City of Mountain View

COUNCIL REPORT

DATE: June 10, 2025

CATEGORY: Consent

DEPT.: City Manager's Office

TITLE: **2023 Community Greenhouse Gas Emissions Inventory**

RECOMMENDATION

Accept the 2023 Community Greenhouse Gas Emissions Inventory.

BACKGROUND

The most recent climate goal adopted by the City Council was on April 21, 2020 to become a carbon-neutral city by 2045. Every year, staff provides an update on the community's progress in reducing greenhouse gas (GHG) emissions. On April 29, 2025, staff presented the 2023 Greenhouse Gas Emissions Inventory to the Council Sustainability Committee (CSC). The CSC unanimously accepted the inventory and recommended acceptance by City Council.

This year, staff is transitioning to bringing a single-year final inventory for 2023 rather than a staggered preliminary and final inventory for two separate years, which has been the approach in previous years. The final 2022 results have been incorporated into the year-by-year comparison graphs in the Analysis section of this report.

To support the City's climate goals, the City Council authorized a scope of work and contract on November 19, 2024 to develop a technical analysis of two decarbonization target years, 2035 and 2040. The project is currently under way, and the GHG emission information in this report will support the decarbonization analysis.

Staff also presents a City municipal GHG inventory every three to five years, with the last report presented in 2022. Another inventory will be completed by 2027 to reflect progress from upcoming City projects, such as fleet and equipment electrification and installation of solar arrays and battery energy storage system projects.

ANALYSIS

A communitywide GHG inventory measures sources of local GHG emissions from residential and commercial activities, which are typically from:

- Building energy use (electricity and natural gas), including electric vehicle charging;
- Fossil fuel-powered vehicle use (e.g., gasoline and diesel);
- Off-road equipment (e.g., construction, industrial, and gardening equipment);
- Energy used to transport and treat water; and
- Waste produced by the community and emissions from the closed Shoreline Landfill.

The inventory does not capture all local emissions related to the community, such as emissions from food, air travel, or manufacturing goods, because they are difficult to measure. It also does not capture all the impacts of local GHG-reduction policies or programs, such as plant-based eating and tree-planting programs. The reductions from implementation of various Mountain View transportation policies and programs are also challenging to capture in a GHG inventory that uses aggregated and modeling data to assess emissions. See Attachment 1 for how data is used to measure GHG emissions for the community. To address Council and community interest in this additional information, staff will begin to report on progress and achievements made in Mountain View that relate to the GHG-emission reductions from residential and commercial activities. In addition, the decarbonization analysis for 2035 and 2040 that is under way will explore how to incorporate Mountain View policies and programs that reduce emissions into future GHG inventories.

2023 Community Greenhouse Gas Emissions Inventory Results

The 2023 Community Greenhouse Gas Emissions Inventory (2023 Inventory) represents a rough estimate that is subject to change as better data and methodologies become available. Year-by-year comparisons can be misleading as external factors may influence the increase or decrease of emissions in any given year, such as economic booms/recessions or a pandemic. Viewing GHG emission trends over time is useful in providing a general understanding on how policies, programs, and technologies are reducing emissions.

Given that the City Council adopted a goal to be carbon-neutral by 2045 and to accurately view trends over time, a rolling five-year average of past inventories to compare the most recent inventory will be used to gauge community emission reductions. While this rolling average will typically be collected over five years, with community inventories conducted on an annual basis, there is currently inadequate sequential data to make this possible for the 2023 Inventory. This

is due to lacking sufficient 2016 data and 2020 to 2022 being anomalies due to the pandemic. Thus, the 2023 GHG-emissions inventory will use a four-year rolling average (2015, 2017, 2018, and 2019) as the primary basis of comparison in this report. Future inventories will include a five-year rolling average, continuing to exclude the pandemic years of 2020, 2021, and 2022.

Table 1 provides the 2023 GHG emissions and compares them to the rolling average baseline (2015, 2017, 2018, 2019) of the four most recent inventories, excluding 2020, 2021, and 2022. The City is on a path toward decarbonization with 2023 emissions, 32% below the rolling average baseline. Individual sectors, such as water, building electricity, and transportation, have made notable reductions due to state policies and City actions described in the respective sections below. Figure 1 provides a year-by-year comparison, in which it can be seen that 2023 emissions are higher than the three years (2020, 2021, and 2022), in which emission reductions were driven by pandemic conditions.

Table 1: Results of the 2023 Community GHG Inventory

	Rolling Average Baseline (2015, 2017, 2018, 2019) Emissions (MT CO_2e)[1]	**2023 Total Emissions (MT CO_2e)**	**Percent <u>Below</u> 2015-2019 Rolling Average**
Annual Emissions	672,947	509,660	32%
Individual Inventory Sectors			
On-Road Transportation	422,009	293,538	44%
Building Natural Gas	113,257	111,495	2%
Building Electricity	76,558	51,862	48%
Off-Road Transportation	41,076	39,548	4%
Waste	17,642	12,484	41%
Water	2,406	732	229%

[1] MT CO_2e stands for metric tons of carbon dioxide equivalent. It is a metric used to standardize the measurement of GHG emissions and provides a common unit that allows different gases, such as methane (CH_4) and nitrous oxide (N_2O), to be compared based on their global warming potential.

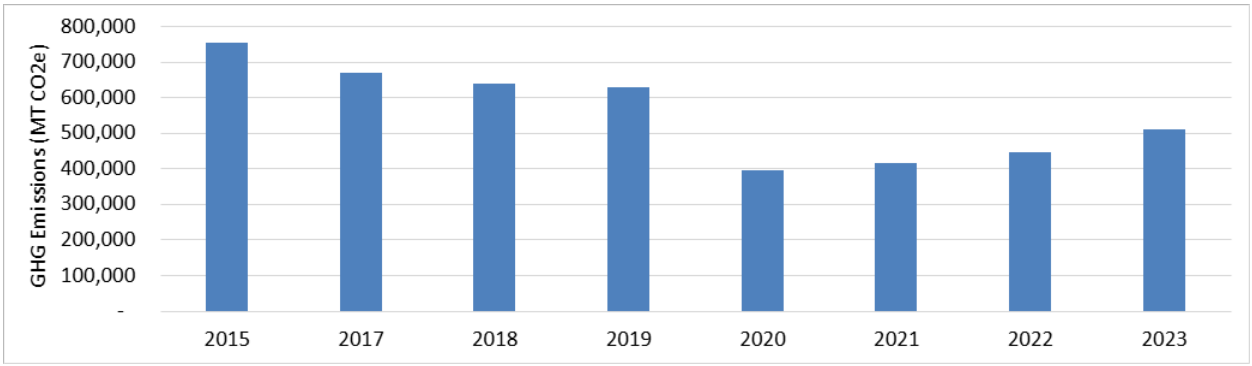


Figure 1: Community GHG Emissions 2015 through 2023

Figure 2 shows a breakdown of 2023 emissions by sector. Transportation and natural gas used in buildings are the two largest emissions sources and account for 80% of the City's emissions.

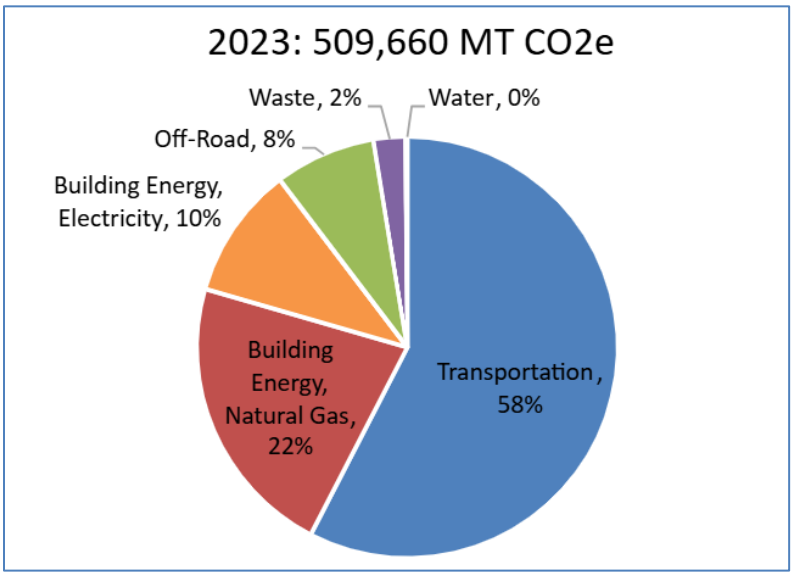


Figure 2: 2023 Emissions by Sector

The inventory methodology and data sources are detailed in Attachment 1.

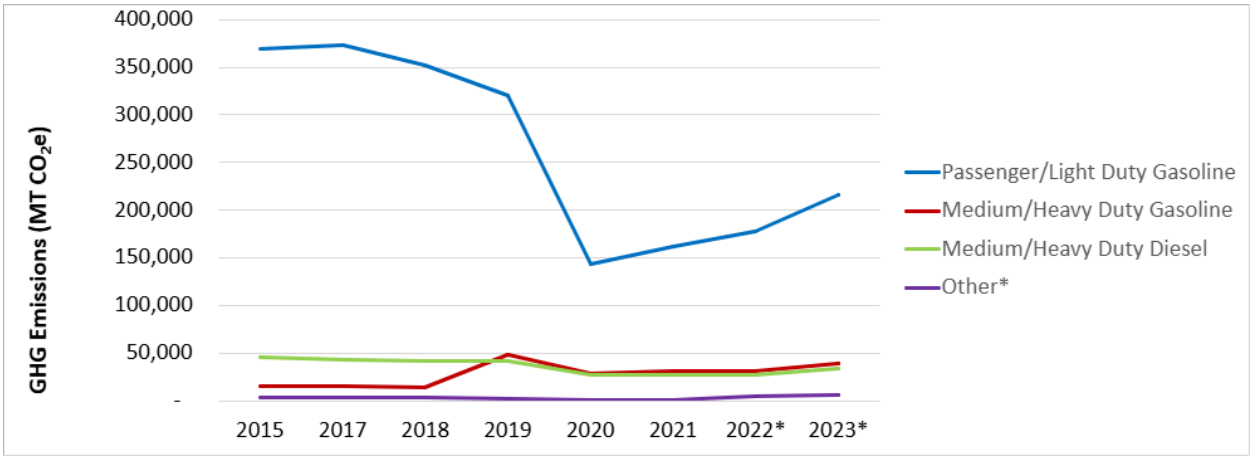
Trends and Insights for Each Emission Source

Each sector of the community GHG inventory in Figure 2 above has trends that are notable and provide insights on how Mountain View can influence the reduction of emissions. The following sections provide details on the emissions trends in each sector.

Transportation

Although transportation emissions have declined, gasoline-powered passenger vehicles and light-duty trucks still continue to generate most of the City's emissions (over 50%) as shown in Figure 3. The City can further reduce these emissions by continuing to support transit-oriented development, municipal fleet electrification, neighborhood walkability, travel by nonvehicular modes, remote work efforts, and the transition to zero-emission vehicles for residents. Staff will present a multi-family electric vehicle (EV) charging gap analysis to the CSC this year to support efforts to reduce emissions associated with transportation. These strategies can also contribute to other community benefits, such as improved air quality, safer streets, a vibrant downtown, and improved public health. Staff also monitors other transportation trends, including travel modes and electric vehicle adoption. Staff is also supporting development of the Citywide Transportation Demand Management (TDM) Ordinance that seeks to reduce single-occupancy vehicle trips and increase use of multi-modal transportation options.

Vehicle emissions dropped by 44% from the four-year rolling average, driven by higher fuel-efficiency standards, higher gasoline prices, and more EVs, e-bikes, and e-scooters. Daily per capita vehicle miles traveled (VMT) has also decreased from the four-year rolling average of 18.4 miles to 14.8 miles in 2023. It should be noted that the daily per capita VMT has increased post-COVID (for example, from 12.1 in 2022 to 14.8 in 2023). Staff will continue to monitor VMT values in comparison to the rolling average.



* The "Other" category includes emissions from On-Road Medium-/Heavy-Duty—CNG/LNG, On-Road Passenger/Light-Duty—Diesel, and Caltrain Diesel ONLY in 2022 and 2023.

Figure 3: Transportation Emissions by Vehicle and Fuel Type, 2015 through 2023

U.S. Census data shows that the percentage of residents driving alone to work largely declined from 2015 to 2022, mainly due to increased remote work during the pandemic (Table 2). However, in 2023, this number rose by 11% compared to 2022 as some organizations required

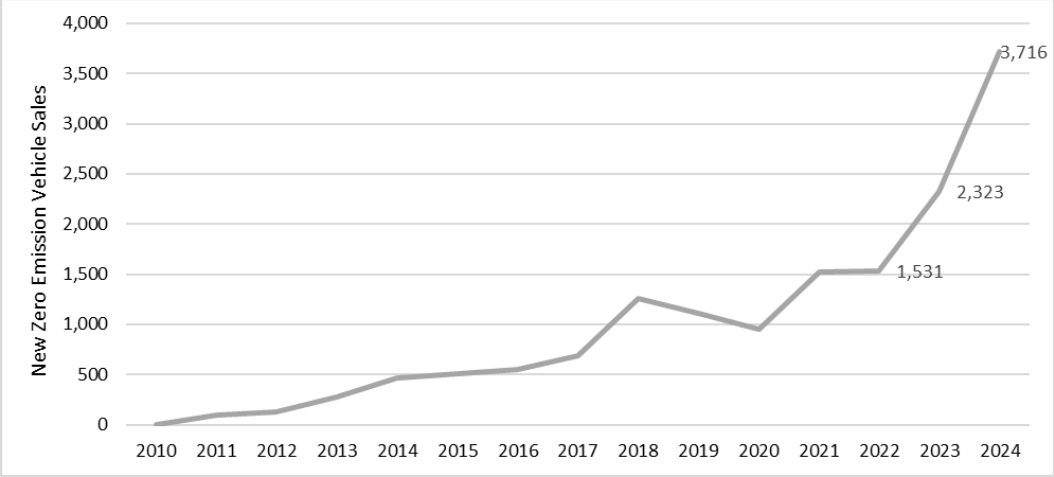
employees to return to the office. As the effects on the pandemic subside, it is likely there will be less fluctuation between in-person and remote work rates in the years following 2023.

Table 2: Commuting Characteristics of Mountain View Residents for 2015, 2022, and 2023

Means of Transportation to Work	2015	2019	2022	2023
Drove alone	73.40%	63.90%	53.20%	65.80%
Carpooled	6.00%	8.80%	4.50%	5.70%
Public transportation	5.30%	8.60%	2.10%	3.90%
Walked	2.70%	4.50%	3.20%	1.70%
Bicycle	7.20%	7.90%	5.60%	3.90%
Taxicab, motorcycle, or other means	1.90%	2.10%	1.20%	1.50%
Worked from home	3.40%	4.10%	30.20%	17.60%
TOTAL	**100.00%**	**99.90%***	**100.00%**	**100.10%***

* U.S. Census Data S0801 does not add up to 100%.

Sales of new zero-emission vehicles in Mountain View continue to grow as seen in Figure 4. This data includes sales made in 2024 as it is the most recent data available.



* Based on data from ZIP Codes 94035, 94039, 94040, 94041, 94042, and 94043.

Figure 4: New Zero-Emission Vehicle Sales in Mountain View Zip Codes Per Year*

On a Countywide level, zero-emission vehicles made up 43% of all new light-duty vehicle sales in Santa Clara County in 2023. The rise of increasing EV purchases can be attributed to many factors, such as increasing gasoline prices in California, availability of tax credits and incentives,

and the expansion of EV charging infrastructure across the state. This can lead to a decrease in the total cost of ownership for an EV as opposed to a conventional gasoline-powered car. This growth can be further supported by promoting and adopting EV/zero-emission vehicle rebates or incentive programs and expanding public and private charging infrastructure in Mountain View.

Building Energy

Low-emission electricity from Silicon Valley Clean Energy (SVCE) continues to drive the majority of Mountain View's building energy sector emissions reductions as shown in Figure 5. SVCE began providing low-carbon electricity to Mountain View in April 2017 and, currently, provides electricity to around 96% of residential and commercial customers in its service territory, previously served by PG&E.

SVCE has updated its energy portfolio over the years to meet electricity demand, which has led to an increase in emissions associated with its electricity generation. Building energy sector emissions have risen slightly because of these changes as well as from added customers due to new developments in Mountain View.

Over the past few years, these emission increases were partially, but not completely, offset by emission reductions due to the City's reach codes (Reach Codes). These Reach Codes regulated the design and construction of buildings and encouraged building electrification to take advantage of low-carbon electricity offered by SVCE.

With the transition of nearly all the community's electricity accounts to SVCE, starting in 2017, natural gas comprises the majority of energy-sector emissions. The City's GHG-reduction strategy focuses on reducing natural gas use by encouraging electrification of space and water heating of commercial and residential buildings. In 2024, the City Council adopted low-cost prewire requirements for new buildings that would allow gas appliances to be easily replaced with an electric alternative in the future. In April, the City launched the Year of the Water Heater Campaign that included providing heat pump water heater rebates to help residents electrify their homes.

Furthermore, the City will be exploring updated Reach Codes and zoning incentives to promote building electrification within the next year. However, the ability for the City to adopt Reach Codes will depend on whether Assembly Bill (AB) 306 is adopted by the state. If adopted, this bill would, from June 1, 2025 until June 1, 2031, prohibit a city or county from adopting Reach Codes that impact residential units to support more housing production. It would also pause state building code cycles for the same period. AB 306 passed the Assembly floor unanimously and will be voted on by the State Senate. The City had submitted a letter of opposition to AB 306 in April. Reach Codes that were adopted and effective on January 1, 2025 could be readopted in the next building code cycle (2025), including requirements such as the City's prewire rules. Staff

will work with SVCE to continue to explore other pathways outside of the Reach Code process to encourage building electrification.

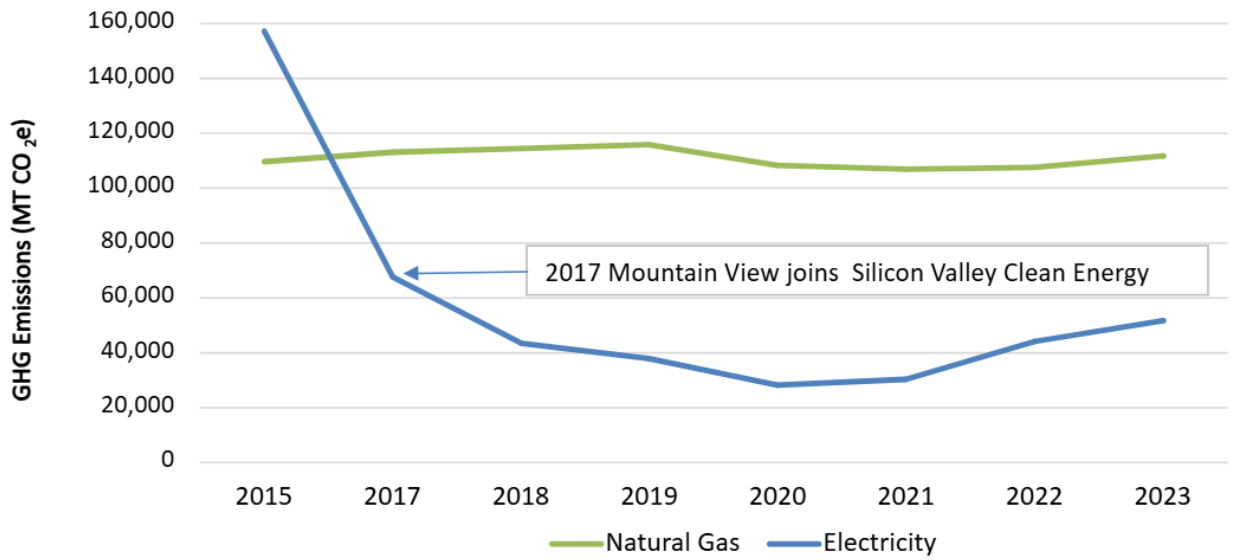


Figure 5: Residential and Nonresidential Energy Emissions, 2015 through 2023

Off-Road Mobile Equipment

Figure 6 shows off-road mobile equipment emissions from construction, commercial, industrial, lawn and garden, portable, and other equipment that uses gasoline or diesel.

In the coming years, staff expects off-road emissions to decline due to California Air Resources Board (CARB) banning the sale and manufacturing of all carbon/pollutant-emitting landscape equipment in 2024. The City is also making efforts to decrease off-road emissions by using all electric equipment at parks and doing outreach at the Day Worker Center.

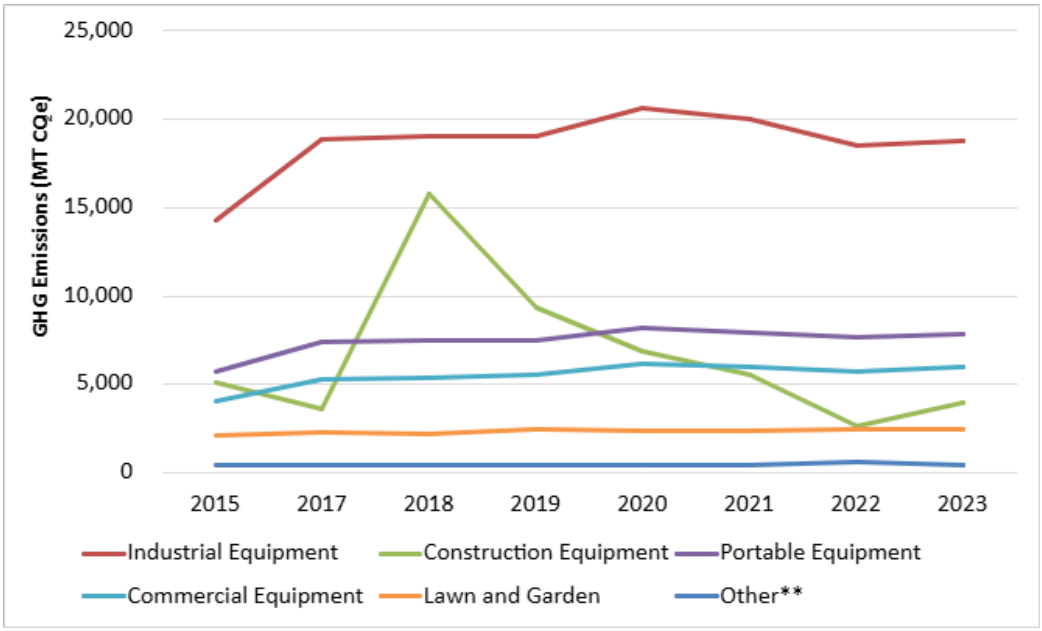


Figure 6: Off-Road Mobile Emissions, 2015 through 2023

Waste

Solid waste emissions are dependent on both the total amount of solid waste sent to landfills and the percentage of organic material in the waste stream. Organic material, such as yard trimmings, food scraps, and food-soiled paper, is the primary contributor of emissions from solid waste due to the release of methane as these materials decompose in a landfill.

In 2023, Mountain View implemented key policy updates to reduce landfill waste. The Food Service Ware Ordinance, effective January 1, required all disposable food ware to be either compostable through the City Organics program or fully recyclable aluminum. Additionally, food vendors were banned from providing straws, stir sticks, or toothpicks made from plastic, including compostable plastic. These policies play a role into the larger Zero Waste Plan that seeks to divert 90% of solid waste from landfills by 2030.

In 2024, through the Rethink Disposable Program, eight Mountain View businesses converted their dine-in food ware from disposable to reusable, and 27 businesses converted to-go food ware to compostable fiber-based containers compliant with the City's ordinance.

As shown in Figure 7, solid waste emissions have been dropping primarily because the amount of landfilled waste decreased.

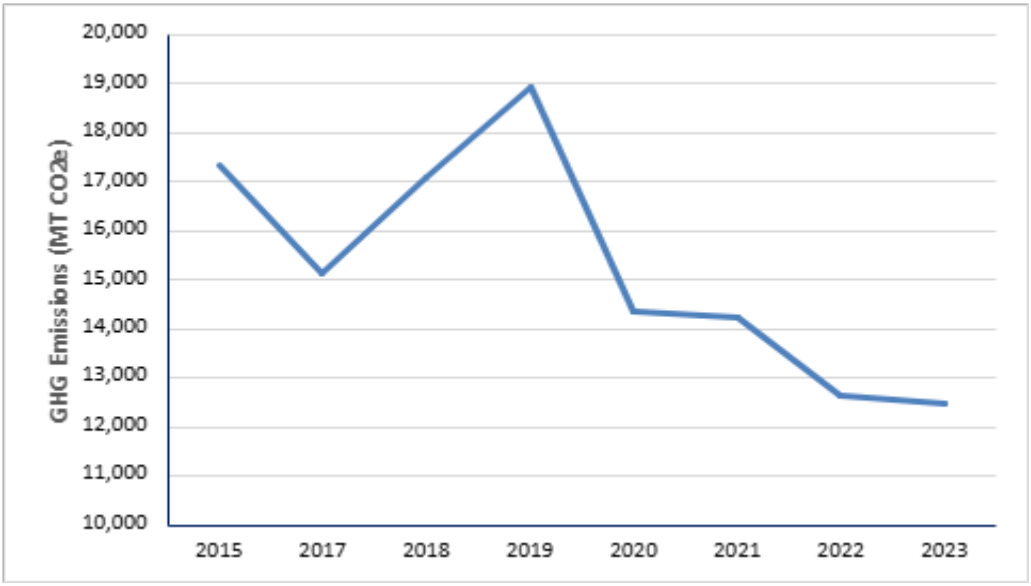


Figure 7: Solid Waste Emissions, 2015 through 2023

Water and Wastewater

This sector includes emissions from the energy used to treat wastewater and extract, convey, treat, and transport potable water. In recent inventories, wastewater treatment has contributed to over 95% of emissions from the water sector. Emissions associated with potable water use remain low as the water supply for Mountain View is primarily gravity-fed and requires very little energy. Increased conservation efforts would reduce emissions from potable water use and wastewater treatment.

Figure 8 shows the estimated wastewater emissions from 2015 through 2023. Natural gas use at the Palo Alto Regional Water Quality Control Plant (Wastewater Treatment Plant) contributes to most of the wastewater emissions. While the City of Palo Alto purchases carbon offsets for its natural gas use, there are still emissions associated with the on-site combustion of natural gas since inventory calculation protocols do not consider offsets as reducing local emissions. In 2019, the incinerators at the Wastewater Treatment Plant were decommissioned, decreasing natural gas use significantly. The Wastewater Treatment Plant transitioned to trucking biosolids off-site to processing facilities where they are converted into fertilizers and other beneficial products. As a result, emissions from wastewater treatment decreased by 55% between 2018 and 2019. In 2020, the first year that no biosolids were incinerated at the Wastewater Treatment Plant, emissions from wastewater treatment dropped another 44% and then remained similar in 2021 to 2023.

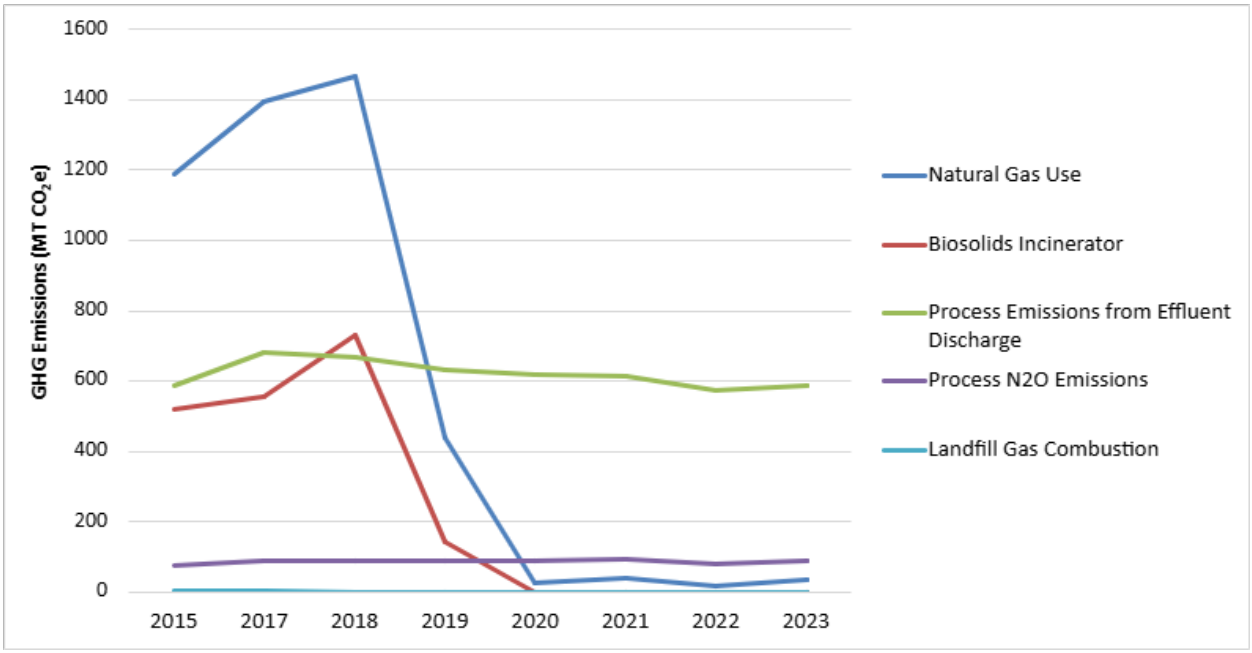


Figure 8: Wastewater Emissions, 2015 through 2023

FISCAL IMPACT

There is no fiscal impact associated with accepting the 2023 Community Greenhouse Gas Emissions Inventory. However, the inventory does inform where budget and resources may need to be spent to reduce emissions, such as implementing the Year of the Water Heater Campaign and investment in zero-emission vehicle infrastructure.

LEVINE ACT

California Government Code Section 84308 (also known as the Levine Act) prohibits city officials from participating in any proceeding involving a "license, permit, or other entitlement for use" if the official has received a campaign contribution exceeding $500 from a party, participant, or agent of a party or participant within the last 12 months. The Levine Act is intended to prevent financial influence on decisions that affect specific, identifiable persons or participants. For more information see the Fair Political Practices Commission website: www.fppc.ca.gov/learn/pay-to-play-limits-and-prohibitions.html

Please see below for information about whether the recommended action for this agenda item is subject to or exempt from the Levine Act.

EXEMPT FROM THE LEVINE ACT

☒ General policy and legislative actions

CONCLUSION

The 2023 Inventory indicates the community is reducing emissions through local, regional, state, and federal programs and policies. The City will continue exploring ways to accelerate emissions reductions through the development of the decarbonization goal analysis for 2035 and 2040, anticipated to be complete by 2026. Market, state, and federal efforts will also be key to achieving Mountain View's decarbonization goals.

ALTERNATIVES

1. Do not accept the 2023 Community Greenhouse Gas Emissions Inventory.

2. Provide other direction.

PUBLIC NOTICING

Agenda posting, and emails sent to community members interested in sustainability.

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Attachment: 1. Community Greenhouse Gas Emissions Inventory Methodology