

Eagle County Energy Inventory

2021 data on energy use, costs and emissions



KEY FINDINGS

Eagle County's total **greenhouse gas emissions** in 2021 totaled 1.37 million metric tons of carbon dioxide equivalent (CO₂e). This represents an increase of about 2% over 2014. Coincidentally, per-capita emissions have actually declined by 2% over the same period, but that progress has been offset by population growth. Overall, the statistical trend line for the period is essentially flat.

It must be noted, however, that this trend is the sum of several different sources of emissions, each telling its own story and requiring different action. Two sources – buildings and ground transportation – account for about 90% of all emissions.

In the **buildings** sector, emissions have decreased by 22% since 2014, thanks to the decarbonization of the **electricity** supply. Notably, Holy Cross Energy increased its share of renewables from 20% to 48% during this period. This resulted in a 38% decrease in emissions from electricity in the county, even as electricity consumption increased by 1%.

In contrast, **natural gas** usage in buildings increased by about 9% compared to 2014, with a corresponding increase in emissions. As the electricity sector improves, natural gas will account for a growing share of the county's emissions, and efforts will need to focus on electrifying homes, businesses and government buildings. Developing electrification programs to capitalize on

Inflation Reduction Act funding as it becomes available may help improve this sector, especially when focused on commercial buildings.

Ground transportation emissions appear to have increased 52% in the 2014-21 period. However, that figure comes with a big disclaimer: it is based on two different data sets, because a new, more accurate data source became available in 2018. While this change in methodology has probably skewed the 52% figure (it is likely much lower), in future years it will provide a more reliable trend line.

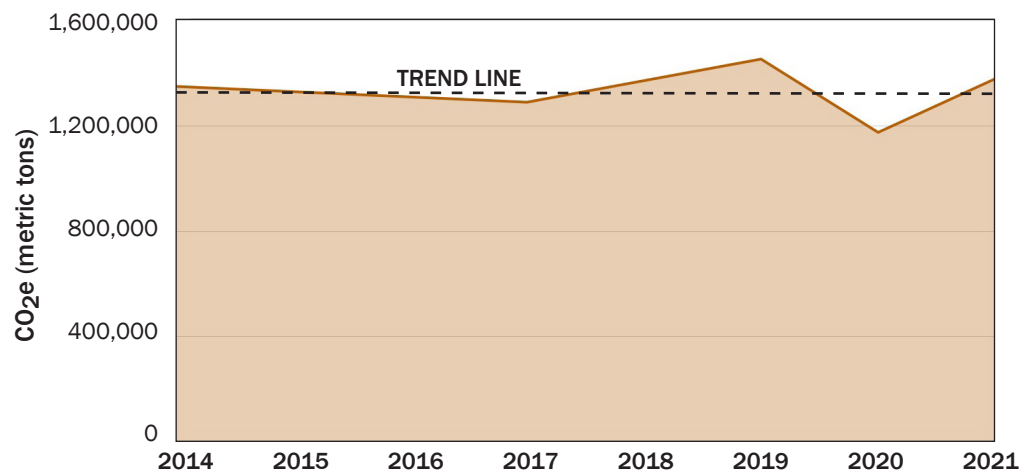
The largest emitting sector continues to be passenger vehicles, particularly SUVs and trucks. To make the biggest impact, efforts to reduce transportation emissions should focus on increasing electric vehicle adoption, EV charging infrastructure and public transit ridership.

Despite laudable diversion efforts, the amount of **solid waste** going into the landfill has increased by 38% since 2014, with emissions remaining at about the same level as in 2014. Eagle County's waste is currently diverted at a rate of 29%, which is considerably better than the national average, but there is much room for improvement. In order to further reduce emissions at the landfill, diversion efforts need to focus on improving recycling rates, increasing green waste (or landscaping waste) diversion and incentivizing general waste reduction.

Section 1: Overview of Emissions

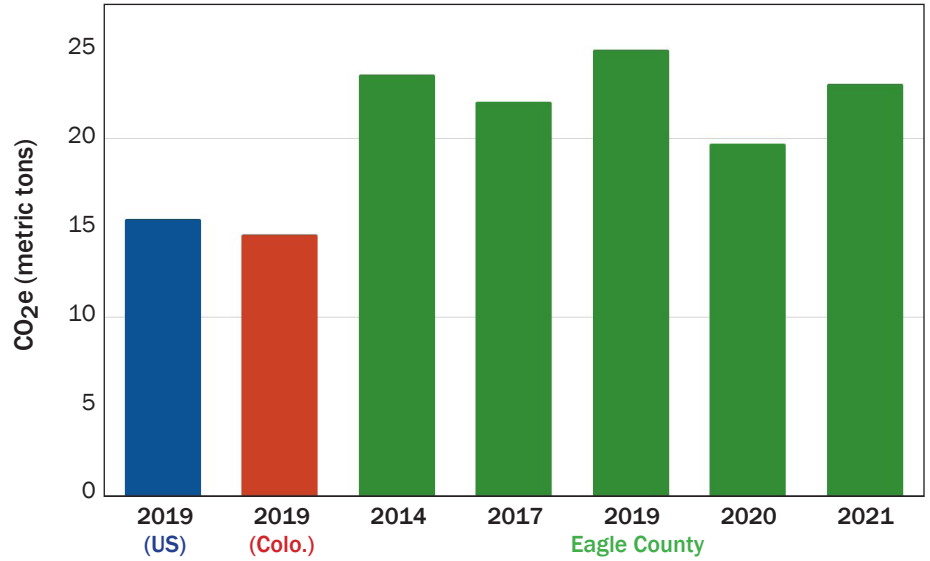
1. Total Emissions, 2014-2021

Eagle County's total emissions have remained level in the face of population growth and increased seasonal visitorship. However, by merely maintaining the status quo the county is not on track to achieve its Climate Action Plan goal of reducing emissions 25% by 2025.



2. Emissions per Capita, 2014-2021

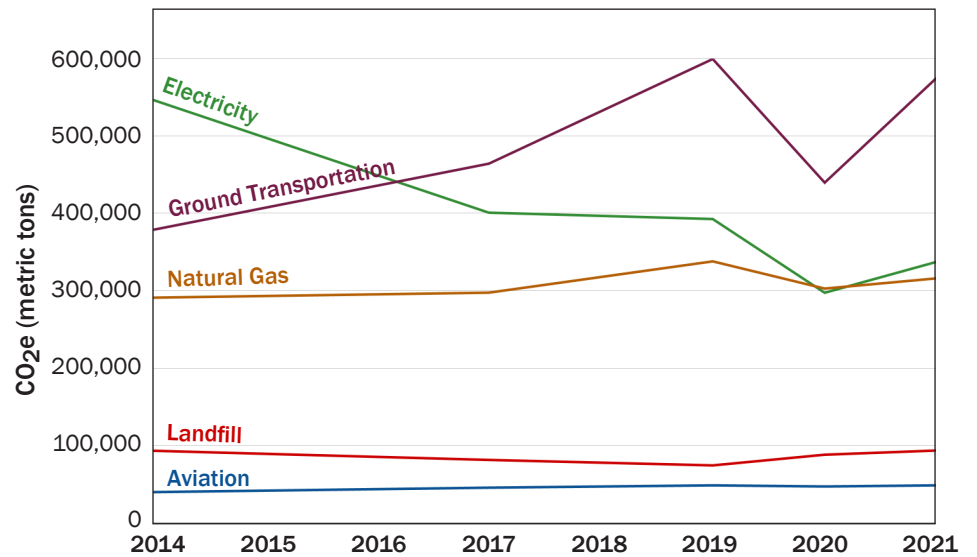
On a per capita basis, the county's emissions have declined by 2% since 2014, despite population growth and increased visitation. That said, they still exceed those of the U.S. and Colorado by a wide margin. Contributing factors are transportation (commute distances are double the national average) and second homes and lodging (which contribute emissions from visitors who are not counted in the permanent population).



3. Change in Emissions by Sector, 2014-2021

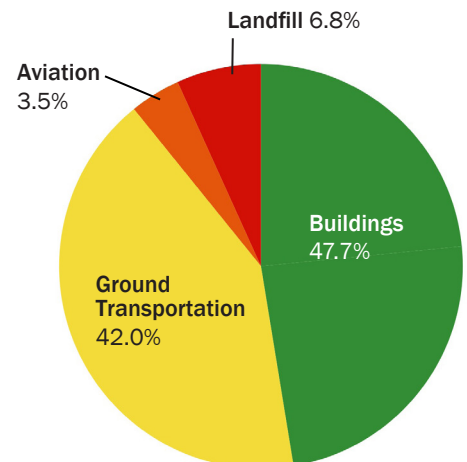
The most significant emissions reductions are in the electricity sector, which has seen a 38% decrease since 2014. Despite population growth, electricity use has remained fairly steady, increasing only 1% since 2014. The emissions reductions are primarily a result of electric providers increasing renewables on the grid.

In contrast, natural gas and transportation sector emissions have increased during the same period, although they are somewhat below the pre-pandemic peak levels of 2019.



4. Emissions by Sector, 2021

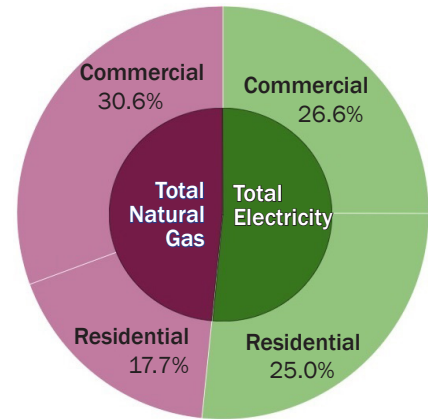
Buildings – which include residential, commercial, institutional and industrial facilities – are the largest source of emissions in the county, and account for nearly all of the electricity and natural gas emissions depicted in the previous chart.



Section 2: Utility Energy

5. Emissions by Activity, 2021

As the electricity grid becomes cleaner, the proportion of emissions attributable to natural gas increases. In 2020, natural gas emissions surpassed those due to electricity. Electricity retook the top spot in 2021, but the margin of difference will likely decrease in future years. While the commercial and residential sectors share a near-even split of emissions from electricity, the commercial sector dominates natural gas emissions. Focus on decarbonizing the energy use in commercial buildings will greatly improve the built environmental impacts.

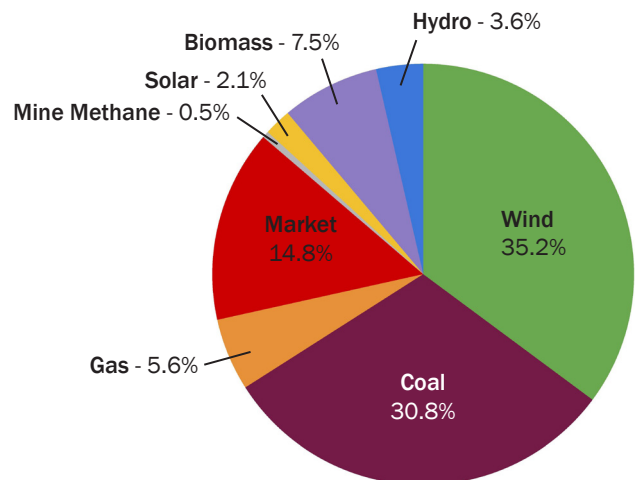


6. Holy Cross Energy Electricity by Sources, 2021

Holy Cross Energy provides 99% of the electricity consumed by residences and businesses in Eagle County.

Holy Cross purchases a mix of electricity from Xcel Energy and hydropower from the Western Area Power Administration. The electricity purchased from Xcel comes mainly from wind, coal and natural gas. “Market” energy is procured to offset any overages; the sources cannot be identified with a high level of certainty, but are presumed to be coal and gas.

Additionally, Holy Cross owns 2.7 MW of solar capacity and holds power purchase agreements for several small renewable sources located in or near our service territory, including 7 hydroelectric generators, 10 commercial solar arrays, a 12 MW biomass plant and a community-owned solar array.



2021 Renewable Energy: 48%

Section 3: Buildings Emissions by Community

The emissions tracked in this section include only those attributable to energy use in buildings. Transportation and waste emissions are not reported at the community level at this time.

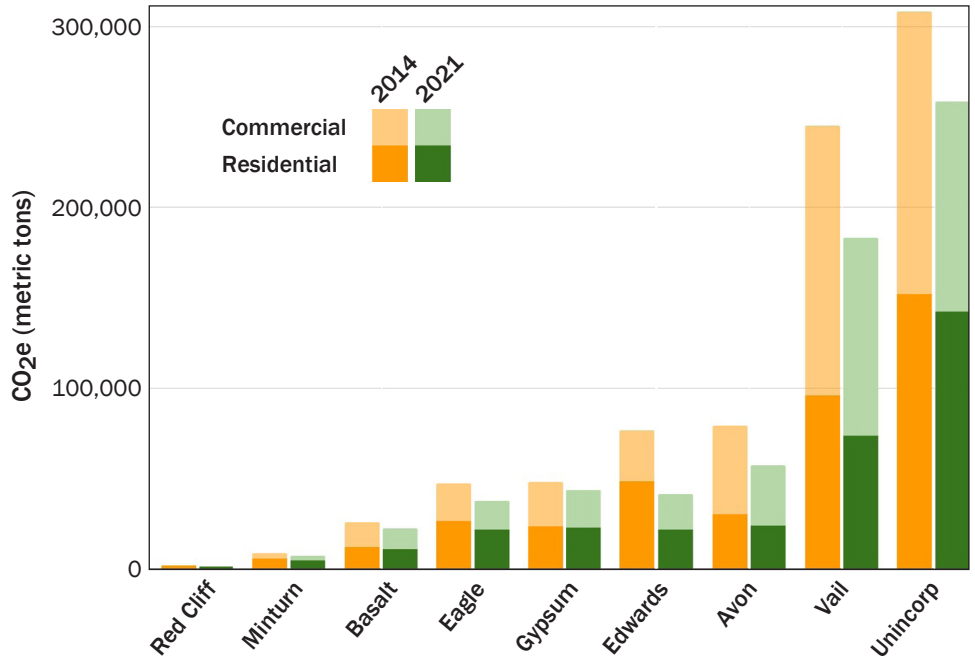
7. Buildings Emissions by Community and Sector, 2014 vs. 2021

Notes:

Edwards: Data for Edwards, an unincorporated community, includes the entire 81632 zip code.

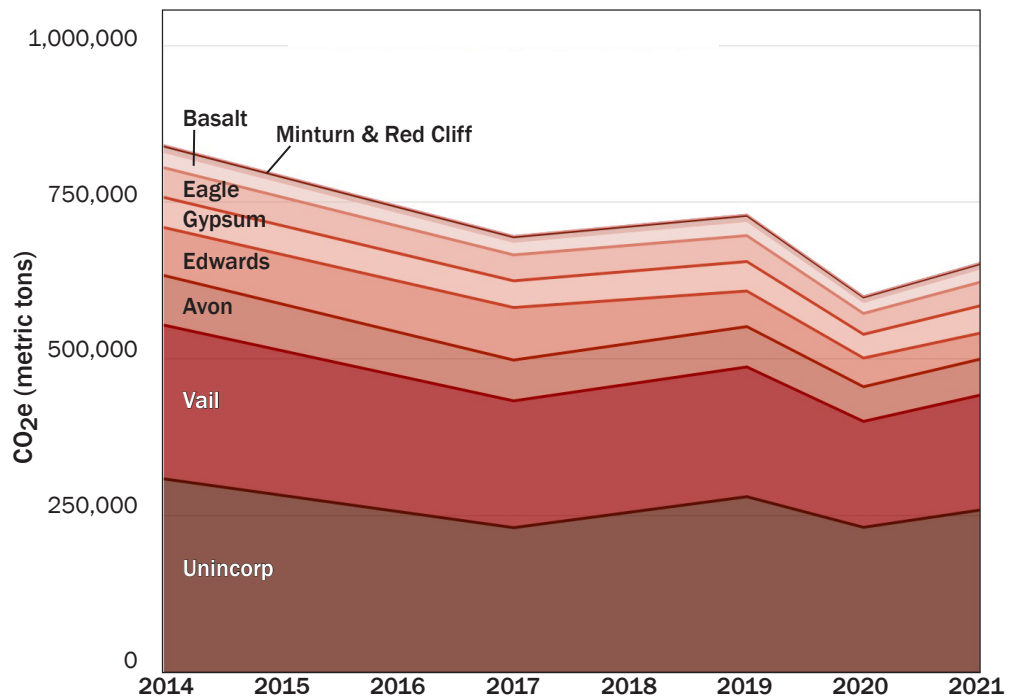
Unincorp: Abbreviation for “unincorporated” includes meters in unincorporated Eagle County other than the Edwards 81632 zip code. Unincorporated Eagle County has more population and housing units than any of the county’s individual municipalities.

Commercial: A broad utility designation for a meter serving properties such as hotels, multi family complexes with one meter, recreational facilities (lifts and snow-making equipment), government buildings, schools, retail, industrial and manufacturing facilities.



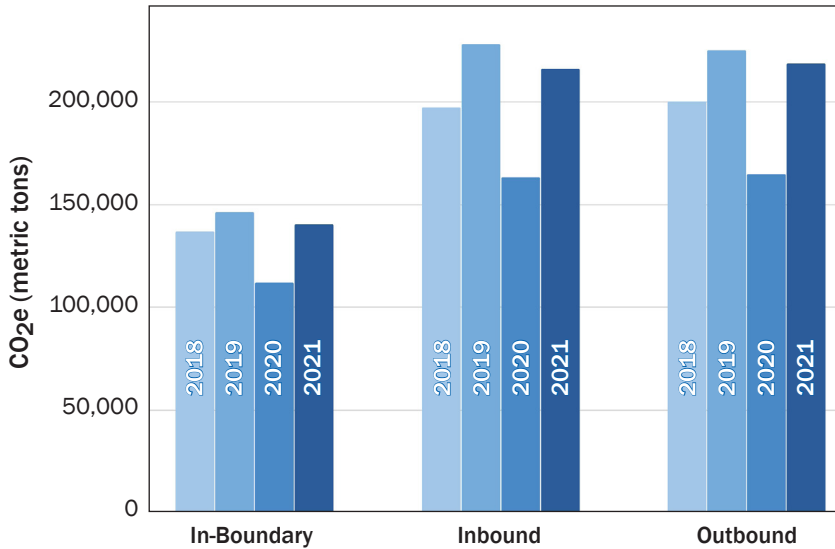
8. Change in Buildings Emissions by Community, 2014-2021

Most of Eagle County’s communities as well as its unincorporated areas are showing a downward trend in emissions since 2014, thanks largely to the decarbonization of the electricity grid. Emissions in 2020 were artificially low, due to the pandemic, so most communities saw a rebound in 2021 – the lone exception being Edwards.



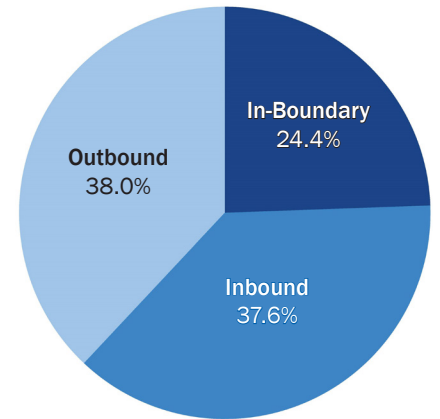
Section 4: Transportation Energy Emissions and Use

9. Eagle County Emissions by Trip Type, 2018-2021



Transportation data for 2018-21 was collected using Google’s Environmental Insights Explorer, which uses location services on individuals’ electronic devices to estimate transportation use within an area (in-boundary), going to an area (inbound) and going from an area (outbound). This data became available in 2018 and has improved with accuracy each year. The charts in this section focus on this data set because it is assumed to

10. Eagle County Energy Use by Trip Type, 2021



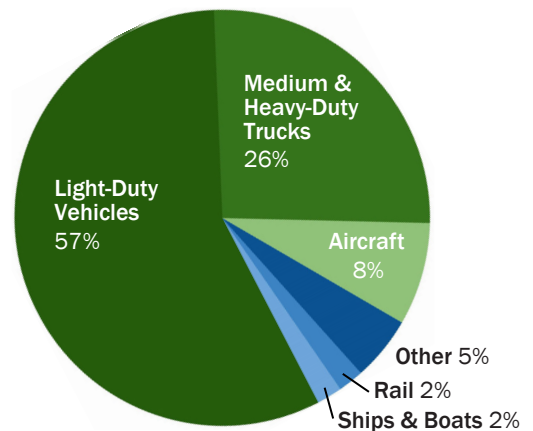
be more accurate than the pre-2018 data (which was derived indirectly from CDOT trip data).

As was predicted in the previous report, transportation emissions levels have nearly rebounded to pre-pandemic levels. The slight net decline from 2019 to 2021 could be attributable to a combination of factors including a continuation of remote working and slightly lower travel levels.

11. U.S. Transportation Sector Emissions, 2020

While a breakdown of transportation emissions by category is not available at the county level, the relative proportions for Eagle County are believed to be consistent with national figures compiled by the EPA. Notably, light-duty vehicles (including passenger cars and light-duty trucks) are the largest category. These, combined with medium- and heavy-duty trucks, account for 83% of transportation emissions nationally.

As electric vehicles become more common, the proportion of emissions from light-duty vehicles (and eventually from trucks) will decrease. At present, EVs account for about 75% fewer emissions than fossil-fuel-powered vehicles – and as the grid approaches 100% renewable electricity over the next decade, emissions from EVs will also approach zero.

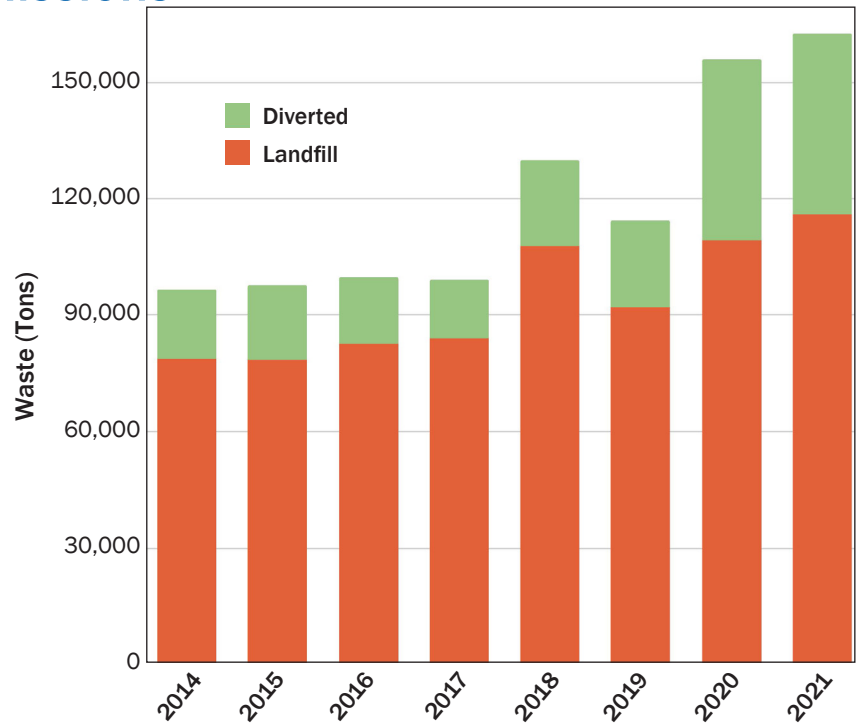


Section 5: Solid Waste Emissions

13. Aggregated Eagle County Solid Waste by Category, 2014-2021

The Eagle County Landfill received 116,028 tons of disposed waste in 2021, resulting in an estimated 93,351 tons of CO₂e emissions – a new high. The diversion rate has increased in recent years, but not enough to offset the additional waste being disposed.

Organic material left to decompose in the landfill is the primary source of solid waste emissions. Efforts should continue to focus on reducing organic waste (including landscaping and food waste) and other recyclables. The diversion rate in 2021 was 29%, which compares favorably to the statewide average of 16%, but there is more room for improvement.



Acknowledgments and Sources

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goals.

The following individuals provided data, insight, support, and expertise for this report: John Gitchell, Eagle County; Mike Steiner, Holy Cross Energy; Mike Beyer, Yampa Valley Electricity Authority; Gabrielle Dunn, Black Hills Energy; Melissa Kirr, Walking Mountains; and Christopher Bain, Google's EIE Platform.

ENERGY INVENTORY PROTOCOL

The Eagle County Energy Inventory quantifies total energy use, costs and carbon emissions by sector and by fuel and utility source, using 2014 as the baseline year and adding new data from 2021. Due to the irregularities caused by the pandemic we opted to limit comparisons to 2020.

The inventory's purpose is to understand how and where energy is used and emissions are generated. With this information in hand, each energy-using sector can identi-

fy opportunities to increase efficiency, reduce emissions and reduce costs.

This inventory complies with the U.S. Community Protocol for Accounting and Reporting of GHG Emissions (USCP). At least five emission-generating activities must be included for an inventory to be USCP compliant. This inventory surveys five activities: residential energy, commercial energy, vehicles, aviation and the landfill.

SOURCES

Section 1.1

Holy Cross Energy, Xcel Energy, Black Hills Energy, Yampa Valley Electric Association, Eagle County Airport, Colorado Department of Transportation, Google Environmental Insights Explorer, and the 2021 Eagle County Diversion Report (Walking Mountains Sustainability).

Section 1.2

U.S. 2021 data from U.S. Census Bureau's Explore Data (<https://data.census.gov/cedsci/>). Colorado 2021 data from *Colorado 2021 Greenhouse Gas Inventory Update With Historical Emissions from 2005 to 2021 and Projections to 2050*, released September 2021 (<https://wp-cpr.s3.amazonaws.com/uploads/2021/08/2021-CO-GHG-Inventory-Report-draft.pdf>).

Sections 1.3 - 1.4

Holy Cross Energy, Xcel Energy, Black Hills Energy, Yampa Valley Electric Association, Eagle County Airport, Colorado Department of Transportation, Google Environmental Insights Explorer and 2021 Eagle County Diversion Report.

Sections 2.5 - 2.6

Holy Cross Energy Power Supply Report (<https://www.holycross.com/greenhouse-gas-emissions>).

Sections 3.7 - 3.8

Holy Cross Energy, Xcel Energy, Black Hills Energy and Yampa Valley Electric Association.

Sections 4.9 - 4.10

Google Environmental Insights Explorer (<https://insights.sustainability.google>).

Section 4.11

U.S. Environmental Protection Agency: *Fast Facts on Transportation Greenhouse Gas Emissions* (<https://www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions>), Alternative Fuels Data Center, Emissions From Electric Vehicles (https://afdc.energy.gov/vehicles/electric_emissions.html).

Section 5.12

2021 Eagle County Diversion Report, Walking Mountains Sustainability.

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