

City of Commerce City 2019 Community Greenhouse Gas Emissions Inventory Memo

October 2021

Overview

Recognizing the need to take a more proactive role in helping to prevent the most dire impacts from climate change, in 2021 the City of Commerce City (City) embarked on a number of sustainability-related initiatives, with a goal of becoming a more sustainable and environmentally just community. These efforts include completing a community-wide greenhouse gas (GHG) inventory to establish a baseline of GHG emissions for the community and develop a tool to measure changes in GHG emissions over time. GHG emissions are [heat-trapping gases that cause the planet to warm](#), and Commerce City's inventory includes emissions from all sectors, sources, and activities within the City boundary.

The year 2019 was selected for Commerce City's baseline emissions calculations; while more recent data from 2020 is available, the COVID-19 pandemic caused 2020 to be a less-than-normal year, impacting many emissions sources including vehicular travel, energy use in buildings, and the use and disposal of materials. Because of these anomalies, it was determined that 2019 would provide a more accurate representation of a "normal" year for Commerce City.

The City hired Lotus Engineering and Sustainability, LLC (Lotus) to complete a 2019 community GHG emissions inventory. The inventory was created using the methodology outlined in the [Global Protocol for Community-Scale GHG Inventories](#) (GPC) for a standard BASIC inventory; additional emissions sources from industrial activities in the community were also included in the inventory to capture an accurate picture of community-generated emissions. This report describes the results of the 2019 GPC BASIC inventory.

2019 Emissions by Sector

Emissions sectors are the broad categories of activities that result in greenhouse gas emissions. Commerce City's inventory is broken down into the following emissions sectors:

- Building Energy Use.
- Transportation.
- Waste.
- Industrial Processes and Product Use.

Emissions sectors can be further broken down into sources of emissions, which represent the specific activities resulting in the emissions. Emissions sources within each sector are further detailed in the following pages of this memo.

In 2019, greenhouse gas emissions in Commerce City totaled 1,945,937 metric tons of carbon dioxide equivalent (mt CO₂e). The largest emissions-producing sector was the Industrial Processes and Product Use sector, which accounted for 57% of all GHG emissions. Following this, Building Energy Use and Transportation made up 25% and 14% of total emissions, respectively. See Table 1 and Figure 1 below for a breakdown of emission by sector and source.

Table 1. Commerce City 2019 greenhouse gas emissions by sector and source.

Emissions Sector	GHG Emissions (mt CO ₂ e)	Percent of Total
Buildings	489,212	25%
<i>Electricity Use</i>	293,612	15%
<i>Natural Gas</i>	195,477	10%
<i>Other Energy Use</i>	114	0.01%
Transportation	274,753	14%
Waste	78,179	4%
<i>Solid Waste</i>	72,656	4%
<i>Wastewater Treatment</i>	5,523	0.3%
Industrial Processes & Product Use	1,103,792	57%
<i>Suncor Energy</i>	949,972	49%
<i>Other Industrial Emitters</i>	145,135	7%
<i>Refrigerants</i>	8,685	0.4%
Total	1,945,937	100%

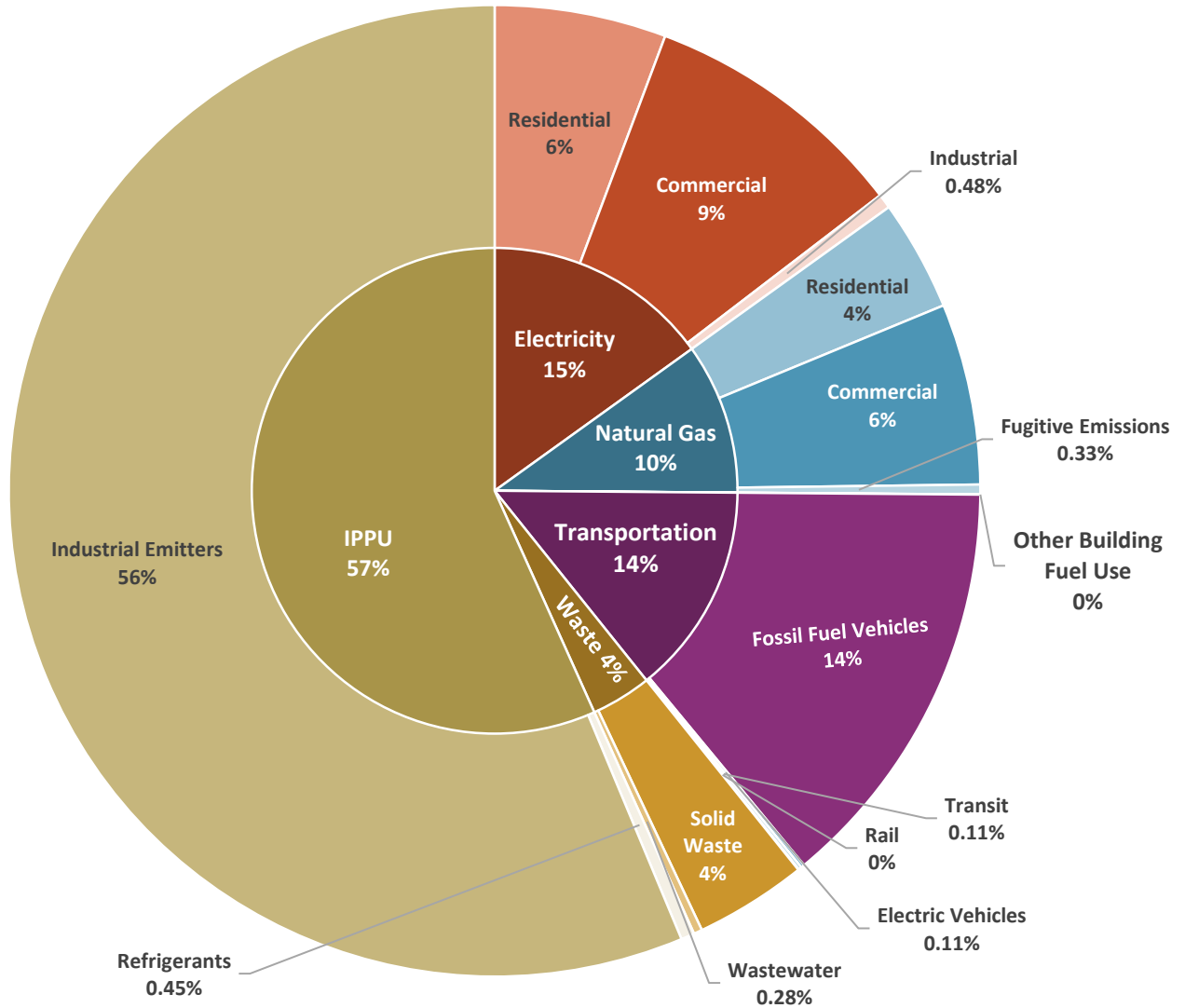


Figure 1. Commerce City's 2019 emissions by sector and source.

STATIONARY ENERGY

In 2019, emissions from buildings and homes accounted for 25% of Commerce City's community GHG emissions (489,212 mt CO₂e). Figure 2, below, breaks down the specific sources of those emissions from community buildings.

Electricity use accounted for 60% of Commerce City building energy use emissions in 2019 (293,621 mt CO₂e) and natural gas use made up 40% of building energy use emissions (195,477 mt CO₂e), including fugitive emissions.

It is also helpful to understand the types of buildings that are using energy and therefore creating emissions. In 2019, commercial and industrial buildings (e.g., shops, offices, hotels, warehouses, and other places of business) accounted for 61% of emissions (299,843 mt CO₂e), while homes made up 38% of Commerce City's total building energy use emissions (182,995 mt CO₂e). One percent of emissions are from fugitive natural gas leakage during the distribution process.

TRANSPORTATION

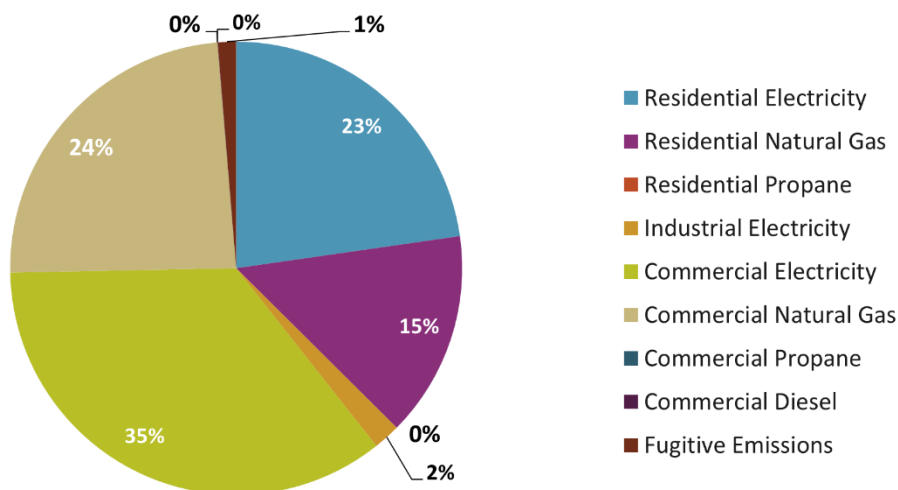


Figure 2. Commerce City's 2019 stationary energy use sector emissions.

In 2019, Commerce City transportation sector emissions accounted for 14% of Commerce City's community greenhouse gas emissions (274,753 mt CO₂e). See Figure 3 below.

On-road vehicles, including personal vehicles and freight trucks, accounted for 99% of transportation emissions (272,234 mt CO₂e). Transit activities (i.e., RTD buses) accounted for 0.8% of transportation emissions (2,114 mt CO₂e), while emissions from railway activities on the Denver Rock Island Railroad and Amtrak lines accounted for 0.2% of the total transportation emissions (405 mt CO₂e). RTD's N Line, a commuter rail line that runs through Commerce City, opened for operations in September 2020, and therefore is not included in transportation emissions in the 2019 inventory.

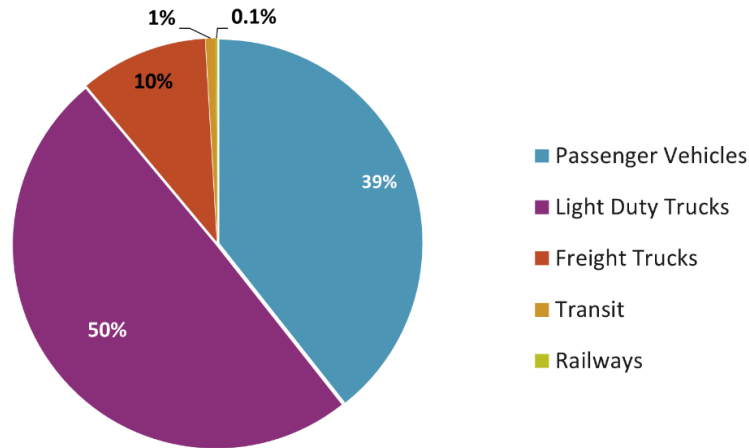


Figure 3. Commerce City's 2019 transportation sector emissions.

WASTE & WASTEWATER

In 2019, waste sector emissions totaled just over 4% of Commerce City's community greenhouse gas emissions (78,179 mt CO₂e). Tower Road Landfill, owned and operated by Republic Services, exists on the northeastern edge of the City and collects waste, including Construction and Demolition waste, from several municipalities across the metro area. A1 Organics composting facility is also within City limits. Since the Tower Road Landfill and A1 Organics are within the City's boundary, all emissions from waste disposed at these sites are included in Commerce City's emissions total.

About 85% of emissions from the waste sector are the result of waste sent to the Tower Road landfill (66,785 mt CO₂e). One percent of waste sector emissions come from the A1 Organics facility, and just over seven percent come from solid waste that is produced within the City but disposed of by haulers who transport the waste outside of the City.

Wastewater treatment emissions account for the remaining 7% of waste sector emissions (5,523 mt CO₂e). All wastewater emissions are produced at the Robert W. Hite Wastewater Treatment Facility, which is located in Commerce City and treats wastewater from the City and surrounding metro area communities, including Denver. While Commerce City could choose to account for only the wastewater emissions generated from activities within the City (i.e., from water use and wastewater production at homes and buildings inside Commerce City), the City chose to report all emissions from the facility because the City may have the opportunity to influence and support enhancement in sustainable operations at the facility through policy and permitting processes.

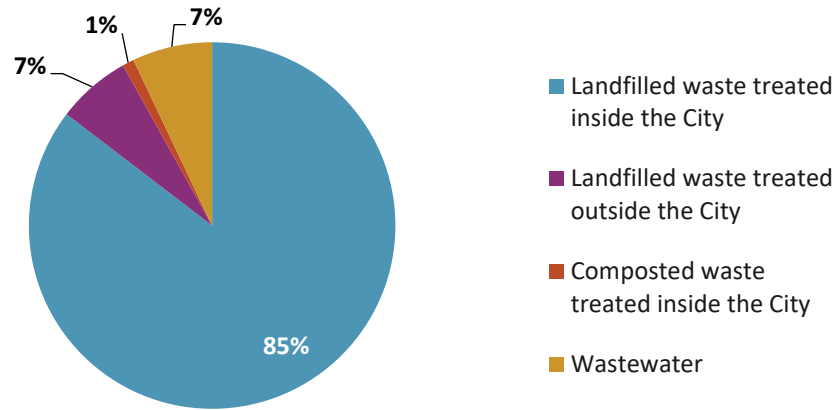


Figure 4. Commerce City's 2019 waste sector emissions.

INDUSTRIAL PROCESSES & PRODUCT USE

In 2019, emissions from industrial processes and product use (IPPU) totaled just over 57% of Commerce City's community greenhouse gas emissions (1,103,792 mt CO₂e). The IPPU sector includes emissions from refrigerant use and other large industrial emitters, such as Suncor Energy. Specifically, Suncor Energy comprises 86% of Commerce City's IPPU sector emissions and 49% of Commerce City's overall community emissions (949,972 mt CO₂e). Other industrial emitters, including local cement production facilities and boilers at other industrial facilities, comprise 13% (145,135 mt CO₂e) and refrigerants comprise 1% of IPPU emissions (8,685 mt CO₂e). See Figure 5 below.

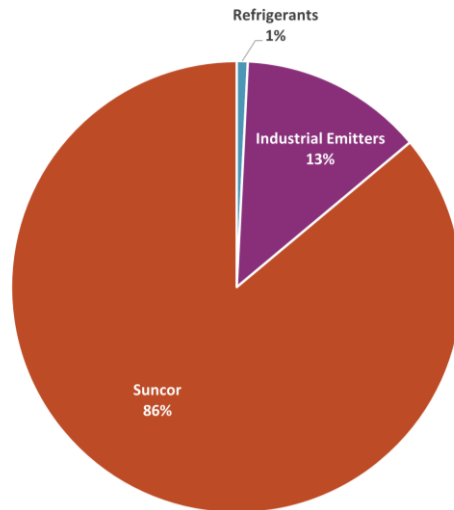


Figure 5. Commerce City's 2019 industrial processes and product use sector emissions.

Comparison to Surrounding Metro Denver Communities

Compared to other cities in Colorado, Commerce City ranks amongst the highest for emissions per capita and emissions per person employed within the community, and the highest for emissions per household. The City has higher emissions for a city its size. For instance, Longmont is a city nearly twice the size in population as Commerce City yet it has nearly the same quantity of emissions, see Table 2 below.

Table 2. Comparison of GHG inventory metrics between cities across Colorado.

City of Comparison	Inventory Year	Total BASIC Emissions (mt CO2e)	Emissions per Capita	Emissions per Household	Emissions per Employed Person
Commerce City, CO	2019	841,826	14.9	50.1	28.5
Denver, CO	2019	8,428,848	11.6	28.6	13.8
Boulder, CO	2019	1,466,276	12.3	31.7	14.1
Lakewood, CO	2018	1,480,119	9.8	22.0	17.1
Aspen, CO	2017	305,319	43.0	49.1	63.8
Fort Collins, CO	2019	2,100,000	12.3	28.9	20.5
Lafayette, CO	2015	287,604	10.2	29.9	17.4
Longmont, CO	2019	991,627	10.3	27.3	19.7
Westminster, CO	2017	1,215,880	10.8	25.5	25.3

Conclusion and Next Steps

Commerce City's first GHG inventory paints a picture of how community activities contribute towards global emissions and the climate crisis. Fully equipped with this information, Commerce City can use this data to understand where there is the greatest opportunity to reduce GHG emissions and enhance community-wide environmental sustainability over the coming years. Following the completion of this inventory, Lotus will develop a business-as-usual emissions forecast for the City that estimates total emissions from the baseline year through 2050. This forecast will illustrate the areas where existing State and utility policies and programs are already anticipated to have an impact on community emissions, and where the City can achieve greater emissions reductions through local policies, programs, and regulations.