

Summit County 2020 Greenhouse Gas Emissions Inventory: Summary Report

December 2021

Introduction

Summit County's communities completed their first greenhouse gas (GHG) emissions inventory in 2017. At that time, they agreed to update the inventory every three years to track progress towards carbon reduction goals and to give better insight into policies and programs that could further reduce emissions across the county. In keeping with this commitment, the community recently completed an inventory of 2020 emissions. Summit County has a unique profile for GHG emissions reporting. It is among the most visited ski destinations in the world, and its temporary population grows substantially during peak ski season and summer months. In addition, Summit County is home to a high percentage of vacation homes. These characteristics can make it challenging to compare Summit with other communities on a per capita or per housing-unit basis.

This summary provides a high-level view of the GHG emissions generated by both residents and visitors. High Country Conservation Center and its community partners will use the information in this summary to guide planning and decision-making for reducing GHG emissions within the county. Because Summit County attracts thousands of visitors each year, strategies and programs have the opportunity to impact not only local residents but also tourists from near and far away.

KEY TAKEAWAYS

- **605,716 metric tons of carbon dioxide equivalent (mt CO₂e) were produced from energy use, transportation, waste, and wastewater. See Figure 1.**
- **Between 2017 and 2020, emissions decreased 13 percent.**
- **At 32 percent, the single largest source of emissions is mobile gasoline used in on- and off-road vehicles and equipment.**
- **Approximately 32 percent of electricity generation comes from renewable sources.**
- **COVID-19 was the largest driver of emissions reductions in Summit County in 2020, although it's likely that it also drove an increase in waste emissions because of the dramatic increase in disposal of single-use items associated with the pandemic (masks, gloves, wipes, etc.).**

Overview of Emissions

Forty percent of GHG emissions come from unincorporated areas of Summit County, followed by the larger towns of Breckenridge, Silverthorne, and Frisco. This is unsurprising as the majority of the county’s population lives outside of town centers. In addition, a significant amount of ski area electricity use, including energy-intensive snowmaking, occurs outside of town boundaries.

The following charts show emissions by sector and by source (Figure 1 and Figure 2). Forty-two percent of Summit County’s emissions come from transportation and the remainder from residential, commercial, and industrial (ski area) energy use. Gasoline used in on- and off-road vehicles and equipment is the largest emissions source at 32 percent, followed closely by natural gas and electricity at 24 and 23 percent, respectively.

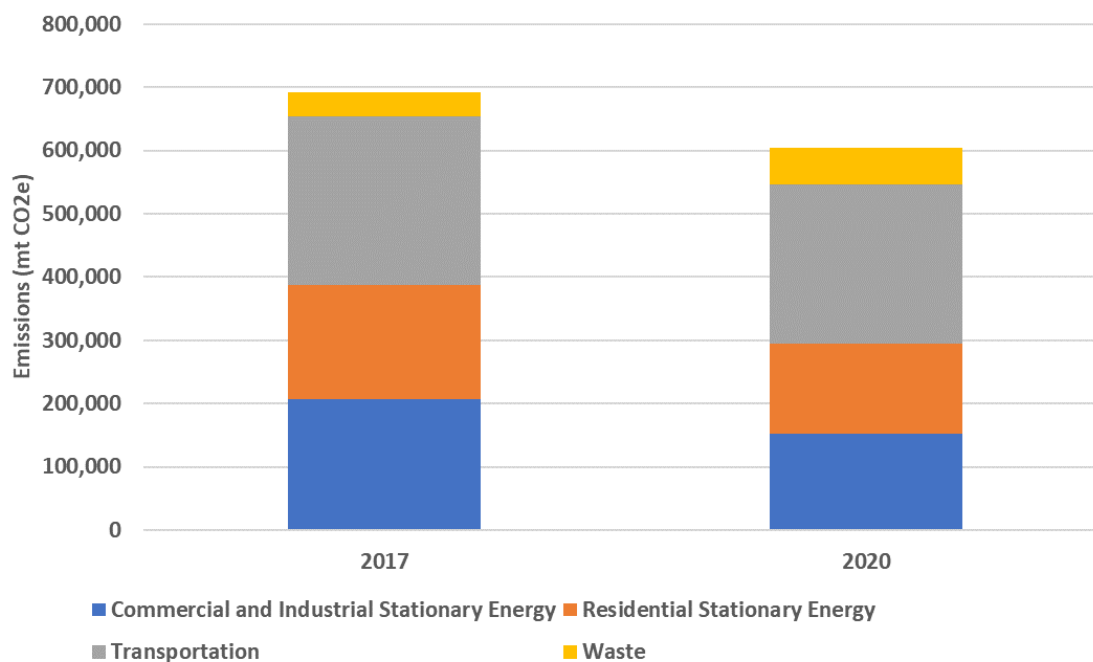


Figure 1. Summit County GHG emissions by sector, 2017 & 2020. Wastewater emissions are left off as they are less than 1% of Summit County’s emissions.

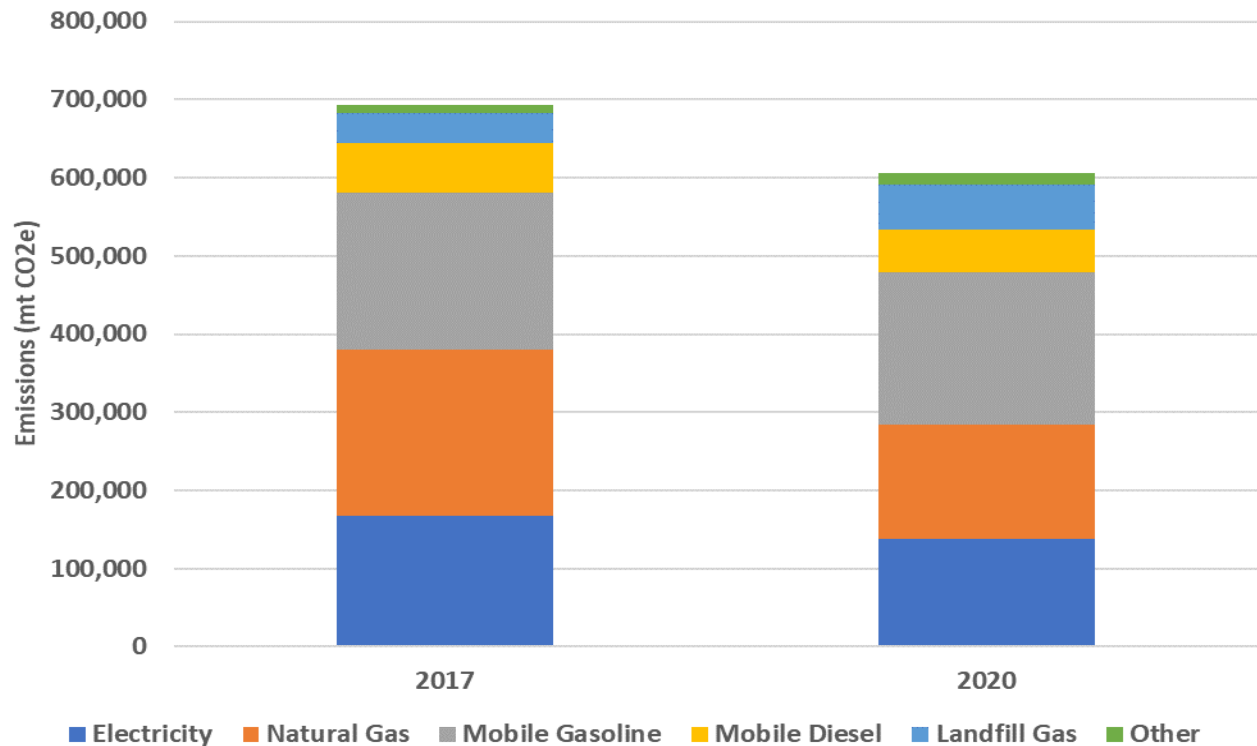


Figure 2. Summit County GHG emissions by source, 2017 & 2020. Other emission sources comprise less than 1% of Summit County emissions and include: Propane, Stationary Diesel, Mobile Ethanol, Waterborne fuel use, Compost, and Wastewater.

BUILDING ENERGY USE

At 49 percent, nearly half of Summit County's GHG emissions come from energy use in buildings.

Across all sources, emissions from natural gas use are dominant at approximately 49 percent, with commercial use comprising 25 percent and residential 13 percent of total building energy use emissions. Electricity use accounts for 47 percent of emissions.

Xcel Energy provides over 99 percent of the electricity in Summit County with Mountain Parks Electric providing the remainder. The electricity provided to the community by Xcel Energy is approximately 32 percent renewable. Summit County residential and commercial roof-top solar panels as well as local community solar gardens total 3,674 kW of capacity or approximately 0.68 percent of electricity demand.

RECENT TRENDS

- Since 2017, Xcel Energy has increased the amount of renewable electricity in its grid mix. The company has goals of providing 80 percent renewable electricity by 2030 and 100 percent carbon-free electricity by 2050. Xcel has also made great progress in other areas, such as reducing carbon dioxide emissions by 51 percent and air particulate emissions by 85 percent since 2005. See Figure 3 for Xcel's progress towards its environmental goals.

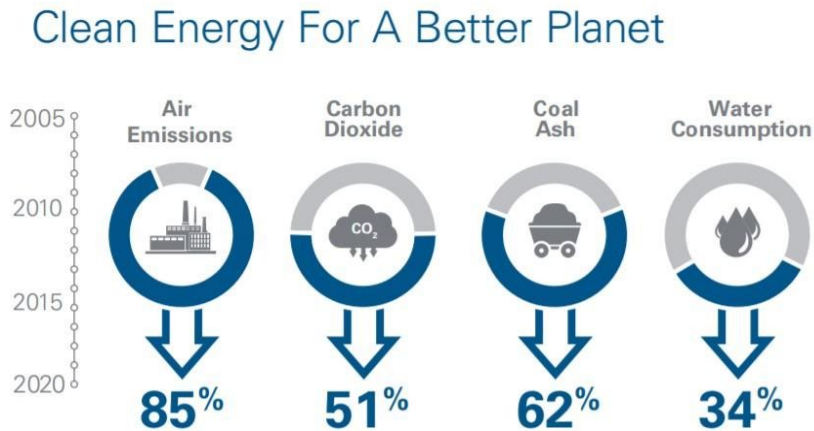


Figure 3. Xcel Energy's progress towards its environmental goals.

- Summit County and the Towns of Dillon, Frisco, and Breckenridge have adopted the Summit Sustainable Building Code. This code requires new residential and commercial buildings to achieve energy efficiency savings above code minimum. It also requires electric vehicle charging stations for homes and businesses.

TRANSPORTATION FUEL USE

Without any airports within county limits, vehicle use is the main driver of transportation emissions in Summit County, followed by off-road vehicle travel and marina emissions.

Cars and trucks are the primary sources of vehicular emissions, while freight trucks are a distant third. There were 288 registered electric vehicles (EVs) registered in Summit County in 2020, with one-third of those being plug-in hybrid electric vehicles and the remaining two-thirds being battery electric vehicles. This is a 488 percent increase from the number of registered EVs in 2017 (49).

Compared to 2017, in 2020, transportation emissions in Summit County decreased by 10 percent. Due to the COVID-19 pandemic, travel outside of necessary trips was

strongly discouraged, which likely was a strong factor in the reduction of transportation emissions within the County. The majority of transportation emissions come from unincorporated Summit County (78 percent) due to I-70 traffic, followed by Silverthorne (7 percent) and Breckenridge (6 percent).

RECENT TRENDS

- Colorado currently ranks 9th in the nation for highest EV market share.¹
- Summit County currently has 116 total charging ports.² In 2017, there were 9 available public charging stations.
- Since 2017, the number of registered electric vehicles in Summit County has increased nearly five times over, increasing from 49 to 288 vehicles (488 percent).
- Summit County and Town of Breckenridge offer free public transit; increasing the availability of and access to these options will likely lead to decreased vehicle miles traveled in future years.

LANDFILLED WASTE AND WASTEWATER TREATMENT

In 2020, emissions from landfilled and composted waste created nine percent of emissions in Summit County. The majority of waste emissions are from methane as biological waste decomposes in the landfill. See Figure 4 for a breakdown of Summit County's waste stream. Additionally, GHG emissions from wastewater treatment totaled 0.2 percent of emissions. Together, emissions from waste and wastewater treatment comprised just over 9 percent of the County's total emissions.

Since 2017, waste emissions have increased by more than 7 percent within the County. This is likely due to multiple impacts from the COVID-19 pandemic, including second homeowners relocating to the County due to the rise in remote work and the increased use of single-use disposable items, such as wipes, masks, and gloves.

RECENT TRENDS

- In 2018, the Strong Future mill levy passed, generating an estimated \$1.7 million annually for recycling programs.
- Breckenridge, Dillon, and Frisco have plastic bag bans, and Dillon is in the process of banning Styrofoam takeout containers.

¹ See: <https://afdc.energy.gov/data/10962>.

² See: <https://atlaspolicy.com/evaluateco/>

- Summit County has a commercial composting and recycling facility and multiple community recycling and food scrap drop-off sites.
- Keystone and Breckenridge Ski Resorts have pledged to be zero-waste by 2030.
- Arapahoe Basin Ski Area achieved a 63 percent diversion rate during the 2019/2020 ski season.³

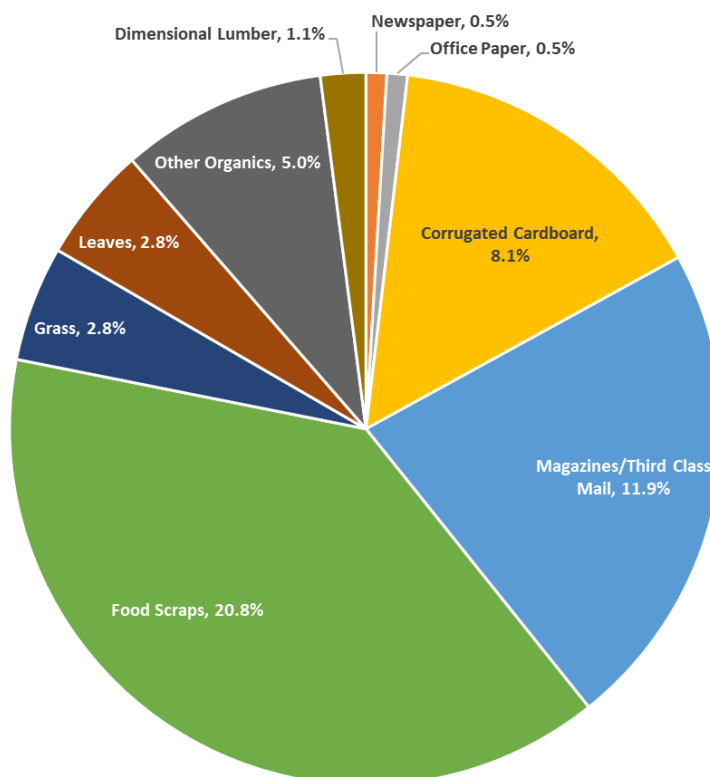


Figure 4. Summit County's Waste Characterization.

TOURISM

- Tourism plays a large role in the economy of Summit County, resulting in a disproportionately large number of housing units unoccupied by year-round residents. Instead, these homes are primarily used as vacation rentals.
- In 2017, \$973 million dollars were spent in Summit County on direct travel spending – a 60 percent increase between 2007 and 2017.⁴ However, in 2020, travel spending decreased across Colorado, as did tourism and travel-related employment. In Summit County specifically, 2020's COVID-19 pandemic

³ See: <https://www.arapahoebasin.com/about/sustainability/>.

⁴ Data from Dean Runyan Associates Annual Report: <https://www.travelstats.com/dashboard/colorado>.

resulted in a 3 percent decrease in spending and a 16 percent drop in employment since 2019.⁵ It is predicted that tourism will increase again in 2021, which could lead to an increase in GHG emissions in both the building energy use and transportation sectors.

- Arapahoe Basin will be net-zero by 2025. The ski area also aims to achieve 100 percent renewable electricity and 75 percent landfill diversion by 2025.⁶ So far, Arapahoe Basin is powered by 53 percent renewable electricity is currently 62 percent carbon neutral.
- Keystone and Breckenridge Ski Resorts have goals to generate net-zero emissions by 2030.

CARBON SEQUESTERED IN FORESTS

Forests sequester carbon from the atmosphere in order to grow, and they store that carbon in trees as well as the soil. In fact, of all land cover types, including grasslands, shrublands, urban areas, and agricultural lands, forests store and sequester the greatest quantity of carbon. Maintaining and restoring forested areas is one way to help mitigate the impacts of human-caused climate change.

Approximately 52 percent of the land area within Summit County is classified as Forest. These forests primarily fall in the unincorporated areas of the County. Despite the advantage forests present for carbon sequestration, local communities should still prioritize installing renewable energy systems and expanding cleaner transportation systems over planting and restoring forests. This is because, following all GHG calculation protocols, carbon sequestered in land and forests cannot be subtracted from a municipality's emissions. However, carbon sequestration can be tracked as a way to measure the impact of natural climate solutions.

⁵ Data from Dean Runyan Associates Annual Report: <https://www.travelstats.com/dashboard/colorado>.

⁶ See: <https://www.arapahoebasin.com/about/sustainability/>.