CITY OF MONTEREY PARK

SUSTAINABILITY PLAN

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Adopted April 17, 2024

Acknowledgments

The City of Monterey Park would like to acknowledge those who supported and helped create the Monterey Park Sustainability Plan:

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Council Member Sanchez	District 3
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Acknowledgments

Purpose

The Monterey Park Sustainability Plan reflects the City's commitment to reducing greenhouse gas (GHG) emissions and addressing challenges associated with climate change as we strive to build sustainable practices that support future generations. The Sustainability Plan is an informative document that proposes a number of policies intended to influence the City's decisions with the goal of reducing emissions in the near-term by engaging the community in climate action. The plan identifies current sustainable projects and programs while outlining policies that will help to achieve the most significant improvements in GHG reduction. Additionally, the plan provides resources for Monterey Park residents to take action at home that will reduce their own emissions and sustain our natural resources in their day-to-day life. Implementation of this Plan will help the community to utilize strategies that support local economic development, improve quality of life, lower energy costs, and protect natural resources.

Sustainability Plan Purpose

The Monterey Park Sustainability Plan will empower Monterey Park to become a leader in sustainability as a city and as a community. Integrating past plans and engaging in best sustainable practices will ensure a safe and healthy environment for current and future generations.

Moving Towards the State's Goals

The strategies, policies, and supporting actions in this plan were developed to further Monterey Park's efforts towards California's ambitious emission reduction goals. California law seeks to reduce GHG emissions to 40% below 1990 levels by 2030 and carbon neutrality by 2045 as codified by AB 1279 (2022). This Plan will build upon existing work the City has been putting in for the past several decades to further reduce emissions and move towards the State's goals. However, more work is needed to effectively reach both targets, and it is anticipated that the Plan will be reviewed and updated as new solutions become available. Future iterations of the Plan may outline additional ways to meet the 2030 and 2045 emission reduction targets as new technologies and solutions become available. Continued progress will require a community-wide commitment at all levels to work towards the goals established by the State and make the necessary adjustments identified through regularly monitored progress.

Monterey Park's Commitment to Sustainability

Monterey Park was the first city in the San Gabriel Valley to create an Environmental Commission in 2005 to develop and implement policies and increase public awareness of environmental programs. On December 13, 2012, the City received the Green Leadership Award from the San Gabriel Valley Energy Wise Partnership (SGVEWP) as the first City in the San Gabriel Valley to adopt a full Climate Action Plan (CAP).[1] Monterey Park supported the strategies of the CAP by adopting the Healthy and Sustainable Community Elements of the City's General Plan in 2014. This Sustainability Plan builds upon these strategies by recommending specific policies and programs.

Monterey Park has been working on sustainable projects and programs since the early 2000s. Over the past two decades, the City has continued taking strides in sustainable action to benefit our environment, economy, and community members. Highlighted in Figure 1 are a few of the actions Monterey Park has taken to decrease emissions and implement sustainable practices.

1. https://www.businesslife.com/articles.php?id=2402

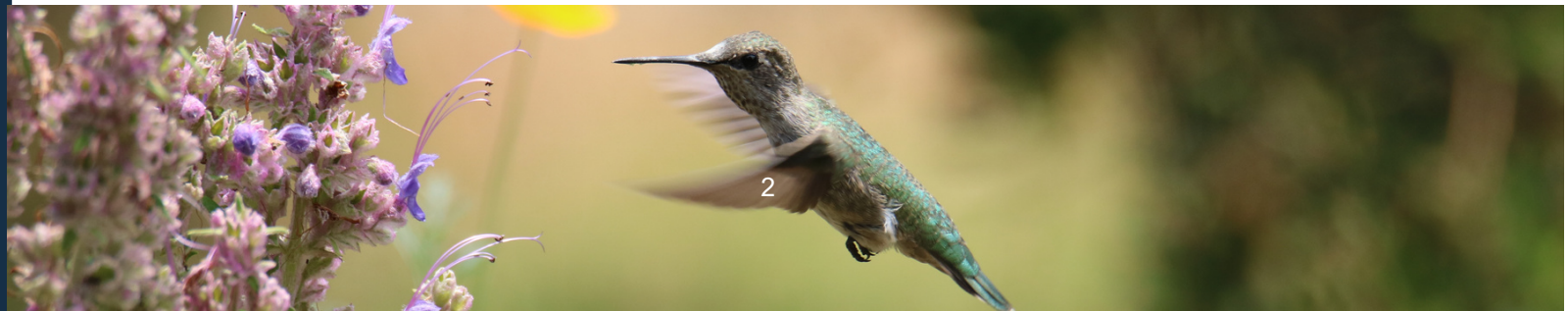
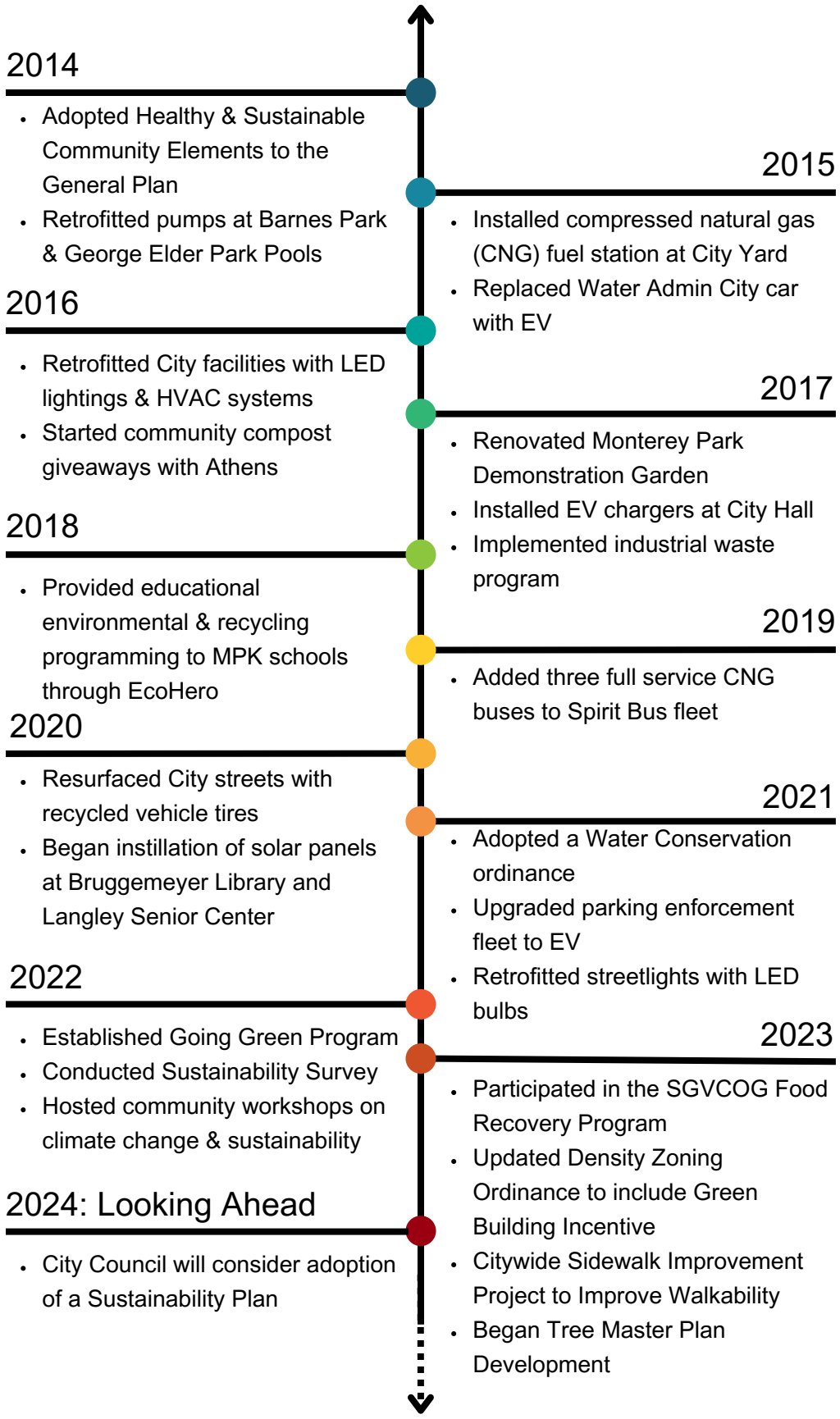


Figure 1. Monterey Park Sustainable Milestones: Highlighting Key Actions



Plan Organization

The Monterey Park Sustainability Plan takes a holistic and integrated approach by building on a framework developed by Local Governments for Sustainability (ICLEI). The framework defines five pathways to guide integrated solutions that balance the patterns of human life with the built and natural environment. The following pathways organize the strategies and policies that will allow sustainable practices to be integrated into the Monterey Park community.

Maintained in a separate document, the Implementation Program includes specific implementation measures and actions, to be led by the City, which will contribute to the strategies and policies identified in the Sustainability Plan. The Implementation Program also identifies the responsible department/agency, potential funding sources, additional resources such as model programs or potential partners, and timeframe for implementation.

Figure 2. ICLEI Sustainable Development Pathway Framework

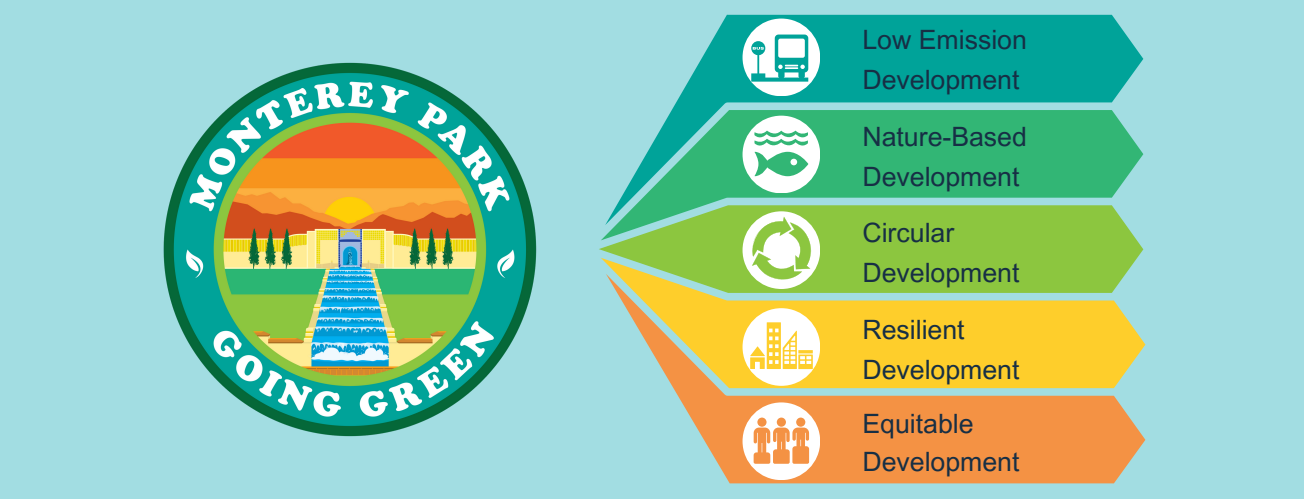
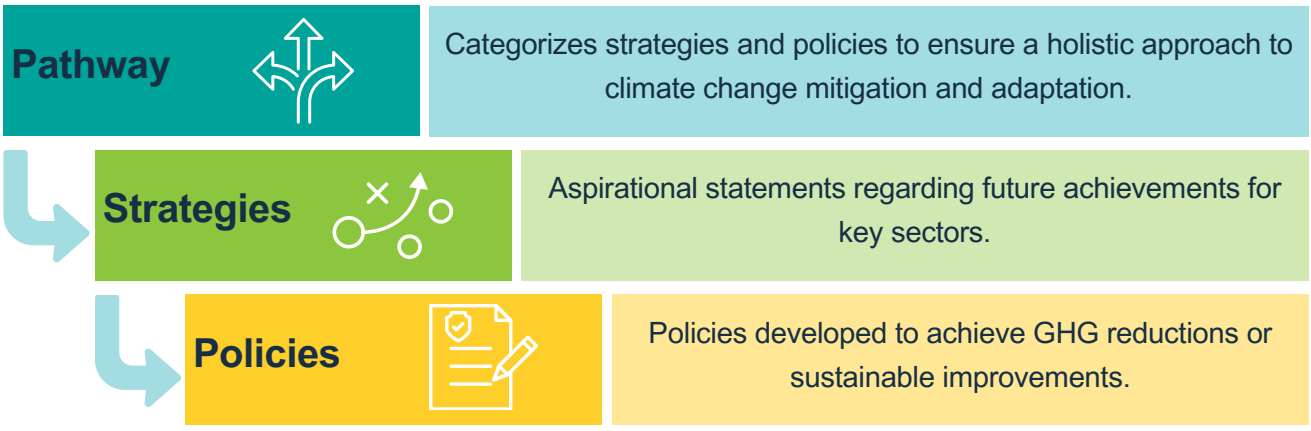


Figure 3. Pathway, Strategy, and Policy Structure

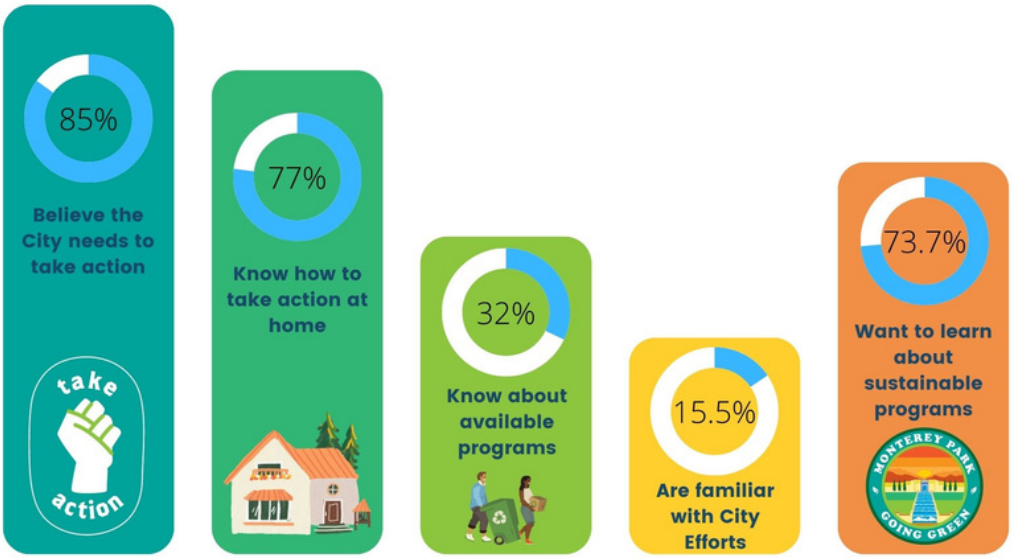


Community Engagement: Going Green

Community Perception of Climate Change and Sustainability

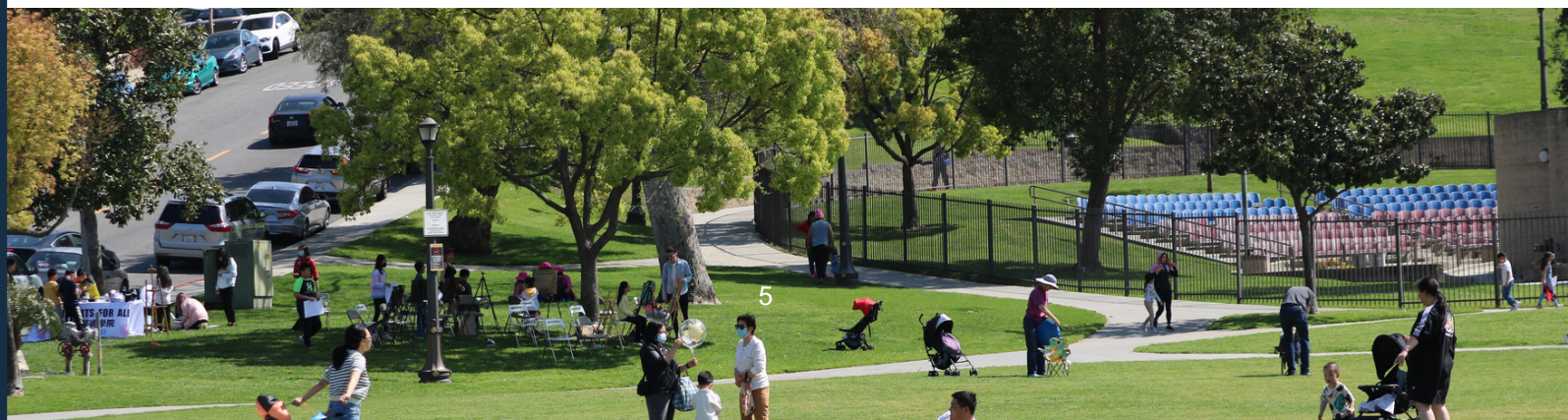
The City conducted outreach through the Going Green Campaign, which included a Sustainability Survey, booths at City events, and workshops that provided opportunities for community members to provide input on the Sustainability Plan. The Sustainability Survey was available in English, Spanish, and Chinese is both digital and physical formats. Over 540 community members responded to the survey and provided 194 written comments. The survey responses provided the following snapshot of the community's understanding of climate change, sustainability issues, and actions they can take in their daily lives.

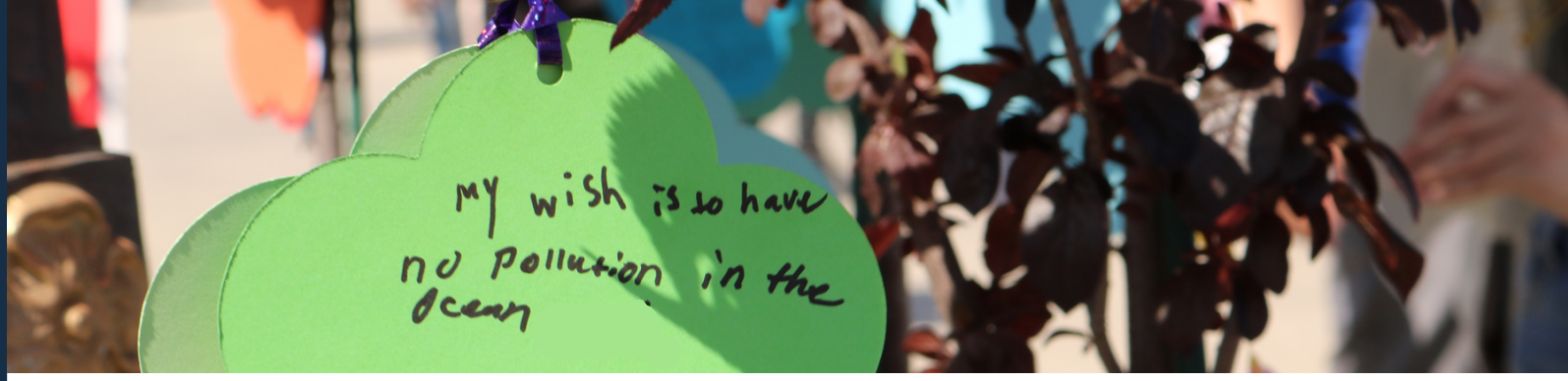
Figure 4. Sustainability Survey Results: Community Perception



While the majority of survey respondents agree or strongly agree that the City needs to take action to mitigate climate change and know how to take action at home, far fewer are knowledgeable of city, county, and state programs available to help them live sustainably. Even fewer respondents are familiar with the City's climate action efforts. This provides a strong case for the City to dedicate time and resources to outreach efforts, ensuring that all City residents have access to the knowledge and resources they need to improve their sustainable practices. The demand for learning opportunities around climate change mitigation and sustainability is very high throughout the community, as over 70% of survey respondents agree or strongly agree that they want more opportunities to learn about sustainable programs available to them.

This plan highlights several of the key programs Monterey Park residents can utilize to learn about sustainable practices and recommends programs the City may choose to implement to support municipal and community sustainability.





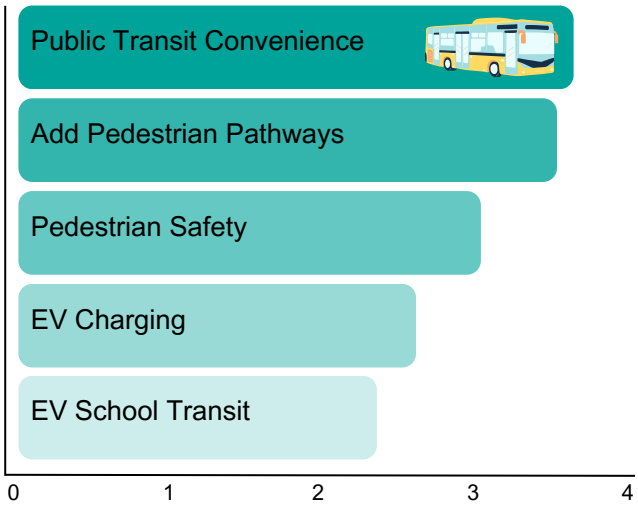
Community Priorities

Survey respondents were asked to rank which strategies the community and City should implement to address various sustainability topics.

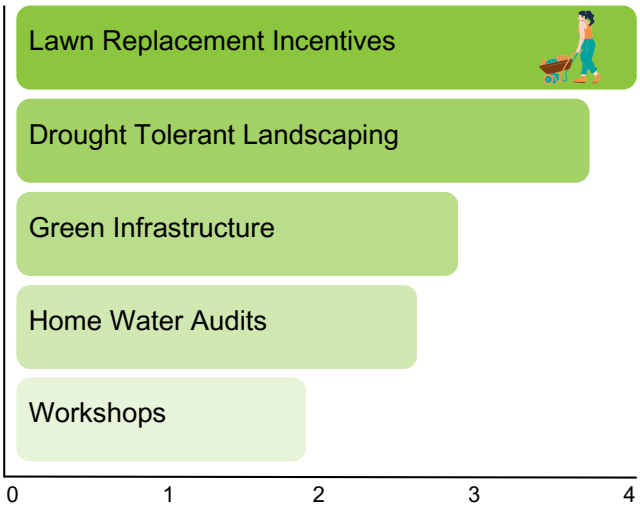
Figure 5. Sustainability Survey: Community Priorities

Which strategies should the community and City implement to...

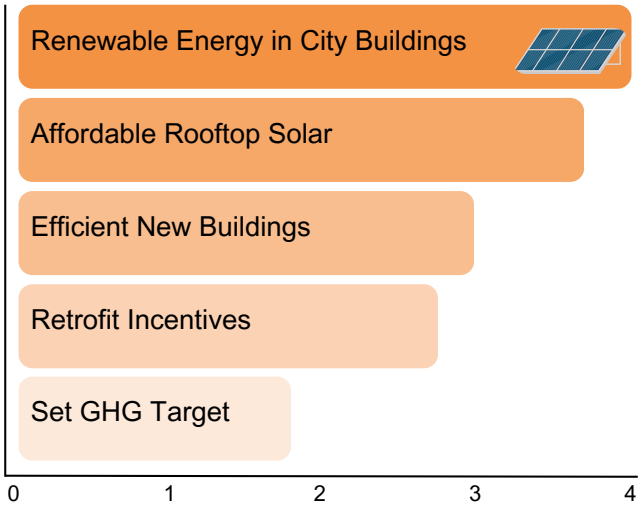
Improve Sustainable Transportation?



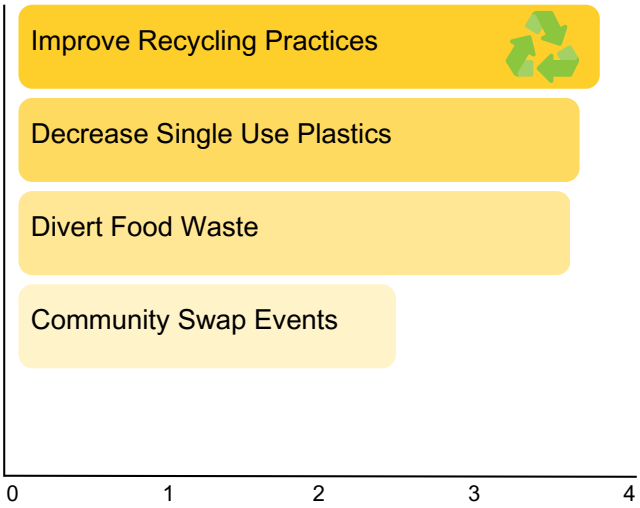
Conserve Water?



Conserve Energy?

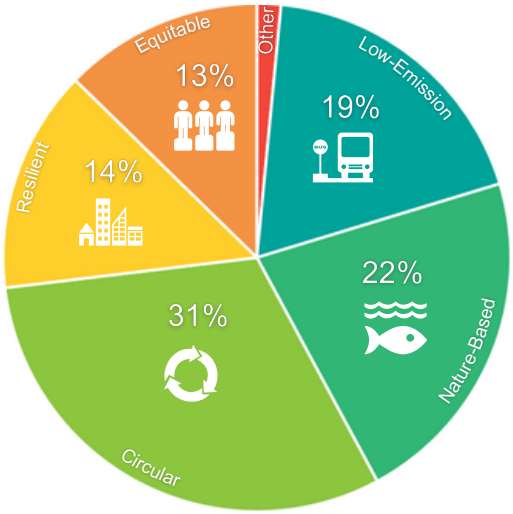


Decrease Waste?



*Rankings are weighted so that the answer choice with the largest average ranking is the most preferred choice.

Figure 6. Sustainability Survey: Written Comments Categorized by Development Pathway



Most Commonly Suggested Strategies Per Pathway

- Recycling & Composting
- Urban Greening
- EVs & Alternative Transport
- Incentives & Rebates
- Community Workshops

The written comments received through the Sustainability Survey, at Going Green Workshops, and through the Going Green Program email have been categorized using the five sustainable development pathways. This provides further insight into how the community believes the City should prioritize its sustainable efforts.

"Distribution of home composting supplies and education about organic waste disposal in the home."

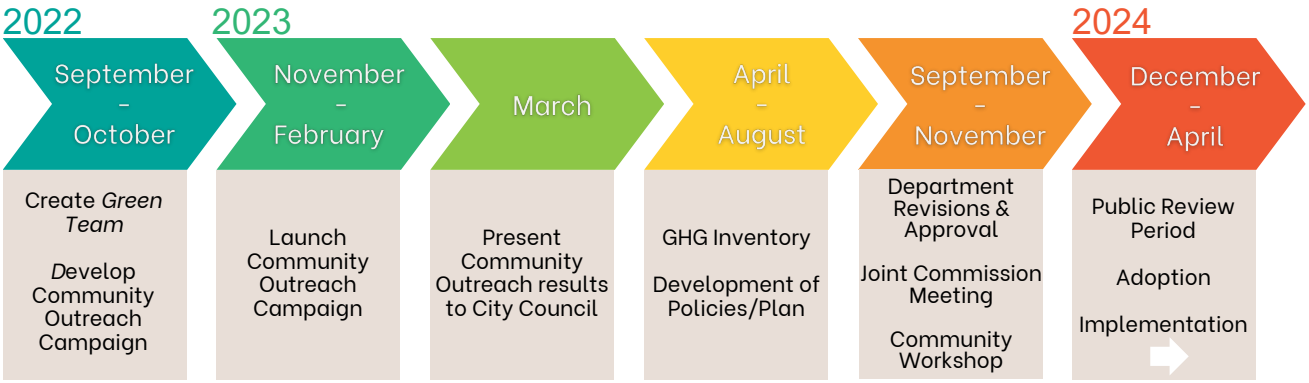
"Provide more electric car charging stations for residents and employees at and near city hall."

"Encourage local residents to improve sustainability by offering more incentive programs."

"To help clean air pollution and mitigate the effects of global warming gases, plant trees in neighborhoods with no sidewalk trees."

"I would like to see community classes, resources, and events that promote sustainability in MP. They can be held at schools, farmers markets, parks, and the senior center in both Chinese and English."

Figure 7. 2022-2024 Sustainability Plan Development Timeline

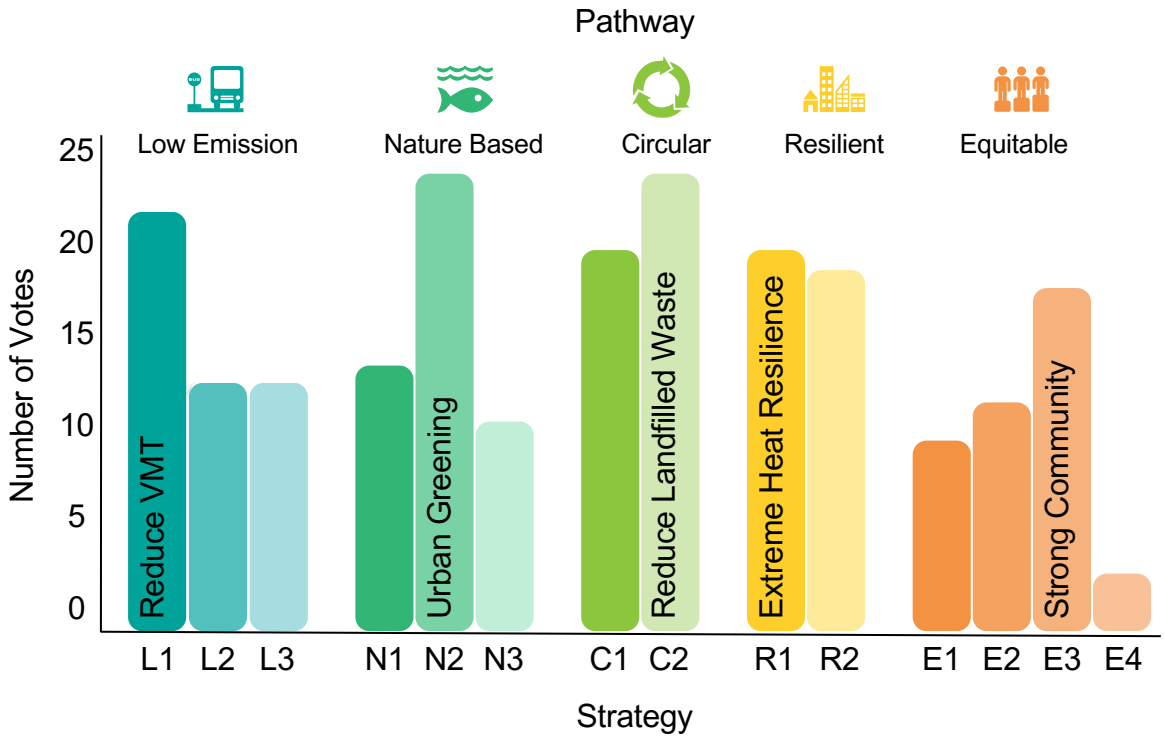


Community Workshops

In February of 2023, the City hosted a series of community engagement workshops as part of the Sustainability Plan development process. The purpose of the workshops was to understand what the greater Monterey Park community values most in terms of climate change mitigation and sustainable practices. The workshops provided an opportunity for community members to learn about the Five Sustainable Development Pathway Framework, ask questions, and voice their opinions on what they believe should be prioritized in the Sustainability Plan. Additional workshops were held in November to ensure a wide reach in the community.

Invitations for the community workshops were sent to commissioners, board members, and community leaders. The workshops were also publicized in Cascades Newspaper, the City website, on social media, and at City events. Workshops were held online and in person at El Encanto, Langley Senior Center, George Elder Park, Garvey Ranch Park, and Robert Hill Lane Elementary School.

Figure 8. Public Review Period: Strategy Prioritization



During the Public Review Period from February 8 to February 29, 2024, community members actively engaged in prioritizing strategies across five sustainable development pathways. The graph illustrates the number of votes each strategy received within these pathways. Notably, strategies prioritized by the community are marked with a star in the plan, reflecting alignment with our collective vision for a greener, more resilient future. Analysis of the data reveals key preferences: in the Low Emission pathway, Reducing VMT garnered significant support; Urban Greening emerged as the preferred strategy in Nature-based development; in Circular Development, reducing landfilled waste was favored; Extreme Heat Resilience stood out in the Resilient pathway; and Building a Strong Community led in Equitable Development. Urban Greening and Reducing Landfilled Waste tied as the most popular strategies overall, reflecting shared community values and priorities for sustainable development. This data underscores the importance of community involvement in shaping actionable plans for a more environmentally conscious and resilient society.

Look for this symbol in chapters 3-7 to identify strategies that received the most community votes:

★ Community Identified Priority

Relationship to Other Plans

The Monterey Park Sustainability Plan builds off of the strategies and policies the City has adopted in related City documents. The plan also identifies current and completed actions the City has taken to ensure the recommended policies will help build toward a sustainable future (Appendix B). Using the five development pathways framework allows the City to address resilience and equity more directly while identifying the best programs available to meet the City's sustainability and emission reduction goals.

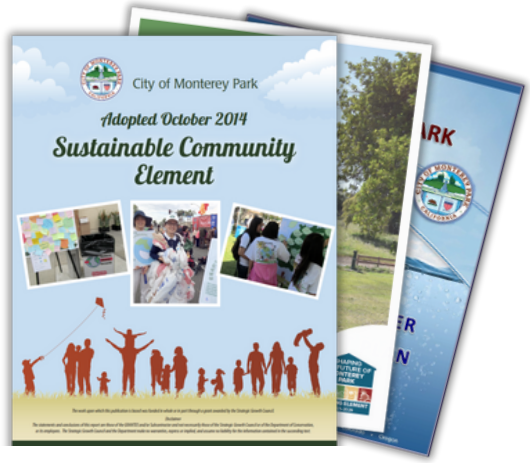


Table 1. Related City Documents

Plan	Year Adopted
Monterey Park Climate Action Plan (CAP)	2012
Safety and Community Services Element	2014
Sustainable Community Element	2014
Healthy Community Element	2014
San Gabriel Valley Regional Bicycle Master Plan	2014
Land Use and Urban Design Element	2020
2020 Urban Water Management Plan (UWMP)	2021
Environmental Justice Element	2022
Climate Change Vulnerability Assessment	2022
Housing Element	2022
Local Hazard Mitigation Plan	In Progress
City of Monterey Park Tree Master Plan	In Progress

Look for this symbol and click to open related documents relevant to specific sections of the Sustainability Plan!

2 - Climate Change & Sustainability

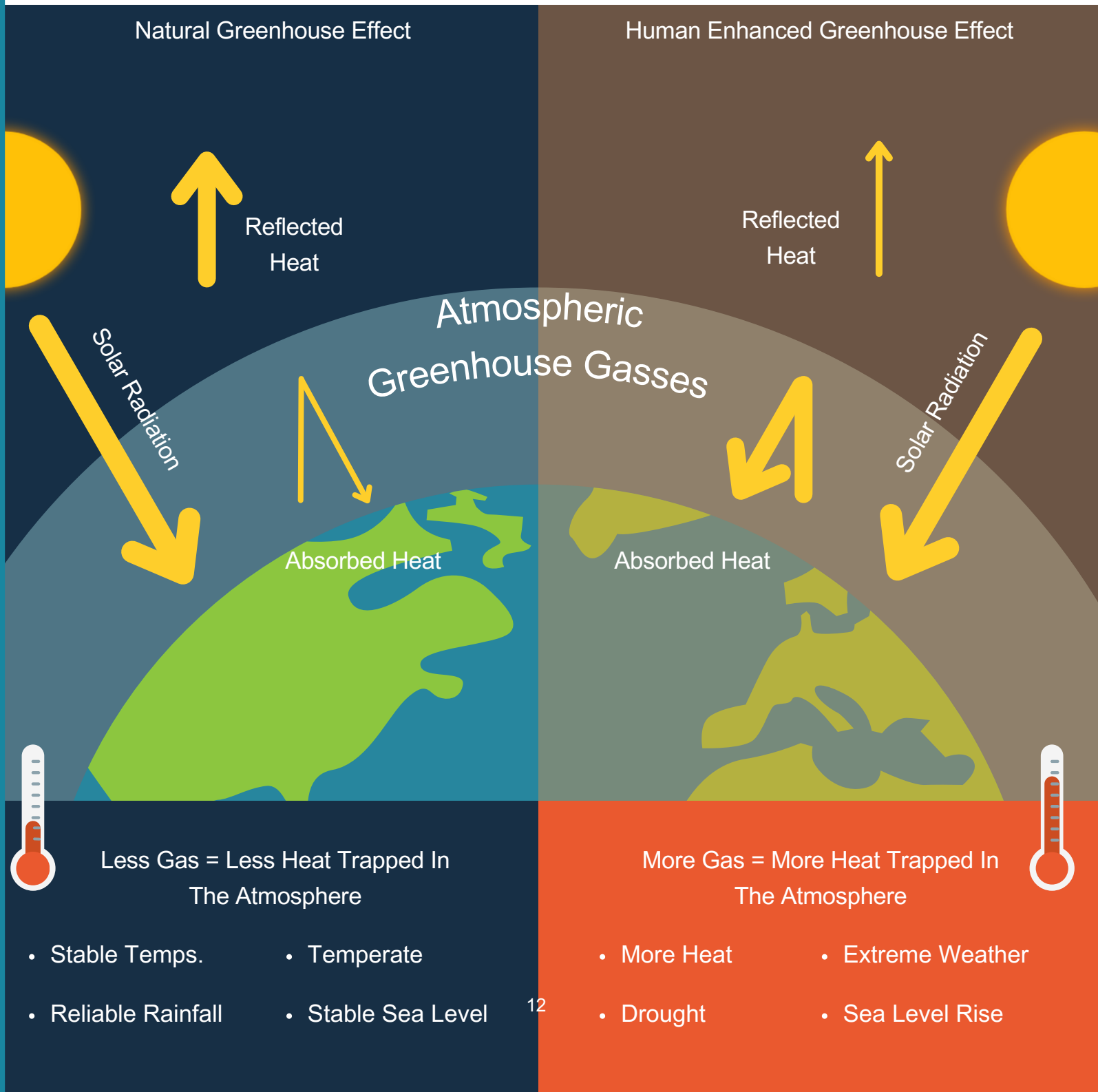
What Is Climate Change?

Climate change refers to long-term alterations in temperature, precipitation, and other atmospheric conditions on Earth. It is primarily driven by human activities, such as the burning of fossil fuels and deforestation, which release greenhouse gases into the atmosphere. These gases trap heat, leading to a warming of the planet and resulting in a myriad of environmental impacts. From rising sea levels and extreme weather events to shifts in ecosystems and disruptions in agricultural patterns, the consequences of climate change are far-reaching and pose significant challenges to the well-being of both the planet and its inhabitants. Understanding the complexities of climate change is crucial for devising effective strategies to mitigate its impact and foster global sustainability. This chapter delves into the various facets of climate change, exploring its causes, consequences, and potential solutions.

The Greenhouse Effect

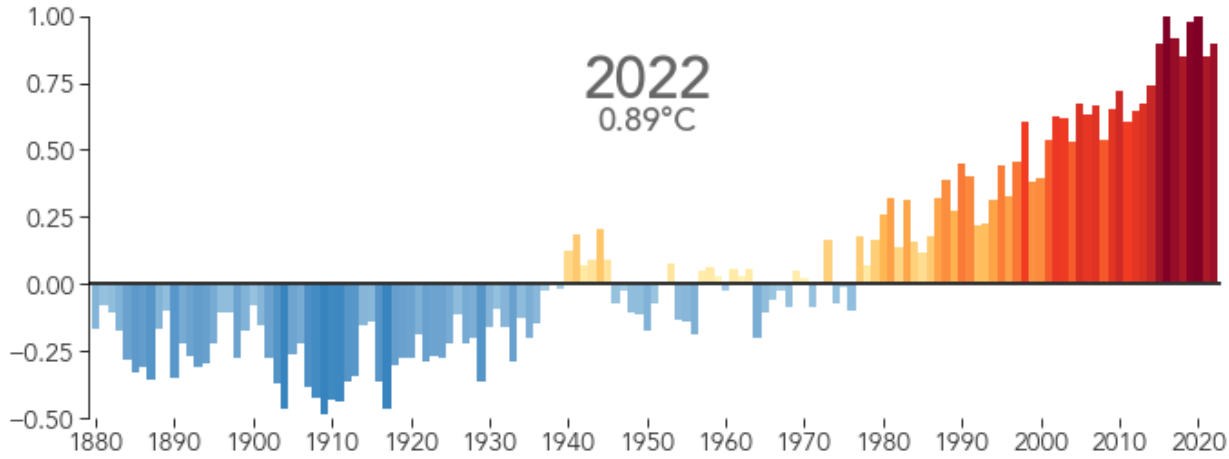
The greenhouse effect is a natural process that occurs when certain gases, such as carbon dioxide, water vapor, and methane in the Earth's atmosphere trap heat from the sun, which warms the planet's surface. These gases act like the glass walls of a greenhouse, allowing sunlight to enter but trapping heat inside. Without this natural process, the Earth would be too cold to support life as we know it. However, human activities, such as burning fossil fuels, have increased the concentration of these greenhouse gases in the atmosphere, leading to an enhanced greenhouse effect and contributing to global warming and climate change.

Figure 9. Natural and Human Enhanced Greenhouse Effect



Human-induced (anthropogenic) climate change is well-understood and widely accepted within the scientific community. Over 97 percent of climate scientists agree that the Earth is warming quickly, primarily due to human activities.[2] Consequently, GHG levels have surged to unprecedented heights, surpassing those of the past 400,000 years. In the last 150 years alone, carbon dioxide concentrations have risen from 280 parts per million to 400 parts per million.[3] While natural processes traditionally govern many climate changes, the current escalation of GHGs in the atmosphere, driven by human activities, represents an unprecedented historical anomaly.

Figure 10. Global Temperature Anomaly (°C compared to the 1951-1980 average)



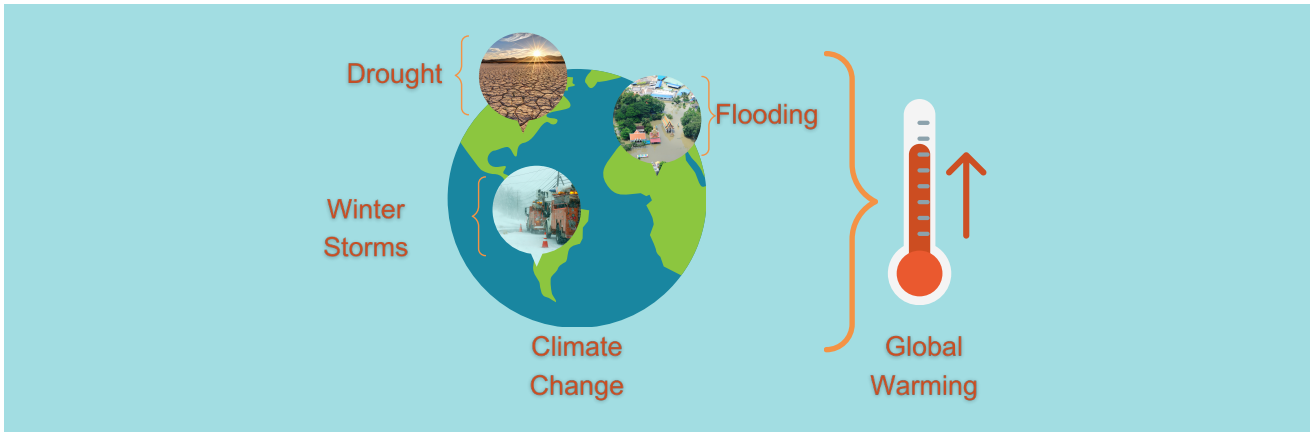
Source: NASA Earth Observatory, World of Change: Global Temperatures [4]

Global Warming vs Climate Change

Global warming refers specifically to the long-term trend of increasing average global temperatures. While the Earth has historically experienced many cycles of cooling and warming, the average global temperature has been rising since the Industrial Revolution at a faster rate than it has naturally occurred in the past.

Climate change, on the other hand, refers to broader changes in the Earth's climate system beyond just temperature, including changes in precipitation patterns, sea level rise, and the frequency and intensity of extreme weather events such as droughts, flooding, and winter storms.

Figure 11. Comparative Scale of Climate Change and Global Warming



2.https://climate.nasa.gov/scientific-consensus/
3.https://climate.nasa.gov/climate_resources/24/graphic-the-relentless-rise-of-carbon-dioxide
4.https://www.epa.gov/climatechange-science/causes-climate-change/

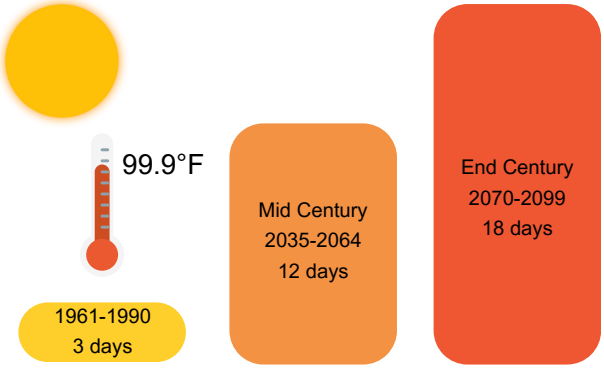
Climate change causes fluctuations in temperature and precipitation globally, which impact ecosystems and communities worldwide. Scientists have measured shrinking ice sheets, warming oceans, increasing global temperatures, less snow cover, sea level rise, and species extinction. Consequently, climate change has the potential to result in flooding of low-lying areas (due to sea level rise), reduction of fresh-water supply (due to rainfall and snowfall changes), adverse changes to biological resources and public health (due to increased temperature, less productive habitats, and expansion of disease vectors), as well as many other adverse environmental consequences.

Globally, a warming trend is abundantly clear, as the past eight years have been (as of 2023) the hottest on record. The average global temperature in 2022 was about 1.15°C above the pre-industrial (1850-1900) levels, making it the 8th consecutive year that annual global temperatures exceeded 1°C above pre-industrial levels. [5] Climate change is a global phenomenon that has the potential to impact local health, natural resources, infrastructure, emergency response, tourism, and many other facets of society.

Social Vulnerability

It is probable that those that are most vulnerable will bear the greatest burden associated with the potential impacts of a changing climate. Race, ethnicity, gender identity, sexual orientation, age, social class, physical ability, religious or ethical value systems, national origin, immigration status, or linguistic ability do not make an individual inherently vulnerable. Vulnerabilities arise from systemic deficiencies rather than a judgement of any community member or neighborhood.

Figure 12. Projected Number of Extreme Heat Days Per Year in Monterey Park

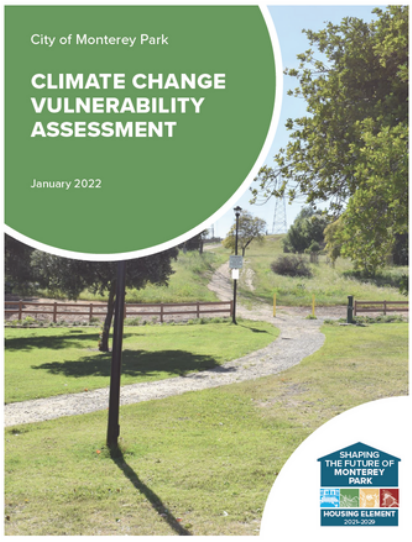


Projected changes in average number of extreme heat days per year (30 year average) when daily maximum temperature is above 99.9°F under a Medium Emissions (RCP 4.5) Scenario. Source: Cal-Adapt Extreme Heat Days & Warm Nights Tool

Climate Change in Monterey Park

The anticipated impacts of climate change that Monterey Park may experience include:

- Increased average maximum and minimum temperature;
- Increased extreme heat events;
- Changing precipitation patterns;
- Increased storm frequency and intensity;
- Air quality impacts from increased regional wildfire risks.



5. https://public.wmo.int/en/media/press-release/past-eight-years-confirmed-be-eight-warmest-record

Figure 13. What are the impacts of Climate Change?

What Is Sustainability?

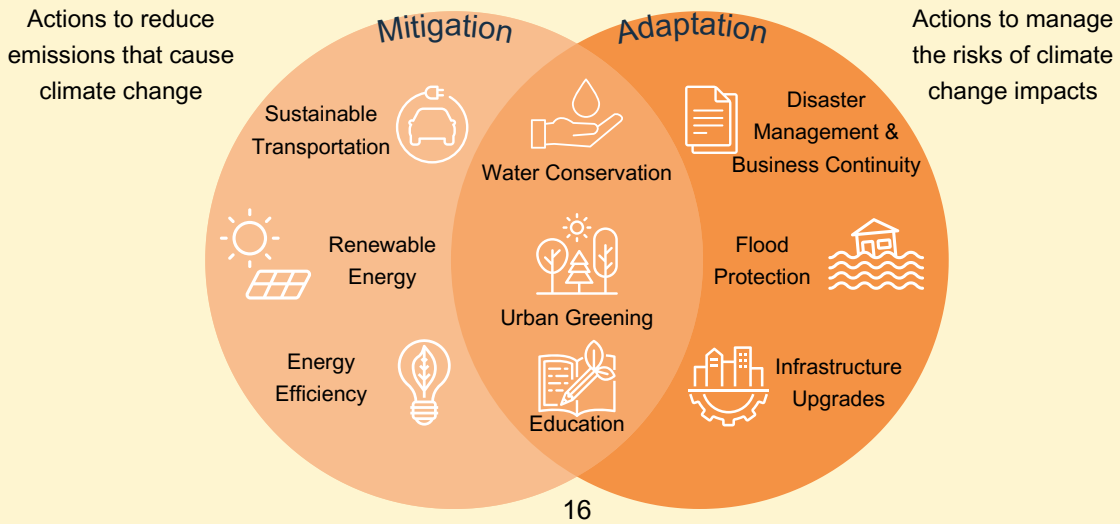
Sustainability is an approach to development that seeks to meet the needs of the present generation without compromising the ability of future generations to meet their own needs. It involves finding a balance between economic growth, environmental protection, and social equity. Sustainability recognizes the interconnectedness of human society with the natural environment and aims to ensure that resources are used wisely, waste is minimized, and the well-being of both present and future generations is prioritized.

Sustainable practices play a crucial role in mitigating and adapting to the impacts of climate change. **Mitigation** refers to efforts aimed at reducing greenhouse gas emissions, which are the primary drivers of climate change. Sustainable practices can help reduce emissions by promoting energy efficiency, transitioning to renewable energy sources, adopting cleaner technologies, and implementing sustainable transportation and land use strategies. By embracing sustainable practices, we can decrease our reliance on fossil fuels, minimize carbon footprints, and work towards a low-carbon economy.

Adaptation, on the other hand, involves taking actions to adjust and prepare for the inevitable impacts of climate change. Sustainable practices can enhance resilience and enable communities and ecosystems to cope with changing conditions. For instance, sustainable agriculture practices can improve soil health, conserve water resources, and enhance food security in the face of changing weather patterns. Sustainable urban planning can incorporate green infrastructure, such as parks and permeable surfaces, to manage stormwater and reduce the risks of flooding.

Sustainable practices are not only essential for climate change mitigation and adaptation but also for achieving broader sustainability goals. They promote resource conservation, reduce pollution, support social equity, and foster economic development. By integrating sustainable practices into our lifestyles, industries, and governance systems, we can create a more resilient and thriving future for ourselves and future generations. Developing a sustainable future requires a collective effort, involving individuals, businesses, governments, and organizations working together towards a shared vision of a sustainable and climate-resilient world.

Figure 14. Climate Mitigation vs. Adaptation

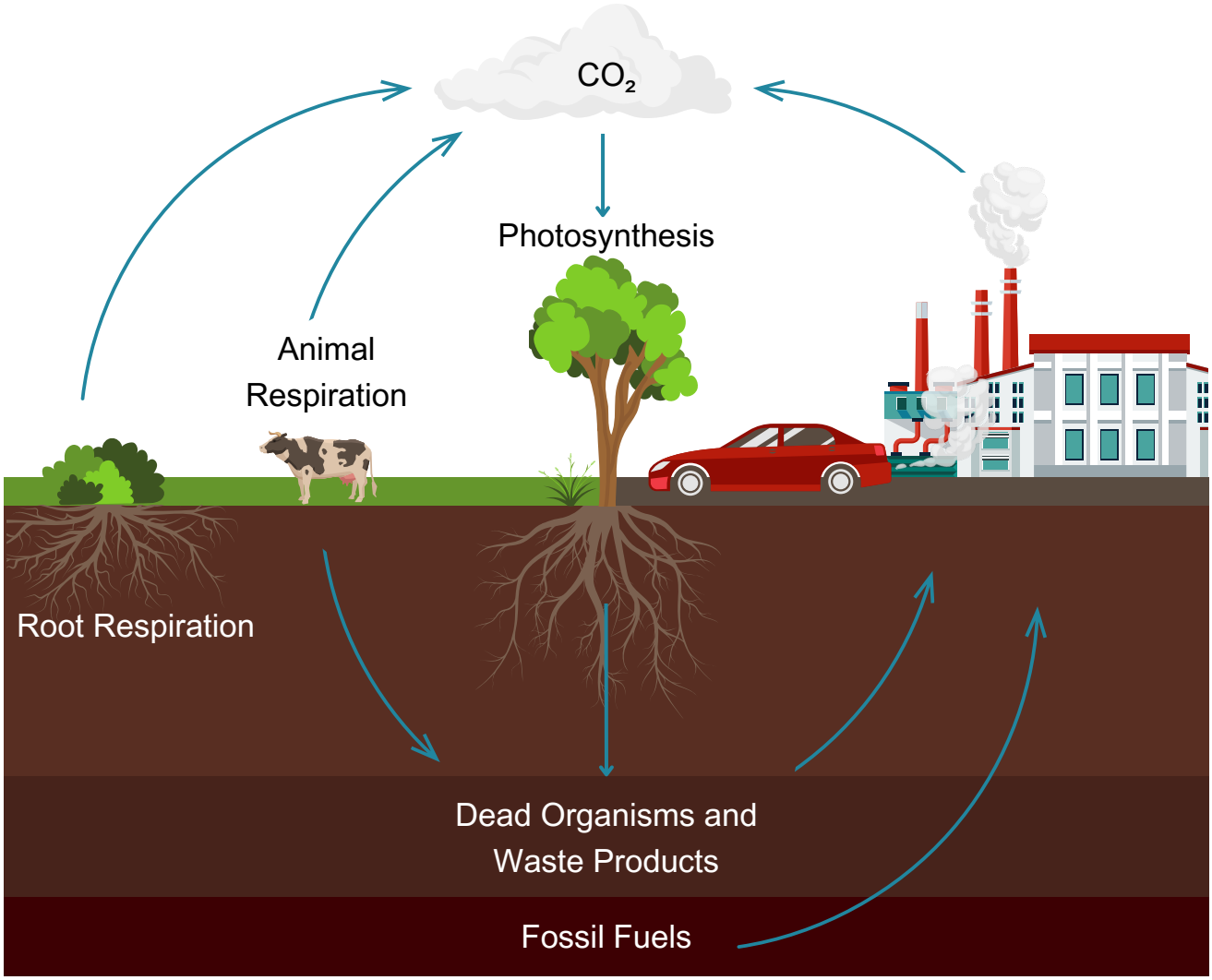


3 - Low Emission Development

What Is Low Emission Development?

The low emission development pathway is intended to curb climate change, create new economic opportunities and improve the health of people and natural systems. Programs under this pathway will help reduce greenhouse gas emissions, aim to achieve climate neutrality, and promote renewable energy by divesting from fossil fuels and using nature-based solutions. Successful low emission development programs promote sustainable passenger mobility, giving priority to walking, cycling, public transit and shared mobility as part of people-centered solutions.

Figure 15. Where Do Emissions Come From?



Sources and Sinks

"Sources" and "sinks" are terms commonly used in the context of greenhouse gas emissions and the carbon cycle to describe how carbon moves through the Earth's systems. Sources are places or processes that release GHGs into the atmosphere. Sources can be natural or human-induced. Human-induced sources include activities like burning fossil fuels (e.g., in cars, power plants), deforestation, and industrial processes. Natural sources include things like the respiration of plants and animals and decomposition of dead organisms or waste products. Sinks are natural or artificial systems that remove and store carbon dioxide from the atmosphere. They act as a counterbalance to sources by reducing the concentration of CO_2 in the atmosphere. Natural sinks include forests, oceans, and soils, which absorb and store carbon. Artificial sinks might include carbon capture and storage technologies.

GHG Emissions Inventory

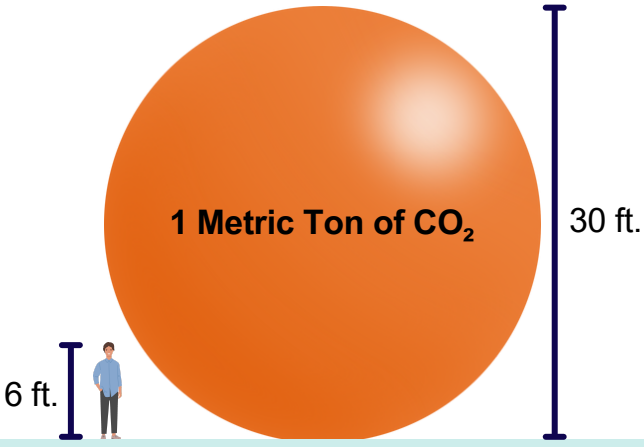
What is a GHG Emissions Inventory?

To minimize the impacts of climate change on the residents of Monterey Park, our community must first begin to understand where our GHG emissions are coming from. By understanding the magnitude of each source of emissions, the City and residents can prioritize ways to make the greatest impact. A GHG emissions inventory is essentially a systematic record of all the GHG emissions produced within a specific area. The following steps were utilized to create a GHG Emissions Inventory for Monterey Park based on data from 2021.

How Are GHG Emissions Inventories Calculated?

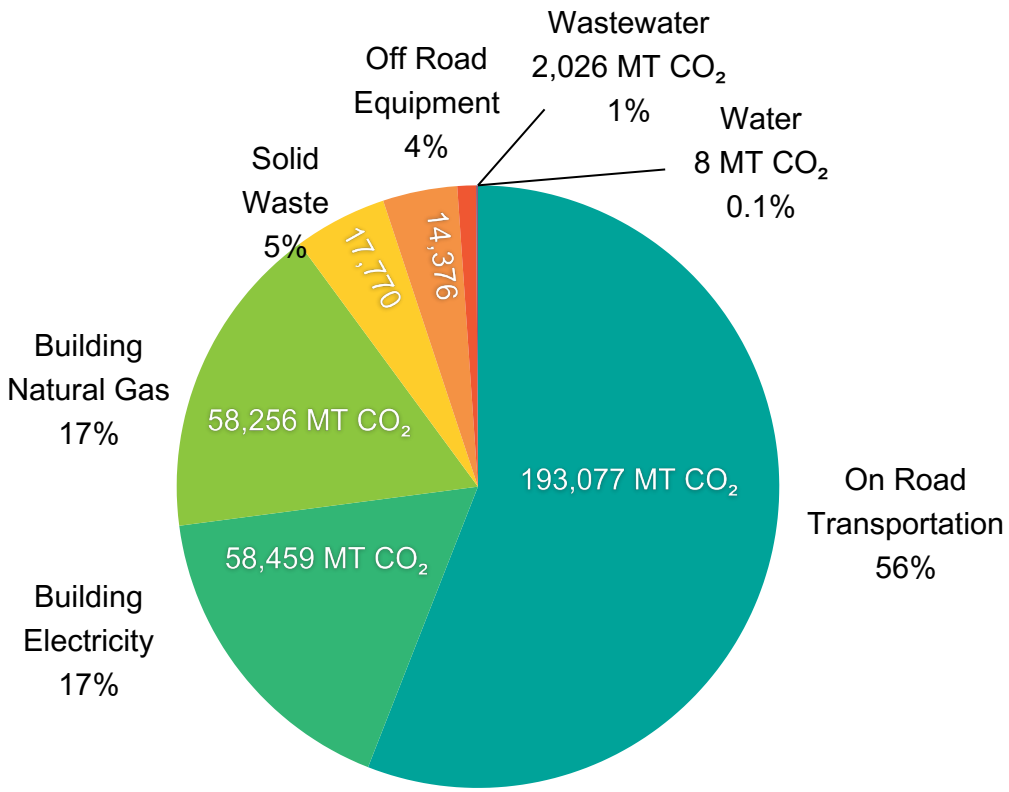
1. Identifying Sources and Sinks: The first step is to identify the sources and sinks of greenhouse gases within the City. Sources are places or activities that emit GHGs, like cars on the road, factories, or energy production. Sinks are areas where GHGs are removed from the atmosphere, like forests that absorb carbon dioxide.
2. Collecting Activity Data: Data is collected for each of these sectors. This data includes information on how much fuel is burned, how much electricity is consumed, and other activities that release or remove GHGs. For example, data often includes the number of cars on the road, the amount of energy used in buildings, or the amount of waste generated.
3. Applying Emissions Factors: Emissions factors are like conversion rates. They tell us how much carbon dioxide equivalence (CO_2e) is produced for a given activity. For example, for every gallon of gasoline burned in a car, there's a known emissions factor that tells us how much CO_2e is released. Emissions factors are used to calculate the total GHG emissions for each sector. A "Metric Ton CO_2e" stands for a metric ton of carbon dioxide equivalent. It's a unit of measurement used to express the global warming potential (GWP) of various greenhouse gases in terms of the amount of carbon dioxide (CO_2) that would have an equivalent warming effect on the Earth's climate. The reason for using CO_2e is that different greenhouse gases have different heat-trapping abilities and lifespans in the atmosphere. Carbon dioxide is often used as a reference point with a GWP (Global Warming Potential) of 1, and other greenhouse gases are compared to it. For example, methane (CH_4) has a much higher GWP than carbon dioxide, meaning it's much more effective at trapping heat in the short term. So, if you emit one metric ton of methane, it will have a much greater impact on global warming than emitting one metric ton of carbon dioxide. By expressing emissions in CO_2e, it makes it easier to compare and aggregate emissions from different greenhouse gases and sources. It provides a standardized way to assess the overall impact of a mixture of greenhouse gases in terms of their CO_2 equivalent, allowing policymakers, scientists, and organizations to quantify and manage the total greenhouse gas emissions in a consistent manner.

Figure 16. How Much Is A Metric Ton (MT) of CO_2?



The full GHG emissions inventory methodology is available in Appendix D.

Figure 17. Monterey Park GHG Emissions by Sector in Metric Tons, 2021



Source: Rincon Consultants (Appendix C)

Emissions in Monterey Park

Based on the findings of the GHG Emissions Inventory for the City of Monterey Park (Figure 16), the proposed strategies in the Low Emission Development Pathway primarily target the reduction of emissions from on-road transportation and building decarbonization. This approach aligns with the inventory data, which reveals that these two sectors are the largest contributors to greenhouse gas emissions in the City. By focusing on on-road transportation, which accounts for 56% of emissions, strategies might include promoting public transportation, electric vehicles, and biking, as well as improving traffic management. Simultaneously, tackling building decarbonization (building electricity and natural gas, which collectively account for 34% of emissions) could involve energy-efficient retrofits, transitioning to cleaner energy sources, and implementing more sustainable building practices. These strategies aim to address the key sources of emissions, making a meaningful impact on the City's overall carbon footprint and contributing to a more sustainable and environmentally responsible future.

Strategy L1: Reduce Passenger Car Vehicle Miles Travelled (VMT) and Increase Active/Shared Transportation ★

Strategy L1 Policies	
L1-1	Promote active transportation with investments in disadvantaged communities that improve connectivity and ease of walking or biking.
L1-2	Explore the implementation of public and shared transit programs to support increased public transit usage.
L1-3	Consider increasing mixed-use and residential densities in neighborhoods with access to transit or well-connected active transportation networks.
L1-4	Review parking standards in transit-rich and walkable neighborhoods to potentially reduce reliance on single-occupancy vehicles.
L1-5	Encourage City employees to explore alternative transportation options and teleworking opportunities to potentially reduce their commutes.

*Vehicle Miles Traveled (VMT) is a metric used to quantify the total distance traveled by all vehicles within a specific geographic area, typically measured over a specified period of time.

One of the primary goals of this strategy is to decrease the number of miles driven by passenger cars. Since many vehicles are powered by fossil fuels, this reduction helps to lower greenhouse gas emissions, combat climate change, and contribute to a more sustainable environment. Reducing VMT has numerous benefits:

- Air Quality and Public Health: By decreasing VMT, there is a potential to reduce air pollution, particularly in urban areas where traffic congestion is common. Improved air quality leads to better public health, with fewer cases of respiratory illnesses and other pollution-related health problems.
- Traffic Congestion: A decrease in VMT can alleviate traffic congestion, making daily commutes and transportation more efficient. This not only saves time for commuters but also reduces fuel consumption and associated emissions, making transportation more cost-effective.
- Reduction in Infrastructure Costs: A decrease in VMT can potentially reduce the need for costly road expansion projects and maintenance. This can free up resources for other infrastructure needs or public services.
- Improved Quality of Life: Promoting active and shared transportation can lead to more walkable and bike-friendly communities. This enhances the quality of life for residents by providing them with safer, more pleasant urban environments.
- Economic Benefits: Increased active and shared transportation can stimulate the local economy. It supports businesses located along pedestrian and cyclist-friendly routes and can reduce transportation costs for individuals and families.
- Safety: Reducing VMT can lead to fewer accidents and injuries on the road, making transportation safer for everyone.
- Urban Planning and Sustainability: This strategy encourages a shift toward more sustainable urban planning, with an emphasis on mixed land use, accessible public transportation, and pedestrian-friendly infrastructure.

Overall, the strategy to reduce passenger car VMT and increase active/shared transportation is a multifaceted approach that has far-reaching benefits for the environment, public health, and urban livability. It aligns with the goals of reducing carbon emissions, promoting sustainability, and improving the overall well-being of communities.

★ Community Identified Priority

E-Bikes

Electric bicycles (e-bikes) are increasingly recognized as an eco-friendly transportation option due to several key advantages they offer over traditional vehicles. One of the most significant environmental benefits of e-bikes is their potential to reduce greenhouse gas emissions. By providing an alternative to car trips, especially for short to moderate distances, e-bikes help decrease the use of fossil fuels and subsequently lower emissions of CO_2 and other pollutants. This reduction in emissions is particularly impactful in urban areas, where traffic congestion and vehicle emissions contribute significantly to air pollution and public health concerns.

Additionally, e-bikes are inherently more energy-efficient than cars. While electric bikes require electricity to charge their batteries, the amount of energy consumed per mile traveled is substantially lower compared to that of a typical car journey. This increased efficiency translates to reduced overall resource consumption and reliance on finite energy sources.

Furthermore, the use of e-bikes encourages a shift towards more sustainable transportation modes. By making cycling more accessible and feasible for a wider range of people, including those who may not have considered cycling as a viable option due to physical limitations or concerns about distance and effort, e-bikes promote a culture of active transportation. This shift away from reliance on cars not only reduces pollution and carbon emissions but also contributes to the development of greener, more livable cities with improved air quality and reduced traffic congestion.

Figure 19. Types of Electric Bicycles

Class 1

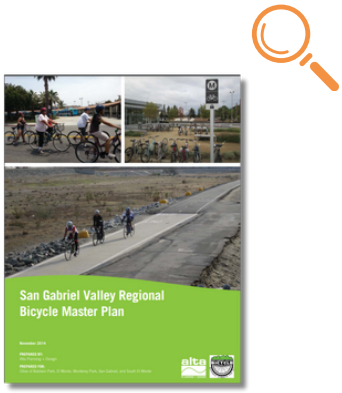
These e-bikes provide assistance up to 20 mph and are equipped with pedal-assist functionality, meaning the motor engages only when the rider pedals.

Class 2

These e-bikes are equipped with a throttle, allowing riders to engage the motor without pedaling, and they also assist up to 20 mph.

Class 3

Offering pedal-assist up to 28 mph, Class 3 e-bikes are faster than Class 1 and 2, but may be subject to different regulations, often requiring riders to wear helmets and adhere to safety standards.



Strategy L2: Increase the Adoption of Zero Emission Vehicles (ZEVs and e-bikes)

Strategy L2 Policies	
L2-1	Consider expanding electric vehicle infrastructure to encourage greater passenger ZEV adoption, with a focus on disadvantaged communities.
L2-2	Explore options to increase commercial ZEV adoption over time.
L2-3	Consider electrifying a significant portion of the City's on-road vehicle fleet and off-road equipment fleet in the coming years.
L2-4	Investigate the transition of a portion of off-road equipment to zero-emission alternatives, with a gradual approach toward full adoption.

Figure 18. Types of ZEVs

Battery Electric Vehicles (BEVs)
BEVs are powered solely by electricity stored in a rechargeable battery. They produce zero tailpipe emissions and are among the most common ZEVs on the road.

Plug-In Hybrid Electric Vehicles (PHEVs)
PHEVs have both an electric motor and an internal combustion engine. While they can run on electricity for a certain distance, they also have a gasoline or diesel engine for longer trips.

Hydrogen Fuel Cell Vehicles (FCVs)
FCVs use hydrogen gas to generate electricity that powers an electric motor. They emit only water vapor and heat as byproducts, making them true zero-emission vehicles.

Zero Emission Vehicles

Zero Emission Vehicles (ZEVs) are vehicles that produce no tailpipe emissions of greenhouse gases or other harmful pollutants during their operation. ZEVs are designed to minimize their environmental impact, and they are a key component of efforts to reduce air pollution and combat climate change.

ZEVs provide numerous benefits to the environment and community:

- ZEVs operate without producing any tailpipe emissions, as they do not rely on internal combustion engines. This means they release no CO_2, nitrogen oxides, particulate matter, or other harmful pollutants into the air.
- Reduced Greenhouse Gas Emissions: ZEVs significantly reduce greenhouse gas emissions, especially when charged with electricity from renewable sources like wind or solar power.
- Energy Efficiency: ZEVs are more energy-efficient than internal combustion engine vehicles, converting a higher percentage of their fuel source into vehicle movement, thus reducing overall energy consumption and emissions.
- Air Quality Improvement: ZEVs contribute to better air quality in urban areas. Their operation produces no harmful emissions like NOx, which are linked to respiratory problems and smog formation. This can lead to significant public health benefits, especially in densely populated regions.

ZEVs are an important tool in the efforts to reduce emissions, combat climate change, and improve air quality.

Strategy L3: Decarbonize Community and Municipal Building Energy

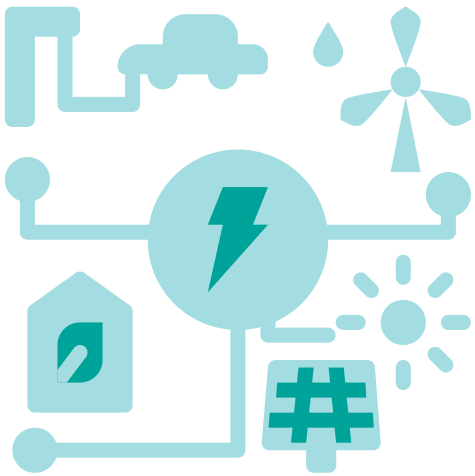
Strategy L3 Policies	
L3-1	Explore the transition of a significant portion of City electricity consumption to renewable or carbon-free energy sources.
L3-2	Consider options for electrifying or decarbonizing new buildings.
L3-3	Investigate electrifying existing residential buildings and implementing energy efficiency improvements to reduce residential natural gas usage.
L3-4	Evaluate electrifying existing commercial buildings and implementing energy efficiency improvements to reduce commercial natural gas usage.
L3-5	Examine the possibility of increasing local renewable energy generation and storage to enhance resilience during power shutoffs and climate hazards.
L3-6	Consider electrifying or decarbonizing all municipal buildings and facilities.

Building decarbonization is a strategy aimed at reducing the carbon emissions associated with the energy consumption of buildings. It involves transitioning the energy sources and systems used in buildings, such as residential and commercial structures, to ones that produce fewer or no carbon emissions. The primary goal is to minimize the environmental impact of energy use in buildings, which typically involves the burning of fossil fuels like natural gas for heating, cooling, and electricity generation.

Building decarbonization aligns with the broader goal of reducing greenhouse gas emissions in the community and municipal sectors. Here's how it fulfills the strategy:

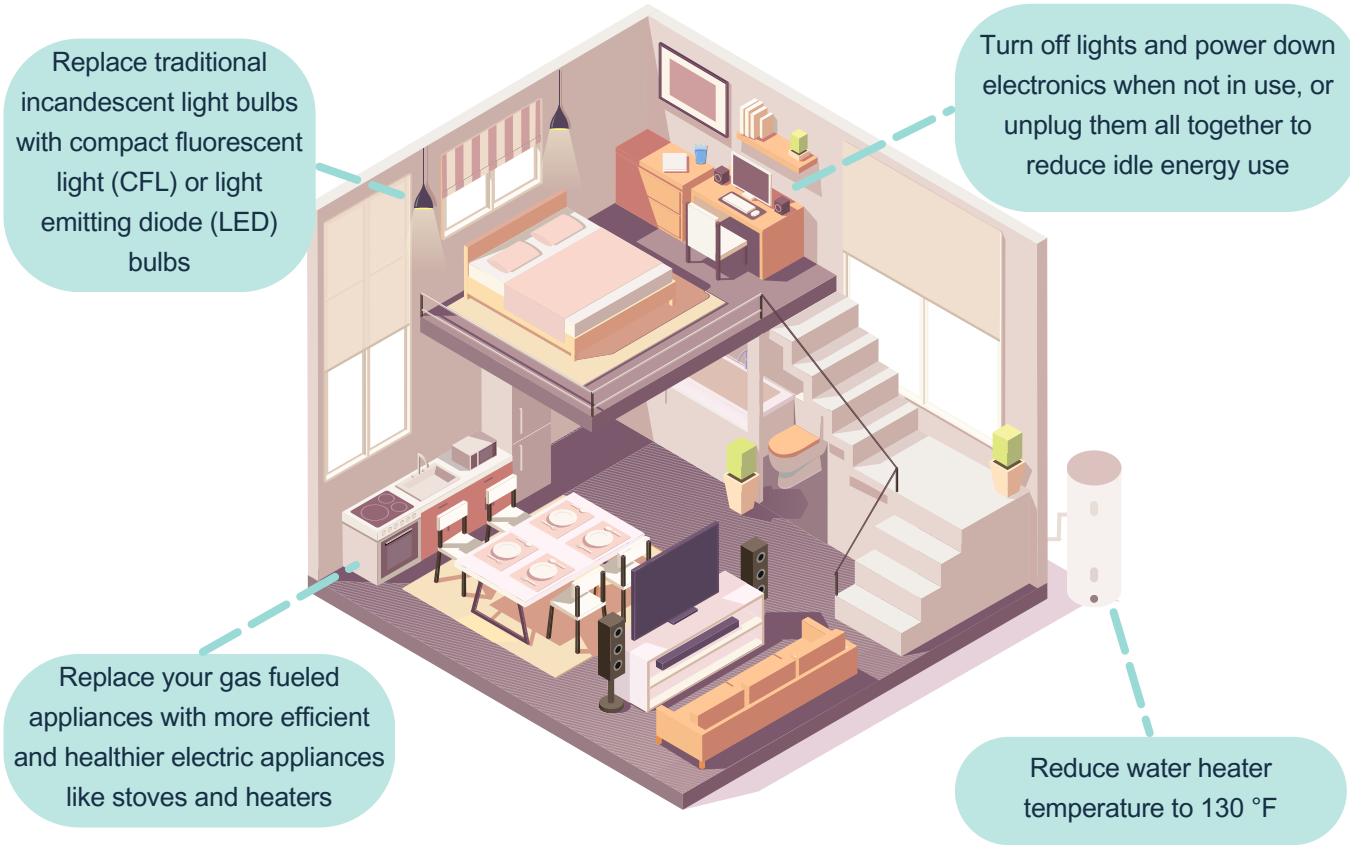
- Reducing Emissions: By electrifying or decarbonizing buildings, the strategy aims to shift away from carbon-intensive energy sources, such as natural gas or oil, towards cleaner, renewable, or low-carbon energy sources. This transition significantly reduces carbon emissions associated with heating, cooling, and powering buildings.
- Energy Efficiency: Building decarbonization often includes energy efficiency improvements. These enhancements reduce the overall energy demand of buildings, making them more sustainable and cost-effective, while further decreasing greenhouse gas emissions.
- Resilience: Building decarbonization can enhance resilience during climate-related power shutoffs or extreme weather events. By adopting renewable energy sources and energy storage systems, buildings become better equipped to maintain essential functions during disruptions, which is especially relevant for municipal facilities.

In summary, building decarbonization is a crucial component of the broader strategy to reduce carbon emissions from community and municipal building energy. It helps lower emissions, improve energy efficiency, set an example for the community, and enhance resilience in the face of climate-related challenges, contributing to a more sustainable and environmentally responsible future.



Lowering Emissions: What Can I Do Today?

At Home



- Install solar panels on your home or business.
- Visit the Monterey Park Sustainability Resource Center Webpage to find resources for free home energy efficiency reviews.
- Consider using a rebate program to update your home with electric retrofits.

On The Go

- If you are in the market for a new car, consider an EV.
- Explore EV incentives and rebates available through the California Air Resources Board or United States Environmental Protection Agency.
- Consider walking or riding your bike for short local trips.
- Download the Passio GO! app to easily track and utilize the Spirit Bus system.
- Pick a central location for attendees when you are planning an event.
- Use the GoMPK app to submit service requests for issues that prevent safe walking, biking, and public transportation use in Monterey Park.
- Carpool whenever you can.

4 - Nature Based Development

What Is Nature Based Development?

The nature based development pathway helps protect biodiversity and urban ecosystems, which are important elements of local economies and our communities. The programs under this pathway may help the City prioritize healthy local environments in which air, water, soil and all natural resources that sustain life are protected and nurtured. These programs could help integrate rainwater capture into City infrastructure or improve resident knowledge on how to keep rainwater in their gardens and out of the streets. Nature-based development programs support urban greening by planting trees, protecting parks, and encouraging native landscaping. Using programs under this nature based pathway will support the well-being of our community members, both human and non-human.

Water

The City of Monterey Park Water System receives water from one source - local groundwater. The water is produced by 12 City-owned wells located in the Rio Hondo, which is outside the city limits and in the Main San Gabriel groundwater basin.

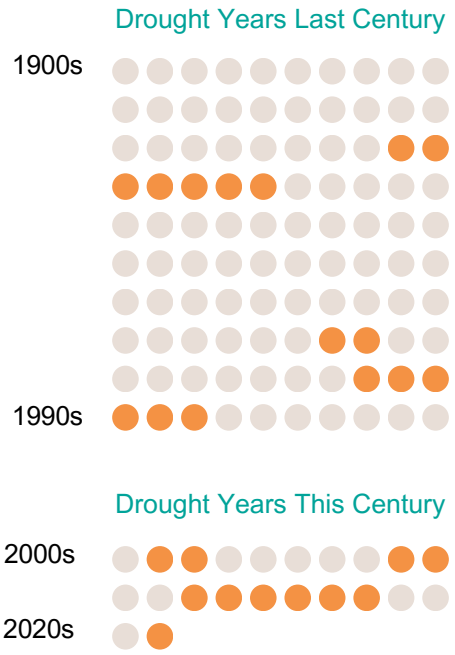
On average, about 65% of the water used in Monterey Park each year is supplied from local rainfall; the other 35% is imported from northern California and then percolated into the groundwater aquifers. The water is imported by the San Gabriel Valley Municipal Water District, a public agency.

The main San Gabriel groundwater basin is one of the few natural underground reservoirs in the United States. Rain and snowmelt flows down from the San Gabriel Mountains through a series of dams and are then diverted to "spreading basins."

Spreading basins are designated areas of land that are very permeable, such as sand and gravel areas where water can percolate into the ground. 100% of the water served to residents and businesses in Monterey Park comes from groundwater. Thus, keeping our groundwater resource clean is vitally important to all of us.

6. https://www.thewatersthatconnectus.com/copy-of-challenges

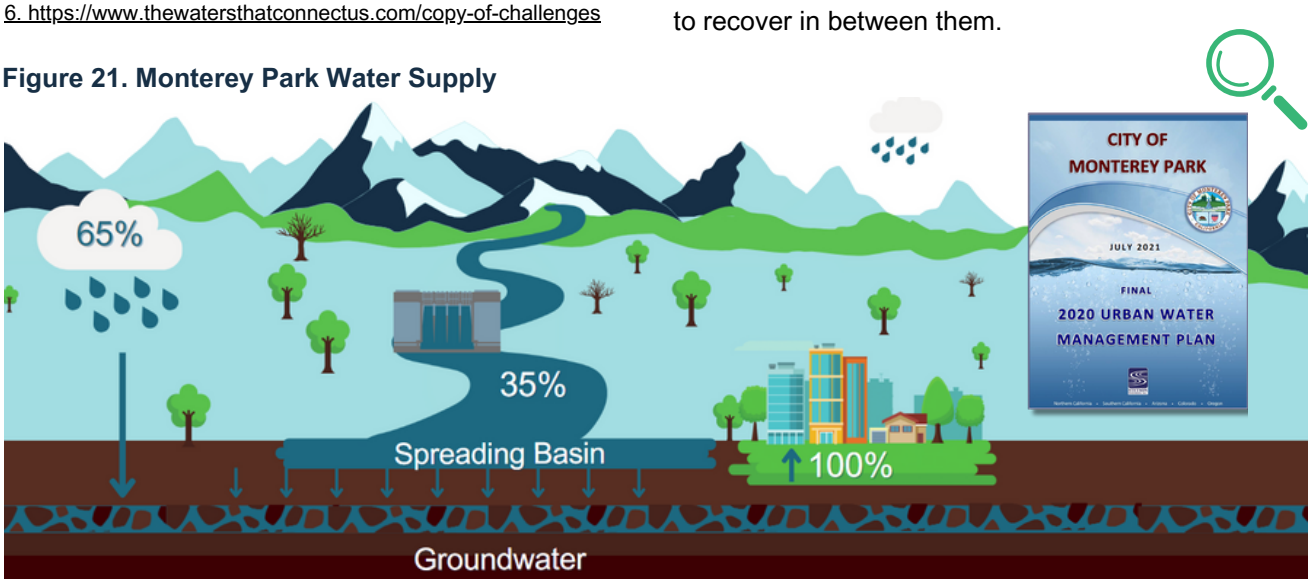
Figure 20. Number of Southern California Droughts per Century [6]



Drought

Droughts have always been a part of life in Southern California. They are now occuring more frequently. A comparison in droughts demonstrates this change: in the last century, there were three droughts that put the state in drought conditions roughly 15% of the time. Since 2000 California already experienced another four, putting the State in drought conditions nearly 50% of the time (Figure 18). These current droughts are also more extreme (in addition to more frequent). The result is our water basin has less time to recover in between them.

Figure 21. Monterey Park Water Supply



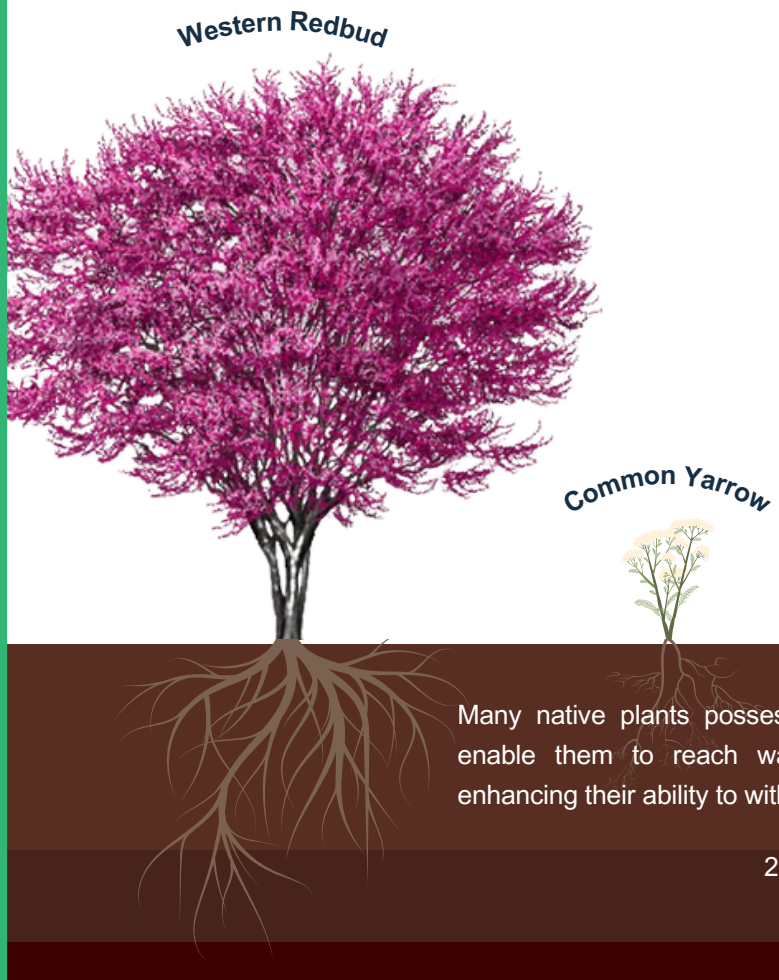
Strategy N1: Increase Water Conservation

Strategy N1 Policies	
N1-1	Consider reducing per capita water consumption, with the aim of achieving long-term reductions compared to the 2020 baseline.
N1-2	Explore options to gradually reduce municipal water consumption over time.
N1-3	Investigate strategies to enhance resilience to potential drought-induced water shortages or fluctuations in utility rate structures.

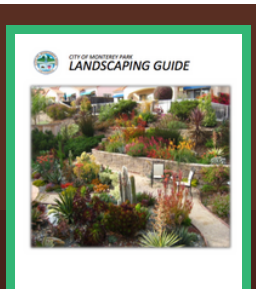
Reducing water consumption and building resilience to water shortages are critical goals in sustainable water management. Achieving these objectives involves a multifaceted approach. To begin, promoting the use of water-efficient technologies, such as low-flow fixtures and smart irrigation systems, is essential. These actions can lead to significant reductions in both residential and municipal water consumption. Moreover, educational campaigns can raise public awareness, offering valuable tips for responsible water use, such as fixing leaks and avoiding overwatering.

Landscaping practices are another integral aspect. Encouraging drought-tolerant and native species for landscaping can drastically cut down on irrigation demands. Native plants are particularly well-suited to local conditions and require less water and maintenance. Additionally, adopting xeriscaping principles can further reduce water consumption by incorporating low-water plants and efficient irrigation systems. Rainwater harvesting is another valuable technique for reducing reliance on municipal water supplies. This collected rainwater can be used for landscape irrigation, conserving the primary water source.

Efforts may also include monitoring and reporting of water usage data to residents, businesses, and local authorities, creating awareness and motivating water-saving behaviors. For long-term resilience, emergency planning and infrastructure investment are crucial. Developing contingency plans for drought conditions and investing in water infrastructure to ensure a dependable supply during dry periods is essential. These comprehensive strategies will collectively work towards conserving water resources and bolstering the ability to withstand water scarcity events.



Many native plants possess deep root systems that enable them to reach water deep in the ground, enhancing their ability to withstand periods of drought.



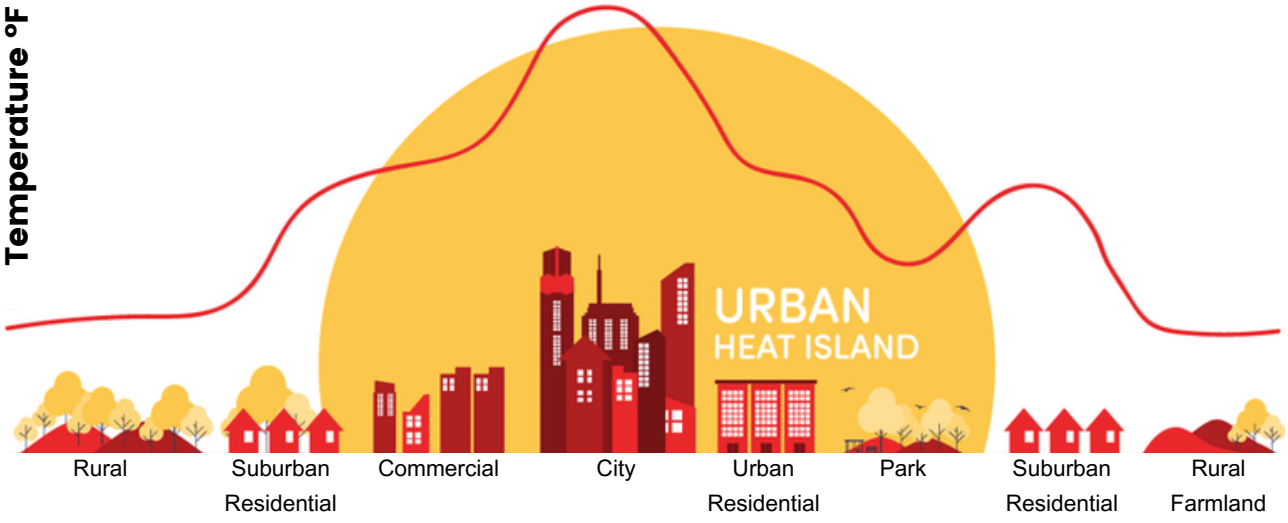
Strategy N2: Urban Greening ★

Strategy N2 Policies	
N2-1	Consider gradually increasing the number of trees in MPK, with an annual tree-planting initiatives.
N2-2	Explore options to enhance green infrastructure, with the aim of improving stormwater capacity during peak rain events, incorporating native plants and habitat restoration measures.

Heat Island Effect

Heat islands are urbanized areas that experience higher temperatures than outlying areas. Structures such as buildings, roads, and other infrastructure absorb and re-emit the Sun's heat more than natural landscapes such as forests and water bodies. Urban areas, where these structures are highly concentrated and greenery is limited, become "islands" of higher temperatures relative to outlying areas. Daytime temperatures in urban areas are about 1–7°F higher than temperatures in outlying areas and nighttime temperatures are about 2-5°F higher. [7]

Figure 22. Heat Island Effect: Temperature Variation by Environment



Source: World Meteorological Organization (WMO) 2020 [7]

As the populations in California's towns and cities continue to increase, the need for urban greening also increases. Adding nature back into the paved and developed environments in which we live, work and play helps to reduce a number of the issues that effect our quality of life. Trees, green roofs, and vegetation can help reduce urban heat island effects by shading building surfaces, deflecting radiation from the sun, and releasing moisture into the atmosphere. This leads to better energy efficiency and conservation, as demonstrated by a decreased need for air conditioning. Green spaces also provide wildlife habitat, promote urban biodiversity, and improve air and water quality by reducing pollutants.

7. https://community.wmo.int/en/activity-areas/urban/urban-heat-island

★ Community Identified Priority

Benefits of Urban Green Spaces

Urban green spaces, such as parks, gardens, and green rooftops, offer a multitude of benefits that enhance the quality of life for residents in cities. These green oases serve as vital respites in urban environments, contributing to both physical and mental well-being. One of the primary advantages is the positive impact on mental health. Spending time in natural environments within urban areas has been linked to reduced stress levels, improved mood, and enhanced cognitive function. The presence of greenery provides a calming effect, helping individuals to disconnect from the fast-paced urban environment and find moments of tranquility.

Moreover, urban green spaces play a crucial role in promoting physical health. They provide opportunities for outdoor activities such as jogging, cycling, yoga, and sports, encouraging people to engage in active lifestyles. This not only fosters physical fitness but also helps combat sedentary habits, which are often associated with urban living. In terms of economic benefits, well-maintained urban green spaces can boost property values and attract businesses and tourists. Access to green areas has been shown to increase property desirability and attract potential residents, ultimately contributing to a more vibrant and attractive urban environment.

Figure 23. The Benefits of Urban Greening

From an environmental perspective, green spaces contribute to biodiversity and ecological balance within cities. They act as habitats for various plant and animal species, supporting local ecosystems and enhancing the urban environment's resilience against pollution and climate change. These areas also help mitigate the urban heat island effect by absorbing heat and reducing surface temperatures, thus contributing to a more sustainable and comfortable urban climate.

Additionally, urban green spaces foster social interactions and community cohesion. They provide places for gatherings, events, and recreational activities, creating opportunities for people from diverse backgrounds to come together and bond. This sense of community and shared space can strengthen neighborhood connections and contribute to a greater sense of belonging and civic pride.

Urban green spaces offer a range of advantages that extend beyond their aesthetic appeal. They enhance mental and physical well-being, support biodiversity, encourage community engagement, and even have economic implications. As Monterey Park continues to grow, investing in and preserving these green havens becomes increasingly important for creating sustainable, livable, and enjoyable urban landscapes.

Did you know...?

130 different bird species have been seen in MPK!

Strategy N3: Experiences in Nature

Strategy N3 Policies	
N3-1	Foster positive opportunities for the Monterey Park community to engage with the natural world.

Experiencing nature is profoundly beneficial for both human and environmental health, making it an important strategy for fostering more sustainable communities. From a human perspective, connecting with nature provides numerous mental, physical, and emotional advantages. Time spent in natural environments can reduce stress, anxiety, and depression, while boosting mood and overall well-being. It encourages physical activity, which promotes better health and fitness. Additionally, exposure to nature enhances creativity and cognitive function, contributing to a richer and more fulfilling life. Furthermore, it fosters a sense of connection to the environment, raising awareness about the need for its protection and preservation.

In the context of environmental health, embracing and preserving natural spaces within communities is important. Green spaces like parks, forests, and wetlands play a vital role in maintaining ecological balance. They provide habitat for wildlife, support biodiversity, and help mitigate the effects of climate change. Natural areas serve as buffers against floods, improve air and water quality, and reduce urban heat islands. By incorporating these elements into community planning and design, we not only enhance environmental resilience but also contribute to the overall sustainability of our communities. In essence, the well-being of both humans and the environment are deeply intertwined, and experiences in nature serve as a bridge between the two, strengthening the case for more sustainable and eco-conscious communities.

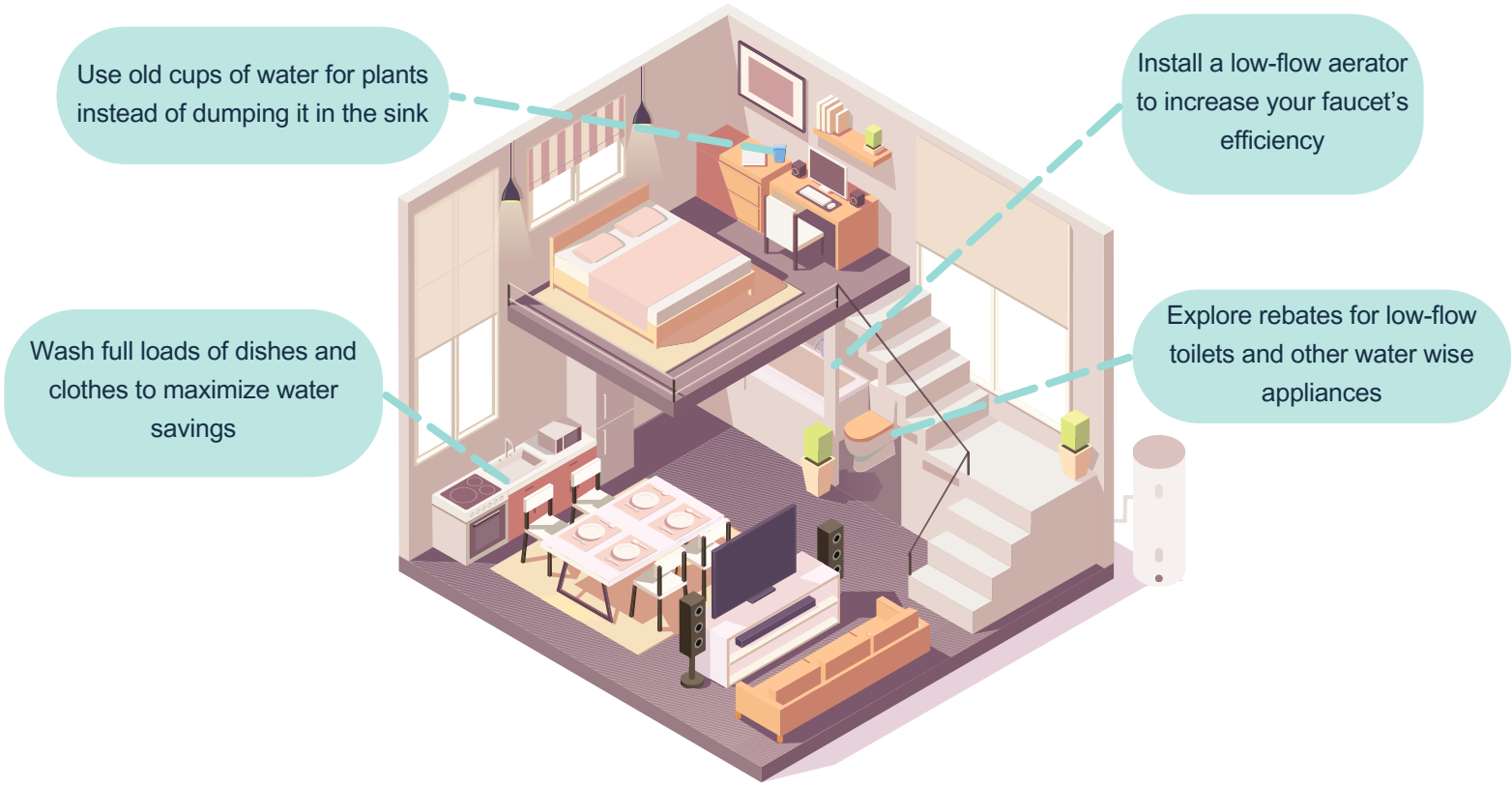
8. https://parkserve.tpl.org/mapping/#/?CityID=0648914

84%

of Monterey Park residents live within a 10-minute walk of a park! [8]

Saving Water & Creating Green Space: What Can I Do Today?

- Design a laundry grey water capture system for your garden irrigation needs.
- Avoid washing your car at home.
- Install a rain barrel at home.
- Replace hard surfaces such as concrete or asphalt with permeable surfaces such as gravel or pavers to capture rainwater and prevent flooding.
- Learn about water-wise gardening practices by attending a LA County Smart Gardening Workshop, frequently held at Garvey Ranch Park, or visit the Monterey Park Demonstration Garden for landscaping inspiration.
- Transform your land into a greenspace by planting native tree and plant species or utilize your space to grow your own food.
- Use the GoMPK app to report dead or unhealthy trees in your neighborhood.
- Plant shade trees around your home or garden.
- Use the Monterey Park Landscaping Guide to choose water-wise plants that will thrive in our City.
- Fix any leaky faucets immediately to reduce unwanted water waste.
- Replace high-consuming lawns with low-water and drought-tolerant vegetation, including California Native plants, grasses, and water-wise succulents.



Review Chapter 14.25 of the Monterey Park Municipal Code for details on water conservation regulations and Chapter 6.31 for Monterey Park's Water Efficient Landscape Ordinance.

5 - Circular Development

What Is Circular Development?

The circular development pathway promotes sustainable waste management options and prioritizes local economies born out of circular development where resources are exchanged, not wasted. Programs under this pathway support economic development while taking into consideration the environmental and social costs of goods and services. These programs can also support sustainable strategies for local businesses. Programs under this pathway take into account not just the GHG emissions from direct sources such as fuel and electricity use, but also the GHG emissions associated with the complete life cycle of the products we use every day. The circular development pathway provides ways that each member of the Monterey Park community can reduce their impact on the world and improve their community at the same time.

Strategy C1: Promote Reduce, Reuse, Repair, and Recovery

Strategy C1 Policies	
C1-1	Explore the procurement of recovered organic waste products for potential use in the City consistent with SB 1383 (2016).
C1-2	Promote the reduction of community waste generation by encouraging residents and businesses to participate in repair and reuse practices.

Senate Bill 1383 (SB1383) is legislation aimed at reducing short-lived climate pollutants, particularly methane and hydrofluorocarbons, by implementing regulations on organic waste disposal, promoting composting, and establishing targets for methane emissions reduction.

“Reduce, Reuse, Repair, and Recovery” embodies the principles of a circular economy, offering numerous environmental and economic benefits. These practices reduce resource consumption, waste, and energy use, as well as lower carbon emissions. They encourage a shift away from disposable culture, fostering more mindful and sustainable consumption. Moreover, embracing "reduce reuse, repair, and recover" practices stimulates economic growth by creating jobs and local economic opportunities. These practices help conserve raw materials, contribute to cultural shifts in favor of sustainable consumption, and effectively address issues like electronic waste. Overall, these practices promote resource efficiency, waste reduction, and a more sustainable, resilient future.

While many are familiar with the phrase "Reduce, reuse, recycle," there are two more facets of waste reduction worth learning about: Repair and Rot. These additional strategies play a crucial role in promoting sustainability and reducing the environmental impact of waste. Beyond the five "R's," the list continues to expand: refuse, repaint, repurpose, refurbish, and reclaim, to name a few. Each of these actions offers unique ways to minimize waste, conserve resources, and reduce our ecological footprint, contributing to a more environmentally responsible and resource-efficient lifestyle.

"Reduce" refers to the practice of minimizing the generation of waste in the first place. It involves using fewer resources, buying products with less packaging, and being mindful of consumption to reduce the overall volume of waste produced.

"Reuse" involves using items or products again in their current form without any significant alteration. It aims to extend the lifespan of items, reducing the need for new production and consumption.

"Repair" focuses on fixing or restoring items that are damaged or worn, rather than discarding them. This extends the useful life of products and reduces the amount of waste sent to landfills.

"Rot" represents the practice of composting organic waste, such as food scraps and yard debris. Through decomposition, organic matter is turned into nutrient-rich compost, diverting it from landfills and enriching soil.

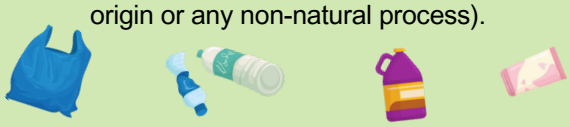
"Recycle" involves the process of collecting and processing materials to be used as raw materials in the production of new products. Recycling reduces the demand for virgin resources and minimizes the environmental impact of manufacturing.

Strategy C2: Reduce Landfilled Waste ★

Strategy C2 Policies	
C2-1	Consider aligning with SB 1383 (2016) organics and recycling requirements, aiming to progressively reduce landfilled organic waste.
C2-2	Strive to meet or surpass the SB 1383 requirement of diverting edible food from the landfill to support food-insecure community members.
C2-3	Closely assess ways to reduce residential and commercial inorganic waste sent to landfills over time, with an aim to achieve gradual reductions.

Organic Waste
All waste of biological origin (which was once alive or part of a living thing).

Inorganic Waste
All waste from non-biological origin (industrial origin or any non-natural process).



Reducing landfilled waste is a crucial strategy for emissions reduction due to its significant impact on greenhouse gas emissions. When organic materials, such as food scraps and yard waste, end up in landfills, they decompose in an anaerobic environment, meaning without oxygen. During this process, they produce methane, a potent greenhouse gas that has a much greater heat-trapping capacity than carbon dioxide. By diverting organic waste away from landfills and into composting or anaerobic digestion systems, the release of methane is minimized.

Reducing Waste: What Can I Do Today?

- Visit Monterey Park Public Works Organics Recycling Webpage for the most up to date information on how to sort your food waste for recycling by your local waste collection company.
- Learn how to compost by attending a LA County Smart Gardening Workshop, frequently held at Garvey Ranch Park.
- Visit Monterey Park Public Works How to Recycle Webpage for the most up to date information on recycling in the City.
- Start or join a "Buy Nothing" group online to donate unwanted items directly to individuals who need them.
- Try to buy secondhand items first to save money and keep waste out of landfills.
- When buying something new, buy high quality products that will last.
- Explore methods of repairing clothing and items before replacing them.

★ Community Identified Priority

6 - Resilient Development

What Is Resilient Development?

The resilient development pathway anticipates, prevents, absorbs, and recovers from shocks and stresses, especially those brought about by rapid environmental, technological, social and demographic change. Through this pathway, MPK will make resilience a core part of municipal strategies and prepare for new risks and impacts, taking into account the rights and needs of vulnerable sections of society. Programs under this pathway will continuously strengthen essential systems, alleviating the burden on people and the environment. Resilient development programs pursue a transparent and inclusive approach that will enhance trust in institutions and the processes that support them.

Strategy R1: Extreme Heat Resilience ★

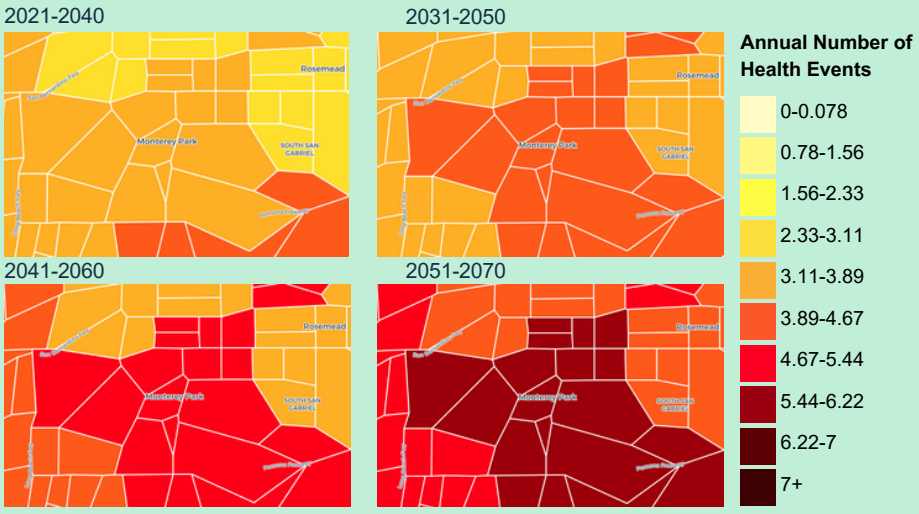
Strategy R1 Policies	
R1-1	Educate the community about the dangers of heat exposure and identify financial and technical resources to reduce impacts of extreme heat on the community.
R1-2	Reduce exposure of the community to extreme heat through a combination of cooling centers, low-cost cooling resources, building weatherization, and increased energy resilience.

Heat Health Events

Heat health events (HHEs), also known as heatwaves or extreme heat events, refer to periods of unusually high and prolonged temperatures that can have significant impacts on human health, infrastructure, and the environment. These events occur when temperatures rise above normal levels for a given region and persist for an extended period, often several days or even weeks. Over the next century, the frequency and intensity of heat health events are projected to increase in Monterey Park. Impacts of heat health events include:

- Health Impacts: Prolonged exposure to high temperatures can lead to various heat-related illnesses, including heat exhaustion, heatstroke, and dehydration. These conditions can range from mild discomfort to life-threatening emergencies, and they may require medical attention.
- Vulnerable Populations: Certain groups of people are more susceptible to the adverse effects of extreme heat, including the elderly, infants, pregnant women, individuals with chronic illnesses, and those who lack access to air conditioning or cool shelter. Social factors such as poverty and isolation can exacerbate these vulnerabilities.
- Impacts on Infrastructure: Extreme heat can damage infrastructure, such as roads, railways, and power grids, as well as reduce the efficiency of public transportation systems. Additionally, buildings not designed to withstand high temperatures may experience structural damage or require increased energy for cooling.
- Economic Consequences: Heat health events can lead to substantial economic losses, including decreased labor productivity, increased healthcare costs, and damage to crops. These financial impacts can be especially burdensome for communities that are already vulnerable.

Figure 24. Projected Annual Heat Health Events in Monterey Park [9]



9. https://www.cal-heat.org/explore

Strategy R2: Climate Change Preparedness

Strategy R2 Policies	
R2-1	Evaluate capacity to respond effectively to emergencies and prepare for unavoidable disasters.
R2-2	Evaluate the ability of the City and its residents to adapt to climate change impacts.

Strengthening the capacity to respond effectively to emergencies and preparing for the unavoidable disasters brought about by climate change is a central component of climate change preparedness. As the impacts of climate change continue to escalate, leading to more frequent and severe weather events, the need for robust emergency response and disaster preparedness has become increasingly crucial. This approach encompasses a multifaceted strategy.

First and foremost, early warning systems must be established and improved to provide communities with timely information about impending climate-related threats, such as hurricanes, floods, and wildfires. These warnings play a vital role in helping communities prepare, evacuate, if necessary, and reduce the risk of loss of life and property.

Equally important is the need to ensure that critical infrastructure, including transportation networks, power grids, and water supply systems, is resilient to climate-related threats. This enhances the ability to withstand disruptions during and after disasters, allowing for quicker recovery.

Engaging the community in emergency response planning is another vital element. Involving residents in disaster preparedness initiatives, such as developing evacuation plans, organizing neighborhood watch programs, and fostering a sense of shared responsibility, can significantly enhance overall resilience.

Furthermore, the healthcare system and social services must be adequately prepared for the increased demands that climate-related emergencies impose. Healthcare facilities need to be resilient, and communities should have access to necessary social services and mental health support.

Sustainable natural resource management practices, such as forest management to reduce wildfire risk, can also help mitigate the severity of climate-related disasters. Additionally, the development of comprehensive disaster recovery plans, which include access to financial resources and assistance programs, ensures that communities can rebuild effectively in the aftermath of a climate-related disaster.

Education plays a crucial role in this process, as educating the public about climate resilience, disaster preparedness, and the risks associated with climate change is essential. An informed and prepared community is better equipped to respond to emergencies effectively.

Finally, recognizing the global nature of climate change, international cooperation is paramount. Climate-related emergencies often transcend national borders, making collaboration between nations vital. Sharing resources, expertise, and collective efforts can significantly improve preparedness and response in the face of climate-related disasters.

7 - Equitable Development

What Is Equitable Development?

Equitable and people-centered development builds more just, livable, and inclusive urban communities and addresses poverty. Through this pathway, Monterey Park will pursue processes that support inclusive development for all that safeguard the natural support systems for human life. Programs under this pathway will ensure that the natural and built environment in and around cities improves livability and safety, promotes human health, and mitigates disease. These programs will pursue secure and safe access to food, water, energy and sanitation for all, and clean air and soil. They create and sustain human-centered, safe, socially, and culturally cohesive communities, where diversity and distinct identities are woven into the social fabric.

What Is Equity?

For this Plan, equity refers to the concept of fairness and justice in the distribution of resources, opportunities, and benefits within a society. In the context of a city, equity means ensuring that all residents, regardless of their background or circumstances, have access to the same opportunities and benefits.

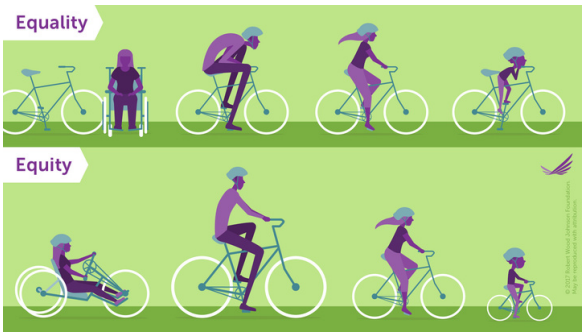
Equity vs Equality

Equality and equity are related concepts but differ in their approach. Equality aims to treat everyone the same way, providing equal resources or opportunities to all individuals. In contrast, equity recognizes that not everyone starts from the same place and seeks to address historical and systemic disparities. Equity involves tailoring resources and support to meet the unique needs of different groups, thereby striving for equal outcomes.

Environmental Justice

Environmental justice is a concept within the broader framework of equity that focuses specifically on the fair treatment and distribution of environmental benefits and burdens, particularly in the context of communities that have historically been marginalized or disadvantaged. In the context of equity, environmental justice includes:

- Fair Treatment: Environmental justice demands that all individuals, regardless of their race, ethnicity, income level, or socioeconomic status, should have equal protection under environmental laws and regulations. It advocates for the fair distribution of environmental benefits, such as access to clean air, water, and green spaces, as well as the fair allocation of resources for environmental protection.



- Equitable Distribution of Environmental Burdens: Environmental justice addresses the disproportionate burden of pollution, environmental hazards, and negative impacts of climate change faced by certain communities, often low-income and minority populations, calling for the fair distribution of these burdens to prevent any group from unfairly enduring higher pollution levels or environmental risks.
- Community Empowerment: Environmental justice underscores involving affected communities in decision-making processes regarding environmental policies and projects, recognizing their valuable insights into unique environmental challenges and the need for their input in shaping solutions.
- Historical Context: Environmental justice acknowledges historical injustices, such as redlining, discriminatory zoning, and other policies that systematically disadvantaged certain communities, leading to the unequal distribution of environmental benefits and burdens. It aims to rectify these historical inequities by addressing past and present environmental injustices.

In summary, environmental justice is a critical component of equity, focusing specifically on ensuring that all individuals and communities, especially historically marginalized ones, have equal access to a clean and healthy environment and are not disproportionately burdened by environmental hazards. It seeks to rectify past injustices and promote fairness in environmental decision-making and resource allocation.

Strategy E1: Foster Community Engagement

Strategy E1 Policies	
E1-1	Conduct meaningful community engagement on implementation of sustainable development projects and foster community-led decision-making.
E1-2	Consider increasing access to technical, financial, and educational resources to facilitate community implementation of sustainable practices.

Community engagement is essential for cities in their efforts to mitigate climate change. As urban areas are significant contributors to greenhouse gas emissions, it is crucial to involve local residents in these initiatives. Engaging communities empowers individuals to contribute their insights and innovative ideas, fostering customized solutions. Moreover, community involvement can drive behavioral changes, promote social cohesion, and enhance the city's overall resilience.

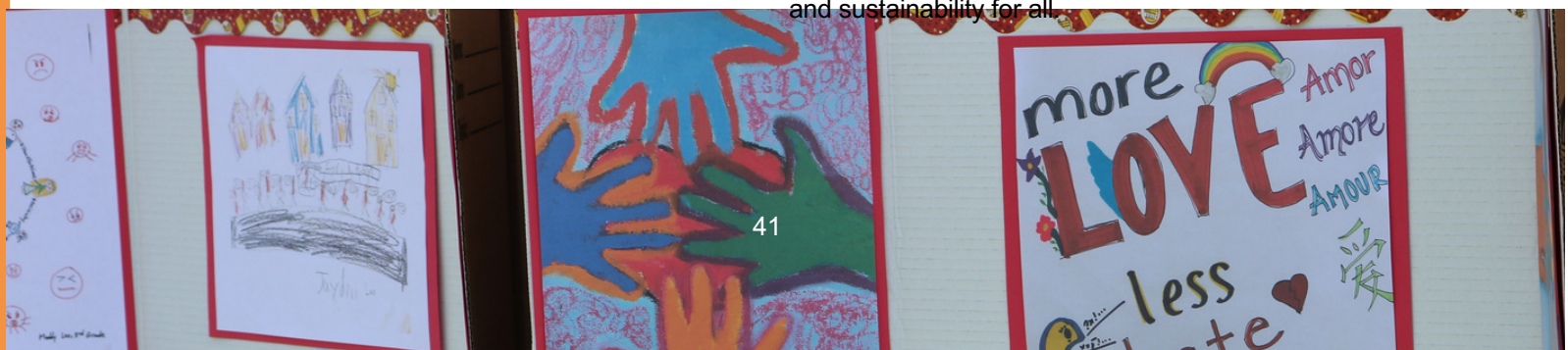
Local knowledge and expertise can be harnessed to develop effective climate strategies, while accountability is increased when city officials work closely with the community. Sustainable, long-term change is more likely to be achieved with ongoing support from engaged residents. Additionally, community engagement can facilitate resource mobilization, with volunteers, businesses, and organizations contributing their time and resources to climate projects, ensuring the City's sustainability efforts are well-supported and effective.

Strategy E2: Promote and Advance Equitable Spaces

Strategy E2 Policies	
E2-1	Promote affordable housing opportunities that connect residents to community services and improve quality of life.
E2-2	Evaluate health outcomes by providing residents with equitable access to public spaces and health services.
E2-3	Encourage community garden programs at schools, non-profit organizations, and religious entities to increase urban access to local food and greenspaces.

Equitable spaces are integral to effective climate mitigation efforts. Climate change disproportionately impacts vulnerable and marginalized communities, worsening existing inequalities. Failing to consider equity in climate action can lead to further disparities in access to resources, health, and economic opportunities. Equitable spaces emphasize fairness, justice, and inclusivity, distributing the burden of climate impacts and the benefits of mitigation policies more fairly.

They promote social justice by addressing the disproportionate effects on disadvantaged groups, ensuring inclusive decision-making, and fostering public health outcomes. Additionally, equitable spaces open doors to new economic opportunities in green industries, enhance community resilience, and contribute to long-term climate success. Moreover, they set an example for global collaboration by recognizing the interconnected nature of climate challenges. In essence, prioritizing equity in climate mitigation is essential for ensuring fairness, justice, and sustainability for all.



Strategy E3: Build a Strong, Connected Community ★

Strategy E3 Policies	
E3-1	Evaluate capacity for the City and community to implement climate action and better withstand climate shocks and stresses.

Strong community connections can play a pivotal role in enhancing resilience to the growing challenges posed by climate change. In a closely-knit community, people are more likely to come together in times of crisis, whether it's extreme weather events, flooding, or other climate-related emergencies. These connections facilitate the sharing of information and resources, ensuring a more coordinated response to these challenges.

A connected community is more adept at implementing sustainability initiatives, like reducing waste, conserving energy, and promoting environmentally friendly practices. By working together, residents can collectively adopt strategies to mitigate climate change, such as reducing greenhouse gas emissions through shared transportation options and energy-efficient practices. These initiatives can help the community become more resilient to the impacts of climate change, making it better prepared to adapt and recover from climate-related events.

Strategy E4: Equitably Distribute Costs and Benefits of Climate Action

Strategy E4 Policies	
E4-1	Consider investing in and prioritizing climate action implementation for historically underinvested communities.

Prioritizing climate action implementation in historically underinvested communities is an important step toward equitably distributing the costs and benefits of climate action. These communities have often experienced the greatest impact of environmental and climate-related challenges, experiencing higher levels of pollution, limited access to clean resources, and heightened vulnerability to climate impacts. By directing climate initiatives toward these areas, several key objectives are achieved. Firstly, it addresses environmental injustices by ensuring that historically marginalized communities gain access to cleaner air, water, and a healthier environment.

Secondly, it enhances resilience to climate impacts, safeguarding vulnerable populations from extreme weather events and other risks. Additionally, investing in these communities stimulates economic development, job creation, and poverty reduction, thereby distributing the economic and social benefits of climate action more equitably. Community engagement and participation in decision-making processes empower residents and lead to more effective and sustainable climate solutions. Lastly, it can positively impact public health and overall well-being, reducing healthcare costs and improving residents' quality of life.

★ Community Identified Priority

8 - Implementation & Monitoring

How Will The Plan Be Used?

The City of Monterey Park developed the Sustainability Plan to be a visionary roadmap to both decrease GHG emissions and improve overall resilience to climate change. The timelines, anticipated costs, legislative environment, and benefits assumed in this plan will continue to evolve as new information and opportunities become available. Therefore, this Plan should be viewed as a strategic framework that will be reevaluated over time. This chapter describes the priority areas on which the City should focus during the first five years of the Plan implementation. While other actions will likely be implemented as opportunities arise, the City should focus its resources on these foundational actions. Together, these actions will help reduce GHG emissions, improve resilience, spark innovation and collaboration, and engage the community.

Implementation

The Sustainability Plan outlines a series of strategies and policies designed to reduce greenhouse gas (GHG) emissions in alignment with the State's goals. Implementation is anticipated to occur between 2024 and 2045. However, a key purpose of this Plan is to identify and prioritize key measures and actions to be implemented in the near term (2024 – 2029) that are most impactful at to reduce GHG emissions.

Given the extended implementation period, policies may evolve as the City tracks progress, adapts to new technologies and legislation, and identifies funding opportunities for additional GHG emissions reduction and climate adaptation initiatives.

Building on Past Success

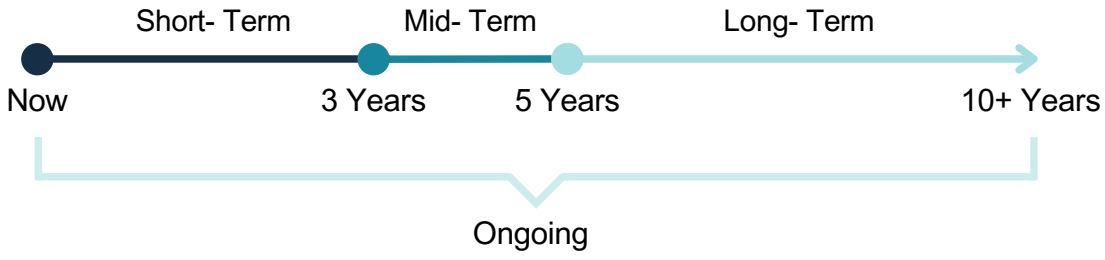
Monterey Park's 2012 Climate Action Plan (CAP) set targets to achieve GHG emission reductions in line with the 2020 State target (Assembly Bill 32). Since that time, the State of California has exceeded AB 32 targets returning to 1990 emissions levels in 2016, four years ahead of the AB 32 target. The City also adopted a new Healthy and Sustainable Community Element in the City's General Plan, retrofitted City facilities with solar panels and LED lighting, added three full service Compressed Natural Gas (CNG) buses to their public transit fleet, and adopted a water conservation ordinance. The Plan builds upon these initiatives from the 2012 CAP and includes a broad range of new initiatives that extend beyond climate mitigation efforts, such as incorporating adaptation and social equity strategies, increasing community connectivity, and improving GHG emissions reduction tracking mechanisms.

The Plan also fosters long-lasting and meaningful partnerships between the City, local partners, community leaders, and the larger community to confront climate change. Implementation of the Plan will help reduce GHG emissions, improve adaptation, and spark innovation and collaboration, all while engaging the community.

Looking Towards the Future

When implemented, strategies and policies outlined in the Plan (see Chapters 3-7) will help the City make substantial progress towards their GHG emission reduction and climate equity goals. The Plan builds on the foundation established in the 2012 CAP by identifying a suite of impactful policies and establishing a clear implementation plan which will transform strategies into on-the-ground programs and projects with real GHG reduction and climate resilience impacts. The policies focus on deep decarbonization within the built environment and transportation sector, promoting and advancing equitable development, and building adaptation to climate change impacts like extreme heat. Notable policies in the Plan include rapidly transitioning City electricity consumption to renewable or carbon-free energy sources, greatly expanding electric vehicle infrastructure, increasing the capacity of cooling centers, installing backup power sources, and creating educational programs/resources regarding climate change.

Figure 25. Policy Implementation Phasing



Phasing

To achieve significant GHG emission reductions, Monterey Park should begin implementing the strategies and policies as soon as possible to make real progress over the next decade. As depicted in Figure 22, the Plan takes a phased approach to implementation:

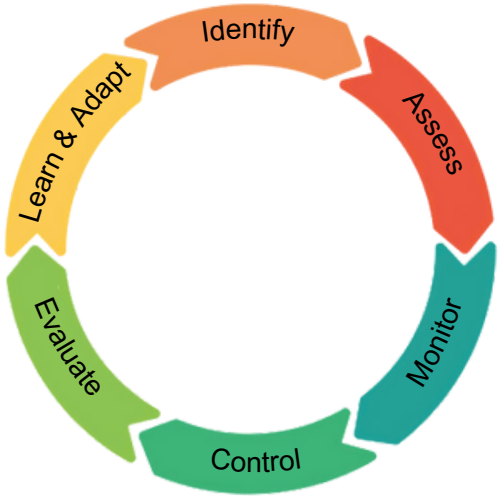
- Phase 1: Policies which will be implemented in the short-term, over the next three years (2024-2027)
- Phase 2: Policies which will be implemented in the mid-term, over the next five years (2024-2029)
- Phase 3: Policies which will be implemented in the long-term, over the next 10+ years (2024-2034)

Planning

The climate action planning process is a dynamic and iterative cycle designed to address the challenges of climate change. It involves six key steps: Identify, Assess, Monitor, Control, Evaluate, and Learn & Adapt.

1. Identify: In the initial phase, stakeholders identify and analyze potential climate-related risks and opportunities. This includes recognizing greenhouse gas emissions sources, vulnerable areas, and potential areas for mitigation and adaptation measures. Stakeholders may include government bodies, community representatives, and experts in climate science and policy.

Figure 26. Climate Planning Process



2. Assess: This step involves evaluating the current state of greenhouse gas emissions, vulnerability of communities, and the effectiveness of existing policies. The assessment provides a foundation for developing targeted strategies.
3. Monitor: Ongoing monitoring is crucial to track the implementation of climate actions and assess their effectiveness. This involves the regular collection of data on greenhouse gas emissions, climate-related impacts, and the progress of implemented measures. Monitoring allows for real-time adjustments and ensures that actions are aligned with the overarching goals.
4. Control: With the information gathered through monitoring, stakeholders implement control measures to manage and mitigate climate-related risks. This step involves the execution of planned interventions, such as introducing renewable energy initiatives, improving infrastructure resilience, and implementing sustainable practices.
5. Evaluate: Regular evaluations are conducted to measure the success and efficiency of implemented measures. This involves assessing the impact on emissions reduction, community resilience, and overall climate goals. Evaluation results help stakeholders understand what works well, what needs improvement, and where adjustments are required.
6. Learn & Adapt: Learning from both successes and challenges is integral to the climate action planning process. Stakeholders use evaluation findings to adapt strategies, improve policies, and enhance resilience. This step ensures that the planning process remains flexible and responsive to changing climate conditions, emerging technologies, and evolving community needs.

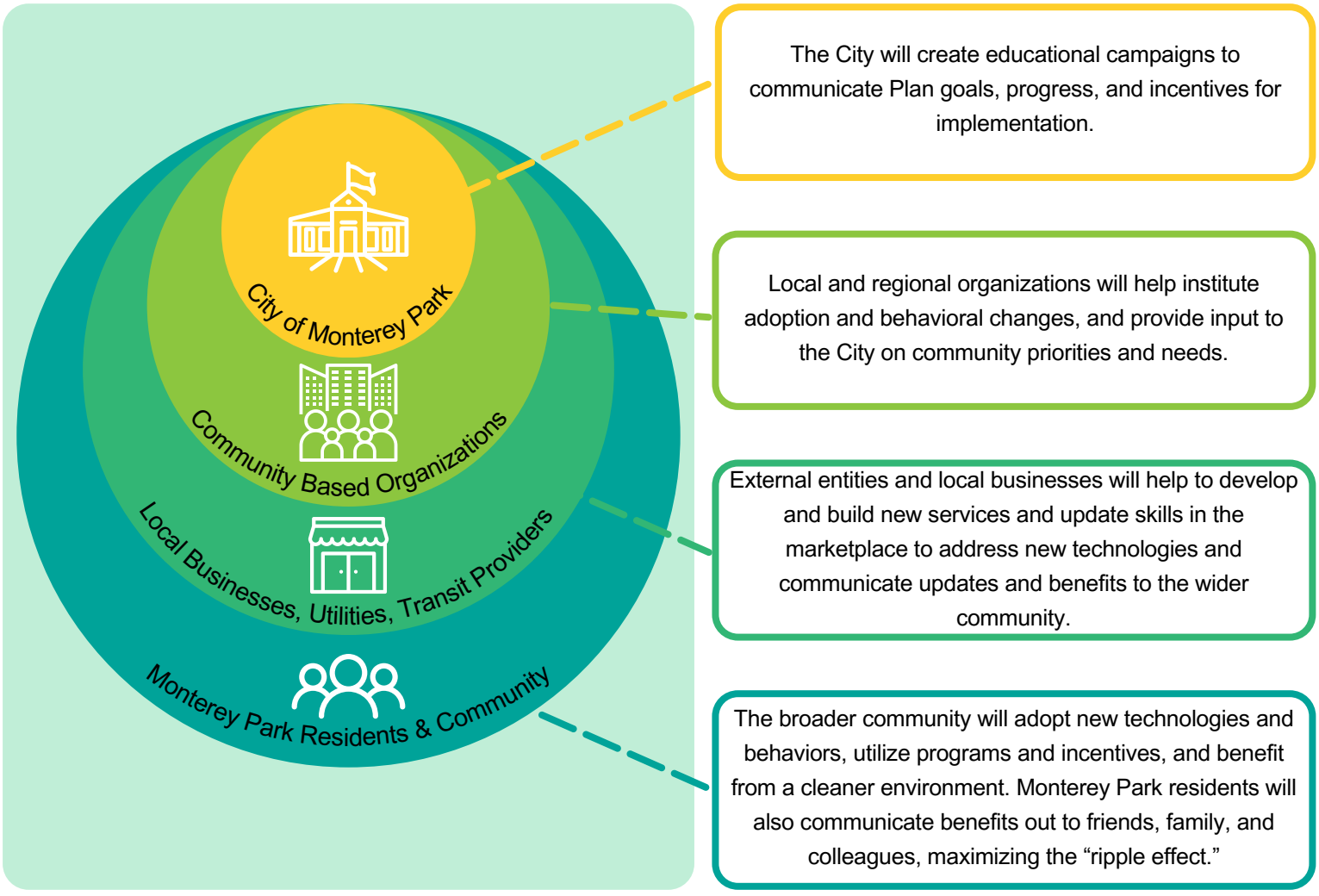
This cyclical approach promotes continuous improvement, allowing communities to respond effectively to the dynamic nature of climate change and its associated challenges. Through each iteration of the cycle, stakeholders refine their understanding and response to climate issues, fostering a more sustainable and adaptive community over time.

The Team

To successfully reduce GHG emissions and achieve climate adaptation goals, everyone in the community must be involved. The City can introduce new services and technologies, from organic waste diversion pathways and EV charging infrastructure to implementing public transit programs and coordinating environmental justice outreach, but success depends on community adoption and collaboration. Achieving meaningful progress towards reducing our GHG emissions and furthering adaptation practices starts with City leadership, through policies, education, and investments that act as catalysts for change throughout the broader community.

Valued partners in the community, including San Gabriel Valley Council of Governments (SGVCOG), Southern California Edison, other local utilities, and various community-based organizations, will provide support for these policies with programs and incentives. Partnerships can more effectively help businesses and residents leverage programs and incentives to work together to reduce environmental impact, adapt quicker to climate change, and decrease GHG emissions. As policies and programs evolve, City staff will continue to engage the community, provide progress updates, and create ongoing opportunities to solicit community feedback.

Figure 27. Community Roles in Climate Action



City Leadership

Implementation and monitoring is central to the success of any plan in achieving GHG reduction targets and increasing adaptation to climate change. Implementation planning involves identifying responsible parties for implementation. Several departments within the City of Monterey Park will play a key role in the Plan's implementation and monitoring. Responsible parties are listed and described below.

City Manager's Office

The City Manager's Office serves as the chief executive officer of the City under the direction of the City Council. In this capacity, the City Manager's Office provides and oversees overall direction and coordination of city operations, continual monitoring and evaluation of services and programming to ensure their relevance with community needs, procurement of available grant funds to achieve special projects, and new commercial and industrial development.

Community Development

The Community Development Department is comprised of the Building and Safety, Planning, and Economic Development divisions. This Department maintains the City's physical environment through the effective and efficient use of the City's legislative mandates, including maintaining the General Plan, zoning, and building, which provide a solid foundation for an excellent quality of life for the community. Additionally, this Department is responsible for encouraging business investment opportunities and job creation, expanding the City's tax base, supporting business attraction and retention activities, and assisting business building efforts through innovative and implementable approaches that advance inclusion, diversity, and accessibility.

This Department will play a key role in developing energy ordinances, efforts to update or adopt climate-friendly building codes, efforts to equitably distribute costs and benefits of climate action in the procurement of grants for GHG emissions reduction projects and tracking and monitoring progress of the Plan.

Police

The Police Department has the primary responsibility of providing for the maintenance of social order within carefully prescribed ethical, legal, and constitutional restrictions. Its objective is the prevention of crime, detection and investigation of criminal conduct, and the apprehension of violators. This department will also play a key role in increasing the community's capacity to respond effectively to emergencies and prepare for unavoidable disasters, and help to enforce safety guidelines as part of active transportation plans.

Human Resources

The Human Resources Department is responsible for personnel matters affecting all city departments. Human resources serves as an internal consultant helping other city departments recruit and retain the best possible workforce, onboarding and training new employees, ensuring a fair and equitable system of personnel management, and resolving employee relations problems. This department will play a key role in community engagement training for City staff, understanding the liability of specific projects outlined in the Plan's measures and actions and updating and monitoring the City's rideshare policy to encourage increased active and public transit mode share.

Library

The Library Department provides informational, educational, and recreational materials and resources in a variety of formats to meet the needs of the community. The Library Department also collects and preserves historical documents, papers, photographs, and other memorabilia. The Library also partners with community based organizations to provide valuable services to members of the Monterey Park community including career resources, health programing, and legal assistance. This department will play a key role in helping provide information for extreme heat and other climate change education programs.

Recreation and Community Services

The Recreation and Community Services Department is responsible for the development, implementation, coordination, and delivery of recreational and leisure time activities. The programs are to promote the well-being and enjoyment of life for the City's residents through the fulfillment of their recreational, cultural, social, and educational needs. This Department will play a key role in community education and outreach, and partnering with community-based organizations and local utilities to ensure equitable transition to clean energy and other low emission opportunities. The Recreation and Community Services Department will also play a key role in assessing the effectiveness of current City cooling centers in serving the needs of vulnerable populations.

Public Works

The Public Works Department is responsible for providing and maintaining the City's infrastructure in a manner that ensures the health, safety, and welfare of the City's residents and visitors. This includes the planning, design, construction, repair and maintenance of City vehicles and equipment, and operations of public land in parks, roadways, sidewalks, public buildings, and sewer systems. This department will play a key role in developing active transportation infrastructure, nature-based solutions to climate change (e.g., Tree Master Plan, green stormwater infrastructure), and implementing programs like the Urban Water Management Plan's water conservation program.

Finance

The Finance Department works to preserve a strong financial condition by creating responsible financial strategies, effectively managing the City's resources, and providing analysis and recommendations that ensure optimal economic outcomes. The Finance Department also oversees and maintains the City's information systems and communication systems. Additionally, the Housing Division of this Department administers affordable housing. The Finance Department will play a key role in identifying funding and pathways for projects outlined in the Plan's measures and actions.

Fire

The Fire Department is responsible for providing quality emergency, preventative, and risk reduction activities to the community. Personnel are also responsible for risk identification, public education, safety education, code enforcement, increased Community Emergency Response Teams ("CERT") training, and fire investigation activities. The Fire Department is also responsible for developing the Local Hazard Mitigation Plan. This department will play a key role in working with Public Works to ensure electrification strategies are safe and equitably available and increasing the community's capacity to respond effectively to emergencies and prepare for unavoidable disasters.

Conclusion

In conclusion, while effective city leadership plays a pivotal role in steering the course toward sustainability, the success of our Sustainability Plan ultimately hinges on the active involvement and commitment of our community. City leaders provide the vision and framework, but it is through collective community support and participation that we will witness the tangible impact of emission reductions and the widespread adoption of sustainable practices. The synergy between leadership and community engagement creates a powerful force for positive change, fostering a resilient and environmentally conscious city for generations to come. Together, as stewards of our shared future, we have the opportunity to build a sustainable legacy that reflects the values and aspirations of our vibrant community.

9 - Acronyms & Abbreviations

Technical Language In The Plan

In the spheres of scientific and technical discourse, the frequent utilization of acronyms and abbreviations is customary for conciseness and precision. This section serves as an essential reference, providing definitions for the shorthand expressions encountered throughout the Sustainability Plan chapters. Whether you are a seasoned professional or a newcomer, familiarizing yourself with this table will enhance your comprehension of key terms in fields such as environmental science, technology, and climate change discussions.

AB	Assembly Bill
BAU	Business as usual
CalRecycle	California Department of Resource, Recycling, and Recover
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CARB	California Air Resources Board
CEC	California Energy Commission
CH_4	Methane
CIP	Capital Improvement Project
CNG	Compressed Natural Gas
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DOT	Department of Transportation
EO	Executive Order
EV	Electric Vehicle
GHG	Greenhouse Gas
GWP	Global Warming Potential
HFCs	Hydrofluorocarbons
ICLEI	International Council for Local Environmental Initiatives

IPCC	United Nations Intergovernmental Panel on Climate Change
kW	Kilowatt
MT	Metric Ton
MT CO_2e	Metric tons of carbon dioxide equivalent
NASA	National Aeronautics and Space Administration
N_2O	Nitrous oxide
PFCs	Perfluorocarbons
PV	Photovoltaic
RCP	Representative Concentration Pathway
RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plan
SCAG	Southern California Association of Governments
SB	Senate Bill
SF_6	Sulfur hexafluoride
TOD	Transit Oriented Development
US EPA	United States Environmental Protection Agency
VMT	Vehicle Miles Traveled
ZEV	Zero Emission Vehicle

Glossary

Term	Definition
Active Transportation	A means of transportation that is powered by human energy, for example walking or biking.
Adaptation	Adjustment or preparation of natural or human systems to a new or changing environment which moderates harm or exploits beneficial opportunities.
Anthropogenic	Made by people or resulting from human activities; usually used in the context of emissions that are produced as a result of human activities.
Atmosphere	The envelope of gases surrounding the Earth; the gases that make up the atmosphere primarily include nitrogen (78%) and oxygen (21%), as well as argon, helium, carbon dioxide, methane, and water vapor in trace amounts.
Backup Power	Any device that provides instantaneous uninterruptible power, for example, a battery or generator.
CALGreen	An abbreviated reference to the California Green Building Standards code, which sets minimum requirements for sustainable practices for construction (residential and commercial) projects throughout the state. It is updated every three years in accordance with the building cycle.
CALGreen Tier 1 & 2	Requirements beyond the mandatory policies laid out by CALGreen: Tier 1 adds additional requirements to the mandatory sustainability requirements, and Tier 2 further increases those sustainability requirements
CalRecycle	Agency that administers and provides oversight for all of California's state-managed non-hazardous waste handling and recycling programs.
California Air Resources Board (CARB)	The lead agency for climate change programs that also oversees all air pollution control efforts in California to attain and maintain health-based air quality standards.
California Building Standards Commission (CBSC)	The Commission is charged with administering California's building code adoption process, coordinating and managing the model code adoption process for state agencies, and reviewing and approving building standards adopted by state agencies, among other duties.
Carbon-free Energy	Energy produced by a resource that generates no carbon emissions, for example, wind power.
Climate Action Plan	A strategic roadmap outlining specific measures and policies to reduce greenhouse gas emissions and enhance resilience to climate change impacts.
Carbon-neutrality/Net-Zero Emissions	Balancing anthropomorphically generated emissions out by removing GHGs from the atmosphere in a process known as carbon sequestration.

Carbon Sequestration	The long-term storage or capture of carbon dioxide and other forms of carbon from the atmosphere through biological, chemical, and physical processes.
Clean Power Alliance (CPA)	A not-for-profit renewable energy provider across Los Angeles and Ventura Counties. The CPA is an administrator of the Community Choice Aggregation (CCA) program. A CCA program permits cities, counties, or other authorized entities like Community Choice Aggregators to purchase and or generate electricity for residents and businesses located within the boundaries of the jurisdiction.
Climate Hazard	A potential occurrence of climate related physical events or trends that may cause damage and loss.
Climate	The average of weather patterns over a long period of time (usually 30 or more years).
Climate Change	A change in the average conditions — such as temperature and rainfall — in a region over a long period of time.
Compressed Natural Gas (CNG)	CNG is primarily composed of methane and is stored under high pressure, making it suitable for use in vehicles and industrial processes as a sustainable and low-emission energy source.
Community Based Organization (CBO)	A public or private nonprofit organization that is representative of the community or specific segments of a community, and provides educational or outreach services to the community.
Commercial Vehicle	A vehicle which is used or maintained for the transportation of persons for hire, compensation, or profit or designed, used, or maintained primarily for the transportation of property (for example, trucks and pickups).
Complete Streets	Are designed and operated to enable safe use and support mobility for all users. Complete Streets approaches address a range of elements including sidewalks, bicycle lanes, bus lanes, public transportation stops, and median islands.
Decarbonization	Replacing technologies and services that run on fossil fuels (ex. natural gas) with ones that run on zero-carbon sources of energy (for example electricity from renewable energy like solar or wind power), ideally from renewable sources.
Disadvantaged Communities	Areas which suffer disproportionately from a combination of economic, health, and environmental burdens (e.g., poverty, high unemployment, air and water pollution, presence of hazardous wastes, as well as higher rates of asthma and heart disease).
Emissions	The release of a substance (usually a gas when referring to the subject of climate change) into the atmosphere.
Environmental Justice	The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Electric Vehicle (EV)	A vehicle that uses one or more electric motors or traction motors for propulsion.
Electrification	Replacing technologies or processes that use fossil fuels, like internal combustion engines and gas boilers, with electrically-powered equivalents, such as electric vehicles or heat pumps. These replacements are typically more efficient, reducing energy demand, and have a growing impact on emissions as electricity generation is decarbonized.
Energy Storage	Can provide frequency regulation to maintain balance between the network's load and detected power generated, achieving more reliable power supplies. Batteries are an example of energy storage.
Fossil Fuel	A general term for fuel formed from decayed plants and animals that have been converted to crude oil, coal, natural gas, or heavy oils by exposure to heat and pressure in the Earth's crust.
Greenhouse Gas (GHG)	A gas that absorbs infrared radiation, traps heat in the atmosphere, and contributes to the greenhouse effect.
Global Warming Potential (GWP)	Total contribution to global warming resulting from the emission of one unit of that gas relative to one unit of the reference gas, carbon dioxide, which is assigned a value of 1.
Greywater	Greywater refers to water that has been used domestically, commercially, and industrially.
Global Warming Potential (GWP)	A measure of how much heat a greenhouse gas traps in the atmosphere over a specific time period, relative to carbon dioxide
Local Governments for Sustainability (ICLEI)	A global network of more than 1,750 local and regional governments committed to sustainable urban development – emissions estimates were calculated using ICLEI's best available methodologies.
Intergovernmental Panel on Climate Change (IPCC)	The United Nations body for assessing the science related to climate change.
Major Renovation	50% or more of the property area renovated
Mitigation	An action that will reduce or prevent greenhouse gas emissions, such as electrifying buildings that previously ran on natural gas.
Organic Material	Natural or organic materials, for example food scraps and yard waste.
Photovoltaic (PV)	Relates to the production of electric current at the junction of two substances exposed to light (e.g. solar energy).

Renewable Energy	Energy derived from natural sources that are replenished at a higher rate than they are consumed (ex. wind, biomass).
Resilience	Ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate.
Sequestration	The storage of carbon in plants or materials so that it cannot enter the atmosphere and cause additional warming.
Transportation Demand Management (TDM)	Transportation Demand Management focuses on how people make their transportation decisions, and facilitates greater usage of infrastructure for transit, ridesharing, walking, biking, and telework.
Transit Oriented Development	A type of urban development that maximizes the amount of residential, business and leisure space within walking distance of public transport.
Vehicle Miles Traveled (VMT)	The amount of total miles traveled by motor vehicle that are generated over a population over a given timeframe (Ex. 1 year).
Weather	The state of the atmosphere over a short period of time (usually an hour or day), describing if it is hot or cold, wet or dry, calm or stormy, clear or cloudy, etc.
Xeriscaping	A landscaping approach that focuses on water conservation by using drought-resistant plants and efficient irrigation techniques to create environmentally sustainable and water-efficient gardens.
Zero-Emissions-Vehicle	A vehicle that never emits exhaust gas from the onboard source of power.
Zero Waste	The conservation of all resources by means of responsible production, consumption, reuse, and recovery of materials and packaging, without burning, and with no discharges to land, water, or air that threaten human health.

10 - Appendix A: Regulatory Framework

State Climate Action History

California is a leader in championing legislation aimed at reducing the California's GHG emissions and adapting to a changing climate. California's first legislation that addressed climate change was in 1988, when Assembly Bill 4420 directed the State to prepare a GHG inventory to study the impacts of climate change. Since then, California's governors have issued several executive orders, and California's legislature has adopted numerous laws to assess climate change, analyze and reduce GHG emissions, and identify and prepare for the impacts of climate change.

Greenhouse Gas Emission Reduction

AB 32, the Global Warming Solutions Act- 2006

Assembly Bill 32 codified greenhouse gas reduction strategies, requiring California to reduce statewide GHG emissions to 1990 levels by 2020. The state achieved its 2020 GHG emissions reductions target of returning to 1990 levels in 2016, 4 years earlier than mandated by AB 32.

AB 802, the Building Energy Benchmarking Program - 2015

Requires building owners to benchmark their building's energy usage and report it to the State of California. This is known as an "Energy Benchmark". The State will then publish this data online so that owners can see how each building compares to its peers. The Building Energy Benchmarking Program requires owners of large commercial and multifamily buildings to report energy use to the California Energy Commission by June 1 annually.

SB 32, the Global Warming Solutions Act- 2016

Senate Bill 32 extended the strategies of AB 32 and set a 2030 strategy of reducing emissions 40 percent from 1990 levels

SB 375, the Sustainable Communities and Climate Protection Act-2008

Senate Bill 375 builds from AB 32 and aims to reduce GHG emissions by linking transportation funding to land use planning. It requires metropolitan planning organizations to create a sustainable communities strategy (SCS) for reducing urban sprawl in their regional transportation plans. Each SCS will demonstrate strategies the region will use to achieve the GHG emissions reduction target set by CARB for 2020 and 2035.

AB 1279, the California Climate Crisis Act- 2022

AB 1279 codified the statewide carbon neutrality, requiring California to reach carbon neutrality no later than 2045.

Renewable Energy Procurement

SB 350, the Clean Energy and Pollution Reduction Act-2015

Established clean energy, clean air, and greenhouse gas reduction strategies, including reducing GHG to 40 percent below 1990 levels by 2030 and to 80 percent below 1990 levels by 2050.

SB 100, the 100 Percent Clean Energy Act- 2018

Established a landmark Measure requiring renewable energy and zero-carbon resources supply 100 percent of electric retail sales to end-use customers by 2045.

Sustainable Transportation Planning

SB 1, the Road Repair and Accountability Act-2017

Transportation funding legislation that increases the state's gasoline tax by $0.12 per gallon, raising over $5 billion per year for transportation projects including improvements in efficiency and emission reduction.

SB 375, the Sustainable Communities and Climate Protection Act-2008

Transportation planning legislation setting regional greenhouse gas emission reduction targets for passenger vehicles and requiring agencies to assess and mitigate the vehicle miles traveled (VMT) impacts of new developments.

Community Air Protection

AB 617, Community Air Protection Program-2017

Air quality legislation that increases air monitoring requirements and penalties for polluters who exceed limitations in vulnerable communities.

Disadvantaged Community Benefits

SB 535, the Greenhouse Gas Reduction Fund -2012

Established initial requirements for minimum funding levels to "Disadvantaged Communities" (DACs). The legislation gives CalEPA the responsibility for identifying those communities, stating that CalEPA's designation of disadvantaged communities must be based on "geographic, socioeconomic, public health, and environmental hazard criteria."

AB 1550, the Climate Investments for California Communities Act -2016

Established applicable minimum funding levels from funds generated by AB 32 in the Greenhouse gas Reduction Fund:

- At least 25 percent of funds must be allocated toward DACs
- At least 5 percent must be allocated toward projects within low-income communities or benefiting low-income households
- At least 5 percent must be allocated toward projects within and benefiting low-income communities, or low-income households, that are outside of a CalEPA-defined DAC but within ½ mile of a disadvantaged community

Adaptation and Resiliency

AB1482, the California Climate Adaptation Strategy -2015

Requires the California Natural Resources Agency (CNRA), in coordination with the Strategic Growth Council, to oversee and coordinate state agency actions to adapt to climate change. The bill requires CNRA to update the state's climate adaptation strategy (Safeguarding California), by July 1, 2017, and every three years thereafter.

SB246, the Integrated Climate Adaptation and Resiliency Program -2015

Established an Integrated Climate Adaptation and Resiliency Program for California as of January 1, 2017. The program coordinates regional and local efforts with state climate adaptation strategies to adapt to the impacts of climate change.

SB 379, Climate Adaptation Planning and General Plans-2015

Requires all cities and counties to address climate change adaptation and resilience, in the safety elements of their general plans, in their local hazard mitigation plans, or in stand-alone plans like the PCSP. The bill requires the climate adaptation and resilience review and update to include a set of goals, policies, and objectives based on a vulnerability assessment, as well as implementation strategies, including the conservation and implementation of natural infrastructure that may be used in adaptation projects., policies, and objectives based on a vulnerability assessment, as well as implementation strategies, including the conservation and implementation of natural infrastructure that may be used in adaptation projects.

AB2800, Infrastructure Planning -2016

Ensures that the planning and design of state infrastructure projects consider future climate change impacts including prolonged heat waves, extreme precipitation events, severe drought, increasing wildfires, and other potentially dangerous climate impacts on critical infrastructure.

SB1035, General Plan, Safety Element -2018

Requires the safety element to be revised to identify new information on fire hazards, flood hazards, and climate adaptation and resiliency strategies applicable to the city or county that was not available during the previous revision of the safety element.

SB30, Insurance: Climate Change -2018

Looks to innovative insurance and reinsurance businesses to provide opportunities for local communities and homeowners to reduce their risk to climate change impacts. The law focuses on finding incentives for investing in and insuring natural infrastructure to mitigate against climate risks.

SB852, Climate Resilience District -2022

Creates the Climate Resilience Districts Act which authorizes local agencies to create climate resilience districts to address climate change effects and impacts. The districts must be formed for the purpose of raising and allocating funding for and the operating expenses of projects designed and implemented to address climate change mitigation, adaptation, or resilience. The climate resilience districts are limited to funding projects that address sea level rise, extreme heat, extreme cold, and the risk of wildfire, drought, and the risk of flooding.

Energy Storage

AB2514, Energy Storage Targets-2010

Requires electric utilities to install minimum levels of grid-scale energy storage infrastructure.

Automobile Emission Standards

AB1493, California's Greenhouse Gas Vehicle Emission Standards -2002

Identifies climate change as a public health concern, that motor vehicles are a major source of the state's greenhouse gas emissions, and that reducing these emissions will protect public health and the environment while stimulating the economy and enhancing job opportunities. Among other things, the bill directed the Air Resources Board (CARB) to adopt regulations that achieve the maximum feasible and cost effective reduction of greenhouse gas emissions from passenger vehicles, beginning with the 2009 model year.

Short-Lived Climate Pollutant Reduction

SB605, Short-Lived Climate Pollutant Reduction Strategy -2016

Directed CARB, in coordination with other State agencies and local air districts to develop a comprehensive short-lived climate pollutant (SLCP) reduction strategy for methane, fluorinated gases (HFCs), and black carbon.

SB1383, Mandatory Organics Recycling -2016

Statewide effort to reduce emissions of short-lived climate pollutants by reducing organic waste disposal to 50% by 2020 and 75% by 2025.

California Climate Registry

SB1771, Greenhouse Gas Emission Reductions-2000

Established the California Climate Registry, which cataloged early greenhouse gas emission reductions and set reduction goals and standards for measurement and verification, as a precursor to AB 32 as well as other states' and international efforts.

Electric Vehicle Charging

AB1236, EVCS Permit Streamlining-2015

Requires local governments to develop streamlined ordinances for electric vehicle charging infrastructure.

Appendix B: Completed Projects

Low Emission Development

Project	Department	Completion Year
Drafted code updates for Mixed Use Zones with Development Standards and Design Guidelines that reduce Vehicle Miles Traveled (VMT)	Community Development	2023
Completed Spirit Bus and Dial-A-Ride evaluation too identify potential barriers and opportunities for improvement	Public Works	2023
Partnered with Metro to accept TAP fare and special fare types on Spirit Buses, including reduced fare during special events	Public Works	2023
Implemented the Passio Go! App to provide real time information on Spirit Bus Services to increase ridership and rider experience	Public Works	2023
Partnered with SoCal Edison to provide free seminars on electric induction cooking for small businesses	Economic Development	2023
Updated the Density Bonus Ordinance to include a Green Building Incentive that encourages building practices above standard requirements	Planning	2023
Adopted a Complete Streets Policy	City Council	2022
Added three electric parking enforcement vehicles to become the first SGV agency to have an all-electric parking enforcement fleet	Public Works	2021
Retrofit 3,248 streetlights with LED bulbs	Public Works	2021
Adopted a Measure implementing Vehicle Miles Traveled for the purpose of analyzing transportation impacts under CEQA	Public Works	2021
Added three CNG vehicles to the Spirit Bus fleet	Public Works	2019
Replaced four city cars with hybrid vehicles for engineering, planning, management services, and fire	Public Works	2018
Installed EVGO charger station at City Hall	Public Works	2017


Retrofit external and internal lighting and HVAC systems at City Siemens facility	Public Works	2016
Replaced 32W lighting with 25W LED lamps at 13 City facilities through the Direct Install Program	Public Works	2016
Installed public CNG fueling stated at City Yard	Public Works	2015
Adopted the Monterey Park Bicycle Master Plan by reference as a component of the large San Gabriel Valley Regional Bicycle Master Plan	Public Works Planning	2014
Installed solar panels at Langley Center, Bruggemeyer Library, and City Hall	Public Works	2013
Adopted a Climate Action Plan	City Council	2012
Adopted voluntary CALGreen Tier 1 policies to the building code	Community Development	2011
Adopted the Downtown Monterey Park Mixed-Use and Pedestrian Linkages Plan	Public Works	2005

Equitable Development

Project	Department	Completion Year
Drafted revised Safety Element and new Environmental Justice Elements for City Council review and approval	Community Development	2022
Formed the Environmental Commission to develop and implement policies and increase public awareness of environmental programs	Public Works	2005

Nature Based Development

Project	Department	Completion Year
Adopted a Water Conservation ordinance and implementation policies to address ongoing drought conditions	Public Works	2020
Implemented Industrial Waste Program to prevent impacts of sewage overflows	Public Works	2017
Renovated the Monterey Park Demonstration Garden to offer examples of smart irrigation methods and California Native landscaping	Public Works	2017
Replaced water meters with Automatic Meter Reading systems to improve water usage reporting accuracy	Public Works	2016
Implemented a tiered water rates structure to promote water conservation by customers	Recreation and Community Services Public Works	2014

Circular Development

Project	Department	Completion Year
Provided City Staff with high quality reusable water bottles to reduce single use plastics	HR and Risk Management	2023
Updated Administrative Policy 20-02: Close the Loop/Buy Recycled to include SB 1383 Organics Recycling requirements	City Managers	2022
Joined the SGVCOG Regional Food Recovery Program for compliance with SB 1383	Public Works	2022
Utilized recycled tires for street resurfacing projects to divert passenger tires from the landfill	Public Works	2020

Resilient Development

Action	Responsibility	Timeframe
Drafted revised Safety Element and new Environmental Justice Elements for City Council review and approval.	Community Development	2022
Promoted Earthquake Brace & Bolt Supplemental Grants for Income-Eligible Homeowners	Building & Safety Division	2022
Formed the Environmental Commission to develop and implement policies and increase public awareness of environmental programs	Environmental Commission	2005

Appendix C: Outreach

Outreach for the Sustainability Plan included workshops and a Sustainability Survey which provides a detailed record of the community's perspective on climate change and priorities on specific climate actions. The survey functions as a pivotal resource for comprehending the perspectives, concerns, and aspirations of Monterey Park residents, establishing a data-driven foundation for the formulation of sustainable initiatives.

Sustainability Survey

Term definitions as used in this survey:

Climate Change: Long-term changes in average temperature and weather patterns across the planet.

Sustainability: Maintaining conditions under which humans and nature can exist in productive harmony to support present and future generations.

Greenhouse Gasses: Gasses that trap heat in the atmosphere and contribute to warming temperatures.

Many human activities create GHGs such as electricity generation, transportation fuel, and decomposing waste in landfills.

Name: _____ Email: _____

Are you a resident of Monterey Park? ◯ Yes ◯ No

Would you like to receive email updates on the Going Green program and involvement opportunities? ◯ Yes ◯ No

---

How would you like to receive news about the City's sustainability work? Select all that apply.

◯ Email ◯ Mail ◯ Twitter ◯ Instagram

◯ Text ◯ MPK-TV ◯ Facebook ◯ Cascades Newspaper

Rank your level of agreement with the following statements:

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
I understand what climate change means	◯	◯	◯	◯	◯
I understand what sustainability means	◯	◯	◯	◯	◯
The City needs to take action to protect the environment	◯	◯	◯	◯	◯
I would like more opportunities to learn about climate change and sustainability	◯	◯	◯	◯	◯

In your opinion, how important are the following issues for the City of Monterey Park?

	NOT IMPORTANT	SOMEWHAT IMPORTANT	IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
Air Pollution	○	○	○	○	○
Water Pollution	○	○	○	○	○
Litter	○	○	○	○	○
Traffic/Congestion	○	○	○	○	○
Extreme Heat & Drought	○	○	○	○	○
Decreasing Waste	○	○	○	○	○

Rank your level of agreement with the following statements:

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
I am aware of sustainable programs and activities offered in my community	○	○	○	○	○
I know how to reduce my water use at home	○	○	○	○	○
I know how to recycle and reduce waste at home	○	○	○	○	○
I know how to reduce my electricity use at home	○	○	○	○	○
I am aware of programs and rebates available to make my home more efficient	○	○	○	○	○

Are you aware of the City's Climate Action Plan or sustainability efforts?

○ Yes ○ Somewhat ○ No

Which strategies should the community and City implement to improve **transportation** sustainability? Rank using 1-5 where 1 is the most important.

#___ Add bike and pedestrian pathways, trails, and sidewalks

#___ Improve convenience of public transit (e.g., Spirit Bus, increased weekend transit service)

#___ Add electric vehicle charging stations and incentives to drive electric vehicles

#___ Transition school and transit buses to electric or hybrid

#___ Improve pedestrian safety (e.g., sidewalk maintenance, streetlights, etc.)

Which strategies should the community and City implement to improve **energy** conservation? Rank using 1-5 where 1 is the most important.

#___ Use more renewable energy in city buildings and parks (e.g., solar, wind, etc.)

#___ Make it more affordable to install rooftop solar on homes (e.g. solar pilot program)

#___ Require new homes and commercial buildings to be more energy efficient

#___ Provide incentives to replace gas heating systems and appliances with efficient electric versions in existing homes and commercial buildings

#___ Set a target to achieve low greenhouse gas emissions

Which strategies should the community and City implement to improve **water** conservation? Rank using 1-5 where 1 is the most important.

#___ Provide incentives to replace residential lawns with drought-tolerant landscaping

#___Promote drought-tolerant landscaping in public spaces

#___ Provide water check-ups to homes and businesses to optimize water use

#___ Promote "green infrastructure" to economically and sustainably manage stormwater (e.g., rain gardens, rainwater harvesting systems, etc.)

#___Provide classes on how to reduce water use at home

Which strategies should the community and City implement to **decrease waste**?
Rank using 1-4 where 1 is the most important.

#___ Improve recycling habits through workshops and handouts

#___ Take steps to decrease single use plastics (e.g., disposable plastic water bottles, takeout boxes, cutlery, etc.)

#___ Divert excess food from grocery stores and restaurants to provide for those in need

#___ Host item-swapping events for Monterey Park Residents

How much do you think climate change impacts your personal health and safety?

Not at all ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ An extreme amount

1 2 3 4 5 6 7 8 9 10

Do you have any ideas to improve sustainability in the City of Monterey Park?

Thank you for helping Monterey Park Go Green!

Please send any questions or comments to
GoingGreen@montereypark.ca.gov

走向綠色：蒙特利公園市可持續性調查

本調查中使用的術語定義氣候變化：全球範圍內平均溫度和天氣模式的長期變化。

可持續性：維持人類與自然能夠以富有成效的和諧共存的條件，以支持現代和後代。

溫室氣體：在大氣中捕獲熱量並導致溫度升高的氣體。
許多人類活動都會產生溫室氣體，例如發電、運輸燃料和在垃圾填埋場分解廢物。

姓名: _____ 電郵: _____

您是蒙特利公園市的居民嗎? ◯ 是 ◯ 不是

您想透過電子郵件收到有關走向绿色計劃和參與機會的最新資訊嗎? ◯ 是 ◯ 不是

您選擇用甚麼方式接收有關市政府可持續策劃進展的最新消息？選擇所有適合的答案。

◯ 電郵 ◯ 郵件 ◯ 推特 ◯ Instagram

◯ 短信 ◯ MPK電視 ◯ 臉書 ◯ Cascades 報紙

請用以下陳述對您的同意程度進行排名：

	強烈反對	不同意	中立	同意	非常同意
I我明白氣候變化意味著什麼	◯	◯	◯	◯	◯
我明白可持續性意味著什麼	◯	◯	◯	◯	◯
城市需要採取行動保護環境	◯	◯	◯	◯	◯
我希望有更多機會了解氣候變化和可持續性	◯	◯	◯	◯	◯

依您看來，以下問題對蒙特利公園市有多重要?

	不重要	有一些重要	重要的	很重要	極其重要
空氣污染	○	○	○	○	○
水污染	○	○	○	○	○
垃圾	○	○	○	○	○
交通擁堵	○	○	○	○	○
極端高溫和乾旱	○	○	○	○	○
減少浪費	○	○	○	○	○

請對以下敍述的認同程度進行排名，請將對您最重要的排在最先

	強烈反對	不同意	中立	同意	非常同意
我知道社區內有可持續性發展計劃及活動	○	○	○	○	○
我知道如何減少家用水量	○	○	○	○	○
我知道如何在家做資源回收及減少垃圾排量	○	○	○	○	○
我知道如何減少家用電量	○	○	○	○	○
I我知道有改善住屋能源效率的計劃及補貼	○	○	○	○	○

您知道市政府的氣候行動和可持續發展計劃嗎?

○ 是　○ 有些/略有所聞　○ 不是

社區及市府應該實行那些措施以改善交通可持續性？請將對您最重要的排在最先

#___ 增設單車及行人專用道

#___ 增加公共運輸系統便利程度（例如：Spirit 巴士、增加週末服務等）

#___ 增設電動汽車充電站及獎勵使用電動車

#___ 將校車及公共巴士改為電動或混合動力

#___ 改善行人安全以鼓勵行走及騎單車（例如:人行道維護、路燈等）

社區及市府應該實行那些措施節能？請將對您最重要的排在最先

#___ 市府管理的建築物及公園內使用更多可再生能源（例如：太陽能、風力等）

#___ 減少在屋頂裝設太陽能發電板的成本（例：太陽能試點計劃）

#___ 新建房屋和工業用建築物規定增加節能性

#___ 獎勵現有房屋和工業用建築物將天然氣暖氣系統替換成較節能的電暖爐

#___ 設置降低溫室氣體排放量目標

社區及市府應該實行那些措施節省水資源用量？請將對您最重要的排在最先

#___ 設置降低溫室氣體排放量目標

#___公共區域推廣耐旱景觀

#___ 為家庭和企業提供用水檢查以優化用水

#___ 鼓勵綠色基建，在經濟及資源利用層面更有效地管理雨水（例：雨水花園、回收雨水等）

#___提供如何減少家用水量的課程

社區及市府應該實行那些措施減少垃圾？請將對您最重要的排在最先

#___ 用課程及發派傳單提倡資源回收習慣

#___為蒙特利公園居民組織物品交換活動

#___ 採取行動減少一次性塑膠用量（例如：礦泉水瓶、外賣盒、餐具等）

#___ 將超市和餐館多餘的食物，提供給有需要的人

您認為氣候變化對您的個人健康和安全有多大影響？

一點也沒有 ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ 極之大

一 二 三 四 五 六 七 八 九 十

您有對於蒙特利公園市改善可持續性有任何其他想法嗎？

感謝您協助使蒙特利公園市更加環保

請將問題或意見發送至 GoingGreen@montereypark.ca.gov

Appendix D: Greenhouse Gas Inventory

Monterey Park Sustainability Plan

Greenhouse Gas Inventory, Forecast, and Targets Report

prepared by

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October 2023

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Tables

Figures

1 Introduction

This document presents the data, methods, and results for the 2021 greenhouse gas (GHG) emissions inventory, forecast, and targets for the City of Monterey Park (the City). The 2021 GHG emissions inventory will be used to update the City's GHG emission reduction targets in support of the development of the City's Sustainability plan (SP).

California (the State) has set statewide GHG emissions reduction goals to mitigate negative climate change impacts and transition the State to a low-carbon economy. In particular, the State has established goals to reduce statewide GHG emissions 40 percent below 1990 levels by 2030, as established by Senate Bill (SB) 32 and achieve net zero GHG emissions as soon as possible, but no later than 2045, as established by Assembly Bill (AB) 1279.[1] The California Air Resources Board (CARB) is the agency responsible for addressing these goals and developing strategies to achieve them. Many local jurisdictions are completing their own GHG inventories, forecasts, and Climate Action Plans (CAPs) to align with SB 32 and AB 1279.

Local governments play a fundamental role in reducing local GHG emissions and preparing for a more resilient future. Local government policies can influence high-emissions behavior and mitigate climate change effects.[2] To this end, the City is developing a SP to align with SB 32 and AB 1279 goals, increase resilience and climate change preparedness, maintain healthy air and water resources, and improve community health and the local economy. The forthcoming SP will include the 2021 GHG inventory for the community (2021 Community GHG Inventory) and the associated GHG emissions forecast, in addition to the municipal operations inventory (2021 Municipal GHG Inventory). Municipal GHG emissions are a subset of community GHG emissions and are therefore already accounted for within the community GHG inventory and associated forecast.

The 2021 Community GHG Inventory completed for the City includes GHG emissions from activities within the City's jurisdictional boundaries during 2021. Based on the inventory, Rincon developed a back-cast of the City's GHG emissions to 1990 to set emissions targets in alignment with the State's goals as well as a forecasted emission levels in 2030, 2035, 2040, and 2045. The emissions forecast provides an up-to-date projection of how GHG emissions are expected to change for the City in the future based on changes in population and employment, as well as existing State and federal legislation aimed at reducing GHG emissions through 2045. This document also presents provisional GHG targets and a gap analysis, which identifies the level of GHG emissions reduction that will need to be achieved through local action to meet the GHG emissions reduction targets. The analysis in this document relies on the best available data and calculation methodologies currently available.

[1] AB 1279 defines net zero GHG emissions as reducing GHG emissions at least 85 percent below 1990 levels. California also set a goal to reach 1990 levels by 2020, as established by AB 32, The 2020 goal set by AB 32 was achieved by the State in 2016. CARB. Frequently Asked Questions – California's 2022 Climate Scoping Plan. Accessed November 14, 2022 at: https://ww2.arb.ca.gov/sites/default/files/2022-06/2022_Scoping_Plan_FAQ_6.21.22.pdf

[2] CARB. California's 2017 Climate Change Scoping Plan. Accessed November 14, 2022 at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf

2 Background

2.1 Legislative Context

The State has developed statewide legislative goals and programs to reduce GHG emissions. CARB has issued guidance concerning the establishment of GHG emissions reduction targets for local CAPs so communities can contribute their fair share towards the State's achievement of the GHG emissions reduction goals. In the first Climate Change Scoping Plan (referred to as the 2008 Scoping Plan), CARB encouraged local governments to adopt a reduction target for their own community emissions that parallels the State commitment to reduce GHG emissions.[3] In 2017, CARB published the 2017 Climate Change Scoping Plan (referred to as the 2017 Scoping Plan Update) outlining the strategies the State will employ to reach the additional State targets set by SB 32.[4]

On May 10th, 2022, the Draft 2022 California Climate Change Scoping Plan Update was published for public comment and includes recommendations for achieving the goal of carbon neutrality by 2045 codified by AB 1279.[5]

The State of California has adopted legislation and policies to address climate change, the most relevant of which are summarized below.

- **Executive Order S-3-05**, signed in 2005, establishes statewide GHG emissions reduction goals to achieve long-term climate stabilization as follows: by 2020, reduce GHG emissions to 1990 levels and by 2050, reduce GHG emissions to 80 percent below 1990 levels. The 2050 goal was accelerated by the 2045 carbon neutral goal established by EO B-55-18 and AB 1279, as discussed below.
- **Assembly Bill 32**, known as the Global Warming Solutions Act of 2006, requires California's GHG emissions be reduced to 1990 levels by the year 2020 (approximately a 15 percent reduction from 2005 to 2008 levels). The 2008 Scoping Plan identifies mandatory and voluntary measures to achieve the statewide 2020 GHG emissions limit.
- **Senate Bill 32**, signed in 2016, establishes a statewide mid-term GHG emissions reduction goal of 40 percent below 1990 levels by 2030. CARB formally adopted the 2017 Scoping Plan Update in December 2017, laying the roadmap to achieve 2030 goals and giving guidance to achieve substantial progress toward the 2050 State goals. The Draft 2022 Scoping Plan Update provides further guidance for reaching the State's SB 32 goal.
- **Executive Order B-55-18**, signed in 2018, expanded upon EO S-3-05 by creating a statewide GHG emissions goal of carbon neutrality by 2045. EO S-55-18 identifies CARB as the lead agency to develop a framework for implementation and progress tracking toward this goal in the 2022 Climate Change Scoping Plan Update.

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[3] CARB. Climate Change Scoping Plan: A Framework for Change. Dec. 2008. Accessed November 14, 2022 at: ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/document/adopted_scoping_plan.pdf

[4] CARB. California's 2017 Climate Change Scoping Plan. Accessed November 14, 2022 at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf

[5] CARB. Draft 2022 Scoping Plan Update. Accessed November 14, 2022 at: https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf

- **Assembly Bill 1279**, known as the California Climate Crisis Act, signed by the governor in 2022, codifies the GHG emissions reduction goals of achieving carbon neutrality by 2045 and expands upon this goal to define carbon neutrality as reducing direct emissions 85 percent below 1990 levels and removing the remaining 15 percent of emissions via other technologies and practices, like carbon sequestration. The 2022 Scoping Plan Update November 2022 provides the pathway for reaching the State's AB 1279 goal.

2.2 Climate Science Context

Greenhouse Gases

GHGs are chemical compounds found in the earth's atmosphere which affect climate conditions by trapping infrared radiation from sunlight which can serve to raise global temperatures. Emissions can occur from natural processes as well as human activities which release excess GHGs into the atmosphere. Table 1 presents the six internationally recognized GHGs commonly quantified in GHG inventories. The City's 2021 inventories focus on the three GHGs most relevant to the City's operations: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). The other gases (hydrofluorocarbons, perfluorocarbons, and sulfur hexafluorides) are emitted primarily in private sector manufacturing and electricity transmission and are therefore omitted from the inventory. This approach is consistent with typical community and municipal inventory approaches, as industrial emissions are typically outside of the City's jurisdictional control. Table 1 also includes the global warming potentials (GWP) for each gas. The 2021 inventories used 100-year GWPs for each gas that are consistent with the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report,[6] which were also used by the State in the latest State-wide GHG emissions inventory. The GWP refers to the ability of each gas to trap heat in the atmosphere. For example, one pound of methane gas has 25 times more heat capturing potential than one pound of carbon dioxide gas. GHG emissions are reported in metric tons of CO_2 equivalent (MT CO_2e).

Table 1 2021 Inventory GHGs and GWPs

Greenhouse Gas	Primary Source	100-year GWP
Carbon dioxide (CO_2)	Combustion	1
Methane (CH_4)	Combustion, anaerobic decomposition of organic waste (e.g., in landfills, wastewater treatment plants)	25
Nitrous Oxide (N_2O)	Leaking refrigerants and fire suppressants	298
Hydrofluorocarbons	Leaking refrigerants and fire suppressants	4 - 12,400
Perfluorocarbons	Aluminum production, semiconductor manufacturing, HVAC equipment manufacturing	6,630 - 11,100
Sulfur Hexafluoride (SH6)	Transmission and distribution of power	23,500

Source: Intergovernmental Panel on Climate Change (IPCC). 2007. AR4 Synthesis Report: Climate Change 2007. Available at: https://www.ipcc.ch/assessment-report/ar4/

[6] Intergovernmental Panel on Climate Change (IPCC). 2014. AR5 Synthesis Report: Climate Change 2014. Accessed January 5, 2023 at: https://www.ipcc.ch/report/ar5/syr/

3 GHG Emissions Inventory - Community

Conducting a GHG emissions inventory provides a comprehensive understanding of a jurisdiction's GHG emissions, and may be developed to serve the following purposes:

- Establishes perspective of GHG emissions conditions in the applicable inventory year.
- Provide an understanding of where the highest sources of GHG emissions in the jurisdiction originate and where the greatest opportunities for emissions reduction exist.
- Create a GHG emissions baseline from which the jurisdiction can establish a forecast, reduction targets, and track progress over time.

GHG inventories are developed by identifying the sources and sinks (sectors) for GHGs within the geographic or system boundary of interest (e.g., City), collecting activity data for each sector, and applying an emissions factor to determine the carbon dioxide equivalence (CO_2e). On the level of cities or counties, there are often many potential sectors contributing to the jurisdiction's GHG emissions. However only a select few sectors are typically considered the major contributors to the jurisdiction's GHG inventory. The GHG emissions sectors used for the City's GHG inventory are identified in Section 3.

3.1 Methodology

Protocol

The City's 2021 Community GHG Inventory was developed in alignment with accounting protocols provided by the Local Governments for Sustainability International Council for Local Environmental Initiatives (ICLEI) as recommended by the Association of Environmental Professionals (AEP) and the California Office of Planning and Research (OPR).[7] ICLEI protocols are designed for local-scale accounting of GHG emissions that contribute to climate change and provide authoritative guidance to account for GHG emissions accurately and consistently. The ICLEI U.S. Community Protocol for Accounting and Reporting Greenhouse Gas Emissions Version 1.2 (Community Protocol) serves to guide the measurement and reporting of GHG emissions in a standardized way and is used by other jurisdictions to support their own inventory, forecast, and climate action planning efforts. The Community Protocol also includes steps to evaluate the relevance, completeness, consistency, transparency, and accuracy of data used in the GHG inventory.

GHG emissions were calculated by multiplying the activity data in each GHG emissions sector (e.g., transportation, energy, waste, water and wastewater) by an associated emission factor. Activity data refer to the relevant measured or estimated level of GHG-generating activity (e.g., energy consumption, miles traveled). Emission factors are observation-based conversion factors used to equate activity data to generated GHG emissions. The 2021 Community GHG Inventory leverages the latest available models and best available data in accordance with the Community Protocol. The inventory serves to provide a comprehensive understanding of the community's current GHG

[7] Association of Environmental Professionals (AEP). 2013. AEP Climate Change Committee's "The California Supplement to the United States Community-Wide Greenhouse Gas (GHG) Emissions Protocol". Available at: https://califaep.org/docs/California_Supplement_to_the_National_Protocol.pdf

emissions. The following sections contain further information on the inventory approach, calculation methodologies, data used, and results.

Emissions Boundary

The City's community inventory covers the relevant emissions sources within the boundary of the City. The inventory thereby reflects emissions sectors over which the City has jurisdictional control and influence. Sectors where the jurisdiction has limited influence are generally excluded from the 2021 GHG Community Inventory as the City does not have the power to develop measures to impact associated emissions. The emissions boundary set forth in the analysis here in aligns with general GHG inventory accounting principles as well as methods set forth by the Community Protocol.

Scope

The Community Protocol recommends reporting GHG emissions from five basic reporting activities in a community inventory, which include:

- Use of electricity by the community
- Use of fuel in residential and commercial stationary combustion equipment
- On-road passenger and freight motor vehicle travel
- Use of energy in potable water and wastewater treatment and distribution
- Generation of solid waste by the community

The Community Protocol also provides recommendations for additional GHG emissions source reporting for activities that can be influenced by the accounting agency. Based on reporting practices in California, it is recommended that GHG emissions from off-road equipment fuel combustion and wastewater treatment processes are also included in community GHG emissions inventories. GHG emissions sources can be categorized more generally into the following five activity sectors:

- Electricity
- Natural Gas
- Transportation
- Water and Wastewater
- Solid Waste

The City's 2021 Community GHG Inventory includes an assessment of the community-wide GHG emissions associated with these five sectors which serve as the basis for the GHG emissions forecast and target setting.

3.2 2021 Community GHG Emissions Inventory

3.2.1 Energy

Energy: Residential and Nonresidential Electricity

The community's residential and nonresidential sectors source electricity solely from Southern California Edison (SCE). SCE provided the activity data through electricity usage reports for the residential sector and nonresidential sector (including commercial, industrial, and agricultural

sectors), though agricultural energy use for SCE did not pass the 15/15 Rule[8] and is aggregated in the reported industrial energy use. The State's Cap and Trade program regulates industrial GHG emissions. Because a jurisdiction has little control and influence over such emissions, industrial electricity reported by SCE was excluded from the 2021 Community GHG Inventory.

Emissions from residential and nonresidential electricity were calculated using Community Protocol Equation BE.2.1. To account for only electricity only consumed in the built environment, equation 3.1 subtracts electricity consumed by electric vehicles (EVs) from total purchased electricity by removing passenger car EV electricity use from residential electricity consumption and commercial and bus EV electricity consumption from nonresidential consumption. Electricity use from passenger, commercial, and bus EVs are instead accounted for under the transportation sector of the inventory to provide a more thorough differentiation between building and transportation sector emissions. More information regarding EV energy use can be found in Section 3.2.2. Equation 3.1 and Table 2 provide the equation, associated parameters, and data sources used to quantify GHG emissions associated with community electricity consumption.

EQUATION 3.1

BE.2.1 RESIDENTIAL/NONRESIDENTIAL ELECTRICITY SECTOR EMISSIONS

$$CO_2e_{electricity,j} = \sum_i \left(Elec_{i,j} - EV_{i,j}\right) \times EF_{elec,i,j} \quad 3.1$$

Table 2 Emissions Parameters and Data Sources – Community Electricity Use BE.2.1

Definition	Parameter	Value	Unit	Data Source
Annual GHG emissions from electricity consumption per building type	$CO_2e_{electricity,j}$	See Table 4	MT CO_2e/year	Calculated
Electricity consumption per building type per energy provider	$Elec_{i,j}$	See Table 3	kWh/year	SCE Electricity Report[1]
Attributed electric vehicle electricity consumption	$EV_{i,j}$	See Table 3	kWh/year	EMFAC2021[2]
Electricity emission factor based on energy provider	$EF_{elec,i,j}$	See Table 4	MT CO_2e/kWh	SCE 2021 Power Content Label[3]
Energy Providers	i	SCE	Categorical	
Building type	j	Residential Nonresidential[4]	Categorical	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; MWh = megawatt hour

1. Southern California Edison (SCE) Electricity Report provided by the City via SharePoint on June 30, 2023

2. California Air and Resources Board (CARB). 2023. Emission FACtor (EMFAC2021 v1.0.2) Model. Available at: https://arb.ca.gov/emfac/emissions-inventory/5e0cb7d6006cc10661f4b3ffb9c120a486d46ea6

3. California Energy Commission (CEC). 2023. 2021 Power Content Label submitted by Southern California Edison. Available at: https://www.energy.ca.gov/filebrowser/download/4676

4. Nonresidential includes kWh consumption from commercial sources and excludes energy consumption from industrial and agricultural sources.

[8] The 15/15 Rule is a policy put in place by the California Public Utilities Commission which protects the privacy of energy users. Aggregated energy information must have more than 15 customers, with no one customer representing 15 percent of the aggregated energy consumption. SCE reports kWh usage for the agricultural sector to be between 8,000,000 – 9,000,000 kWh annually.

Table 3 below shows the SCE provided electricity activity data, allocated EV electricity use data, and subsequent building activity data used to determine GHG emissions for the community's electricity consumption in the built environment.

Table 3 Community Residential and Nonresidential Electricity Activity Data Adjustment

Sector	Provider	Provided Activity Data [kWh]	Attributed EV[1] [kWh]	Building Activity Data [kWh]
Residential	SCE	108,960,575	4,462,398	104,498,177
Nonresidential[2]	SCE	108,159,810	4,486	108,155,324

Notes: kWh = kilowatt hour; MT CO_2e = Metric tons of carbon dioxide equivalent; EV = electric vehicles

1. Attributed EV allocates electric vehicle kWh consumption to each provider based on the vehicle type, electricity sector, and proportion of electricity provided by each provider per sector. EV kWh usage from passenger vehicles is removed from residential electricity, while commercial and bus EV kWh usage is removed from nonresidential electricity.

2. Nonresidential includes kWh consumption from commercial sources and excludes energy consumption from industrial and agricultural sources.

Resulting activity data, emissions factors, and GHG emissions per building type and provider is summarized in Table 4.

Table 4 Community Residential and Nonresidential Electricity GHG Emissions Calculations

Sector	Provider	Building Activity Data [kWh]	Emission Factor [MT CO2e/kWh]	GHG Emissions [MT CO2e]
Residential	SCE	104,498,177	0.000263	27,492
Nonresidential	SCE	108,155,324	0.000263	28,454

Notes: kWh = kilowatt hour; MT CO_2e = Metric tons of carbon dioxide equivalent

Energy: Electricity Transmission and Distribution Losses

Electricity Transmission and Distribution (T&D) losses arise from electricity lost during delivery to the buildings and associated end-uses in the City. Electricity T&D losses occur in the electricity transmission and distribution system and are therefore upstream of the delivery endpoints located within the City's jurisdictional boundaries. This means this electricity is lost before it is counted. However, T&D losses are estimated and included in the 2021 Community GHG Inventory as they are associated with energy usage in the City and thereby directly impacted by the community's electricity consumption. Additionally, emissions from T&D losses are recommended for inclusions in community GHG inventories by the Community Protocol. Equation 3.2 and Table 5 provide the calculation method, associated parameters, and data sources used to quantify GHG emissions associated with community T&D losses from electricity consumption. T&D losses associated with EV electricity use are considered negligible and therefore are included in the quantification of residential and nonresidential electricity T&D.

EQUATION 3.2

BE.4 ELECTRICITY T&D LOSS SECTOR EMISSIONS

$$CO_2e_{T\&D,j} = \sum_i Elec_{i,j} \times L_{T\&D} \times EF_{elec,i,j} \quad 3.2$$

Table 5 Emissions Parameters and Data Sources – Community Electricity T&D Loss

Definition	Parameter	Value	Unit	Data Source
Annual GHG emissions from transmission and distribution losses per building type	$CO_2e_{T\&D,i}$	See Table 6	MT CO_2e/year	Calculated
Electricity consumption per energy provider and building type	$Elec_{i,j}$	See Table 6	kWh/year	SCE invoice request[1]
Electricity emissions factor per energy provider and building type	$EF_{elec,i,j}$	See Table 6	MT CO_2e/kWh	SCE 2021 Power Content Label[2]
Electricity loss factor	$L_{T\&D}$	4.40%	Percent	EPA eGRID[3]
Energy Providers	i	SCE	Categorical	
Building type	j	Residential Nonresidential[4]	Categorical	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; MWh = megawatt hour

1. Southern California Edison (SCE) Electricity Report provided by the City via SharePoint on June 30, 2023

2. California Energy Commission (CEC). 2023. 2021 Power Content Label submitted by Southern California Edison. Available at: https://www.energy.ca.gov/filebrowser/download/4676

3. Environmental Protection Agency (EPA). 2023. eGRID Data Explorer 2021 Western Energy Grid. Available at: https://www.epa.gov/egrid/data-explorer

4. Nonresidential includes kWh consumption from commercial sources and excludes energy consumption from industrial and agricultural sources.

The activity data, emissions factors, and GHG emissions associated with electricity T&D losses is summarized in Table 4 per building type and provider.

Table 6 Community Electricity T&D Loss GHG Emissions Calculations

Sector	Provider	Activity Data [kWh]	T&D Losses [kWh][1]	Emission Factor [MT CO_2e/kWh][2]	GHG Emissions [MT CO_2e]
Residential	SCE	108,960,575	4,794,265	0.000263	1,261
Nonresidential	SCE	108,159,810	4,759,032	0.000263	1,252

Notes: kWh = kilowatt hour; MT CO_2e = Metric tons of carbon dioxide equivalent

1. T&D losses include the kWh consumption associated with EV charging.

Energy: Residential and Nonresidential Natural Gas

GHG emissions from natural gas result from the stationary combustion of natural gas in both the residential and nonresidential building sectors. The City's natural gas is supplied by Southern California Gas Company (SoCalGas) which provided activity data through natural gas usage reports. GHG emission calculations are based on natural gas used in residential and nonresidential buildings (i.e., commercial, and industrial). Like industrial electricity use, industrial use of natural gas is excluded from the GHG inventories as these emissions are regulated by the Cap-and-Trade program.

Emissions from residential and nonresidential natural gas use were calculated using Community Protocol Equation BE.1.1. Though the majority of GHG emissions result from the combustion of natural gas, not all the natural gas purchased is combusted. Natural gas that leaks from pipes and processing plants has a larger GHG impact compared to combusted natural gas due to the higher global warming potential of methane. Some natural gas also leaks from fittings and appliances

within a building, after the natural gas meter which is used to quantify total gas usage. Therefore, Community Protocol has been adjusted to remove this small percentage of "behind the meter" natural gas from the combustion calculation, and instead count it as leakage. More information regarding emissions associated with natural gas leaks can be found under "Energy: Natural Gas Methane Leaks" subsection below. Equation 3.3 and Table 7 provide the equation used, associated parameters, and data sources used to quantify GHG emissions associated with community natural gas consumption in residential and nonresidential buildings.

EQUATION 3.3

BE.1.1 RESIDENTIAL/NONRESIDENTIAL NATURAL GAS SECTOR EMISSIONS

$$CO_2e_{NatGas,i} = \left(Fuel_{NG,i} - [1 - L_{enduse}]\right) \times \left[\left(EF_{NG,CO_2} \times GWP_{CO_2}\right) + \left(EF_{NG,CH_4} \times GWP_{CH_4}\right) + \left(EF_{NG,N_2O} \times GWP_{N_2O}\right)\right] \times 10^{-1} \times 10^{-3} \quad 3.3$$

Table 7 Emissions Parameters and Data Sources – Community Natural Gas Use BE.1.1

Definition	Parameter	Value	Unit	Data Source
Annual GHG emissions from stationary combustion of natural gas per building type	$CO_2e_{NatGas,i}$	See Table 8	MT CO_2e/year	Calculated
Natural gas consumed per building type	$Fuel_{NG,i}$	See Table 8	therms/year	SCG Natural Gas Report[1]
Percent natural gas lost during consumer end-use	L_{enduse}	0.50%	Percent	Environmental Defense Fund[2]
Carbon dioxide emission factor for natural gas combustion	EF_{NG,CO_2}	53.06	kg CO_2/MMBtu natural gas	EPA Emission Factors Hub[3]
Methane emission factor for natural gas combustion	EF_{NG,CH_4}	0.001	kg CH_4/MMBtu natural gas	EPA Emission Factors Hub
Nitrous oxide emission factor for natural gas combustion	EF_{NG,N_2O}	0.0001	kg N_2O/mmBTU natural gas	EPA Emission Factors Hub
Global warming potential of carbon dioxide	GWP_{CO_2}	1		IPCC Fourth Assessment Report[4]
Global warming potential of methane	GWP_{CH_4}	25		IPCC Fourth Assessment Report
Global warming potential of nitrous oxide	GWP_{N_2O}	298		IPCC Fourth Assessment Report
Conversion factor	10^{-1}	0.1	MMBtu/therm	
Conversion factor	10^{-3}	0.001	MT/kg	
Building type (i.e. residential or nonresidential)	i	Residential Nonresidential	Categorical	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; therms = thermal unit; MMBtu = metric million British thermal unit; kg = kilograms

1. Southern California Gas (SCG) Natural Gas Report provided by the City via SharePoint on June 30, 2023
2. Environmental Defense Fund USER GUIDE FOR NATURAL GAS LEAKAGE RATE MODELING TOOL. Available at: https://www.edf.org/sites/default/files/US-Natural-Gas-Leakage-Model-User-Guide.pdf
3. Environmental Protection Agency (EPA). 2022. GHG Emission Factors Hub (April, 2022). Available at: https://www.epa.gov/climateleadership/ghg-emission-factors-hub

Definition	Parameter	Value	Unit	Data Source

4. Intergovernmental Panel on Climate Change (IPCC). 2007. AR4 Synthesis Report: Climate Change 2007. Available at: https://www.ipcc.ch/assessment-report/ar4/

5. Nonresidential includes natural gas use from commercial sources and excludes energy consumption from industrial and sources.

The total natural gas consumption, combusted natural gas activity data, emissions factors, and GHG emissions associated with community natural gas use is summarized in Table 8 per building type and provider.

Table 8 Community Residential and Nonresidential Natural Gas GHG Emissions Calculations

Sector	Provided Activity Data [therms]	End-use Leakage [therms]	Combustion Activity Data [therms]	Emissions Factor [MT CO_2e/therm]	GHG Emissions [MT CO_2e]
Residential	5,992,889	29,964	5,962,925	0.005311	31,672
Nonresidential	2,818,116	14,091	2,804,025	0.005311	14,894

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent

Energy: Natural Gas Methane Leaks

Natural gas methane leaks occur during delivery to the buildings and during associated end-uses in the community. Gas methane leaks from delivery occur in the pipeline distribution system and are therefore upstream of the delivery endpoints located in the City and not reflected in reported total natural gas purchased. While natural gas pipeline distribution leakage is technically outside of the City's jurisdictional boundaries, the leakage is directly impacted by natural gas consumption in the community. As leakage is directly connected to the community's natural gas consumption, it is best practice to include leakage as an emissions sector and is therefore included in the City's 2021 Community GHG Inventory. Methane leaks from end-use discussed previously occur at the point of use in the City and therefore occur within the City's jurisdictional boundaries. Though a recommended source of emissions, the Community Protocol does not provide a specific calculation methodology for determining GHG emissions from natural gas leakage. Therefore, emissions from natural gas leaks were calculated using Equation 3.4 which aligns with energy calculation principles set forth by the Community Protocol and the guidance provided under Community Protocol Section BE.5 Upstream Emissions from Energy Use. Table 9 shows the parameters and data sources associated with Equation 3.4 which were used to quantify GHG emissions from natural gas distribution and end-use leakage.

EQUATION 3.4

NATURAL GAS LEAKAGE SECTOR EMISSIONS

$$CO_2e_{leak,i} = Fuel_{NG,i} \times EF_{NG\ leak} \times (L_{enduse} + L_{dist}) \quad 3.4$$

Table 9 Emissions Parameters and Data Sources – Community Natural Gas Leaks

Definition	Parameter	Value	Unit	Data Source
Annual GHG emissions from natural gas distribution leakage per building type	$CO_2e_{leak,i}$	See Table 10	MT CO_2e/year	Calculated
Natural gas consumed per building type	$Fuel_{NG,i}$	See Table 10	therms/year	SCG Natural Gas Report[1]
Emission factor for natural gas leakage	$EF_{NG\ leak}$	0.047381	MT CO_2e/therm	Calculated[2]
Percent natural gas lost during distribution	L_{dist}	2.3%	Percent	Alvarez, Ramón et al. (2018)[3]
Percent natural gas lost during consumer end-use	L_{enduse}	0.5%	Percent	Environmental Defense Fund[4]
Building type (i.e. residential or nonresidential)	i	Residential Nonresidential[5]	Categorical	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; therms = thermal unit

1. Southern California Gas (SCG) Natural Gas Report provided by the City via SharePoint on June 30, 2023
2. Emission factor is calculated using the following equation:

$$2.85\ \frac{cubic\ meters}{therm} * 95\%\ methane\ content * 0.7\ \frac{kg}{cubic\ meter} * 25\ \frac{CO_2e}{CH_4} * 0.001\ \frac{MT}{kg}$$

3. Alvarez, Ramón et al. (2018). Assessment of methane emissions from the U.S. oil and gas supply chain. Science. 361. Accessed January 12, 2023 at: https://www.science.org/doi/abs/10.1126/science.aar7204
4. Environmental Defense Fund USER GUIDE FOR NATURAL GAS LEAKAGE RATE MODELING TOOL. Accessed January 12,2023 at: https://www.edf.org/sites/default/files/US-Natural-Gas-Leakage-Model-User-Guide.pdf
5. Nonresidential includes natural gas use from commercial sources and excludes energy consumption from industrial and sources.

The total natural gas use and resulting leakage activity data, emissions factors, and GHG emissions per building type is summarized in Table 10.

Table 10 Community Natural Gas Methane Leaks GHG Emissions Calculations

Natural Gas Sector	Provided Activity Data [therms]	Leakage Source	Methane Leakage [therms]	Emissions Factor [MT CO_2e/therm]	GHG Emissions [MT CO_2e]
Residential	5,992,889	Distribution	137,836	0.047381	7,951
		End-use	29,964	0.047381	
Nonresidential	2,818,116	Distribution	64,817	0.047381	3,739
		End-use	14,091	0.047381	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent

3.2.2 Transportation

Transportation: On-road

On-road vehicles in the community produce GHG emissions from the mobile combustion of fossil fuels (i.e., internal combustion engines) and up-stream from the production of electricity (i.e., electric vehicles). GHG emissions from the on-road transportation sector were calculated in accordance with Community Protocol TR.1.A and TR.2.B. The methodology leverages on-road transportation emissions factor and EV penetration data from CARB's 2021 EMission FACtor

(EMFAC2021) model.[9] EMFAC2021 provides data on the county-wide data level and does not differentiate data according to cities. This assessment assumes county-wide data reported by EMFAC2021 is representative of city-level on-road transportation emissions factors and EV penetration.

The Community Protocol recommends use of regional travel demand models to differentiate passenger, commercial, and bus vehicle miles travelled activity data attributed to the community. This assessment utilizes data provided by Iteris, Inc.[10] The study provided by Iteris is based on data pulled from the Southern California Association of Governments (SCAG) Regional Transportation Model,[11] an origin-destination model which generates attributable daily average vehicle miles travelled (VMT) for participating counties and cities in Southern California. The model provides VMT data from trips occurring within City limits (internal-internal), traversing City limits (internal-external), and trips which are entirely outside City limits (external-external). Daily VMT provided by Iteris accounted for 100 percent of internal-internal trips and 50 percent of internal-external trips and was annualized[12] to determine 2021 VMT activity data for the City. Equation 3.5 and Table 11 define the equations, parameters, and data sources used to convert resulting Replica VMT activity data to GHG emissions from on-road transportation fuel combustion.

EQUATION 3.5

TR.1.A & TR.2.B ON-ROAD TRANSPORTATION COMBUSTION EMISSIONS

$$CO_2e_{onroad,i} = \left(T_i + \frac{1}{2}T_{O,i} + \frac{1}{2}T_{D,i}\right) \times EF_{auto,i} \quad 3.5$$

[9] California Air and Resources Board. 2023. Emission FACtor (EMFAC2021 v1.0.1) Model. Available at: https://arb.ca.gov/emfac/emissions-inventory/5e0cb7d6006cc10661f4b3ffb9c120a486d46ea6

[10] https://www.iteris.com/

[11] https://scag.ca.gov/activity-based-model

[12] Daily VMT is scaled based on a 347 days per year conversion as specified by Iteris and the SCAG Regional Transportation Model. The conversion factor accounts for difference between weekend vs weekday transportation activities.

Table 11 Emissions Parameters and Data Sources – Community On-road Transportation TR.1.A and TR.2.B

Definition	Parameter	Value	Unit	Data Source
Total annual community on-road GHG emissions per vehicle class	$CO_2e_{Onroad,i}$	See Table 14	MT CO_2e/year	Calculated
VMT occurring within jurisdictional boundaries per vehicle class	T_i	See Table 14	miles	SCAG Regional Transportation Model (Iteris)[1]
VMT originating within and terminating outside of jurisdictional boundaries per vehicle class	$T_{O,i}$	See Table 14	miles	SCAG Regional Transportation Model (Iteris)
VMT originating outside of and terminating within jurisdictional boundaries per vehicle class	$T_{D,i}$	See Table 14	miles	SCAG Regional Transportation Model (Iteris)
Emissions factor for on-road vehicles per vehicle class	$EF_{auto,i}$	See Table 14	MT CO_2e/mile	EMFAC2021 v1.0.1[2]
Vehicle class	i	Passenger Commercial Bus	Categorical	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; VMT = vehicle miles travelled

1. Southern California Association of Governments (SCAG) Regional Transportation Model activity data provided by Iteris, Inc. via email on June 26, 2023. Further information regarding the regional transportation model is available at: https://scag.ca.gov/activity-based-model

2. California Air Resources Board (CARB). 2023. EMission FACtor (EMFAC2021 v1.0.1) Model. Available at: https://arb.ca.gov/emfac/emissions-inventory/5e0cb7d6006cc10661f4b3ffb9c120a486d46ea6

In addition to mobile combustion emissions accounted under Community Protocol Equations TR.1.A and TR.2.B, GHG emissions from electric vehicles were included in the City's 2021 Community GHG Inventory for more accurate accounting of on-road transportation trends. This was achieved through modifying Equation 3.5 to account for EV modeshare estimates based on total VMT. EMFAC2021 emissions factors attribute GHG emissions to be zero for EV activity, therefore application of the emission factor to total VMT data do not result in double counting of emissions associated with EVs. The equation, parameters, and data sources used to estimate GHG emissions attributable to on-road EV activity is provided in Equation 3.6 and Table 12 below.

EQUATION 3.6

ON-ROAD TRANSPORTATION ELECTRIC VEHICLE EMISSIONS

$$CO_2e_{onroad,EV,i} = \left(T_i + \frac{1}{2}T_{O,i} + \frac{1}{2}T_{D,i}\right) \times EV_{share,i} \times EPM_i \times EF_{elec,j} \quad 3.6$$

Table 12 Emissions Parameters and Data Sources – Community On-road Transportation EV

Definition	Parameter	Value	Unit	Data Source
Total annual community on-road EV GHG emissions per vehicle class	$CO_2e_{Onroad,EV,i}$	See Table 14	MT CO_2e/year	Calculated
VMT occurring within jurisdictional boundaries per vehicle class	T_i	See Table 13	miles	SCAG Regional Transportation Model (Iteris)[1]
VMT originating within and terminating outside of jurisdictional boundaries per vehicle class	$T_{O,i}$	See Table 13	miles	SCAG Regional Transportation Model (Iteris)
Vehicle miles travelled originating outside of and terminating within jurisdictional boundaries per vehicle class	$T_{D,i}$	See Table 13	miles	SCAG Regional Transportation Model (Iteris)
Percent share of VMT attributable to EVs	$EV_{share,i}$	See Table 13	%	EMFAC2021 v1.0.1[2]
Average rate of electricity consumption per EV-mile per vehicle class	EPM_i	See Table 13	kWh/mile	EMFAC2021 v1.0.1
Weighted average electricity emissions factor per building type	$EF_{elec,j}$	See Table 13	MT CO_2e/kWh	SCE 2021 Power Content Label[3]
Vehicle class	i	Passenger Commercial Bus	Categorical	
Building type	j	Residential Nonresidential	Categorical	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; EV = electric vehicles; VMT = vehicle miles travelled; kWh = kilowatt hour

1. SCAG Regional Transportation Model activity data provided by Iteris, Inc. via email on June 26, 2023. Further information regarding the regional transportation model is available at: https://scag.ca.gov/activity-based-model

2. California Air Resources Board (CARB). 2023. EMission FACtor (EMFAC2021 v1.0.1) Model. Available at: https://arb.ca.gov/emfac/emissions-inventory/5e0cb7d6006cc10661f4b3ffb9c120a486d46ea6

3. California Energy Commission. 2023. 2021 Power Content Label submitted by Southern California Edison. Available at: https://www.energy.ca.gov/filebrowser/download/4676

Table 13 shows the VMT activity data for community vehicles per vehicle class as well as the EV share of VMT and EVMT used to determine EV activity data expressed as electricity consumption.

Table 13 Community On-road EV Activity Data Calculations

Vehicle Class	VMT Activity Data [miles]	EV Share [%]	EVMT [miles]	EPM [kWh/mile]	EV Activity Data [kWh]
Passenger	483,695,445	2.54%	12,285,864	0.36	4,462,398
Commercial	16,519,282	0.00%	0	0.00	0
Bus	416,380	0.51%	2,124	2.11	4,486

Notes: VMT = vehicle miles travelled; EV = electric vehicle; EPM = electricity per mile; EVMT = electric vehicle miles traveled; kWh = kilowatt hour

The activity data, emissions factors, and resulting GHG emissions from on-road transportation quantified in accordance with Equation 3.5 and Equation 3.6 is summarized in Table 14 below.

Table 14 Community On-road Transportation GHG Emissions Calculations

Sector	Activity Data[1]		Emission Factor		GHG Emissions [MT CO_2e]
Passenger VMT	483,695,445	VMT	0.000354	MT CO2e/mile	171,228
Commercial VMT	16,519,282	VMT	0.001198	MT CO2e/mile	19,790
Bus VMT	416,380	VMT	0.002123	MT CO2e/mile	884
Passenger EVMT[1]	4,462,398	kWh	0.000263	MT CO2e/kWh	1,174
Commercial EVMT[2]	0	kWh	0.000263	MT CO2e/kWh	0
Bus EVMT[2]	4,486	kWh	0.000263	MT CO2e/kWh	1
Total					**193,077**

Notes: VMT = vehicle miles traveled; EVMT = electric vehicle miles traveled; kWh = kilowatt hour; MT CO_2e = Metric tons of carbon dioxide equivalent

1. EV activity data does not include kWh associated with T&D losses as these emissions are considered negligible and are included under energy sector emissions.

2. Emissions factor for on-road passenger EV electricity use is weighted according to the portion of electricity supplied per provider in the residential electricity sector (see Table 4)

3. Emissions factor for on-road commercial and bus EV electricity use is weighted according to the portion of electricity supplied per provider in the residential electricity sector (see Table 4)

Transportation: Off-road

Off-road equipment and vehicles in the community generate GHG emissions from the mobile combustion of fossil fuels. Off-road fuel usage results from equipment operation for sectors such as agricultural, construction, lawn and garden, or recreational equipment. Community Protocol Equation TR.8 was used to quantify GHG emissions from off-road equipment fuel consumption and is shown under Equation 3.7 below. Table 15 lists the parameters, values, and data sources used to quantify emissions in according with the Community Protocol.

EQUATION 3.7

TR.8 OFF-ROAD EQUIPMENT SECTOR EMISSIONS

$$CO_2e_{offroad,j} = EF_j \times \sum_i Fuel_{offroad,i,j} \times AF_i \quad 3.7$$

Table 15 Emissions Parameters and Data Sources – Community Off-Road Equipment TR.8

Definition	Parameter	Value	Unit	Data Source
Annual GHG emissions from offroad equipment	$CO_2e_{offroad,j}$	See Table 17	MT CO_2e/year	Calculated
Annual fuel consumption in the County per sector per fuel type	$Fuel_{offroad,i,j}$	See Table 17	Gallons/year	OFFROAD2021[1]
Fuel attribution factor per equipment type	AF_i	See Table 16	Percent	SCAG Growth Forecast[2]
Emission factor per fuel type	EF_j	See Table 17	MT CO_2e/gallon	EPA Emission Factors Hub[3]
Equipment Type	i	See Table 16	Categorical	OFFROAD2021
Fuel type	j	Gasoline Diesel Natural Gas	Categorical	OFFROAD2021

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent

1. California Air Resource Board (CARB). 2023. Mobile Source Emissions Inventory Off-road (OFFROAD2021). Available at: https://arb.ca.gov/emfac/emissions-inventory/5e0cb7d6006cc10661f4b3ffb9c120a486d46ea6

2. Southern California Association of Governments (SCAG). 2023. 2016-2040 RTP/SCS Final Growth Forecast by Jurisdiction. Available at: https://scag.ca.gov/sites/main/files/file-attachments/2016_2040rtpscs_finalgrowthforecastbyjurisdiction.pdf?1605576071

3. Environmental Protection Agency (EPA). 2022. GHG Emission Factors Hub. Available at: https://www.epa.gov/climateleadership/ghg-emission-factors-hub

Locally applicable activity data in alignment with ICLEI protocol standards reports off-road equipment fuel consumption on a county-wide basis. Attribution factors per equipment type used to allocate City off-road fuel usage were determined based on demographic data and land use data relating to population size, number of jobs, and agricultural acreage where applicable. The demographic attribution metrics and percent attribution used for each off-road equipment type is shown in Table 16.

Table 16 Community Off-road Equipment Sector Attributions

Equipment Type	Attribution Metric	Attribution	Data Source
Agricultural	Excluded – Other[1]	0.00%	Not Applicable
Airport Ground Support	Excluded – Not Under Jurisdictional Control	0.00%	Not Applicable
Cargo Handling Equipment	Excluded – Not Under Jurisdictional Control	0.00%	Not Applicable
Commercial Harbor Craft	Excluded – Not Under Jurisdictional Control	0.00%	Not Applicable
Construction and Mining	Employment	0.73%	SCAG Growth Forecast[2]
Industrial	Employment	0.73%	SCAG Growth Forecast
Lawn and Garden	Population	0.60%	SCAG Growth Forecast
Light Commercial	Employment	0.73%	SCAG Growth Forecast
Locomotive	Excluded – Not Under Jurisdictional Control	0.00%	Not Applicable
Ocean Going Vessel	Excluded – Not Under Jurisdictional Control	0.00%	Not Applicable
Oil Drilling	Excluded – Not Under Jurisdictional Control	0.00%	Not Applicable
Outboard Marine Tanks	Excluded – Not Under Jurisdictional Control	0.00%	Not Applicable
Pleasure Craft	Population	0.60%	SCAG Growth Forecast
Portable Equipment	Employment	0.73%	SCAG Growth Forecast
Transport Refrigeration Unit	Employment	0.73%	SCAG Growth Forecast
Recreational	Population	0.60%	SCAG Growth Forecast
Military Tactical Support	Excluded – Not Under Jurisdictional Control	0.00%	Not Applicable
Forestry	Excluded – Other[3]	0.00%	Not Applicable

Notes:

1. Agricultural off-road equipment was excluded to remain consistent with the scope of the City's 2021 Community Inventory which excludes agricultural electricity and natural gas sector GHG emissions due to aggregation rules.

2. Southern California Association of Governments. 2023. 2016-2040 RTP/SCS Final Growth Forecast by Jurisdiction. Available at: https://scag.ca.gov/sites/main/files/file-attachments/2016_2040rtpscs_finalgrowthforecastbyjurisdiction.pdf?1605576071

3. Though forestry occurs withing the County of Los Angeles, there appears to be minimal opportunity for forestry within the City's boundaries. Therefore, it is assumed that offroad fuel consumption for forestry activities is negligible and thereby exclude d.

The allocated and aggregated activity data by fuel type, emission factors, and emissions results for the inventory's off-road equipment sector are provided in Table 17.

Table 17 Community Off-road GHG Emissions Calculations

Fuel Type	Activity Data (gallons)	Emission Factor (MT CO_2e/gallon)[1]	GHG Emissions (MT CO_2e)
Diesel	605,302	0.010496	6,353
Gasoline	621,263	0.009199	5,715
Natural Gas	392,276	0.005882	2,307
TOTAL			**14,376**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; Values may not add due to rounding

1. Emission factors per fuel type represent a weighted average based on the emissions factor and fuel consumption per offroad equipment type as determined according to EPA's Emissions Factor Hub available at: https://www.epa.gov/climateleadership/ghg-emission-factors-hub

3.2.3 Solid Waste

GHG emissions associated with the waste sector result from the decomposition of waste at a landfill as well as landfill operation processes. City solid waste is collected by Athens Services which contracts with San Bernadino County landfills. GHG emissions from waste decomposition were calculated using Community Protocol Method SW.4. Equation 3.8 and Table 18 provide the calculation method, associated parameters, and data sources used to quantify GHG emissions in accordance with Community Protocol SW.4.

EQUATION 3.8

SW.4.1 SOLID WASTE FUGITIVE EMISSIONS

$$CO_2e_{Waste,fugitive} = GWP_{CH_4} \times (1 - CE) \times (1 - OX) \times M \times \sum_i P_i \times EF_i \quad 3.8$$

Table 18 Emissions Parameters and Data Sources – Community Solid Waste SW.4.1

Definition	Parameter	Value	Unit	Data Source
Annual community generated waste GHG emissions	$CO_2e_{Waste,fugitive}$	17,770	MT CO_2e/year	Calculated
Methane global warming potential	GWP_{CH_4}	28		IPCC Fourth Assessment Report[1]
Default LFG collection efficiency	CE	0.75	Fraction	ICLEI Community Protocol
Oxidation rate	OX	0.10	Fraction	ICLEI Community Protocol
Total mass of waste entering landfill	M	See Table 20	Wet short tons	1. CalRecycle[2] 2. SCAG[3]
Proportion of total waste material per material type	P_i	1	Fraction	
Emission factor per material type[4]	EF_i	0.060	MT CH_4/wet short ton	ICLEI Community Protocol
Material type	i	Multiple	Categorical	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent

1. Intergovernmental Panel on Climate Change (IPCC). 2007. AR4 Synthesis Report: Climate Change 2007. Available at: https://www.ipcc.ch/assessment-report/ar4/

2. California Department of Resources Recycling and Recovery (CalRecycle). 2019. Multi-year Countywide Origin Summary. Available at: https://www2.calrecycle.ca.gov/LGCentral/DisposalReporting/

3. Southern California Association of Governments. 2023. 2016-2040 RTP/SCS Final Growth Forecast by Jurisdiction. Available at: https://scag.ca.gov/sites/main/files/file-attachments/2016_2040rtpscs_finalgrowthforecastbyjurisdiction.pdf?1605576071

4. For mixed municipal waste streams where the proportion of material type is unknown, ICLEI specifies a default value of 0.060 MT CH_4 per wet short ton may be used.

Landfill process emissions were quantified according to Equation SW.5 of the Community Protocol. Equation 3.9 and Table 19 provide the calculation method, associated parameters, and data sources used to quantify GHG emissions from landfill operations.

EQUATION 3.9

SW.5 SOLID WASTE PROCESS EMISSIONS

$$CO_2e_{Waste,process} = M \times EF_p \quad 3.9$$

Table 19 Emissions Parameters and Data Sources – Community Solid Waste SW.5

Definition	Parameter	Value	Unit	Data Source
Annual landfill process GHG emissions	$CO_2\,e_{Waste,process}$	561	MT CO_2e/year	Calculated
Total mass of solid waste that enters the landfill in the inventory year	M	See Table 20	Wet short tons/year	1. CalRecycle[1] 2. SCAG[2]
Emissions factor for landfill process emissions	EF_p	0.011	MT CO_2e/wet short ton	ICLEI Community Protocol

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent

1. California Department of Resources Recycling and Recovery (CalRecycle). 2019. Multi-year Countywide Origin Summary. Available at: https://www2.calrecycle.ca.gov/LGCentral/DisposalReporting/

2. Southern California Association of Governments. 2023. 2016-2040 RTP/SCS Final Growth Forecast by Jurisdiction. Available at: https://scag.ca.gov/sites/main/files/file-attachments/2016_2040rtpscs_finalgrowthforecastbyjurisdiction.pdf?1605576071

As CalRecycle tonnage data by jurisdiction is currently only available up through the year 2019, the tonnage activity data for Equations 3.8 and 3.9 was determined based on a per capita tonnage factor and the City's 2021 population. The calculation method used to estimate 2021 solid waste tonnage for the City is provided in Table 20 below.

Table 20 Community Solid Waste Tonnage Allocation

Sector	2019 Activity Data [wet short ton]	Population (2019)	Allocation [wet short ton/capita]	Population (2021)	2021 Activity Data [wet short ton]
Solid Waste	49,654	61,057	0.81	62,700	50,990

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent

1. Emissions factor provided by the EPA AP-42 –EPA Emission Factor Database, Chapter 2.4 Municipal Solid Waste Landfills (1998) WARM—Exhibit 6 of http://epa.gov/epawaste/conserve/tools/warm/pdfs/Landfilling.pdf, February 2012.

The total GHG emissions from solid waste emissions sources is summarized in Table 21.

Table 21 Community Solid Waste Tonnage Allocation

Emissions Source	GHG Emissions [MT CO_2e/year]
Landfill Fugitive Emissions	17,209
Landfill Process Emissions	561
Total	**17,770**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent

3.2.4 Water

Water consumption generates GHG emissions from the electricity used to deliver water to the community, as well as the energy used to treat and convey the water prior to delivery. Monterey Park's water sources include City-pumped groundwater and purchased local groundwater from San Gabriel Valley Water Company (SGVWC). The City is the primary water service provider and sources all of its water from groundwater wells within the Main Basin. Emissions from electricity used for City-supplied water is anticipated to be accounted under the non-residential electricity sector and is therefore excluded from the inventory to avoid double counting. However, GHG emissions associated with City water production is quantified and presented below for information purposes.

Table 22 shows the parameters and data sources associated with Equation 3.10 which were used to quantify GHG emissions from local and imported water sources.

EQUATION 3.10

WW.14 WATER SECTOR EMISSIONS

$$CO_2e_{Water,i} = Vol_i \times \sum_j EI_{i,j} \times EF_{elec,i,j} \quad 3.10$$

Table 22 Emissions Parameters and Data Sources – Community Water WW.14

Definition	Parameter	Value	Unit	Data Source
Annual GHG emissions from water consumption per water district	$CO_2e_{Water,i}$	See Table 26	MT CO_2e/year	Calculated
Volume of water supplied to the community per water district	Vol_i	See Table 23	AF	2021 Water Production Report provided by the City via email on August 23, 2023
Energy intensity of water distribution per water district	$EI_{i,j}$	See Table 24	kWh/AF	1. City of Monterey Park 2020 UWMP[1] 2. San Gabriel Valley Water Company 2020 UWMP[2]
Electricity emissions factor per water process stage per source type	$EF_{elec,i,j}$	See Table 25	MT CO_2e/kWh	1. SCE 2021 Power Content Label[3] 2. EPA eGRID[4]
Water district	i	See Table 23	Categorical	
Water process stage	j	Extraction Conveyance Treatment Distribution	Categorical	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; AF = acre-feet; kWh = kilowatt hour; UWMP = Urban Water Management Plan

1. City of Monterey Park. 2021. 2020 Urban Water Management Plan. Available at: https://www.montereypark.ca.gov/DocumentCenter/View/12162/FINAL-City-of-Monterey-Park-2020-UWMP?bidId=

2. San Gabriel Valley Water Company. 2021. 2020 Urban Water Management Plan. Available at: https://www.sgvwater.com/wp-content/uploads/2021/07/FINAL-San-Gabriel-Valley-Water-Company-2020-UWMP.pdf

3. California Energy Commission. 2023. 2021 Power Content Label submitted by Southern California Edison. Available at: https://www.energy.ca.gov/filebrowser/download/4676

4. Environmental Protection Agency (EPA). 2023. eGRID Data Explorer 2021 Western Energy Grid. Available at: https://www.epa.gov/egrid/data-explorer

Table 23 shows the total water supplied to the City by each water district or provider and classifies the activity data as local vs imported sources of water.

Table 23 Community Water Activity Data

Water Districts	Activity Data [AF]
Local Water Supply	
City of Monterey Park	7,305.95
Imported Water Supply	
San Gabriel Valley Water Company	27.53

Notes: AF = acre-feet

The energy intensities and emissions factors per water district or provider are summarized in Table 24 and Table 25, respectively. As SGVWC's operations occur outside of the City's jurisdictional boundaries and is anticipated to be supplied by multiple electricity providers, the CAMX grid mix emissions factor provided by eGRID was used to estimate emissions.

Table 24 Community Water Energy Intensities Per Water District

	Energy Intensities [kWh/AF]					
Water District	**Extraction**	**Conveyance**	**Treatment**	**Distribution (Purveyor)**	**Distribution (Consumer)**	**All Stages**
Local Water Supply						
City of Monterey Park[1]	—	—	—	—	—	1,071
Imported Water Supply						
San Gabriel Valley Water Company[2]	—	—	—	—	—	1,127

Notes: kWh = kilowatt hour; AF = acre-feet

1. Energy Intensity information for the City of Monterey Park was sourced from the City's 2020 Urban Water Management Plan available at: https://www.montereypark.ca.gov/DocumentCenter/View/12162/FINAL-City-of-Monterey-Park-2020-UWMP?bidId=
2. Energy Intensity information for San Gabriel Valley Water Company was sourced from the company's 2020 Urban Water Management Plan available at: https://www.sgvwater.com/wp-content/uploads/2021/07/FINAL-San-Gabriel-Valley-Water-Company-2020-UWMP.pdf

Table 25 Community Water Emissions Factors Per Water District

	Emissions Factors [MT CO_2e/kWh]					
Water District	**Extraction**	**Conveyance**	**Treatment**	**Distribution (Purveyor)**	**Distribution (Consumer)**	**All Stages**
Local Water Supply						
City of Monterey Park[1]	—	—	—	—	—	0.000263
Imported Water Supply						
San Gabriel Valley Water Company[2]	—	—	—	—	—	0.000242

Notes: kWh = kilowatt hour; AF = acre-feet
1. Emissions factors are sourced from the City's electricity provider (SCE) power label information available at: https://www.energy.ca.gov/filebrowser/download/4676
2. As San Gabirel Valley Water Company's operation are outside of City boundaries, the CAMX grid mix emissions factor provided by eGRID was used to estimate emissions. Information on CAMX emissions factor for 2021 is available at: https://www.epa.gov/egrid/data-explorer

Table 26 shows the City's water sector GHG emissions and total GHG emissions added to the City's 2021 Community GHG Inventory.

Table 26 Community Water GHG Emissions and Inclusions

Water District		Emissions [MT CO_2e/year]					
		Extraction	Conveyance	Treatment	Distribution (Purveyor)	Distribution (Consumer)	All Stages
Local Water Supply							
City of Monterey Park	Emissions	—	—	—	—	—	2,059
	Inclusion	—	—	—	—	—	No
Imported Water Supply							
San Gabriel Valley Water Company	Emissions	—	—	—	—	—	8
	Inclusion	—	—	—	—	—	Yes
Total Water Supply							
Inventory Total							**8**

Notes: kWh = kilowatt hour; AF = acre-feet

3.2.5 Wastewater

Management of wastewater produces emissions through every stage of the process from collection to final use or discharge. The City's wastewater is treated by the Sanitation Districts of Los Angeles County (LACSD) and is not processed or disposed of within the City's boundaries. The City's wastewater is sent to either LACSD's Whittier Narrows Water Reclamation Plant (WNWRP) or the Joint Water Pollution Control Plant (JWPCP). It is unknown how much of the City's water is processed by each wastewater treatment plant. LACSD estimates approximately 69 gallons per person per day of wastewater is generated within LACSD's service area.[13]

WNWRP has a 15 MGD capacity and serves a population of 150,000 people. The plant provides primary, secondary, and tertiary treatment using anoxic and aerobic processes without digester systems. Treated wastewater produced at the plant meets sanitation requirements of the Regional Water Quality Control Board for recycled water and is ultimately reused as recycled water for industrial, commercial, agricultural, and recreational activities.[14]

JWPCP has a treatment capacity of 300 MGD and serves a population of 3.5 million people. Solids are treated in a primary and secondary treatment system before being sent to anaerobic digester tanks. Biogas produced by the anaerobic digesters is collected and used for energy production to power the facility and is also sold to Southern California Edison. Disinfected wastewater from JWPCP is ultimately discharged to the Pacific Ocean.[15]

[13] City of Monterey Park. 2020. Urban Water Management Plan. Available at: https://www.montereypark.ca.gov/DocumentCenter/View/12162/FINAL-City-of-Monterey-Park-2020-UWMP?bidId=

[14] Los Angeles County Sanitation Districts. 2023. Whittier Narrows Water Reclamation Plant. Available at: https://www.lacsd.org/services/wastewater-sewage/facilities/whittier-narrows-water-reclamation-plant

[15] Los Angeles County Sanitation Districts. 2023. Wastewater Treatment Process at JWPCP. Available at: https://www.lacsd.org/services/wastewater-sewage/facilities/joint-water-pollution-control-plant/wastewater-treatment-process-at-jwpcp

GHG emissions from JWPCP operations are a result of stationary combustion, process emissions which occur without nitrification/denitrification, effluent discharge into the Pacific Ocean, and electricity use. WNWRP emissions are the result of process emissions with nitrification/denitrification and electricity use. Community protocol methods used to quantify GHG emissions from stationary combustion, process emissions, and effluent discharge rely on population served by the wastewater facility as activity data. As information is not available regarding how much of the City's wastewater is processed by WNWRP or JWPCP, activity data was estimated by apportioning the City's population served based on each facility's wastewater treatment capacity. The method and calculations used to determine wastewater activity data is provided in Table 27 below.

Table 27 Wastewater Population Served Allocation Per WWTP

Wastewater Treatment Plant (WWTP)	Total Activity Data [population served]	Capacity [MGD]	Allocation [%]	Allocated Activity Data [population served]
Whittier Narrows Water Reclamation Plant (WNWRP)	97,093	15	4.76%	4,623
Joint Water Pollution Control Plant (JWPCP)		300	95.24%	92,470

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent

1. Serviced Population = the combined total number of employees and residents in the City

The set of methods used to quantify stationary combustion emissions is outlined in Equation 3.11 and Table 28 as well as Equation 3.12 and Table 29 below.

EQUATION 3.11

WW.1. (ALT) WASTEWATER DIGESTER GAS STATIONARY COMBUSTION EMISSIONS (CH_4)

$$CO_2e_{WW,Stat,CH4,i} = (P_i \times Digester\ Gas \times f_{CH4} \times BTU_{CH4} \times 10^{-6} \times EF_{CH4} \times 365.25 \times 10^{-3}) \times GWP_{CH4} \quad 3.11$$

Table 28 Emissions Parameters and Data Sources – Community Wastewater WW.1.(alt)

Definition	Parameter	Value	Unit	Data Source
Total annual GHG emitted by devices designed to combust digester gas	$CO_2e_{WW,Stat,CH4}$	See Table 35	MT CO_2e/year	Calculated
Population served[1]	P_i	See Table 27	People	1. SCAG Growth Forecast[2] 2. City of Monterey 2020 UWMP[3]
Rate of digester gas volume production	$Digester\ Gas$	1.00	std ft^3/person/day	ICLEI Community Protocol
Fraction of methane in digester gas	f_{CH4}	0.65	Fraction	ICLEI Community Protocol
Default higher heating value of methane	BTU_{CH4}	1,028	BTU/ft^3	ICLEI Community Protocol
Conversion factor	10^{-6}	0.000001	MMBtu/BTU	
Methane emissions factor	EF_{CH4}	0.0032	kg CH_4/MMBtu	ICLEI Community Protocol
Conversion factor	365.25	365.25	Days/year	ICLEI Community Protocol
Conversion factor	10^{-3}	0.001	MT/kg	
Global warming potential of methane	GWP_{CH4}	25		IPCC Fourth Assessment Report
Wastewater treatment plant (WWTP)	i	WNWRP JWPCP	Categorical	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; std ft^3 = standard cubic feet; BTU = British thermal unit; MMBtu = one million British thermal units; kg = kilograms;

1. Population serviced (or service population) is the sum of population and employment

2. Southern California Association of Governments. 2023. 2016-2040 RTP/SCS Final Growth Forecast by Jurisdiction. Available at: https://scag.ca.gov/sites/main/files/file-attachments/2016_2040rtpscs_finalgrowthforecastbyjurisdiction.pdf?1605576071

3. City of Monterey Park. 2021. 2020 Urban Water Management Plan. Available at: https://www.montereypark.ca.gov/DocumentCenter/View/12162/FINAL-City-of-Monterey-Park-2020-UWMP?bidId=

EQUATION 3.12

WW.2.(ALT) WASTEWATER DIGESTER GAS STATIONARY COMBUSTION EMISSIONS (N_2O)

$$CO_2e_{WW,Stat,N2O,i} = (P_i \times Digester\ Gas \times f_{CH4} \times BTU_{CH4} \times 10^{-6} \times EF_{N2O} \times 365.25 \times 10^{-3}) \times GWP_{N2O} \quad 3.12$$

Table 29 Emissions Parameters and Data Sources – Community Wastewater WW.2.(alt)

Definition	Parameter	Value	Unit	Data Source
Total annual GHG emitted by devices designed to combust digester gas	$CO_2e_{WW,Stat,N2O}$	See Table 35	MT CO_2e/year	Calculated
Population served[1]	P_i	See Table 27	People	1. SCAG Growth Forecast[2] 2. City of Monterey 2020 UWMP[3]
Rate of digester gas volume production	$Digester\ Gas$	1.00	std ft^3/person/day	ICLEI Community Protocol
Fraction of methane in digester gas	f_{CH4}	0.65	Fraction	ICLEI Community Protocol
Default higher heating value of methane	BTU_{CH4}	1,028	BTU/ft^3	ICLEI Community Protocol
Conversion factor	10^{-6}	0.000001	MMBtu/BTU	
Nitrous Oxide emissions factor	EF_{N2O}	0.0006	kg N_2O/MMBtu	ICLEI Community Protocol
Conversion factor	365.25	365.25	Days/year	ICLEI Community Protocol
Conversion factor	10^{-3}	0.001	MT/kg	
Global warming potential of nitrous oxide	GWP_{N2O}	298		IPCC Fourth Assessment Report
Wastewater treatment plant (WWTP)	i	WNWRP JWPCP	Categorical	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; std ft^3 = standard cubic feet; BTU = British thermal unit; MMBtu = one million British thermal units; kg = kilograms;

1. Population serviced (or service population) is the sum of population and employment

2. Southern California Association of Governments. 2023. 2016-2040 RTP/SCS Final Growth Forecast by Jurisdiction. Available at: https://scag.ca.gov/sites/main/files/file-attachments/2016_2040rtpscs_finalgrowthforecastbyjurisdiction.pdf?1605576071

3. City of Monterey Park. 2021. 2020 Urban Water Management Plan. Available at: https://www.montereypark.ca.gov/DocumentCenter/View/12162/FINAL-City-of-Monterey-Park-2020-UWMP?bidId=

Equation 3.13 shows the calculation method use to quantify process emissions with nitrification/denitrification in accordance with Community Protocol WW.7. Table 30 show the parameter definitions, default factors, and data sources used.

EQUATION 3.13

WW.7 CENTRALIZED WWTP W/ NITRIFICATION/DENITRIFICATION

$$CO_2e_{WW,nit/denit,i} = P_i \times F_{ind-com} \times EF_{nit/denit} \times 10^{-6} \times GWP_{N2O} \quad 3.13$$

Table 30 Emissions Parameters and Data Sources – Community Wastewater WW.7

Definition	Parameter	Value	Unit	Data Source
Total annual GHG emitted by WWTP processes	$CO_2e_{WW,nit/denit,i}$	See Table 35	MT CO_2e/year	Calculated
Population served[1]	P_i	See Table 27	People	1. SCAG Growth Forecast[2] 2. City of Monterey 2020 UWMP[3]
Factor for insignificant industrial or commercial discharge	$F_{ind-com}$	1.00		ICLEI Community Protocol
Emissions factor for a WWTP without nitrification or denitrification	$EF_{w/o\ nit/denit}$	7.00	g N_2O/person/year	ICLEI Community Protocol
Conversion factor	10^{-6}	0.000001	MMBtu/BTU	
Global warming potential of nitrous oxide	GWP_{N2O}	298		IPCC Fourth Assessment Report
Wastewater treatment plant (WWTP)	i	WNWRP JWPCP	Categorical	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; std ft^3 = standard cubic feet; BTU = British thermal unit; MMBtu = one million British thermal units; kg = kilograms;

1. Population serviced (or service population) is the sum of population and employment

2. Southern California Association of Governments. 2023. 2016-2040 RTP/SCS Final Growth Forecast by Jurisdiction. Available at: https://scag.ca.gov/sites/main/files/file-attachments/2016_2040rtpscs_finalgrowthforecastbyjurisdiction.pdf?1605576071

3. City of Monterey Park. 2021. 2020 Urban Water Management Plan. Available at: https://www.montereypark.ca.gov/DocumentCenter/View/12162/FINAL-City-of-Monterey-Park-2020-UWMP?bidId=

Equation 3.14 shows the calculation method use to quantify process emissions without nitrification/denitrification in accordance with Community Protocol WW.8. Table 31 show the parameter definitions, default factors, and data sources used.

EQUATION 3.14

WW.8 CENTRALIZED WWTP W/O NITRIFICATION/DENITRIFICATION

$$CO_2e_{WW,w/o\,nit/denit,i} = P_i \times F_{ind-com} \times EF_{w/o\,nit/denit} \times 10^{-6} \times GWP_{N2O} \quad 3.14$$

Table 31 Emissions Parameters and Data Sources – Community Wastewater WW.8

Definition	Parameter	Value	Unit	Data Source
Total annual GHG emitted by WWTP processes	$CO_2e_{WW,w/o\ nit/denit,i}$	See Table 35	MT CO_2e/year	Calculated
Population served[1]	P_i	See Table 27	People	1. SCAG Growth Forecast[2] 2. City of Monterey 2020 UWMP[3]
Factor for insignificant industrial or commercial discharge	$F_{ind-com}$	1.00		ICLEI Community Protocol
Emissions factor for a WWTP without nitrification or denitrification	$EF_{w/o\ nit/denit}$	3.20	g N_2O/person/year	ICLEI Community Protocol
Conversion factor	10^{-6}	0.000001	MMBtu/BTU	
Global warming potential of nitrous oxide	GWP_{N2O}	298		IPCC Fourth Assessment Report
Wastewater treatment plant (WWTP)	i	WNWRP JWPCP	Categorical	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; std ft^3 = standard cubic feet; BTU = British thermal unit; MMBtu = one million British thermal units; kg = kilograms;

1. Population serviced (or service population) is the sum of population and employment

2. Southern California Association of Governments. 2023. 2016-2040 RTP/SCS Final Growth Forecast by Jurisdiction. Available at: https://scag.ca.gov/sites/main/files/file-attachments/2016_2040rtpscs_finalgrowthforecastbyjurisdiction.pdf?1605576071

3. City of Monterey Park. 2021. 2020 Urban Water Management Plan. Available at: https://www.montereypark.ca.gov/DocumentCenter/View/12162/FINAL-City-of-Monterey-Park-2020-UWMP?bidId=

Community Protocol Equation WW.12.(alt) was used to quantify GHG emissions associated with treated wastewater effluent discharge into natural water bodies. Equation 3.15 shows the calculation method use to quantify process emissions without nitrification/denitrification in accordance with the Community Protocol while Table 32 shows the parameter definitions, default factors, and data sources used.

EQUATION 3.15

WW.12.(ALT) NITROUS OXIDE EMISSIONS FROM EFFLUENT DISCHARGE

$$CO_2e_{WW,effluent,i} = P_i \times F_{ind-com} \times (Total\ N\ Load - N\ Uptake_i \times BOD_5\ load) \times EF_{effluent,i} \times \frac{44}{28} \times (1 - F_{plant,i}) \times 365.25 \times 10^{-3} \times GWP_{N2O} \quad 3.15$$

Table 32 Emissions Parameters and Data Sources – Community Wastewater WW.12.(alt)

Definition	Parameter	Value	Unit	Data Source
Total annual GHG emitted by WWTP processes	$CO_2e_{WW,w/o\ nit/denit,i}$	See Table 35	MT CO_2e/year	Calculated
Population served[1]	P_i	See Table 27	People	1. SCAG Growth Forecast[2] 2. City of Monterey 2020 UWMP[3]
Factor for industrial or commercial discharge	$F_{ind-com}$	1.00		ICLEI Community Protocol
Average total nitrogen per day	$Total\ N\ Load$	0.026	kg N/person/day	ICLEI Community Protocol
Nitrogen uptake for cell growth per system type (aerobic vs anaerobic)	$N\ Uptake_i$	0.005	kg N/kg BOD_5	ICLEI Community Protocol
Rate of BOD_5 produced	$BOD5\ load$	0.09	kg BOD_5/person/day	ICLEI Community Protocol
Emissions factor of discharge to water body type (ocean)	$EF_{effluent,i}$	0.003	kg N_2O-N/kg sewage-N discharged	ICLEI Community Protocol
Molecular weight ratio of N_2O to N_2	$\frac{44}{28}$	1.57	Fraction	
Fraction of nitrogen removed from the WWTP per system type (w/ or w/o nit/denit)	$F_{plant,i}$	0.00	Fraction	ICLEI Community Protocol
Conversion factor	365.25	365.25	Days/year	
Conversion factor	10^{-3}	0.001	MT/kg	
Global warming potential of nitrous oxide	GWP_{N2O}	298		IPCC Fourth Assessment Report
Wastewater treatment plant (WWTP)	i	WNWRP JWPCP	Categorical	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; std ft^3 = standard cubic feet; kg = kilograms; BOD_5 = five-day biochemical oxygen demand

1. Population serviced (or service population) is the sum of population and employment

2. Southern California Association of Governments. 2023. 2016-2040 RTP/SCS Final Growth Forecast by Jurisdiction. Available at: https://scag.ca.gov/sites/main/files/file-attachments/2016_2040rtpscs_finalgrowthforecastbyjurisdiction.pdf?1605576071

3. City of Monterey Park. 2021. 2020 Urban Water Management Plan. Available at: https://www.montereypark.ca.gov/DocumentCenter/View/12162/FINAL-City-of-Monterey-Park-2020-UWMP?bidId=

Wastewater electricity use occurs from the collection and treatment of wastewater. Electricity use from City wastewater treatment at WNWRP and JWPCP were quantified in alignment with Community Protocol Equation WW.15. However, the City's utility expenses includes wastewater infrastructure used for wastewater collection within the City's boundaries and is therefore anticipated to be included under nonresidential energy sector activity data. To avoid double counting, electricity consumption associated with wastewater collection is excluded from the inventory. The inventory does include emissions associated with electricity use for wastewater treatment occuring outside the City's boundary. Community Protocol Equation WW.15 has been updated to account for T&D losses to remain consistent with electricity consumption in other sectors of the City's 2021 Community GHG Inventory. Equation 3.16 and Table 33 outline the

method, parameters, and data sources used to determine GHG emissions attributable to wastewater facility electricity use.

EQUATION 3.16

WW.15 ENERGY-RELATED EMISSIONS ASSOCIATED WITH WASTEWATER COLLECTION AND TREATMENT

$$CO_2e_{WWelec,i} = \left(\sum_j EI_{WW,i,j}\right) \times Vol_i \times (1 + L_{T\&D}) \times EF_{elec,i} \quad 3.16$$

Table 33 Emissions Parameters and Data Sources – Community Wastewater WW.15

Definition	Parameter	Value	Unit	Data Source
Total annual GHG emitted by WWTP electricity use	$CO_2e_{WWelec,i}$	See Table 35	MT CO_2e/year	Calculated
Energy intensity per WWTP and wastewater management stage	$EI_{WW,i,j}$	See Table 34	kWh/MG	ICLEI Community Protocol
Volume of community wastewater production	Vol_i	See Table 34	MG	1. SCAG Growth Forecast[1] 2. City of Monterey 2020 UWMP[2]
Electricity loss factor	$L_{T\&D}$	4.40%	Percent	EPA eGRID[3]
Electricity emission factor per WWTP	$EF_{elec,i}$	0.000242	MT CO_2e/kWh	EPA eGRID
Wastewater treatment plant or (WWTP)	i	WNWRP JWPCP	Categorical	
Wastewater management stage	j	Collection Treatment	Categorical	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; MG = million gallons; kWh = kilowatt hour

1. Southern California Association of Governments. 2023. 2016-2040 RTP/SCS Final Growth Forecast by Jurisdiction. Available at: https://scag.ca.gov/sites/main/files/file-attachments/2016_2040rtpscs_finalgrowthforecastbyjurisdiction.pdf?1605576071

2. City of Monterey Park. 2021. 2020 Urban Water Management Plan. Available at: https://www.montereypark.ca.gov/DocumentCenter/View/12162/FINAL-City-of-Monterey-Park-2020-UWMP?bidId=

3. Environmental Protection Agency (EPA). 2023. eGRID Data Explorer 2021 Western Energy Grid. Available at: https://www.epa.gov/egrid/data-explorer

As information regarding the volume of the City's wastewater production is not tracked by the City, activity data for the volume of wastewater and resulting kWh consumption attributable to the City is estimated using a per person wastewater production factor according to method shown in Table 34.

Table 34 Wastewater Electricity Use Activity Data Allocation Per WWTP

Wastewater Treatment Plant (WWTP)	Population Served[1] [people]	Volume Rate[2] [gal/person/ day]	Allocation[3] [%]	City Production[4] [MG]	EI [kWh/MG]	Electricity Use [kWh]
WNWRP	97,093	69	4.76%	117	3,000	349,567
JWPCP			95.24%	2,330	1,400	3,262,627

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent

1. Serviced Population = the combined total number of employees and residents in the City as provided by SCAG Growth Forecast data
2. Volume of wastewater production per person per day based on the average rate of LACSD production as reported in the City of Monterey Park's 2020 UWMP
3. See Table 27
4. MGD converted to MG using a day per year conversion factor of 365.25

Table 35 summarizes the City's wastewater sector activity data, emissions factors, and GHG emissions per WWTP.

Table 35 Community Wastewater GHG Emissions Calculations

Emissions Source	Protocol Equation	Activity Data		Emissions Factor[1]		GHG Emissions [MT CO_2e/year]
WNWRP						
Stationary Combustion	—	—		—		—
Process N_2O	WW.7	4,623	people	0.002086	MT CO_2e/person	9.64
Effluent Discharge	—	—		—		—
Electricity Use	WW.15	349,567	kWh	0.0002421	MT CO2e/kWh	84.62
Electricity Use T&D	WW.15	15,381	kWh	0.0002421	MT CO2e/kWh	3.72
JWPCP						
Stationary Combustion	WW.1.(alt) WW.2.(alt)	92,470	people	0.000065	MT CO_2e/person	6.04
Process N_2O	WW.8	92,470	people	0.000954	MT CO_2e/person	88.18
Effluent Discharge	WW.12.(alt)	92,470	people	0.010915	MT CO_2e/person	1,009.34
Electricity Use	WW.15	3,262,627	kWh	0.0002421	MT CO2e/kWh	789.82
Electricity Use T&D	WW.15	143,556	kWh	0.0002421	MT CO2e/kWh	34.75
All WWTP						
Stationary Combustion		97,093	people	0.000062	MT CO_2e/person	6.04
Process N_2O[1]		97,093	people	0.001008	MT CO_2e/person	97.82
Effluent Discharge		97,093	people	0.010396	MT CO_2e/person	1,009.34
Electricity Use		3,612,194	kWh	0.0002421	MT CO2e/kWh	874.44
Electricity Use T&D		158,937	kWh	0.0002421	MT CO2e/kWh	38.48
Total						**2,026.13**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent

1. Emissions Factors for "All WWTP" are weighted based on each WWTP's the activity data and emissions factors per emissions source category.

3.3 2021 Community GHG Emissions Inventory Results

The inventory provides the City with current GHG emissions estimates that follow the Community Protocol and current best practices for GHG accounting. The results of the GHG inventory are shown in Figure 2 and Figure 2 summarized in detail in Table 36.

Figure 1 Updated Inventory GHG Emissions by Sector

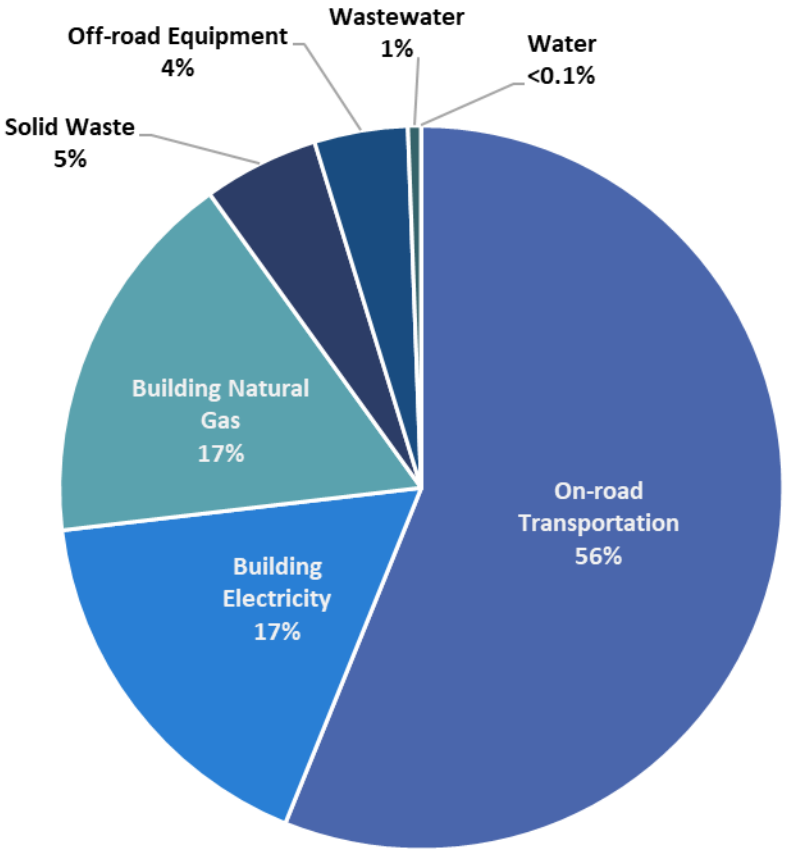

Figure 2 Updated Inventory GHG Emissions by Sub-Sector

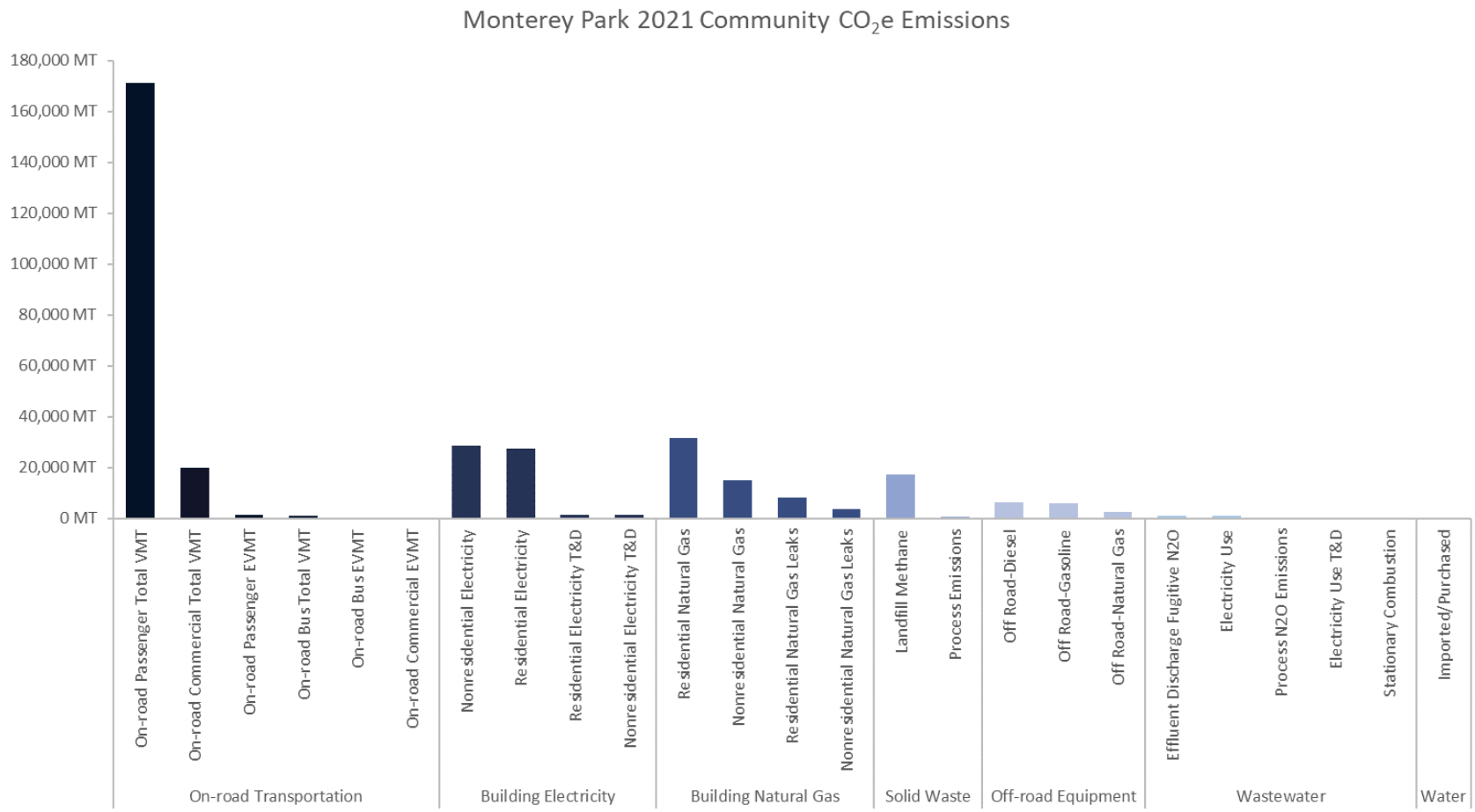

Table 36 2021 Community GHG Emissions Inventory

GHG Emissions Sector	GHG Emissions Subsector	Activity Data		Emission Factor		GHG Emissions (MT CO_2e)
Energy	Residential Electricity	104,498,177	kWh	0.000263	MT CO_2e/kWh	27,492
	Residential Electricity T&D	4,794,265	kWh	0.000263	MT CO_2e/kWh	1,261
	Nonresidential Electricity	108,155,324	kWh	0.000263	MT CO_2e/kWh	28,454
	Nonresidential Electricity T&D	4,759,032	kWh	0.000263	MT CO_2e/kWh	1,252
	Residential Natural Gas	5,962,925	therms	0.005311	MT CO_2e/therm	31,672
	Residential Natural Gas Leaks	167,801	therms	0.047381	MT CO_2e/therm	7,951
	Nonresidential Natural Gas	2,804,025	therms	0.005311	MT CO_2e/therm	14,894
	Nonresidential Natural Gas Leaks	78,907	therms	0.047381	MT CO_2e/therm	3,739
Transportation	Passenger VMT	483,695,445	VMT	0.000354	MT CO_2e/mile	171,228
	Commercial VMT	16,519,282	VMT	0.001198	MT CO_2e/mile	19,790
	Bus VMT	416,380	VMT	0.002123	MT CO_2e/mile	884
	Passenger EVMT	4,462,398	kWh	0.000263	MT CO_2e/kWh	1,174
	Commercial EVMT	0	kWh	0.000263	MT CO_2e/kWh	0
	Bus EVMT	4,486	kWh	0.000263	MT CO_2e/kWh	1
	Off-road Diesel	605,302	Gallons	0.010496	MT CO_2e/gal	6,353
	Off-road Gasoline	621,263	Gallons	0.009199	MT CO_2e/gal	5,715
	Off-road Natural Gas	392,276	Gallons	0.005882	MT CO2e/gal	2,307
Solid Waste	Landfill Methane	50,990	Wet short tons	0.337500	MT CO_2e/ton	17,209
	Process Emissions	50,990	Wet short tons	0.011000	MT CO_2e/ton	561
Water	Local	-	kWh	-	MT CO_2e/kWh	-
	Imported	31,026	kWh	0.000242	MT CO_2e/kWh	8
Wastewater	Stationary Combustion	97,093	people	0.000062	MT CO_2e/person	6
	Process N2O Emissions	97,093	people	0.001008	MT CO_2e/person	98
	Effluent Discharge Fugitive N2O	97,093	people	0.010396	MT CO_2e/person	1,009

GHG Emissions Sector	GHG Emissions Subsector	Activity Data		Emission Factor		GHG Emissions (MT CO_2e)
	Electricity Use	3,612,194	kWh	0.000242	MT CO2e/kWh	874
	Electricity Use T&D	158,937	kWh	0.000242	MT CO2e/kWh	38
Total						**343,970**

Notes: VMT = vehicle miles traveled; EVMT = electric vehicle miles traveled; kWh = kilowatt hour; MT CO_2e = Metric tons of carbon dioxide equivalent; gal = gallons

4 GHG Emissions Inventory - Municipal

4.1 Methodology

The City's municipal GHG inventory (2021 Municipal Inventory) was competed using the Local Government Operations Protocol[16] (LGOP) developed by ICLEI, CARB, California Climate Action Registry, and The Climate Registry (TCR). The LGOP methodology includes the calculation of GHG emissions which can be attributed directly to the City's operations in the given inventory year. The municipal inventory allows the City to track its GHG emissions resulting from the municipally owned facilities, vehicles, and equipment over which it can exert control with GHG reduction policies and ultimately lead by example.

The results of GHG emission calculations are presented by emissions *scope*, relating to the degree of control the City has over emissions sources, and the specific sources that the emissions are associated with. Emissions sources are categorized as direct (i.e., Scope 1) or indirect (i.e., Scope 2 or Scope 3), in accordance with the World Resources Institute and the World Business Council for Sustainable Development's Greenhouse Gas Protocol Corporate Standard, which are summarized below:

- **Scope 1:** Direct GHG emissions from sources within a local government's operations that it owns and/or controls. This includes stationary combustion to produce electricity, steam, heat, and power equipment; mobile combustion of fuels; process emissions from physical or chemical processing; fugitive emissions that result from production, processing, transmission, storage, and use of fuels; and other sources.
- **Scope 2:** Indirect GHG emissions associated with the consumption of electricity, steam, heating, or cooling that are purchased from a utility provider that also provides energy to other jurisdictions and/or is located outside City boundaries.
- **Scope 3**: All other indirect GHG emissions not covered in Scope 2, such as emissions resulting from the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the City (e.g., employee commuting and business travel) outsourced activities, waste disposal, etc.

Scope

Similar to the community inventory, the GHG emissions sources and sectors for the municipal operations inventory are categorized into various sectors and subsectors to match the GHG emissions reporting of the community GHG emissions inventory, with the granularity required by the LGOP. The primary sectors of GHG emissions sources include:

- Electricity
- Natural Gas
- Transportation
- Water and Wastewater
- Solid Waste

[16] ICLEI. May 2010. Local Government Operations Protocol for the quantification and reporting of greenhouse gas emissions inventories.

Further granularity can be achieved by also reporting GHG emissions sources by the following subsectors when possible:[17]

- Buildings and other facilities
- Streetlights and traffic signals
- Water delivery facilities
- Vehicle fleet
- Transit fleet
- Wastewater facilities
- Employee commute
- Employee business travel
- Water consumption
- Solid waste generation

The City's 2021 Municipal Inventory includes an assessment of the City's operational GHG emissions according to the above subsectors and categorized to reflect the City's municipal Scope 1-3 emissions.

Emissions Boundary

The 2021 Municipal GHG Emissions Inventory includes all emissions occurring within the City's direct jurisdictional authority (i.e., sources of emissions resulting from facilities that the City owns and/or operates).

4.2 2021 Municipal GHG Emissions Inventory

4.2.1 Buildings and Other Facilities

Buildings and facilities generate Scope 1 and Scope 2 emissions that relate to the stationary combustion of natural gas (i.e., Scope 1) and the use of electricity (i.e., Scope 2) in the City's facilities.

Natural gas which is used for heating and cooling of buildings and facilities is provided to the City by SoCalGas. However, similar to the community natural gas used, not all the natural gas used is combusted, some fraction is leaked during distribution and at end-uses.[18,19,20] The activity data provided by SoCalGas is adjusted to remove end-use leakage and an emission factor from the EPA Emission Factors for Greenhouse Gas Inventories report is applied to calculate GHG emissions from

[17] The LGO Protocol recommends additional subsector reporting; however, the following have been excluded due to inapplicability to the City of Camarillo's operations: port facilities, airport facilities, and solid waste facilities.

[18] See Section 3.2.1, *Energy: Natural Gas Methane Leaks* for more information

[19] Alvarez, Ramón et al. (2018). Assessment of methane emissions from the U.S. oil and gas supply chain. Science. 361. https://www.science.org/doi/abs/10.1126/science.aar7204

[20] Environmental Defense Fund USER GUIDE FOR NATURAL GAS LEAKAGE RATE MODELING TOOL. Available at: https://www.edf.org/sites/default/files/US-Natural-Gas-Leakage-Model-User-Guide.pdf

natural gas combustion.[21] Emissions from distribution and end-use methane leaks are calculated separately using the attributed activity data and a calculated natural gas methane leak emission factor. The GHG emission calculation details associated with the buildings and other facilities sector's natural gas usage and leakage are provided in Table 37.

Table 37 Municipal Buildings and Facilities Sector Natural Gas GHG Emissions Calculations

GHG Emissions Source	Total Activity Data [therms]	Source Activity Data[1] [therms]	Emissions Factor [MT CO_2e/therm]	Emissions [MT CO_2e]	Scope
Natural Gas Combustion	123,243	122,627	0.005311	651	Scope 1
Natural Gas Methane Leaks[2]		3,451	0.047381	164	Scope 1
Total				**815**	**Scope 1**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent

1. See Equations 3.3 and 3.4 as well as Table 7 and Table 9 for more information on how natural gas activity data is attributed between combustion and leakage emissions sources

2. Emission factor is calculated using the following equation:

$$2.85\ \frac{cubic\ meters}{therm} * 95\%\ methane\ content\ * 0.7\ \frac{kg}{cubic\ meter} * 28\ \frac{CO_2e}{CH_4} * 0.001\ \frac{MT}{kg}$$

Electricity used to light and power municipal buildings and facilities is provided to the City by SCE and is considered Scope 2 emissions. An annual electricity consumption utility data summary report was provided by the City for all municipal buildings and operations. Buildings and facilities activity data was identified from the annual summary and applied to SCE's 2021 power label emissions factor as reported to CEC to quantify GHG emissions.[22] Additionally, T&D electricity losses are included in the City's 2021 Municipal GHG Inventory to align with sector inclusions of the City's 2021 GHG Community Inventory. The GHG emission calculation details associated with buildings and other facilities sector's electricity usage are provided in Table 38.

[21] Environmental Protection Agency (EPA). 2022. GHG Emission Factors Hub. Available at: https://www.epa.gov/climateleadership/ghg-emission-factors-hub

[22] California Energy Commission (CEC). 2023. 2021 Power Content Label submitted by Southern California Edison. Available at: https://www.energy.ca.gov/filebrowser/download/4676

Table 38 Municipal Buildings and Facilities Sector Electricity GHG Emission Calculations

GHG Emissions Source	Utility Provider	Activity Data[1] [kWh]	Emissions Factor[2] [MT CO_2e/kWh]	Emissions [MT CO_2e]	Scope
Electricity Consumption	SCE	2,152,933	0.000263	566	Scope 2
Electricity Consumption T&D[3]	SCE	94,729	0.000263	25	Scope 2
Total				**591**	**Scope 2**

Notes: kWh = kilowatt hour; MT CO_2e = Metric tons of carbon dioxide equivalent

1. See Equation 3.1 and Table 2 for calculation methodology and data sources
2. See Equation 3.2 and Table 5 for calculation methodology and data sources
3. Electricity consumption T&D includes the T&D associated with electric vehicle charging at City buildings and facilities.

4.2.2 Streetlights and Traffic Signals

The City's streetlights and traffic signals generate Scope 2 emissions related to the use of electricity and resulting T&D losses. Activity data was reported in the City's annual electricity consumption utility data report and emissions factors for SCE and T&D losses were determined according to Table 5. The GHG emission calculation details associated with buildings and other facilities sector's electricity usage are provided in Table 39.

Table 39 Municipal Streetlights and Traffic Signals Sector Electricity GHG Emission Calculations

GHG Emissions Source	Utility Provider	Activity Data[1] [kWh]	Emissions Factor[2] [MT CO_2e/kWh]	Emissions [MT CO_2e]	Scope
Streetlights & Traffic Signals	SCE	2,229,759	0.000263	587	Scope 2
Streetlights & Traffic Signals T&D	SCE	98,109	0.000263	26	Scope 2
Total				**612**	**Scope 2**

Notes: kWh = kilowatt hour; MT CO_2e = Metric tons of carbon dioxide equivalent

1. See Equation 3.1 and Table 2 for calculation methodology and data sources
2. See Equation 3.2 and Table 5 for calculation methodology and data sources

4.2.3 Water Delivery Facilities

Water consumption typically generates Scope 3 GHG emissions from the electricity used to deliver water to the City facilities, as well as the energy used to treat and convey the water prior to delivery. A portion of the City's water which is purchased from SGVWC is considered Scope 3 as the City does not control the electricity used to extract, convey, treat, and transport SGVWC's water prior to delivery. However, the portion of water provided by SGVWC is considered negligible and therefore excluded from the 2021 Municipal GHG Inventory.

City produced water is considered a Scope 2 emissions source as the facility and distribution infrastructure are owned and operated by the City. The City's annual electricity consumption utility data report provided aggregated activity data for water supply and irrigation systems which is assumed to include municipal building water consumption.

T&D losses associated with the City's water supply and irrigation systems was quantified to maintain consistency with the community inventory and the buildings and facilities emissions sectors. The GHG emission calculations details are provided in Table 40.

Table 40 Municipal Water Consumption GHG Emissions Calculations

GHG Emissions Source	Activity Data[1] [kWh]	Emissions Factor[2] [MT CO_2e/kWh]	Emissions [MT CO_2e]	Scope
Water Supply Infrastructure	6,250,401	0.000263	1,644	Scope 2
Water Supply Infrastructure T&D	275,018	0.000263	72	Scope 2
Total			**1,717**	**Scope 2**

Notes: kWh = kilowatt hour; MT CO_2e = Metric tons of carbon dioxide equivalent; Values may not add due to rounding

1. For T&D loss activity data, see Equation 3.2 and Table 5 for calculation methodology and data sources

2. See Equation 3.10 and Table 22 for calculation methodology and data sources

4.2.4 Vehicle Fleet

Vehicle fleet emissions include Scope 1 sources that relate to the combustion of fossil fuels in the City's on-road and off-road fleet vehicles as well as Scope 2 emissions from the charging of EVs. On-road fleet vehicles include light and medium-duty vehicles and trucks as well as the use of personal vehicles for work. The employee commute sector accounts for emissions generated by City employees' trips to and from work and is treated as separate from the use of personal vehicles for work and is discussed in the section below. The City tracks data regarding vehicle make, model and model year, vehicle identification numbers (VIN), vehicle type, and odometer readings from the beginning and end of each fiscal year. Data regarding public transit and Dial-A-Ride vehicles were identified in the City's municipal vehicle mileage report and excluded from vehicle fleet emissions as they are included under the transit fleet sector. Due to the small amount of EVs currently owned by the City[23], electricity emissions from City-owned EVs were considered negligible and therefore not calculated as part of the 2021 Municipal GHG Inventory. However, electricity emissions from these vehicles are assumed to already be captured in building electricity usage.

Annual mileage, or hours of use in the case of off-road equipment, were determined by comparing 2020 and 2021 vehicle fleet based on VIN information and subtracting odometer readings. Type of fuel used (i.e., gasoline, diesel, or natural gas) was identified based on type of vehicle identification. Total GHG emissions were quantified for on-road vehicles using emissions factors obtained from the EPA Emission Factors for Greenhouse Gas Inventories report.[24] EPA per gallon emissions factors were applied to fuel efficiency standards identified using the U.S. Department of Energy's Fuel Economy database[25] to determine the GHG emissions per mile. Miles travelled was aggregated based on vehicle fuel type and GHG emissions were quantified using a weighted average per mile emissions factor.

Off-road equipment emissions were calculated by applying annual hours of operation activity data to horsepower designations, load factors, and per horsepower-hour emissions factors provided by

[23] The City currently owns and operates 2 electric cars and 2 electric scooters.

[24] Environmental Protection Agency (EPA). 2022. GHG Emission Factors Hub (April, 2022). Available at: https://www.epa.gov/climateleadership/ghg-emission-factors-hub

[25] U.S. Department of Energy. 2023. www.fueleconomy.gov, the official U.S. government source for fuel economy information. Available at: https://fueleconomy.gov/

the California Emissions Estimator Model (CalEEMod).[26] The GHG emission calculation results associated with vehicle fleet sector sources are provided in Table 41.

Table 41 Municipal Vehicle Fleet Sector GHG Emission Calculations

GHG Emission Source	Activity Data		Emissions Factor		Emissions [MT CO_2e]	Scope
On-road vehicles						
Diesel	196,821	miles	0.00101	MT CO_2e/mile	199	Scope 1
Gasoline	588,404	miles	0.00044	MT CO_2e/mile	258	Scope 1
Natural Gas	0	miles	—	MT CO_2e/mile	—	Scope 1
Off-road Equipment[1]						
Diesel	1,029	hours	0.03	MT CO2e/hour	26	Scope 1
Gasoline	839	hours	0.01	MT CO2e/hour	6	Scope 1
Natural Gas	11	hours	0.02	MT CO2e/hour	0.2	Scope 1
Total					**505**	**Scope 1**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; gal = gallons; kWh = kilowatt hour; Values may not add due to rounding

1. Emission factor for off-road equipment is calculated using the following equation:

$$hp \times Load\,Factor \times \left(\frac{g\ CO_2}{hp-hr} + \left[\frac{g\ CH_4}{hp-hr} \times GWP_{CH4}\right] + \left[\frac{g\ N_2O}{hp-hr} \times GWP_{N2O}\right]\right)$$

4.2.5 Transit Fleet

Transit fleet emissions include Scope 1 sources that relate to the mobile combustion of fossil fuels in the City's public transit fleet (e.g., buses and Dial-A-Ride). Activity data was obtained from the City's annual municipal vehicle milage report which tracks data regarding vehicle make, model and model year, vehicle identification numbers (VIN), vehicle type, and odometer readings from the beginning and end of each fiscal year. The quantification process to determine activity data and emissions factors for transit fleet vehicles follows the same procedure used for the City's vehicle fleet (see Section 4.2.4 above). The GHG emission calculation details associated with transit fleet sector sources are provided in Table 42.

Table 42 Municipal Transit Fleet Sector GHG Emission Calculations

GHG Emission Source	Activity Data		Emissions Factor		Emissions [MT CO_2e]	Scope
Natural Gas	2,367	miles	0.00230	MT CO_2e/mile	5	Scope 1
Gasoline	18,751	miles	0.00064	MT CO_2e/mile	12	Scope 1
Total					**17**	**Scope 1**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; gal = gallons; Values may not add due to rounding

4.2.6 Solid Waste Facilities

Solid waste generated at municipal buildings and facilities produces Scope 3 GHG emissions from process emission and the decomposition of waste at a landfill. The City's solid waste is collected by

[26] California Emissions Estimator Model (CalEEMod). 2022. User Guide for CalEEMod Version 2022.1, Appendix G, Default Data Tables. Available at: https://www.caleemod.com/user-guide

Athens Services which contracts with San Bernadino County landfills. For consistency in GHG emissions accounting, municipal solid waste GHG emissions were quantified consistent with the methodology applied to the City's 2021 Community GHG Inventory. The GHG emissions calculations for municipal solid waste are summarized in Table 43.

Table 43 Municipal Solid Waste GHG Emission Calculations

Sector	Activity Data [wet short ton]	Emission Factor [MT CO_2e/wet short ton]	GHG Emissions [MT CO_2e]	Emission Source Scope
Landfill Decomposition[1]	1,445	0.3375	488	Scope 3
Landfill Process	1,445	0.0110	16	Scope 3
Total			**504**	**Scope 3**

Note: MT CO_2e = Metric tons of carbon dioxide equivalent

1. For information regarding methodology, default factors, and data sources used to quantify emissions from solid waste decomposition see Equation 3.8 and Table 18

2. For information regarding methodology, default factors, and data sources used to quantify emissions from landfill processes see Equation 3.9 and Table 19

4.2.7 Wastewater Facilities

Wastewater management produces emissions through every stage of the collection and treatment process and falls under Scope 3 emissions as the City's wastewater is treated by the LACSD whose WNWRP and JWPCP facilities exist outside of the City and are not under the City's jurisdictional control. However, the wastewater collection and conveyance infrastructure is managed by the City, therefore Scope 2 emissions from electricity used by wastewater collection infrastructure within the City are also included. Electricity consumption activity data for wastewater collection infrastructure was reported in the City's annual electricity consumption utility data summary report. Additionally, the inventory for wastewater facilities includes T&D losses associated with the City's wastewater collection infrastructure to maintain consistency with the community inventory and the buildings and facilities emissions sectors.

Except for electricity use, activity data for emissions associated with wastewater treatment at WNWRP and JWPCP are based on the number of full time City employees as provided by the City. The total number of employees is apportioned between wastewater treatment plants according to the methodology specified in Table 27. Activity data for wastewater treatment electricity use was determined using the same methodology applied in Table 34 based on the number of City employees. T&D losses associated with electricity used for wastewater facility treatment processes are excluded from the municipal wastewater inventory as they are considered to be negligible. Default emission factors applicable to each wastewater treatment plant were applied to the activity data consistent with methods used in the City's 2021 Community GHG Inventory.[27] The total GHG emissions generated by the City produced wastewater and wastewater infrastructure can be found in Table 44.

[27] See Community Protocol wastewater sector methods (Section 3.2.5) for all default inputs including emissions factors used to calculate wastewater emissions.

Table 44 Municipal Wastewater GHG Emissions

GHG Emission Source	Activity Data		Emissions Factor[1]		Emissions [MT CO_2e]	Scope
Wastewater Collection						
Wastewater Collection Infrastructure[2]	1,387,154	kWh	0.000263	MT CO_2e/kWh	365	Scope 2
Wastewater Collection Infrastructure T&D[2]	61,035	kWh	0.000263	MT CO_2e/kWh	16	Scope 2
Wastewater Treatment						
Stationary Combustion[3]	443	employees	0.000062	MT CO_2e/employee	0	Scope 3
Effluent Discharge Fugitive N2O[4]	443	employees	0.010396	MT CO_2e/employee	5	Scope 3
Process N2O Emissions[5]	443	employees	0.001008	MT CO_2e/employee	0	Scope 3
Electricity Use[6]	16,481	kWh	0.000242	MT CO2e/kWh	4	Scope 3
Total					**381**	**Scope 2**
Total					**9**	**Scope 3**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; kg = kilogram; kWh = kilowatt hour; Values may not add due to rounding

1. See Table 35 for a summary of emissions factors calculated according to methods detailed in Section 3.2.5
2. See Equation 3.16 and Table 33; this only includes electricity emissions from wastewater collection infrastructure
3. See Equation 3.11 and Table 28 as well as Equation 3.12 and Table 29
4. See Equation 3.15 and Table 32
5. See Equation 3.13 and Table 30 as well as Equation 3.14 and Table 31
6. See Equation 3.16 and Table 33; this includes electricity emissions from wastewater treatment processing

4.2.8 Employee Commute

Emissions from employee commute include Scope 3 GHG emissions sources from the mobile combustion of fossil fuels generated by the City's employee vehicles due to employees commute to and from work. The annual commute miles travelled per year were estimated based on number of full time employee data provided by the City, the average commute miles per one way trip as reported by a study published by SCAG,[28] and a 260 work days per year conversion factor. The passenger vehicle emissions factor provided by EMFAC2021[29] was applied to activity data to determine GHG emissions from employee commute. The GHG emissions associated with the employee commute sector are provided in Table 45.

[28] Southern California Association of Governments. 2021. Spatiotemporal Analysis of Jobs-Housing Fit in Southern California (ID: P21-20281). Available at: https://scag.ca.gov/sites/main/files/file-attachments/ej_jhfit_scag_2021trb.pdf?1612993870

[29] California Air and Resources Board. 2023. Emission FACtor (EMFAC2021 v1.0.1) Model. Available at: https://arb.ca.gov/emfac/emissions-inventory/5e0cb7d6006cc10661f4b3ffb9c120a486d46ea6

Table 45 Municipal Employee Commute GHG Emissions

GHG Emission Source	City Employees	Avg One-way Distance [mi/trip]	Work Days per Year	Emissions Factor [MT CO_2e/mi]	Emissions [MT CO_2e]	Emission Source Scope
Employee Commute	443	9.10	260.00	0.00035	742	Scope 3

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; mi = miles; Values may not add due to rounding

5 GHG Emissions Forecast

A GHG emissions inventory sets a reference point for a single year; however, annual GHG emissions change over time due to factors such as population and job growth as well as new technologies and policies. A GHG emissions forecast estimates future GHG emission changes by accounting for projected community growth. Calculating the difference between the GHG emissions forecast and GHG emissions reduction targets set by a jurisdiction determines the gap in GHG emissions that needs to be closed through the implementation of local GHG reduction policies. This section includes an estimate of the future emissions for the City in the years 2030, 2035, 2040 and 2045 in a *business-as-usual scenario* (BAU) forecast and a *legislative adjusted scenario* (adjusted) forecast, which are defined as follows:

- B*usiness-as-usual scenario*- Provides a forecast of how future GHG emissions would change if consumption trends continue as they did in 2021 and growth were to occur as projected in Southern California Association of Government's (SCAG) 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Final Growth Forecast, absent any regulations that would reduce local emissions.
- *Legislative adjusted scenario*- Provides a forecast of how currently adopted legislation would reduce GHG emissions from the *business-as-usual scenario*. The *legislative adjusted scenario* represents the State's contribution to reducing local GHG emissions to meet state goals.

Because the adjusted forecast incorporates the impact of State regulations that provide GHG emission reduction potential to offer a more accurate picture of future GHG emission growth and the responsibility of the City for GHG reductions.

5.1 Business-as-usual Scenario GHG Emissions Forecast

For the BAU forecast, future GHG emissions were calculated by multiplying projected activity data with the baseline emission factors utilized in the 2021 community GHG emissions inventory. Several indicator growth rates were developed from 2021 activity data and applied to demographic projections to project future activity data.

Demographics applied to the growth factors use SCAG's RTP/SCS 2016-2040 Final Growth Forecast estimates of population, employment, and households.[30] Household based growth factors from SCAG's RTP/SCS forecast are adjusted to account for the 6th Cycle Regional Housing Needs Assessment (RHNA) allocation of housing needs for the City between 2021 and 2029. As such, the number of households in the City is expected to grow by 5,257 units between 2020 and 2029[31], with steady growth after 2030 at a rate of about 36 households per year. On-road transportation VMT projections and off-road fuel use projections utilize data obtained from Iteris, Inc. and the CARB EMFAC OFFROAD2021 model, respectively, as described in the Community Inventory section. A summary of the demographics and projection metrics for each forecast year in the BAU forecast are provided in Table 46.

[30] Southern California Association of Governments. 2023. 2016-2040 RTP/SCS Final Growth Forecast by Jurisdiction. Available at: https://scag.ca.gov/sites/main/files/file-attachments/2016_2040rtpscs_finalgrowthforecastbyjurisdiction.pdf?1605576071.

[31] City of Monterey Park. 2023. 2023 Housing Element. Available at: https://www.montereypark.ca.gov/DocumentCenter/View/14974/Housing-Element-2023?bidId=

Table 46 BAU Forecast Demographic and Projection Metrics by Forecast Year

Metric	Data Source	2021	2030	2035	2040	2045
Population	SCAG 2016-2040 RTP/SCS	62,700	63,600	64,100	65,000	65,900
Employment	SCAG 2020 RTP/SCS	34,393	35,391	35,700	36,500	37,300
Service Population	SCAG 2020 RTP/SCS	97,093	98,991	99,800	101,500	103,200
Households	SCAG 2020 RTP/SCS and SCAG 6th Cycle RHNA Allocation	20,833	26,406	26,557	26,757	26,957
Passenger Annual VMT	Iteris, Inc.	483,695,445	492,860,756	497,952,634	503,044,859	508,137,084
Commercial Annual VMT	Iteris, Inc.	16,519,282	17,834,759	18,566,235	19,297,364	20,028,493
Bus Annual VMT[1]	Iteris, Inc.	416,380	N/A	N/A	N/A	N/A
Off-road gasoline usage (gallons)	CARB OFFROAD2021	621,263	673,143	691,873	709,122	726,981
Off-road diesel usage (gallons)	CARB OFFROAD2021	605,302	642,586	673,444	704,153	739,068
Off-road natural gas usage (gallons)	CARB OFFROAD2021	392,276	429,606	451,568	474,690	474,690

Notes: VMT = vehicle miles traveled; RHNA = Regional Housing Needs Allocation; Demographics for 2030 and 2045 are quantified assuming growth rate remains consistent between the years of 2035-2045

1. Bus VMT for 2021 is obtained from Iteris Inc.'s VMT analysis and growth factor is applied for forecast years, as seen in Table 2 below.

A description of the demographic metrics used to project activity data and associated growth factors for each forecasted GHG emission source in the 2021 community GHG emissions inventory are provided in Table 47.

Table 47 GHG Emission Sources and Growth Factors for BAU Scenario Forecast

GHG Emissions Source	Demographic Projection Metric	Growth Factor	Value	Units
Energy[1]				
Residential Natural Gas Consumption	Households	Natural Gas Consumption per Household	286	therms
Non-residential Natural Gas Consumption	Employment	Natural Gas Consumption per Job	82	therms
Residential Electricity Consumption	Households	Electricity Consumption per Household	5,016	kWh
Non-residential Electricity Consumption	Employment	Electricity Consumption per Job	3,145	kWh
Residential Natural Gas Leaks	Households	Natural Gas Leakage per Household	8	therms

Non-residential Natural Gas Leaks	Employment	Natural Gas Leakage per Job	2	therms
Transportation				
On-Road Passenger Vehicles[2]	N/A	N/A	N/A	N/A
On-Road Commercial Vehicles[3]	N/A	N/A	N/A	N/A
On-Road Buses	Service Population	Annual Bus Service per Service Person	4	VMT
Off-Road Equipment[4]	N/A	N/A	N/A	N/A
Water & Wastewater[5]				
Imported Water Supply Electricity Consumption	Service Population	Imported Potable Water Supply Electricity Consumption per Service Person	0.32	kWh
Wastewater Electricity Consumption	Service Population	Wastewater Electricity Consumption per Service Person	37	kWh
Wastewater Process and Fugitive Emissions	Service Population	Wastewater Process and Fugitive Emissions per Service Person	0.01	MT CO2e
Solid Waste				
Solid Waste Disposal	Service Population	Solid Waste Disposed per Service Person	0.18	tons

Notes: MT CO2e = Metric tons of carbon dioxide equivalent; kWh = kilowatt-hour; VMT = vehicle miles traveled; N/A = Not Applicable; SP = Service Population – the combined total number of employees and residents in the City

1. Electricity T&D growth factor is not included as GHG emissions from electricity T&D is added to each forecasted year's total electricity amount.

2. Annual Vehicle Miles Traveled (VMT) for each forecast year are obtained from Iteris Inc.'s VMT analysis.

3. VMT for each forecast year are obtained from Iteris Inc.'s VMT analysis.

4. Fuel consumption for each forecasted year are obtained from the CARB OFFROAD2021 Model, available at: https://arb.ca.gov/emfac/emissions-inventory/5e0cb7d6006cc10661f4b3ffb9c120a486d46ea6

5. Electricity emissions associated with local water consumption use are captured within the energy sector, as previously described in the Community Inventory section of this technical report. GHG emissions from wastewater electricity T&D is added to each forecasted years' wastewater electricity amount.

Using the above demographic and projection metrics in Table 46, multiplied by the growth factors in Table 47 and the 2021 community GHG inventory emission factors, the BAU forecast can be calculated. In the BAU forecast, GHG emissions are expected to increase through 2045. A summary of the BAU forecast results by GHG emission sector is provided in Table 48.

Table 48 BAU Forecast Results Summary by Emission Sector

GHG Emissions Source	2021	2030	2035	2040	2045
Energy	116,714	136,394	137,323	139,104	140,885
Residential Electricity + T&D	28,753	36,432	36,640	36,916	37,192
Nonresidential Electricity + T&D	29,706	30,568	30,835	31,526	32,216
Residential Natural Gas	31,672	40,144	40,373	40,677	40,981
Residential Natural Gas Leaks	7,951	10,077	10,135	10,211	10,288
Nonresidential Natural Gas	14,894	15,326	15,459	15,806	16,152
Nonresidential Natural Gas Leaks	3,739	3,847	3,881	3,968	4,055
Transportation	207,453	213,401	216,725	220,048	223,286

On-road Passenger Vehicles	172,402	175,669	177,484	179,299	181,114
On-road Commercial Vehicles	19,790	21,366	22,242	23,118	23,994
On-road Buses	885	902	910	925	941
Off-road Equipment	14,376	15,464	16,089	16,706	17,237
Water and Wastewater	2,034	2,073	2,090	2,126	2,162
Imported Water Supply	8	8	8	8	8
Wastewater Process and Fugitive Emissions	1,113	1,135	1,144	1,164	1,183
Wastewater Electricity + T&D	913	931	938	954	970
Solid Waste	17,770	18,117	18,265	18,576	18,888
Solid Waste Disposal	17,770	18,117	18,265	18,576	18,888
Total GHG Emissions	343,970	369,985	374,404	379,855	385,219

Notes: All values are presented in metric tons of carbon dioxide equivalent (MT CO2e)

5.2 Legislative Adjusted Scenario GHG Emissions Forecast

Several federal and state regulations have been enacted that would reduce the City's GHG emissions below the BAU forecasted levels in 2030, 2035, 2040 and 2045. The impact of these regulations was quantified and incorporated into the adjusted forecast to provide a more accurate depiction of future emissions growth and the GHG emission reduction responsibility of the City. The state legislation included in the adjusted forecast reduce GHG emissions associated with transportation, building efficiency and renewable electricity. A brief description of each regulation and the methodology used to calculate associated reductions is provided in the following, as well as a description of why specific legislation was excluded from the analysis.

5.2.1 Legislative Reduction Programs

Additional legislative programs are expected to reduce GHG emissions in specific sectors throughout California, as identified in the 2017 Scoping Plan Update. Many of these programs were incorporated into the forecast analysis and are summarized in the subsections below.

Transportation Legislation

Advanced Clean Cars Programs

Prior to 2012, mobile emissions regulations were implemented on a case-by-case basis for GHG and criteria pollutant emissions separately. In January 2012, CARB approved a new emissions-control program (the Advanced Clean Cars program) combining the control of smog, soot causing pollutants, and GHG emissions into a single coordinated package of requirements for passenger cars and light trucks model years 2017 through 2025. The Advanced Clean Cars program coordinates the goals of the Low Emissions Vehicles, Zero Emissions Vehicles, and Clean Fuels Outlet programs, and is more stringent than the federal Corporate Average Fuel Economy (CAFE) standards. The new

standards will reduce California's GHG emissions by 34 percent in 2025 which is modeled under the CARB EMission FACtor (EMFAC) Model and included in the GHG forecast.[32]

Advanced Clean Cars II was approved by CARB in August 2022 and expands the program's roadmap so that by 2035 all new cars and passenger trucks will be zero-emission vehicles (ZEV). This regulation effectively binds the State to EO N-79-20. The executive order was passed by the governor in 2020 and requires all new cars and passenger trucks sold in California be ZEV by 2035. While these legislations will lead to an expedited timeline for ZEV adoption in California, modeling data is not yet available in CARB's EMFAC Model, and emissions reductions attributable to the Advanced Clean Cars II program were therefore, excluded from the GHG forecast.

Advanced Clean Trucks was approved by CARB in June 2020 sets a zero emission vehicle (ZEV) percent-of-sales requirement on medium- and heavy- duty vehicle manufacturers to promote increased truck ZEV sale from 2024 to 2035. The standard is intended to reduce NO_x pollution and GHG emissions, which are disproportionately high in medium- and heavy-duty vehicle classes compared to passenger vehicles, as well as promote first-wave ZEV truck technology penetration in the market.[33] EMFAC models the effect of the Advanced Clean Trucks regulation on ZEV truck penetration and associated GHG emissions and in included in the forecast.

Assembly Bill 1493

Signed into law in 2002, AB 1493 (Pavley Standards) required vehicle manufacturers to reduce GHG emissions from new passenger vehicles and light trucks from 2009 through 2016. Regulations were adopted by CARB in 2004 and took effect in 2009 when the United States Environmental Protection Agency (USEPA) issued a waiver confirming California's right to implement the bill. CARB anticipates that the Pavley I standard will reduce GHG emissions from new California passenger vehicles by about 30 percent in 2016, while simultaneously improving fuel efficiency and reducing motorists' costs.[34]The impacts of the Pavley Standards on zero emission vehicle market penetration was incorporated into the EMFAC model starting in 2014 and is included in the forecast assessment.

Innovative Clean Transit

Public transit GHG emissions will be reduced in the future through the Innovative Clean Transit (ICT) regulation, which was adopted in December 2018. It requires all public transit agencies to gradually transition to a 100-percent zero-emission bus fleet by 2040. Under ICT, large transit agencies are expected to adopt Zero-Emission Bus Rollout Plans to establish a roadmap towards zero emission public transit buses.[35] The effects of the ICT regulation on GHG emissions are modeled in EMFAC2021 and is therefore included in the forecast.

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[32] California Air and Resource Board (CARB). 2019. Advanced Clean Cars Summary.. Available at: https://ww2.arb.ca.gov/sites/default/files/2019-12/acc%20summary-final_ac.pdf

[33] California Air and Resource Board (CARB). 2023. Advanced Clean Trucks. Available at: https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks/about

[34] CARB. Clean Car Standards – Pavley, Assembly Bill 1493. May 2013. Accessed November 14, 2022 at: http://www.arb.ca.gov/cc/ccms/ccms.htm

[35] Innovative Clean Transit. Approved August 13, 2019. Accessed November 14, 2022 at: https://ww2.arb.ca.gov/sites/default/files/2019-10/ictfro-Clean-Final_0.pdf?utm_medium=email&utm_source=govdelivery

Energy Legislation

Title 24

Although it was not originally intended to reduce GHG emissions, California Code of Regulations Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was adopted in 1978 in response to a legislative mandate to reduce California's energy consumption, which in turn reduces fossil fuel consumption and associated GHG emissions. The standards are updated triennially to allow consideration and possible incorporation of new energy-efficient technologies and methods. Starting in 2020, new residential developments had to include on-site solar generation and near-zero net energy use. For projects implemented after January 1, 2020, the California Energy Commission (CEC) estimates that the 2019 standards will reduce electricity consumption by 53 percent for residential buildings and 30 percent for non-residential buildings, relative to the 2016 standards. The CEC further estimates residential natural gas efficiency increases of 7 percent for residential end uses.[36] No efficiency increases were estimated for commercial natural gas end uses, based on lack of requirements in this sector in the 2019 standards. These percentage savings relate to heating, cooling, lighting, and water heating only and do not include other appliances, outdoor lighting not attached to buildings, plug loads, or other energy uses. In December 2022 the CEC published the new Title 24 2022 Building Efficiency Standards.[37]

Due to the complexity of the new code there is currently no available model establishing projected efficiency increase as a result of the standard. Therefore, the updated 2022 code was not included to provide a conservative estimate of forecasted GHG emissions reductions resulting from efficiency increases.

Renewables Portfolio Standard, Senate Bill 100, & Senate Bill 1020

Established in 2002 under SB 1078, enhanced in 2015 by SB 350, and accelerated for the first time in 2018 under SB 100, California's Renewable Portfolio Standard (RPS) is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities, publicly owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 50 percent of total procurement by 2026 and 60 percent of total procurement by 2030. The RPS program further requires that by 2045 that 100 percent of total energy procured be a combination of eligible renewable energy resources and zero-carbon resources.

California's RPS was further accelerated in 2022 by SB 1020 which established additional requirements that procurement from eligible renewable energy resources and zero-carbon resources increase to 90 percent of total procurement by 2035 and 95 percent of total procurement by 2040. The requirements of SB 1020 do not affect those previously set forth and are to be considered additional to the existing RPS requirements. The RPS program and SB 1020 were incorporated into the GHG forecast by adjusting the electricity emissions factors for future years, as discussed in Section 4.4.

Southern California Edison (SCE) currently provides electricity to the City and is subject to the RPS requirements. SCE's emission factors adjusted for RPS requirements were used to project emissions

[36] California Energy Commission. 2019 Building Energy Efficiency Standards Frequently Asked Questions. January 1, 2020. Accessed November 8, 2022 at: https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf

[37] California Energy Commission (CEC). 2023. 2022 Building Energy Efficiency Standards. Available at: https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency

through 2045. Table 49 provides the estimated electricity emission factors that would result from SB 100.

Table 49 Southern California Edison Forecasted RPS and Electricity Emission Factor

Metric	2021	2030	2035	2040	2045
Renewables Portfolio Standard Percentage	31%	60%	90%	95%	100%
Electricity Emission Factor (MT CO_2e/kWh)	0.00026	0.00015	0.000038	0.000019	0

Notes: MT CO2e = Metric tons of carbon dioxide equivalent; kWh = kilowatt-hour

Waste Legislation

Assembly Bill 939 & Assembly Bill 341

In 2011, AB 341 set the target of 75 percent recycling, composting, or source reduction of solid waste by 2020 calling for the California Department of Resources Recycling and Recovery (also known as CalRecycle) to take a statewide approach to decreasing California's reliance on landfills. This target was an update to the former target of 50 percent waste diversion set by AB 939.

As actions under AB 341 are not assigned to specific local jurisdictions, potential future reductions from the bill were conservatively not included in the GHG forecast analysis.

Assembly Bill 1826

In 2014, AB 1826 set regulations in place requiring California businesses to recycle all of their organic waste starting in April 2016. The bill also required jurisdictions across the State to provide organic waste recycling programs to accommodate diverted waste from local businesses. As the City has already implemented an organics collection program, implementation of AB 1826 compliance is reflected in the City's community inventory solid waste activity data and is thereby included in the BAU and adjusted forecast.

Senate Bill 1383

SB 1383 established a methane emission reduction target for short-lived climate pollutants in various sectors of the economy, including waste. Specifically, SB 1383 establishes targets to achieve a 50 percent reduction in the level of the statewide disposal of organic waste from the 2014 level by 2020 and a 75 percent reduction by 2025.[38] Additionally, SB 1383 requires a 20 percent reduction in "current"[39] edible food disposal by 2025. Although SB 1383 has been signed into law, compliance with this Senate Bill must occur at the jurisdiction-level rather than the state-level. Due to current limitations in local jurisdiction's ability to comply with organic waste targets set by SB 1383, anticipated emissions reductions attributable to the bill are conservatively excluded from the forecast. However, estimated impacts associated with SB 1383 will be included in the GHG reduction measures in the SP.

[38] CalRecycle. California's Short-Lived Climate Pollutant Reduction Strategy. https://calrecycle.ca.gov/organics/slcp/

[39] SB 1383 does not specify a baseline year for the 20 percent food recovery target, however, CalRecycle's 2018 statewide waste characterization studies will be used to help measure the baseline for the State to meet its SB 1383 goals. See CalRecycle FAQ accessed November 14, 2022 for more information:https://calrecycle.ca.gov/organics/slcp/faq/foodrecovery/#:~:text=SB%201383%20requires%20the%20state,for%20individual%20jurisdictions%20to%20achieve.

5.2.2 Legislative Adjusted Scenario Forecast Results

In the adjusted emissions forecast, the electricity and water sectors all experience a strong downward trend, approaching near-zero in 2045 due to stringent RPS requirements from SB 100/1020. Natural gas emissions are expected to continue an upward trajectory until 2045 due to population and employment growth projections. This trend is partially offset due to the increasingly stringent efficiency requirements for new construction in the upcoming Title 24 code cycles. Transportation emissions are expected to decrease sharply in the next 10 to 15 years due to existing fuel efficiency requirements, fleet turnover rates, and increased electric vehicle penetration. As most current regulations expire in 2025 or 2030, emissions standards will experience diminishing returns while VMT continues to increase, leading to lower rates of emissions reduction in the transportation sector as 2045 is approached. A detailed summary of the City's projected GHG emissions under the adjusted forecast by sector and year through 2045 can be found in Table 50.

Table 50 Legislative Adjusted Scenario Forecast Results

GHG Emissions Source	2021	2030	2035	2040	2045
Energy	116,714	105,261	78,288	74,522	70,661
Residential Electricity + T&D	28,753	18,927	4,750	2,386	0
Nonresidential Electricity + T&D	29,706	17,682	4,451	2,263	0
Residential Natural Gas	31,672	39,551	39,764	40,047	40,330
Residential Natural Gas Leaks	7,951	9,928	9,982	10,053	10,124
Nonresidential Natural Gas	14,894	15,326	15,459	15,806	16,152
Nonresidential Natural Gas Leaks	3,739	3,847	3,881	3,968	4,055
Transportation	207,453	180,915	171,627	168,002	167,629
On-road Passenger Vehicles	172,402	147,380	139,526	136,651	136,181
On-road Commercial Vehicles	19,790	17,358	15,513	14,335	14,040
On-road Buses	885	713	499	310	172
Off-road Equipment	14,376	15,464	16,089	16,706	17,237
Water and Wastewater	2,034	1,510	1,239	1,212	1,183
Imported Water Supply	8	3	1	<1	0
Wastewater Process and Fugitive Emissions	1,113	1,135	1,144	1,164	1,183
Wastewater Electricity + T&D	913	372	94	48	0
Solid Waste	17,770	18,117	18,265	18,576	18,888
Solid Waste Disposal	17,770	18,117	18,265	18,576	18,888
Total GHG Emissions	343,970	305,803	269,419	262,312	258,361

Notes: All values are presented in metric tons of carbon dioxide equivalent (MT CO2e)

5.2.3 Legislative GHG Emission Reduction Contribution

A summary of the reductions from the BAU forecast that can be expected under the adjusted forecast are provided in Table 51.

Table 51 Summary of Legislative GHG Emission Reductions

Metric	2030	2035	2040	2045
California Renewable Portfolio Standards	28,236	58,866	65,251	71,517
Title 24	5,026	5,301	5,695	6,094
Transportation (Pavley, Innovative Clean Transit, etc.)	30,920	40,818	46,597	49,248
Total	64,182	104,985	117,542	126,858

Notes: All values are presented in metric tons of carbon dioxide equivalent (MT CO2e)

6 Provisional GHG Emissions Targets

GHG reduction targets are used in climate action planning to establish metrics that guide the community's commitment to achieve GHG emissions reductions and help gauge progress reducing emissions over time. California has established statewide GHG reduction goals for 2030 and 2045, relative to a baseline emissions level. CARB's 2022 Scoping Plan encourages local agencies to take ambitious, coordinated climate action that is consistent with and supportive of the state's climate goals[40]. Thus, local agencies are recommended to establish equivalent reduction targets at the local level by establishing community wide GHG reduction goals for climate action that will help California achieve its 2030 and 2045 goals. CARB has issued several guidance documents concerning the establishment of GHG emission reduction targets for CAPs or SPs, to comply with California Environmental Quality Act (CEQA) Guidelines § 15183.5(b). Even if a plan is not CEQA-qualified, CARB has long recommended that local targets be a part of the process of developing, monitoring, and updating a CAP or SP.

6.1 1990 Level GHG Emissions Back-cast

The City does not have a 1990 GHG emissions inventory from which to develop GHG reduction targets consistent with SB 32, however, 1990 GHG emissions can be estimated for the community relative to the City's updated 2021 inventory using a state-level emissions change metric.

The City's 1990 GHG emissions have been calculated using the State's 2020 GHG emissions inventory as compared to the State's GHG emissions inventory in 1990 to calculate approximate percent reduction in the City between 2021 and 1990. The State's 2020 GHG emissions inventory was used as this is the most recently available statewide inventory from CARB. It is assumed that the 1990-2020 Statewide GHG emissions change is similar to the 1990-2021 Statewide GHG emissions change, therefore it can be used to estimate 1990 level GHG emissions for Monterey Park based on the 2021 community GHG emissions inventory. This approach assumes that the City's community GHG emissions have generally remained consistent with the State's GHG emissions. The calculation is developed using the published State-wide emissions results from CARB,[41] after removing emissions from sectors not included in the City's inventory (e.g., agriculture, aviation, non-specified, industrial). The 1990 back-cast for the City is shown in Table 52.

Table 52 1990 Back-cast Calculations

1990 Back-cast Calculations	
2020 Statewide GHG Emissions (MMT CO_2e)	254.30
1990 Statewide GHG Emissions (MMT CO_2e)	306.65
2020 to 1990 Statewide GHG Emissions Change (%)	20.59%
2021 Monterey Park GHG Emissions (MT CO_2e)	343,970

[40] California Air Resources Board. 2022. California's Climate Change Scoping Plan, p.268. https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf

[41] California Air Resources Board. 2023. California GHG Emission Inventory Program. https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf

6.2 GHG Emissions Reduction Target Setting

The purpose of target setting is to develop the trajectory toward achieving the State's 2030 goal (SB 32) and prepare for the deep decarbonization needed by 2045 in a cost-effective manner by setting an incremental path toward achieving AB 1279 targets. CARB guidance is for jurisdictions to first strive to exceed the SB 32 targets of reducing GHG emissions 40% below 1990 levels, while establishing a policy framework to achieve the long-term target of carbon neutrality by 2045.

Target setting is an iterative process which must be informed by the reductions that can realistically be achieved through the development of feasible GHG reduction measures. While the provisional mitigation measures and actions outlined in the City's SP have a high level of probability to achieve GHG emissions reductions in line with SB 32, uncertainty increases over time. If the City determines that implementation of specific strategies is not achieving the anticipated emissions reductions, the strategy and/or targets may have to be revised or replaced to establish a path forward to align with the State's GHG emissions targets.

According to the Association of Environmental Professionals (AEP), the feasibility of achieving substantial reductions through local action only is questionable given limitations on local municipality authority. The AEP also states that no city or county is completely autonomous in matters of energy and transportation systems; and notes that a municipality can influence certain matters; however, many decisions about the electricity and transportation systems are under the control of the State and federal government, and/or are controlled by market determinations. Achieving the established target will require major shifts in how communities within California obtain and use energy, transport themselves and goods, and how the population lives and builds. These transformations would require implementation across all levels of the economy, not just what local jurisdictions have authority over. As such, placing the burden predominantly on local jurisdictions would thus be highly disproportional, costly, and potentially subject to litigation[42].

To maintain consistency with State targets, the City's provisional GHG emissions reduction targets are:

- Reduce GHG emissions to 40% below 1990 levels by 2030 (SB 32 target year)
- Make substantial progress towards carbon neutrality by 2045 (AB 1279 target year)

With GHG emission reduction targets in place, the reduction gap that the City will be responsible for through local action can be calculated. The City's GHG emissions reduction gap is based on the difference between the adjusted forecast, discussed previously, and the established GHG emission reduction targets. Table 53 provides a summary of the GHG emission reduction targets.

[42] Association of Environmental Professionals. Beyond Newhall and 2020: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets in California. October 2016.

Table 53 GHG Emissions Reduction Targets and Gap Analysis

Emissions Forecast or Pathway	2021	2030	2035	2040	2045
Mass Emissions Target Pathway Scenario (MT CO2e)					
Adjusted Forecast	343,970	305,803	269,419	262,312	258,361
SB 32 Mass Emissions Target Pathway[1]	343,970	248,868	165,912	82,956	-
Remaining Emissions Gap	0	56,936	103,507	179,356	258,361

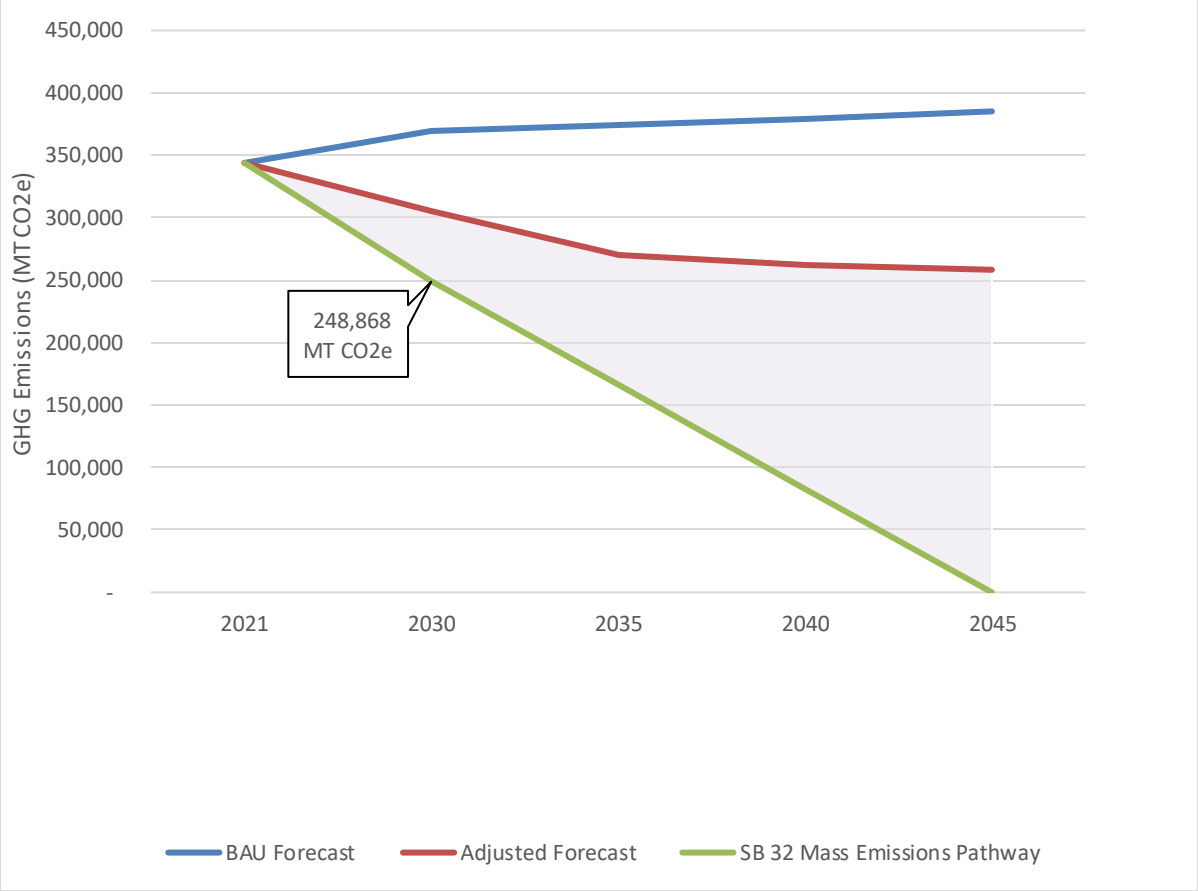
Notes: MT CO2e = Metric tons of carbon dioxide equivalent

Emissions have been rounded to the nearest whole number and therefore sums may not match.

1. The target pathway is calculated by reducing 1990 mass emissions by 40% in 2030 and to 0 in 2045. This provisional target pathway is consistent with both SB 32 and a trajectory set forth to achieve AB 1279.

Figure 3 provides a visual representation of future GHG emissions, with the impacts of State legislation and the remaining gap the City will be responsible for to meet the GHG emission reduction targets set by the State.

Figure 3 GHG Emissions Forecast and Provisional Target Pathways (Mass Emissions)



6.3 Meeting the Targets

The 2030, 2035, and 2045 targets identified above will be achieved through a combination of existing state measures and the implementation of local measures that are identified in the Monterey Park Sustainability Plan. Local measures were identified through a comprehensive assessment of existing local and regional policies, programs, and actions and by assessing any gaps and identifying additional opportunities. Additional measures were developed from best practices of other similar and neighboring jurisdictions, as well as those recommended by organizations and agencies, such as the California Air Pollution Control Officers Association (CAPCOA), the Office of Planning and Research, CARB's 2022 Scoping Plan, and Association of Environmental Professionals (AEP).

Sincerely,
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