CITY OF LOS ANGELES

2023 MUNICIPAL GREENHOUSE GAS INVENTORY REPORT

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Executive Summary

This report outlines the City of Los Angeles' efforts in managing its municipal greenhouse gas (GHG) emissions, detailing the municipal GHG inventory from the baseline year of 2008 and from 2017 through 2023. This inventory serves as a crucial tool in quantifying the emissions generated from city operations, offering insights into the effectiveness of the City's environmental policies and initiatives in reducing GHG emissions.

In a landmark achievement in 2019, LA Sanitation & Environment (LASAN) unveiled the inaugural Municipal Greenhouse Gas Emissions Inventory Report. This report revealed a significant milestone: Los Angeles had surpassed its target, reducing municipal GHG emissions to 35% below the 2008 levels by 2025 – a commendable achievement attained eight years ahead of the scheduled target. In the same breath of progress, the City embraced the Green New Deal, setting forth ambitious, yet crucial, updated targets for municipal emissions reduction:

- A 55% reduction by 2025
- A 65% reduction by 2035
- Achieving carbon neutrality by 2045

These goals were developed based on how the Municipal Inventory was performed at that time and the values and trends therein. However as of 2023, changes have been made to the values reported for municipal emissions, which caused a recalculation of all old values (See 3.1 Power Generation for more details on methodological changes). This report includes information presenting both sets of numbers and graphics to provide as much information as possible since it is intended to serve as a tool for use by the City.

As illustrated in Figure 1, using the updated methodology and totals that strictly follow the Local Government Operations Protocol, emissions have declined significantly over the years. However, recent trends indicate a slower pace of progress. As of 2023, with the changed methodology, the City has achieved a 41% reduction in emissions compared to the 2008 baseline, a substantial achievement, but slightly below the trajectory needed to meet the 55% reduction target by 2025. This trend signals a need for recalibrated and intensified efforts to ensure alignment with the City's environmental commitments.

In comparison, Figure 2, using the prior totals (including what 2023 would be using those numbers), shows that the City would now be ahead of its 2025 municipal emissions target with a 61% reduction from the baseline calculated with that data. This shows that when looking at City department efforts beyond what is the common standard, the City's efforts are making a big impact. These values reflect the context of the time when the GND goals were established and the municipal inventory's role as a tool to show the big picture of the City's emissions. These values

The City stands at a pivotal juncture. To continue on this path of environmental stewardship and meet its ambitious goals, Los Angeles must adopt and implement additional, sustainable practices. This commitment will not only steer the City toward its 2025 targets, but also pave the way for a sustainable and environmentally responsible future.

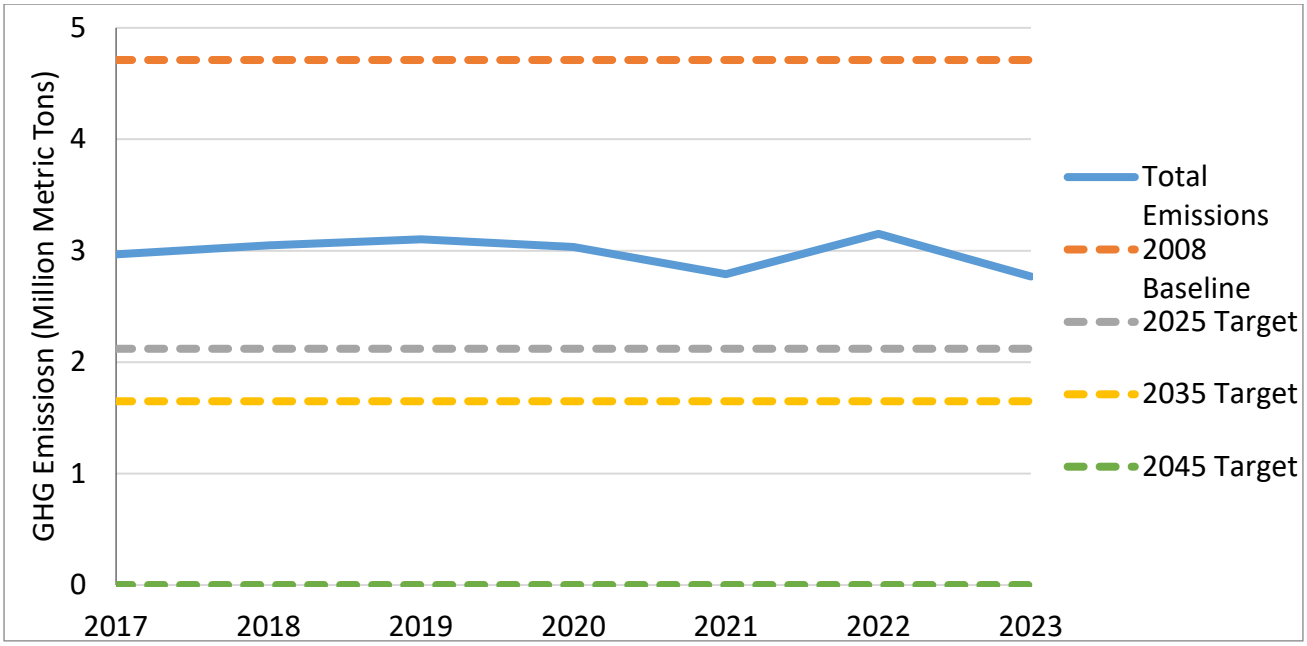

Figure 1. Municipal Emissions Progress Compared to Green New Deal Targets (New Totals and Method)

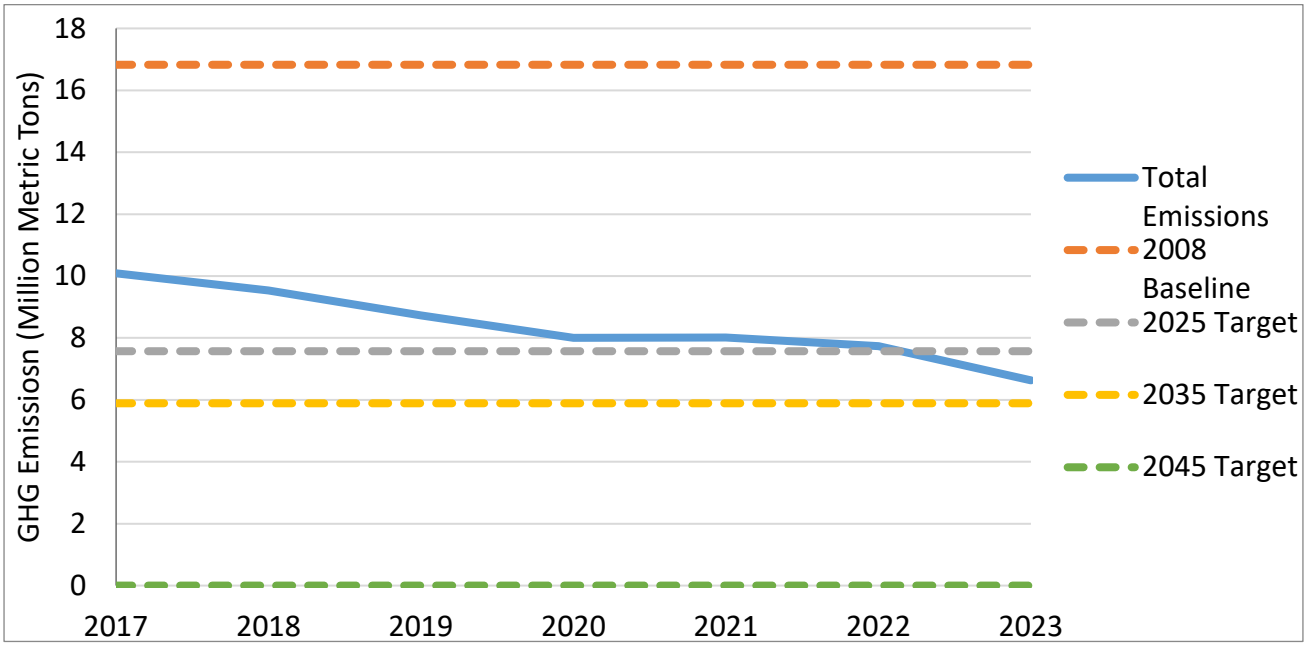

Figure 2. Municipal Emissions Compared to Green New Deal Targets (Old Values and Method)

1. Introduction

LA Sanitation & Environment (LASAN) is at the heart of Los Angeles' efforts to create a healthier, more sustainable city. Tasked in 2014 by the Mayor's Office of Energy and Sustainability (MOES), LASAN has been pivotal in tracking the city's greenhouse gas (GHG) emissions. This work is crucial for understanding and reducing our environmental impact, as highlighted in the City's first Municipal report, the 2017 Municipal Greenhouse Gas Inventory Report, which had been continually reported annually since then.

Our journey towards a greener future, especially as we aim for municipal operation carbon neutrality by 2045 as part of the 2019 Green New Deal, is guided by these detailed reports. They help us understand where we're making progress and where we need to focus more effort. In a city facing increasing heatwaves, droughts, and wildfires, LASAN's role in the City's climate action is more important than ever.

Our commitment to regular GHG emissions reporting, following a detailed and organized approach, helps shape key city plans like the Sustainability City pLAn and LA's Green New Deal. These plans set specific goals for reducing emissions and making Los Angeles a leader in urban sustainability.

Together, we're working towards a future where Los Angeles is not only a great place to live, but also a leader in environmental responsibility.

2. Methodology

2.1 Greenhouse Gasses and Global Warming Potential

In our efforts to understand and manage the City of Los Angeles' impact on climate change, we focus on the three primary greenhouse gasses (GHGs) recognized internationally:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous Oxide (N_2O)

We calculate the emissions of each of these gases separately. To understand their combined impact, we convert them into a common unit, metric tons of CO_2 equivalent (CO_2e), using Global Warming Potential (GWP) values. These values, sourced from the Intergovernmental Panel on Climate Change's Fourth Assessment Report (AR4), help us compare the impact of different gases on global warming (see Table 1 below).

Table 1. IPCC AR4 Global Warming Potential Values

Greenhouse Gas	Formula	GWP (100-year values)
Carbon Dioxide	CO_2	1
Methane	CH_4	25
Nitrous Oxide	N_2O	298

Using AR4 values, our approach aligns with the California Air Resources Board's (CARB) standards for the statewide California Greenhouse Gas Emissions Inventory, ensuring consistency and comparability.

2.2 LGOP Methodology

To guarantee accuracy and consistency, our inventory adheres to the Local Government Operations Protocol (LGOP), a widely recognized framework for GHG emissions accounting. This protocol, published by ICLEI-Local Governments for Sustainability, California Air Resources Board, the California Climate Action Registry, and the Climate Registry, is popular among municipalities, allowing us to compare our progress with other cities.

2.2.1 Inventory Boundaries

Our inventory aims to capture the GHG emissions over which the City of Los Angeles has operational control. This includes emissions from various city departments, bureaus, and agencies responsible for buildings, vehicle fleets, waste facilities, water supply, power generation, and water reclamation. As additional data becomes available and is reported to us, we develop new calculations in order to include those emissions as well.

2.2.2 Scopes

In our efforts to comprehensively track and manage greenhouse gas emissions, the City of Los Angeles classifies these emissions into types based on the Local Government Operations Protocol

(LGOP) sectors: direct (Scope 1) and indirect (Scope 2) emissions. Currently, our municipal inventories focus on these two scopes and do not include indirect scope 3 emissions.

Scope 1 direct emissions are emissions that occur right at the source, within the City's control. They can come from stationary sources like buildings, or mobile sources like city-operated vehicles, as well as from various industrial processes. Essentially, if something is part of the City's operations and emits greenhouse gasses directly, it falls under scope 1.

Scope 2 indirect emissions result from the City's consumption of electricity, heating, cooling, or steam that we purchase or acquire. While these emissions don't occur directly within our operations, they are a byproduct of the energy we use. They happen offsite away from where they're physically generated and emitted, but are still a result of our activities.

Scope 3 covers all other indirect emissions not included in scope 2. This could include emissions from transportation using vehicles the City doesn't own or control. While important, these emissions are not currently included in our reports due to limited data. However, we aim to incorporate them in the future as we gather more information.

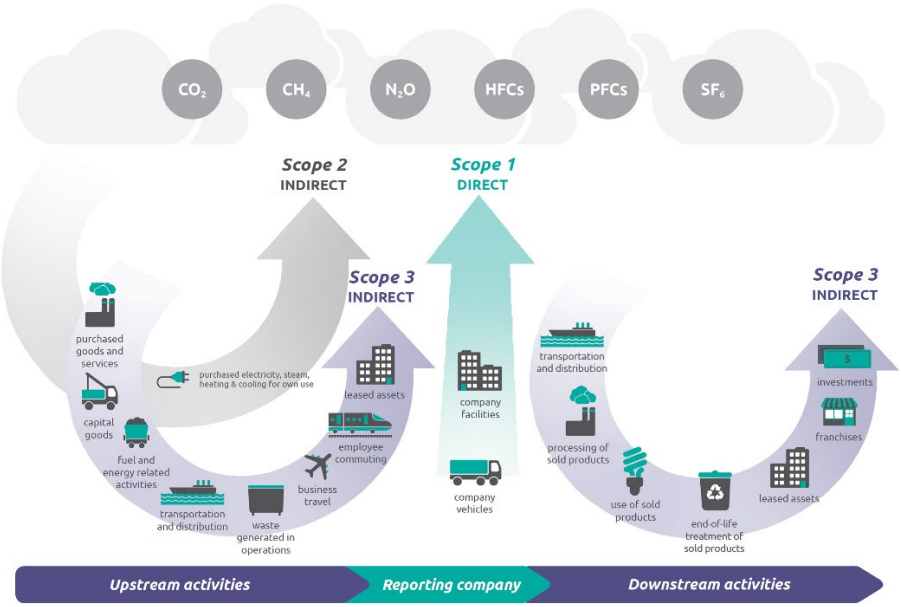

Figure 3. Overview of GHG Emission Scopes[1]

From these definitions, a municipality can generate scope 1 emissions at one of its owned facilities and consume that power at its other facilities as scope 2 emissions. When this occurs efforts should be made to ensure that emissions are not being double counted, usually by only counting the emissions at the source.

The City of Los Angeles's Municipal Inventory needs to account for this because we own and operate some of our utilities through the Los Angeles Department of Water and Power (LADWP). In Los Angeles's case, scope 2 emissions where the power was purchased from City plants are still calculated for each sector, but are not included in the summation of total municipal emissions because they're accounted for in the power generation sector as scope 1 emissions already.

[1] Source: Scope 1 and Scope 2 Inventory Guidance | US EPA, www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance. Accessed 27 Nov. 2023.

By categorizing emissions in this way, we can better understand and manage our impact on the environment, ensuring that our strategies are as effective as possible in reducing the City's carbon footprint.

2.2.3 Sectors

Under LGOP, emissions are categorized into local government sectors. The local government sectors identified in LGOP are:

- Power Generation Facilities
- Building and Other Facilities
- Streetlights and Traffic Signals
- Water Delivery Facilities
- Water Reclamation Facilities
- Port Facilities
- Airport Facilities
- Vehicle Fleet
- Transit Fleet
- Solid Waste Facilities

These sectors create a framework that is relevant to local government activities and allow them to communicate inventory information clearly.

2.2.4 Updated Methodology

In the 2023 Municipal Inventory updates have been made resulting in changes from prior years' reports. The Municipal Inventory was originally developed for use as a tool for Los Angeles to evaluate its emissions. In development of the inventory, LGOP served as the guidance for how the calculations should be performed. However, for the power generation sector, a decision was made to include emissions beyond those that would be included with LGOP in order to convey a bigger picture view of emissions. Further explanation is in Section 3.1 Power Generation.

The new changes make the Municipal Inventory adhere to LGOP exactly, as instructed by City of Los Angeles Council File 22-1402. Emissions in the inventory have been adjusted to be accurate for the 2008 baseline year values and annual values presented in the 2023 Municipal Inventory Report.

2.3 Data Collection and Providers

Through cooperation and collaboration with a variety of departments and agencies, LASAN has established a data collection process for the preparation of the annual inventories. Table 2 below is a summary of the data providers.

Table 2. Municipal Inventory Data Providers

Data Provider	Data
City Departments	
Bureau of Street Services	Asphalt plant natural gas usage
General Services Department	Vehicle fuel usage
	Street Services' asphalt plant natural gas usage (from Building Maintenance Division)
LA Department of Transportation	Department vehicle fuel usage
LA Department of Water & Power	Department electricity usage
	Department natural gas usage
	Department vehicle fuel usage
	Power generation
LA Fire Department	Department vehicle fuel usage
LA Police Department	Department vehicle fuel usage
LA Sanitation & Environment	Wastewater process data
	Digester gas data
	Landfill gas data
Los Angeles World Airports	Department electricity usage
	Department natural gas usage
	Department vehicle fuel usage
Port of Los Angeles	Department electricity usage
	Department natural gas usage
	Department vehicle fuel usage
Utilities	
LA Department of Water & Power	Electricity usage
SoCal Gas	Natural gas usage

3. Findings by Sector

This section highlights the key findings from the City of Los Angeles' municipal greenhouse gas (GHG) inventories spanning from 2017 to 2023, in comparison with the 2008 baseline year. Each year, LA Sanitation & Environment (LASAN) diligently updates these inventories. This process involves not only incorporating revised protocols, but also enhancing data collection methods, refining emission factors, and strengthening quality assurance measures. To ensure accuracy and consistency over time, previous years' inventories are also revised accordingly, aligning with the Intergovernmental Panel on Climate Change (IPCC) recommendations for developing GHG inventories.

Table 3 offers a detailed breakdown of total emissions by sector, alongside a comprehensive view of overall municipal emissions for the years 2008, and 2017-2023. As of 2023, the data indicates that power generation remains the largest contributor to municipal emissions, followed by emissions from solid waste facilities, and then emissions from buildings and other facilities. This information is crucial in guiding the City's efforts to target and reduce emissions effectively across different sectors. Currently, as shown in Figure 4, 2023 saw a total GHG emissions reduction of 41% compared to 2008 baseline. In Table 3, each sector's scope 2 emissions from electricity consumption are reported in the individual sectors and deducted from the Power Generation sector in Table 3 to avoid double counting[2].

Table 3. Total Emissions by Sector (MT CO_2e)

LGOP Category	2008	2019	2020	2021	2022	2023
Building and Other Facilities	266,795	155,099	136,609	141,070	142,190	130,940
Streetlight and Traffic Signals	153,247	38,865	30,654	32,453	31,801	31,645
Water Delivery Facilities	67,763	35,113	28,845	34,948	24,423	21,580
Water Reclamation Facilities	189,137	98,152	92,705	101,205	108,902	109,219
Port Facilities	7,654	6,380	5,013	4,705	5,310	4,013
Airport Facilities	135,388	91,605	78,381	79,089	83,686	84,853
Vehicle Fleet	191,292	145,038	132,047	137,959	143,982	136,816
Transit Fleet	35,263	20,420	19,980	24,122	21,200	19,530
Power Generation	3,468,319	2,353,668	2,354,007	2,083,600	2,441,474	2,082,635
Solid Waste Facilities	196,470	157,692	154,531	151,485	148,486	147,243
Total Municipal Emissions[2]	4,711,329	3,102,032	3,032,772	2,790,636	3,151,454	2,768,473

[2] The City functions as both an electricity generator and consumer, which can lead to double counting if Scope 1 and Scope 2 emissions are combined into a single total. To address this, Scope 1 emissions, including those from LADWP's in-basin power generation facilities, are aggregated to calculate the City-wide municipal total. Separately, each sector's Scope 1 and Scope 2 emissions are combined to provide a comprehensive view of the emissions resulting from that sector's annual energy consumption.

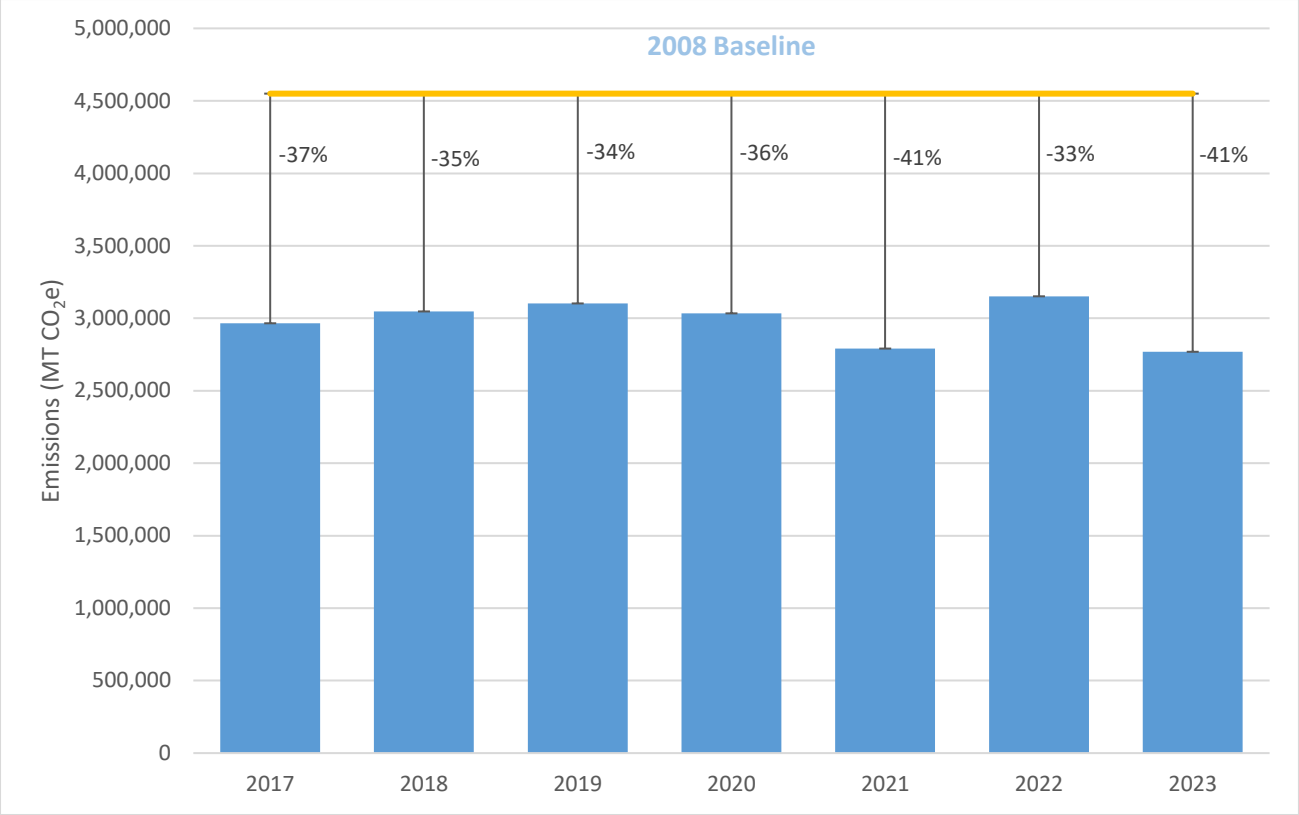

Figure 4. Overall Emissions Reductions

3.1 Power Generation

The City of Los Angeles Municipal Inventory includes emissions from the Los Angeles Department of Water and Power (LADWP), a publicly owned water and electric utility serving the City of Los Angeles. Emissions from generating electricity to serve the city are a major source of emissions in the Municipal Inventory. LGOP prescribes that all emissions under operational control are included in the municipal emissions accounting. For LADWP, in the power generation sector, this means the City's four in-basin power plants are included, as well as renewable generation which doesn't produce emissions. In the 2023 Inventory, updates have been made to this section to reflect two different emissions values. This has resulted in a recalculation of historic numbers that have been reported in the Municipal Inventory because those past values included both in-basin emissions and emissions that were not under LADWP's operational control from purchased power.

LADWP Operational Emissions (Scope 1 and Scope 2)

LADWP operates four municipally-owned generating stations within the Los Angeles region. These are referred to as: Harbor, Haynes, Valley, and Scattergood. Emissions produced by burning natural gas to generate electricity within LADWP's operational control are included as scope 1 (direct emissions) in the City's Municipal Inventory. In alignment with LGOP, these emissions are included in the City's municipal inventories. Scope 2 emissions are associated with the electricity consumed by LADWP's operations but generated by external sources outside of LADWP's operational control. These scope 1 and 2 emissions will be the official values used in the Municipal Inventory total emissions going forward in accordance with LGOP.

Total Owned and Purchased Emissions

LADWP's electricity portfolio also includes power purchased from out-of-basin facilities through joint power authority (JPA) agreements and power purchase agreements (PPAs). In accordance with LGOP, these purchased power emissions fall under Scope 3, as they are indirect emissions from electricity generation not under LADWP's direct operational control. The proportion of power generated at in-basin versus out-of-basin stations changes from year to year, and can result in large year-over-year fluctuations in the inventory's overall emissions.

LADWP's electricity supply is dynamic and subject to continual adjustment to meet the demands of the community while also pursuing long-term renewable energy and emission goals. Additional information on emissions from a combination of owned and purchased power is provided to assess the full scope of emissions and understanding of community-wide conditions. As LADWP enters agreements to expand its renewable energy portfolio to meet the State's Renewable Portfolio Standard target and the City of LA's emission reduction goals, the associated reduction in greenhouse gas emissions may not be reflected in scope 1 in-basin values reported in this inventory unless additional information is included in this section. In order to reflect the City's commitment to overall reductions in emissions from power generation for the community, the emissions from these sources will be included as supplemental information. This supplemental data provides the following value:

- Trends in Renewable Energy Adoption: Highlighting the reductions in emissions from purchased power due to LADWP's transition toward renewable energy sources will demonstrate its progress and align with the City's Green New Deal goals.
- Separate Reporting for Clarity: To avoid conflating direct and indirect emissions, the Scope 1 and Scope 3 emissions will be reported in separate tables, reflecting LADWP's operational control emissions distinctly from its broader carbon footprint.

Table 4. In-Basin Power Generation Facilities GHG Emissions (MT CO_2e)

In Basin Power Generation Facilities GHG Emissions (MT CO_2e)						
	2008	**2019**	**2020**	**2021**	**2022**	**2023**
Scope 1: Stationary Combustion	4,167,393	2,639,482	2,586,980	2,339,219	2,682,510	2,303,240
Total	**4,167,393**	**2,639,482**	**2,586,980**	**2,339,219**	**2,682,510**	**2,303,240**

Table 5. Total Owned and Purchased Power Generation Facilities GHG Emissions (MT CO_2e)

Total Owned and Purchased Power Generation GHG Emissions (CO_2e)						
	2008	**2019**	**2020**	**2021**	**2022**	**2023**
Total	**16,282,004**	**8,267,621**	**7,558,235**	**7,560,596**	**7,261,679**	**6,165,273**

Power generation is the largest source of emissions, generally accounting for over 77% of overall emissions. As of 2023, power generation emissions have decreased by 45% compared to the 2008 baseline, as illustrated by Table 4 and Figure 5.

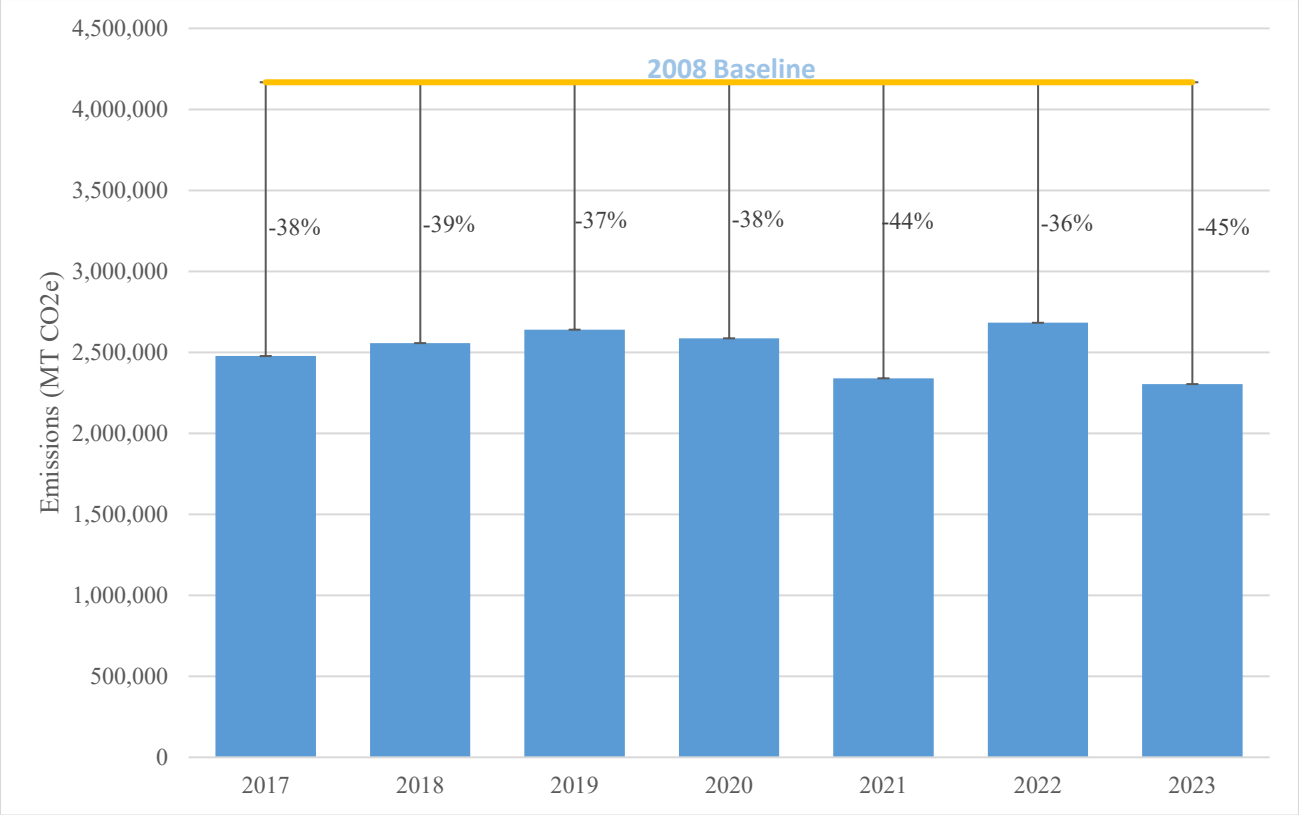

Figure 5. Power Generation Emissions Reduction from Baseline

Los Angeles is actively reducing its GHG emissions, a significant part of which is due to the LADWP shifting to cleaner, renewable energy sources. This transition away from carbon-heavy fuels means our electricity is now being generated with substantially fewer GHGs.

Looking ahead, the City is dedicated to the LA100 plan, which envisions sourcing all of Los Angeles' electricity from renewable energy by 2045, potentially achieving this milestone as early as 2035. This goal is in line with the Green New Deal's broader vision, marking a significant step towards a cleaner, more sustainable Los Angeles.

3.2 Buildings and Facilities

The building and facilities sector covers emissions associated with natural gas and electricity consumption from all City facilities that are used for municipal operations. This sector excludes facility energy used at landfills, seaports, airports, power generation facilities, potable water plants, and water reclamation plants, as those emissions are covered in their respective sectors.

Table 6. Building and Facilities Emissions (MT CO_2e)

	2008	2019	2020	2021	2022	2023
Scope 1: Stationary Combustion	26,543	31,061	34,425	32,472	34,051	37,932
Scope 2: Purchased Electricity	240,252	124,038	102,183	108,598	108,139	93,008
Total	**266,795**	**155,099**	**136,609**	**141,070**	**142,190**	**130,940**

Electricity consumption, the primary contributor to this sector's emissions, generally decreased since 2008. In 2023, the total emissions were 51% lower than the 2008 baseline, indicating a slight decrease from the previous year's emissions.

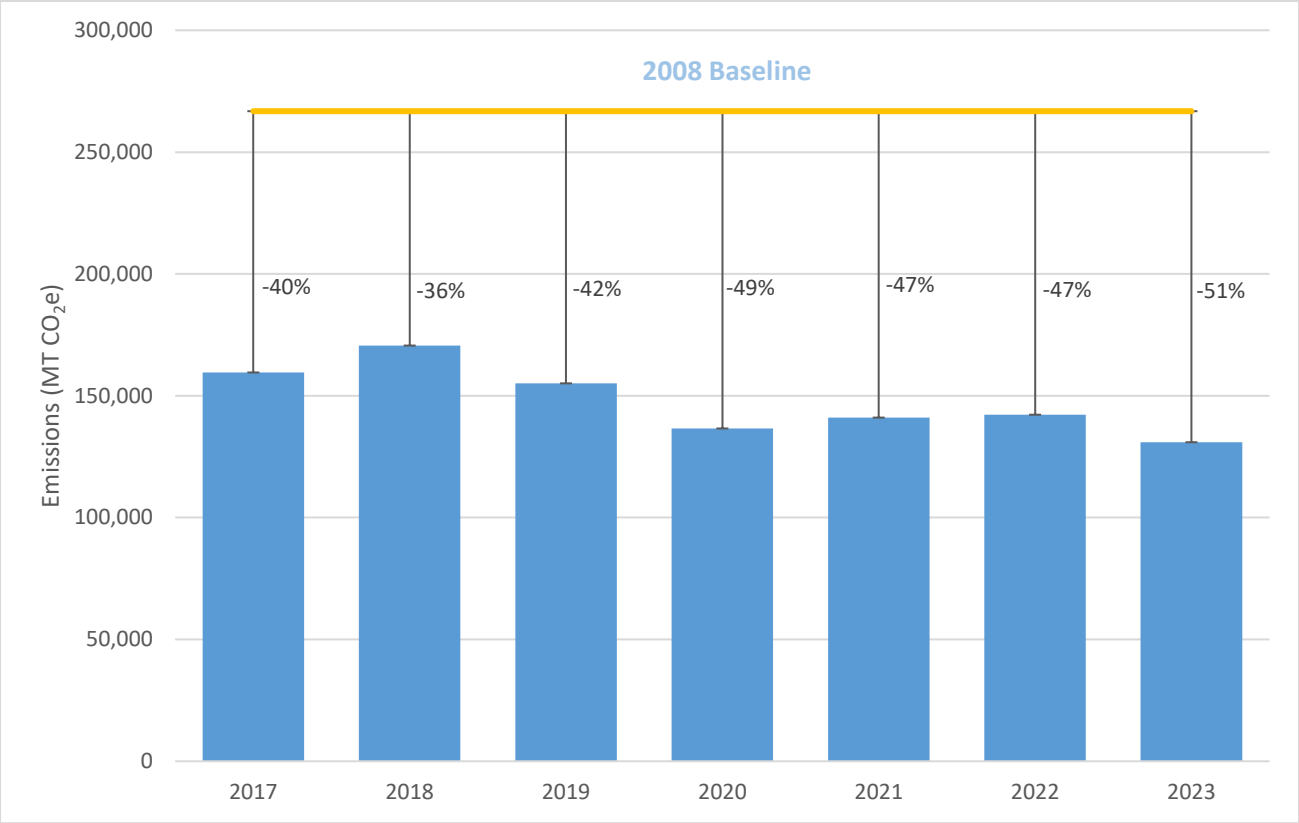

Figure 6. Building and Facilities Emissions Reductions from Baseline

The Bureau of Engineering's (BOE) Decarbonization Plan for municipal buildings is a pivotal step in reducing the City of Los Angeles' GHG emissions. The plan emphasizes how prioritizing capital investments in electrification and targeting high natural gas demand sites would maximize impacts to emissions in this sector. By implementing measures such as building electrification, energy efficiency upgrades, and renewable energy adoption, the plan would cut emissions while improving infrastructure resilience. This planning effort ensures the City's desire to achieve its climate goals, but also address urgent infrastructure needs in an equitable and impactful manner.

Aligned with L.A.'s Green New Deal, a primary goal of the decarbonization plan is to ensure all new municipally owned buildings and major renovations are fully electric. While this initiative may initially increase electricity consumption, it is expected to lead to an overall decrease in building emissions due to the reduced carbon intensity of LADWP's electricity supply. This comprehensive effort underscores the City's commitment to sustainability by driving equitable investment, creating green jobs, and setting a powerful example for the private sector to follow. By improving infrastructure resilience and advancing leadership in sustainable practices, the plan positions Los Angeles as a model for how urban centers can meet the challenges of climate change while delivering significant community benefits.

3.3 Streetlights and Traffic Signals

Emissions reported in the streetlights and traffic signals sector consist of only Scope 2 purchased electricity emissions related to the operations of streetlights and traffic signals.

Table 7. Streetlights and Traffic Signals Emissions (MT CO_2e)

	2008	2019	2020	2021	2022	2023
Scope 2: Purchased Electricity	153,247	38,865	30,654	32,453	31,801	31,645
Total	**153,247**	**38,865**	**30,654**	**32,453**	**31,801**	**31,645**

On average, about 85% of emissions in this subsector are from streetlights. In 2018, electricity consumption associated with streetlights increased by approximately 25%; however, consumption has generally been decreasing since.

This decrease is likely attributed to the Bureau of Street Services' efforts to convert all streetlights and LA tunnel lights to 100% LED lights and integrate smart nodes to enhance energy efficiency.

Table 7, above, indicates emissions were higher than last year's emissions as a result of increased electricity consumption. Emissions are expected to decrease hereafter as the grid's carbon intensity decreases.

In 2023, overall emissions for this sector were 79% below the 2008 baseline, as seen in Figure 7.

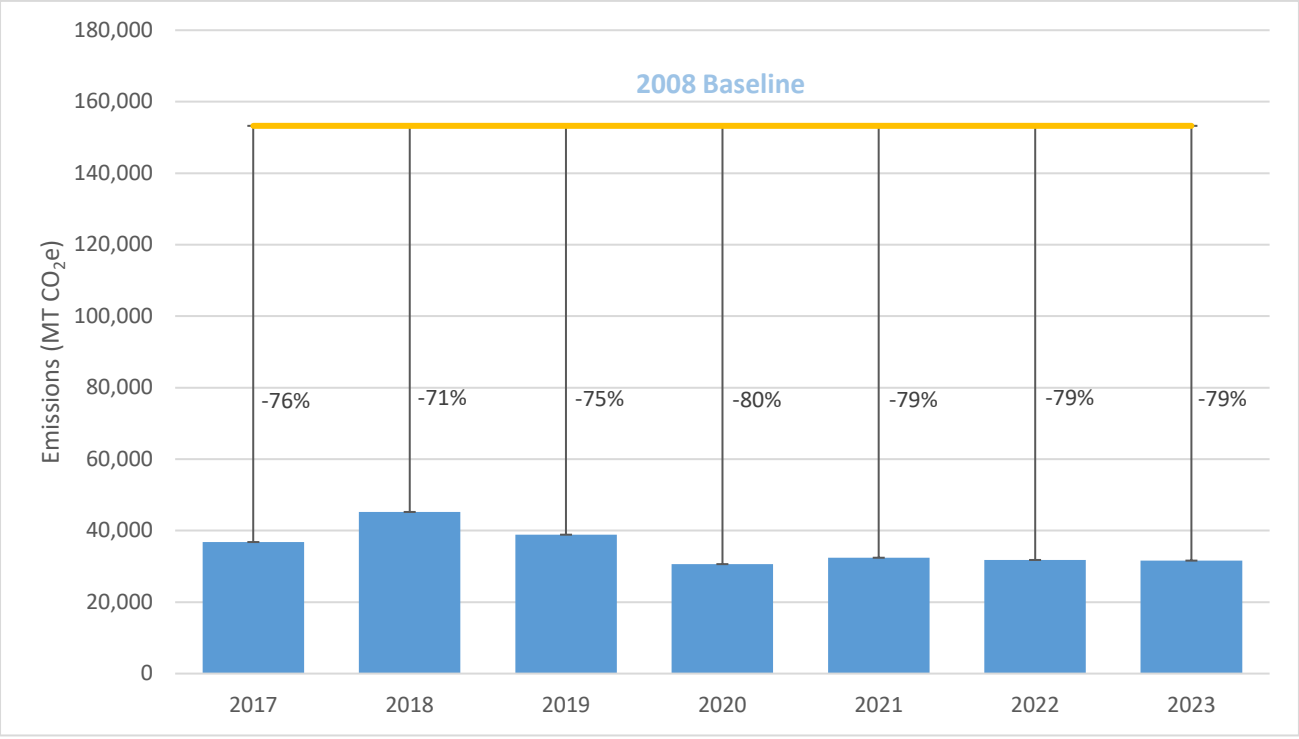

Figure 7. Streetlights and Traffic Signals Emissions Reductions from Baseline

3.4 Water Delivery

The water delivery sector contributes to GHG emissions through the activities of LADWP's potable water operations in providing water services to the residents and businesses in the City of Los Angeles. This encompasses the emissions resulting from sourcing, conveyance, treatment, storage, pumping, and distribution and transportation of potable water to the customers within the City of Los Angeles. The emissions herein only include water supply sourced from the Los Angeles Aqueduct and local groundwater, which are both managed by LADWP. However, it excludes emissions from imported water supplies from the Colorado River Aqueduct and the State Water Project, as these are operated by others beyond the City's control. Instead, the emissions from these imported sources are accounted for in the City of Los Angeles' Community Greenhouse Gas inventories.

Table 8. Water Delivery Emissions (MT CO_2e)

	2008	2019	2020	2021	2022	2023
Scope 1: Stationary Combustion	245	250	212	191	162	167
Scope 2: Purchased Electricity	67,518	34,863	28,634	34,757	24,261	21,413
Total	**67,763**	**35,113**	**28,845**	**34,948**	**24,422**	**21,580**

In 2023, the water delivery sector achieved a modest 4% reduction in emissions compared to 2022, as detailed in Table 8. This decrease reflects the increased supply from the Los Angeles Aqueduct in the wet year, which is conveyed by gravity to the City, and has lower emissions relative to other water supplies. Additionally, ongoing improvements in operational practices and the decreasing carbon intensity of LADWP's power grid helps to reduce emissions. This efficiency gain is part of a continuing trend of emission reductions in this sector, as evidenced by the data in Figure 8, which shows that the overall emissions from water delivery in 2023 were already 68% below the 2008 baseline.

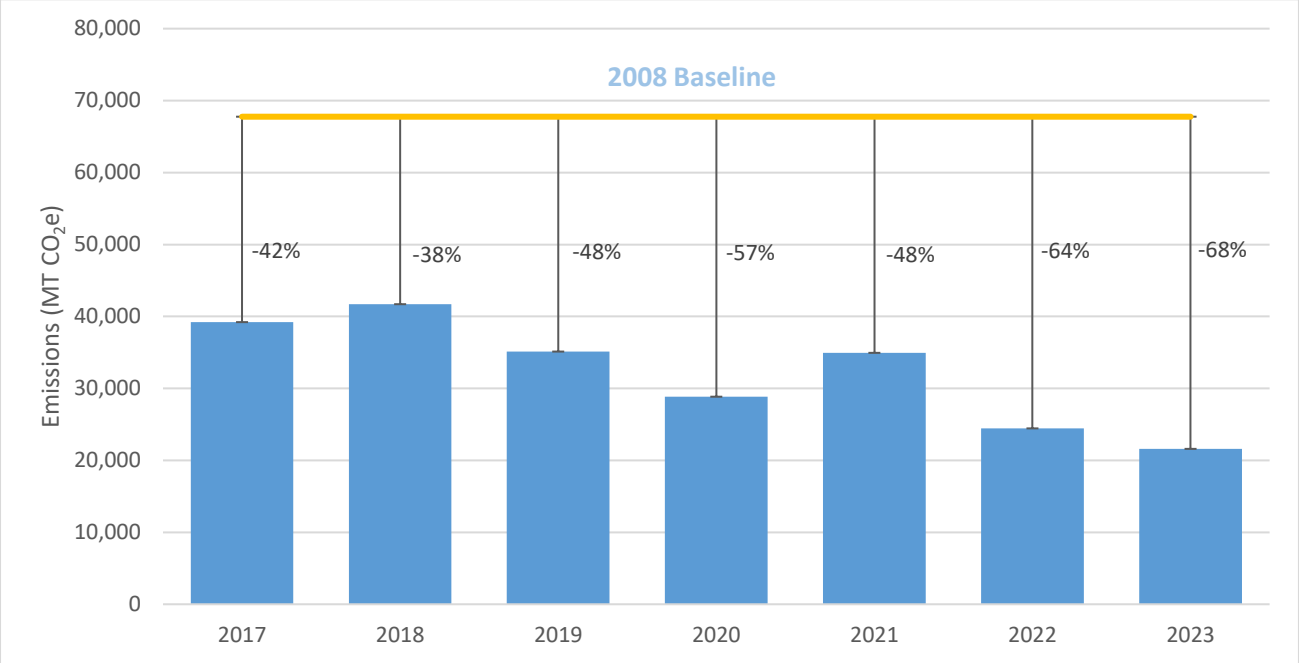

Figure 8. Water Delivery Emissions Reductions from Baseline

The City is actively working to manage water demand and diversify the water supply portfolio by implementing conservation and water efficiency measures and reducing imported supply purchases in order to reduce emissions in the long-term.

3.5 Water Reclamation

The water reclamation sector, a significant contributor to the City's greenhouse gas (GHG) emissions, encompasses the operations of four key water reclamation facilities: Hyperion Water Reclamation Plant (HWRP), Terminal Island Water Reclamation Plant (TIWRP), Donald C. Tillman Water Reclamation Plant (DCTWRP), and Los Angeles-Glendale Water Reclamation Plant (LAGWRP). These facilities are responsible for emissions stemming from various wastewater processes and effluent discharge, as well as the energy consumption required for plant operations.

Notably, the sector's emissions include CH_4 and N_2O released during the combustion of digester gas, categorized under stationary combustion. However, in alignment with LGOP protocols, CO_2 emissions resulting from digester gas combustion are deemed biogenic and thus excluded from the City's emissions inventory.

Table 9. Water Reclamation Facilities Emissions (MT CO_2e)

	2008	2019	2020	2021	2022	2023
Scope 1: Stationary Combustion and Process Emissions	49,256	78,458	74,548	74,704	89,620	89,218
Scope 2: Purchased Electricity	139,881	19,694	18,157	26,501	19,282	20,001
Total	**189,137**	**98,152**	**92,705**	**101,205**	**108,902**	**109,219**
Biogenic CO_2[3]	3,062	78,605	70,025	64,183	63,000	61,650

A significant reduction in emissions from this sector, amounting to 42% compared to the 2008 baseline, is evident as illustrated in Figure 9. However, it is noteworthy that energy consumption in these facilities has experienced a slight uptick. This trend highlights the importance of balancing efficiency gains with the growing energy demands driven by the City's ambitious Green New Deal, which aims for 100% water recycling. While this initiative is expected to increase reliance on grid-supplied electricity, ongoing efforts to decarbonize the electrical grid are anticipated to offset the emissions associated with this increased energy use, ensuring alignment with the City's long-term sustainability goals.

[3] CO_2 emissions from biogenic material (e.g. biofuel) are reported separately for informational purposes and not counted in the emission totals. Carbon from biogenic sources already exist in the natural carbon cycle so biogenic CO_2 emissions are not an addition to the environment. CH_4 and N_2O emissions are included in the emissions totals.

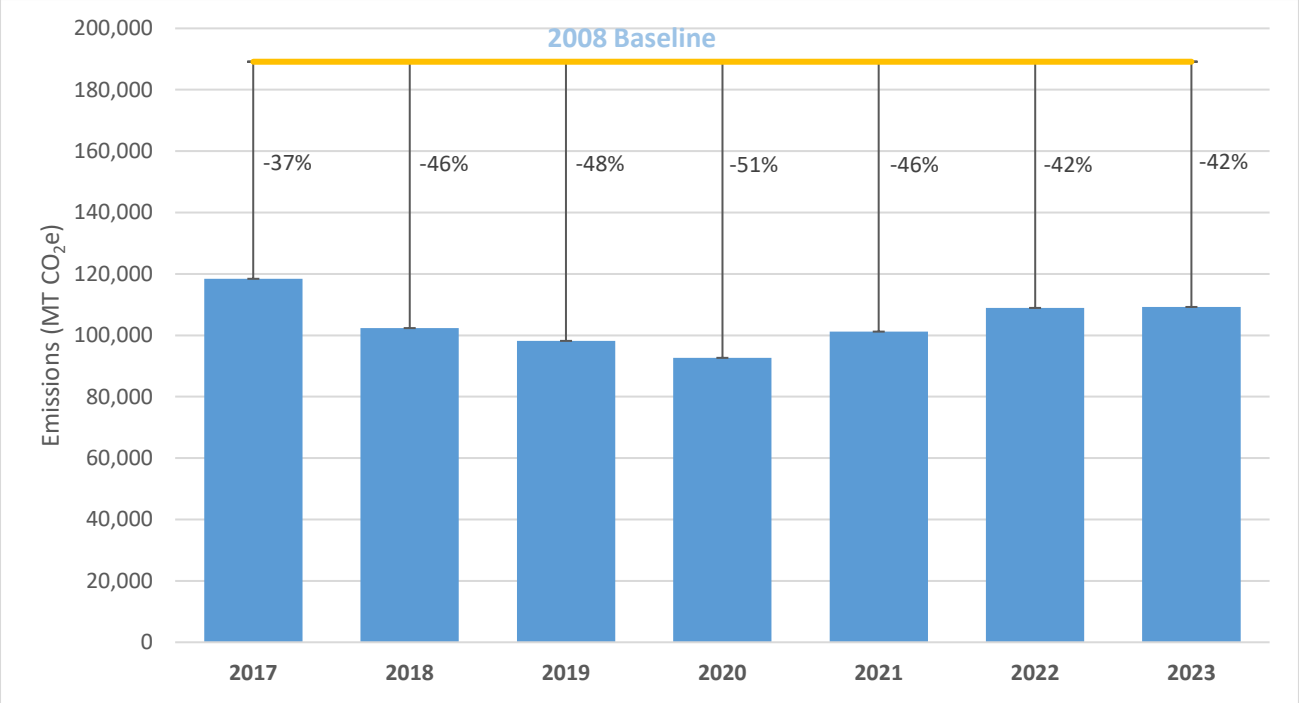

Figure 9. Water Reclamation Facilities Emissions Reductions from Baseline

3.6 Port

The port sector, specifically focusing on the Port of Los Angeles (POLA), is responsible for emissions generated by energy consumption in port-operated facilities. It's important to note that emissions from vehicles operated by the port are accounted for in the vehicle fleet sector (refer to section 3.8 Vehicle Fleet). Additionally, this sector excludes emissions from ships, vehicles, or facilities operated by third parties at POLA, which are included in the City of Los Angeles' Community Greenhouse Gas inventories.

Table 10. Port Facilities Emissions (MT CO_2e)

	2008	2019	2020	2021	2022	2023
Scope 1: Stationary Combustion	409	473	287	280	361	565
Scope 2: Purchased Electricity	7,245	5,907	4,726	4,425	4,949	3,448
Total	**7,654**	**6,380**	**5,013**	**4,705**	**5,310**	**4,013**

In 2023, despite a rise in emissions from stationary combustion, total emissions declined compared to the 2008 baseline, as indicated in Table 10. Overall, emissions in this sector have decreased by 48% from the 2008 baseline, as depicted in Figure 10.

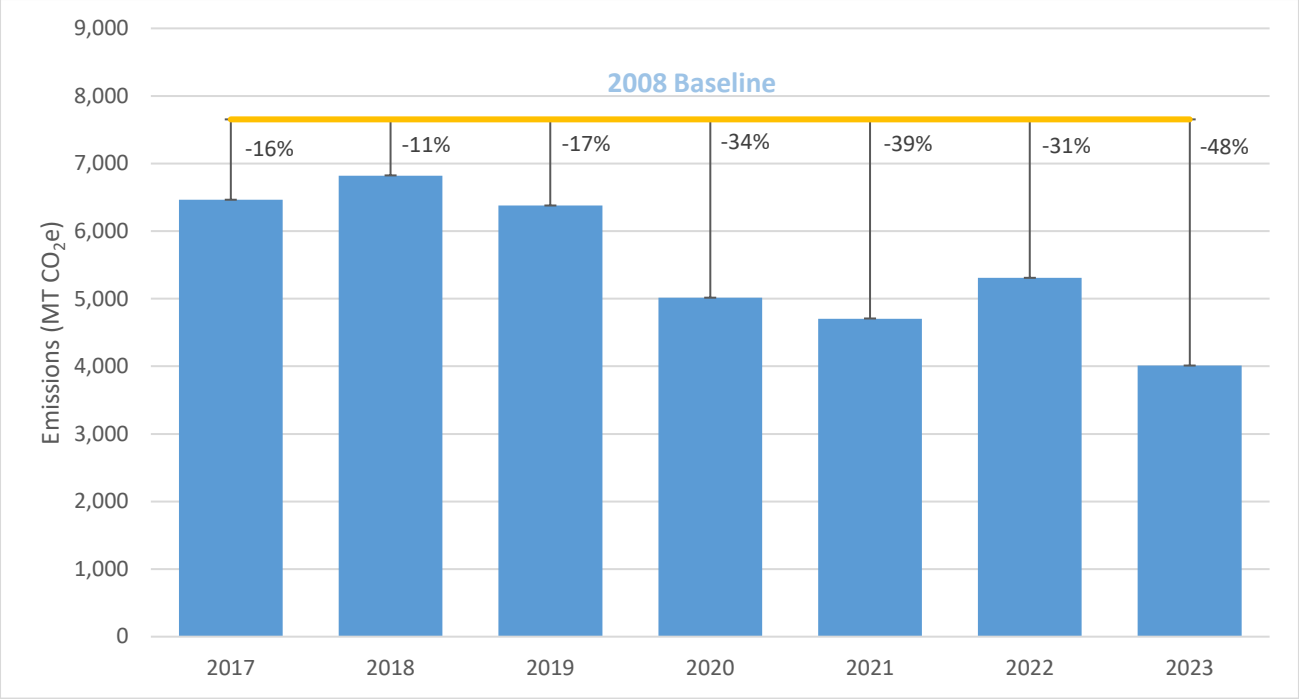

Figure 10. Port Facilities Emissions Reductions from Baseline

3.7 Airport

The airport sector encompasses emissions from Los Angeles International Airport (LAX) and Van Nuys Airport (VNY), focusing specifically on energy consumption at facilities operated by these airports. It's important to note that emissions from vehicles operated by the airports are accounted for in the vehicle fleet sector (refer to section 3.8 Vehicle Fleet). However, this sector does not include emissions from aircraft operated by third parties, which are instead included in the City of Los Angeles' Community Greenhouse Gas inventories.

Table 11. Airport Facilities Emissions (MT CO_2e)

	2008	2019	2020	2021	2022	2023
Scope 1: Stationary Combustion	44,457	29,159	29,762	30,204	31,083	33,763
Scope 2: Purchased Electricity	90,931	62,447	48,619	48,886	52,603	51,090
Total	**135,388**	**91,605**	**78,381**	**79,089**	**83,686**	**84,853**

In 2023, the airport sector experienced a slight increase in greenhouse gas (GHG) emissions. Despite this uptick, emissions remained significantly lower than historical levels, sustaining a reduction of approximately 37% compared to the 2008 baseline, as shown in Figure 11.

A key driver in 2023 may be a surge in passenger traffic at Los Angeles International Airport (LAX), which handled approximately 75 million passengers, a substantial 37% increase from the 66 million passengers in 2022. This rebound in air travel, indicative of post-pandemic recovery, likely contributed to the slight rise in GHG emissions from airport municipal facilities.

Figure 11 illustrates the long-term emissions reductions achieved since the 2008 baseline, emphasizing the ongoing efforts to mitigate the environmental impact of airport operations. Despite the challenges posed by rising passenger volumes, the sustained emissions reductions demonstrate the effectiveness of initiatives aimed at enhancing energy efficiency and reducing the sector's carbon footprint. The airport sector's commitment to environmental sustainability is evident in its continued efforts to balance growing operational demands with ambitious sustainability goals.

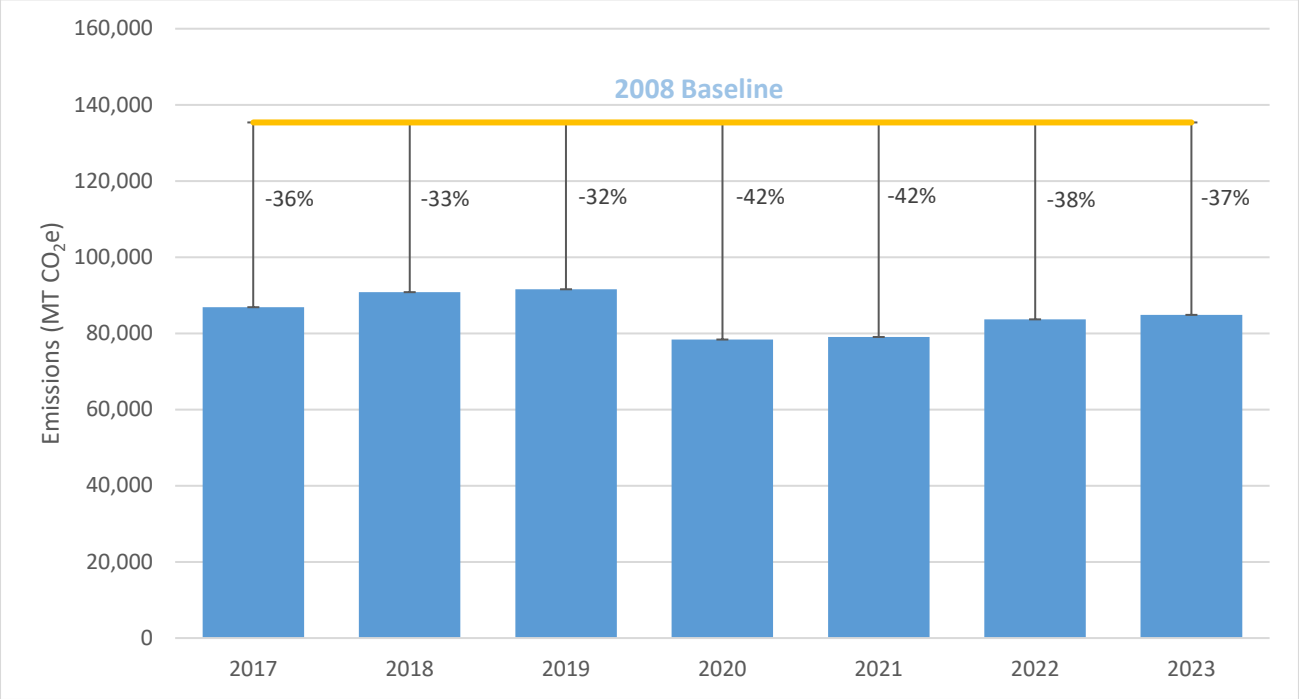

Figure 11. Airport Facilities Emissions Reductions from Baseline

3.8 Vehicle Fleet

The vehicle fleet sector accounts for emissions from on-road and off-road vehicles operated by the City, excluding the Los Angeles Department of Transportation's (LADOT) public transit fleet. Public transit fleet emissions are accounted for in their own sector (see section 3.9 Transit Fleet).

Table 12 showcases the City's ongoing commitment to lowering emissions from its vehicle fleet. Significant reductions have been achieved primarily through reducing the use of conventional fuels like gasoline and diesel, and increasingly adopting lower-carbon alternatives, such as compressed natural gas and electric vehicles. Notably, the city has also incorporated renewable natural gas (RNG), as detailed in Figure 12.

Table 12. Vehicle Fleet Emissions (MT CO_2e)

	2008	2019	2020	2021	2022	2023
Scope 1: On- and Off-Road Mobile Combustion	191,292	145,038	132,047	137,959	143,955	136,816
Total	**191,292**	**145,038**	**132,047**	**137,959**	**143,955**	**136,816**
Biogenic CO_2[4]	-	13,741	11,865	8,736	7,095	6,335

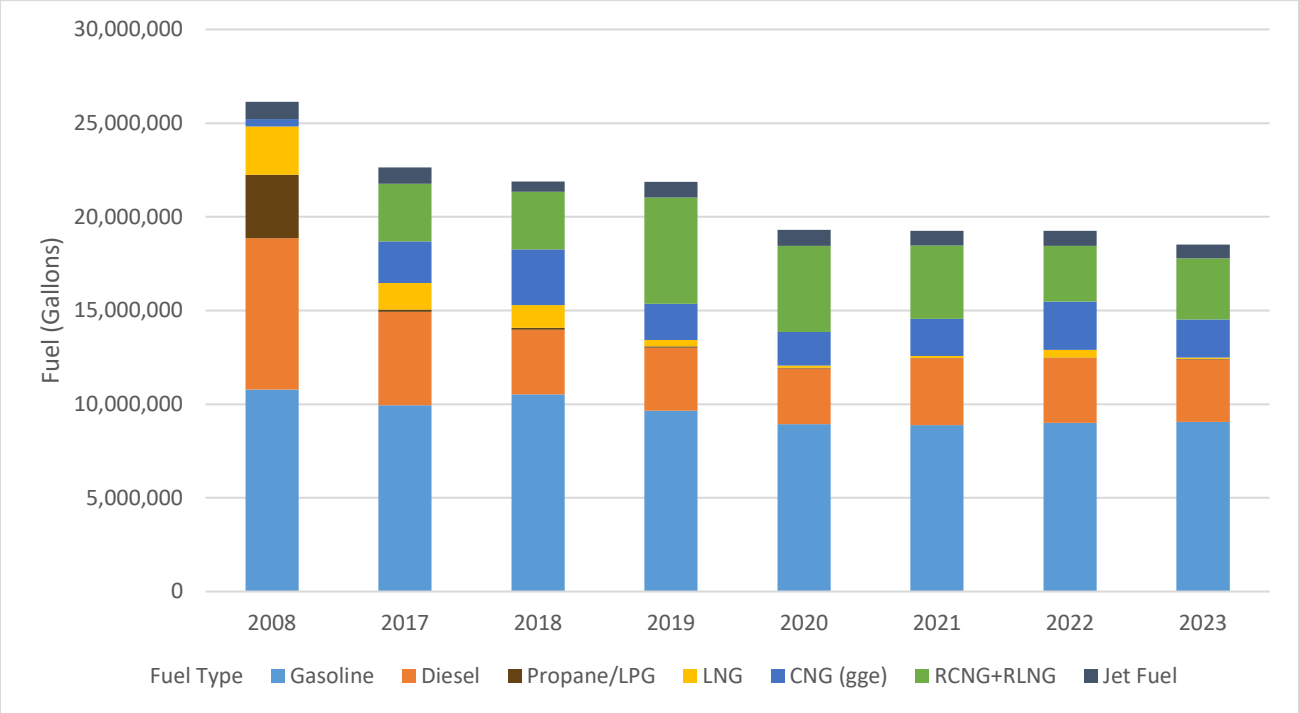

Figure 12. Fleet Fuel Consumption

In 2023, the vehicle fleet sector's emissions were 28% lower than the City's 2008 baseline, as illustrated in Figure 13. Total fuel consumption decreased by 3.8% compared to 2022, driven by significant reductions in LNG and CNG usage, alongside continued efforts to adopt cleaner and more efficient fuel options. A continued decline in emissions is anticipated as the City progresses towards its Green New Deal objective of transitioning all City fleet vehicles to zero emissions by 2028, where technically feasible.

[4] CO_2 emissions from biogenic material (e.g. biofuel) are reported separately for informational purposes and not counted in the emission totals. Carbon from biogenic sources already exist in the natural carbon cycle so biogenic CO_2 emissions are not an addition to the environment. CH_4 and N_2O emissions are included in the emissions totals.

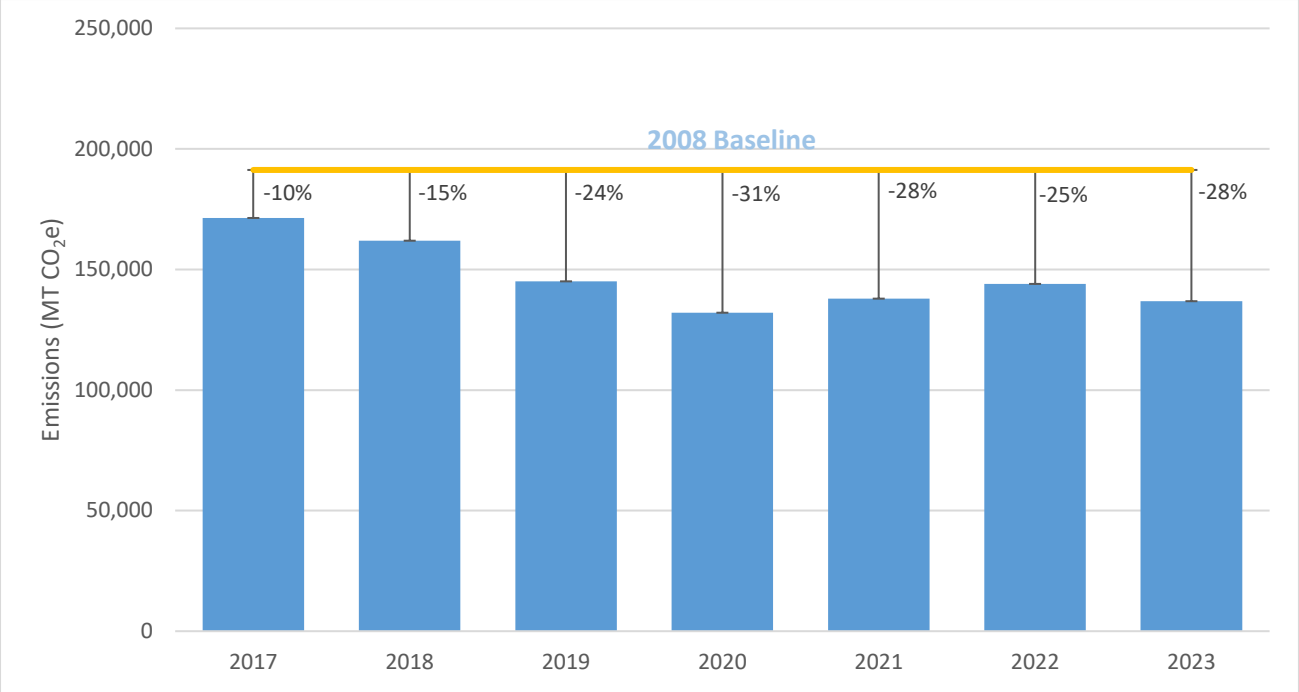

Figure 13. Vehicle Fleet Emissions Reductions from Baseline

3.9 Transit Fleet

The transit fleet sector accounts for emissions from Los Angeles' public transit fleet. This includes the City's DASH, Commuter Express, and Cityride services. This does not include emissions from the public transit fleet operated by the Los Angeles County Metropolitan Transportation Authority (Metro), which is outside the City's jurisdiction.

Table 13.Transit Fleet Emissions (MT CO_2e)

	2008	2019	2020	2021	2022	2023
Scope 1: On-Road Mobile Combustion	35,263	20,420	19,980	24,122	21,200	19,530
Scope 2: Purchased Electricity		45	41	125	130	446
Total	**35,263**	**20,464**	**20,020**	**24,247**	**21,330**	**19,976**

Table 13 presents a downward trend in emissions over the past five years. This reduction is largely attributed to the City's initiative to shift from traditional, high-carbon fuels (like gasoline and diesel) to lower-carbon alternatives, namely Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG). As of 2023, the City's transit fleet emissions have been reduced by 43% compared to the 2008 baseline.

The City is actively working towards electrifying its transit fleet. A core goal of the L.A. Green New Deal is to achieve 100% fleet electrification by 2028. As the transit fleet moves towards electrification and the carbon intensity of electricity continues to decrease, a further reduction in emissions is anticipated.

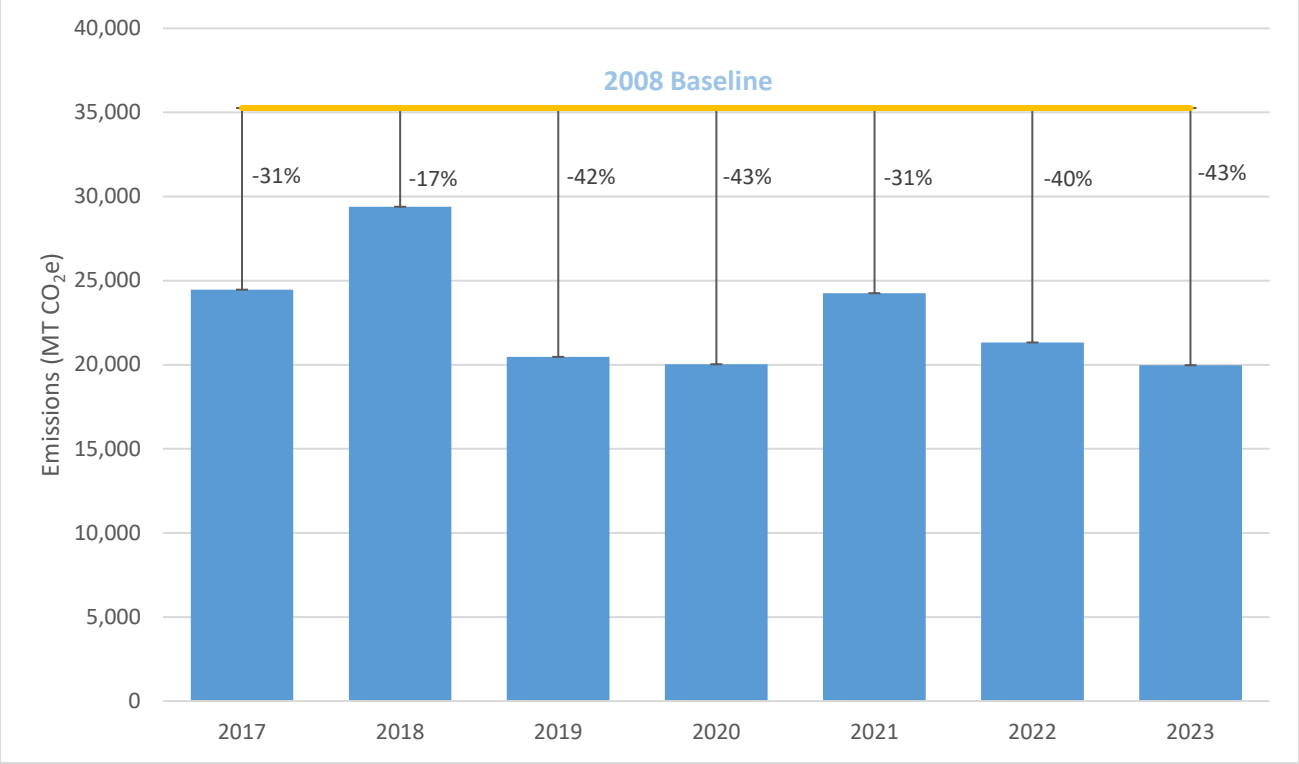

Figure 14. Transit Facilities Emissions Reductions from Baseline

3.10 Solid Waste Facilities

The solid waste sector encompasses emissions from five closed landfills - Bishop Canyon, Gaffey Street, Lopez Canyon, Sheldon-Arleta, and Toyon Canyon - all under the management of the City of Los Angeles. Although these facilities have ceased accepting solid waste, they continue to be sources of environmental impact through fugitive emissions from their landfill gas collection systems and stationary combustion emissions from the burning of captured landfill gas.

Table 14. Solid Waste Facilities Emissions (MT CO_2e)

	2008	2019	2020	2021	2022	2023
Scope 1: Fugitive Emissions and Stationary Combustion	196,440	157,692	154,531	151,485	148,486	147,243
Total	**196,440**	**157,692**	**154,531**	**151,485**	**148,486**	**147,243**
Biogenic CO_2[5]	55,029	44,168	43,282	42,430	41,589	40,766

Table 14 demonstrates emissions calculated in accordance with LGOP methodologies. According to the Protocol emissions for this sector should be calculated via a first order decay model with a variety of fixed or limited ranges of inputs. More refined calculations are possible, but due to numerous variables in gathering data for these emissions, standards for further reporting are not available in the latest edition of LGOP. In 2023, emissions calculated via the methodologies in LGOP for this sector were 25% below 2008 baseline levels, as illustrated by Figure 15.

[5] CO_2 emissions from biogenic material (e.g. biofuel) are reported separately for informational purposes and not counted in the emission totals. Carbon from biogenic sources already exist in the natural carbon cycle so biogenic CO_2 emissions are not an addition to the environment. CH_4 and N_2O emissions are included in the emissions totals.

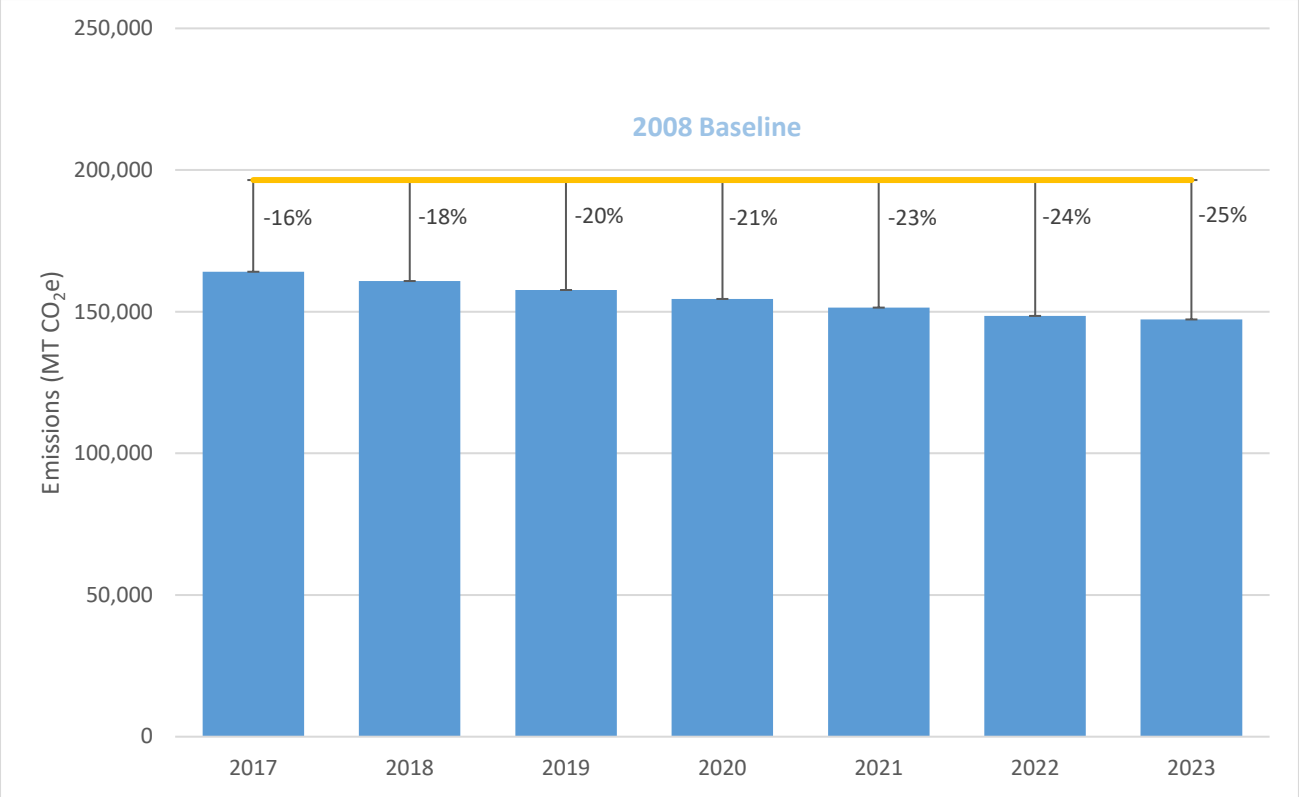

Figure 15. Solid Waste Facilities Emissions Reductions from Baseline

As we continue to monitor and manage emissions from our closed landfills, our facilities have provided the following additional data, offering deeper insights into our emission control measures and techniques that go beyond the techniques LGOP describes. In discussion with our Solid Resources staff, the following information has been described for these landfills' gas collection technologies and measurements. All landfills, except for Bishop Canyon, are equipped with gas collection and treatment systems. The precision in measuring methane composition is ensured by using a Landtec GEM5000 gas analyzer, which boasts an accuracy of ±0.5%. Furthermore, destruction rates are verified annually through EPA Method 3C gas chromatography, capable of detecting concentrations down to parts per billion (ppb). For flow measurements, Lopez Canyon employs an FCI GF90 mass flow meter, and other sites use devices with similar accuracy (±1% of reading plus 0.5% of scale) and repeatability (±0.5% of reading or better).

In addition to these advanced monitoring technologies, all collected landfill gas is directed to high-efficiency flares or energy recovery systems to maximize methane destruction and minimize greenhouse gas emissions. Regular calibration and maintenance of equipment ensure consistent accuracy and reliability of the data collected. These measures underscore our commitment to maintaining high standards of environmental stewardship and accuracy and result in significantly lower total emissions for the sector. Based on the data provided by Solid Resources in 2022, the emissions for this sector in from the measured quantities from landfill sampling in 2022 would be calculated at 105,924 MT CO_2e. We have kept the modeled values as the official numbers in accordance with LGOP's methodologies; however, the actual quantities, as indicated by measured data from Solid Resources, may differ and potentially be significantly lower. This measured data reflects the effectiveness of our enhanced gas collection systems and ongoing operational improvements aimed at reducing the environmental impact of our landfills.

4. Conclusion

In the heart of Los Angeles, our collective endeavors to diminish greenhouse gas emissions transcend mere statistics – they embody our unwavering dedication to fostering a healthier, more sustainable city. Our stride towards carbon neutrality by 2045 is not merely a theoretical ambition; it's a dynamic, communal mission that we breathe life into every single day. Our achievements thus far are noteworthy, having already realized a significant 41% reduction in emissions from our 2008 levels by 2023. However, a recent, albeit slight, deviation in this positive trajectory serves as a poignant reminder: our journey is far from over, and our vigilance is paramount to meet our ambitious 2025 targets.

At this pivotal juncture, Los Angeles is not just poised to continue its environmental stewardship, but is also committed to amplifying these efforts. Our approach extends beyond governmental policies, permeating the very fabric of our daily existence. It's about each individual embracing sustainable choices – be it through energy conservation at home, opting for public transit, or supporting local eco-initiatives.

Our collective power for change has been evident in actions like transitioning to renewable energy sources, electrifying our municipal fleet, and implementing water conservation strategies. Yet, we face ongoing challenges, such as the increased energy demands of our water facilities and the task of managing emissions from our ports and airports. These aren't mere obstacles; they represent opportunities for us to collectively innovate and devise groundbreaking solutions.

As we forge ahead, let us hold fast to the conviction that Los Angeles is resolute in its pledge to protect our environment. Reducing our carbon footprint is a shared journey, and the strategies outlined in LA’s Green New Deal are our compass. Equally crucial is the role each one of us plays in this collective endeavor. By altering our habits and fostering a culture steeped in sustainability, we are not just effecting change for the present – we are sculpting a vibrant, resilient Los Angeles for the generations to come. Let's persist in this journey together, fueled by commitment and optimism, as we pave the way for a brighter, greener future.

5. Preparers

LA Sanitation & Environment (LASAN), recognized as a national leader in environmental services and programs, is a critical partner in the City's climate action and response and in advancing the path towards the City's climate goals. LASAN is committed to proactively addressing climate change and supporting climate action in line with our mission to protect public health and the environment.

Building on nearly a decade of experience, LASAN's Climate Action Program supports the City's path towards carbon neutrality as outlined by the Sustainable City pLAn. This program collaborates with City departments, policymakers, and outside agencies on climate-related reports and activities.

For more information about the Climate Action Program, please contact us at san.climateaction@lacity.org or (213) 485-3640 or visit us at www.lacitysan.org/climateaction.

Last updated: January 2025

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As a covered entity under Title II of the Americans with Disabilities Act, the City of Los Angeles does not discriminate on the basis of disability and, upon request, will provide reasonable accommodation to ensure equal access to its programs, services and activities.