



CRESTED BUTTE CLIMATE ACTION PLAN



Photo: Lydia Stern

December 2019

A COMMUNITY CALL TO ACTION FROM THE MAYOR



To Our Community,

The Crested Butte Climate Action Plan details the Town of Crested Butte's commitment to taking action on climate change, by identifying aggressive greenhouse gas emissions goals and laying out implementation plans to make these targets a reality. While the actions of the Town will not change the global tide of climate change, the Town plans to be a leader by demonstrating how our local actions can have global impacts. For example, as we begin working towards installing local renewable energy generation projects, in the meantime, the Town will purchase renewable energy credits for every meter in town in 2020 to demonstrate to our energy provider the community's commitment to supporting their efforts around transitioning to renewables. This is our first step of many, including implementing additional climate related policies and projects that you'll learn about in this plan.

To achieve our goals, our community will need to work together through innovation, breaking down barriers, and igniting change across the State of Colorado, across the United States, and across the world. As a local government, by implementing this plan with new projects, policies, and investments in green infrastructure, we will provide our community with the tools to effect change and inspire local action.

However, the Town cannot act alone. In the end, our success will be defined by the passion of our community. The daily actions taken by our citizens will begin to reshape the global conversation and economy around climate change. Riding our bikes, taking the bus, opting into community solar gardens, energy retrofitting our homes, rethinking our diets, reducing our consumption (not just recycling), and making simple day to day life choices will define our success and demonstrate our commitment.

We are calling on our community to take action with us. By supporting this Climate Action Plan and considering individual changes to our lifestyles, we will, together, act locally, think globally, and ignite change!



Please Join Us,

Jim Schmidt, *Mayor of Crested Butte*

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INTRODUCTION



As a mountain town dependent on snowpack and a thriving outdoor recreation and tourism-based economy, the Crested Butte community views climate change as one of the most important issues facing the Town of Crested Butte (Town) today. Guided by the value of embracing resource efficiency and environmental stewardship, the Crested Butte Town Council set a 5-year goal in 2018 to reduce greenhouse gas (GHG) emissions from the Town's operations by 50% and reduce community GHG emissions by 25%, versus 2017 levels. As its first step, the Town launched the development of a new Climate Action Plan (CAP) in May 2019 to create a roadmap for establishing goals, projects, policies, and implementation strategies to meet this aggressive goal. This CAP focuses on reducing GHG emissions in the community, while keeping in mind specific measures that the Town can take to additionally reduce its municipal footprint.

The Town has a long history of environmental stewardship and climate action, including, but not limited to:

- Conserving open space in the northern Gunnison Valley
- Promoting electric vehicle (EV) use for Town operations
- Retrofitting Town buildings for energy efficiency considerations
- Updating building codes to increase energy efficiency in the built environment
- Increasing the diversion rate of the waste stream
- Promoting solar installations through multiple avenues

In 2017, the Town worked with the CS2I Lab at Western Colorado University (WCU) to develop an energy, materials, and GHG inventory, which provides a baseline for measuring the Town's progress at reducing future emissions. It also breaks out emissions by sector (e.g., transportation, buildings), revealing where it has the greatest potential for GHG reduction.

At commencement of the CAP process, the Town convened 13 stakeholders representing various local and regional entities and community representatives as part of the CAP committee to ensure comprehensive data collection, broad community support, and aligned and actionable outcomes. While this CAP is specific to the Town and community of Crested Butte, the Town recognizes that strong regional partnerships are critical for implementation. The stakeholders met monthly both as a whole and in subcommittees from July through September to identify GHG reduction strategies with the most potential and to develop implementation plans for each strategy. Stakeholders also met with community residents, businesses, and interested organizations from July through September to discuss the implementation strategies and gain feedback before finalizing the plan.



Photo: Lydia Stern

“We see global warming not as an inevitability but as an invitation to build, innovate, and effect change, a pathway that awakens creativity, compassion, and genius. This is not a liberal agenda, nor is it a conservative one. **This is the human agenda.**”

- Paul Hawken

INTRODUCTION



The Town Council set a 5-year goal in 2018 to reduce GHG emissions from the Town's operations by 50% and reduce community GHG emissions by 25%, versus 2017 levels.

Crested Butte's 5-year commitment is ambitious, but it's just the beginning. The Town is unique in its exclusive mountain location and as a vacation destination with a large second homeowner population. These characteristics also pose GHG reduction hurdles that towns and cities across the US and even other less remote mountain towns do not face. These hurdles include the cost and availability of renewable energy solutions, extreme heating costs due to the high altitude climate, and the Town's designation as a National Historic District (which can limit building efficiency). Working towards meeting the Town's 5-year goals will require a renewed focus on the big opportunities available and an innovative eye to what can be accomplished in a very short time given the unique environment. The biggest opportunities for Crested Butte include the following:

- Increasing renewable energy use
- Increasing the efficiency in new and renovated buildings
- Decreasing single-occupancy vehicle use

While determined to not be a large GHG emissions source within the Town itself, the CAP committee additionally included strategies for waste reduction in this plan.

These opportunities are discussed in detail in this document, which includes the following:

- An overview of Crested Butte's GHG emissions opportunities, summarizing the GHG inventory and identifying priority reduction opportunities
- A description of the actions the Town will take to reduce GHG emissions
- A measurement & verification (M&V) checklist to help the Town track progress in implementing the CAP

The Town is committed to achieving results and inspiring action in Crested Butte while collaborating with partners across the region, and building a powerful coalition of people who work on climate change mitigation. While this CAP is the Town's first immediate step toward significantly reducing its GHG emissions in 5 years, the Town is committed to joining the Mountain Towns 2030 commitment by working with the community and other similar mountain towns to achieve 100% renewable electricity for the Town and net-zero carbon emissions as quickly as possible, and by no later than 2030. After beginning implementation of this CAP, the Town is looking forward to initiating discussions on additional challenges relating to carbon sequestration, water quantity and quality, food production, impacts from tourism, and more.

Biggest Opportunities

Increasing renewable energy use



Increasing the efficiency in new and renovated buildings



Decreasing single-occupancy vehicle use



GHG EMISSIONS OPPORTUNITIES



In Crested Butte, the biggest opportunities for GHG reduction exist in the residential/commercial buildings and transportation sectors.

GHG EMISSIONS OPPORTUNITIES

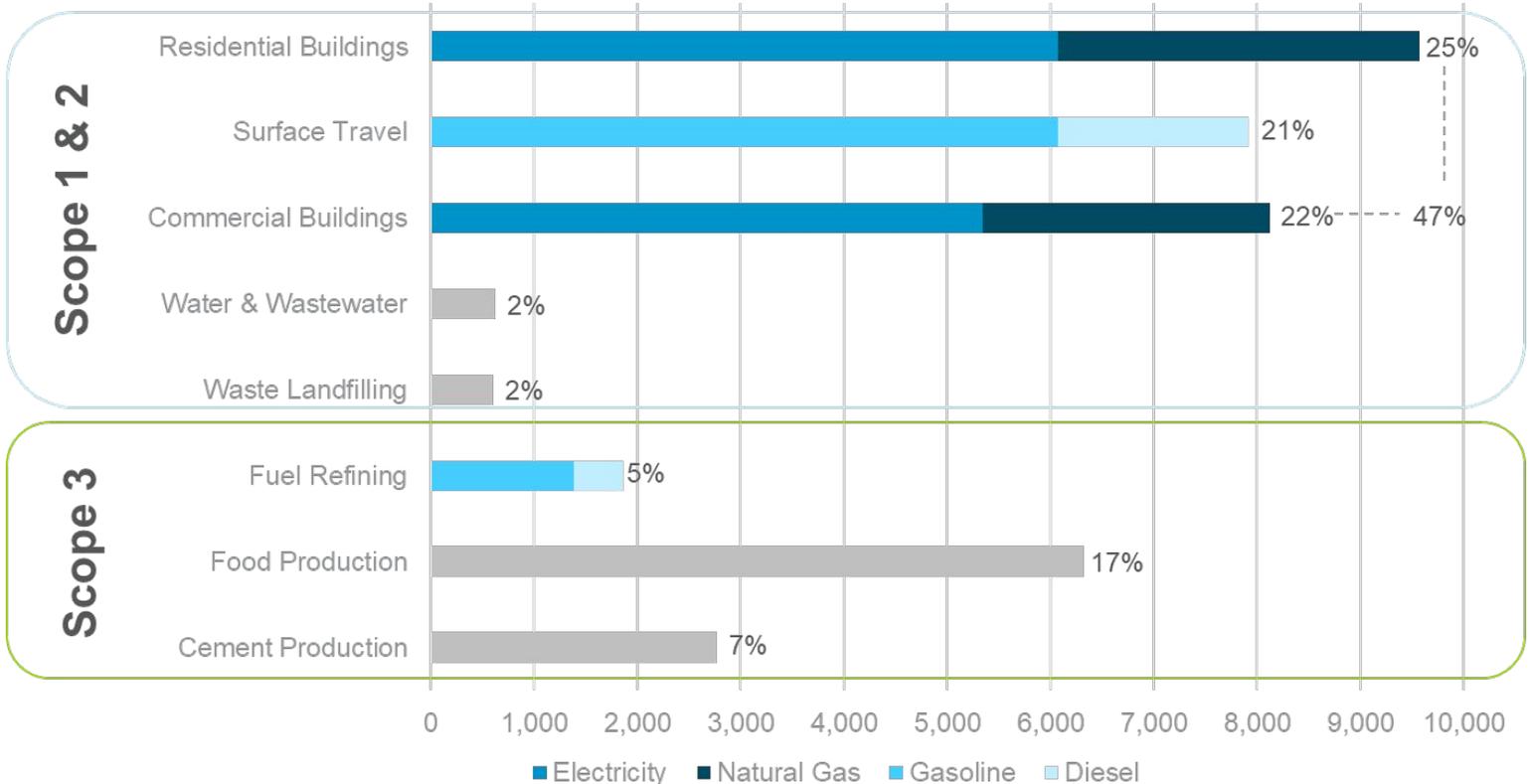


In June 2018, in coordination with Western Colorado University, the Town completed the *Town of Crested Butte, Colorado Energy, Materials, and Greenhouse Gas Emissions Inventory: 2017 Baseline & 2030 Forecast (GHG inventory)*. This GHG inventory calculates GHG emissions for in-boundary activities (scope 1 and 2), which the report defines as the emissions from buildings, surface travel, waste landfilling, and water and wastewater electricity. The GHG inventory also identifies Crested Butte’s GHG footprint, which includes out-of-bounds emissions (scope 3) from fuel refining for transportation, cement production, and food production.

The GHG inventory utilized a variety of data to calculate GHG emissions, including utility data from Gunnison County Electric Association (GCEA) and Atmos Energy, tons of waste landfilled from Waste Management, as well as estimated data including VMT (vehicle miles traveled) from the Federal Highway Administration. Overall, the GHG inventory provides the Town with a broad picture of which sectors to focus our efforts in for this CAP, while providing baseline GHG estimates to help the Town track its progress toward its goals.

The report estimates total in-boundary emissions for Crested Butte at 26,838 mt CO_{2e} for the 2017 baseline year. These emissions, measured in CO_{2e}, capture six GHGs: CO₂, CH₄, N₂O, HFCs, PFCs, and F₆. These emissions come from five sectors, the largest of which is residential buildings, accounting for 25% of the Town’s baseline. In 2017, residential buildings accounted for 8,697,045 kWh electricity use (average of 670 kWh per household per month) and 659,490 therms of natural gas use (average of 51 therms per household per month).

For the purpose of this CAP, only scope 1 and 2 emissions from the GHG inventory are considered, as the Town has the greatest control over these emissions. However, as the Town progresses in its climate action goals, scope 3 emissions will present a challenging opportunity to identify emissions reduction opportunities relating to the critical issues of food production, tourism, infrastructure/building materials, and more.



Source: Town of Crested Butte, Colorado Energy, Materials, and Greenhouse Gas Emissions Inventory: 2017 Baseline & 2030 Forecast, Center for Environment and Sustainability Community Solutions Incubation+Innovation (CS2I) Lab, Western Colorado University, June 2018.

During the CAP process GCEA realized it overestimated the residential and commercial GHG numbers it provided for the GHG emissions inventory. Navigant calculated updated numbers based on the new data from GCEA. The graphic above depicts the new numbers and the estimated GHG reduction potential of each mitigation strategy in this Plan is based on the new numbers.

GHG EMISSIONS OPPORTUNITIES



The GHG inventory also projects scope 1 & 2 emissions for the Town for the year 2030. Driven by changes in population, job growth, and decreased GHG intensity for electricity, the forecast anticipates how emissions will change in a business-as-usual scenario. The majority of sectors will experience an increase in overall emissions. Emissions from commercial buildings, surface travel, and landfilling will grow in response to a rising population and larger workforce. Residential buildings, however, will experience a modest 2% decrease in emissions, driven by the expected drop in electricity emissions intensity as a result of a greener electricity supply. Water and Wastewater emissions also decline, again as a result of reduced emissions per kilowatt-hour from the Gunnison County Electric Association (GCEA).

Sector	2017 Emissions (mt CO _{2e})	2030 Emissions (mt CO _{2e})	Percent Change
Residential Buildings	9,575	9,368	-2.2%
Commercial Buildings	8,128	8,577	5.5%
Surface Travel	7,915	9,720	22.8%
Water and Wastewater	620	531	-14.4%
Landfilling	600	714	19%
Total	26,838	28,910	7.7%

Source: Town of Crested Butte, Colorado Energy, Materials, and Greenhouse Gas Emissions Inventory: 2017 Baseline & 2030 Forecast, Center for Environment and Sustainability Community Solutions Incubation+Innovation (CS2I) Lab, Western Colorado University, June 2018.

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Photo: Lydia Stern

GHG EMISSIONS OPPORTUNITIES



Based on the GHG inventory, Navigant modeled GHG reduction estimations for the implementation strategies identified in this CAP. However, the Town and Navigant recognize that while the inventory serves as a useful platform to build the 2019 CAP, it also highlights opportunities for improved data collection and metric tracking. Crested Butte is a small town with a unique climate, economy, and culture, and it is not easily modeled with generic national or state data.

There are several areas of improvement for the Town to consider, including the following:

Building Energy Use Assessment: Conducting a Town-led study of energy use in the buildings sector will provide a better understanding of emissions based on building type and end-use. This data can then be used to inform building code updates and channel resources for deep energy retrofits toward the highest impact measures.

Transportation Study: The current GHG inventory uses national, state, and county data to predict vehicle type, total miles travelled, and fuel economy for the Town. Additionally, it does not account for non-single occupancy vehicle (SOV) use, including walking, biking, carpools, and public transportation. A commuter study of the Town, augmented by DMV data specific to Crested Butte, will serve to refine these estimates where they may not align with broader datasets. Specifically:

- Average vehicle miles travelled (VMT) per person: Crested Butte’s seasonal economy sees employees commuting from outside the Town limits, and may limit the applicability of VMT data at the county level.
- Vehicle fleet characteristics: As a mountain town with snowy roads and popular outdoor recreation, residents likely require different vehicles than the average driver, affecting estimates for fuel economy. Collecting data on vehicle age will provide better insight into vehicle fleet turnover and the potential for increased EV penetration. Finally, understanding the current number of EVs in the Town will provide a critical baseline against which to benchmark strategies promoting EV adoption. These characteristics can be aggregated at the Town level through coordination with the DMV.
- Non-SOV transportation trends: In order to track the progress toward reducing SOV use and promoting alternative modes of transportation, the current commuting and transportation trends of Crested Butte residents must be understood. Examples include creating a baseline for public transportation ridership, calculating the percentage of residents that currently use alternative transportation, and understanding the motivations for those that do not.

Renewable Energy Inventory: Establishing the current rate of solar installation or other local renewable energy generation, will assist the Town in measuring its progress transitioning residents from renewable energy credits (RECs) to local renewable energy generation.

By no means an exhaustive list, this recommended data will enable the Town to develop more nuanced insights into its emissions sources and will provide a strong foundation for critical metrics to accurately track progress toward the Town’s current and future climate goals.

Areas of Improvement

Building Energy Use Assessment



Transportation Study



Renewable Energy Inventory



IMPLEMENTATION PLANS



Reducing GHG emissions by implementing the strategies in this CAP will take collaboration with the community, as well as neighboring municipalities and regional organizations. Each strategy is described in detail in the following pages and contains activities that the Town and other organizations will lead.

BUILDING ENERGY USE



Global and statewide perspectives

Global

Buildings consume on average more energy than any other feature of city or town life, meaning they are among the major contributors to climate change. Buildings have an average lifespan of over 40 years. Looking ahead to the cities and towns of 2050—with hundreds of millions more urban citizens—the decisions made today by mayors, architects, and developers all over the world will have a considerable impact on the future climate.

To deliver on the goals of the Paris Agreement on climate change and mitigate global warming requires urgent action. Going forward, new buildings will need to be net-zero carbon, operating at high levels of energy efficiency and using on and offsite clean energy to meet remaining energy needs. This dictates that most existing buildings must be retrofitted to use significantly less energy and to rely on clean energy supplies.

The strategies to reducing GHG emissions from buildings need to be applied to all buildings, both new and existing. There is not one solution to reducing building energy use. The challenges to expedient solution implementation are colossal, requiring rapid mobilization of supply chains, finance, citizen engagement, building energy use data gathering and reporting, and appropriate planning and building standards enforcement.



Photo: Lydia Stern

Colorado

At the state level, the Colorado Energy Office has enacted new building code policy and offers financial assistance for contractors, homeowners, municipalities, and schools.

House Bill 19-1260 updated the 2007 state law that established a minimum building energy code. Effective August 2, 2019, the law requires local jurisdictions in Colorado to adopt and enforce one of the three most recent versions of the **International Energy Conservation Code (IECC)** upon updating any other building code.

Colorado Commercial Property Assessed Clean Energy (C-PACE) is a financing tool that allows commercial and multifamily property owners to finance qualifying energy efficiency, water conservation, and other clean energy improvements on existing and newly constructed properties, with repayment of the financing through a voluntary assessment on their property tax bill.

The **Colorado RENU Loan** is a statewide residential loan program sponsored by the Colorado Energy Office in partnership with Elevations Credit Union. It makes home energy upgrades easy and affordable by offering low cost, long-term financing for energy efficiency and renewable energy improvements.

The **Energy Savings for Schools (ESS) program** provides technical resources for rural and low-income schools across Colorado to achieve measurable savings and create sustainable energy programs. ESS helps schools implement energy efficiency measures and leverage low to no-cost options to pay for upgrades that yield long-term benefits.

Energy Performance Contracts (EPC) allow facility owners to partner with an energy service company (ESCO) to pay for today's facility upgrades with tomorrow's energy savings—without tapping into capital budgets. Since Colorado first established its EPC program in the 1990s, over 152 public jurisdictions have worked with an ESCO to identify nearly \$35 million in annual utility savings through a technical energy audit. The Town is currently participating in this program with Johnson Controls, Inc. as the selected ESCO.

BUILDING ENERGY USE



Implementation Strategies



Photo: Lydia Stern

Adopt consistent, countywide above-building-code standards.

The Town will collaborate with Gunnison County, Town of Mt. Crested Butte, and the City of Gunnison to determine countywide, above-building-code or net-zero standards for new buildings in regards to energy efficiency and on-site renewable energy generation.

Mandate building automation technology for commercial and residential buildings.

The Town and the Crested Butte Chamber of Commerce will first incentivize short-term rentals and seasonal business owners to install building automation technology and then enact future policy to require building automation technology for all commercial and residential buildings.

Drive and support deep energy retrofits for existing buildings.

The Town will undertake several initiatives to support deep energy retrofits of existing residential and commercial buildings, including retrofitting municipal buildings, benchmarking requirements for residential and commercial buildings, and energy efficiency incentive programs.

In addition to the Town's actions, local organizations will support this effort with community education and outreach.

BUILDING ENERGY USE



Adopt consistent, countywide, above-building-code standards for new construction

700 mtCO₂e reduced

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Adopting net-zero building codes for residential and commercial buildings will reduce GHG by 700 mtCO₂e if 10% of Crested Butte buildings are net-zero by 2030.

Activity	Target Date	Resources	Lead Organization
Review current Town building code requirements to determine immediate opportunities for increased building efficiency.	Winter and Spring 2020	The Town already has a Renewable Energy Mitigation Program, which requires on-site renewable energy generation or payment in lieu for outdoor heating installations. As the Town works towards adopting above-building-code standards, the Town will review its current code to determine changes to implement, such as not allowing outdoor heating.	Town of Crested Butte
Convene a working group to discuss and plan for the potential of moving toward net-zero building codes or above current-code requirements.	Winter 2021	Municipal and county community development and building departments, contractors, builders, engineers, etc.	One Valley Leadership Council, Town of Crested Butte
Set above-building-code or net-zero standards.	Spring 2022	Municipal and county community development and building departments, contractors, builders, engineers, etc.	Town of Crested Butte
Stay apprised of electric heating systems technology (including cost and efficiency in high-altitude climates) and consider working towards a building electrification policy.	Ongoing	As the electrical grid is anticipated to utilize more renewable energy sources, many jurisdictions are considering beneficial electrification, which is a term for replacing direct fossil fuel use with electricity in a way that reduces overall emissions and energy costs. While electric heating systems are currently questioned as far as efficiency for a high-altitude climate like Crested Butte, as technology evolves, the Town could consider a building electrification policy to require all new construction to be electric, as the Town works to greening its electrical grid.	Town of Crested Butte



Net-Zero Buildings

Net-zero buildings are utility grid connected homes that are designed and operated so efficiently that they are able to produce as much energy as they need to operate on an annual basis with clean, renewable energy. Net-zero buildings are more comfortable and healthy due to passive design strategies such as natural ventilation and daylighting, and they have lower operational and maintenance costs and reduce emissions.

BUILDING ENERGY USE



Mandate building automation technology for commercial and residential buildings

400 mtCO₂e reduced



Technology such as building automation and smart thermostats save between 10% and 20% of a building's energy use. If all homes and businesses in Crested Butte are required to implement building automation technology, by 2030 the Town will save roughly 400 mtCO₂e.

Activity	Target Date	Resources	Lead Organization
Determine the most feasible building automation, sleep mode, and/or smart thermostat technologies to use in Crested Butte, including cost.	Winter 2020	As many different homes and buildings utilize different heating sources, the Town will need to determine different building automation technologies that will increase energy efficiency for a variety of heating systems.	Town of Crested Butte
Research best practices for policy requirements	Winter 2020	Develop a process and timeline for compliance	Town of Crested Butte
Discuss and determine rebate opportunities for building automation technologies.	Winter 2020	Town will discuss the rebate possibilities with GCEA and Atmos Energy	Town of Crested Butte, GCEA, Atmos Energy
Incentivize businesses and short-term rental properties to install building automation and smart thermostat technology.	Spring 2020	Crested Butte/Mt. Crested Butte Chamber of Commerce support.	Town of Crested Butte
Enact policy requiring all short-term rental and commercial buildings install building automation technology.	Fall 2020-Winter 2021	Include building automation technology for short-term rental license requirements (which are up for renewal in 2021)	Town of Crested Butte
Initiate inspection period to ensure all buildings are in compliance.	Winter 2022	Once all short-term rental and commercial buildings are in compliance, develop policy to require building automation technology for all residential buildings	Town of Crested Butte



Building Automation Technology

Building automation technologies control when lighting or HVAC systems are switched on and off. Once installed, these technologies can create a fixed schedule or a limited interval to help optimize how and when energy is used in residences and businesses.



Utility Rebates

Installing controls and building automation may include an upfront cost, but they also provide energy savings that make up for that cost over time. Initial investments are returned within 2-3 years and offer yearly cost savings.

In addition to these savings over time, many utilities offer businesses and homeowners rebates for purchasing energy efficiency equipment such as lighting controls and smart thermostats, which can provide additional benefits including reducing electricity consumption during peak demand periods.

BUILDING ENERGY USE



Drive and support deep energy retrofits for existing buildings

2,700 mtCO₂e reduced

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If half of all residential and commercial buildings receive a deep energy retrofit (~30% energy savings) by 2030, Crested Butte will reduce emissions by 2,700 mtCO₂e.

Activity	Target Date	Resources	Lead Organization
Conduct Investment Grade Audit of Town municipal facilities and complete retrofitting through an Energy Performance Contract	Fall 2019-Summer 2022	Johnson Controls EPC; Colorado Energy Office support, state and federal grant programs	Town of Crested Butte
Have discussions with GV-Heat to brainstorm ways to increase the utilization of the program in the northern Gunnison Valley and about offering financial incentives to cover the cost of the energy assessment and measure installation (i.e., grants and rebates, tax incentives, green mortgages, loans).	Winter 2020	GV-Heat	Town of Crested Butte
Educate the community about existing programs and rebate opportunities for residential (including short-term rentals) and commercial buildings.	Winter 2020	GCEA, Atmos Energy, GV-Heat, marketing and outreach funding	Sustainable Crested Butte
Increase outreach and targeting of energy efficiency programs that make energy use data more available to building owners (i.e. GCEA SmartHub)	Summer 2020	Support from Town of Crested Butte	GCEA
Engage building owners, managers, and occupants to help brainstorm actions to meet the Town's GHG reduction goal (i.e., green leases, green building rating and certification, competitions, strategic energy management).	Fall 2020	Building owners, managers, and occupants	Town of Crested Butte
Launch a Green INDEED program to incentivize retrofits in exchange for a permanent deed-restriction on a property.	Spring 2021	Town Council approval	Town of Crested Butte
Convene a working group of builders and contractors to discuss programming or incentive ideas to drive deep retrofits of existing buildings in the community.	Winter 2021	Building community, Community Development Department	Town of Crested Butte
Host a residential fair or showcase to provide examples of energy efficient homes and businesses while showcasing available grants and financing.	Summer 2022	Support from community businesses, homeowners, local organizations	Sustainable Crested Butte
Discuss and implement an energy benchmarking ordinance requiring commercial buildings report energy use annually.	2022	Work with regional jurisdictions and technical consultants to determine feasibility of enacting a consistent, regional benchmarking policy	Town of Crested Butte
Discuss and implement an ordinance mandating energy use disclosure at point of sale for residential homes.	2022	Work with regional jurisdictions and technical consultants to determine feasibility of enacting a consistent, regional energy disclosure policy.	Town of Crested Butte



CASE STUDY

Energiesprong: A Dutch Approach to Deep Energy Retrofits

In 2010, the Dutch government awarded a group called Energiesprong a €40 million (approximately \$50 million, at \$1.24/€) contract to develop deep energy retrofits for residential and commercial buildings in the Netherlands. Six years later, approximately 900 homes had been renovated, successfully demonstrating net-zero performance.

Energiesprong's net-zero retrofit revolution may have started in the Netherlands, but over the last 10 years it has ignited a global movement inspiring similar programs across Europe including the UK, France, Germany, and Italy. New York State Energy Research and Development Authority (NYSERDA) is now adapting Energiesprong thinking in the US with RetrofitNY.

In general, an Energiesprong renovation is financed by future energy cost savings plus the budget for planned maintenance and repairs over the coming 30 years. This allows residents to keep the same cost of living. In the case of housing associations, tenants pay the housing association an energy service plan, which is the equivalent of their previous energy supplier bill. The housing association can use this new income stream to partially fund the renovation.

Independent Energiesprong market development teams work with regulators to tune policy and regulation, and with banks to create financial arrangements to make a viable path to scale. By creating these market contexts while simultaneously brokering initial pilot projects and, subsequently, large volume retrofit deals and the momentum needed for stakeholders to act is created.

For more information, visit <https://energiesprong.org/> and <https://www.nyserda.ny.gov/All-Programs/Programs/RetrofitNY>.



GV-HEAT: A Home Energy Efficiency Program for the Gunnison Valley Community

The Gunnison Valley Regional Housing Authority manages the Gunnison Valley--Home Energy Advancement Team (GV-HEAT), which seeks to make Gunnison Valley homes more energy efficient, affordable, and safe. Through this program, the Housing Authority connects residents to a suite of programs aimed at making homes more energy efficient and comfortable. GV-HEAT administers both income-qualified and non-income qualified programs for the Gunnison Valley.

During CAP implementation, the Town hopes to work with GV-HEAT to increase the utilization of this existing program in the northern Gunnison Valley.

For more information, visit <http://gvrha.org/gv-heat/>.



Photo: Lydia Stern

RENEWABLE ENERGY



Global and statewide perspectives

Global

Addressing global climate change requires the rapid adoption and efficient use of renewable energy sources. A 100% renewable energy target creates an attractive framework for towns and cities to work toward, as it represents a conscious decision to move away from fossil fuels. Several countries have already set national targets to achieve 100% renewable energy, including Costa Rica, Denmark, and Sweden, but the largest number of jurisdictions to adopt a 100% renewable target are municipalities. Cities such as Reykjavik, Iceland and Burlington, Vermont have already achieved that goal in at least one sector. Many other larger global cities have adopted a 100% renewable energy goal in one or more of the electricity, heating and cooling, or transportation sectors. Some of these cities include Vancouver, Munich, Sydney, Hamburg, San Francisco, Barcelona, San Diego, and Malmö.

Cities and towns can dramatically reduce their carbon footprint by purchasing or directly generating electricity from clean, renewable sources. The most common renewable power technologies include solar (photovoltaic, solar thermal), wind, biogas, geothermal, biomass, low impact hydroelectricity, and emerging technologies like wave and tidal power.

Municipalities can lead by example by generating energy onsite or purchasing and subscribing to renewable energy from their electric utility. Using a combination of renewable energy options can help meet local government goals, especially in some regions where availability and quality of renewable resources vary, like in Crested Butte. Options for using renewable energy include:

- **Generating renewable energy onsite** using a system or device at the location where the power is used (e.g., solar PV panels on a building).
- **Purchasing renewable energy** from an electric utility through a green pricing program, where buyers pay a small premium in exchange for electricity generated locally from green power resources.

Colorado

Across the US, more than 100 cities, 10 counties, and two states have already adopted 100% clean energy goals. Six cities have already hit their targets, including the City of Aspen located near Crested Butte. *By adopting this CAP, the Town of Crested Butte is setting an additional goal of achieving 100% renewable electricity by 2030.*

Colorado is a leader in renewable energy, with investments in wind, solar, biomass, small hydroelectric, and other renewable energy resources.

Renewable Energy Standard

In 2004, Colorado passed the first voter-led Renewable Energy Standard in the nation, requiring electricity utilities to obtain a percentage of their power from renewable energy sources. The legislature has increased the minimum requirements three times since 2004, spurring the development of hundreds of new renewable energy projects across the state. In 2019, Governor Jared Polis additionally unveiled a roadmap of the state's path to 100% renewable electricity by 2040.

Solar

Colorado leads the nation with nearly 70 community solar projects in operation generating more than 50 MW, and many more in development.

Hydropower

Hydropower systems use the kinetic energy in flowing water to produce electricity or mechanical energy. There are over 60 operating hydropower facilities throughout Colorado with a combined installed capacity of 1,150 MW.

Coal Mine Methane

Coal mine methane is a gas released from coal during and after coal mining operations. As of 2015, one electricity producing coal mine methane project has been developed in Colorado, located over Kebler Pass from the Town of Crested Butte. Oxbow Mining LLC, Vessels Coal Gas, Gunnison Energy LLC, Aspen Skiing Company, and Holy Cross Energy partnered to develop the Elk Creek Mine near Somerset in Gunnison County. This project co-locates a 3 MW power plant and a thermal oxidizer that destroys the remaining methane emissions.

Wind

Wind is the fastest growing energy resource on the grid and is the predominant renewable resource in Colorado.

Source: <https://www.renewablecities.ca/about-renewable-cities>

Source: <https://www.colorado.gov/pacific/energyoffice/renewable-energy-1>

RENEWABLE ENERGY

Implementation Strategies



8,000 mtCO₂e reduced | \$\$\$

Achieving 100% renewable electricity could account for up to 8,000 mtCO₂e reduction. The Town plans to work towards this goal through onsite solar development, community solar arrays, and investment in local renewable energy generation projects, while continuing to advocate at the state and federal level for a rapid increase in renewable energy on the grid.

Purchase renewable energy certificates (RECs) for the community. | \$\$ |

As a first step in working towards Crested Butte's renewable energy future, the Town will offset residential and commercial electricity use by purchasing RECs for 100% of Town residents and businesses through GCEA's [green power program](#). Of the purchase, 25% will be put toward a fund for future local renewable energy projects. After this one-time purchase in 2020, the Town will work with GCEA to develop an "opt-out" option to encourage residences and businesses to stay on GCEA's Green Power Program. While these RECs will not reduce carbon emissions, this is a short-term strategy to show the Town and community's commitment to purchase power from regional renewable energy sources, while the Town works to install local renewable energy generation.

Install solar on Town buildings and property. | \$\$\$ |

Because RECs do not decrease GHG emissions, the Town will lead the community in reducing GHG emissions by transitioning the Town's RECs to onsite and utility-scale renewable energy generation. The Town will install onsite renewable energy on some municipal buildings and property, starting first with the highest energy using buildings. The Town owns many buildings that they lease to community organizations and services (i.e., Center for the Arts, Old Rock Library, Stepping Stones Pre-School) and will lead by example to improve the efficiency of these buildings by adding onsite solar where feasible.

Reduce barriers for community members to access solar energy. | \$ |

The Town and GCEA will work together to expand the community solar garden to provide an affordable opportunity for community members to access solar.

Construct a local, utility-scale solar array. | \$\$\$ |

By 2022, GCEA will construct a 1 MW-1.5 MW solar array and the Town will support the construction and subscribe to renewable attributes from the array.

Support GCEA in constructing a hydro generation plant. | \$\$\$ |

By 2023, GCEA will construct a 200 kW-400 kW hydro generating facility on the Taylor River dam. The Town will support the construction and subscribe to renewable attributes from the plant.

While these strategies represent local projects that the Town and its partners will implement, the Town recognizes that achieving 100% renewable electricity will additionally require a utility-scale grid comprised of a significant majority of renewable energy sources. The Town will continue to advocate at the state and federal level for rapid increase in utility-scale renewable energy by continuing its participation in Colorado Communities for Climate Action (CC4CA).

RENEWABLE ENERGY



Purchase renewable energy certificates (RECs) for the community.

GCEA provides electricity to homes and businesses in Crested Butte. GCEA's power supplier, Tri-State Generation and Transmission, provides GCEA with 32% of its energy from renewable resources including wind, solar, and hydropower. Currently, between 60-68% of Tri-State's energy comes from fossil fuels. Locally, the Town has a few options to increase the percentage of renewable power that is electrifying homes and businesses in Crested Butte: build onsite solar; expand the community solar garden, build a large, utility-scale solar array, and develop local hydropower. Because these projects will take time to develop, in the meantime, the Town plans to purchase RECs for the entire Crested Butte community to demonstrate to our electricity provider that Crested Butte supports a transition to renewable energy.

RECs are tradable, non-tangible energy commodities in the US that represent proof that 1 MWh of electricity was generated from an eligible renewable energy resource (renewable electricity) and was fed into the shared system of power lines, which transport energy. For example, if a business purchases 7 MWh a year from GCEA—which mostly offers a mix of electricity from renewable energy and fossil fuels—and also buys five RECs, the business purchased an amount of renewable energy equal to its electricity consumption. RECs allow for purchasers to support renewable energy generation and are an alternative option when onsite or community renewables are not available. Locally, GCEA provides REC purchase opportunities to its members through their Green Power Program. In addition to the RECs, 25% of the funds collected in the Green Power Program are contributed to a local renewable energy project fund.

While RECs are not a guarantee that additional renewable energy is produced that would not have been produced otherwise and RECs will not reduce the Town's GHG emissions, purchasing RECs is a first step to better demonstrate public demand by showing Crested Butte's commitment to renewable energy, while the Town works to install local renewable energy sources.

Activity	Target Date	Resources	Lead Organization
Enroll all consumers within Town limits in GCEA's Green Power Program.	January 31, 2020		Town of Crested Butte, GCEA
Prepare monthly reports of Green Power Participation, kilowatt-hour totals and program cost. GCEA will bill the Town.	Monthly beginning in February 2020	To be completed by GCEA.	GCEA
Launch a program for consumers to contribute directly to a local energy development fund to support local renewable energy projects.	March 2020	Marketing and outreach support from Sustainable CB and a CB Community School student organization.	GCEA
Develop a plan for retaining consumer participation in the Green Power Program after the free subscription period, such as an "opt out" option. Plan should include retention goals and a plan for communicating with consumers.	March 2020	Marketing and outreach support from Sustainable CB and a CB Community School student organization.	Town of Crested Butte GCEA
Receive Town Council and GCEA Board approval of the communication and transition plan.	May 2020	Town Council and GCEA Board	Town of Crested Butte GCEA
Encourage consumers to stay on the Green Power Program after 2020. The minimal way to support renewable energy is to purchase RECs through GCEA's Green Power Program. The ability to purchase RECs is additionally important for lower income individuals and renters.	December 31, 2020	Marketing and outreach support from Sustainable CB and Crested Butte Community School students. Seek interest from other entities.	GCEA

RENEWABLE ENERGY



Install solar on Town buildings.

Activity	Target Date	Resources	Lead Organization
Identify suitable municipal buildings and properties for solar.	Fall 2019	Johnson Controls investment grade audit for Town buildings and feasibility study (in progress)	Town of Crested Butte
Seek permits and competing bids for construction of the array.	Winter 2020	Energy Performance Contract process	Town of Crested Butte
Complete permitting and construction.	2020-2023	Phased construction over several years	Town of Crested Butte



The Town is initially considering these facilities for onsite solar installation:

The Town is currently participating in the Colorado Energy Office’s Energy Performance Contracting (EPC) program. The Town selected Johnson Controls, Inc. as their energy services company (ESCO) to audit and evaluate energy efficiency and renewable energy opportunities for Town facilities and fleet. The investment grade audit is occurring during the fall and winter of 2019/2020. The Town is currently analyzing the buildings and properties listed below for onsite solar potential:

- Fire Station
- Marshals’ Office
- Center for the Arts
- Wastewater Treatment Plant buildings
- Public Works buildings
- Avalanche Park Property
- Slate River Annexation Property



SolSmart

The US Department of Energy Solar Energy Technologies Office funds the SolSmart national designation program recognizing local governments for spurring solar market growth. Its goal is to make it faster, easier, and more affordable to go solar. SolSmart has designated over 275 communities representing over 71 million people. The Town will consider becoming designated in this program as part of CAP implementation.



For more information, visit <https://www.solsmart.org/>.

RENEWABLE ENERGY



Reduce barriers for community members to access solar power.

Activity	Target Date	Resources	Lead Organization
Beginning in 2019, GCEA will offer customers a month to month lease option for the existing community solar option, in addition to the long-term lease already available.	Complete	The community solar garden officially sold out in October 2019.	GCEA
Prepare for the expansion of the existing community solar garden or construction of another facility.	Winter/Spring 2020	The Town will support the expansion by helping to secure a location.	GCEA, Town of Crested Butte
Construct the expansion of the community solar garden.	November 2020	Identify local contractor, secure permits. Support from Town of Crested Butte.	GCEA
Encourage consumers to subscribe to the community solar garden and achieve at least an 80% subscription rate.	January 2021	Marketing and outreach support from the Town of Crested Butte, Sustainable CB and the CB Community School, among others.	GCEA
Seek SolSmart Designation and reduce barriers to solar (if existing) in current building and zoning codes.	Spring 2020	The Town has already waived permit fees for solar installation and is currently updating its design guidelines to encourage solar. The Town will determine additional ways to reduce barriers and increase efficiencies for permitting solar.	Town of Crested Butte
Advertise available tax credits to installing rooftop solar.	Fall 2020	Marketing and outreach support from Sustainable CB.	Town of Crested Butte

Renewable Energy Ordinance Framework

It is important the Town provide clear zoning regulations that allow solar energy installations on residential and commercial rooftops by right. Delaware Valley Regional Planning Commission created the Renewable Energy Ordinance Framework: Solar PVA, a resource for municipalities as they develop and update zoning ordinances to govern the siting of small-scale solar PV energy systems in their community. The Town can use this guide to identify ways to regulate solar PV in its zoning codes and other regulations and ordinances in a way that aligns with Crested Butte's local land use and community goals.

For more information, visit

https://www.dvrpc.org/EnergyClimate/ModelOrdinance/Solar/pdf/2016_DVRPC_Solar_REOF_Reformatted_Final.pdf

RENEWABLE ENERGY



Construct a local, utility-scale solar array.

Activity	Target Date	Resources	Lead Organization
Identify a suitable site for a solar array (6 acre minimum).	Winter/Spring 2020	Support from Town of Crested Butte; The Town plans to enter into a Memorandum of Understanding (MOU) to outline its commitment to GCEA in this project	GCEA
Seek permits and competing bids for construction of the array.	Summer/Fall 2020	RFP Process	GCEA
Allocate money from the local renewable development fund if needed and available.	Fall 2020		GCEA
Commit to the purchase of renewable attributes if needed to make the project financially viable.	Fall 2020	Cost and revenue figures from GCEA	Town of Crested Butte
Select a developer.	Winter/Spring 2021	RFP Process	GCEA
Complete permitting and construction.	Summer/Fall 2022		Selected Developer
Subscribe to additional renewable attributes as needed to meet GHG reduction goals.	Winter 2023	Cost and revenue figures from GCEA	Town of Crested Butte

CASE STUDY | Vancouver, Canada



Creekside Community Recreation Centre installed a 15 kW solar PV array. The rooftop solar panels mounted on boat sheds were installed in June 2017 through a joint effort between the City of Vancouver, the North Growth Foundation and Clean Energy Canada. It features 60 solar PV modules on six boat sheds and in its 30-year lifetime, the system will feed about 459,000 kWh of clean electricity back into the grid and offset a portion of the energy used at the Creekside Community Recreation Centre. By installing solar electricity systems on public buildings and in high traffic areas like Creekside, Vancouver aims to help British Columbians get a firsthand look at how solar panel technology works and demonstrate how solar power could help meet the energy needs of homes and businesses across the province.

RENEWABLE ENERGY



Support GCEA in constructing a hydropower generation plant.

Activity	Target Date	Resources	Lead Organization
Complete negotiations with the Uncompahgre Valley Water Users Association (UVWUA).	December 31, 2019	UVWUA	GCEA
Obtain a Lease of Power Privilege from the Bureau of Reclamation.	December 2020	Bureau of Reclamation	UVWUA
Seek permits and competing bids for construction of the facility at the Taylor River Dam.	Winter 2021	Expected RFP process	GCEA
Allocate money from the local renewable development fund if needed and available.	Winter 2021	Fund balance	GCEA
Commit to the purchase of renewable attributes if needed to make the project financially viable.	Winter 2021	Cost and revenue figures from GCEA	Town of Crested Butte
Select a developer.	Spring 2021	RFP	GCEA, UVWUA
Complete permitting and construction.	Summer 2021/2022		Developer
Subscribe to additional renewable attributes as needed to meet GHG reduction goal	Summer 2021/2022	Cost and revenue figures from GCEA	Town of Crested Butte

CASE STUDY | Boulder, Colorado



Since 1985, the City of Boulder hydroelectric program has turned water power into electricity, generated revenue, and provided sustainable, non-polluting electricity. The city owns and operates eight hydroelectric power plants, with one purchased and seven constructed over the last 20 years.

Significant pressure develops as water flows downhill from the city's mountain reservoirs to delivery systems in Boulder. Instead of mechanically reducing the excess pressure, the city converts it into energy by causing the flowing water to spin turbines that spin electrical generators to produce electricity. No fossil fuels are consumed and nothing is emitted in the energy conversion process.

For more information, visit: <https://bouldercolorado.gov/water/hydroelectricity>

WASTE REDUCTION



Global and statewide perspectives

Global

Global waste generation is increasing faster than any other environmental pollutant. The International Solid Waste Association estimates that when all waste management actions, including disposal, recycling, composting, and treatment, are considered, the waste sector could cut 10%-15% of GHG emissions globally. When actions to reduce waste generation are also taken into account, the sector could reduce up to 20% of the global emissions.

Food waste is a particularly critical issue. According to the United Nations Food and Agriculture Organization 1.3 billion tons of food is wasted globally each year, representing one-third of all food produced for human consumption. Project Drawdown ranks reduced food waste as the #3 largest strategy for reducing global GHG emissions.

When food waste decays in landfills, it produces methane, a GHG 28 times more potent than CO₂ at retaining heat in the atmosphere over a 100-year period and already causing 25% of current global warming. Yet when food scraps are separated and treated rather than sent to landfills, they can produce compost to grow new food and enhance the soil's carbon capture capacity to pull CO₂ from the atmosphere, and recover energy through anaerobic digestion and biogas utilization.

For other types of waste, reuse and recycle schemes will reduce the amount of waste sent to landfills or incinerators and can create jobs and economic opportunities for social entrepreneurs and vulnerable communities.

Colorado

In 2018, Colorado created a record 9.3 million tons of waste while its recycling rate was just 12%, which put Colorado far behind the national average of 35% recycling. On average, each Colorado resident throws away nearly 8 pounds of trash per day, or more than 1.45 tons per year. That's more than 8 million tons piling up in Colorado landfills every year.

According to Eco-Cycle, nearly 95% of Colorado's waste could be recycled or composted: the state could recycle 32%, including bottles, cans and paper; 37% could be composted, like grass clippings, food waste and clean wood; and 26% could be reused or recycled through specialized programs for textiles, electronics, construction materials, and other bulky materials.

In 2016, Colorado set its first-ever statewide recycling goals, aiming for 28% by 2021. Achieving 28% would more than double the state's current recycling rate and keep an additional 1.5 million tons of waste out of the landfill every year.



Source:
https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-PotentialValues%20%28Feb%2016%202016%29_1.pdf

Source:
https://www.ecocycle.org/files/pdfs/Campaigns/zero-waste-colorado/State_of_Recycling_2018_SUMMARY.pdf

WASTE REDUCTION

Implementation Strategies



Photo: Lydia Stem

Install an industrial-scale composting facility and require community-wide composting.

The Town will look into the feasibility of building a large centralized composting facility or anaerobic digester to collect and process organic materials with a goal to construct a facility and require community-wide composting by 2025.

Educate the community about waste reduction and recycling.

The Town will support initiatives led by the Crested Butte/Mt. Crested Butte Chamber of Commerce and Sustainable Crested Butte to educate residents, businesses, and tourists about becoming zero-waste. Getting to zero-waste requires changing everyday human behavior.

Implement policies to reduce waste.

The Town recognizes the importance of enacting waste reduction and recycling ordinances to strive towards becoming a zero-waste community.

Support community initiatives that reduce waste.

Green Business Stamp Initiative

The Green Business Stamp Initiative is a certification program that will be designed and implemented by the Crested Butte/Mt. Crested Butte Chamber of Commerce. The certification provides consumers with proof that community businesses are taking environmental action like reducing energy use, procuring products with less waste, or selling organic products.

Zero-Waste Events

Crested Butte hosts many events throughout the year. The Town will support Sustainable Crested Butte, which can help event organizers reduce waste generated at special events. Zero-waste events reuse various elements such as banners, do not use single serve items, have proper signage for attendees, and have trained volunteers who monitor waste, compost, and recycling bins. For the first year, the Town will incentivize zero-waste events and then will implement an ordinance requiring zero-waste for all permitted special events.

WASTE REDUCTION



Install an industrial-scale composting facility and require community-wide composting.

100 mtCO₂e reduced

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Crested Butte will reduce GHG emissions by 100 mtCO₂e if all Crested Butte residents successfully divert organic or biodegradable waste from the landfill by 2030.

Activity	Target Date	Resources	Lead Organization
Conduct analysis of Gunnison County's waste-stream, including the Town of Crested Butte.	Spring/ Summer 2020	Analyze current landfill data from Gunnison County; engage technical expertise to conduct audit of the Town's wastestream	One Valley Leadership Council and/or Town of Crested Butte
Learn from other mountain communities about how they compost (Summit County, Chaffee County, Pitkin County).	Spring 2020	Support from Crested Butte Mountain Resort and Gunnison County	Town of Crested Butte
Explore options with Waste Management for increased waste diversion from landfills.	Spring 2020	Support from Mt. Crested Butte	Town of Crested Butte
Conduct feasibility analysis for constructing a composting facility or anaerobic digester.	Fall 2020/ Winter 2021	Regulatory requirements, land suitability and availability, cost analysis	One Valley Leadership Council and/or Town of Crested Butte and Gunnison County
Engineering, design, and construction of a facility.	2023	Engineering Firm	Town of Crested Butte
Public Outreach to transition community members to composting.	2025	Crested Butte/Mt. Crested Butte Chamber of Commerce, Sustainable CB	Contracted waste firm
Implement composting ordinance requiring residents and businesses to compost.	2026	Town Council approval	Town of Crested Butte



CASE STUDY | Montrose, Colorado

3xM Grinding and Compost, LLC aims to operate a commercial composting facility that will process material diverted from landfilling operations in five or more counties on Colorado's western slope, turning material into soil amendment for sale to both public and private entities. The business is currently working to secure necessary approvals from Montrose County and the Colorado Department of Public Health and Environment.

For more information, visit:

https://montrosecounty.granicus.com/MetaViewer.php?view_id=2&clip_id=1251&meta_id=71432

WASTE REDUCTION



Implement policies to reduce waste. | \$ |

Activity	Target Date	Resources	Lead Organization
Enact waste reduction and recycling ordinances to work toward becoming a zero-waste community.	2020-2025	Town Council approval, Waste Management support	Town of Crested Butte

Example Ordinances

San Francisco Department of the Environment, the Commission on the Environment, the Board of Supervisors, and the mayor have all helped adopt policies to promote or require zero waste practices in San Francisco. Here is a list of some of those commitments and policies:

- **Joined the C40 Zero Waste Declaration:** To date, the mayors of Paris, Milan, New York, London, and more than 23 other cities have joined San Francisco in this commitment.
- **Mandated recycling and composting and established enforcement procedures:** San Francisco passed a 2009 ordinance requiring everyone in San Francisco to separate recyclables, compostables, and landfill-bound trash.
- **Set ordinance prohibiting the sale or use of single-use food service ware** made with fluorinated chemicals and certain items made with plastic. This policy requires that food service ware accessories be provided only on request or at self-service stations, and requires reusable beverage cups at events on city property.
- **Food Service Waste Reduction Ordinance:** Prohibits the use of Styrofoam or polystyrene foam food serviceware and requires the use of food serviceware that is compostable or recyclable.
- **Resource Conservation Ordinance:** Requires city departments to prevent waste, maximize recycling, buy products with recycled content and appoint a Zero Waste Coordinator to lead these efforts.
- **Bottled Water Ordinance:** Restricts the sale or distribution on city property of drinking water in plastic bottles of 21 ounces or less, set city policy to increase the availability of drinking water in public areas, and bar the use of city funds to purchase bottled water.
- **Environmentally Preferable Purchasing Ordinance:** Requires an environmentally preferable purchasing program for commodities purchased by the city.



CASE STUDY

European Union

The European Parliament voted overwhelmingly in 2018 to ban single-use plastic items including straws, food containers, and cotton bud sticks, as a way to tackle marine litter and encourage sustainable alternatives.

The Single-Use Plastics Directive will ban products for which alternatives exist on the market, such as single-use plastic cutlery, plates, and items made of oxo-degradable plastics, by the year 2021. EU member states will also have to achieve a 90% collection target for plastic bottles by 2029. The legislation is estimated to avoid around \$25 billion-worth of environmental damages by 2030.

WASTE REDUCTION



Educate the community about waste reduction and recycling. | \$ |

Activity	Target Date	Resources	Lead Organization
Develop outreach materials that show businesses the benefits of waste reduction and recycling.	Fall 2020	Crested Butte/Mt. Crested Butte Chamber of Commerce	Sustainable Crested Butte
Help residences understand what can be re-used, recycled and the benefits of waste reduction and recycling.	Fall 2020		Sustainable Crested Butte
Help residents and businesses reduce their waste generation and bring awareness to residents of recycling and re-use services available to them.	Fall 2020	Building owners and managers, Crested Butte/Mt. Crested Butte Chamber of Commerce	Sustainable Crested Butte
Support the Crested Butte Community School in greater waste reduction and recycling efforts.	Fall 2020	Crested Butte Community School	Sustainable Crested Butte
Develop advertising concepts that move messaging from awareness of waste reduction and recycling programs to fostering behavioral change through action.	Winter 2021	Crested Butte/Mt. Crested Butte Chamber of Commerce, Tourism Association	Sustainable Crested Butte

Recycling Grants and Rebates



Colorado's Recycling Resources Economic Opportunity Program provides funding that promotes economic development through the management of materials that would otherwise be landfilled. Funds are available to support recycling, composting, anaerobic digestion, source reduction, and beneficial use/reuse. Grants and rebates are overseen by the Pollution Prevention Advisory Board and its corresponding Assistance Committee. Since its inception in 2007, the program has awarded nearly \$25 million to businesses, local governments, nonprofit organizations, and schools and universities to help develop recycling infrastructure and promote sustainable behavior change in communities across Colorado.

For more information, visit: <https://www.colorado.gov/pacific/cdphe/recycling-grants-and-rebates>

WASTE REDUCTION



Support community initiatives that reduce waste. | \$\$ |

Green Business Stamp Initiative

Activity	Target Date	Resources	Lead Organization
Distribute a survey to all businesses to assess what actions businesses have already taken, their interest in being certified as a green business, and determine additional actions businesses can take to be greener.	Winter 2020	Contact information for all businesses	Crested Butte/Mt. Crested Butte Chamber of Commerce
Determine certification levels and how to highlight the businesses that become certified.	Spring 2020	Knowledge of how other towns are implementing similar programs	Crested Butte/Mt. Crested Butte Chamber of Commerce
Create assessment forms and pilot the initiative with a few businesses.	Summer 2020		Crested Butte/Mt. Crested Butte Chamber of Commerce
Roll out the initiative to all Chamber members.	Winter 2021		Crested Butte/Mt. Crested Butte Chamber of Commerce

Zero-Waste Events

Activity	Target Date	Resources	Lead Organization
Create a zero-waste event toolkit.	Winter 2020	Grant Funding	Sustainable Crested Butte
Determine incentives to encourage events to use the toolkit and be a zero-waste event (Example: Special event permit fees and use of Elk Avenue fees removed).	Winter 2020	Support from Crested Butte/Mt. Crested Butte Chamber of Commerce and Sustainable CB	Town of Crested Butte
Enact policy requiring all special events to be zero-waste	Winter 2020	Support from Crested Butte/Mt. Crested Butte Chamber of Commerce and Sustainable CB	Town of Crested Butte

TRANSPORTATION



Global and statewide perspectives

Global

Transportation is the sector where GHG emissions are rising the fastest. One-third of GHG emissions come from transport, and traffic is the biggest source of air pollution, globally responsible for up to one-quarter of particulate matter in the air. As emissions from private motor vehicle use rise, encouraging greater use of public transport, walking, and cycling, as well as reducing vehicle emissions intensity are some of the most effective actions that communities can take to cut emissions.

Cities and towns can make targeted enhancements to transit, such as introducing bus rapid transit on main arteries, and improving transit service quality, including reduced crowding, increased service frequency, renovating major stations for improved security or adding stations to increase access for underserved areas.

An ideal transit system extends beyond its stations, vehicles, and corridors and is fully integrated within the larger network, from airports and intercity rail, to public bikes and neighborhood walkways. In fast-growing cities, where multiple systems are planned and implemented at the same time, these systems will need to be coordinated to reduce redundancies and maximize the synergies between modes.

Colorado

In Colorado, the transportation sector is projected to account for approximately 33% of CO₂ emissions by 2020.

Colorado is home to approximately 5 million people and 3 million jobs. By 2040, the population is expected to increase by 47% to nearly 7.8 million, with the number of people age 65 and older representing approximately 1.4 million or 18% of the total. Because of these projections, Colorado is facing growing demand for mobility services throughout the state. Some notable mitigation strategies include:

- **Colorado Revised Statute 42-14-101**, more commonly known as the puffer law, which allows law enforcement officers across the state to immediately ticket individuals who have left a vehicle running unattended for any period of time.

- The **RTD FasTracks Program** is a multibillion dollar comprehensive transit expansion plan to build 122 miles of new commuter rail and light rail, 18 miles of bus rapid transit, 57 new transit stations, 21,000 new parking spaces at light rail and bus stations, and bus service for convenient bus/rail connections across the eight county district. FasTracks is RTD's 2004 voter-approved plan to expand transit across the Denver metro region.
- **Bustang, CDOT's interregional bus service**, offers Monday through Friday express transit services to the communities of Fort Collins, Loveland, Denver, Lakewood, Monument, Colorado Springs, Frisco, Vail, Eagle, and Glenwood Springs. Bustang connects major populations, employment centers, and local transit entities while offering commuters more travel choices, alleviating congestion and consequently reducing emissions that contribute to GHG. Bustang currently connects Gunnison County to the Front Range.
- In 2019, the Colorado Air Quality Control Commission voted to adopt an **alternate Zero Emissions Vehicle (ZEV) Rule**. This rule mandates that as of January 2, 2022, automakers must make an increasing minimum percentage of ZEVs available for sale as part of their light-duty fleet.
- In support of the executive order of supporting Colorado's Clean Energy Transition, the State of Colorado released the **Colorado Electric Vehicle Plan** in 2018, which aims to build out key charging corridors to facilitate economic development and boost tourism across the state while reducing harmful air pollution. The overall goal identified in the plan is to have 940,000 electric vehicles on the road in Colorado by 2030.



Photo: Lydia Stern

Source: <https://www.c40.org/networks/mass-transit>

Source: <https://www.codot.gov/programs/environmental/Sustainability/colorado-climate-plan-2015>

TRANSPORTATION

Implementation Strategies



Photo: Xavier Fane

Increase electric vehicle (EV) adoption through education, charging stations, and prioritized parking.

The Town of Crested Butte will work toward converting its entire fleet of vehicles to zero emissions alternatives as vehicles need to be replaced. In preparation, the Town will install additional public charging stations, install priority parking for EVs, and encourage EV use through education.

Discourage single occupancy vehicle (SOV) use through no-car zones, bike and bus infrastructure.

By 2024, the Town and regional partners will develop a regional transportation plan to define policies, goals, investments, and designs for multi-modal transit infrastructure, as well as no-car zones within Town limits.

In the meantime, there are many ways the Town plans to reduce SOV use by making bikes more available to visitors, educating visitors on how to reduce car use, adding an in-town circulator bus, determining feasibility of adding a CB South circulator bus, and continuing to measure bus ridership while maintaining and expanding existing routes.

TRANSPORTATION



Increase EV adoption through education, charging stations, and prioritized parking

1,500 mtCO₂e reduced

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If 20% of registered vehicles within the Town boundary are EVs by 2030 (using a 2017 baseline), Crested Butte will reduce GHG emissions in the Town by about 1,500 mtCO₂e.

Activity	Target Date	Resources	Lead Organization
Install additional public EV charging infrastructure as EV use grows.	Summer 2020-Ongoing	Partnership with GCEA and funding from Charge Ahead Colorado	Town of Crested Butte
Convert Town of Crested Butte fleet to EVs, leading by example, and provide resources to support conversion of Mt. Crested Butte's fleet and the School District bus fleet.	2021-2030	Grants opportunities, Energy Performance Contract with Colorado Energy Office; Volkswagen settlement for EVs	Town of Crested Butte
Install priority parking for EVs.	Winter 2022		Town of Crested Butte
Encourage EV use through education: <ul style="list-style-type: none"> Promote the GCEA loaner program and its incentive for home EV charging Create awareness of the Town's EV infrastructure Help residents learn about EV use at altitude Promote GCEA's rebates for installing home charging stations 	Winter 2022	Marketing support from GCEA and Town of Mt. Crested Butte	Town of Crested Butte
Convert Mountain Express' fleet to zero emissions alternatives.	2022-2030	Support from Towns of Crested Butte and Mt. Crested Butte; Volkswagen settlement for EVs	Mountain Express

TRANSPORTATION



Discourage SOV use through no-car zones, bike and bus infrastructure

350 mtCO₂e reduced

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The Town and supporting organizations will implement multiple strategies, including improved transit, increased walking and biking infrastructure, varied commuter options, education and marketing, and parking management to reduce Crested Butte GHG emissions by about 350 mtCO₂e.

Activity	Target Date	Resources	Lead Organization
Require all Crested Butte lodging establishments provide bikes and bike parking for visitors.	Summer 2020	Involve the Tourism Association and provide options for inexpensive bikes and bike parking; support from Town bike stores for help with annual bike maintenance; include requirement in renewed 2021 short-term rental licenses	Town of Crested Butte
Continue to measure bus rider demographics and determine feasibility of adding new routes or additional trips, while maintaining existing routes.	Ongoing	Marketing to support survey completions (i.e., poster on the bus)	Mountain Express and RTA
Evaluate the need for additional Mountain Express operating hours during the off season and whether an in-town circulator would increase ridership.	Summer 2020		Mountain Express
Seasonally, educate visitors on how to reduce car use: <ul style="list-style-type: none"> Ask visitors to park their cars while here and ride the bus, walk, or bike Create greater awareness of Mountain Express bus schedules Advertise how to reduce car use through various channels and campaigns 	Summer 2020	Marketing support from Tourism Association and Mt. Crested Butte and Crested Butte/Mt. Crested Butte Chamber of Commerce	Crested Butte/Mt. Crested Butte Chamber of Commerce, Tourism Association, Crested Butte Mountain Resort
Develop a student project to survey students and parents to understand how many students walk, bus, bike, and drive to school, address the reasons for driving to school, and encourage students to walk, bike, or bus to school.	Summer and Fall 2020	Support from the Town of Crested Butte	Crested Butte Community School
Enforce the anti-idling ordinance through education and outreach.	Ongoing	Support and coordination from Town of Crested Butte	Sustainable Crested Butte
Implement a pilot CB South circulator, measure ridership and determine long-term feasibility.	Winter 2021	Support from Towns of Crested Butte and Mt. Crested Butte	Mountain Express
Develop a regional transportation plan to define policies, goals, investments, and designs for multi-modal transit infrastructure, including parking areas and no-car-zones.	2023	Funding and commitment from municipalities and the Colorado Department of Transportation (CDOT) to develop and implement the plan; use available grants and taxes	One Valley Leadership Council, Towns of Crested Butte and Mt. Crested Butte, Mountain Express, RTA



CASE STUDY

Aspen, Colorado Microtransit

Parking demand in Aspen's core exceeds the parking spaces available as many visitors lodge in town and opt to drive and park in downtown. This contributes to parking occupancy issues and congestion. The City was looking for first and last mile solutions to reduce the parking demand and congestion.

The City developed Aspen Downtowner, an app-based, on-demand, door-to-door microtransit system that operates in Aspen's core and nearby neighborhoods. The vehicles are electric, heated golf carts that hold seven passengers plus the driver. The service is free of charge and operates from 11 a.m. to 11 p.m. in spring, summer, and fall. It operates from 8 a.m. to 11 p.m. in winter.

The fleet consists of seven vehicles that can carry skis but are not equipped for bicycles. Dogs are allowed on the service, and children must be 5 years or older to ride on the service with adults due to legal restraints requiring car seats. The program has been in place for approximately 2 years and started as a pilot project in 2017. The City recently signed a 5-year contract with the Downtowner vendor and anticipates the service is on its way to becoming a permanent service as a result of the positive feedback from users and 47,000 one-way person trips recorded annually. Downtowner (the vendor) owns and maintains the vehicles, and hires and trains the drivers as well.

The Downtowner is paid for through Aspen's Transportation Fund, which is made up of funds from a lodging tax and a portion of the sales tax. Parking revenues generated also contribute to the City's Transportation Fund. The program cost \$540,000 for 2018-2019, which includes vehicles, drivers, and insurance.

For more information on Aspen's Downtowner program, visit: <https://www.cityofaspen.com/270/Downtowner>

For more information about successful multimodal transportation advancements in resort communities, visit <https://coloradotransit.com/multi-modal-best-practices-study/>

Highlights

Demand exceeds parking space



Positive feedback and use may lead to permanent service

47,000
one-way trips annually

Paid through Aspen's Transportation Fund



MEASUREMENT & VERIFICATION CHECKLIST



M&V are critical steps to the implementation of any Climate Action Plan. Once steps are taken to implement emissions reduction opportunities, M&V allows for an ongoing assessment of the effectiveness of the implemented actions.

MEASUREMENT & VERIFICATION CHECKLIST



Part of developing a successful M&V protocol is identifying the metrics to determine success. When dealing with GHG emissions, identifying these metrics can be particularly challenging because GHG emissions are not directly measurable in most cases, for example, the Town will not be able to directly measure the GHG emissions released out of each individual car's tailpipe.

The metrics on the following page should be collected by the Town annually to evaluate success of the GHG emissions reduction strategies. Reviewing trends will allow the Town to evaluate success and redistribute resources as needed. All M&V metrics may not be reported in full confidence from the start, but efforts should be made in the annual cycle to update and refine estimates as better information becomes available.

Tracking these metrics is the first priority for evaluating progress on the CAP. Beyond these metrics, the Town will also complete a full GHG emissions inventory on a regular basis. Completing an inventory every 2-3 years is an appropriate time frame. At every update, the goal should be set to use internationally recognized methodologies and tools and to update statewide, or nationwide metrics to the extent possible. Using internationally recognized methodologies and tools will allow the Town to benchmark GHG emissions and the overall inventory against other municipalities with similar goals. Updating metrics to local metrics, whenever possible, will allow the Town to develop a more exact inventory to better understand the full footprint of local residents and continue to make positive reductions to GHG emissions.



Photo: Lydia Stern

MEASUREMENT & VERIFICATION CHECKLIST



	Metric	Responsible Party
Building Energy Use	GCEA energy mix, including renewable percentage and carbon intensity	GCEA
	Total energy use for Town of Crested Butte (will need to be normalized for heating degree days and cooling degree days)	GCEA, Atmos Energy
	Percentage of buildings opting to meet above-code guidelines (commercial/residential)	Town of Crested Butte
	Number of buildings receiving a deep energy retrofit	Town of Crested Butte
	Number of buildings installing building automation technology	Town of Crested Butte
Transportation	Number of registered EVs in the Town of Crested Butte	Gunnison County DMV
	Number of EV charging stations installed and energy use at those charging stations	GCEA
	Percentage of rides completed using public transportation (will require a transportation study)	Mountain Express, RTA, and the Crested Butte Community School
	Vehicle miles traveled, personal vehicles (will require a transportation study specific to the Town or County)	Town of Crested Butte
Waste	Percentage of waste that is diverted to composting	Waste Contractor
	Percentage of Town events certified as zero waste	Town of Crested Butte
	Number of businesses that enact zero waste policies or reach highest levels of waste reduction certification	Town of Crested Butte
Renewable Energy	Megawatt-hours of Green Power purchased by Crested Butte residents	GCEA
	Total megawatt-hours of electricity produced through onsite renewable energy in the Town (municipal/commercial/residential)	GCEA
	Total megawatt-hours of renewable electricity produced locally on the grid and in GCEA and Tri-State's overall power mix.	GCEA
	Percentage of renewable energy produced in low income properties	GCEA

APPENDIX A

REVIEW OF CRESTED BUTTE EXISTING PLANS



The Town currently adheres to a series of plans with different implications for the future CAP. While none of these plans pose quantifiable limitations to this CAP and the Town of Crested Butte achieving its emission reduction goals, understanding the current strategic landscape of the region will allow for smoother implementation and greater success.

REVIEW OF CRESTED BUTTE EXISTING PLANS



At the County level, the Gunnison County Strategic Plan and Gunnison Valley Housing Needs Assessment should be considered to ensure the CAP's strategies align with the priorities and goals of the County. This alignment will make for more robust and scalable solutions and greater buy-in from Crested Butte's neighboring localities. Locally, the Transportation Plan, Affordable Housing Plan, and Waste Management documents can serve to help identify CAP strategies that produces co-benefits to the region in addition to reaching the Town's emission reduction goals. Finally, past and current Crested Butte sustainability activities must be scrutinized for their successes and challenges and built upon or updated and incorporated into the CAP as appropriate.

Gunnison County Strategic Plan

This county-wide 2018 Plan seeks to provide focused direction and mechanisms for measuring progress in County activities and goals. The strategic results laid out in the Plan align with the One Valley Prosperity Project strategy and require cooperation with other local jurisdictions, agencies and individuals.

Gunnison Valley Housing Needs Assessment

These documents reveal the current housing conditions and future housing needs in the Gunnison Valley, of which Crested Butte is a part of the North Valley region. Published in 2016, it looks ahead to 2020 and quantifies housing market conditions, accounting for job growth, economic conditions, and demographics, to estimate the number of additional units needed.

Town of Crested Butte Sustainability Projects

A snapshot of Crested Butte's online communication around past and current sustainability projects.

Town of Crested Butte 5-Year Affordable Housing Plan

The Town of Crested Butte updates its affordable housing plan every year to plan out projects and goals for the next five years. Moving forward, Town affordable housing projects will incorporate the Town's climate action goals.

Town of Crested Butte Municipal Code, Deconstruction and Recycling Plan

This code requires that all demolition of existing structures in excess of 1,000 square feet submit a deconstruction and recycle plan for approval by the Building Official. There is potential to update the Plan to account for GHG emissions as well as waste, such as those from equipment and transportation associated with demolition activities.

Town of Crested Butte Transportation Plan and Town Vehicle List

Crested Butte's preliminary 2014 Transportation Plan addresses the goals, policies, funding, and issues affecting mobility in Crested Butte. It also provides a 2035 traffic volume forecast and reports the effect of this increased traffic on mobility services. The Town Vehicle List lists the characteristics of the Town's vehicle fleet.

Refuse and Recycling Agreement and Monthly Recycling Reports

These documents outline the current waste management codes and contracts for the Town of Crested Butte. Monthly reports provide the Town's recent recycling rate and resulting GHG emissions savings.

The Navigant team organized the results of their research by GHG reduction area and described their findings to Town Staff. These findings were shared with the CAP committee and were then utilized to guide selection of GHG reduction strategies and development of the implementation plans.

REVIEW OF CRESTED BUTTE EXISTING PLANS



Building Energy Use

Document	Finding	Climate Action Plan Considerations
Town of Crested Butte Sustainability Projects (from website)	The Town upgraded select municipal buildings with new lighting, boilers, and insulation, and installed smart meters at the water and wastewater plants to gain a better understanding of facility energy use, as well as participated in programs from the Governor's Office for Energy Management and Conservation.	Determine which of the Governor's Office programs are in alignment with CAP strategy and how they can be incorporated into the Plan.
Gunnison County Strategic Plan	<p>By December 31, 2030, Gunnison County will work to reduce energy use impacts and lower greenhouse gas emissions by 20% from 2005 levels, thereby improving air quality and addressing climate change, as measured by:</p> <p>a) By 2020, EUI (energy use intensity) will be declining from 2015 levels in residential and commercial new and existing buildings with a target of 20% reduction by 2030; and</p> <p>b) By December 31, 2030, Gunnison County will provide leadership to convene stakeholders and facilitate the development of local alternative energy sources and increased efficiency in utilities resulting in declining annual emissions measured by mCO₂e/mBtu.</p>	Learning opportunities from Gunnison County regarding what they have already implemented to work towards their GHG reduction goal.
Gunnison Valley Housing Needs Assessment and Supporting Documents	Up to 330 homes in the North Valley (Crested Butte and Mt. Crested Butte) were identified as being in Fair/Poor condition. Among respondents, energy efficiency improvements such as insulation and windows are the most common needed.	Consider this housing stock as the most likely target for emissions reductions.
	Aging rental inventory was identified as a critical barrier for the Valley, with the inability of lower income homeowners to make necessary repairs and upgrades.	<p>There could be alignment between the need to update rental stock and the CAP desire to reduce energy.</p> <p>Also consider strategies to increase energy efficiency improvement projects amongst lower income homeowners by assisting in the upfront cost of projects.</p>
	Weatherization and Home Improvement Loan programs are available for households below 80% area median income. This program has been used only occasionally.	Promote this program to boost participation, since the survey data shows homes in fair and poor condition are most often in need of energy efficiency upgrades.
	Energy efficiency was indicated as being moderately desired compared to other housing amenities. A garage, storage, pets allowed, in-unit laundry, and yard space all ranked Highly Preferred.	Retrofitting existing buildings to be more energy efficient has the co-benefit of making them more attractive to tenants. However, this is not a tenant's top concern when looking for a new housing. Consider education to make it more relevant to those looking to rent or buy a home.
	Parking, minimum unit size, setback, and open space requirements limit the feasibility of high density housing.	High density housing is often more energy efficient and affordable. Could we update these requirements to align with the need for housing and emissions reductions?
	Up to 960 new units are predicted to be needed by 2020 in the combined Valley and about 45% of those are predicted to need additional support outside of the traditional market to aid development such as updated policies, funding, and collaborative strategies.	If there are green building codes homes will be more expensive; because of that, the 45% may increase, meaning more houses will require support by government incentives. However, this does provide an opportunity for housing to be built to high sustainability standards.
Of houses in the Valley, 52% are heated by non-electric means.	About half of all homes represent potential emissions savings from switching to electric heat.	

REVIEW OF CRESTED BUTTE EXISTING PLANS



Transportation

Document	Finding	Climate Action Plan Considerations
Transportation Plan and Supporting Documents	Goal: Maintaining a safe pedestrian and bike-oriented community where use of a car is optional.	Potential area of alignment between CAP stakeholder priority to reduce SOV use and Transportation Plan goals.
	Goal: Free parking that allows visitors and residents to walk, bike, or take transit to destinations around town.	New or updated parking infrastructure represents opportunity for construction of public EVSE to support greater EV penetration in the Town, and the potential to decrease SOV use if properly sited.
	Traffic analysis projects 27% total growth in volume entering Crested Butte on SR135 by 2035, increased congestion on Elk Avenue, and several intersection failures.	Growth in traffic into and within Crested Butte represents increased GHG emissions from transportation. We need to account for this increase when understanding how transportation GHG emissions will trend. They may go up despite efforts if the number of new cars on the road outpaces the savings from the CAP strategies.
	GCEA efforts include an EV loaner program and promotion and installation of charging stations.	Work with GCEA to align CAP strategies with current efforts and resources.
	Identified funding mechanisms for transportation projects are a highway use tax fund, a 1% transportation sales tax, a mill levy property tax, CDOT funding, and other grants. Voter-approved bonds can fund one-off projects.	Established funding mechanisms should be reviewed for alignment, limitations, and opportunities to support CAP transportation goals and strategies.
	Planned projects with possible CAP alignment: <ul style="list-style-type: none"> • Parking structure • New sidewalks • Completion of Perimeter Trail • Expand bus service: CB South service, late night service to Gunnison, continue to Gothic, special event service, regional bus to connect to Denver • New bike lanes 	Revisit Transportation Plan to be in alignment with Town Climate Action goals.
	Planned policies with possible CAP alignment: <ul style="list-style-type: none"> • Update development codes • Evaluation parking fee • Update codes for bike parking 	New or updated policies present opportunity to incorporate language to further CAP goals. What planned policies are in the works, or what should we suggest as part of the CAP?
	The current Town vehicle fleet consists of gasoline vehicles (45%), diesel vehicles (45%), and EVs (10%).	The current fleet represents opportunity for greater electrification and Town operations' GHG reduction. The LCA of replacing a new ICE vehicle with an EV needs to be weighed.
	Vehicles with readily available EV replacements: ~50% Filtered for older vehicles (>5 years): ~28%	Only half of the Town's vehicles represent makes and models that are easily replaceable with current EV vehicles. Under one-third of the Town's vehicles are older than 5 years. These age and replacement availability considerations will limit the potential for fleet electrification as a component of the CAP.

REVIEW OF CRESTED BUTTE EXISTING PLANS



Transportation

Document	Finding	Climate Action Plan Considerations
Gunnison Valley Housing Needs Assessment and Supporting Documents	About 63% of residents drive their own car to work as their primary means of transportation. Another 27% bike/walk. Only 10% of employees either carpool/vanpool or take a bus as their primary means of travel.	This finding represents opportunity to reduce emissions through more effective non-SOV transportation infrastructure. Inter-valley transportation solutions must be considered as 79% of mid-valley residents commute to the north valley (Crested Butte) for work.
Town of Crested Butte Sustainability Projects (from website)	Two charging stations and three EVs for staff use. All vehicle purchases must be evaluated for fuel efficiency.	There is an opportunity to build on the successes of these actions and learn how they can be improved for future strategies.
Gunnison County Strategic Plan	By December 31, 2020, 26 municipal fleet vehicles will have been replaced by natural gas vehicles from the 2016 baseline.	Do county vehicles contribute to Crested Butte's GHG baseline?
	By December 31, 2020, Gunnison County will have an additional funding stream for road and bridge infrastructure, construction and maintenance, so that residents and visitors can safely travel on County roads, conduct business, and pursue recreational interests.	Could the Town partner with the County on some of these projects so as to reach CAP goals?



Photo: Lydia Stern

REVIEW OF CRESTED BUTTE EXISTING PLANS



Waste

Document	Finding	Climate Action Plan Considerations
Town of Crested Butte Sustainability Projects (from website)	Operating a biosolids composting program to decrease the number of loads that must go to landfill, installation of seven solar trash compactors to reduce trash pickups.	Assess the GHG emissions reductions associated with these activities and determine how they can support CAP strategies.
Waste Management and Supporting Documents	GHG savings of 28.6 tons of emissions and 27,989 kWh of electricity as a result of April 2019 recycling activities and 37.5 tons of emissions and 36,191 kWh of electricity as a result of May 2019 recycling activities.	Assess current recycling rate to determine potential for greater GHG savings from increased recycling.
Waste Management and Supporting Documents	The recycling goal (30%) was not met for the majority of months in 2019.	Opportunity to increase GHG savings by understanding barriers to reaching the 30% goal. Additionally, review the 30% goal to assess viability of a higher diversion rate and associated GHG savings.
Waste Management and Supporting Documents	Non-recyclables and Excluded Materials listed in the Crested Butte Refuse and Recycling Collection and Disposal Agreement	The effect of recycling activities is limited by the materials included in the contract as recyclable. Assessing this list to determine if additional materials can be categorized as recyclable offers potential for increased GHG reductions.
Waste Management and Supporting Documents	“WMI shall collect, process, and dispose of, at least once each calendar week, all trash, rubbish...”	The ability to reduce waste-related emissions is limited by the current pickup requirements. Assess the need for weekly pickups and viability for a biweekly pickup schedule to reduce emissions resulting from trash collection vehicles.
Waste Management and Supporting Documents	“WMI agrees in principal to assist the Town with developing a future Town-Wide Green Waste Program.”	Calculate the potential GHG reduction from such a Green Waste Program and consider for inclusion in CAP.
Waste Management and Supporting Documents	“At least 60 days prior to the expiration of each Term or Renewal Term, the Town may renegotiate the list of recyclables to include any additional materials desired by the Town.”	A broadened definition of recyclable material has the potential to create a higher waste diversion rate and for greater GHG savings. However, this solution will be bound to the timeline (60 days before end of contract) that is laid out.

REVIEW OF CRESTED BUTTE EXISTING PLANS



Renewable Energy

Document	Finding	Climate Action Plan Considerations
Gunnison County Strategic Plan	By December 31, 2021, Gunnison County will support the development and implementation of a coal mine methane capture, mitigation, and/or utilization strategy to decrease the GHG impacts of coal mine methane being emitted from the North Fork valley by 85%.	Represents potential for local baseload electricity generation from coal mine methane capture activities or local REC generation.
Gunnison County Strategic Plan	By December 31, 2030, Gunnison County will provide leadership to convene stakeholders and facilitate the development of local alternative energy sources and increased efficiency in utilities resulting in declining annual emissions measured by $mCO_2e/mBtu$.	Gunnison County could develop a regional CAP based on Crested Butte's to make it a more holistic plan - in terms of renewable energy this may be important.
Gunnison Valley Housing Needs Assessment and Supporting Documents	About 43% of employers in the valley add to their employment in the summer and 21% add to their employment in the winter.	When procuring or building renewable energy the effect of seasonality on peak demand must be factored in. Another consideration is that offsetting via RECs could provide a flexible way to make up for additional energy use that is not supplied by renewables during peak seasons.
Town of Crested Butte Sustainability Projects (from website)	<p>On December 17, 2018, the Town Council adopted a new solar policy to help streamline the process for building owners pursuing solar for their building. The Town also:</p> <ul style="list-style-type: none"> • Installed solar arrays on the Clarifier building with potential for more panels • Planned solar array for new transit facility • Ordinance requiring mitigation of outdoor heated areas with fee or solar • Facilitated design guideline amendments <p>Took part in the Sunshot program, and received technical assistance, resources, customized best practices, etc.; access to training and meetings; and potentially even a stipend to cover staff time.</p>	Use these initiatives as an opportunity to build on the successes of these actions and learn how they can be improved for future strategies. If still available, leverage the resources from the Sunshot program when developing solar strategies for the CAP.

APPENDIX B

REVIEW OF BEST PRACTICES IN NEIGHBORING TOWNS



The following towns represent peers similar in size, economy, and climate to the Town of Crested Butte. They also have publicly stated GHG emission reduction goals with sufficient supporting detail to extract insights and best practices relevant to the Crested Butte CAP.

REVIEW OF BEST PRACTICES IN NEIGHBORING TOWNS



For comparison, the statistics for Crested Butte are as follows:

Population: 1,681 (2017)

Households: 725 (2010)

Total Housing Units: 1,098

Vail (Municipal 2006 GHG Emissions: 11,862.9 mt CO ₂ e)		Aspen (Total 2017 GHG Emissions: 305,319 mt CO ₂ e)	
Population: 5,425 (2017)	Households: 2,604 (2010)	Population: 7,097 (2017)	Households: 3,516 (2010)
	Total Housing Units: 7,210		Total Housing Units: 6,219
GHG Mitigation Goal		GHG Mitigation Goal	
Reduce municipal and community energy use by 20% from 2006 levels by 2020 (no GHG specific goal found)		Reduce community emissions 30% by 2020 and 80% by 2050 below 2004 levels	
Renewable Energy Goals		Renewable Energy Goals	
<ul style="list-style-type: none"> Utility relationship: Cooperative, Holy Cross Energy. Holy Cross Seventy70Thirty: increase renewable energy share to 70% renewable by 2030, and decrease the GHG emissions associated with the power supply by 70%. 		<ul style="list-style-type: none"> Utility relationship: Purchase 30% from Aspen Electric (Municipal, 100% renewable in 2015) and 70% from Holy Cross Energy (Cooperative, 30% renewable in 2015). Natural gas is supplied by Black Hills Energy. Decarbonize Aspen's energy supply. Enable and maximize the regional production and consumption of more renewable energy. Support relevant state and federal policies through active legislative and regulatory engagement. 	
Building Energy Efficiency Goals		Building Energy Efficiency Goals	
<ul style="list-style-type: none"> Goal: Implement a sustainable building code program that requires new construction and major renovations (municipal and community) to achieve designated resource and energy efficiency targets. Action items include: <ul style="list-style-type: none"> Require all Town-funded remodel projects to exceed the IECC by at least 15% on retrofits. Require ENERGY STAR or better products when available for all new equipment. Use strategic tree planting to reduce cooling loads of buildings. Educate the public on the adopted green building program and provide information and services at the Department of Community Development. 		<ul style="list-style-type: none"> Apply all objectives in the Toolkit to achieve an 86% reduction by 2050 in residential GHG emissions through energy efficiency measures for new and existing residential buildings. Apply all objectives in the Toolkit to achieve an 86% reduction by 2050 in commercial GHG emissions by promoting benchmarking and reporting, enhancing energy efficiency in new developments, bringing existing buildings up to current building codes, retrofitting government buildings as a model, and optimizing utility rates. 	
Clean Transportation Goals		Clean Transportation Goals	
<ul style="list-style-type: none"> Goal: Reduce the environmental impact of transportation by supporting efforts within the Eagle Valley to decrease total VMT by commuters and guests by 20% by 2020. Operates eight hybrid busses on its in-town routes as well as several hybrid municipal fleet vehicles. 		<ul style="list-style-type: none"> Apply all objectives in the Toolkit to achieve an 80% reduction by 2050 in transportation-related GHG emissions by promoting alternatives to SOVs, enhancing first and last mile connectivity to transit, supporting the adoption of alternative fuel vehicles, redesigning urban form and population density, promoting new mobility technologies, increasing the cost of driving, and supporting federal and state policies. 	

REVIEW OF BEST PRACTICES IN NEIGHBORING TOWNS



For comparison, the statistics for Crested Butte are as follows:

Population: 1,681 (2017)

Households: 725 (2010)

Total Housing Units: 1,098

Dillon (*Total 2017 GHG Emissions: 33,702 mt CO₂e*)

Population: 1,062

Households: 455

Total Housing Units: 1,290

GHG Mitigation Goal

May 2019: Adopted the Summit County CAP to support a countywide emissions reduction of 50% by 2030 and 80% by 2050 from 2017 levels

Renewable Energy Goals

- Utility relationship: IUO, Xcel Energy
- Reduce emissions from electricity use 100% by 2035 by adopting the IECC, participating in NREL's SolSmart program, and considering Xcel Energy's renewable electricity programs.

Building Energy Efficiency Goals

- Support reducing building emissions 21% by 2030 and 36% by 2050 countywide from residential and commercial buildings by adhering to the Summit Sustainable Building code, tracking municipal energy use, and identifying buildings from energy efficiency improvements, hosting LED bulb giveaways.

Clean Transportation Goals

- Support reducing transportation emissions 25% by 2030 and 91% by 2050 countywide by developing and implementing a communitywide EV Readiness Plan and provide incentives to use public transportation.



APPENDIX C

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ACKNOWLEDGEMENTS



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