CITY OF LOS ANGELES

2022 MUNICIPAL GREENHOUSE GAS INVENTORY REPORT

lacitysan.org/climateaction

san.climateaction@lacity.org

(213) 485-3640

CITY OF LOS ANGELES FOUNDED 1781

LA SANITATION environment
CITY OF LOS ANGELES
zero waste • zero wasted water

Table of Contents

List of Figures

List of Tables

Executive Summary

This report provides a comprehensive overview of the City of Los Angeles' efforts in managing its greenhouse gas (GHG) emissions, detailing the municipal GHG inventory from the baseline year of 2008 and from 2017 through 2022. 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 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

As illustrated in Figure 1, the emissions have seen significant declines but recent years have not seen as much of a decrease as in the past. Notably, as of 2022, the City has achieved a 54% reduction in emissions compared to the 2008 baseline, aligning once again with the 2025 goal well ahead of time. However, it's critical to acknowledge a slight deviation in the current trend of GHG emissions. This deviation, albeit minor, signals a potential risk of not fully meeting the 2025 objectives. This observation underscores an urgent need for Los Angeles to reevaluate and fortify its environmental strategies.

The City stands at a pivotal juncture. To continue on this path of environmental stewardship and to meet its ambitious goals, it is imperative that Los Angeles commits to adopting and implementing more robust, sustainable practices. This commitment will not only steer the City back on track towards its 2025 targets but also pave the way for a sustainable and environmentally responsible future.

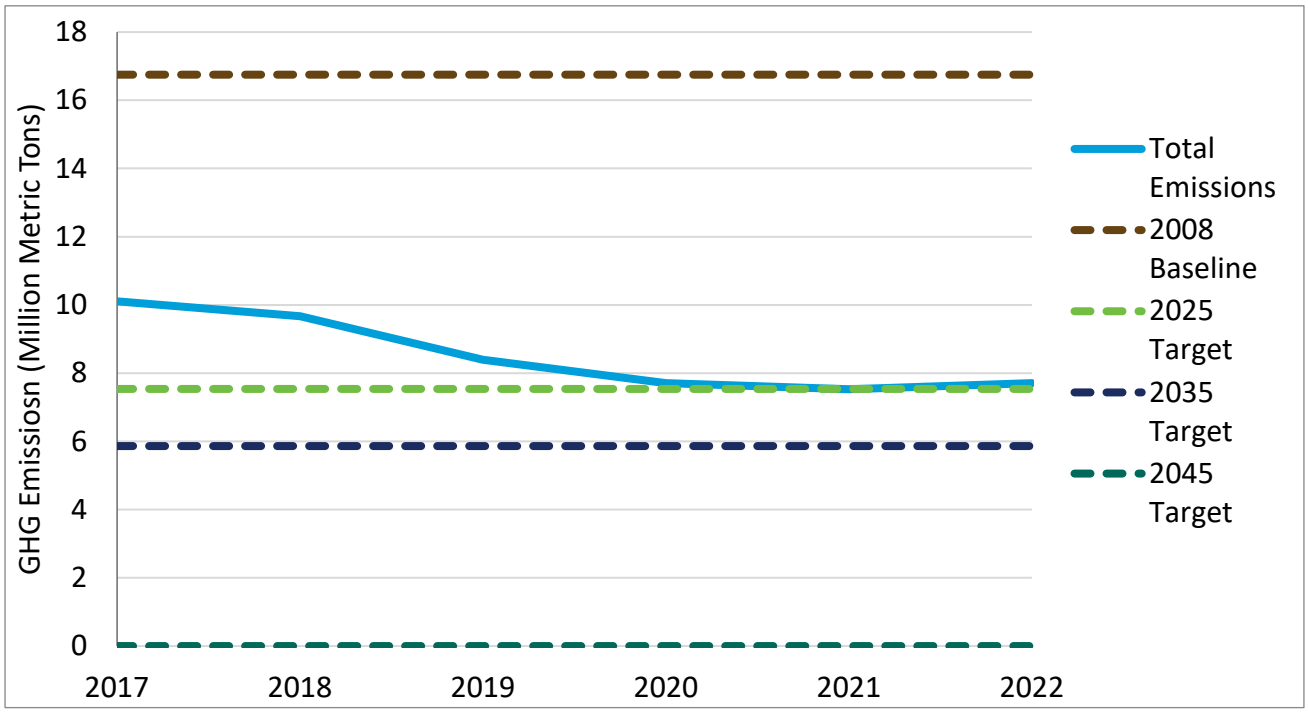

Figure 1. Municipal Emissions Progress Compared to Green New Deal Targets

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 Sustainability (MOS), 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 and 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 see 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 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 CO2 equivalent (CO2e), 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

Our approach, using AR4 values, 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 majority of 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.

2.2.2 Scopes

In our efforts to comprehensively track and manage greenhouse gas emissions, the City of Los Angeles classifies these emissions into two included categories 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 it's a 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 as we gather more information.

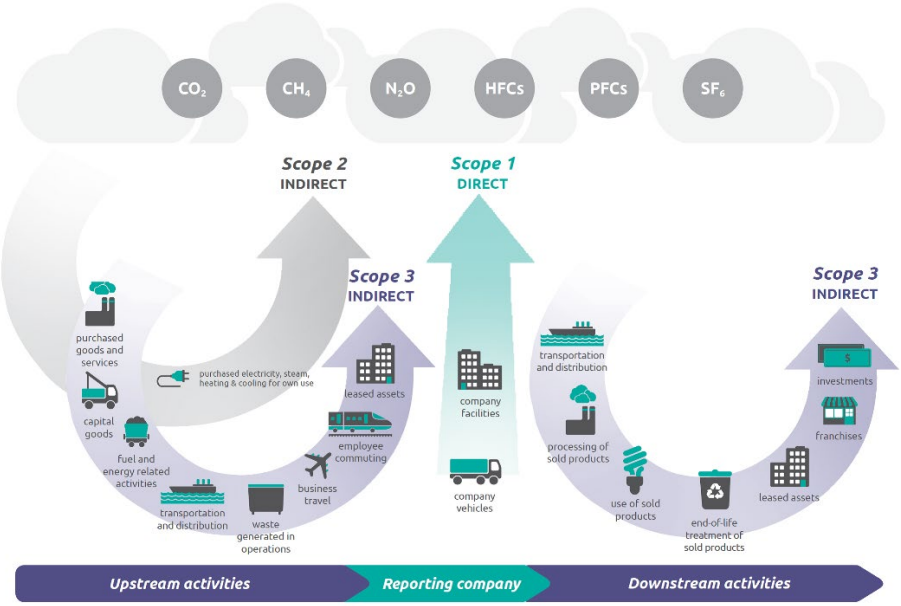

Figure 2. Overview of GHG Emission Scopes[1]

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 does have to account for this because we own and operate some of our utilities through 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.

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.

[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.

2.2.3 Sectors

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

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

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

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
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 2022, 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 2017-2022. As of 2022, 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 3, 2022 saw a total GHG emissions reduction of 54% compared to 2008 baseline.

Table 3. Total Emissions by Sector (MT CO_2e)

LGOP Category	2008	2018	2019	2020	2021	2022
Building and Other Facilities	266,795	170,628	155,099	136,609	141,070	142,190
Streetlight and Traffic Signals	153,247	45,203	38,865	30,654	32,453	31,083
Water Delivery Facilities	67,763	41,720	35,113	28,845	34,948	24,423
Water Reclamation Facilities	189,137	102,404	98,152	92,705	101,205	108,902
Port Facilities	7,654	6,822	6,380	5,013	4,705	5,310
Airport Facilities	135,388	90,801	91,605	78,381	79,089	83,686
Vehicle Fleet	191,292	161,986	145,038	132,047	137,959	143,956
Transit Fleet	35,263	29,370	20,420	19,980	24,122	21,330
Power Generation	16,206,619	9,179,050	7,931,835	7,263,656	7,078,694	7,234,813
Solid Waste Facilities	196,470	160,861	157,692	154,531	151,485	148,486
Total Municipal Emissions[2]	**16,750,555**	**9,668,591**	**8,394,385**	**7,709,448**	**7,530,111**	**7,703,731**

[2] As the City is both an electricity generator and consumer, adding Scope 1 and 2 emissions to generate a single City-wide total would result in double counting of emissions. Therefore, Scope 1 emissions are added together to generate the City-wide municipal total, and each sector's specific Scope 1 and Scope 2 are added together to show an overview of total emissions resulting from each sector's overall annual energy consumption.

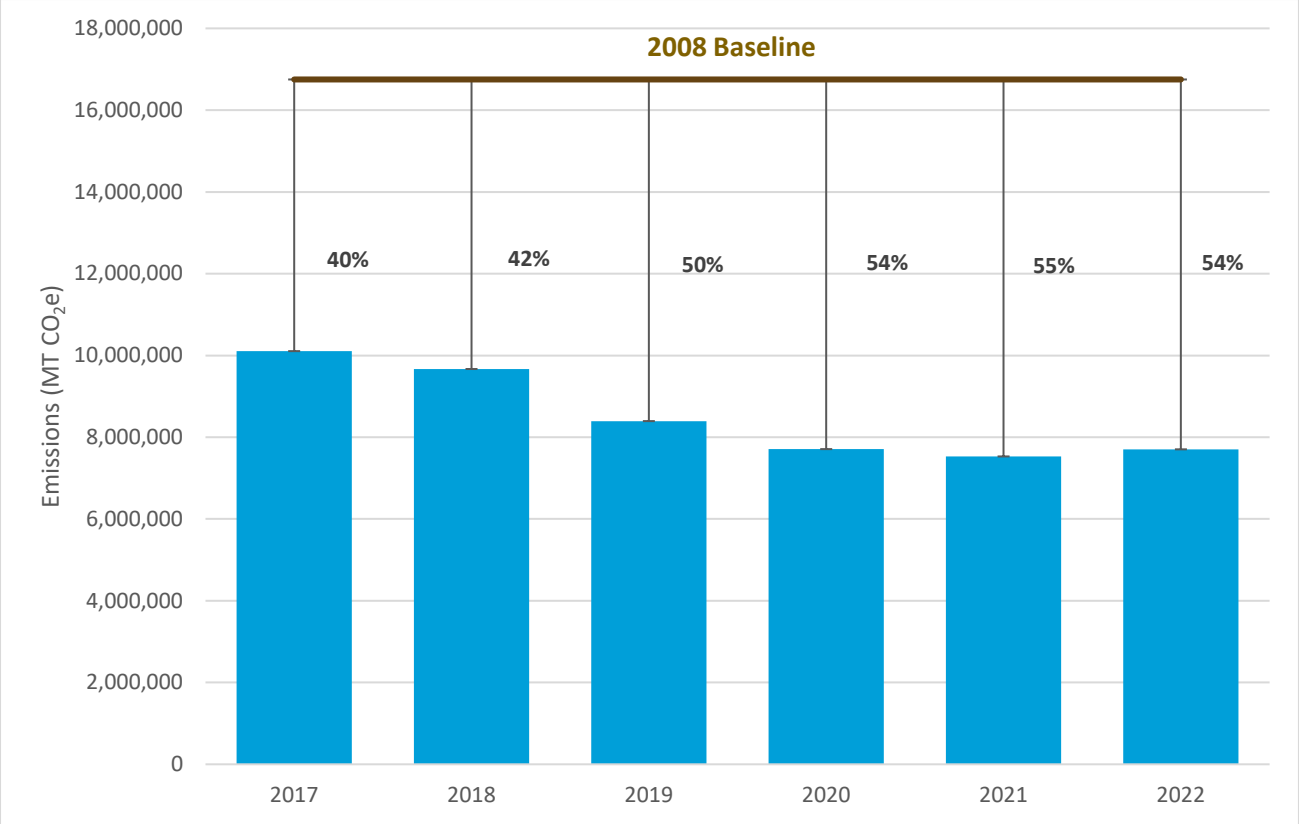

Figure 3. Overall Emissions Reductions

3.1 Power Generation

The power generation sector accounts for emissions associated with power either generated or purchased by the Los Angeles Department of Water and Power (LADWP) for consumption by its customers.

Table 4. Power Generation Facilities Emissions (MT CO_2e)

	2008	2018	2019	2020	2021	2022
Scope 1: Stationary Combustion	16,206,619	9,179,050	7,931,835	7,263,656	7,078,694	7,234,813
Total	**16,206,619**	**9,179,050**	**7,931,835**	**7,263,656**	**7,078,694**	**7,234,813**
Biogenic CO_2[3]	-	8,667	-	-	-	

Power generation is the largest source of emissions, generally accounting for over 93% of overall emissions. As of 2022, power generation emissions have decreased by 55% compared to the 2008 baseline, as illustrated by Table 4 and Figure 4.

[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 exists 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.

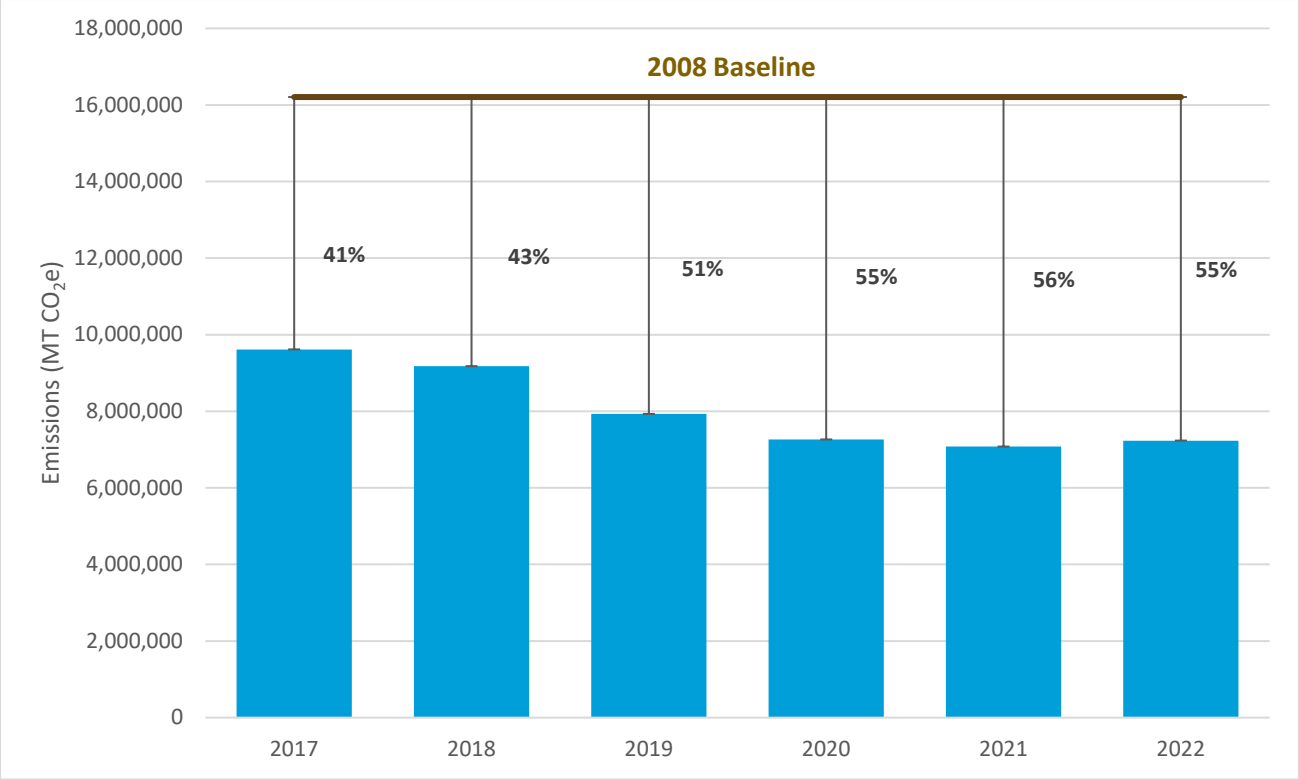

Figure 4. Power Generation Emissions Reduction from Baseline

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 landfill, seaport, airport, power generation, potable water, and water reclamation operations, as those emissions are covered in their respective sectors.

Table 5. Building and Facilities Emissions (MT CO_2e)

	2008	2018	2019	2020	2021	2022
Scope 1: Stationary Combustion	26,543	29,780	31,061	34,425	32,472	34,051
Scope 2: Purchased Electricity	240,252	140,848	124,038	102,183	108,598	108,139
Total	**266,795**	**170,628**	**155,099**	**136,609**	**141,070**	**142,190**

Electricity consumption, the primary contributor to this sector's emissions, has generally decreased since 2008, with a minor uptick in 2021 and 2022 compared to the lows achieved during the Covid-19 Pandemic. In 2022, the total emissions were 47% lower than the 2008 baseline, indicating a slight decrease from the previous year's emissions.

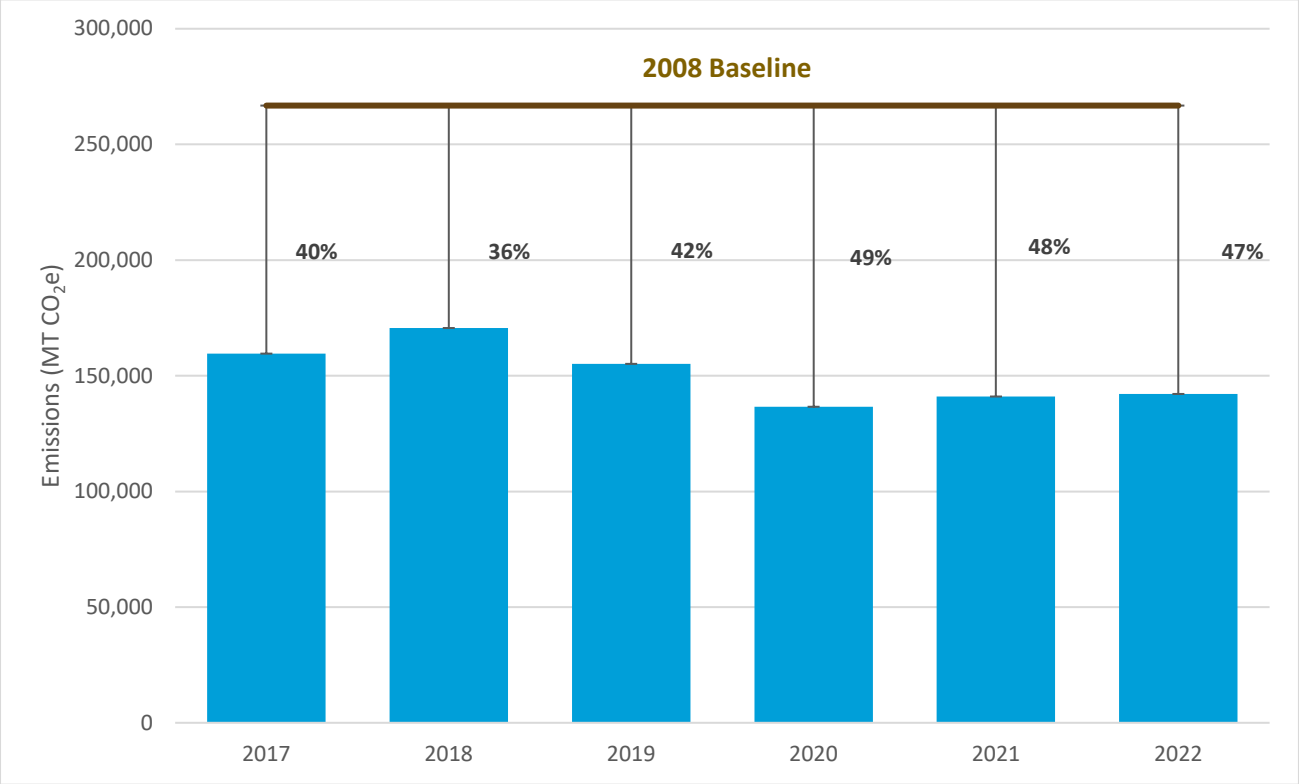

Figure 5. Building and Facilities Emissions Reductions from Baseline

The increase in Scope 1 emissions is partly due to higher natural gas usage for building heating, as well as increased usage at the City's asphalt plants and the conversion of pipeline natural gas to compressed natural gas (CNG) for fueling heavy-duty trucks and buses. While most CNG consumption is included in the Vehicle Fleet sector, some facilities compress pipeline natural gas on-site for fueling, contributing to higher consumption in recent years.

Despite these increases, the sector has seen an overall reduction in emissions compared to the baseline, thanks to reduced electricity usage and a decrease in the carbon intensity of the electrical grid.

Aligned with L.A.'s Green New Deal, a primary goal is to ensure all new municipally owned buildings and major renovations are fully electric. This initiative may initially increase electricity consumption, but it is expected to lead to an overall decrease in building emissions due to the reduced carbon intensity of LADWP's electricity.

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 6. Streetlights and Traffic Signals Emissions (MT CO_2e)

	2008	2018	2019	2020	2021	2022
Scope 2: Purchased Electricity	153,247	45,203	38,865	30,654	32,453	31,801
Total	**153,247**	**45,203**	**38,865**	**30,654**	**32,453**	**31,801**

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 6, 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 2022, overall emissions for this sector were 79% below the 2008 baseline, as seen in Figure 6.

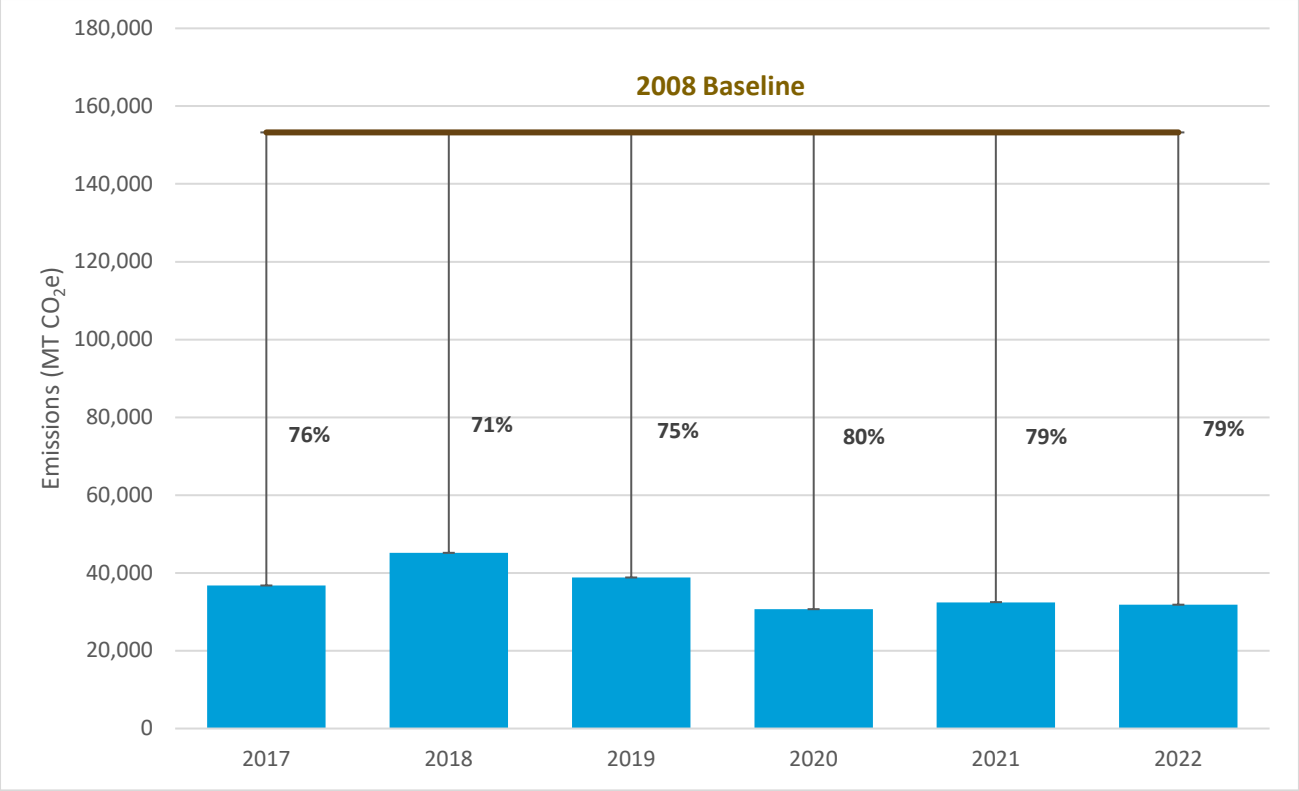

Figure 6. Streetlights and Traffic Signals Emissions Reductions from Baseline

3.4 Water Delivery

The water delivery sector contributes to GHG emissions through the activities of LADWP's potable water operations. This encompasses the emissions resulting from sourcing and conveying water to the city via the Los Angeles Aqueduct, which is managed by LADWP. However, it excludes emissions from initiatives like the Colorado River Aqueduct and the State Water Project, as these are beyond the City's control. Instead, the emissions from these projects are accounted for in the City of Los Angeles' Community Greenhouse Gas inventories.

Table 7. Water Delivery Emissions (MT CO_2e)

	2008	2018	2019	2020	2021	2022
Scope 1: Stationary Combustion	245	202	250	212	191	162
Scope 2: Purchased Electricity	67,518	41,518	34,863	28,634	34,757	24,261
Total	**67,763**	**41,720**	**35,113**	**28,845**	**34,948**	**24,422**

In 2022, the water delivery sector experienced a significant 14% reduction in emissions, as detailed in *Table 7*. This decrease can be largely attributed to the abundant water supply during the year, which facilitated more efficient water delivery operations and reduced the energy required for water transportation and processing. This efficiency gain is part of a continuing trend of emission reductions in this sector, as evidenced by the data in Figure 7, which shows that the overall emissions from water delivery in 2022 were already 64% below the 2008 baseline.

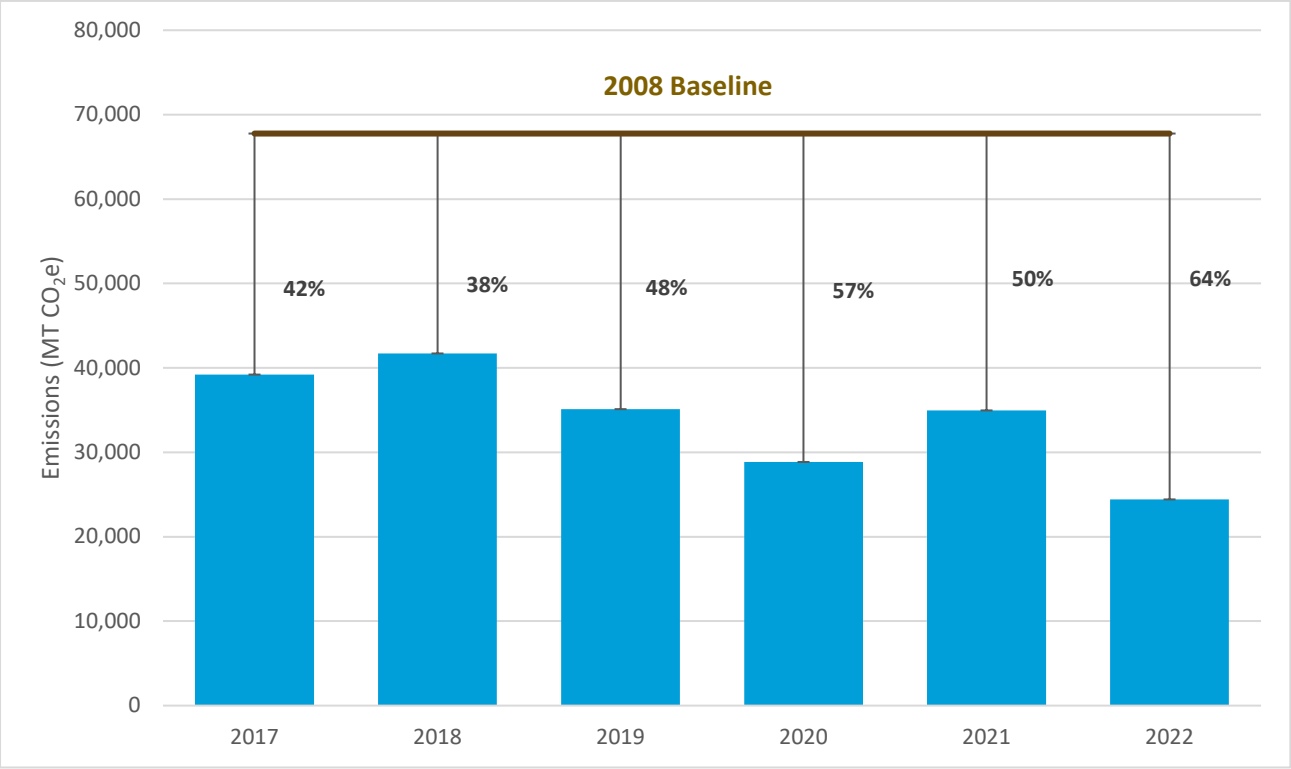

Figure 7. Water Delivery Emissions Reductions from Baseline

The City is actively working to diminish water demand by implementing conservation and water efficiency measures, alongside enhancing local water supply through initiatives in water recycling and stormwater capture. These strategies are anticipated to lead to a long-term reduction in emissions linked to the water delivery sector.

Furthermore, while the City does not have operational control over water delivery operations related to the Colorado River Aqueduct and State Water Project, and thus does not include them in this sector, it's important to note that importing water from these sources remains a high-energy process. Therefore, a key aspect of reducing these indirect emissions, which are external to the City's operational jurisdiction, lies in the continued efforts to decrease overall water demand.

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 CH4 and N2O released during the combustion of digester gas, categorized under stationary combustion. However, in alignment with LGOP protocols, CO2 emissions resulting from digester gas combustion are deemed biogenic and thus excluded from the City's emissions inventory.

Table 8. Water Reclamation Facilities Emissions (MT CO_2e)

	2008	2018	2019	2020	2021	2022
Scope 1: Stationary Combustion and Process Emissions	49,256	79,967	78,458	74,548	74,704	89,620
Scope 2: Purchased Electricity	139,881	22,437	19,694	18,157	26,501	19,282
Total	**189,137**	**102,404**	**98,152**	**92,705**	**101,205**	**108,902**
Biogenic CO_2[4]	3,062	74,673	78,605	70,025	64,183	63,000

A significant reduction in emissions from this sector, amounting to 42% compared to the 2008 baseline, is evident as illustrated in Figure 8.

Despite the reduction in emissions, it is important to note that energy use in these facilities has increased by 4 percent. This uptick in energy consumption is a critical factor to consider, especially in the context of the City's ambitious Green New Deal, which aims for 100% water recycling. This initiative is expected to further increase energy demands at these facilities, potentially leading to a higher reliance on grid-supplied electricity. However, ongoing efforts to decarbonize the electrical grid are anticipated to mitigate the emissions associated with purchased electricity.

[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.

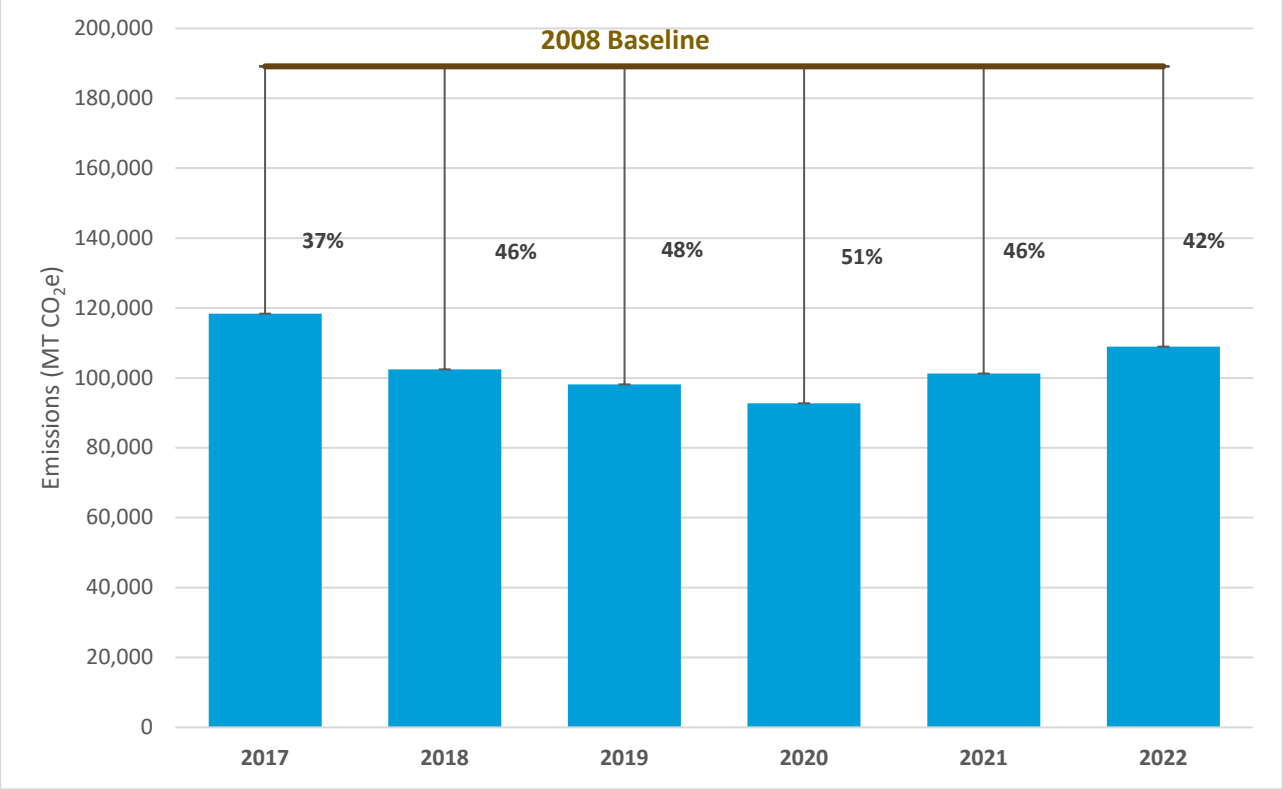

Figure 8. Water Reclamation Facilities Emissions Reductions from Baseline

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 9. Port Facilities Emissions (MT CO_2e)

	2008	2018	2019	2020	2021	2022
Scope 1: Stationary Combustion	409	362	473	287	280	361
Scope 2: Purchased Electricity	7,245	6,460	5,907	4,726	4,425	4,949
Total	**7,654**	**6,822**	**6,380**	**5,013**	**4,705**	**5,310**

In 2022, despite a rise in emissions from stationary combustion, both Scope 1 and Scope 2 emissions declined compared to the 2008 baseline, as indicated in *Table 9*. Overall, emissions in this sector have decreased by 31% from the 2008 baseline, as depicted in Figure 9.

However, it's crucial to address the 7% increase in emissions from 2021 to 2022. This increase can be largely attributed to the unique challenges faced in 2021, as detailed in the Port of Los Angeles' latest Inventory of Air Emissions[5].

[5] Source: 2022 Inventory of Air Emissions | Port of Los Angeles, kentico.portoflosangeles.org/getmedia/409590b5-0e6a-4c15-8d9b-fcdb02624933/2022_Air_Emissions_Inventory. Accessed 28 Nov. 2023.

The year 2021 saw significant supply chain disruptions, notably the congestion of cargo vessels anchored outside the port complex, which led to increased emissions of diesel particulate matter (DPM), nitrogen oxides (NOx), and sulfur oxides (SOx). These disruptions were a primary factor contributing to the rise in emissions, despite ongoing efforts and initiatives aimed at reducing environmental impact.

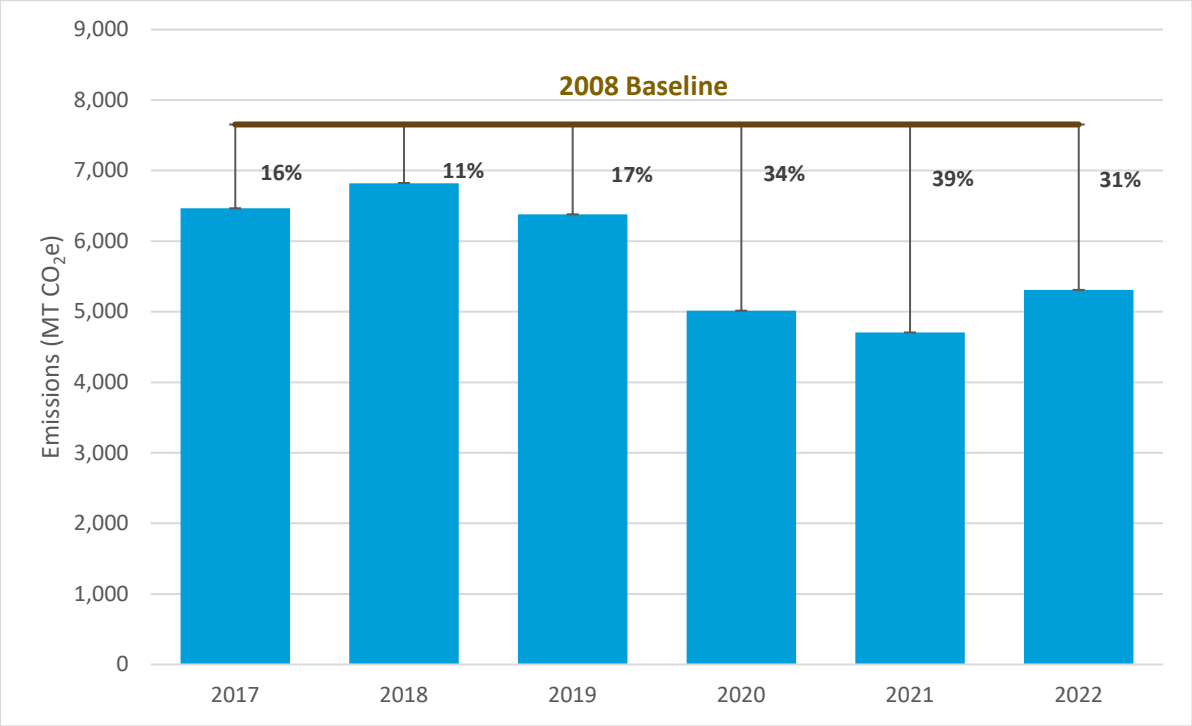

Figure 9. Port Facilities Emissions Reductions from Baseline

To address these challenges, POLA implemented various strategies, such as reducing congestion and ships at anchor, which positively influenced 2022 emissions. Initiatives included funding for zero-emission trucks, testing green technologies, and international collaborations to decarbonize ocean shipping. Measures like slow steaming toward San Pedro Bay and queuing ships 150 miles offshore significantly reduced emissions from ships.

Despite the increase in emissions in 2021 and 2022, the Port's long-term goals and initiatives, such as transitioning to zero-emission cargo-handling equipment and drayage trucks, demonstrate a commitment to environmental sustainability and a proactive approach to addressing greenhouse gas emissions. These ongoing efforts are expected to contribute to a continued overall decrease in emissions in the port sector, aligning with the broader objectives of reducing environmental impact and enhancing air quality in the region.

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 10. Airport Facilities Emissions (MT CO_2e)

	2008	2018	2019	2020	2021	2022
Scope 1: Stationary Combustion	44,457	27,013	29,159	29,762	30,204	31,083
Scope 2: Purchased Electricity	90,931	63,788	62,447	48,619	48,886	52,603
Total	**135,388**	**90,801**	**91,605**	**78,381**	**79,089**	**83,686**

In 2022, the airport sector experienced a slight increase in greenhouse gas (GHG) emissions. Despite this increase, emissions remained substantially lower than historical levels, maintaining a reduction of about 38% below the 2008 baseline, as depicted in Figure 10.

A significant factor in 2022 was the passenger traffic at LAX. The year saw approximately 66 million passengers, marking a considerable increase of about 37% compared to the previous year[6]. This surge in passenger numbers reflects a rebound in air travel, which likely contributed to the slight increase in GHG emissions.

Figure 10 illustrates the trajectory of emissions reductions from the 2008 baseline, highlighting the ongoing efforts to minimize the environmental impact of airport operations. Despite the challenges posed by increasing passenger numbers, the sustained reduction in emissions underscores the effectiveness of the measures implemented to enhance energy efficiency and reduce the carbon footprint of airport operations. The airport sector's commitment to environmental stewardship is evident in these continued efforts to balance operational demands with sustainability goals.

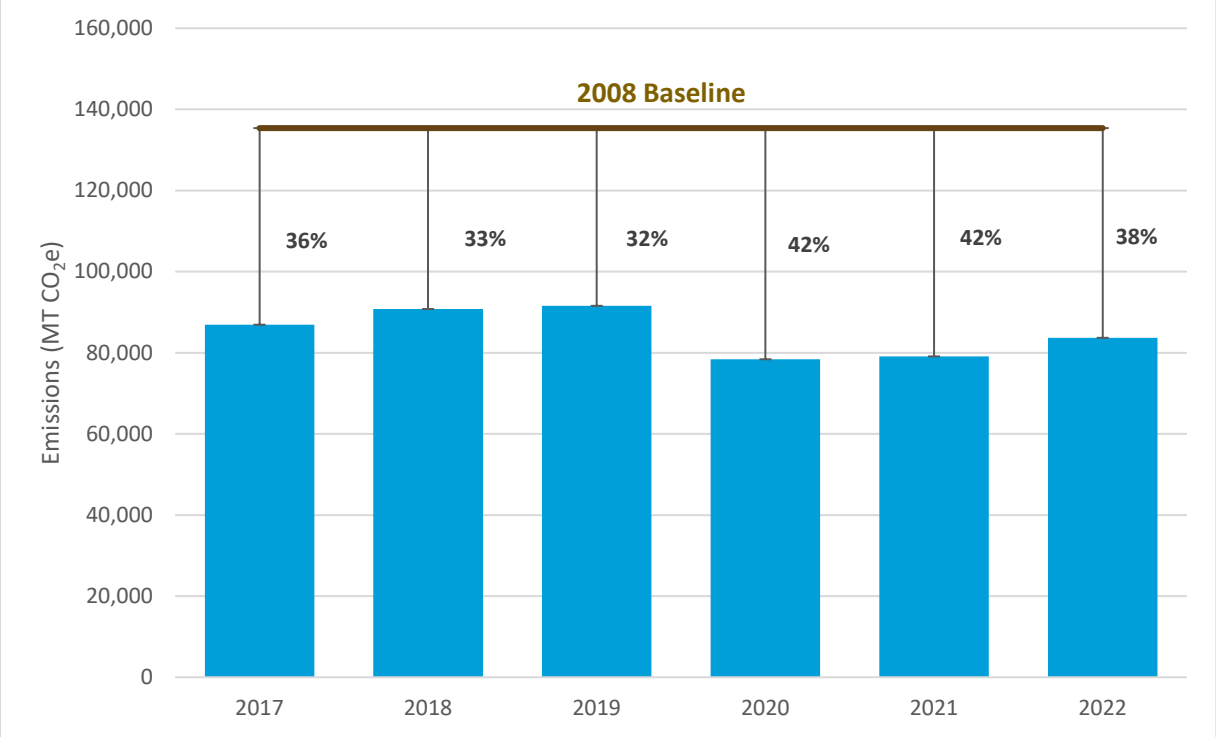

Figure 10. Airport Facilities Emissions Reductions from Baseline

[6] Source: LAX Specific Plan Aviation Activity Analysis Report CY 2022 - Lawa.Org, www.lawa.org/-/media/lawa-web/lawa-our-lax/studies-and-reports/aviation-activity-analysis/2022-aviation-activity-analysis_final.ashx. Accessed 28 Nov. 2023.

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 11 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. Notably, the city has also incorporated renewable natural gas (RNG), as detailed in Figure 11.

Table 11. Vehicle Fleet Emissions (MT CO_2e)

	2008	2018	2019	2020	2021	2022
Scope 1: On- and Off-Road Mobile Combustion	191,292	161,986	145,038	132,047	137,959	143,955
Total	**191,292**	**161,986**	**145,038**	**132,047**	**137,959**	**143,955**
Biogenic CO_2[7]	-	13,754	13,741	11,865	8,736	7,095

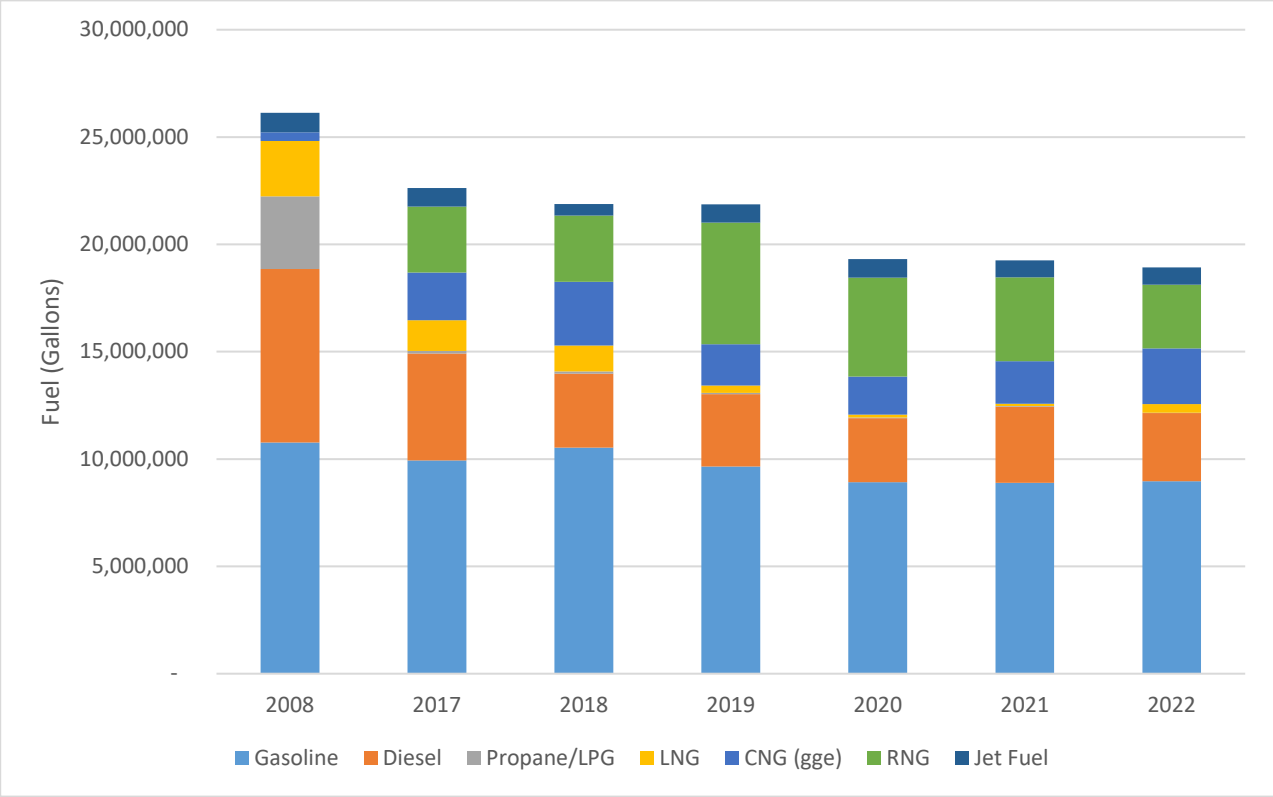

Figure 11. Fleet Fuel Consumption

In 2022, the vehicle fleet sector's emissions were 25% lower than the City's 2008 baseline, as illustrated in Figure 12. This marks a partial rebound from the previous year, driven by an increase in CNG consumption. However, a continued decline in emissions is anticipated as the City progresses

[7] 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.

towards its Green New Deal objective of transitioning all City fleet vehicles to zero emissions by 2028, where technically feasible.

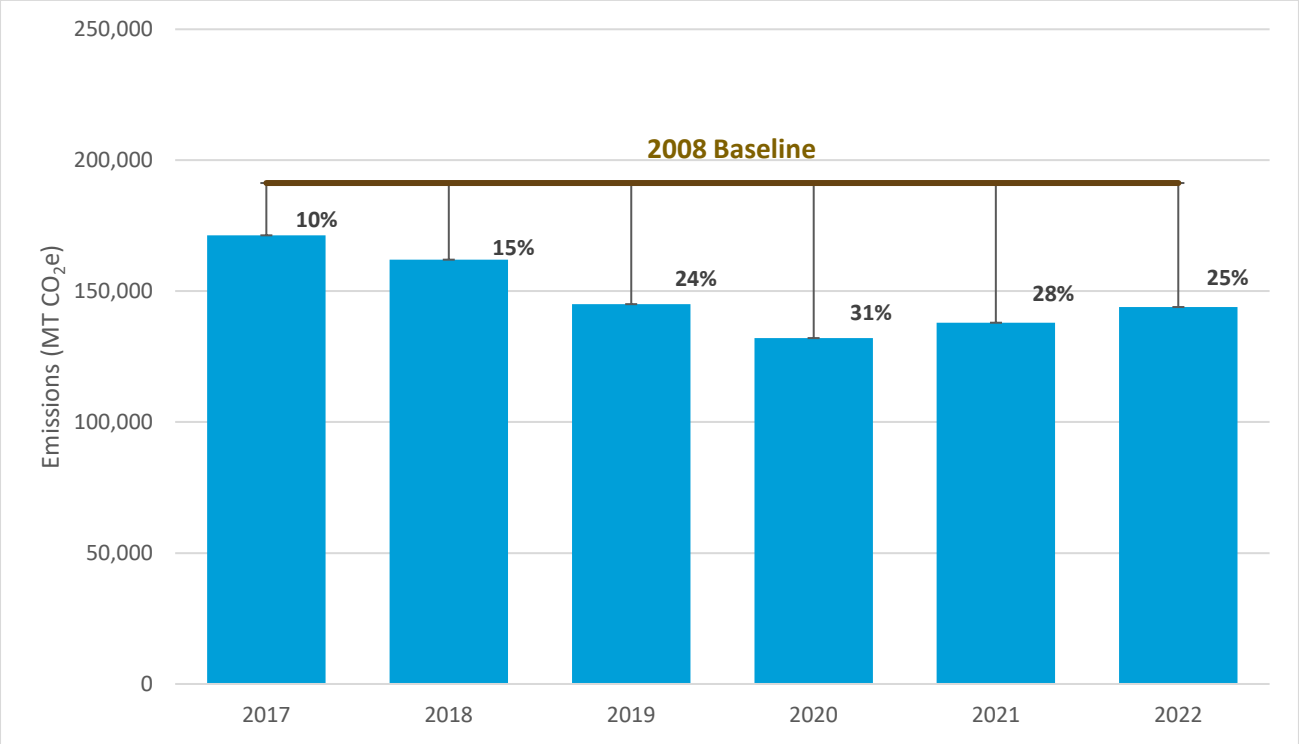

Figure 12. Vehicle Fleet Emissions Reductions from Baseline

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 12. Transit Fleet Emissions (MT CO_2e)

	2008	2018	2019	2020	2021	2022
Scope 1: On-Road Mobile Combustion	35,263	29,370	20,420	19,980	24,122	21,200
Total	**35,263**	**29,392**	**20,464**	**20,020**	**24,247**	**21,330**

Table 12 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 2022, the City's transit fleet emissions have been reduced by 40% 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.

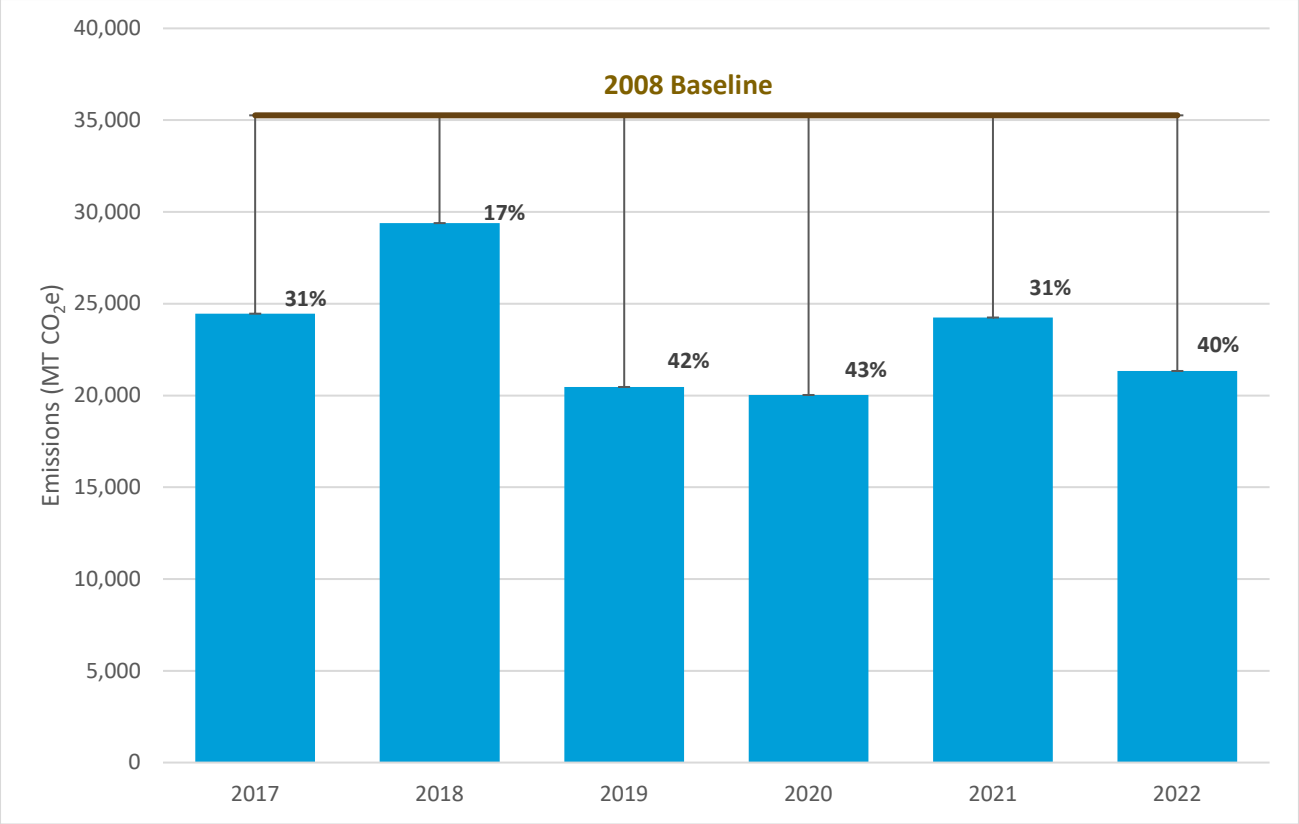

Figure 13. Transit Facilities Emissions Reductions from Baseline

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 13. Solid Waste Facilities Emissions (MT CO_2e)

	2008	2018	2019	2020	2021	2022
Scope 1: Fugitive Emissions and Stationary Combustion	196,440	160,861	157,692	154,531	151,485	148,486
Total	**196,440**	**160,861**	**157,692**	**154,531**	**151,485**	**148,486**
Biogenic CO_2[8]	55,029	45,056	44,168	43,282	42,430	41,589

Table 13 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

[8] 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.

latest edition of LGOP. In 2022, emissions calculated via the methodologies in LGOP for this sector were 24% below 2008 baseline levels, as illustrated by Figure 14.

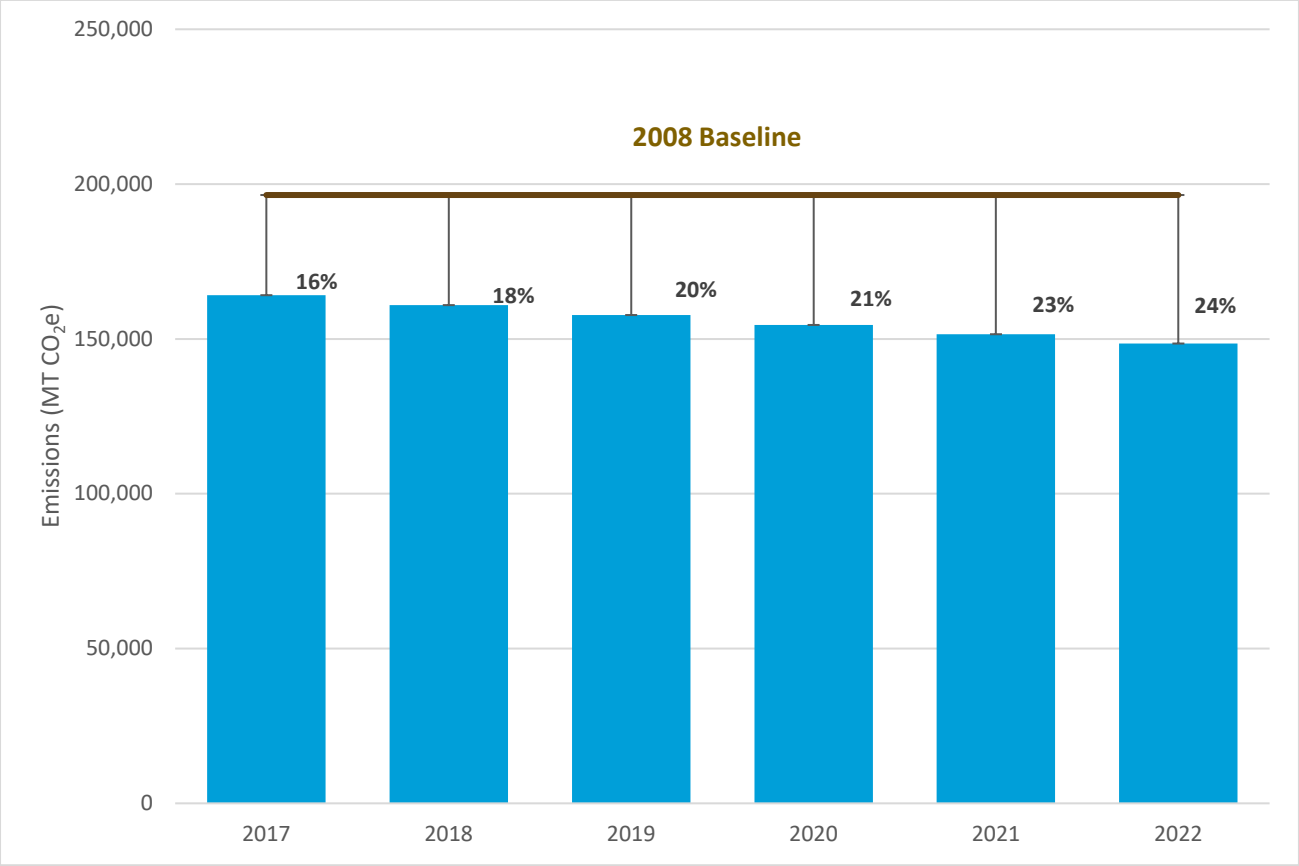

Figure 14. Solid Waste Facilities Emissions Reductions from Baseline

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). 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 the emissions based on the measured quantities for 2022 would be 105,924 MT CO_2e. We have kept the modeled values as the official numbers in accordance with LGOPs methodologies but the actual quantities may differ and potentially be significantly lower as indicated by values calculated from the measured data from Solid Resources.

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 54% reduction in emissions from our 2008 levels by 2022. 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 2024

Management

Mas Dojiri

Doug Walters

Jim Marchese

Melissa Plamondon

Amanda Amaral

Climate Action Program

Daniel Brehm

Ashley Fernando

Laura McAlister

Daisy Ojeda

David Phung