASE RESIDENTIAL WASTE SENT TO THE LANDFILL.



STRATEGY A: DOUBLE RATES OF DIVERTED WASTE FROM CURRENT DIVERSION RATE OF 2%.

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Weigh recyclables during two-week audit on an annual basis to see if any change has been made per capita.	Increased weight of recyclables	1	On-going	\$	City of Gunnison Refuse and Recycling
★ Action 2	Shift to dual or single-stream recycling methods depending upon available services to increase landfill diversion rate.	Diversion rate	1	2025	\$\$	Private Contract
Action 3	Implement a bilingual educational campaign to reduce waste generation.	Bilingual educational campaign	1	2022	\$	City of Gunnison Refuse and Recycling
Action 4	Develop bilingual outreach materials to educate the community regarding what is recyclable and how to recycle.	Bilingual educational campaign	1	2022	\$	Community Outreach Liaison

STRATEGY B: DEVELOP POLICIES AND INCENTIVES TO REDUCE WASTE GENERATION.

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Work with existing programs to provide rentable reusable dishware and waste stations for cleaning dishes at local events.	Purchase of materials/marketing of product	1	2023	\$	City of Gunnison Refuse and Recycling
Action 2	Ban the use of single-use products made of polystyrene.	Implemented policy (Y/N)	1	2024	\$	Chamber of Commerce, Local Businesses, City Council
★ Action 3	Implement a City-wide Plastic Bag Ban initiative.	Implemented policy (Y/N)	1	2024	\$	Chamber of Commerce, Local Businesses, City Council



ADOPT MEASURES TO DECREASE COMMERCIAL WASTE SENT TO THE LANDFILL, INCLUDING WASTE FROM CONSTRUCTION AND DEMOLITION.

STRATEGY A: DEVELOP OPERATIONAL STRATEGIES & PARTNERSHIPS WITH PRIVATE BUSINESSES TO INCREASE RECYCLING RATES.

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Work with existing programs to provide rentable reusable dishware and waste stations for cleaning dishes at local events.	Purchase of materials/marketing of product	1	2023	\$	City of Gunnison Refuse and Recycling
Action 2	Ban the use of single-use products made of polystyrene.	Implemented policy (Y/N)	1	2024	\$	Chamber of Commerce, Local Businesses, City Council

**STRATEGY A: DEVELOP OPERATIONAL STRATEGIES & PARTNERSHIPS
WITH PRIVATE BUSINESSES TO INCREASE RECYCLING RATES.**

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Encourage businesses to take recyclables to the recycling center or use private companies.	# of businesses bringing recycling to Gold Basin	I	2022+	\$	Chamber of Commerce, Local Businesses
Action 2	Provide standardized recycling signage in all businesses with self-service (i.e. coffee shops, etc.).	# of businesses with signage	I	2022	\$	City of Gunnison Refuse and Recycling
Action 3	Incentivize purchasing recyclable containers for dining/takeout.	# of businesses with recyclable containers	I	2023	\$	City of Gunnison Refuse and Recycling, Chamber of Commerce, Local Businesses
Action 4	Work with CDPHE to implement their state-wide green business program.	# of businesses participating in program	I	2022	\$	Chamber of Commerce, Local Businesses, CDPHE, City Manager's Office

STRATEGY B: PROVIDE COMMERCIAL RECYCLING.

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Work with CB, Mt. CB, and County to determine cost-effective dual or single-stream recycling program options for the valley under one waste management service provider.	New contract with private partner (Y/N)	I	2025	\$\$\$	Public Works Department
Action 2	Empower businesses to recycle by providing materials and bilingual education once single or dual-stream recycling is available.	# of businesses that are recycling	I	2025	\$\$	City of Gunnison Refuse and Recycling

STRATEGY C: DEVELOP POLICIES TO REDUCE WASTE GENERATION.

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Implement a city-wide Plastic Bag Ban initiative.	Implemented policy (Y/N)	I	2024	\$	City of Gunnison Refuse and Recycling, Chamber of Commerce, Local Businesses, City Council
Action 2	Ban polystyrene to-go containers.	Implemented policy (Y/N)	I	2024	\$	City of Gunnison Refuse and Recycling, Chamber of Commerce, Local Businesses, City Council
 Action 3	Require city-hosted events to be zero waste by providing sorted recycling and composting bins with educational signs and encourage the use of paper cups, plates, and straws.	# of waste free events hosted	I	2024	\$	City of Gunnison Refuse and Recycling
Action 4	Empower community events to be zero waste events by providing sorted recycling and composting bins with educational signs and encourage the use of paper cups, plates, and straws.	Implemented policy (Y/N) and education campaign	I	2024	\$	City of Gunnison Refuse and Recycling, Chamber of Commerce, City Council
Action 5	Support circular economy initiatives that are happening in the valley.	# of initiatives in the valley	I	2030	\$\$\$	WCU

STRATEGY D: REDUCE AND RECYCLE CONSTRUCTION AND DEMOLITION (C&D) WASTE.

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
★ Action 1	Develop a location for reusable C&D materials to be salvaged and redistributed.	Location determined	I	2024	\$\$\$	Local Construction Companies, City of Gunnison Community Development, Local Nonprofit Organizations
Action 2	Create a C&D reuse network to educate builders and architects on sustainable C&D best practices.	Develop network, # of participants in network	I	2024	\$\$	Local Construction Companies, City of Gunnison Community Development, Local Nonprofit Organizations
Action 3	Increase the amount of construction materials such asphalt, bricks, concrete, and untreated clean wood that get diverted from the landfill at the tree dump.	Increased revenue at the tree dump from construction materials	I	2023	\$	City of Gunnison Community Development, Local Nonprofit Organizations
Action 4	Require construction sites to recycle materials and charge differential rate at the landfill for unsorted waste.	Implemented policy (Y/N)	I	2023	\$\$	Local Construction Companies, Gunnison County Landfill, City Council





DIVERT AT LEAST 50% OF FOOD WASTE COMING FROM THE CITY OF GUNNISON FROM GOING TO THE LANDFILL ANNUALLY.

STRATEGY A: IDENTIFY OPPORTUNITIES FOR COMMUNITY SCALE COMPOSTING FACILITIES.

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Write Recycling and Reuse Economic Opportunities (RREO) grant through CDPHE to help fund a community compost facility for residential drop off.	Funding acquired (Y/N)	I	Short term -Due March 1, 2023	\$\$	City of Gunnison Refuse and Recycling
*Action 2	Identify locations for composting facilities and seek funding to obtain a community scale composter to maximize sequestration opportunities.	Funding acquired; location determined (Y/N)	I	March 2023: due at time of grant	\$\$\$	City of Gunnison Refuse and Recycling
Action 3	Expand the size of the composting facility - utilize recommendations to build Conditionally Exempt Small Quantity (CESQ) facility from MEM feasibility study and CDPHE.	% increase in compost capacity	II	2030	\$\$\$	City of Gunnison Refuse and Recycling
Action 4	Develop operations programming to have community composting program and curbside pickup – either offered by municipality or private partner.	Operation for collection developed (Y/N)	I	2030	\$\$\$	City of Gunnison Refuse and Recycling
*Action 5	Create a policy that requires new neighborhoods and multi-family complexes to factor in space for recycling bins, and access to green space (park, etc.) that can contain a community composting pile.	Implemented policy (Y/N)	I	2025	\$	City Community Development, City Council

STRATEGY B: BEGIN COMMERCIAL COMPOSTING.

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Empower businesses to compost by providing them with materials and bilingual education.	# of businesses that are composting	I	2030	\$	Local Businesses, City of Gunnison Refuse and Recycling
Action 2	Implement fees for restaurants that do not compost kitchen scraps.	Implemented policy (Y/N)	I	2030	\$	Local Restaurants, City of Gunnison Refuse and Recycling, City Council
Action 3	Require restaurants to use compostable containers for non-reusable dishware once CESQ or Class III composting facility is available.	Educational campaign and implemented policy (Y/N)	I	2030	\$	Local Restaurants, City of Gunnison Refuse and Recycling, City Council

STRATEGY C: INCENTIVIZE AND EDUCATE TO INCREASE BACKYARD COMPOSTING.

 Action 1	Promote backyard composting by providing low or no-cost compost barrels to consumers.	# of businesses that are composting	I	2023	\$	City of Gunnison Refuse and Recycling
Action 2	Provide/endorse local backyard composting education.	Implemented policy (Y/N)	I	2022+	\$	City of Gunnison Refuse and Recycling, Nonprofits with access to composting education
Action 3	Partner with local nonprofits to expand education about their voluntary compost drop-off.	Educational campaign and implemented policy (Y/N)	I	2022+	\$	City of Gunnison Refuse and Recycling, Nonprofits with access to composting education
Action 4	Create increased landfill fee for waste; revenue from which supports a composting facility.	Implemented policy (Y/N)	I	2023	\$	City of Gunnison Refuse and Recycling, Gunnison County Landfill
Action 5	Create (and enforce) a ban on yard waste in the landfill.	Implemented policy (Y/N)	I	2023	\$	City of Gunnison Refuse and Recycling, Gunnison County Landfill

STRATEGY D: BUILD ON COMMUNITY PARTNERSHIPS.

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Increase awareness about access to Gunni Gold- locally created compost from Wastewater Treatment Plant.	Bilingual educational campaign	I	2022+	\$	Public Works Department
Action 2	Work with WCU to encourage students to compost with Chipeta Garden.	Bilingual educational campaign	I	2022+	\$	WCU
Action 3	Require municipal buildings to compost and take compost to compost drop-off centers in the valley.	Implemented policy (Y/N)	I	2022	\$	City of Gunnison Administration, City Council

STRATEGY D: DECREASE FOOD WASTE BEING CREATED.

ACTIONS		INDICATOR OF SUCCESS	GHG REDUCTION POTENTIAL	DEAD-LINE	COST	PARTICIPATING STAKEHOLDERS
Action 1	Enhance partnerships between food providers and food insecure populations through food sovereignty efforts.	Created incentive and then implemented policy (Y/N)	I	2023+	\$\$\$	Local grocery stores, organizations that are certified to distribute food





COMMUNITY SPOTLIGHTS

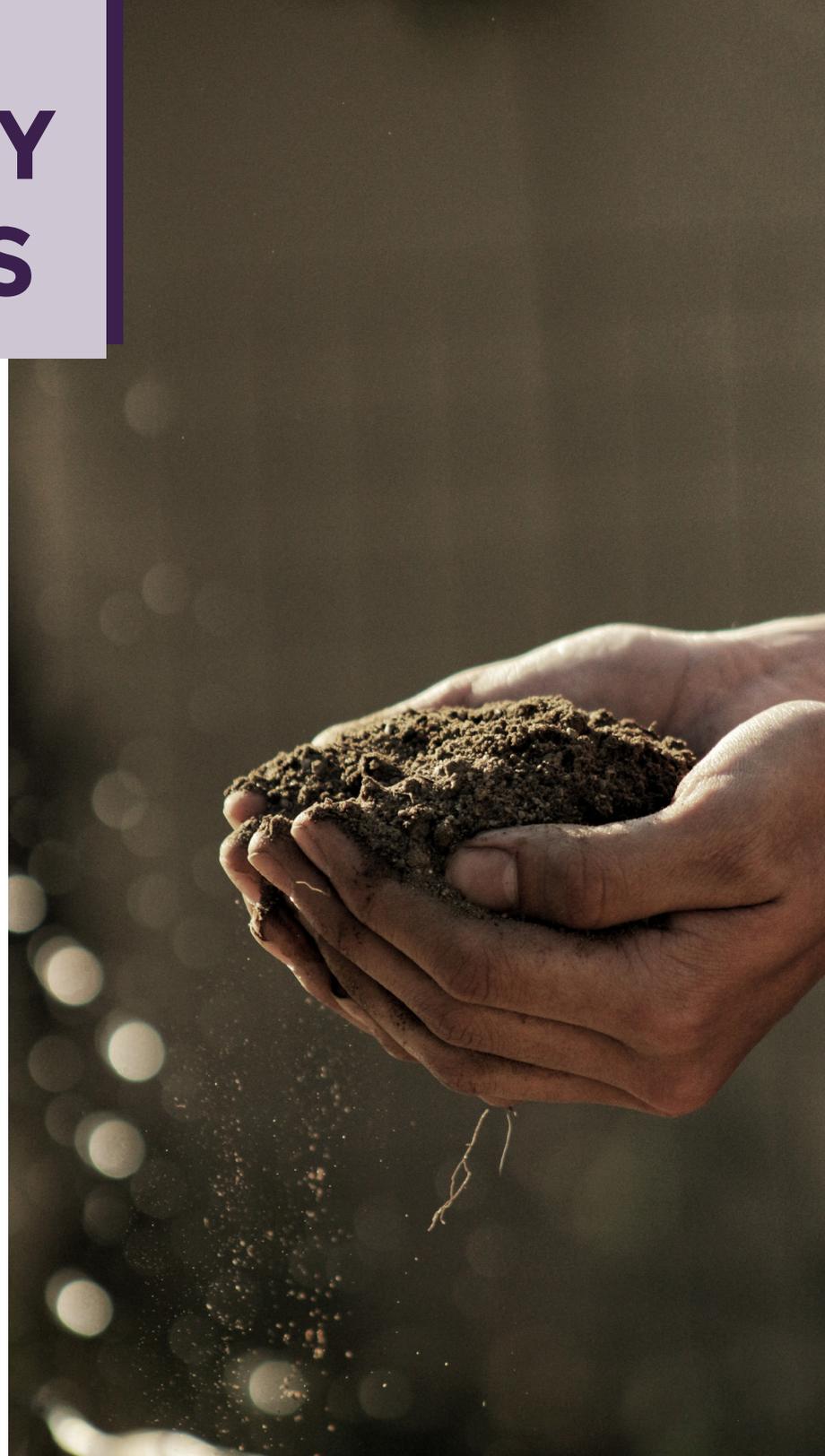
GUNNY GOLD

BY SHAUN MCGRATH

Community health starts with soil health, and soil health starts with feeding our soils. Gunny Gold, a local, Class A, biosolid compost provides the community with an affordable resource to enrich soil while also diverting waste from the landfill. During the summer of 2020, Gunny Gold became an important resource for resilience during the global pandemic when the Wastewater Treatment Plant offered Gunny Gold to the community for free to aid in individual efforts to grow food. During this time, the community could see firsthand the benefits of enriching soil with organic matter and nutrients found in compost. For example, the Organics Guild's Garden at Western Colorado University saw an obvious increase in food production when Gunny Gold compost was incorporated into the soil.

On a larger scale, and not quite as obvious to the local eye, Gunny

Gold compost contributes to climate resilience and mitigation. Starting in the summer of 2019, Dr. Jennie DeMarco and Master of Environmental Management candidate Alexia Cooper designed and initiated a research project that looks at the implications of Gunny Gold on rancher resilience during climate change and specifically the increasing droughts that the county experiences. This research applied two inches of Gunny Gold compost to treatment plots at three rangelands in Gunnison (Coldharbour Institute, Parker Pastures, and Matt Ozy's property), and compared various soil properties of these treated plots with plots not amended with Gunny Gold. Cooper found a significant increase in water holding capacity, the ability of the soil to store water for use by plants after irrigation and rain events, and in plant productivity. Both Bill Parker and Matt Ozy noticed that the cattle preferred forage in the treated plots.



In November of 2021, Ozyp noted of the treated plots, "There must be higher nutritional value that the cattle favored." Where these findings are important in telling the story of how Gunny Gold applications improve rancher resilience in time of drought, monitoring of the soil water holding capacity and plant productivity continues to consider if these improvements are lasting.

Beyond resilience, this research has continued with Master of Science of Ecology candidate Alex VanTill and now Master of Environmental

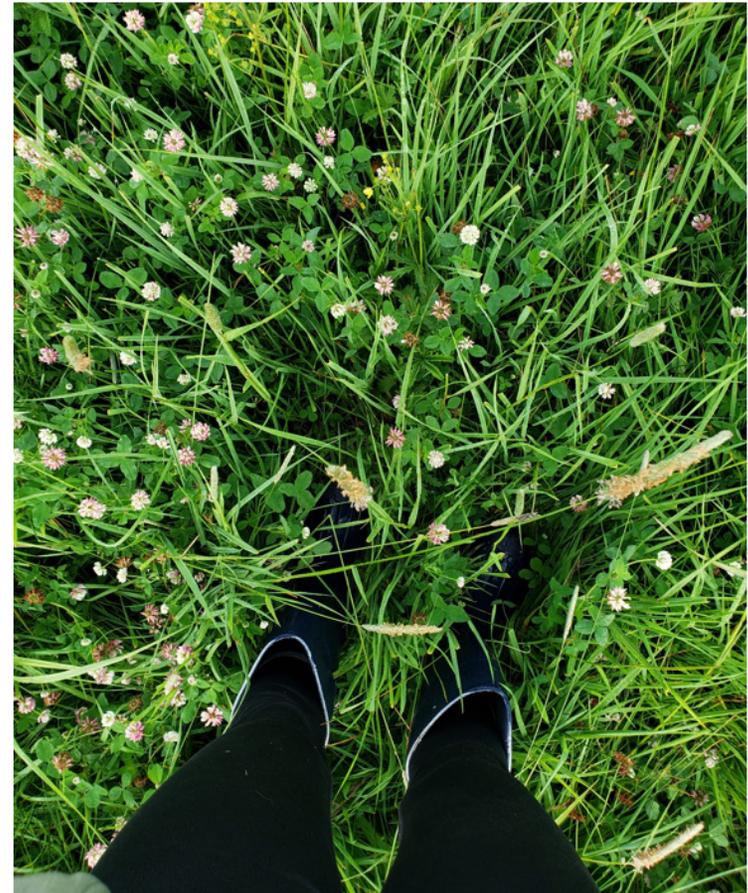
Management candidate Shaun McGrath to determine the ability of Gunny Gold to mitigate the changing climate by drawing down atmospheric carbon dioxide concentrations through soil carbon sequestration. Soil is a natural carbon sink as it indirectly sequesters carbon dioxide from the atmosphere as plants undergo photosynthesis. When a plant uses carbon from the atmosphere during photosynthesis, some of the carbon stays within the plant matter. Once the plant dies, the plant matter with the carbon, known as soil organic matter, begins to move down the soil profile

and eventually becomes more permanently stored, protecting it from remission to the atmosphere. Soil samples from both 2019 and 2020 found a trend towards an increase in soil carbon in Gunny Gold compost treated plots compared to untreated plots, and samples from 2021 are currently in carbon analysis. If this research continues to show an improvement in soil carbon sequestration, then the hope is to expand the use of Gunny Gold as a land management tool that will both increase rancher resilience and mitigate climate change.

CONTROL



TREATMENT



WESTERN COLORADO UNIVERSITY ROCKET COMPOSTER

BY DEMITRA BIDDLE

Western Colorado University (WCU) was awarded a Recycling Resources Economic Opportunity (RREO) grant for \$139,690 in 2018 which was used to purchase a mechanical composter. The A900 Rocket Composter (the Rocket) was installed in the summer of 2019, and after a period of trial and error was fully institutionalized in 2021. In collaboration with Sodexo, WCU's food service provider, the campus now composts 95% of food waste from the campus dining hall. By diverting food waste from the landfill and turning it into a useful product this

project supports WCU in their goal of zero waste while also reducing campus GHG emissions. Compost produced by the Rocket is used in campus gardens to improve soil health and grow produce which contributes to food security for WCU students. Essentially, the A900 Rocket Composter was intended to create a closed-loop system by keeping food waste on campus and has been successful in doing so. When operations at Western return to normal, post pandemic, the Rocket is expected to produce around 25 cubic yards of compost annually.



“ As climate change progresses, composting operations will become increasingly important for private and public institutions to implement. The work Western is doing to compost is exceedingly important. We would love to see more operations like ours on a municipal government level. ”

—Demitra Biddle

NEXT STEPS »

Each result, goal, strategy, & action demonstrated in this plan will need to be tracked and updated.

1 An emissions inventory and other metrics of sustainability were defined for the baseline year 2020. In 2021, after a series of stakeholder workshops, community input, and a thorough review of previous strategic documents, a series of Results, Goals, Strategies and Actions were developed and published in this Roadmap. The next five years will be focused on the implementation of individual actions and tracking progress. In 2030, there will be a 2030-2040 Gunni CARES Roadmap.

2 The City of Gunnison will develop a governance structure to approve a Gunnison Resiliency Task Force (GRTF). This will help ensure that the City is continuously making progress on the Goals set out in this Roadmap. City council will then need to adopt a resolution to put it into effect. This board will be made up of diverse residents, with a Sustainability Coordinator serving as the staff liaison once that position becomes available. This may be a part time position initially.

3 Within the next year, it is highly recommended that the City of Gunnison hire a Sustainability Coordinator to create a Sustainability division within the City Departments. The role of this coordinator would be to oversee the implementation of many of the actions outlined in this Roadmap by working with the participating stakeholders listed in each of the Strategies and actions.

4 Until a Sustainability division is created, the oversight of this project will remain with the City Manager's office, the Community Development office, and the Gunnison Resiliency Task Force (GRTF), once created.

GUNNISON RESILIENCY TASK FORCE

The next step after adoption of this plan will be to craft a resolution to create the Gunnison Resiliency Task Force which would include its purpose, responsibilities, and composition. The GRTF will serve as a voluntary advisory board to City officials to ensure that progress is being made towards the Results and Goals outlined in Gunni CARES 2030. Task Force members will initially work with the City Manager in the absence of a sustainability professional. It should be acknowledged that the City of Gunnison has potentially competing goals in terms

of creating affordable housing, ensuring our vulnerable populations are not negatively impacted from City policy changes, and achieving the desired results of this plan. The purpose of the Gunnison Resiliency Task Force is to work on the implementation of the results of this plan while also recognizing that creating affordable housing in the City is a critical priority. It is recommended that the Task Force include constructive results-oriented individuals that represent different stakeholders in the community including home builders, representatives

of our vulnerable populations, utility interests, and organizations and individuals working in the area of environmental sustainability and climate change in the Gunnison Valley. The policy recommendations in this plan should be more fully developed with the Task Force and recommendations should be made from the Task Force to the City Council on specific policy changes recommended in this plan to both achieve the desired results of this plan while also achieving the City's other strategic goals.

TIMELINE

FOR IMPLEMENTATION

2023

GREENHOUSE GAS EMISSIONS INVENTORIES USING ICLEI'S CLEARPATH FOR 2022.

These should happen on a biannual basis for the year prior. (2025, 2027, 2029, etc.)

2025

UPDATE PROGRESS ON EACH METRIC, COMPLETE 2022-2025.

2030

REASSESS AREAS OF PRIORITY & METRICS.

Develop updated Gunni CARES 2030-2040 plan.

2050

GUNNISON IS CARBON-FREE.





CONCLUSION

The City of Gunnison has set ambitious, yet attainable Goals to be achieved in the next eight years. With changes to our energy portfolio, increasing local energy generation, improving efficiency of buildings, improving water storage and conservation, increasing rates of recycling, and implementing municipal composting, there is a clear Roadmap to achieving Results.

Over the coming years, actions to achieve desired Results will take place. By 2025, the City will report on its progress and make any adaptations that are necessary transparent to the community. As members of ICLEI, the City of Gunnison will renew its annual membership and conduct GHG inventories to help track progress. This document is meant to be a Roadmap to success in becoming leaders for small, mountain towns in environmental sustainability and climate action. The creation of this Roadmap would not have been possible without the numerous expert stakeholders, City staff, and other devoted individuals and organizations in this valley. It is because of all of you that we can produce this Roadmap and keep Gunnison united and focused on such an important task at hand.

APPENDIX I GLOSSARY

ADEQUATE WATER SUPPLY: a constant access to a supply of clean, fresh, potable water provided in a sanitary manner or provided at suitable intervals for the species and not to exceed 24 hours at any interval.³⁷

BLACKWATER: is the wastewater from bathrooms and toilets that contains fecal matter and urine. Water from kitchens and dishwashers are also considered blackwater due to the contamination by pathogens and grease.³⁸

BLOCK RATE: A way of pricing water from the utility where there is differential pricing per a specific amount of water. An increasing block rate means that every unit increase in water usage, the price per unit increases. This is done to promote conservation.³⁹

CARBON DIOXIDE EQUIVALENT (CO₂E): The unit "CO₂e" represents an amount of a GHG whose atmospheric impact has been standardized to that of one unit mass of carbon dioxide (CO₂), based on the global warming potential (GWP) of the gas.⁴⁰

CLIMATE JUSTICE: Addresses the social, economic, and ethical dimensions of climate change. Begins with recognizing how different groups are affected differently by climate change impacts. Climate change will exacerbate existing gaps in social classes.⁴¹

CLIMATE ADAPTATION / PREPAREDNESS: Climate change poses major risks to Colorado, and preparedness actions can reduce those

risks.⁴² Climate adaptation means taking action to prepare for and adjust to both the current and projected impacts of climate change.

CLIMATE RESILIENCY: The capacity to recover quickly from difficulties, resiliency is the ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate. Improving climate resilience involves assessing how climate change will create new, or alter current, climate-related risks, and taking steps to better cope with these risks.⁴³

DOMESTIC USE (WATER): includes indoor and outdoor uses at residences, and includes uses such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, watering lawns and gardens, and maintaining pools. Domestic water use includes potable and non-potable water provided to households by a public water supplier (domestic deliveries) and self-supplied water use. Self-supplied domestic water use is typically withdrawn from a private source, such as a well, or captured as rainwater in a cistern.⁴⁴

EMISSIONS FACTOR: a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant.⁴⁵ Emissions factors are needed in order to estimate GHG emissions per unit of activity. An example would be Gunnison County's emissions factor for electricity use in 2015. This was .51 kg CO₂e/ kWh. .51 kg of CO₂e are emitted for every kilowatt hour.⁴⁶

EQUITY: Equality means each individual or

group of people is given the same resources or opportunities. Equity recognizes that each person has different circumstances and allocates the exact resources and opportunities needed to reach an equal outcome.⁴⁷

GLOBAL WARMING POTENTIAL (GWP): is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO₂). The larger the GWP, the more that a given gas warms the Earth compared to CO₂ over that time period. The time period usually used for GWPs is 100 years. For Example, Methane (CH₄) is estimated to have a GWP of 28–36 over 100 years, which is why it is often stated that Methane is about 28 times as potent as Carbon Dioxide.⁴⁸

GREENHOUSE GAS EMISSIONS (GHGS): Carbon dioxide, methane, nitrous oxide, and fluorinated gases which are emitted in excess from human activities that cause global climate change.⁴⁹

GREYWATER: comes from washing machines, bathrooms sinks, and showers, while "dark greywater" from dishwashers or kitchen sinks might also be included. In contrast, wastewater from toilets and urinals is called blackwater. In residential buildings, the majority of water (between 50% and 80%) falls into the greywater category.⁵⁰

HEALTH OF THE WATERSHED: A healthy watershed has the structure and function in place to support healthy aquatic ecosystems, including

natural flow regime and minimum instream flow.⁵¹

MITIGATION: reducing the effects of climate change by reducing the amount of greenhouse gasses emitted to the atmosphere.⁵²

SCOPE 1 EMISSIONS: All emissions directly generation from energy, fuel, and operations within the boundary.⁵³

SCOPE 2 EMISSIONS: Indirect emissions calculated from the generation of purchased energy and electricity for the city.⁵⁴

SCOPE 3 EMISSIONS: All indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.⁵⁵

SCIENCE-BASED TARGET: A clearly defined pathway for companies to reduce GHG emissions, helping prevent the worst impacts of climate change and future-proof business growth. SBTs show companies how much and how quickly businesses need to reduce their GHG emissions to prevent the worst impacts of climate change, leading them on a clear path towards decarbonization. By guiding companies in science-based target setting, SBTs enable them to tackle climate change while seizing the benefits and boosting their competitiveness in the transition to a net-zero economy.⁵⁶

SINGLE FAMILY EQUIVALENT (SFE): One SFE represents one single-family residence that is either located alone on one parcel or one of two

duplex units located on a parcel. Per the United States Census Bureau, the average household size in the City of Gunnison in the year 2018 is 2.24 people per home.⁵⁷

VULNERABLE POPULATIONS: Groups and communities at a higher risk for poor health because of the barriers they experience due to a lack of social, economic, political and environmental resources, as well as limitations due to age, illness or disability.⁵⁸ In regard to climate change, vulnerable populations “experience heightened risk and increased sensitivity to climate change and have less capacity and fewer resources to cope with, adapt to, or recover from climate impacts. These disproportionate effects are caused by physical (built and environmental), social, political, and/ or economic factor(s), which are exacerbated by climate impacts. These factors include, but are not limited to, race, class, sexual orientation and identification, national origin, and income inequality,” according to California’s Integrated Climate Adaptation and Resiliency Program.⁵⁹

VEHICLE MILES TRAVELED (VMT): VMT is calculated as the total annual miles of vehicle travel.⁶⁰ Typically referred when discussing a reduction in emissions created from vehicle use within a certain geographic range.

APPENDIX II: ACRONYMS

BAFT- Baseline Accounting and Forecasting Tool

CARES- Climate Action, Resiliency, and Environmental Sustainability

CC- Community Collaboration

CDOT- Colorado Department of Transportation

CDPHE- Colorado Department of Public Health and Environment

CO₂e- Carbon Dioxide equivalents

CWCB- Colorado Water Conservation Board

EP- Economic Prosperity

EQ- Environmental Quality

EV- Electric Vehicles

GHG- Greenhouse Gas

GRBR- Gunnison River Basin Roundtable

GRTF- Gunnison Resiliency Task Force

GVHEAT- Gunnison Valley Home Energy Advancement Team

GVRHA- Gunnison Valley Regional Housing Authority

GWP-Global Warming Potential

HHGV- Habitat for Humanity Gunnison Valley

HVAC- Heating, Ventilation, and Air Conditioning

IBC- International Building Code

ICLEI- Local Governments for Sustainability

IECC- International Energy Conservation Code

JEDI- Justice, Equity, Diversity, and Inclusion

LEAP- Low-Income Energy Assistance Program

MEM- Master in Environmental Management

MSW- Municipal Solid Waste

MT- Metric Tons

OVLC-One Valley Leadership Council

OVPP-One Valley Prosperity Project

PPA- Power Purchase Agreement

PH- Public Health

PS- Public Safety

RCC- Resource Conscious Construction

RTA- Gunnison Valley Transportation Authority

SFE-Single Family Equivalents

TU-Trout Unlimited

UGRWCD- Upper Gunnison River Water Conservancy District

VMT- Vehicle Miles Traveled

WCU- Western Colorado University

APPENDIX III: GHG EMISSIONS INVENTORY METHODOLOGY

The City of Gunnison 2020 inventory was completed using ICLEI's ClearPath tool, using data collected from 2019 and 2020 in the areas of residential and commercial energy, transportation and mobile sources, and solid waste, using a baseline population of 6,560. The total emissions in CO₂e are shown in Table 1, and specific assumptions are outlined below. Only Scope 1 and 2 emissions considered here.

SECTOR	FUEL OR SOURCE	UTILITY PROVIDER	MT CO ₂ E	%
Residential Electricity	Electricity	MEAN	4,768	9%
Residential Natural Gas	Natural Gas (Atmos)	Atmos	7,557	14%
Commercial Electricity	Electricity (MEAN)	MEAN	9,111	17%
Commercial Natural Gas	Natural Gas	Atmos	13,108	24%
Gasoline	Gasoline	-	10,845	20%
Diesel	Diesel	-	2,684	5%
Airport	Jet fuel	-	2,256	4%
Waste in Landfill	Waste Sent to Landfill	-	3,918	7%
Total		-	54,247	100%

TRANSPORTATION AND MOBILE SOURCES: GASOLINE AND DIESEL VMT's were approximated for the City of Gunnison by CDOT's Traffic Data Explorer,⁶¹ using traffic data from the nine stations in the City of Gunnison. The percentage of diesel and gasoline vehicles are based on ICLEI's national averages.

TRANSPORTATION AND MOBILE SOURCES: AIRPORT

Data was collected for 2019, as 2020 was not a typical year for aviation travel during the COVID-19 lockdown. Emissions for the power of the airport are accounted for in the commercial energy sector, so the emissions in the airport sector are calculated based on the jet fuel sales on the Gunnison-Crested Butte Regional Airport. The inventory only accounts for CO₂e produced from the burning of this fuel. Most large airplanes do not fill up at Gunnison-Crested Butte Regional Airport, so these jet fuel sales can be attributed to mostly small, private planes. Because the airport is regional, the emissions from the entire airport are attributed to the entire County. To calculate emissions for just the City of Gunnison, we assumed that the percent of emissions from the jet fuel that can be attributed to the City of Gunnison is equal to the proportion of planes registered to addresses within the City of Gunnison versus total registered in Gunnison County.

WASTE: Waste is categorized as 100% Municipal Solid Waste (MSW). Without a waste audit, it is not possible to characterize the type of waste more specifically. Tons are calculated based on tipping charges every month in 2020.

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