DATE: March 18, 2025

TO: Mayor and City Council

FROM: Director of Public Works

SUBJECT Greenhouse Gas Emissions Inventory**:** Review and Discuss 2023 Greenhouse Gas Emissions Inventory (Report from Director of Public Works Ameri)

RECOMMENDATION

That the City Council reviews and comments on this report.

SUMMARY

The City Council-adopted General Plan includes greenhouse gas (GHG) emission reduction targets for the Hayward community. This report provides the results of the calendar year 2023 GHG inventory and compares them to previous inventories. Table 1 summarizes the total emissions for six sectors – electricity, natural gas, transportation (including public transit), off-road vehicles, solid waste, and water and wastewater. Emissions are measured in metric tons of carbon dioxide equivalent ($MTC0_2e$).[1] The table indicates that, as of 2023, emissions have been reduced by 35% since 2005.

As the largest contributor to community-wide GHG emissions, trends in on-road transportation significantly impact the inventory. Following the decline in transportation emissions due to the COVID-19 pandemic in 2020, emissions increased in 2021 as restrictions eased and pre-pandemic activities resumed. However, transportation emissions have not returned to pre-pandemic levels. When comparing 2021 to 2023, total emissions increased by only 1.3%. The relatively consistent emissions in 2021 through 2023 may be attributed to a shift toward increased hybrid and remote work following the pandemic.

[1] Carbon Dioxide equivalent is unit of measurement used to compare the emissions of various greenhouse gases based on how long they stay in the atmosphere and how much heat they can trap. For example, over a period of 100 years, 1 pound of methane will trap as much heat as 21 pounds of carbon dioxide. Thus, 1 pound of methane is equal to 21 pounds of carbon dioxide equivalents.

Table 1: GHG Emissions by Sector ($MTCO_2e$)

	2005	2010	2015	2020	2021	2022	2023	% Change from 2005
Electricity	185,536	165,172	141,814	23,038	35,844	29,313	26,011	-86.0 %
Natural Gas	189,995	191,526	176,803	166,334	168,917	170,495	172,822	-9.0 %
Transportation	520,768	458,988	441,751	304,371	357,867	367,652	353,271	-32.2
Airport*	-	-	-	-	-	-	4,779	-
Off-Road Vehicles	14,889	17,004	27,267	27,976	23,408	39,646	37,006	148.5 %
Solid Waste	50,924	38,338	38,148	34,628	32,011	32,141	32,537	-36.1 %
Water and wastewater	4,716	4,340	3,518	2,506	2,164	1,981	2,074	-56.0 %
Total	**966,828**	**875,368**	**829,301**	**558,853**	**620,211**	**641,228**	**628,500**	**-35.0 %**
Hayward Population	140,305	146,296	160,244	162,079	159,986	160,699	159,770	13.9%
Total Emissions/ Capita	**6.9**	**6.0**	**5.2**	**3.4**	**3.9**	**4.0**	**3.9**	**-43.5%**

***** Emissions from the Hayward Executive Airport are included for 2023. Data for previous years is not yet available.

BACKGROUND

The most recent report on the City's GHG emissions, presented to the Council Sustainability Committee in March 2024,[2] showed Hayward's community-wide emissions were reduced by 33.7% from 2005 to 2022. This was an increase from 2021, when emissions were 35.9% below 2005 levels. Emissions may continue to rise as COVID-19 pandemic restrictions ease, and transportation demand, along with community activities, increases within the City. Previous inventory reports, can be found on the City's website[3].

The City's General Plan Policy NR-2.4 sets the following GHG emissions reduction targets.

> *NR-2.4: Community Greenhouse Gas Reduction*
> The City shall…reduce community-based GHG emissions by 20 percent below 2005 baseline levels by 2020, 30 percent below 2005 baseline emissions levels by 2025, 55 percent below 2005 baseline emissions levels by 2030, and work with the community to develop a plan that may result in the reduction of community-based GHG emissions to achieve carbon neutrality by 2045.

[2] CITY OF HAYWARD - Meeting of Council Sustainability Committee on 3/11/2024 at 5:00 PM
[3] Climate Action Plan | City of Hayward - Official website (hayward-ca.gov)

To track compliance with these targets, the City initially conducted community GHG emissions inventories every five years, starting with 2005 as the baseline year. In 2017, the City transitioned to conducting inventories annually. All inventories follow the U.S. Community Protocol methodology to calculate GHG emissions. This methodology, developed by ICLEI – Local Governments for Sustainability, is an industry-standard used by local governments to measure and report GHG emissions with a standardized method. Over the past fifteen years, organizations have continuously refined and updated the models used to estimate emissions, improving accuracy. In response, staff recalculates emissions with the new modeling across all previous inventories. For example, this year staff modified the methodology for collecting data for the demographics portion of the inventory, thus changing the results of past years' data. Staff previously relied on the Metropolitan Transportation Commission's calculations and predictions for jobs data, which applied a previously determined growth rate to older data. This year staff used data from the State of California Employment Development Department, which uses census data and county data reflecting actual changes in numbers of jobs. As a result, the total emissions for each year in this report do not match the numbers from previous reports.

DISCUSSION

This report presents the 2023 GHG inventory, which shows that community-wide emissions were reduced by 35% below 2005 levels and shows no significant increase or decrease in emissions from the previous year. As shown in Table 2, Hayward met its goal of 20% below 2005 levels by 2020, two years early by achieving a reduction of 22.6% in 2018. In 2020, Hayward exceeded its 2025 emission reduction goal of 30% below the 2005 baseline when it achieved a 42.2% emission reduction. However, the significant decrease in emissions from 2019 to 2020 was primarily attributed to the COVID-19 pandemic impacts on community-wide activities and staff predicted that emissions would likely increase in 2021 as pandemic-related restrictions eased. Community-wide emissions did increase by 6.3% from 2020 to 2021, and while staff anticipated that emissions would continue to rise over the next few years as transportation activity increased, emissions only increased by 0.9% from 2021 to 2023 resulting in an overall reduction of 35.0% from the 2005 baseline.

On January 30, 2024, the updated Climate Action Plan (CAP) was adopted by the City Council as an amendment to the 2040 General Plan.[4] It builds upon the 2014 CAP to include specific actions and measures to reduce GHG emissions in alignment with state goals. Additionally, the 2024 CAP projects future per capita emissions that are contingent on the successful implementation of all CAP measures. Adhering closely to the CAP's recommended projects and timeline for each action would set Hayward on a pathway to reducing carbon emissions by 55% by 2030. Table 2 shows historical per capita emissions as well as the 2030 goal of achieving per capita emissions at or below 3.12 MT CO2e.

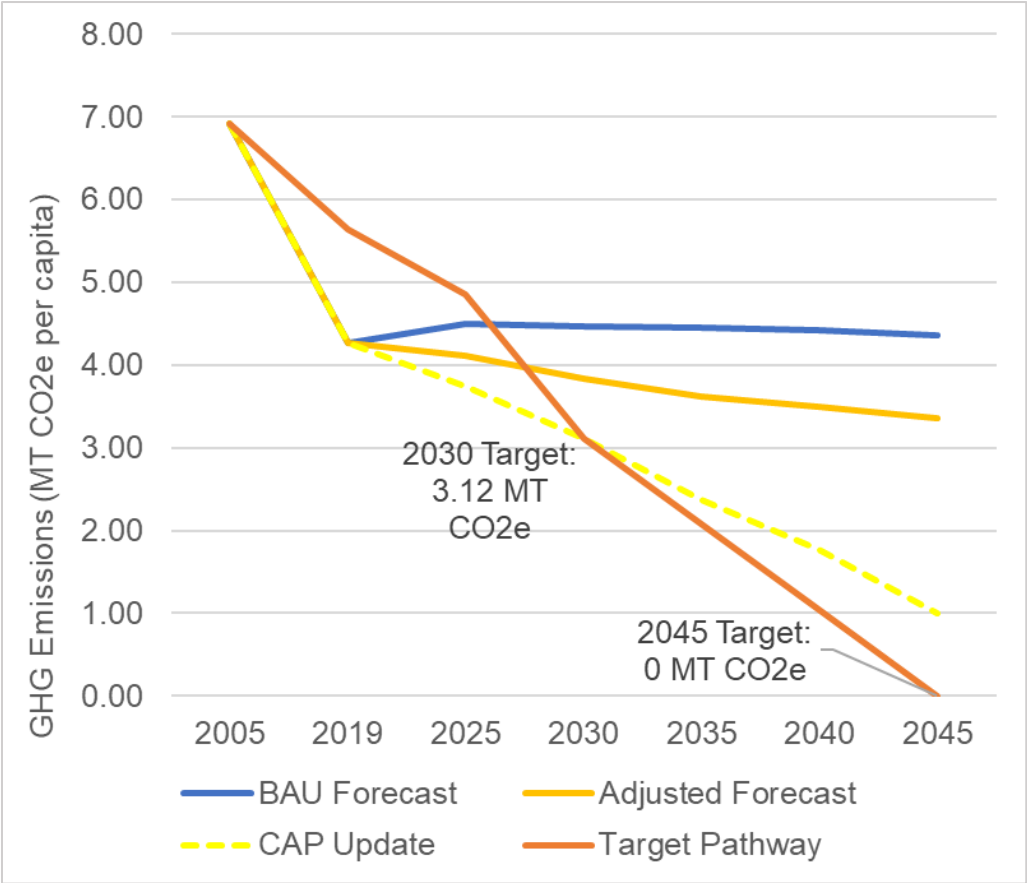
[4] https://hayward.legistar.com/LegislationDetail.aspx?ID=6497833&GUID=90E54932-8B3F-46FA-8B79-47F2DD47560D&Options=&Search=

Table 2: GHG Emission Reduction Goals and Actual Emission Reductions

Year	Overall Emissions Goal	Actual Reduction	Per Capita Goal	Actual Per Capita Emissions (MT CO2e)
2005	Baseline	N/A	Baseline	6.9
2010		9.5%		6.0
2015		14.2%		5.2
2018		22.6%		4.6
2019		29.8%		4.2
2020	20%	42.2%		3.4
2021		35.9%		3.9
2022		33.7%		4.0
2023		**35.0%**		**3.9**
2025	30%			
2030	55%		3.12	
2045	Carbon neutrality		Carbon neutrality	

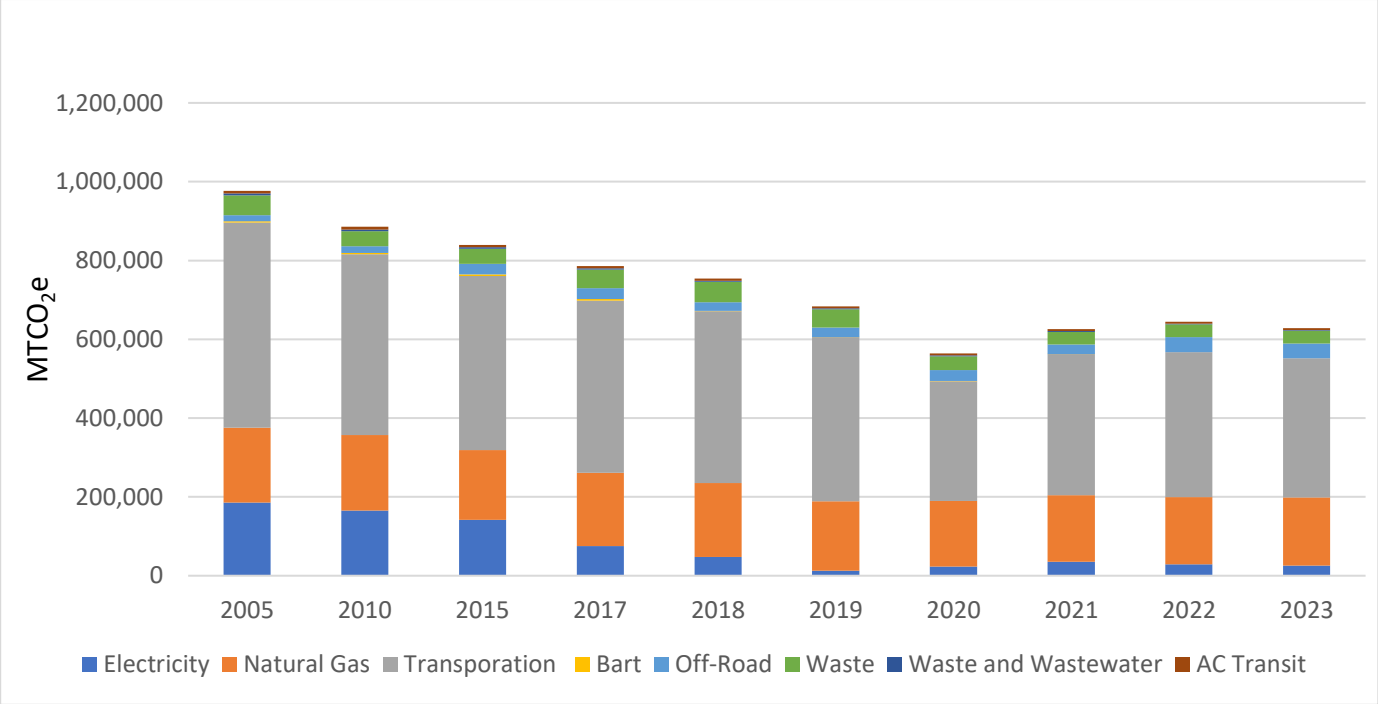
Figure 1 shows projected per capita emission levels with and without CAP measures. Business-as-usual (BAU) emissions are in blue. The adjusted forecast in orange reflects State of California actions that are expected to reduce emissions and the yellow-dashed line projects emissions assuming full implementation of the CAP. While this places Hayward on a pathway to carbon neutrality (dark orange line), CAP measures will need to be updated again in order to reach carbon neutrality by 2045.

Figure 1 – Per Capita Emissions Compared to Forecast Scenario and Target Pathway



The City's GHG inventory consists of eight sectors: electricity, natural gas, transportation, public buses (AC Transit), BART, off-road vehicles, solid waste, and water and wastewater. Figure 2 (below) illustrates the breakdown of emissions for each year by subsector, along with the percentage contribution of each subsector. Transportation, shown in grey, remains the largest sector and consistently accounts for over half of total emissions. Water and wastewater combined account for 0.3% of emissions, solid waste comprises 5.2% of emissions, off-road vehicles account for 5.9% of emissions, and electricity used in buildings represents 4.1% of emissions. Natural gas use in buildings, shown in orange, accounts for just over a quarter of all emissions at 27.5%.

Figure 2: GHG Emissions by Subsector (MT C02e)



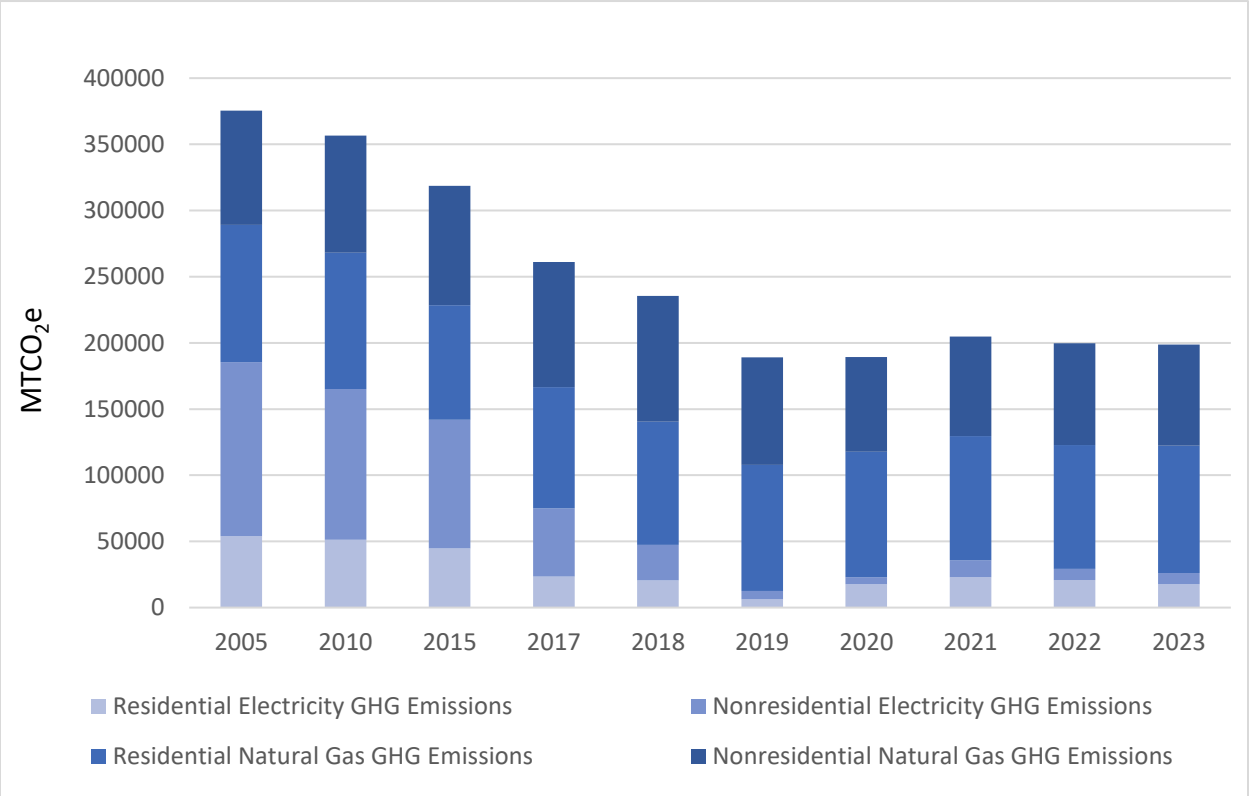
Energy Sector (Electricity and Natural Gas)

Energy emissions, which include electricity and natural gas, were 47.0% below 2005 levels, with an 86.0% reduction in electricity emissions and 9.0% decrease in natural gas emissions from 2005 to 2023 (see Table 3 and Figure 3). Residential electricity emissions have decreased by 67.1% while nonresidential electricity emissions have decreased by 93.7% since 2005. The primary factor driving the decrease in electricity emissions is the transition of the City's customers to Ava Community Energy (Ava), formerly known as East Bay Community Energy (EBCE) in 2018. Following this transition, the majority of Hayward customers were automatically enrolled in Ava's carbon-free electricity product (Brilliant 100 from 2018-2021 and Renewable 100 from 2022 onward). This shift led to a significant reduction in electricity emissions, from 47,452 $MTCO_2e$ in 2018 to 12,467 $MTCO_2e$ in 2019. However, in 2020, Ava's more affordable product, Bright Choice, changed its energy mix to include a higher proportion of carbon-intensive power sources, leading to an increase in overall energy emissions.

Table 3: Energy Sector GHG Emissions

		2005	2010	2015	2019	2020	2021	2022	2023	% Change
Residential Electricity	GHG Emissions	53,939	51,166	44,807	6,326	17,547	22,930	20,704	17,742	-67.1 %
	MWh	242,161	252,327	242,783	239,006	215,828	244,443	238,085	256,435	5.8%
Non - residential Electricity	GHG Emissions	131,597	114,006	97,007	6,140	5,491	12,914	8,609	8,269	-93.7 %
	MWh	590,811	562,228	525,628	511,639	381,744	410,516	418,744	427,418	-27.6%
Residential Natural Gas	GHG Emissions	103,502	103,027	86,736	95,291	94,811	93,713	93,396	96,374	-6.8%
	Therms (in millions)	19.489	19.400	16.332	17.943	17.853	17.646	17.587	18.183	-6.8 %
Non-residential Natural Gas	GHG Emissions	86,493	88,499	90,066	81,358	71,523	75,204	77,099	76,448	-11.6%
	Therms (in millions)	16.287	16.664	16.960	15.320	13.468	14.161	14.518	14.395	-11.6%
Total GHG Emissions		**375,531**	**356,699**	**318,617**	**189,116**	**189,373**	**204,761**	**199,808**	**198,833**	**-47.0 %**

Figure 3: Energy Sector GHG Emissions (MT CO2e)



Approximately 30% of Hayward households are enrolled in income- or medical-related discount programs and receive Ava's Bright Choice energy product. Carbon-free energy sources (biomass and biowaste, geothermal, solar, wind, hydroelectric, and nuclear) accounted for 86.7% of Bright Choice's energy mix in 2019; however, that declined to 55% in 2020. The percentage of carbon-free energy for Bright Choice increased in 2021 to 59.9%, 71.5% in 2022, and 88.9% in 2023 (see Table 4). Bright Choice remains more carbon-intensive than PG&E's Base Plan product.[5]

Table 4: Annual Percentage of Carbon-Free Energy* in Electricity Products

	2019	2020	2021	2022	2023
Ava's Renewable 100	100%	100%	100%	100%	100%
Ava's Bright Choice	86.7%	55.0%	59.9%	71.5%	88.9%
Pacific Gas & Electricity (PG&E) Base Plan	100%	83.5%	91.0%	95.2%	100%

*Carbon-free energy includes nuclear and hydroelectric power in addition to renewable energy such as solar, wind, and geothermal.

Due to the changes in Ava's energy mix to include more carbon-intensive sources, residential electricity emissions have increased by 180% since 2019 along with a 7.3%

[5] Power Content Label (ca.gov)

increase in mega-watt hour (MWh) usage, and nonresidential electricity emissions have increased 34.7% despite a 16.4% decrease in MWh used (see Figure 4). However, due to the decrease in carbon intensity in Bright Choice from 2022 to 2023, this marks a significant improvement compared to the 227% increase in residential electricity emissions and a 40.2% increase in non-residential electricity emissions when comparing 2019 and 2022. In the coming years, we expect to see a continued decrease in emissions, as Ava aims to make Bright Choice 100% carbon free by 2030.

Figure 4: Electricity Usage & GHG Emissions

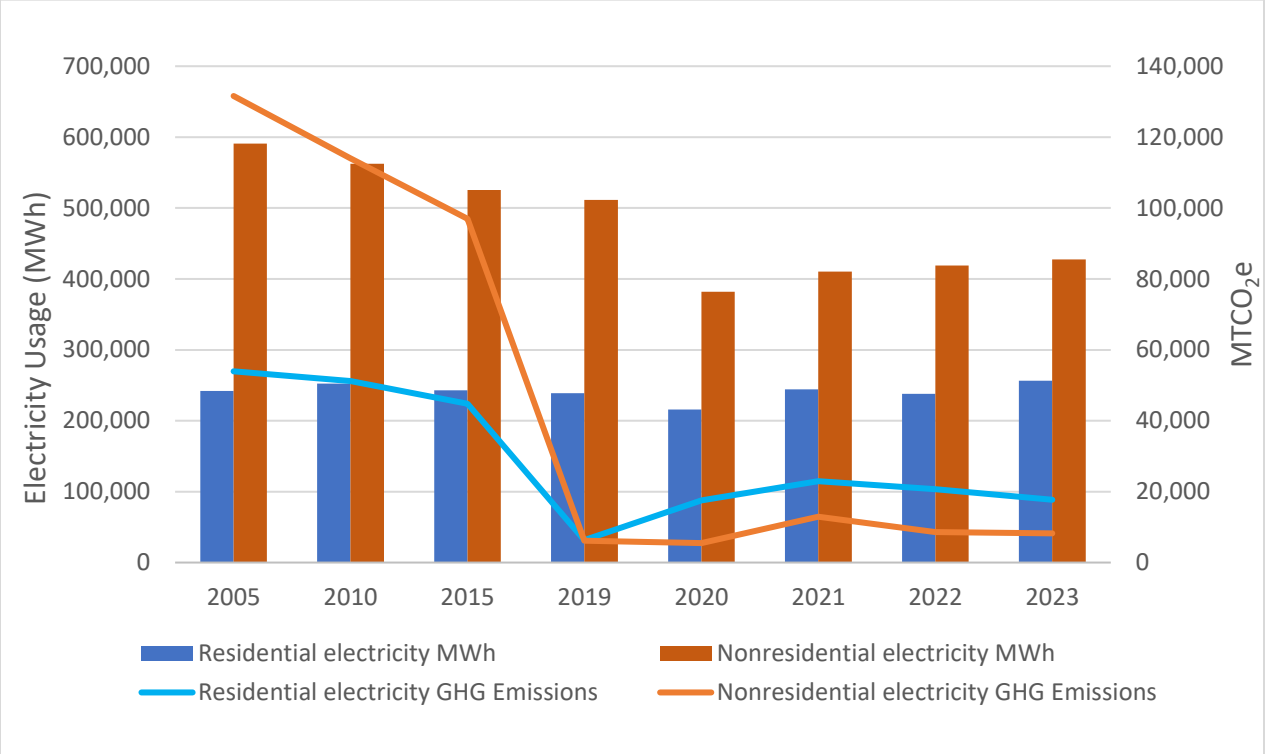


Figure 5: Natural Gas Usage & Emissions

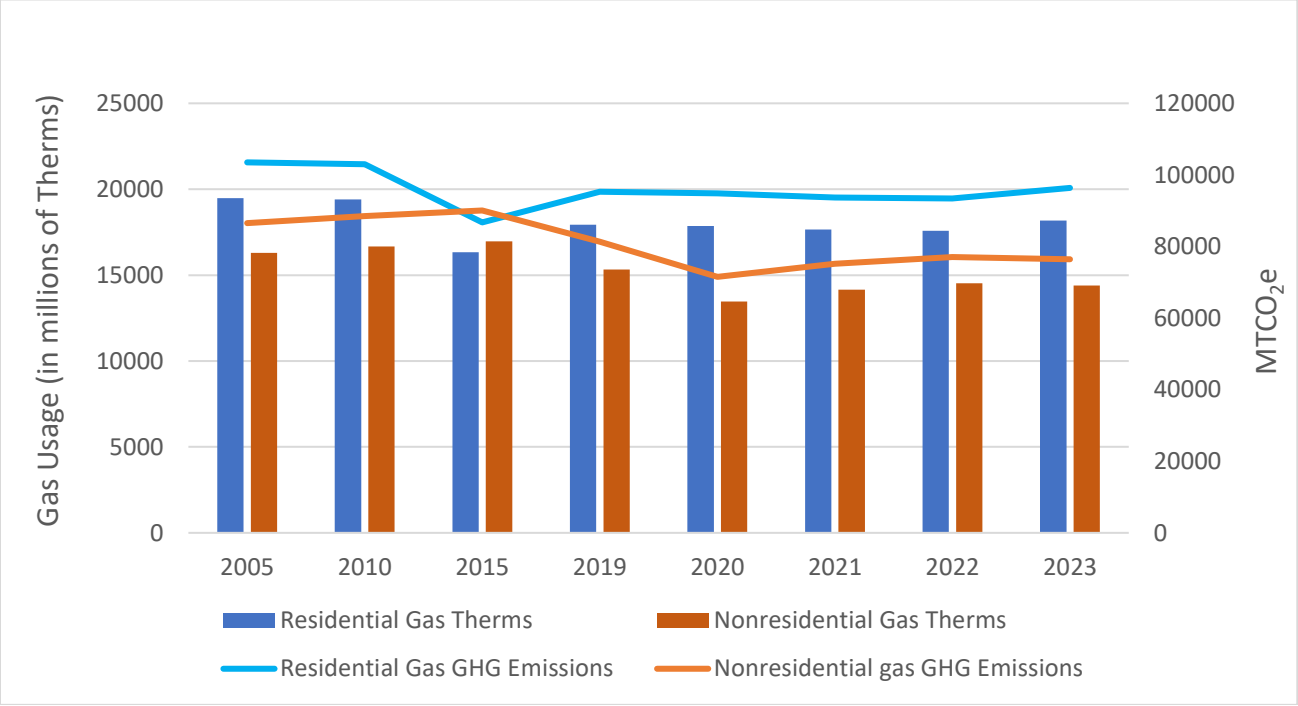
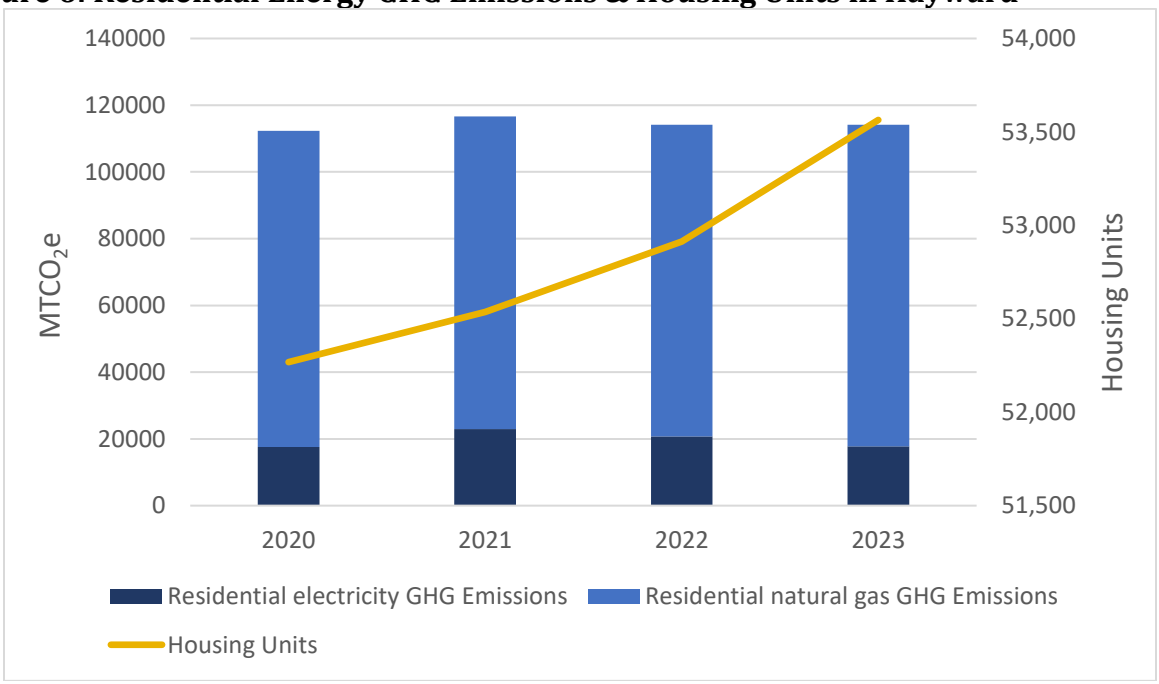


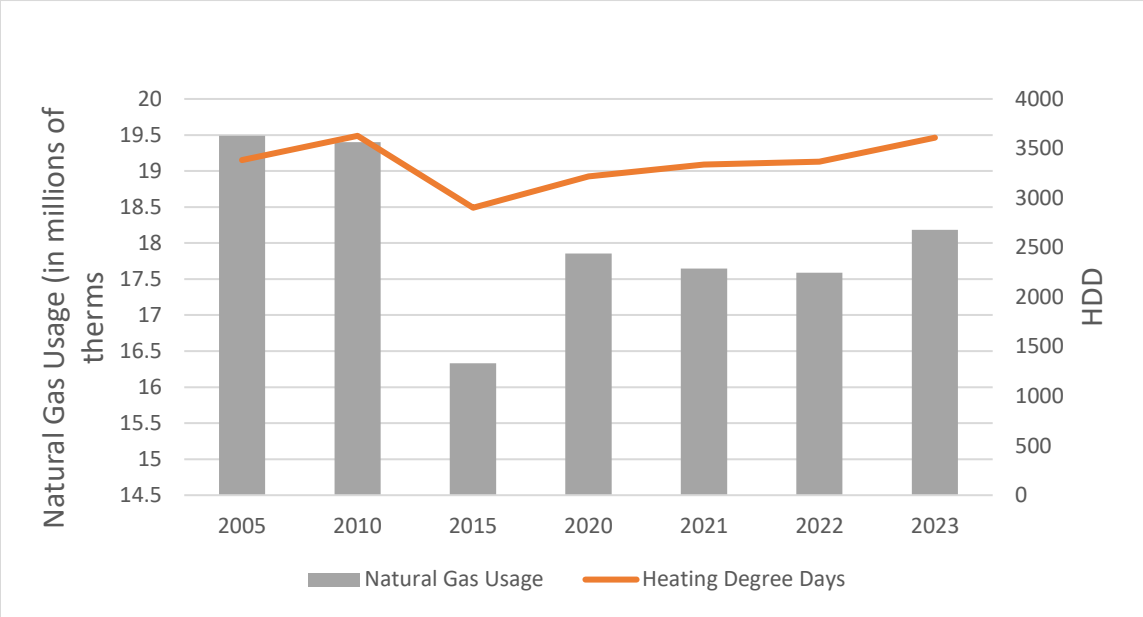
Figure 6: Residential Energy GHG Emissions & Housing Units in Hayward



Residential and non-residential natural gas emissions have decreased from 2005 to 2023 by 6.8% and 11.6%, respectively. When compared to 2022, residential natural gas

emissions increased by 3.0% in 2023, which may be related to an increase in heating degree days[6] (HDD) (see Figure 7).

Figure 7: Residential Natural Gas Usage & Heating Degree Days in Hayward



Transportation Sector

From 2005 to 2023, transportation emissions decreased by 31.7% and vehicle miles traveled (VMT) decreased by 13.7% (see Table 5). Due to the COVID-19 pandemic, there were significant decreases in on-road transportation from 2019 to 2020, with a 26.5% decrease in VMT and a 21.3% decrease in total transportation emissions. From 2020 to 2021, Hayward saw an 11.1% increase in VMT and a 10.1% increase in transportation emissions as restrictions lifted and pre-pandemic activities began to resume. Staff expected this trend to continue, however, VMT decreased by 1.9% from 2022 to 2023, and transportation emissions decreased by 2.7%. There are several factors that may have contributed to a slight decrease in VMT. The first is likely due to the increased popularity of remote and hybrid work compared to before the pandemic. A second reason *could* be due to an increase in inflation, leading individuals to reduce travel or attendance at events. According to the U.S. Bureau of Labor Statistics, the average annual inflation rate was 1.7% in 2020, 3.6% in 2021, 6.2% in 2022, and 4.8% in 2023. In addition to decreased VMT, another reason for decreased GHG is likely due to the growing number of hybrid and electric vehicles (EVs) on the road, (see Figure 9).

In 2020, staff began using a new data source from Google called Environmental Insights Explorer (EIE) which captured the impact of the pandemic and created a more complete scope of transportation emissions. In inventories prior to 2020, on-road transportation

[6] A *degree day* compares the mean (the average of the high and low) outdoor temperatures recorded for a location to a standard temperature, usually 65° Fahrenheit (F) in the United States. https://www.eia.gov/energyexplained/units-and-calculators/degree-days.php#:~:text=Heating%20degree%20days%20(HDDs)%20are,%C2%B0F%20has%2025%20HDDs

activity was estimated using a model from the Metropolitan Transportation Commission (MTC) which takes into account surveys of transportation patterns, land use, and population metrics to calculate VMT for passenger and commercial vehicles completing trips entirely within the city, ending or starting in the City, and those that pass through the city.

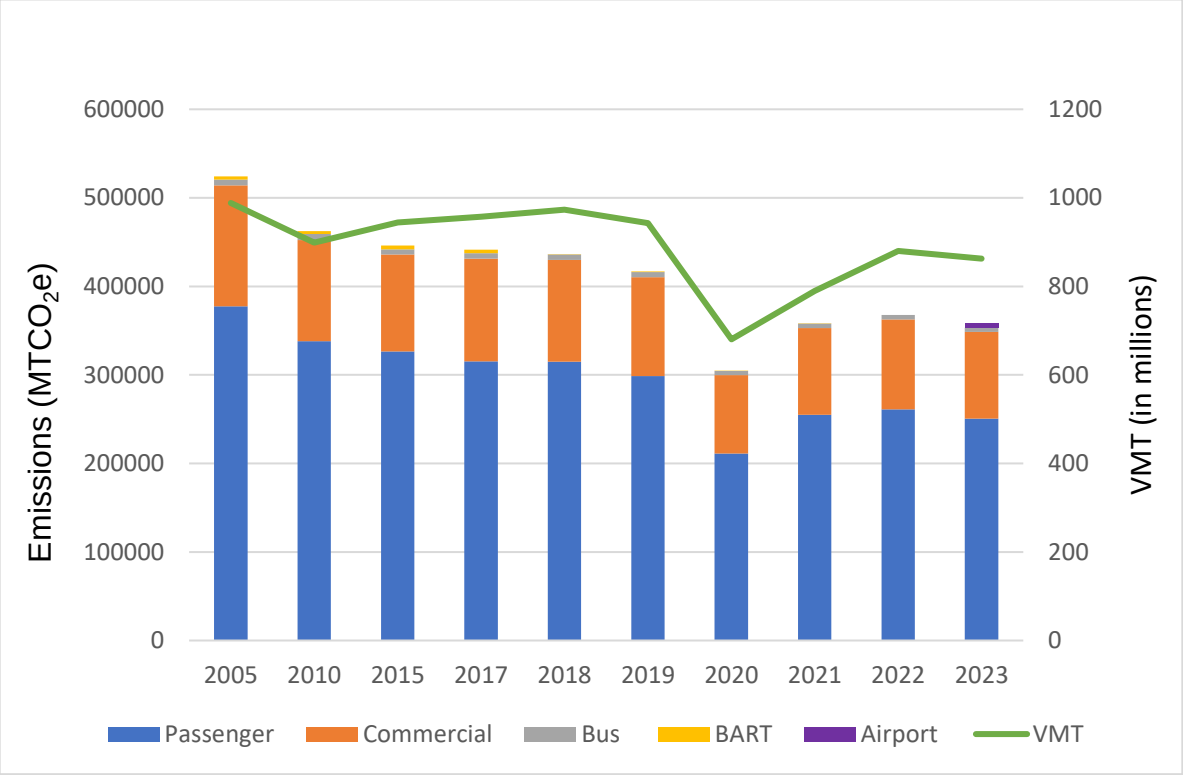
Google EIE's dataset accounts for all vehicle types that start or end within the City by using anonymized location history from mobile devices. This better captures residents' transportation habits than the previously used transportation model. To make accurate comparisons to the 2005 baseline, staff re-calculated transportation emissions in inventory years that were not available from Google EIE (2005-2017).

Table 5: Transportation Sector GHG Emissions (MT CO2e)

		2005	2010	2015	2020	2021	2022	2023	% Change
Passenger	GHG Emissions	377,446	338,117	326,365	211,039	254,783	261,152	250,591	- 33.6%
	VMT (in millions)	892.31	816.71	865.69	617.07	765.12	803.54	788.02	- 11.7%
Commercial	GHG Emissions	136,630	114,193	109,561	88,826	98,220	101,561	98,010	- 28.3%
	VMT (in millions)	92.13	78.00	74.68	61.09	69.27	72.60	71.18	- 22.7%
Buses*	GHG Emissions	6692	6678	5824	4506	4,864	4,939	4,670	- 60.4%
	VMT (in millions)	3.91	3.81	3.76	3.17	3.44	3.52	3.36	- 39.8%
BART	GHG Emissions	3,440	3,425	4,276	546	98	0	0	-100%
	Passenger Miles (in millions)	37.08	36.93	46.10	41.19 **	7.40	14.42	13.11	-64.6%
Airport	GHG Emissions	-	-	-	-	-	-	4,779	-
	Operations	-	-	-	-	-	-	122,601	-
Total GHG Emissions		**524,208**	**462,413**	**446,026**	**304,917**	**357,965**	**367,652**	**358,050**	**-31.7 %**
Total VMT (in millions)		**988.4**	**898.5**	**944.1**	**680.3**	**789.9**	**879.7**	**862.6**	**- 13.7%**

*Buses include public (AC Transit) and private (Google EIE)
**BART passenger miles in 2020 were based off ridership from the month of February, before the COVID-19 pandemic.
***BART has been carbon-free since 2022. The data above provides a reference to BART's past emissions.

Figure 8: Transportation Sector GHG Emissions (MT CO2e)



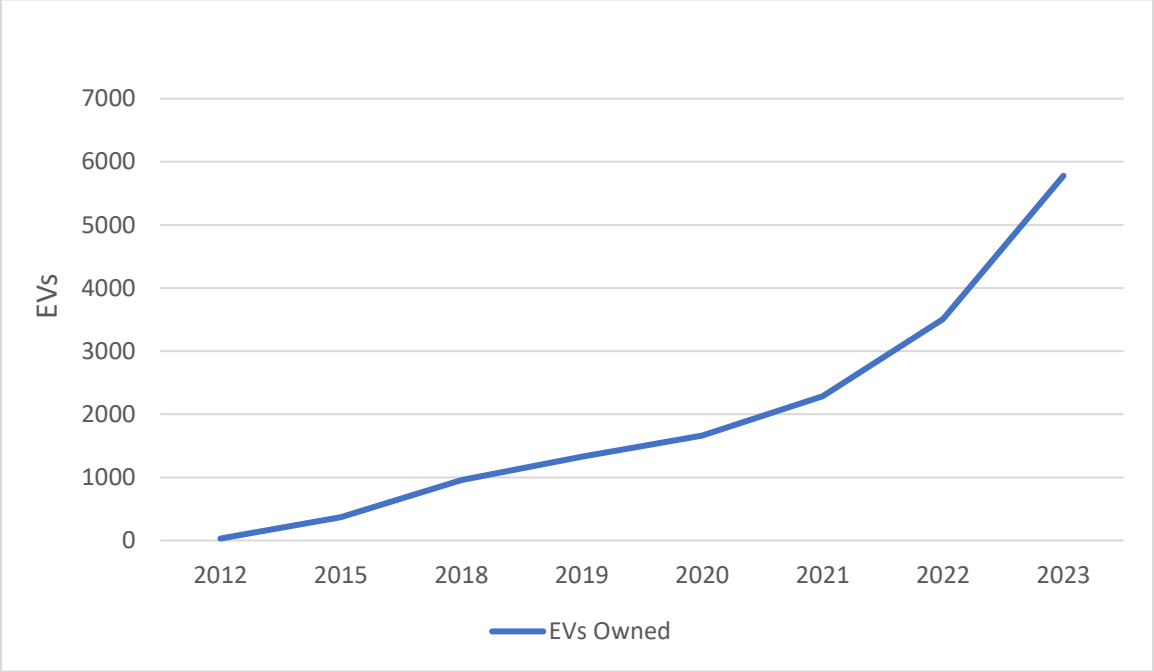
Electric Vehicles-

While electric vehicles (EVs) are not factored into the calculation of transportation emissions, they do influence the emissions factor used to calculate total vehicle emissions. Staff has tracked the change in EV ownership in Hayward over the years to observe any correlation between emissions reduction and EV adoption. The CAP includes actions to encourage transportation alternatives to single-passenger internal combustion cars, including EVs. The State of California provides EV registration data by zip code. Using this data, staff were able to compile the number of EVs owned and sold in Hayward from 2012 to 2023 (see Table 6). This data shows a steady increase in EV ownership in Hayward over the course of the past nine years, showing a 192% increase in ownership since 2012 and an 184% increase in EVs per capita.

Table 6: EV Ownership in Hayward

	2012	2015	2018	2019	2020	2021	2022	2023
EV Ownership	31	368	956	1,327	1,661	2,285	3,509	5,779
Population	149,078	160,244	159,603	160,197	162,079	159,986	160,699	159,770
EV per Capita	0.0002	0.002	0.01	0.01	0.01	0.01	0.02	0.04

Figure 9: EV Ownership in Hayward



Hayward Executive Airport Emissions

This 2023 inventory includes emissions from the Hayward Executive Airport, but airport emissions data for past years is not yet available. Table 7 provides total operations and emissions by aircraft type. Operations refers to the total number of landings and takeoffs.

Table 7: Hayward Executive Airport Emissions in 2023

	Single Piston	Multi Piston	Turbine	Jet	Helicopter	Other	Total
Operations	98,198	6,370	3,918	8,332	5,757	26	122,601
Total Emissions (MT C02e)	1,000	123	793	1,686	1,165	5.3	4,779
Emissions (MT C02e) per Operation	0.01	0.02	0.2	0.2	0.2	0.2	0.04

Table 8: Hayward Executive Airport and Community-wide Emissions

2023 Airport and Community-wide Total Emissions (MT CO2e)	
Airport Emissions	4,779
Community-wide Emissions	628,050
Community-wide Emissions + Airport	632,829
Airport Emissions as % of Community-wide Total	0.76%

Staff presented the 2023 airport emissions data to the Council Infrastructure and Airport Committee on January 29, 2025[7]. Committee members asked about comparing aircraft emissions to those of passenger cars. According to the U.S. EPA, a typical passenger vehicle emits about 4.6 metric tons of carbon dioxide per year based on an average fuel efficiency of 22.2 miles per gallon.[8] Burning one gallon of gas to travel 22 miles emits approximately 8.9 kilograms of CO_2. This compares to approximately 10.1 kg of CO_2 per operation for a single piston aircraft and approximately 201.5 kg of CO_2 per operation for a jet aircraft. When comparing airport emissions to those from gasoline-powered landscaping equipment including lawn mowers, leaf blowers, landscaping equipment caused approximately 3,508 metric tons of CO_2e compared to 4,779 from the airport in 2023.

In response to staff's comment that bio-based jet fuels should be available soon, the Committee asked that when it is made available, it should be promoted in the City's Leaflet newsletter.

Off-road Vehicles Sector

Off-road vehicles include equipment used in construction, commercial, and industrial activities. Over the years, off-road emissions have accounted for more of the total community-wide emissions, rising from 1.5% in 2005 to 5.9% in 2023. Emissions in this sector have steadily increased since 2005 by 149% due to increased construction and industrial activities. The large increase in emissions from 2021 to 2022 is partially due to the addition of data for some equipment categories. Notably, lawn and garden equipment data were added to the inventory in 2022 to improve the accuracy of the inventory and provide a more comprehensive report. As noted in the previous section, lawn and garden equipment caused approximately 3,508 metric tons of CO_2e. As of January 1, 2024, small gasoline-powered engines for lawn and garden equipment cannot be sold in California. This year off-road emissions have decreased from 2022 to 2023 by 7%, possibly due to the ban.

[7] https://hayward.legistar.com/View.ashx?M=E1&ID=1277412&GUID=3C831A8A-5746-47A6-808E-85B70F34C517
[8] https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle

Table 9: Off-Road Emissions

	2005	2010	2015	2019	2020	2021	2022	2023
Offroad Emissions ($MTCO_2e$)	14,889	17,004	27,267	24,287	27,976	23,408	39,646	37,006
% change from previous year	N/A	14%	60%	-11%	15%	-16%	69%	7%
Total Hayward Emissions	966,828	875,368	829,301	678,440	558,853	620,309	641,228	628,050
% of total	1.5%	1.9%	3.3%	3.8%	5%	3.8%	6.2%	5.9%

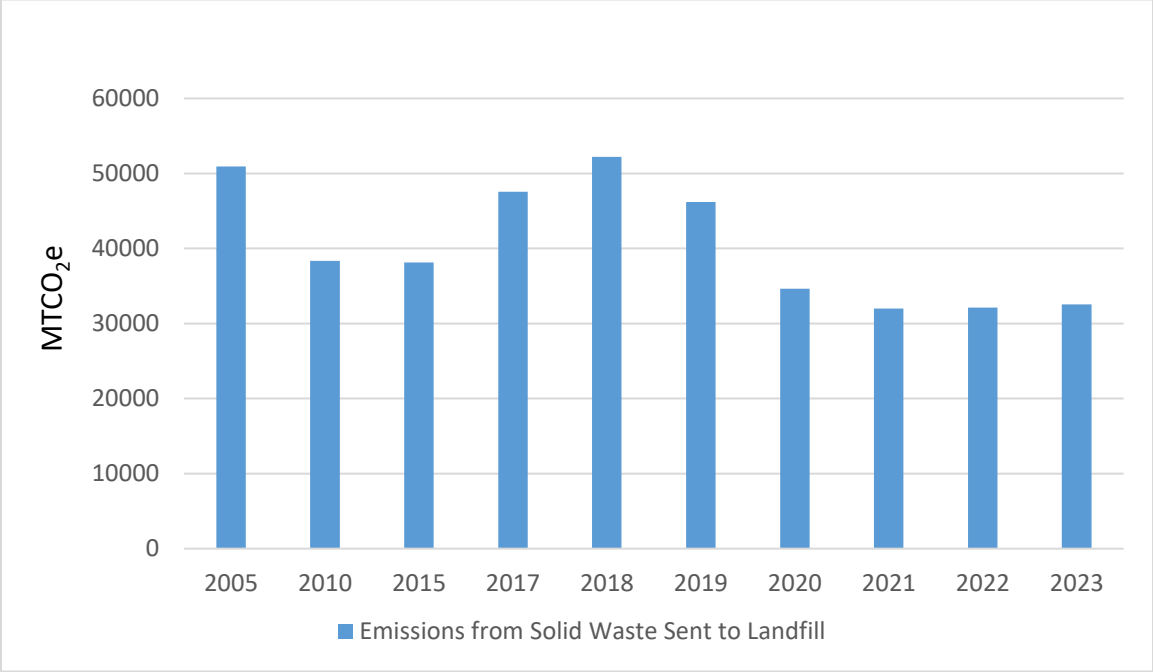
Solid Waste Sector

Solid waste emissions in 2023 were 36.1% below 2005 levels. After several years of increasing emissions, likely due to increased economic activity, emissions decreased from 2019 to 2021 but are now slowly beginning to rise again (see Table 10). The decline in solid waste tonnage in 2020 and 2021 can be attributed to reduced economic activity during the pandemic. In early 2022, SB 1383 took effect, requiring residences and businesses to sort and separately collect food scraps, yard debris, and food-soiled paper from trash and recycling, as well as subscribe to an organic waste collection service. It is likely too early to see the full impact of SB 1383 in this inventory, but staff expects to see reductions in the tons of solid waste sent to landfill and associated emissions in future inventories.

Table 10: Solid Waste Sector GHG Emissions

		2005	2015	2018	2020	2021	2022	2023	% Change
Solid Waste Sent to Landfill	GHG Emissions	50,924	38,148	52,209	34,628	32,011	32,141	32,537	-36.9%
	Tons of Solid Waste	173,908	136,261	185,432	122,375	113,038	113,498	113,746	-34.7%

Figure 10: Solid Waste Sector GHG Emissions



Water and Wastewater Sector

Water and wastewater emissions in 2023 were 57.1% below 2005 levels. As shown in Table 11, water consumption decreased significantly from 2010 to 2015. This is likely due to drought periods, state-mandated reductions, requests from the San Francisco Public Utilities Commission, increased public awareness, and the City's water conservation programs.

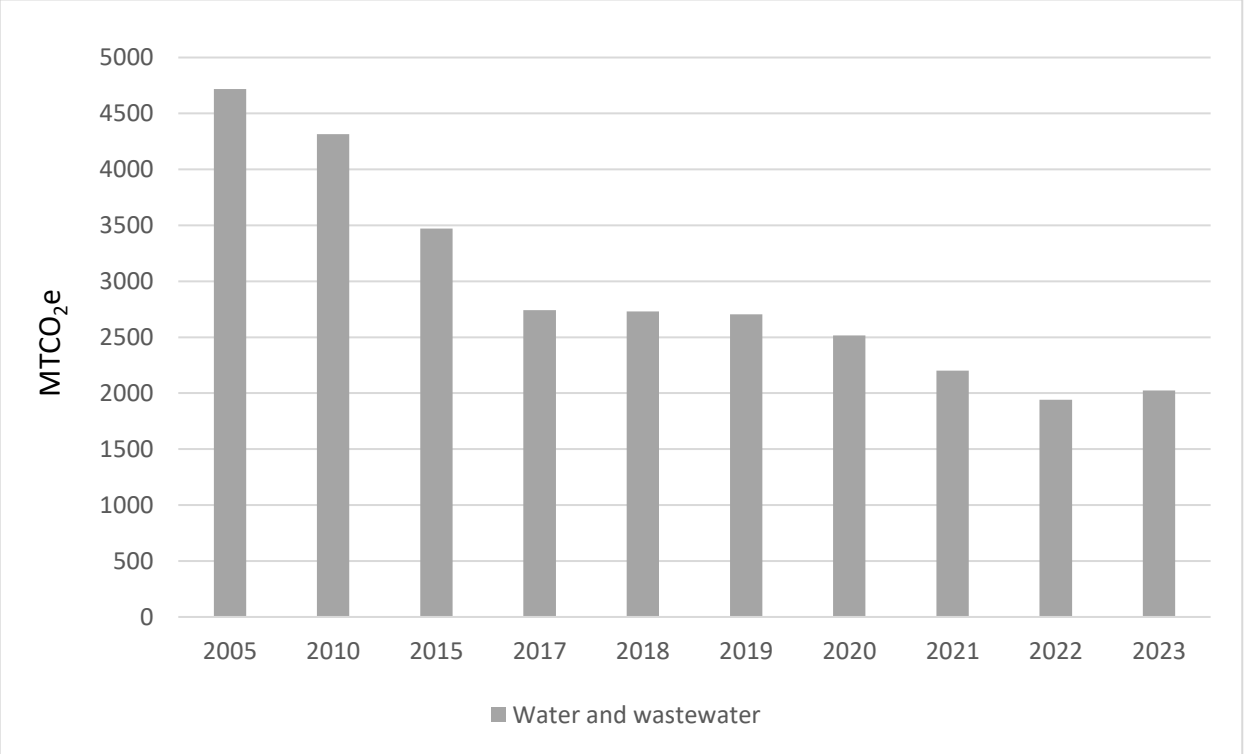
Table 11: Water and Wastewater Sector GHG Emissions [9]

	2005	2010	2015	2019	2020	2021	2022	2023	% Change
Water Consumption (Billions of gallons)	7.335	7.120	4.697	5.018	5.227	5.095	4.953	4.754	- 35.2%
Wastewater Processed (Billions of gallons)	5.009	4.539	3.824	4.218	3.850	3.819	3.860	4.548	- 9.2%
Total Emissions ($MTCO_2e$)	**4,716**	**4,340**	**3,518**	**2,700**	**2,506**	**2,164**	**1,981**	**2,074**	**- 56.0%**
Residential Water Consumption* (Billions of gallons)	3.534	3.180	2.963	2.692	2.897	2.779	2.704	2.631	- 25.6%
Hayward Population	140,305	146,296	160,244	164,029	162,079	159,986	160,699	159,770	13.9%
Per Capita Residential Water Consumption (gal)/day	**69**	**60**	**51**	**45**	**49**	**48**	**46**	**45**	**- 34.8%**

*2005 residential consumption water data unavailable, used 2008 data

[9] Annual Survey (bawsca.org)

Figure 11: Water and Wastewater Sector GHG Emissions



Limitations of this Inventory

The City's GHG inventory was originally designed by ICLEI and its partners in the early 2000s. The focus has always been on measuring emissions from the data sources that are most readily available, such as utility data. While this approach is practical, it comes with limitations.

Due to the limited influence of the City on certain activities, inventories completed omit large sources of emissions such as upstream emissions of goods consumed in the City. For example, emission reductions from green purchasing policies would not be reflected in the current inventory. Additionally, emissions associated with the production and transport of food are one of the largest contributors of GHG emissions worldwide, but it is not reflected in Hayward's inventory.

Upstream emissions are not included because it is difficult to obtain data on consumer consumption patterns in Hayward. According to current guidance, consumption-based emissions inventory should not be a substitute for citywide inventories, but as a complement[10]. Staff will continue to monitor the newest consumption-based inventory methods and explore creating a consumption-based inventory for Hayward as data and modeling become more readily available.

[10] https://sustainableconsumption.usdn.org/climate/cbei-guidebook/cbei-basics

The COVID-19 pandemic significantly impacted GHG emissions in 2020 and 2021. While emissions were expected to continue to rise in the years following, the 2023 inventory shows that emissions held consistent with 2021 emissions. It is likely that we are not seeing the rebound we expected due to the increased hybrid and remote work options and economic impacts following the pandemic.

ECONOMIC IMPACT

There is no economic impact associated with the completed inventory. However, the information acquired from the inventory provides insight on what needs to be done to meet the City's GHG reduction goals. Meeting the City's ambitious GHG reduction goals will require significant investment throughout the community and has the potential to create new local jobs, however some necessary improvements are not currently cost-effective.

FISCAL IMPACT

The 2023 GHG inventory was prepared by City staff and resulted in no cost to the City beyond already budgeted staff positions.

STRATEGIC ROADMAP

This agenda item supports the Strategic Priority of *Confront Climate Crisis & Champion Environmental Justice*. This item is not specifically related to a project identified in the Strategic Roadmap. However, this agenda item does help track progress of projects identified in the Strategic Roadmap, such as:

Project CP1: Implement Year 1 Programs from the adopted GHG Roadmap

SUSTAINABILITY FEATURES

Meeting GHG reduction goals is the primary objective of the City's Climate Action Plan. Meeting the goals will require reducing emissions in every sector and will entail improving energy efficiency in buildings, decarbonizing buildings, increasing the use of renewable energy, and reducing vehicle-related emissions. All these actions will result in cleaner air for Hayward residents and for the region.

PUBLIC CONTACT

No public contact has been made for this item.

NEXT STEPS

Staff will continue to work with Ava Community Energy, StopWaste and regional agencies to identify potential opportunities to streamline GHG inventories on a county or regional level, with the goal of maintaining annual reporting.

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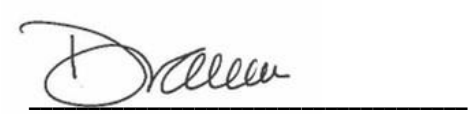
Recommended by: Alex Ameri, Director of Public Works

Approved by:



Dr. Ana M. Alvarez, City Manager