SUMMIT COMMUNITY CLIMATE ACTION PLAN:

STRATEGIES FOR A SUSTAINABLE FUTURE

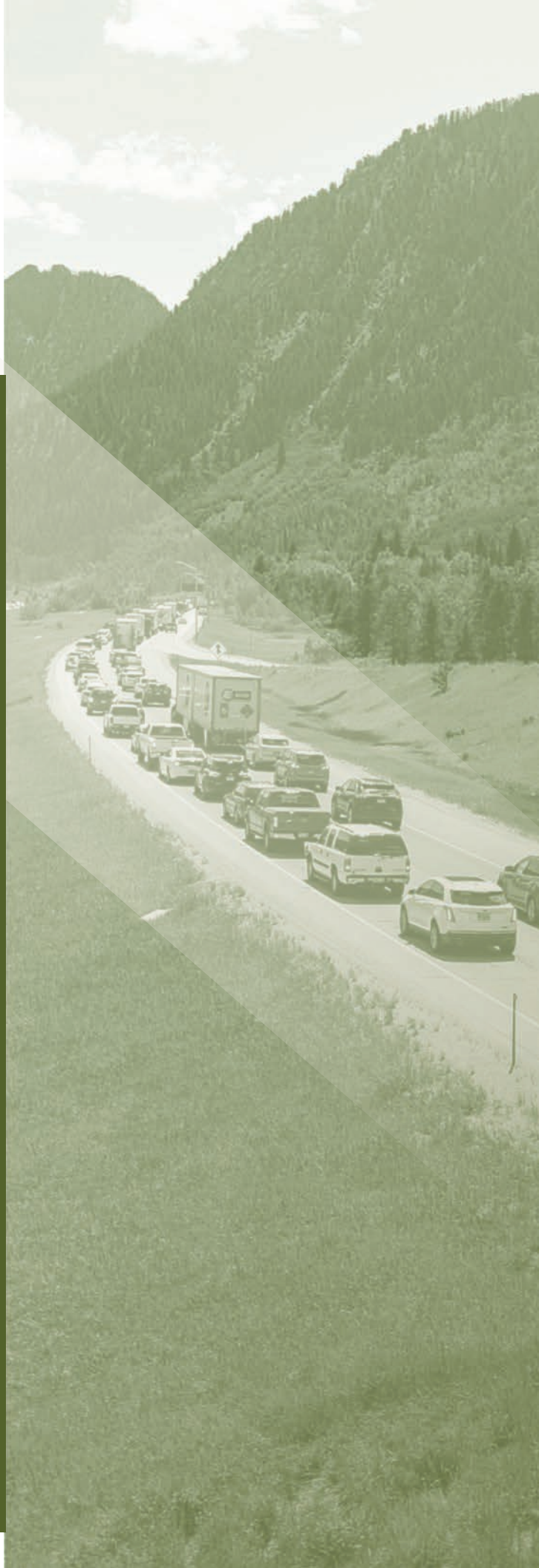
PREPARED BY: SUMMIT CLIMATE ACTION COLLABORATIVE

Bill Linfield

VISION STATEMENTS

WE BELIEVE THAT OUR COMMUNITIES WILL...

- be powered in ways that protect our vibrant mountain resources.
- maximize energy efficiency and lead in green design.
- design multi-modal transportation systems that discourage fossil fuel consumption.
- conserve natural resources through striving for zero waste.
- value healthy forests and understand their beneficial climate and environmental impacts.
- inspire residents and visitors to reduce emissions through outreach and leadership.



Hugh Carey

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ACKNOWLEDGMENTS

The development of the Summit Community Climate Action Plan would not have been possible without the support and input of the Summit Climate Action Collaborative as well as expert group participants. Many of the organizations represented in the Collaborative also helped fund the project.

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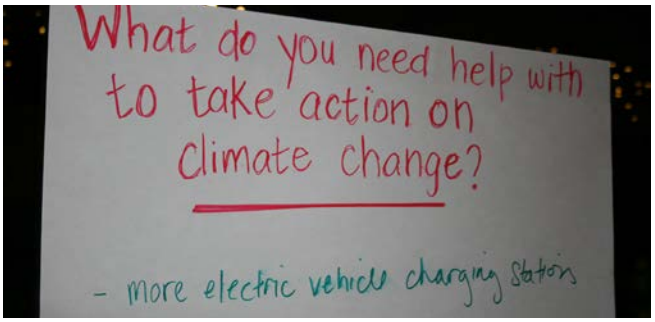
On November 14th, 2018, over 60 community members attended an open house to add their thoughts, concerns and comments to the initial goals and strategies developed by the expert and Collaborative groups. This community feedback is included throughout the Climate Action Plan.



Barry Rubenstein

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Lotus Engineering and Sustainability facilitated the planning process and compiled this report, in partnership with High Country Conservation Center.

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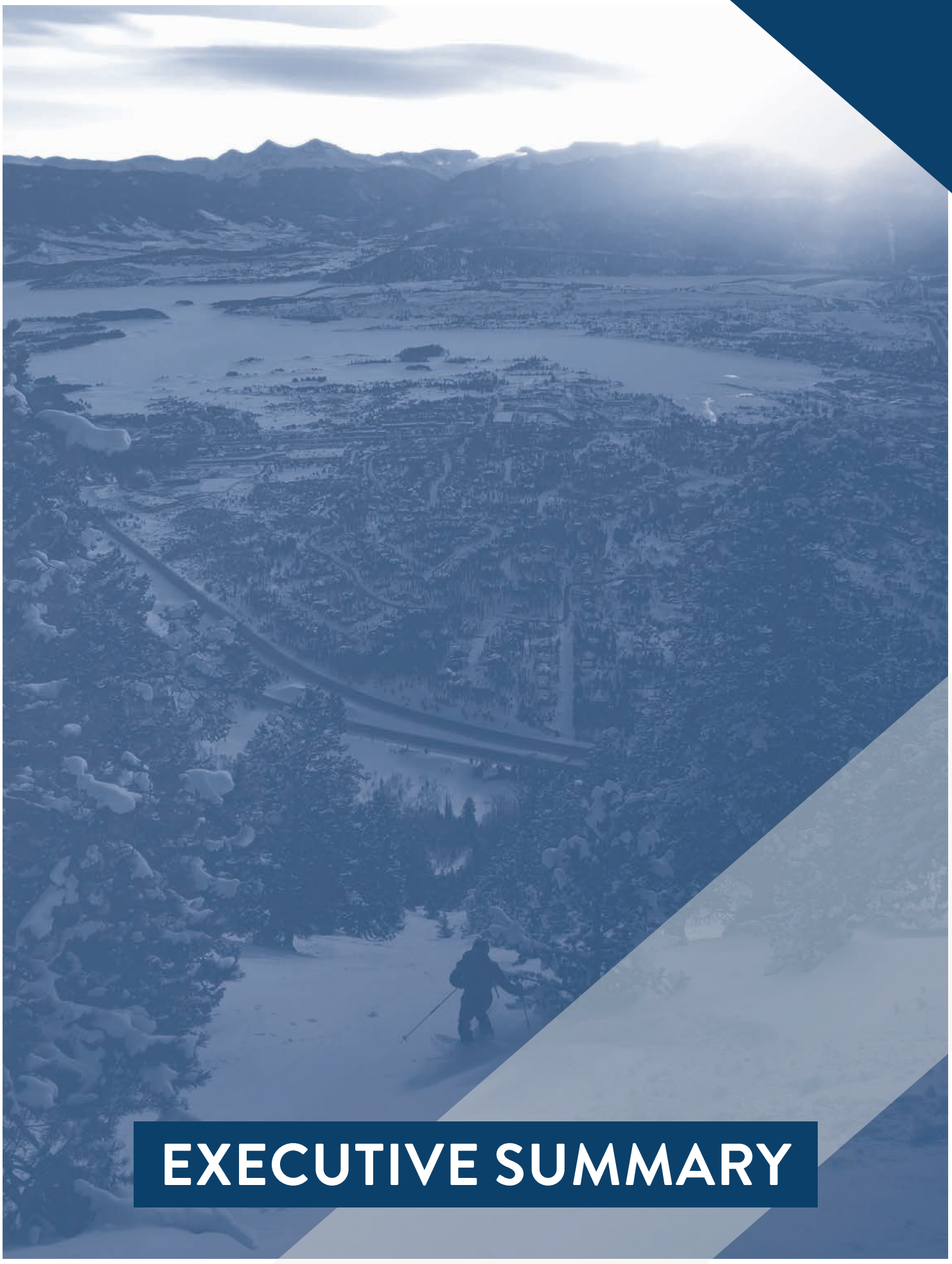


EXECUTIVE SUMMARY

Jason Lederer

SUMMIT COUNTY, LIKE ALL COMMUNITIES ACROSS THE WORLD, WILL BE IMPACTED SIGNIFICANTLY BY THE EFFECTS OF CLIMATE CHANGE. Our way of life relies on the very environment in which we are located—the beautiful Rocky Mountains – and we recognize our responsibility to take a leading role in mitigating climate change. Average temperatures in Colorado have increased 2 degrees Fahrenheit over the past 30 years, with an additional 2 to 5 degrees warming expected by 2050.[1] These changes will affect the quality and length of ski seasons, and a change in visitation patterns would drastically affect our local economy and lifestyle.

Realizing our collective responsibility to mitigate greenhouse gas emissions and do our part to prevent climate change, High Country Conservation Center (HC3) convened the Summit Climate Action Collaborative in 2018. The Collaborative hired Lotus Engineering and Sustainability, LLC (Lotus) to support the development of the Summit Community Climate Action Plan and complete an initial community-wide greenhouse gas inventory for 2017. As with many communities, emissions in Summit County are largely generated through energy use in buildings (65 percent) and transportation (33 percent). Lotus also worked with the Collaborative to help us understand strategies for reducing emissions, which were then modeled for greenhouse gas emission reduction potential.

The Collaborative group acknowledges that we do not yet have perfect solutions to reach the plan's goals. However, we strongly believe in the ability of our community to work together to implement the strategies identified in this Climate Action Plan and make our vision of a sustainable Summit County a reality. We look forward to engaging residents, businesses, and visitors in these efforts. Moving forward, HC3 and the Collaborative members will work with each of the municipalities in Summit County to ensure this plan is adopted and supported within each jurisdiction. The Collaborative will also publish a progress report on the Climate Action Plan on an annual basis. Further, HC3 will complete an updated greenhouse gas emissions inventory every three years to determine whether we are on-track to meet our goals.

CLIMATE ACTION PLAN SECTORS

RENEWABLE ENERGY

BUILDING ENERGY

TRANSPORTATION

WASTE

FORESTS

[1] Colorado Water Conservation Board. (2014). Climate Change in Colorado: A Synthesis to Support Water Resources Management and Adaptation. https://wwa.colorado.edu/climate/co2014report/Climate_Change_CO_Report_2014_FINAL.pdf

OUR COMMITMENT TO CURRENT AND FUTURE GENERATIONS

REDUCE EMISSIONS 50% BY 2030 AND 80% BY 2050

To achieve our emissions reduction goals, the Collaborative members identified impactful strategies to reduce our community's emissions. While the strategies selected are not projected to fully realize these goals, we remain committed to identifying additional strategies and technologies that can further help us reduce our emissions in the coming years.

Within the Climate Action Plan, emissions reduction strategies are grouped by the sector that they impact most directly. A brief description of the goals and key strategies within each sector are provided in the following pages.

RENEWABLE ENERGY SECTOR

VISION: Our communities will be powered in ways that protect our vibrant mountain resources.

SECTOR GOAL: Reduce emissions from electricity use 100 percent by 2035.

Bill Linfield

Our community-wide commitment to 100 percent renewable energy builds on existing initiatives from Arapahoe Basin, Summit County Government, the Town of Breckenridge, and Vail Resorts. By establishing a common goal across the county, our communities can work together to ensure we uphold our individual and mutual commitments.

KEY STRATEGIES

- Encourage all jurisdictions to adopt or support renewable energy goals and work with utilities to achieve these goals.
- Advocate at the state and local level for a rapid increase in the amount of renewable energy on the grid.
- Increase education about renewable energy and make it easier to install renewable energy on homes and businesses.

BUILDING ENERGY SECTOR

VISION: Our communities will maximize energy efficiency and lead in green design.

SECTOR GOAL: Reduce emissions from building energy use 21 percent by 2030 and 36 percent by 2050.

Through a combination of policies, education, and financial tools, we will ensure that residents, businesses and visitors benefit from more energy efficient and healthier buildings.


Innovative Energy

KEY STRATEGIES

- Adopt and enforce the most updated version of the International Energy Conservation Code for buildings and develop an above-building-code standard for new construction.
- Require energy reporting for large commercial buildings.

TRANSPORTATION SECTOR

VISION: Our communities will design multi-modal transportation systems that discourage fossil fuel consumption.

SECTOR GOAL: Reduce emissions from transportation 25 percent by 2030 and 91 percent by 2050.

To significantly reduce emissions in the transportation sector, our communities will ensure that multimodal connectivity and access are key considerations in community growth and expansion, increase the use of public transit systems, and support the adoption of electric vehicles. These actions will also have additional positive community impacts such as improved air quality through less tailpipe pollution, reduced congestion, and an improved visitor experience.

KEY STRATEGIES

- Support the adoption of more electric vehicles through expanded infrastructure and incentives.
- Provide incentives to use public transit within Summit County.


Barry Rubenstein

WASTE SECTOR

VISION: Our communities will conserve natural resources through striving for zero waste.

SECTOR GOAL: Reduce emissions from waste 50 percent by 2030 and 90 percent by 2050.


Hugh Carey

Summit County will expand waste reduction and recycling programs, encourage less consumption and more re-use, and make recycling and composting easy and economical for all residents and business owners. By doing this, our communities will reduce the use of natural resources and increase the landfill diversion rate.

KEY STRATEGIES

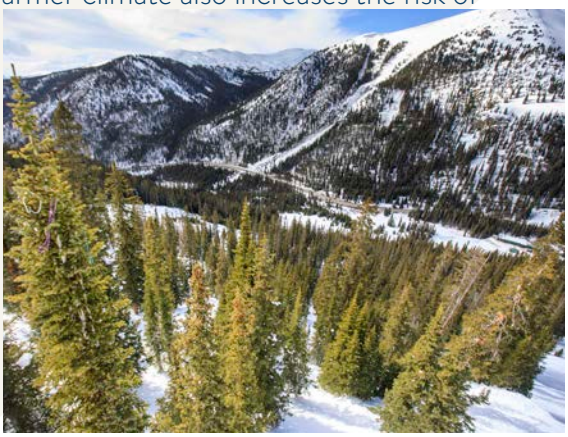
- Adopt a Save-As-You-Recycle ordinance across the county.
- Work with waste haulers to implement a curbside food scrap collection program.

FORESTS SECTOR

VISION: Our communities will value healthy forests and understand their beneficial climate and environmental impacts.

SECTOR GOAL: Maintain forest cover in Summit County and improve forest resilience to climate impacts.

In recent years, the county has seen an uptick in forest fires, and a warmer climate also increases the risk of pest infestation. Finding ways to improve the health of Summit's forests in the face of a changing climate can reduce these risks, while also preserving the trees' capacity to store carbon.



KEY STRATEGIES

- Improve the understanding of forest health in a changing climate.
- Educate and advocate for the important role of forests with regard to climate change.

INTRODUCTION

Hugh Carey

SUMMIT COUNTY IS AN AMAZING AND BEAUTIFUL PLACE. Our community is home to four internationally recognized ski resorts, year-round outdoor activities that attract millions of visitors annually, and stunning national forest. As a resort community heavily dependent on our natural resources, Summit County already has been and will continue to be significantly impacted by the onset of climate change.

Average temperatures in Colorado have increased 2 degrees Fahrenheit over the past 30 years, with an additional 2 to 5 degrees Fahrenheit warming expected by 2050.[2] In the fall when ski areas rely on snowmaking to cover the slopes, nighttime low temperatures are rising at a fast rate, delaying early season snowmaking and making it less efficient. At the end of the season, snow is melting 15 – 30 days earlier than in the late 1970s, cutting ski season short. [3] Springtime snowpack levels have decreased at most monitoring sites since 1955, and most projections for the state's river basins show decreasing annual runoff and less overall water supply.[4] Even the trees are feeling the heat. Summit County's forests have been especially affected by the mountain pine beetle – leaving our community at risk of significant fire danger and erosion.

DID YOU KNOW?

Because of increased temperatures, water flow in the Colorado River is anticipated to reduce up to 40 percent by 2100.[6]

If worldwide greenhouse gas emissions are not curtailed soon, Summit County could experience increased drought, heat, fire danger, and significantly more winter precipitation falling as rain rather than snow. In 2010, Colorado hosted 12 million skier visits (approximately 20 percent of total United States skier visits) which accounted for 37,000 employees earning $1.2 billion in wages and contributed $2.2 billion in value to the Colorado economy.[5] A reduction in skiers and winter tourists due to decreased snow pack could drastically affect our local economy and lifestyle. Lastly, a growing population across the state and in Summit County will place increased pressure on water supplies and could create conflict between water-intensive industries like recreation, agriculture, and municipal use.

[2] Natural Resources Defense Council and Protect our Winters. (2012). Climate Impacts on the Winter Tourism Economy in the United States. http://protectourwinters.org/climate_report/report.pdf

[3] Colorado Water Conservation Board. (2014). Climate Change in Colorado: A Synthesis to Support Water Resources Management and Adaptation. https://wwa.colorado.edu/climate/co2014report/Climate_Change_CO_Report_2014_FINAL.pdf

[4] United States Environmental Protection Agency. (2016). What Climate Change Means for Colorado. https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-co.pdf

[5] Natural Resources Defense Council and Protect our Winters. (2012). Climate Impacts on the Winter Tourism Economy in the United States. http://protectourwinters.org/climate_report/report.pdf

[6] Jonathan Overpeck and Brad Udall. (2017). Climate Change is Shrinking Our Rivers. https://theconversation.com/climate-change-is-shrinking-the-colorado-river-76280

Hugh Carey

A COMMUNITY EFFORT

This Climate Action Plan is a continuation of work undertaken in 2015 through Xcel Energy's Partners in Energy program. Through Partners in Energy, we laid the foundation for the Summit Climate Action Collaborative and created our community's first-ever greenhouse gas reduction goals. Other foundational documents include the 2009 Frisco CleanTracks Plan, the 2011 SustainableBreck Plan, and the 2011 Summit County Energy Action Plan. This Climate Action Plan builds upon that work by establishing larger goals and mapping out additional actions needed to create a more sustainable and resilient future.

VOICES FROM THE COMMUNITY

"Climate change is important to me because I've seen the climate changes first-hand in the 25 years I've lived in Summit County. It's concerning to think what the next 25 years will look like."

– Citizen Comment –

EXPERT GROUPS

The planning process included input from five subject-specific expert groups. These groups included building energy, mobility and transportation, water and sanitation, forests, and public engagement. The expert groups generated and prioritized sector-based emissions reduction strategies for further consideration by the Collaborative members.

SUMMIT CLIMATE ACTION COLLABORATIVE

Over a six-month period, the members of the Summit Climate Action Collaborative were charged with further refining the strategies, setting targets and overarching greenhouse gas reduction goals, and creating vision statements for the Climate Action Plan. The Collaborative is committed to working together to achieve the plan's goals and will share responsibility for implementing the strategies outlined in the plan. High Country Conservation Center serves as the facilitator for this group.

Moving forward, each year the Collaborative will report publicly on the progress of this Climate Action Plan. In addition, HC3 will measure greenhouse gas emissions every three years to ensure that we are reducing emissions at the rate needed to achieve our goals.

OUR GOAL IS TO REDUCE COMMUNITYWIDE EMISSIONS 50% BY 2030 AND 80% BY 2050.

WHY MORE ACTION IS NEEDED

Climate action is not new to Summit County. Our local citizens, municipalities, and companies have been working to decrease greenhouse gas emissions for several years, and we recognize that a stable climate is essential to ensure a vibrant, healthy, and economically viable future for Summit County.

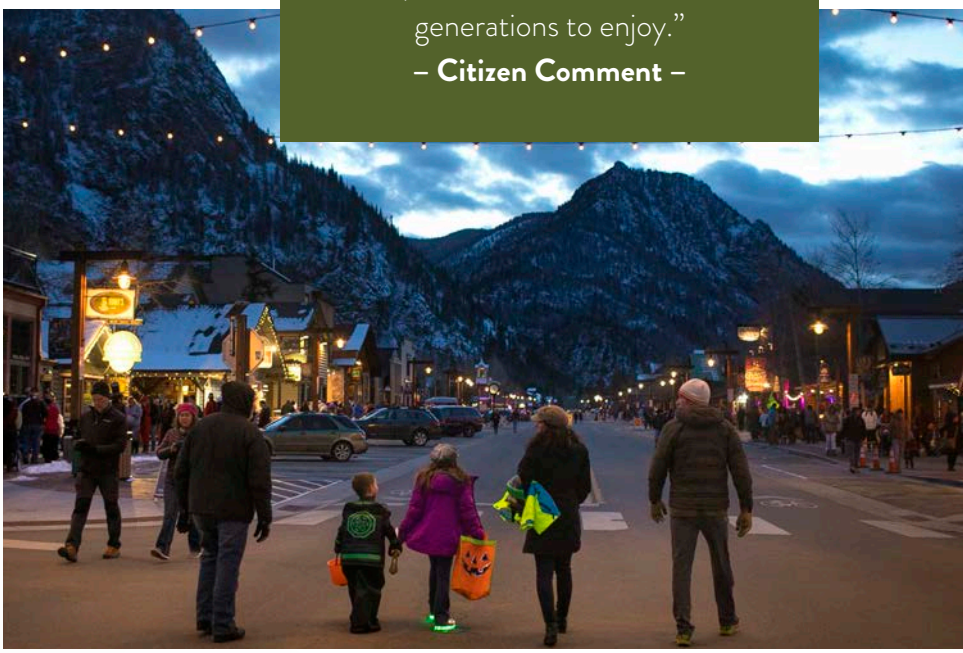
Between 2017 and 2018 alone, communities and businesses in Summit County have made great strides in local climate action including:

- Summit County and the Town of Breckenridge committed to communitywide 100 percent renewable electricity by 2035.
- Vail Resorts, Inc. — owner of Breckenridge and Keystone Ski Resorts — announced its Commitment to Zero which includes zero net emissions by 2030, zero waste to landfill by 2030, and zero net operating impact on forests and habitat by 2030.
- Arapahoe Basin announced its goals to achieve carbon neutrality, a 75 percent waste diversion rate, and 100 percent renewable electricity all by 2025.
- Summit County voters passed a property tax to increase funding for waste reduction programs.
- The towns of Breckenridge and Frisco and Summit County Government joined the Compact of Colorado Communities, a consortium of local governments committed to addressing the impacts of climate change.

VOICES FROM THE COMMUNITY

"I care about leaving a healthy planet behind for future generations to enjoy."
– Citizen Comment –

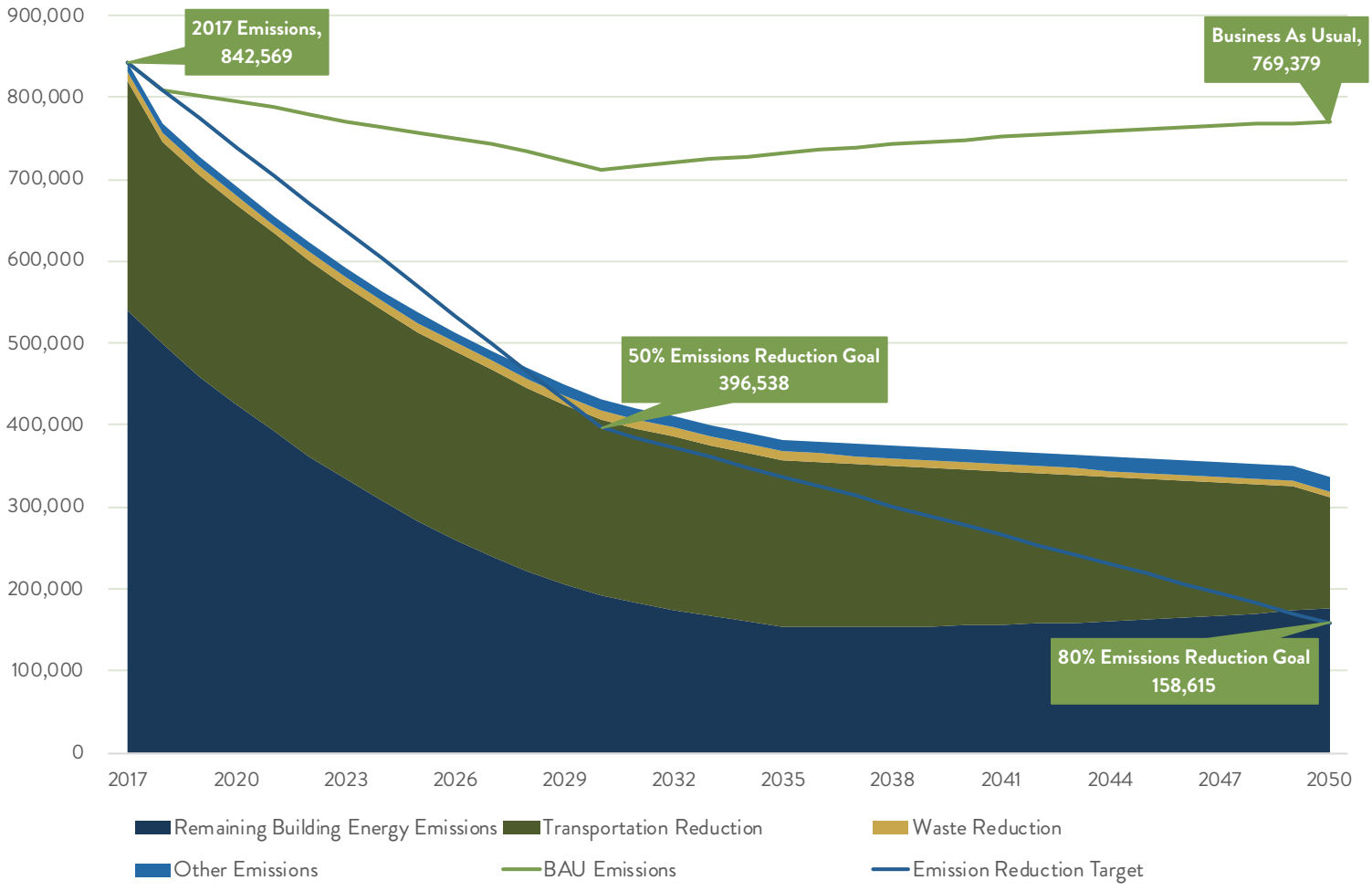
Innovative Energy



Hugh Carey

Yet without further action, the community's greenhouse gas emissions will decrease only 3 percent by 2050. This decrease is due to Xcel Energy's greenhouse gas reduction targets, which are included in the Business As Usual scenario shown in Figure 1. Building upon its commitment to providing 55 percent renewable energy by 2026, Xcel plans to reduce carbon emissions 80 percent by 2030 and to deliver zero-carbon electricity by 2050. In addition, the business-as-usual scenario includes the recently announced low-emission vehicle standards signed by Governor Hickenlooper in 2018.[7] Despite Xcel Energy's announcement and future low-emission vehicle standards, Summit County's emissions are anticipated to stay relatively flat due to expected increases in population, development, and visitation.

FIGURE 1: GHG REDUCTIONS FROM STAKEHOLDER STRATEGIES ($MTCO_2e$)



[7] David Migoya. (2018). Colorado Will Adopt California-Style Low-Emission Vehicle Standards Under Hickenlooper Order. The Denver Post. https://www.denverpost.com/2018/06/19/colorado-california-emission-vehicle-standards/

GREENHOUSE GAS INVENTORY SUMMARY

Hugh Carey

GREENHOUSE GAS INVENTORY SUMMARY

In 2018, the Summit County community completed its first greenhouse gas inventory to better understand our emissions profile and to give insight to policies and programs that could help reduce emissions in our region.

The data indicate that our communities have unique challenges in terms of greenhouse gas emissions. For example, Summit County is among the most visited ski destinations in the world. Peak seasonal daily population is nearly 150,000 people – a stark increase over the year-round resident population of approximately 30,000.[8] With millions of tourists visiting our community each year, it's likely that tourism has a larger impact on emissions than our year-round resident population.

DID YOU KNOW?

Flying from New York to Los Angeles (5,000-miles round-trip) produces more than two metrics tons of carbon dioxide. Based on U.S. averages, you generate the same amount of emissions after driving your car for five months.

The following are a few key takeaways from the inventory:

- 842,569 metric tons of carbon dioxide equivalent ($MtCO_2e$) were produced in 2017. This is equal to the emissions from 179,000 cars driven for a year.
- As shown in Figure 2, more than half of emissions are generated in unincorporated areas of Summit County, followed by the larger towns of Breckenridge, Silverthorne, and Frisco. The high level of emissions in unincorporated Summit County is driven by two main factors: These areas are where more than half of the county's full-time residents live and where most ski areas' energy use occurs.
- The majority of Summit County's emissions arise from three sectors: commercial energy, residential energy, and transportation (see Figure 3).
- As shown in Figure 4, the single largest source of emissions is electricity, followed by natural gas and mobile gasoline. In 2017, approximately 28 percent of electricity came from renewable resources.

[8] Summit County Government. (2013). Summit County Multi-Hazard Mitigation Plan.

FIGURE 2:
EMISSIONS BY MUNICIPALITY, 2017

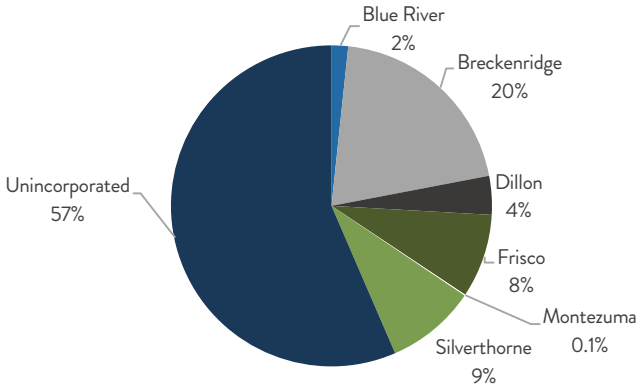


FIGURE 3:
EMISSIONS BY SECTOR, 2017

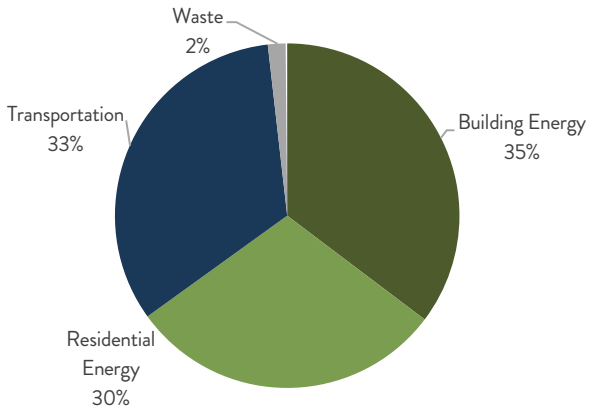
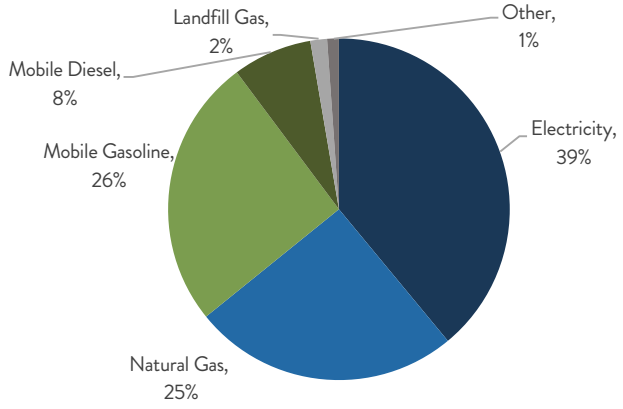


FIGURE 4:
EMISSIONS BY SOURCE, 2017




Hugh Carey

FORESTS

In addition to emissions from energy, transportation, and waste, Summit County's forests play a role in the overall carbon budget of the county. On the plus side, preliminary estimates for the years 2001-2011 suggest the county's forests sequester (that is, capture and store) around 10 percent of emissions from other sectors. However, there are emissions when development such as buildings, roads, or recreational areas result in a permanent loss of forest area. Emissions also occur from disturbances such as insects and fire, which may be temporary if the forest is restored. Forest greenhouse gas estimates will be updated in 2019 when new data becomes available.

OUR EMISSIONS REDUCTION GOALS

Jason Lederer

Our goal is to reduce greenhouse gas emissions 50% by 2030 and 80% by 2050 over a 2005 baseline.

Many of the Collaborative members hope that we can achieve these goals sooner than the target years we have chosen. While the strategies outlined in this plan include actions necessary to meet our community goals, the Collaborative also recognizes that changes and innovations in technology and the economy over the coming years may make new strategies applicable to our community. We remain open, engaged, and informed of additional opportunities to drive greater emissions reductions.

The strategies that follow are divided into the sectors they impact: 1) Renewable Energy, 2) Building Energy, 3) Transportation, 4) Waste, 5) Forests, and 6) Community Engagement. Throughout each section, strategies are listed in order of potential impact on emissions reductions, with the first strategy listed having the highest potential impact. Additionally, we have a set of strategies for Community Engagement, which, while not necessarily driving emissions reductions directly, will ensure greater success of our Climate Action Plan through engaging and empowering our whole community to participate. The Collaborative will begin implementing several of the plan's strategies in 2019, while others have a longer-term timeline.

Together, if all the strategies are implemented, the Summit County community could reduce emissions 60 percent by 2050 based on a 2005 baseline. In order to achieve our goal of reducing emissions 80 percent by 2050, will need to find cost-effective ways to decrease our dependence on natural gas heating.

Hugh Carey

RENEWABLE ENERGY

VISION: Our communities will be powered in ways that protect our vibrant mountain resources.

SECTOR GOAL: Reduce emissions from electricity 100 percent by 2035.

DID YOU KNOW?

Enough solar energy hits Colorado to power approximately 360 times the state's current electricity needs. [9]

WHERE WE ARE NOW

Currently, over 99 percent of the electricity used in Summit County is provided by Xcel Energy (Xcel). The remainder of homes and businesses are served by Mountain Parks Electric. In 2017, Xcel's energy mix consisted of 28 percent renewable resources. In the coming years, Xcel plans to rapidly increase the amount of renewable electricity on its grid, primarily from large-scale wind farms in the eastern plains of Colorado, as well as large solar installations. The company has committed to generating 55 percent renewable electricity by 2026 and zero-carbon electricity by 2050 (see Figure 6 and Figure 7).

FIGURE 6: 2017 XCEL ENERGY MIX

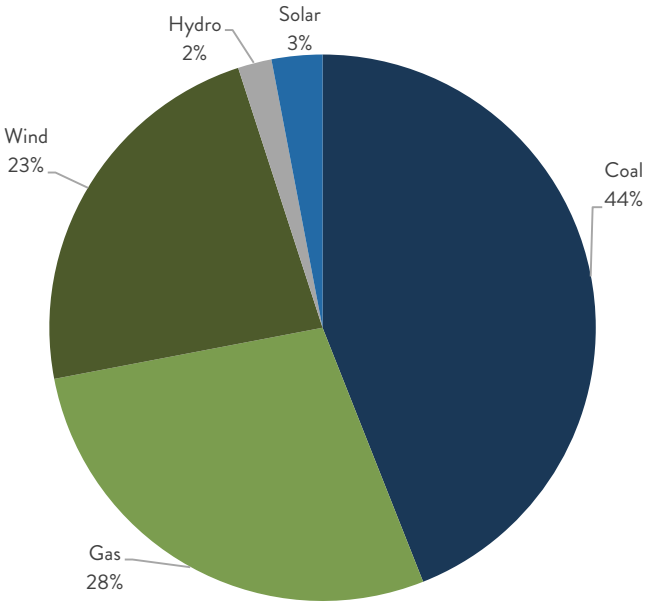
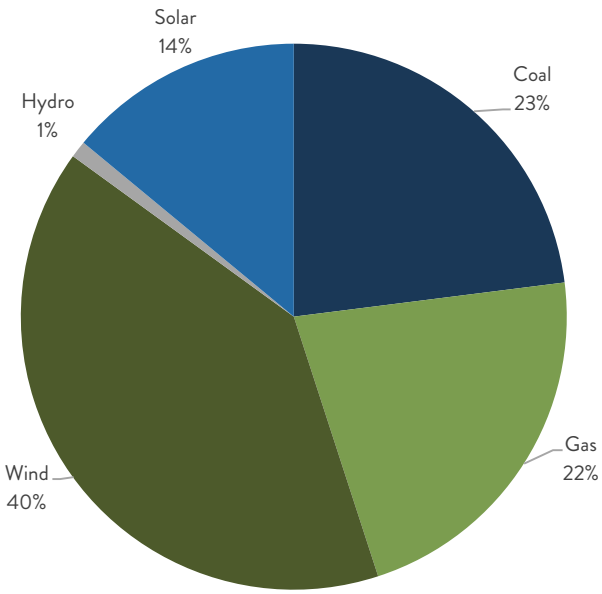


FIGURE 7: 2026 XCEL PROJECTED ENERGY MIX

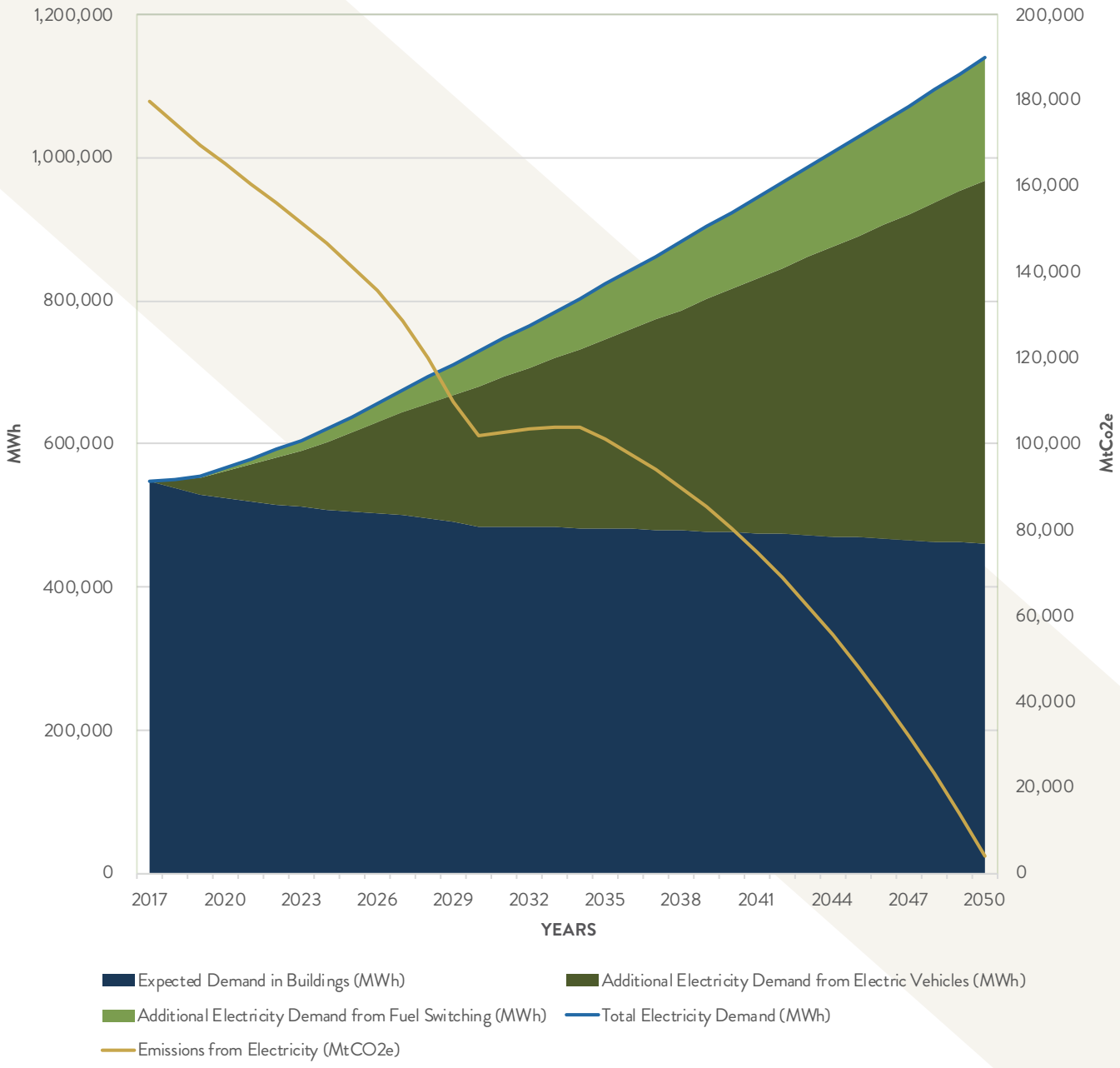


[9] Solar Energy Industries Association. Top Ten Solar States. https://www.seia.org/research-resources/top-10-solar-states

As shown in Figure 8, the demand for electricity in our communities is expected to rise. This projected increase is due to several factors, including:

- population growth, leading to more homes and businesses needing power;
- increased use of electric vehicles;
- increased snowmaking by the ski areas;
- increased demand for air conditioning during the summer months; and
- increased electric heating.

FIGURE 8: PROJECTED ELECTRICITY DEMAND



WHERE WE ARE HEADED

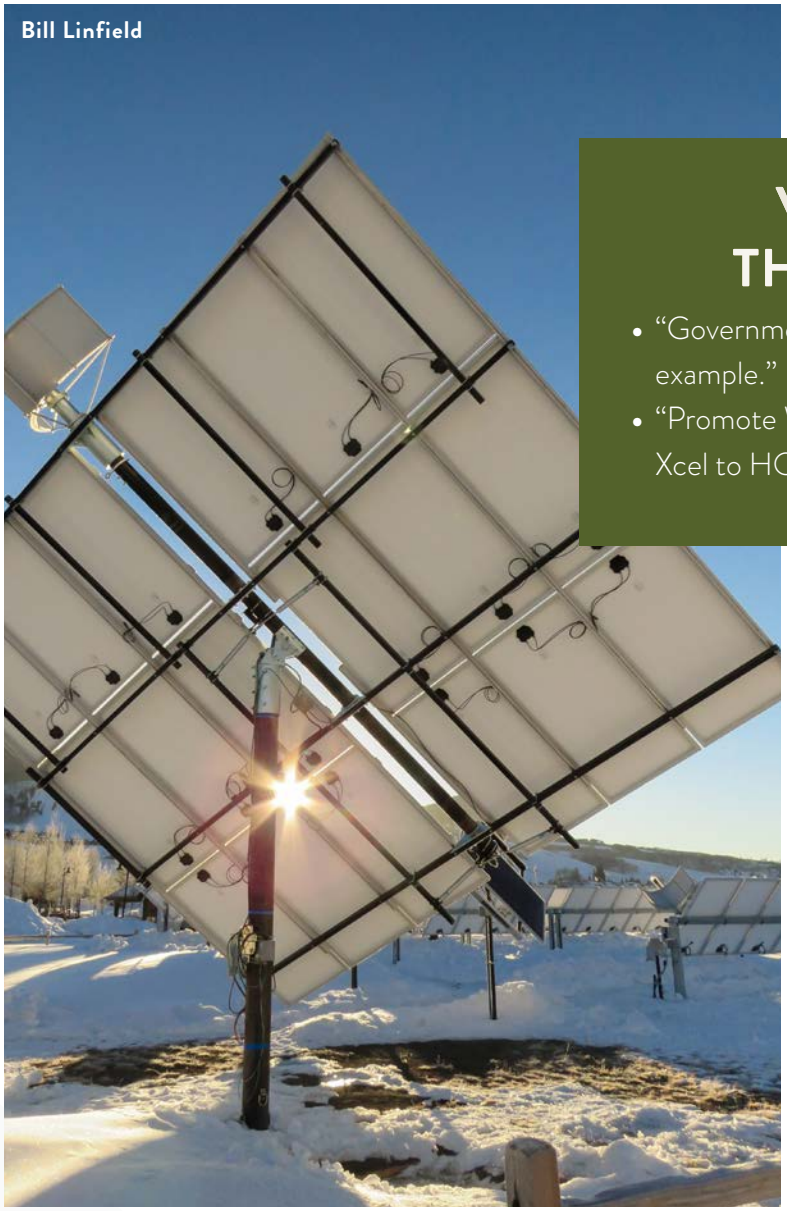
This community-wide commitment builds on existing initiatives within the county. Arapahoe Basin set a goal to be carbon neutral by 2025. Vail Resorts committed to 100 percent renewable electricity by 2020 and plans to be carbon neutral by 2030. The Town of Breckenridge committed to 100 percent renewable electricity for municipal operations by 2025 and 100 percent renewable electricity for the entire community by 2035. Summit County Government also set a goal of 100 percent renewable electricity by 2035. By establishing a common goal across the county, our community can work together to ensure we uphold our individual and mutual commitments. While renewable electricity goals are important to our community, they do not address emissions from natural gas use. To meet our goal, we need to decrease our reliance on natural gas as a heating fuel.

UNIQUELY SUMMIT COUNTY

- **Summit County receives an average of 245 days of sunshine a year.**
- **In 2017, locally produced solar and wind systems within Summit County's borders accounted for less than one percent of community electricity use.**

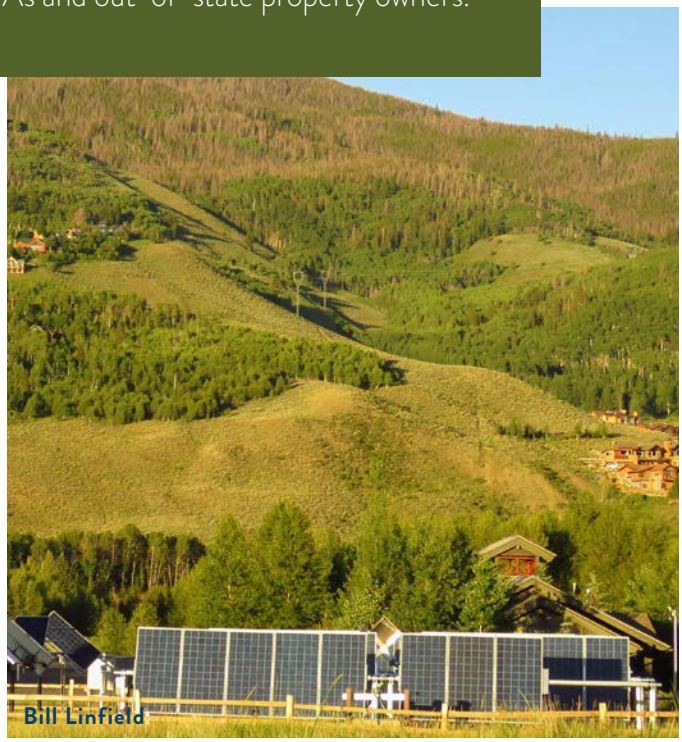
RENEWABLE ENERGY STRATEGIES

- **Encourage all jurisdictions to adopt or support renewable energy goals.**
- **Advocate at the state level for a rapid increase in the amount of renewable energy on the grid.**
- **Develop a local renewable energy roadmap and/or feasibility study to ensure that we maximize the use of our local solar and wind resources.**
- **Execute a community campaign to increase solar installations through education and bulk purchase programs.**
- **Streamline the permitting process for renewable energy systems.**
- **Collaborate with utilities to achieve the goals of this plan.**


Bill Linfield

VOICES FROM THE COMMUNITY

- "Government and public entities should lead by example."
- "Promote WindSource and solar programs from Xcel to HOAs and out-of-state property owners.'"


Bill Linfield


Summit County Government

BUILDING ENERGY

VISION: Our communities will maximize energy efficiency and lead in green design.

SECTOR GOAL: Reduce emissions from building energy use 21 percent by 2030 and 36 percent by 2050.

DID YOU KNOW?

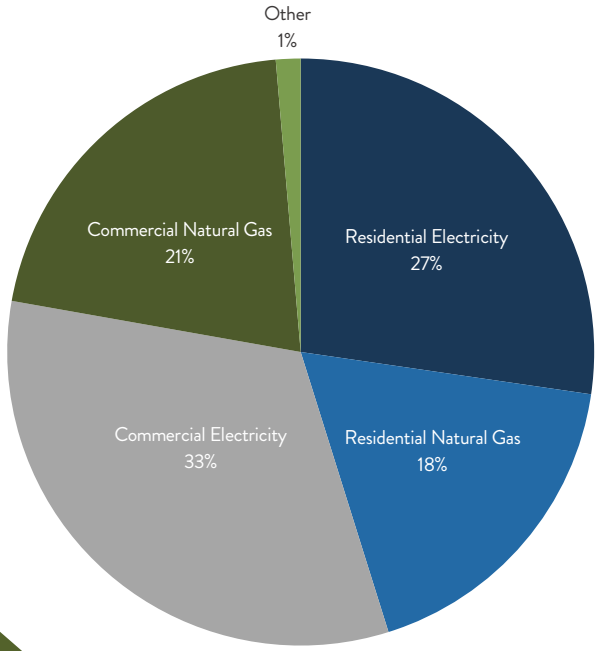
In 2016, electricity use accounted for 28 percent of the United States' total emissions.[10]

WHERE WE ARE NOW

In 2017, buildings and ski area energy use in Summit County accounted for two-thirds of the community's emissions. Commercial buildings have slightly higher total emissions than residential buildings. The majority of building energy emissions comes from the use of electricity in buildings to power lights and other building systems. This is followed by the use of natural gas, primarily for heating. A small share of emissions result from diesel and propane used in generators and heaters (see Figure 9).

The Renewable Energy section of this report discussed the significant greenhouse gas impact of a clean and renewable-powered electricity grid. However, to achieve our goals, our community must decrease the use of natural gas, propane, and stationary diesel.

FIGURE 9: BUILDING ENERGY EMISSIONS



As a resort community, we experience massive population fluctuations throughout the year, and over two-thirds of homes are second homes. In addition, Summit County has dozens of hotels and energy-intensive tourism and recreation facilities. Together, this creates a unique set of challenges that requires a creative approach to reducing building energy emissions.

[10] United States Environmental Protection Agency. Sources of Greenhouse Gas Emissions. https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions

WHERE WE ARE HEADED

Through a combination of policies, education, and financial tools, we will ensure that homeowners, businesses, and visitors to our community are able to take advantage of the benefits of more energy efficient and healthier buildings. We have identified a set of strategies that will ensure we continue to reduce energy consumption in existing buildings and incorporate the most innovative green building standards into new developments. While the strategies listed here cover a wide range of actions and will reduce community emissions significantly, we recognize that technological improvements in the coming years and a rapid transition to a renewable electricity grid may offer further opportunities to reduce building energy emissions.

UNIQUELY SUMMIT COUNTY

- **Over one-third of homes in Summit County are heated with electricity. As we transition to 100 percent renewable electricity, these buildings will essentially become carbon-free.**
- **68 percent of homes in Summit County are second homes.**
- **Summit residents that participate in the Energy Smart Colorado program realize an average utility bill savings of $430/year.**

Jess Hoover

BUILDING ENERGY STRATEGIES

The building energy sector strategies are organized by residential building strategies, commercial building strategies, and strategies that impact all buildings.

RESIDENTIAL BUILDING STRATEGIES

- **Explore the feasibility of requiring all new residential construction to be heated with electricity as there are no carbon-free alternatives to natural gas or propane.**
- **Develop a homeowner association, short-term rental, and second-homeowner energy efficiency program.** We will develop a program that incentivizes, educates, and supports these property owners to improve their buildings' energy efficiency and install renewable energy.
- **Improve and expand existing residential energy efficiency programs to target more homes and gain greater energy savings.** Residents in our community can currently participate in Energy Smart Colorado and the Colorado Affordable Residential Energy programs to reduce energy use.
    - **Strategy Target:** Increase the number of homes that have participated in the Energy Smart Colorado program to 30 percent of all homes by 2025 and 55 percent of all homes by 2030.
    - **Strategy Target:** Increase the number of eligible households that have participated in the Colorado Affordable Residential Energy program to 20 percent of eligible households by 2025 and 25 percent of eligible households by 2030.
- **Host LED light bulb giveaways or exchanges for homeowners.**

COMMERCIAL BUILDING STRATEGIES

- **Amend local codes to require mandatory building retro-commissioning.** Retro-commissioning means that commercial property owners will assess their buildings' mechanical systems to ensure efficient operation.
- **Improve and expand existing commercial energy efficiency programs to target more businesses and gain greater energy savings.**
    - **Strategy Target:** Increase the number of commercial properties that have participated in ResourceWise and similar programs to 30 percent of all buildings by 2025 and 55 percent of all buildings by 2030.

- **Adopt local ordinances to require energy reporting for large commercial buildings.** Owners of large commercial and industrial buildings will publicly report their energy use on an annual basis. Reporting programs can empower them to make smarter decisions about how their buildings and facilities run.
    - **Strategy Target:** Achieve 80 percent compliance with mandatory reporting for all buildings over 15,000 square feet by 2025.
    - **Strategy Target:** Achieve 100 percent compliance with mandatory reporting for all buildings over 10,000 square feet by 2030.
- **Promote energy efficiency and renewable energy for school and government buildings.** Our communities will lead by example by promoting and prioritizing energy efficiency and green building in new construction and major renovations of school and government facilities.

VOICES FROM THE COMMUNITY

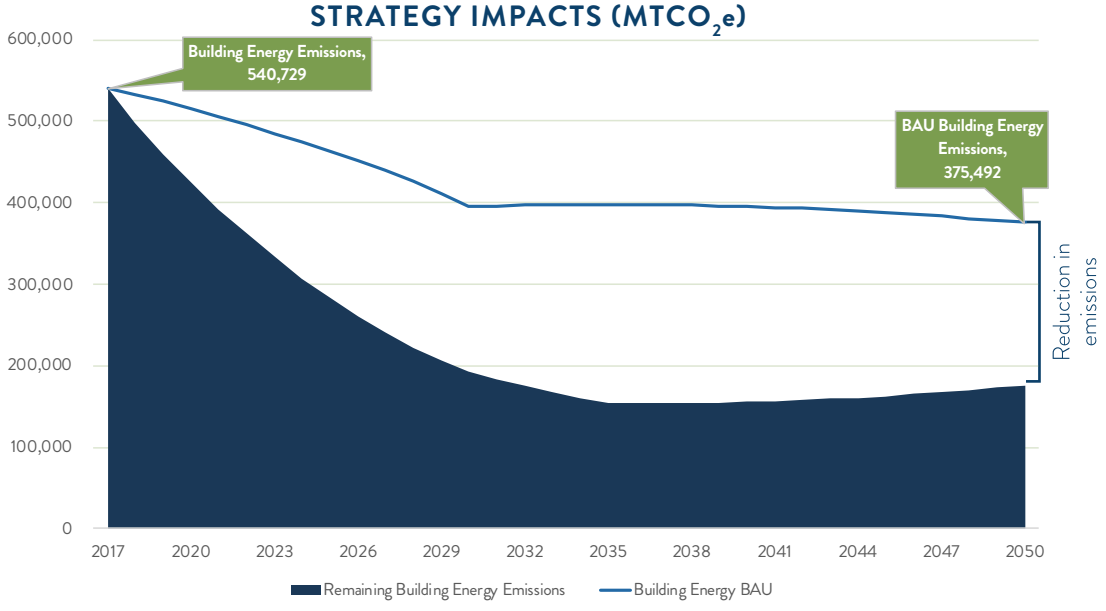
- "Commit to renewable resources and support HC3's home and business energy audits."
- "New building codes to mandate solar and energy efficient homes and commercial buildings."

STRATEGIES IMPACTING ALL BUILDINGS

- **Develop an above-building-code standard for new construction.**
- **Adopt and enforce the most updated version of the International Energy Conservation Code for buildings.** The Summit County community will continue to adopt new international codes every six years.
- **Develop a long-term financing mechanism to provide incentives for reducing energy use and greenhouse gas emissions in buildings.**

As shown in Figure 10, by pursuing the above strategies our community will reduce building sector emissions by 21 percent by 2030 and 36 percent by 2050.

FIGURE 10: BUILDING ENERGY BUSINESS AS USUAL VS. STRATEGY IMPACTS ($MTCO_2e$)



TRANSPORTATION

VISION: Our communities will design multi-modal transportation systems that discourage fossil fuel consumption.

SECTOR GOAL: Reduce emissions from transportation 25 percent by 2030 and 91 percent by 2050.

DID YOU KNOW?

Even though the current electric grid isn't 100 percent carbon free, electric cars produce less than half of the lifetime emissions as conventional gasoline-powered vehicles. [11]

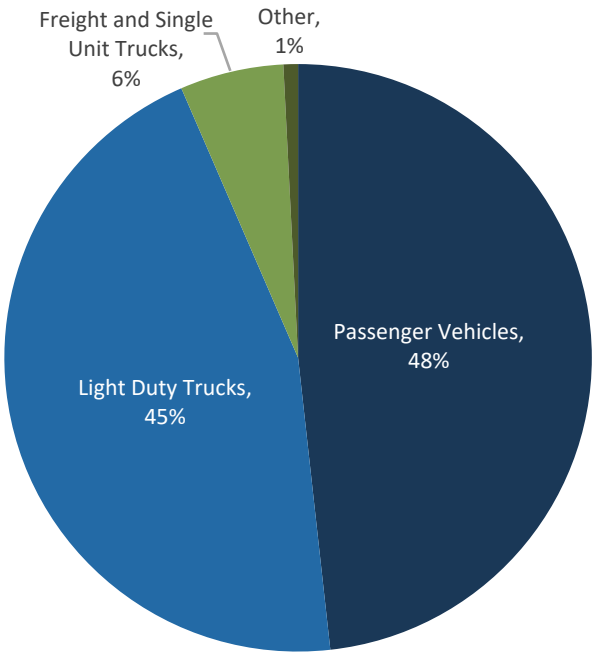
WHERE WE ARE NOW

Emissions from transportation activities account for one-third of our total community emissions. Over 90 percent of transportation emissions come from driving gas and diesel-powered cars and trucks.

WHERE WE ARE HEADED

To significantly reduce emissions in the transportation sector, our communities will ensure that multimodal connectivity and access are key considerations for community growth and expansion, increase the use of public transit systems, and support the deployment and adoption of electric vehicles. These actions will also have additional positive community impacts such as improved air quality, reduced congestion and an improved visitor experience.

FIGURE 11: VEHICLE MILES TRAVELED BY VEHICLE TYPE



[11] Steve Hanley. (2018). Electric Car Myth Buster - Well-to-Wheel Emissions. https://cleantechnica.com/2018/02/19/electric-car-well-to-wheel-emissions-myth/

UNIQUELY SUMMIT COUNTY

- **There were 49 electrical vehicles registered in Summit County in 2017. According to the Colorado Electric Vehicle Plan, this could increase to 7,000 by 2030 under a high-adoption scenario.**


Hugh Carey

TRANSPORTATION STRATEGIES

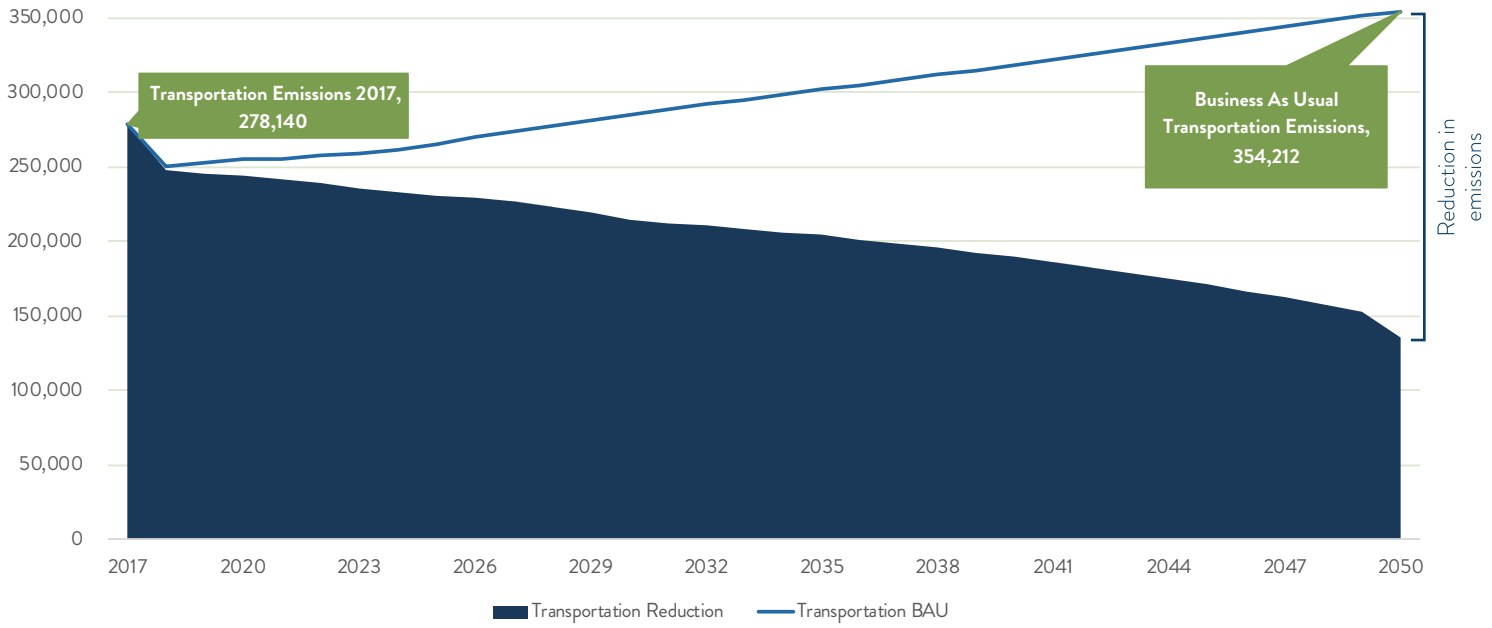
- **Support the adoption of more electric vehicles through the development of a community-wide Electric Vehicle Readiness Plan, as well as expanded infrastructure and incentives.**
    - **Strategy Target:** Increase the share of electric vehicles driving on Summit County roads to 30 percent of all vehicles by 2030 and 60 percent of all vehicles by 2050.
- **Switch government fleets to electric vehicles within the replacement cycle and when appropriate models are available.** Local governments will train fleet technicians to ensure most maintenance can be performed in-house.
- **Promote clean fuels and alternative fueling infrastructure for heavy-duty vehicles.** We will work with partner agencies to promote and encourage the development of clean fueling stations for heavy-duty vehicles.
    - **Strategy Target:** Increase the percentage of heavy-duty vehicles using alternative fuels to 30 percent by 2030 and 50 percent by 2050.
- **Discourage single occupancy vehicles through through incentives, policies, and participation in regional initiatives.**
- **Provide incentives to use public transit within Summit County.** Summit County has an expansive and free public transit system available to both residents and visitors. We will work to ensure that transit is easy to access and has routes and time schedules that are convenient for our community and visitors.
    - **Strategy Target:** Increase the ridership of public transit systems in Summit County 50 percent by 2030 and 100 percent 2050 (over a 2017 baseline).
- **Develop a Summit County bicycle and walking master plan.**
- **Partner with utilities to ensure grid capacity for increased electric vehicle charging.**

VOICES FROM THE COMMUNITY

- "Frequent, reliable, and affordable connection from Front Range to Summit County."
- "Promote walking, biking, taking the bus, and carpooling."

As shown in Figure 12, the combined impact of the above strategies is likely to result in a 25 percent reduction in total community emissions by 2030, and a 91 percent reduction by 2050. Additionally, we will continue to explore further opportunities to reduce emissions from the transportation sector through improved technology and innovative projects.

FIGURE 12: TRANSPORTATION: BUSINESS AS USUAL VS. STRATEGY IMPACTS ($MTCO_2e$)



WASTE

VISION: Our communities will conserve natural resources through striving for zero waste.

SECTOR GOAL: Reduce emissions from waste 50 percent by 2030 and 90 percent by 2050.

DID YOU KNOW?

Nationally, Americans compost or recycle 34 percent of our waste. In Summit County, we recycle or compost only 21 percent of our waste. [12]

WHERE WE ARE NOW

The Summit County Resource Allocation Park (also known as SCRAP) hosts a landfill, recycling processing center, and commercial composting operation. In 2017, Summit County residents and visitors landfilled over 50,000 tons, recycled 5,000 tons, and composted 8,700 tons for a total landfill diversion rate of 21 percent. Waste accounts for only two percent of the community's emissions.

WHERE WE ARE HEADED

With the passing of Ballot Measure 1A in 2018, the SCRAP will increase local opportunities for recycling and composting. By encouraging less consumption and more re-use, and making recycling and composting easy and economical for all residents and business owners, our community will reduce emissions and our use of natural resources.

UNIQUELY SUMMIT COUNTY

- **The SCRAP accepts electronic waste and household hazardous waste free of charge for residents.**
- **When waste decomposes at higher altitudes, it produces less methane than at sea level.**

[12] United States Environmental Protection Agency. (2016). Municipal Solid Waste. https://archive.epa.gov/epawaste/nonhaz/municipal/web/html/

WASTE STRATEGIES

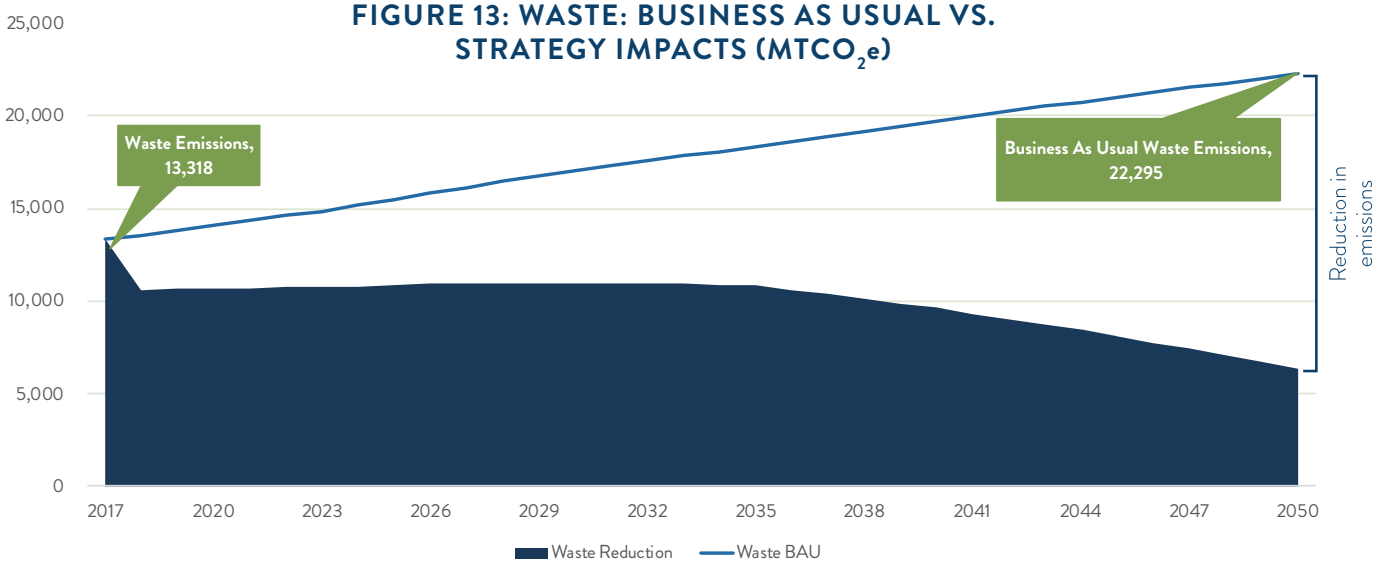
VOICES FROM THE COMMUNITY

- "Create a curbside food scrap collection program."

- **Adopt a Save-As-You-Recycle ordinance across the county.** Save-As-You-Recycle will provide financial incentives for people to reduce their landfilled waste by recycling and composting more.
- **Consider implementing landfill bans on easily recycled items.** For example, in Fort Collins cardboard must be recycled or resused. It is not allowed in the landfill.
- **Work with waste haulers to implement a curbside food scrap collection program.**
- **Increase the number of glass collection sites and types of materials accepted at recycling centers.**
- **Require new construction to include space for recycling and food scrap collection.**
- **Create codes to require recycling at new construction sites.** Many construction materials can be recycled, reused, or repurposed. We will require all new construction to prioritize recycling and reuse over landfilling the waste that is created on-site.
- **Incentivize deconstruction and reuse instead of demolition in construction and demolition projects.**
- **Create local markets and infrastructure for used asphalt and concrete.**
- **Encourage local governments to demonstrate leadership by providing zero waste stations in all facilities as well as creating and enforcing zero waste event requirements.**

As shown in Figure 16, the combined impact of the above strategies is likely to result in a 42 percent reduction in total waste emissions by 2030, and a 90 percent reduction by 2050. Additionally, we will continue to explore new opportunities for recycling and composting to further reduce emissions from the waste sector.

FIGURE 13: WASTE: BUSINESS AS USUAL VS. STRATEGY IMPACTS ($MTCO_2e$)



FORESTS

VISION: Our communities will value healthy forests and understand their beneficial climate and environmental impacts.

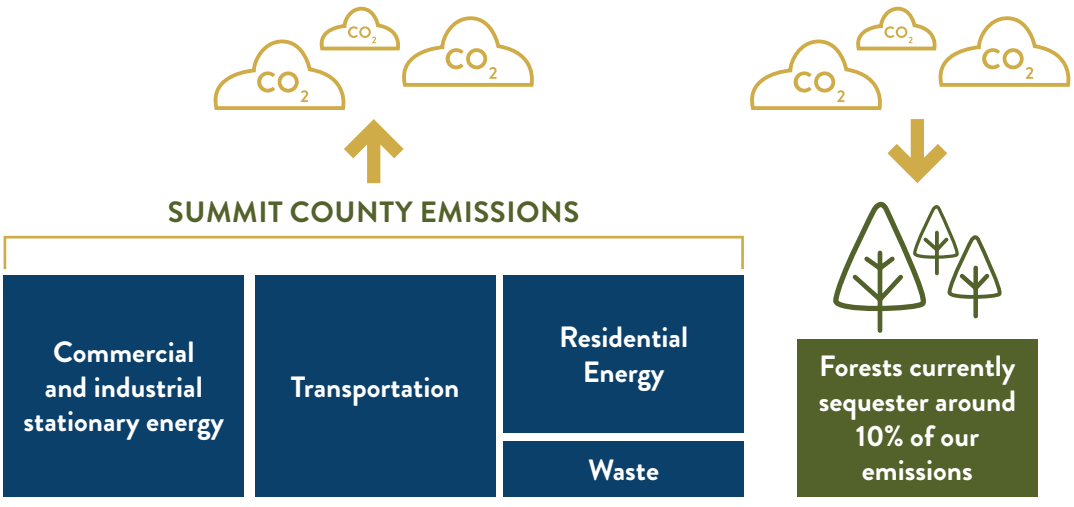
SECTOR GOAL: Maintain forest cover in Summit County and improve forest resilience to climate impacts.

WHERE WE ARE NOW

Currently, 53 percent of Summit County is forested, sequestering approximately 10 percent of the county's gross emissions. Much of this forest land (roughly 170,000 acres) is managed by the US Forest Service (USFS). Around 15 percent of Summit County forests are outside of federal lands and managed by Summit County Government or local towns or private land owners.

Between 2001 and 2011, our community lost nearly 8,300 acres of live trees. Most of this loss was due to the mountain pine beetle. Federal forest land that is subject to natural disturbance (such as pest or fire) will likely regenerate over time, and the USFS may replant areas to accelerate forest restoration. The USFS also monitors federal forest land after treatment—for example, clear cuts that occur in beetle infected areas to manage fuel load and create defensible space—and ensures forests in such areas are restored in ways that promote safety and forest health.

Over the same time period, there was a loss of over 1,880 acres of non-federal forest. Around 90 percent of this loss was likely due to beetle disturbance, while 10 percent was due to increased development. When forests are cut, this results in the release of greenhouse gas emissions (as the carbon they stored goes to the atmosphere), as well as lost future sequestration—as forests can sequester carbon for long periods of time.



WHERE WE ARE HEADED

There are two major trends impacting the forests of Summit County: development and climate change. Through a combination of efforts, the community will strive to maintain its forest and tree canopy cover despite expected growth in population over the coming years. This will require consideration of how to ensure forest areas lost to disturbance are restored, while managing the expected development and expanding urban-rural boundaries in coming years.

DID YOU KNOW?

A tree can sequester up to 400 pounds of carbon dioxide over 25 years. At that rate, it takes 80 trees 25 years to absorb the same amount of carbon emissions an average American produces in one year.

In addition, Summit County forests will be increasingly impacted by climate change. In recent years the county has seen an uptick in forest fires, and a warmer climate also increases the risk of pest infestation. Finding ways to improve the health of Summit's forests in the face of a changing climate can reduce these risks to our forests.

UNIQUELY SUMMIT COUNTY

- **Summit County citizens appreciate and love forests! The beauty and recreation that the White River National Forest provides is a key reason why people live in Summit County.**
- **Trees in Summit County grow slowly—due to our altitude, precipitation, and colder average temperatures—so the carbon we lose when cutting down trees is not quickly regained. Most of Summit County's forests have been storing carbon for over a century.**
- **Summit County and the Town of Breckenridge have active, well-funded Open Space and Trails departments, managing and protecting nearly 20,000 acres of land across the county.**
- **Summit County is one of the first communities in the country to include forests in their GHG inventory and Climate Action Plan, recognizing the important role forests play in regulating our climate.**

[13] Bob Schildgen. (2016). How much carbon do trees really store? https://www.sierraclub.org/sierra/2016-2-march-april/ask-mr-green/how-much-carbon-do-trees-really-store

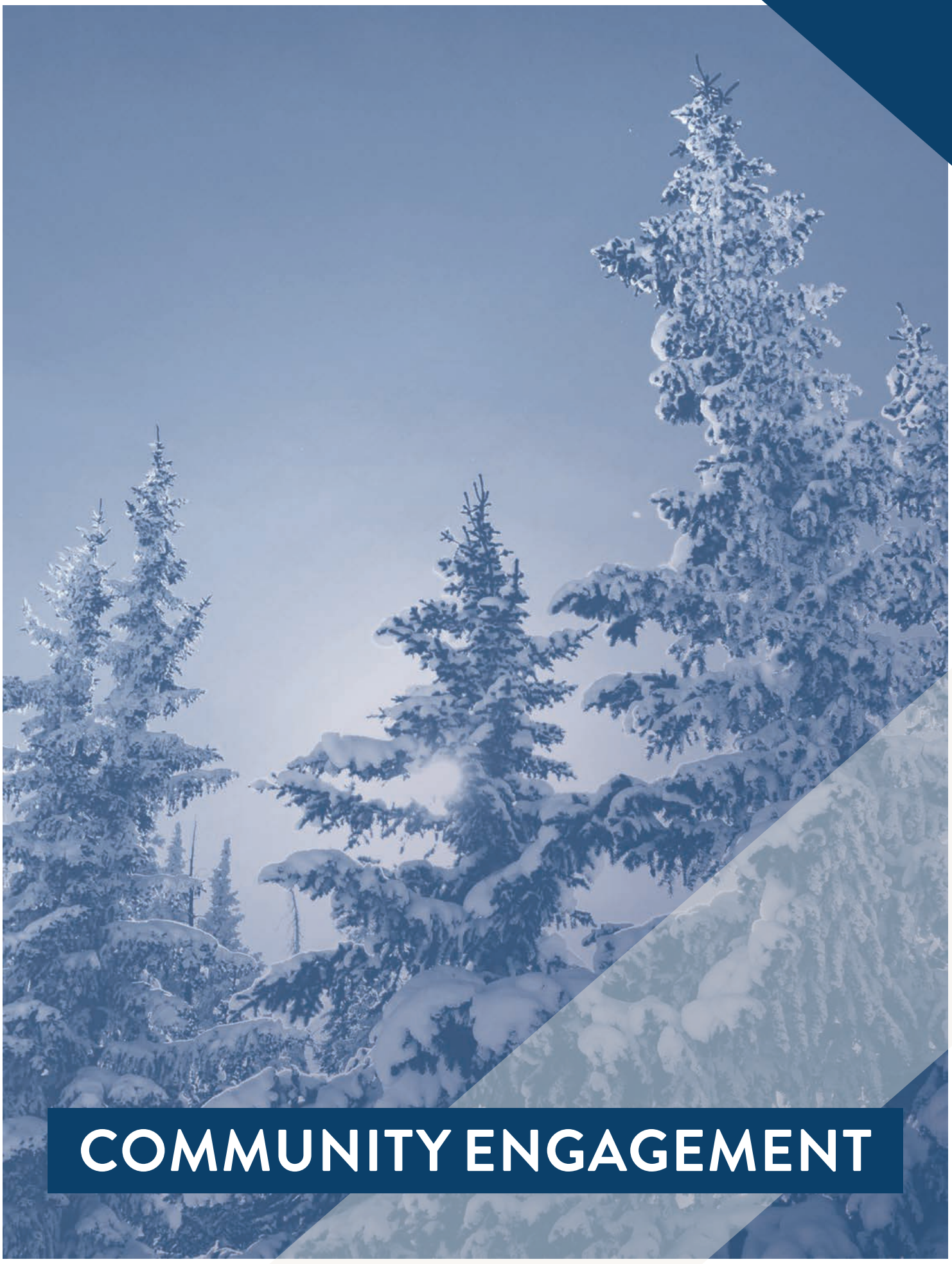
FOREST STRATEGIES

VOICES FROM THE COMMUNITY

- "Incorporate climate change and our forests' health into messaging."
- "Plant new diverse varieties of trees that adapt to our changing climate."

- **Develop and implement a community-wide forest management plan.** Many communities have a forest or tree management plan—not only to create a healthier environment, but also a friendlier, more beautiful setting. Increasingly, tree management is seen as a critical piece of building sustainable communities. A community-wide management plan could:
    - Encourage municipalities to set goals for maintaining forest and tree canopy.
    - Expand the use of county's Transferable Development Rights (TDR) program in the Lower Blue, Snake, and Tenmile river basins by encouraging the towns of Dillon, Frisco, and Silverthorne to use TDRs as a tool for protecting forested lands from development.
    - Develop ways to incentivize tree planting on private property.
    - Increase the number of street trees and reevaluate trees and landscaping in parks.
    - Continue to monitor forest cover on non-federal lands and develop an urban tree inventory.
- **Improve the understanding of forest health in a changing climate.** Summit County forests are already experiencing the impacts of climate change. More work is needed to understand what measures will best promote healthy forests for generations to come. A local collaborative, the Forest Health Task Force, is dedicated to promoting forest health in Summit County. Actions undertaken may include:
    - Develop a Forest Health Index to monitor factors that affect the health of Summit County's forests and to take action when needed to preserve the many services forests provide to our community.
    - Conduct research on Summit County's forest ecology in a changing climate and better understand how to promote carbon sequestration and health of future forests.
- **Educate and advocate for the important role of forests with regard to climate change.** While most people who live and visit Summit County appreciate forests for the recreation and beauty they provide, fewer are aware of the role forests play in mitigating climate change. Therefore, Summit County will work to:
    - Educate the community and visitors about the benefits of healthy forests, including the carbon sequestration they provide.
    - Advocate for forest protection at the federal, state, and local levels.

By taking the steps above, Summit County can expand the ways in which our community values forests. These actions not only "lock up" the carbon stored within our forests, but also ensure that trees continue to sequester carbon well into the future—helping Summit County reach its climate change mitigation goals.



COMMUNITY ENGAGEMENT

Jess Hoover

COMMUNITY ENGAGEMENT

VISION: Our communities will inspire residents and visitors to reduce emissions through outreach and leadership.

We believe in a bright, healthy, and sustainable future for Summit County; however, we cannot do it without our community's help. We recognize that this Climate Action Plan will only be impactful if we engage and empower the entire community, including visitors, to be a part of this effort. If successful, the results will be far-reaching, and our community will be:

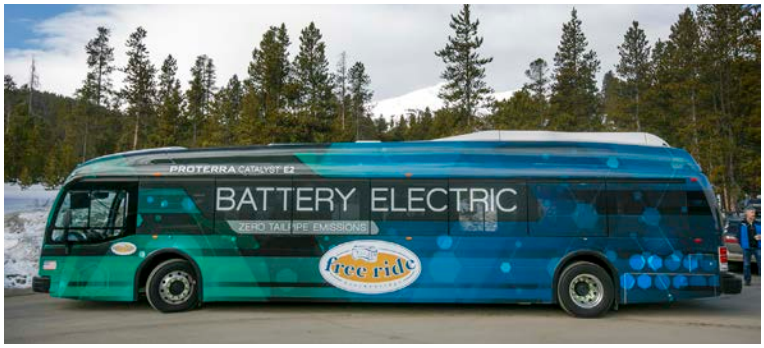
- healthier due to less air pollution and congestion, with greater opportunities for safe multimodal travel;
- more informed and engaged about climate, sustainability, and energy issues;
- more affordable due to more energy efficient housing and businesses; and
- empowered to create a vibrant and sustainable Summit County for current and future generations.

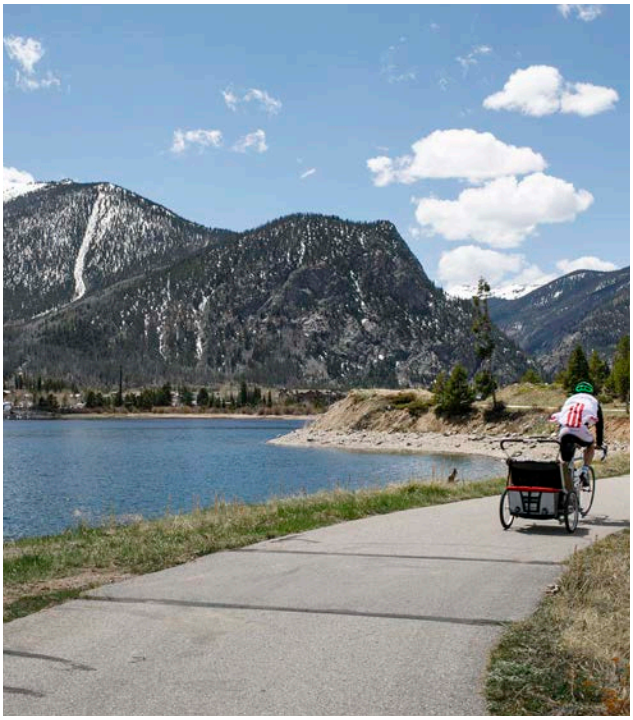
COMMUNITY ENGAGEMENT STRATEGIES

- **Collaborate with ski areas and local towns to promote the Climate Action Plan and implement strategies to educate millions of visitors.** We hope that visitors will be inspired to take these strategies and lessons learned back to their own communities to further expand the benefits of climate action.
- **Create an outreach campaign to engage locals in climate action.** Working collaboratively, we will develop an engaging, empowering, and relevant outreach campaign that helps locals understand and participate in these efforts.
- **Provide free workshops to help residents learn how to reduce their carbon footprints.**
- **Develop programs to engage K-12 and college students on climate change and solutions.** We will work with the Summit School District, Colorado Mountain College, and other relevant organizations to develop programs that educate and engage students of all ages.
- **Utilize special events to share messages, provide resources, and engage participants in carbon reduction strategies.** We will be an active participant in community and events that occur throughout Summit County in order to engage people, provide resources, and ensure that implementation of our Climate Action Plan is a community effort.

MOVING FORWARD TOGETHER

Jess Hoover





Hugh Carey

MOVING FORWARD TOGETHER

As a resort community that hosts millions of visitors each year, the Summit Climate Action Collaborative believes it is our responsibility to demonstrate leadership in the fight against climate change. This plan identifies strategies and actions that will lead to significant emissions reductions, ensuring that we do our part to mitigate the most severe effects of climate change. Our Collaborative strongly believes in the ability of our communities to work together to implement the strategies identified in this Climate Action Plan and make our vision of a sustainable Summit County a reality. We look forward to engaging residents, businesses, and visitors in these efforts so that we can create a healthy and sustainable future for all.

Moving forward, HC3 will work with each of the municipalities in Summit County to ensure this plan is adopted and supported within each jurisdiction. Many of the Collaborative members that helped create this plan have agreed to participate in working groups to develop and implement the policies, programs, and initiatives identified in the plan. Each year, the Collaborative will publish a progress report on the Climate Action Plan. Further, HC3 will complete an updated greenhouse gas emissions inventory every three years to determine whether we are on-track to meet our goals.

In Summit County, our way of life is directly tied to the health of our environment. While we recognize the significant effort required to fully implement this Climate Action Plan, we are committed to protecting our mountain community for generations to come.

HIGH COUNTRY
CONSERVATION CENTER

Bill Linfield