

Eagle County Energy Inventory

2017 data on energy use, costs and emissions



EAGLE COUNTY

KEY FINDINGS

Greenhouse gas emissions from energy use in Eagle County in 2017 totaled 1.28 million metric tons of carbon dioxide equivalent (CO₂e). This is a reduction of 59,900 metric tons compared to 2014, a 4% reduction.

This reduction in emissions comes primarily in the electricity sector, which was reduced by 27%. Eagle County users consumed 2% less electricity, and Holy Cross Energy increased renewables on the grid from 20.3% in 2014 to 39% in 2017.

Natural gas usage in buildings remained about the same as 2014. (See note page 4.) As the electricity sector

improves, efforts will need to focus on reducing natural gas usage in homes, businesses and governments.

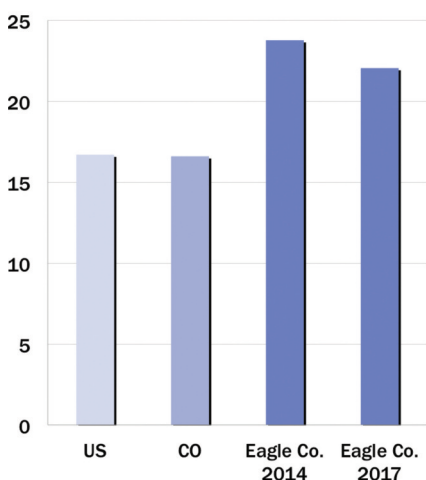
Transportation emissions increased and the largest sector is still passenger vehicles, particularly SUVs and trucks. Reduction efforts need to focus on increased ridership on transit and increasing the adoption of electric vehicles.

Solid waste in Eagle County is currently diverted at a rate of 15%, leaving lots of opportunities for increased diversion efforts. In order to reduce emissions at the landfill, diversion efforts need to focus primarily on food waste.

Section 1: Overview of Emissions

Emissions in 2017

Total carbon dioxide equivalent (CO₂e) emissions: 1,288,892 metric tons



1. Emissions per Capita, 2014 & 2017
Metric tons of CO₂e

Greenhouse gas emissions divided on a per capita basis are higher in Eagle County than the U.S. and Colorado. Contributing factors are transportation, second homes and lodging.

See the Appendix in the 2014 Inventory for an explanation of the impact of sporadically occupied second homes on per capita energy use.

2. Change in Emissions by Sector, 2014 - 2017

Metric tons of CO₂e

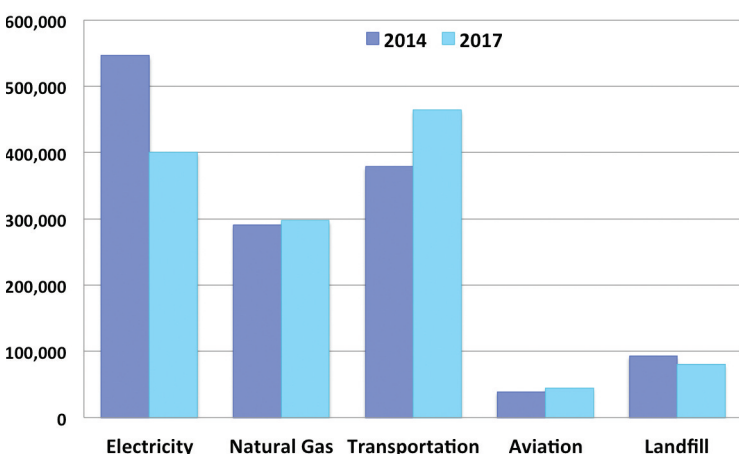
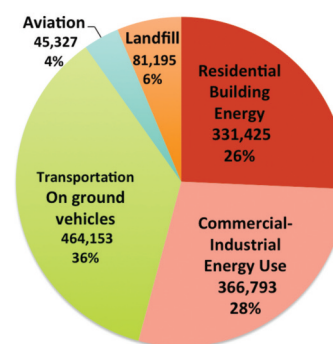


Chart 2 shows the change in emissions in each sector between 2014 and 2017. The largest change is in electricity usage.

The landfill implemented composting in this time period, reducing methane emissions from that source.

3. Emissions by Sector, 2017

Metric tons of CO₂e



4. Emissions by Source, 2017

Metric tons of CO₂e

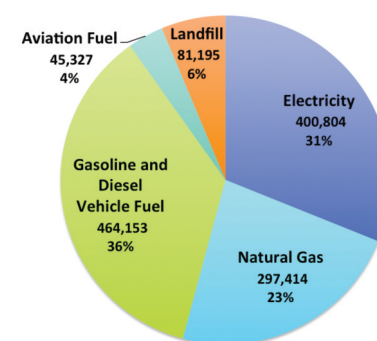
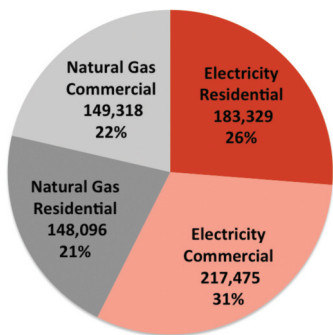


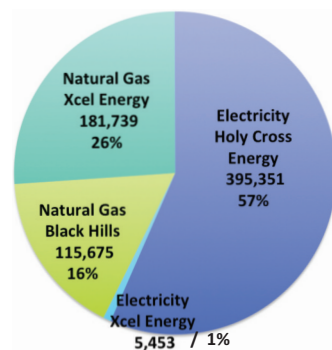
Chart 3 shows emissions by use sector. Chart 4 shows emissions by fuel source. The residential and commercial-industrial sectors contribute the largest percentage of emissions in the county. By fuel, electricity is the largest share of emissions, followed by gasoline and diesel fuels for transportation.

Section 2: Utility Energy

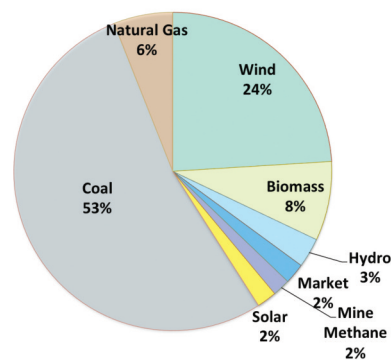
5. Emissions by Sector
Metric tons of CO₂e



6. Emissions by Utility
Metric tons of CO₂e



7. Holy Cross Energy Electricity by Sources
Renewable energy: 39%



- Holy Cross Energy purchases power from Xcel Energy, Western Area Power Administration (hydropower), and holds power purchase agreements for coal mine methane, hydropower and wind projects.
- Holy Cross Energy provides 99% of the electricity consumed by grid-tied customers in Eagle County.

Emissions from electricity consumption dominate the energy used in buildings.

Section 3: Community Energy Emissions

8. Emissions by Community
by Residential and Commercial Sectors, 2017
Metric tons of CO₂e

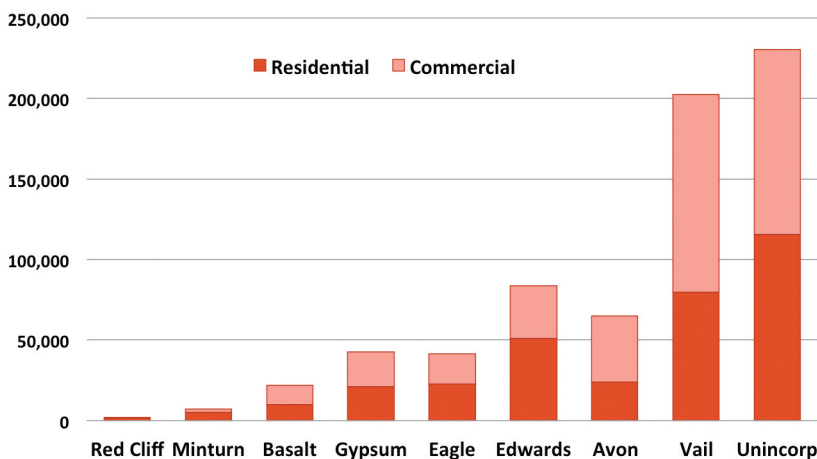
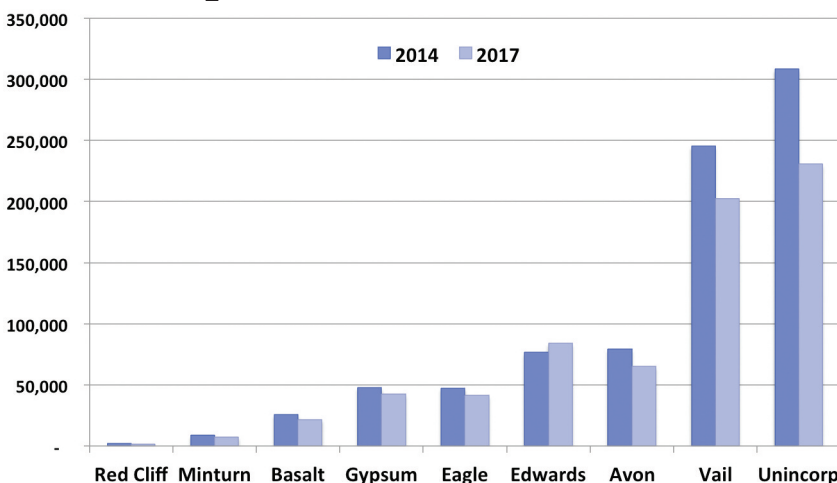


Chart 8 shows emissions in each community attributed to energy use in the residential and commercial sectors.

9. Change in Emissions by Community,
by Residential and Commercial Sectors, 2014 & 2017
Metric tons of CO₂e



Notes for Section 3 charts:

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.

Chart 9 shows that the reduction in emissions was shared across all the communities, except for the Edwards zip code area.

Difficulty in obtaining quality natural gas consumption data from Black Hills Energy might explain the increase in the Edwards zip code. Another factor might be additional housing units built in that zip code during the time period.

Section 4: Transportation Energy Emissions and Use

10. Eagle County Transportation Emissions, 2017

Metric tons of CO₂e

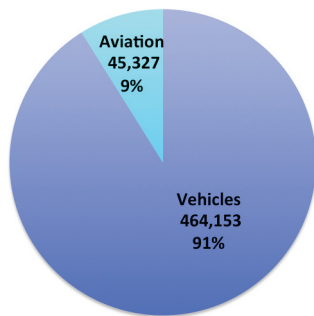


Chart 10. To calculate motor vehicle energy use, the research team determined the best available method was to use Colorado Department of Transportation traffic statistics for Eagle County. CDOT data does not include county roads or city streets. Because of this missing information, this inventory's estimate is inherently conservative and very likely an underestimate of total transportation energy use.

Because of the economic importance of I-70 to the region for destination traffic, the high percentage of local traffic on I-70, and the built-in underestimation due to missing city street traffic, the research team chose to include 100 percent of I-70 traffic along with U.S. Highway 6 data to represent the county's total vehicle miles traveled.

11. Eagle County Energy Use by Vehicle Class, 2014 & 2017

Thousands of Gallons

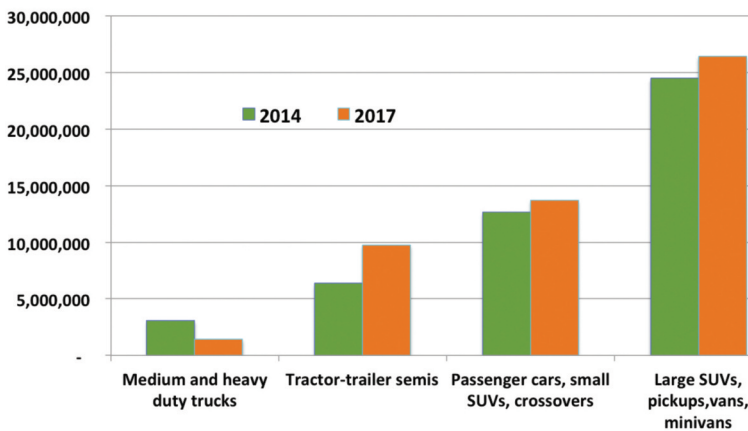


Chart 11. Vehicle miles traveled (VMT) data was combined with a 2014 survey from Aspen (the nearest regional data available) to estimate miles traveled per vehicle type, including cars, pickups, and medium and heavy trucks.

12. U.S. Transportation Sector Emissions by Source, 2016

Metric tons of CO₂e

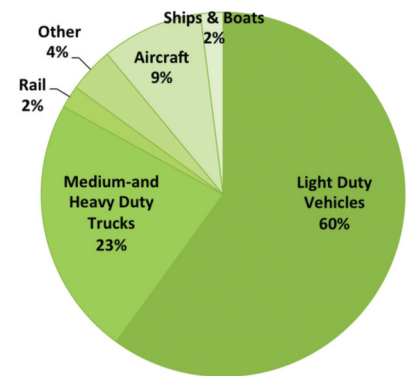


Chart 12. Eagle County's transportation emissions and fuel use are consistent with transportation emissions across the U.S.

Within the transportation sector, light-duty vehicles (including passenger cars and light-duty trucks) are the largest category, responsible for 60 percent of emissions. Medium- and heavy-duty trucks made up the second largest category, with 23 percent of emissions.

Between 1990 and 2016, emissions nationwide in the transportation sector increased more in absolute terms than any other sector (i.e. electricity generation, industry, agriculture, residential, or commercial).

Section 5: Solid Waste Emissions

13. Aggregated Eagle County Solid Waste by Category, 2017

Chart 13. The Eagle County Landfill received 84,022 tons of disposed waste in 2017.

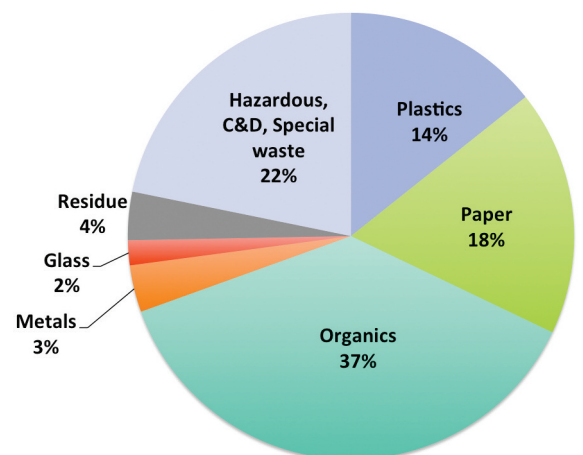
An audit of incoming waste conducted in 2017 shows the proportion of waste types. Based on these percentages, incoming waste to the landfill produces 81,194 tons of CO₂e per year.

Organic material left to decompose in the landfill is the primary source of solid waste emissions.

Increased diversion efforts can reduce solid waste emissions.

Efforts should focus on reducing food waste and paper waste. When combined, these two sources are 55% of the weighted average of disposed materials at the landfill.

The diversion rate in 2017 was 15%. The statewide average diversion rate is 12%. Some neighboring counties do better. Routt County has a diversion rate of 24%, and Pitkin County diverts 40%.



Sources and Acknowledgements

Data collection and analysis by Erica Sparhawk and Karleigh Dean, CLEER. Rick Heede, Climate Mitigation Services, reviewed transportation data. Kim Schlaepfer, Walking Mountains Science Center, collected landfill data.

Special thanks to Eagle County Commissioners Jeanne McQueeney, Jill Ryan and Kathy Chandler-Henry for their continued leadership on the role local government can take to address climate change, and for commissioning this emissions inventory to be used by the Climate Action Collaborative to measure progress towards its goals.

The following individuals provided data, insight, support and expertise for this report:

- John Gitchell, Eagle County
- Kim Schlaepfer, Walking Mountains Science Center
- Wayne Alderson, Holy Cross Energy
- Steve DeGrazio, Xcel Energy
- Noelle Hackley, Black Hills Energy

Note on natural gas data:

New data shows natural gas usage increased slightly in 2017 compared to 2014. This data is not fully comparable, however, because the dominant natural gas provider in 2014, SourceGas, was acquired by Black Hills Energy in 2016. Data provided by the two utilities for the two different years was not well aligned.

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 2017.

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 sectors can identify 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

Chart 1

U.S. Energy Information Administration: Energy-Related Carbon Dioxide Emissions by State, 2000-2015. Table 5.

Report Release Date: January 22, 2018

www.eia.gov/environment/emissions/state/analysis/pdf/table5.pdf

U.S. Census Bureau, Quick Facts. Eagle County.

www.census.gov/quickfacts/fact/table/eaglecountycolorado,co/PST045218

Charts 2 to 6

Eagle County Energy Inventory data gathered from Holy Cross Energy, Xcel Energy, Black Hills Energy, Colorado Department of Transportation, Eagle County Airport.

Northwest Colorado Waste Diversion Study, April 2018, Souder, Miller & Associates

Chart 7

Holy Cross Energy, 2017 CO₂ emissions report

Charts 8 and 9

Eagle County Energy Inventory data from utilities.

Chart 10

Colorado Department of Transportation: Vehicles Miles Traveled Statistics, data provided online.

Chart 11

Aspen VMT Model 2014 prepared by Charlier Associates (2015) **no other more current VMT models have been performed in the region*

Chart 12

U.S. Environmental Protection Agency: Fast Facts on Transportation Greenhouse Gas Emissions

www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions

Chart: 13

Northwest Colorado Waste Diversion Study, April 2018, Souder, Miller & Associates

Data about diversion rates in state and neighboring counties provided by LBA Associates.

