City of Pittsburg Sustainability Plan

Adopted **2023**

Project Team Acknowledgements

The City of Pittsburg Sustainability Plan Team extends its sincere gratitude to everyone who has supported and participated in this foundational planning process. This plan was developed through an integrated partnership between community members, City staff from all departments, including Community Development, Public Works, the City Manager's Office, and Environmental Services; and interested parties. The invaluable contributions made by the community at large, City staff, Council members, and planning experts, in addition to your unwavering support and collaborative input played an instrumental role in the development of this comprehensive plan. Voices, feedback, and input are interwoven throughout this document and your continued dedication and collaboration have been instrumental in shaping an implementable Sustainability Plan that encompasses a wide range of sustainable practices. The City is grateful for the expertise, time, and effort that each person has contributed to designing this comprehensive strategy. Specifically, we would like to thank:

- Community Members
- Pittsburg Planning Commission
- Pittsburg City Council
- City Staff from all Departments, with a special thanks to the Sustainability Plan Team:
    - John Samuelson, Director of Public Works and City Engineer
    - Jordan Davis, Director of Community & Economic Development
    - Dick Abono, Director of Special Projects
    - John Funderburg, Assistant Director of Community and Economic Development
    - Hilario Mata, Assistant Public Works Director
    - Laura Wright, Retired Environmental Affairs Manager
    - Sara Bellafronte, Assistant to the City Manager
    - Dhaynae Romero, Administrative Assistant
    - Ariana Ruiz, Assistant Planner
- Delta Diablo
- Rincon Consultants, Inc.

Your active involvement, feedback, and support have enriched this plan and provided alignment with our City's goals and the community's needs. Together, we look forward to continuing our collaborative efforts as we transition into the implementation phase, working towards a greener and more sustainable future.

Glossary

Term	Definition
Active Transportation	A means of transportation that is powered by human energy, for example walking or biking.
Alteration/Remodel	Any construction or renovation to an existing structure other than repair for the purpose of maintenance or addition.
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.
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 code cycle.
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.
Carbon-free Energy	Energy produced by a resource that produces no carbon emissions while generating energy, for example, nuclear or large hydroelectric.
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.
CH_4	Methane, a hydrocarbon that is a greenhouse gas produced through anaerobic (without oxygen) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.
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.

Term	Definition
Co-benefits	Additional benefits attributed to sustainable initiatives beyond greenhouse gas emissions reductions, including improved health and safety, high-road job development, connected communities, energy security, reduced reliance on fossil fuels, and community savings.
CO_2	Carbon dioxide, a naturally occurring gas and a by-product of burning fossil fuels and biomass, as well as land-use changes and other industrial processes.
CO_2e	Carbon dioxide equivalent, a metric measure used to compare the emissions from various GHGs based upon their GWP.
Decarbonization	Replacing technologies and services that run on fossil fuels (e.g., 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	Any community disproportionally affected by environmental, health, and other burdens or low-income areas disproportionally affected by environmental pollution and other hazards.
Emissions	The release of a substance (usually a gas when referring to the subject of climate change) into the atmosphere.
Electric Vehicle (EV)	A vehicle that uses one or more electric motors or traction motors for propulsion.
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.
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.

Term	Definition
MCE	A not-for-profit, community choice aggregator (CCA) that provides clean energy options to residents and businesses in Marin County, California and select cities in Contra Costa, Napa, and Solano counties.
Mitigation	An action that will reduce or prevent GHG emissions, such as electrifying buildings that previously ran on natural gas.
Metric Tons (MT)	Common international measurement for the quantity of GHG emissions – one metric ton is equal to 2,205 pounds or 1.1 short tons.
Metric tons carbon dioxide equivalent (MT CO_2e)	Metric/unit that GHG emissions are reported per standard practice; when dealing with an array of emissions, the gases are converted to their carbon dioxide equivalents for comparison purposes.
Microgrid	A group of interconnected loads and distributed energy resources that act as a single controllable entity in respect to the grid. A microgrid can operate in 'island mode' and disconnect from the grid, or operate while connection to the grid.
N_2O	Nitrous Oxide, a powerful GHG with a high global warming potential; major sources of nitrous oxide include soil cultivation practices, especially the use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production, and biomass burning.
Organic Material	Natural 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).
Representative Concentration Pathway (RCP)	Greenhouse gas concentration trajectory scenarios adopted by the IPCC.
Reach Code	A building code which requires a higher level of energy efficiency than the standard statewide code. Reach codes are allowed and encouraged under Title 24.
Renewable Energy	Energy derived from natural sources that are replenished at a higher rate than they are consumed (e.g., wind, biomass). By definition, all renewable energy is also considered "carbon-free," however, only naturally replenishing sources are considered renewable.
Resilience	Ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate.
Senate Bill (SB) 32	SB 32 is the California Senate bill in 2016 that requires there be a reduction in GHG emissions to 40% below 1990 levels by 2030.

Term	Definition
Senate Bill (SB) 1383	California's Short-Lived Climate Pollutant Reduction Strategy, which sets statewide targets to reduce compostable materials in landfills by 75% by 2025, and to rescue at least 20% of edible food currently disposed for human consumption by 2025.
Service population	Total combined residents and employees served by the community
Sequestration	The storage of carbon in plants or materials so that it cannot enter the atmosphere and cause additional warming.
Social Equity	All people having equal access to and influence on the resources and benefits of society.
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.
Urban Forest Management Plan	An Urban Forest Management Plan (UFMP) promotes the sustainability of trees in an urban space that maximizes environmental benefits while maintaining other/ linked safety and economics goals.
Vehicle Miles Traveled (VMT)	VMT is the total miles traveled by motor vehicle that are generated over a population over a given timeframe (e.g., one year).
Weather	The state of the atmosphere over a short period of time (usually an hour or a day), describing if it is hot or cold, wet or dry, calm or stormy, clear or cloudy, etc.
Zero-Emissions-Vehicle (ZEV)	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.

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1. Introduction

John Buckley Square

City's Sustainability Vision

The Pittsburg **Sustainability Plan** is a living document that has been designed to engage, excite, and empower our community to take incremental steps towards a healthier, more sustainable future. This plan will serve as a first step towards reducing greenhouse gas (GHG) emissions in the City and establishes practices the community can implement that are practical and result in real, positive change. As such, the primary focus of this plan is to create a more sustainable, equitable, and healthy Pittsburg, while maintaining a strong economy and reducing emissions to support California's Climate goals.

Sustainability can be defined as meeting the needs of the present without compromising the ability of future generations to meet theirs and is supported by three primary pillars: economic viability, environmental protection, and social responsibility (Figure 1).[1] Building off these pillars, this plan has been created with input from community members, interested parties, and City staff to establish a robust structure and continue cultivating a healthy, flourishing City, while reducing GHG emissions and becoming more sustainable. The City's commitment to reduce GHG emissions and become more sustainable means the community will benefit from various co-benefits, including improved health and safety, high-road job development, connected communities, energy security, reduced reliance on fossil fuels, and community savings. The co-benefits are discussed further in Chapter 3, *GHG Reduction Strategy*.

1. https://www.epa.gov/sites/default/files/2015-05/documents/sustainability_primer_v9.pdf

Background and Purpose

The plan establishes a framework for the community to work together to create positive change, with sustainability and GHG emission reductions at its core. The following section provides a brief background and purpose of this plan.

Background

The City of Pittsburg has been committed to increasing sustainable operations and policies and fostering a healthy community for many years.

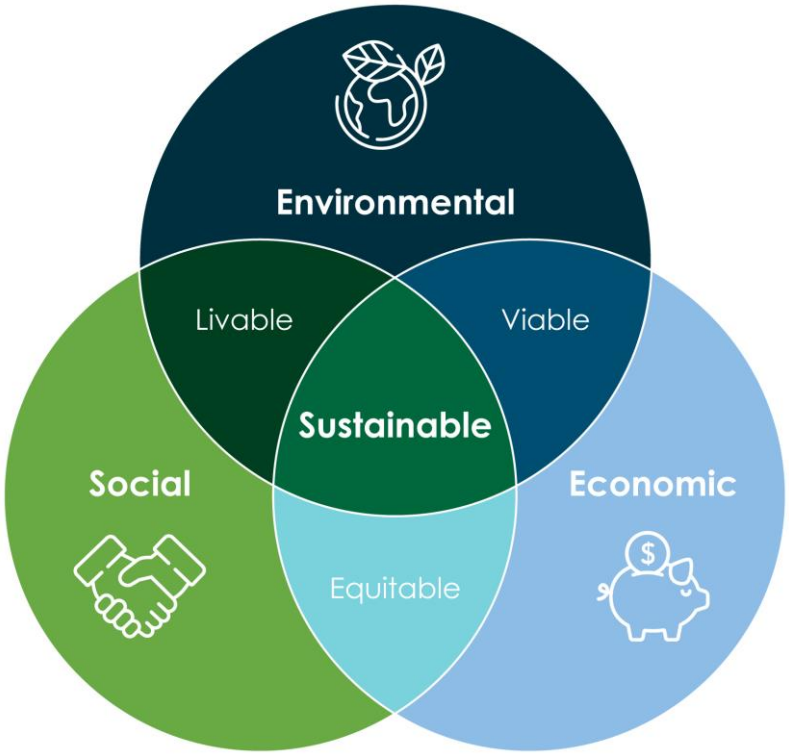
For example, the City created a Sustainability Overview reference page on the City website that includes information related to: transportation, energy use, climate action news, energy upgrade, composting, Living Green Gardens, hazardous waste, stormwater, waste and recycling, and water conservation. Pittsburg also completed a GHG inventory for 2005 and 2016 to track and understand the City's GHG emissions profile and sources. Additionally, the City has adopted a handful of documents, including Pittsburg Moves,[2] the City's Active Transportation Plan, which focuses on infrastructure and availability for active transportation options in hopes of improving health, mobility, livability, the economy, and the environment. Pittsburg Moves includes over 257 projects, such as roadway and trail improvements, including paving or repaving; installing trail crossing signals, high visibility cross walk markings, new signage, and creating high-visibility crosswalks; providing pedestrian refuge; and adding Class I and II bike lanes on various roadways throughout the City. This Sustainability Plan further demonstrates that Pittsburg is committed to reducing GHG emissions and continuing to improve life in the City.

Purpose

The Sustainability Plan is a long-range document that guides the City towards sustainability and GHG emission reduction goals. It includes the inventory of emissions sources in Pittsburg for 2005 and 2016, forecasts future GHG emissions through 2045, and establishes emissions reduction targets that align with goals set by California for both 2030 and 2045. The Sustainability Plan also includes emissions reduction goals and actions the City can implement to put the community on a path towards reducing GHG emissions with a focus on community health and our thriving economy. We recognize that the time to act is now – as a community, we can and should work together to establish a healthier future with safer homes and public spaces; more secure, high-paying jobs; and reliable access to clean resources. The structures and systems that shape our day-to-day activities can make a significant difference. According to the United Nations Intergovernmental Panel on Climate Change's (IPCC) recent report (2022), changes in lifestyle and behaviors have a significant role to play in mitigating climate change.

2. https://www.ipcc.ch/report/ar6/wg2/

Figure 1. Sustainability Pillars



Source: https://www.sciencedirect.com/topics/earth-and-planetary-sciences/venn-diagram

Specifically, actively commuting, avoiding flying when possible, shifting to plant-based diets, reducing food waste, and switching to electric vehicles and electric building heating systems are things that, with the right structures and systems in place, we can all do to reduce emissions and improve our own health, as well as the health of our communities. One of the main goals of Sustainability Plan is to bring awareness to sustainability and opportunities to reduce emissions in the community across all sectors and provide information about what we can each do today to make a difference and set our community on the path towards more significant GHG reductions. Collectively, through implementation of thoughtful actions, we can change the world by focusing locally on Pittsburg to establish a future that makes us proud.

Equity and Environmental Justice

A foundational objective of this plan is to enhance equity throughout the community while working towards long-term sustainability and GHG emission reduction goals. The City acknowledges that past policies and plans may have not equally distributed the benefits to specific communities while leaving them out of the decision-making process . Equity means ensuring that the impacts, co-benefits, and opportunities associated with this plan's goals are fairly distributed amongst the community, that the potential burdens of implementing these goals are fairly distributed, and that all communities—specifically, those who have been historically left out of the conversation before—participate in the plan's decision-making process.

As such, equity can be thought of as the goal while environmental justice is the act of achieving and protecting that goal. As outlined in the Community Health and Environmental Justice Element, a foundational objective of this plan is to consider and respond to environmental justice issues

Environmental justice is defined in California law as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.

Government Code Section 65040.12

Anchor Monument, City Hall

to confirm disadvantaged and vulnerable communities are engaged and represented in the decision-making process, to protect disadvantaged and vulnerable communities from environmental hazards, and to create a future where such communities have access to recreation, transportation, education, community amenities, healthy foods, and safe and decent housing.

Sustainability Planning Process

As mentioned above, the Sustainability Plan development process was built off the work done for the previous GHG emissions inventories and development of future GHG emissions forecasts and emissions reduction targets. As shown in Figure 2, after the targets were set, emissions reduction goals and supporting actions were designed based on the success of the work done previously in the City and current best practices. The goals and actions were refined based on City staff, interested party, and community feedback, to establish a robust plan of voluntary actions.

Once the goals and supporting actions were finalized, an implementation plan (Chapter 5, Implementation Plan) was established to track and monitor the City's progress towards the previously identified targets. As a final step, the Sustainability Plan will be adopted after public review. Successfully developing a long-range plan takes a team, including various interested parties, community members, decision-makers, City staff, and consultants, that work together collaboratively to design a plan that is representative of the needs and the desires of the community at large.

The development of this Sustainability Plan required just that – it was developed through an integrated partnership between City staff from all departments, including Community Development, Economic Development, Public Works, the City Manager's Office, and Environmental Services; interested parties; and community members. The main community-focused outreach and engagement events that were completed as part of the Sustainability Plan development process are outlined Table 1.

Figure 2. Sustainability Plan Process Flow Diagram

Table 1. Summary of Sustainability Plan Interested Party and Community Outreach and Engagement Events

Topic	Event	Date
Introduction to Sustainability Plan	Community Pop-Up Event	August 5, 2022
Input on Sustainability Plan	Community Input Survey	December 11, 2022 – January 31, 2023
Strategy and Action Review and Prioritization	Community Open House	January 25, 2023
Reducing Vehicle Miles Traveled and Increasing Zero-Emissions Vehicle and Equipment Use	Weekly Social Media Post Virtual Climate Café	March 7, 2023 March 9. 2023
Waste Diversion	Weekly Social Media Post Virtual Climate Café	March 14, 2023 March 16. 2023
Decarbonizing Electricity and Use and Storage of Local Renewable Energy	Weekly Social Media Post Virtual Climate Café	March 21, 2023 March 23, 2023
Water Conservation and Local Water Supply	Weekly Social Media Post Virtual Climate Café	March 28. 2023 March 30, 2023
Carbon Sequestration	Weekly Social Media Post Virtual Climate Café	April 4, 2023 April 6, 2023
City's Commitment to Climate Action	Weekly Social Media Post Virtual Climate Café	April 11, 2023 April 13, 2023
Reducing Reliance of Natural Resources	Weekly Social Media Post Virtual Climate Café	April 18. 2023 April 20, 2023
Creating High Road Jobs	Weekly Social Media Post Virtual Climate Café	April 25, 2023 April 27, 2023

Co-benefits of Greatest Interest to the Community:

- Improved air and water quality
- Increased personal and public health
- Protection of natural resources
- Increased resilience
- Cost savings
- Creation of high-road jobs

"Environmental justice must be central to this work as well. We have a lot of industrial businesses in the community. Thinking through a long-term plan for making a transition to cleaner businesses is going to be crucial. Providing jobs for youth is also very important!"
- City of Pittsburg Resident

Your Voice Matters!

As part of the Sustainability Plan development process, the City hosted 10 events that were open to the community members and advertised, in part, via the City's social media pages. Additionally, the City hosted a survey with the goal of gaining an understanding of the community's current awareness of climate change and preferred path toward increasing our ability to reduce the impacts of climate change and become more sustainable, while retaining the character of the City. The survey received 71 responses, 41% (31 people) of whom participated in a public planning process (e.g., participating in community surveys, providing feedback on plans and policies, attending City Council Meetings, etc.) for the first time! In addition to the survey, the City hosted a social media and Climate Café campaign, where the Sustainability Plan goals were presented by topic area and then a discussion was held to answer any questions and collect feedback from the community on anticipated hurdles and solutions to overcome those hurdles.

Based on the feedback received from the community, 16 new actions were added, and an additional 14 actions were revised or updated, with additional highlights shown in Figure 3. The community insight is incredibly valuable for this process as it confirms that the Sustainability Plan aligns with the specific needs and aspirations of the people it aims to serve.

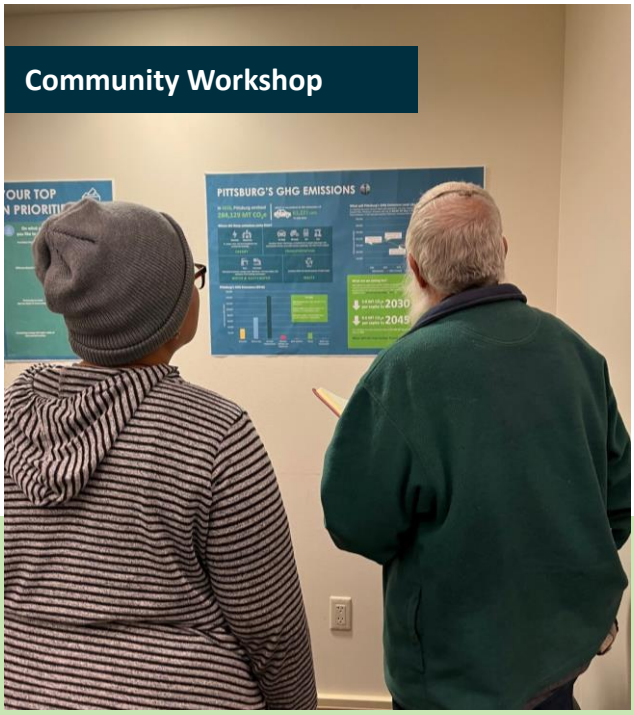


Figure 3. Outreach by the Numbers

97%

of Respondents are "**Very Likely**" or "**Likely**" to implement sustainable initiatives if hurdles were removed!

41%

first-time participation in a planning process!

71

total survey responses!

8.5

hours spent on survey!

Greenhouse Gas Emissions Background Context

Most of the energy that affects Earth's climate comes from the sun. When solar radiation reaches the Earth's atmosphere, some of it is reflected into space and a small portion is absorbed by Earth's surface. As Earth absorbs the solar radiation, its surface gains heat and then reradiates it back into the atmosphere. Some of this heat gets trapped by gases in the atmosphere, causing Earth to stay warm enough to sustain life. This is known as the "greenhouse effect" and the gases trapping the heat are known as "greenhouse gases."[3] The greenhouse effect, shown on the next page, is integral to sustaining life on Earth. However, human activities emit GHGs more than natural ambient concentrations, thereby contributing to the enhancement of the natural greenhouse effect. This enhanced greenhouse effect contributes to global warming, an accelerated rate of warming of Earth's average surface temperature. More specifically, by burning fossil fuels (e.g., gasoline, diesel, natural gas, coal) to power homes, businesses, and automobiles, we increase the amount of GHGs emitted into the atmosphere,[4] which, in turn, leads to increased absorption of infrared radiation by the Earth's atmosphere and increasing temperatures near the surface.

Types of GHGs

The United Nations Intergovernmental Panel on Climate Change's (IPCC) list of GHG emissions include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), as well as chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, which are collectively called fluorinated gases.[5] Fluorinated gases are man-made gases that can stay in the atmosphere for centuries and contribute to the GHG effect. Ninety-seven percent[6] of the annual GHG emissions generated in the United States consist of CO_2, CH_4, and N_2O, while fluorinated gases[7] result in the remaining three percent of emissions. Most fluorinated gases come from industrial sources. Due to CO_2, CH_4, and N_2O comprising the large majority of GHG emissions in Pittsburg, the Sustainability Plan focuses on these three gases for its GHG emissions inventory, forecast, and reduction strategy (See Chapter 2, *GHG Emissions Inventories, Forecasts, and Targets*, for more information).

While Pittsburg does include various industrial sources, these emissions are not under direct operational control of the City and therefore are not included in the inventory.

Each type of GHG has a differing ability to trap heat in the Earth's atmosphere, referred to as the gas's global warming potential (GWP).[8] The reference point to compare the potential impact of different GHGs is CO_2, and therefore CO_2 has a GWP of 1, whereas CH_4 has a GWP of 28. This means that each metric ton (MT) of methane causes 28 times more warming than 1 MT of CO_2. Even more potent, N_2O has a GWP of 265, or 265 times the GWP of 1 MT of CO_2.[9]

Sources of GHG Emissions

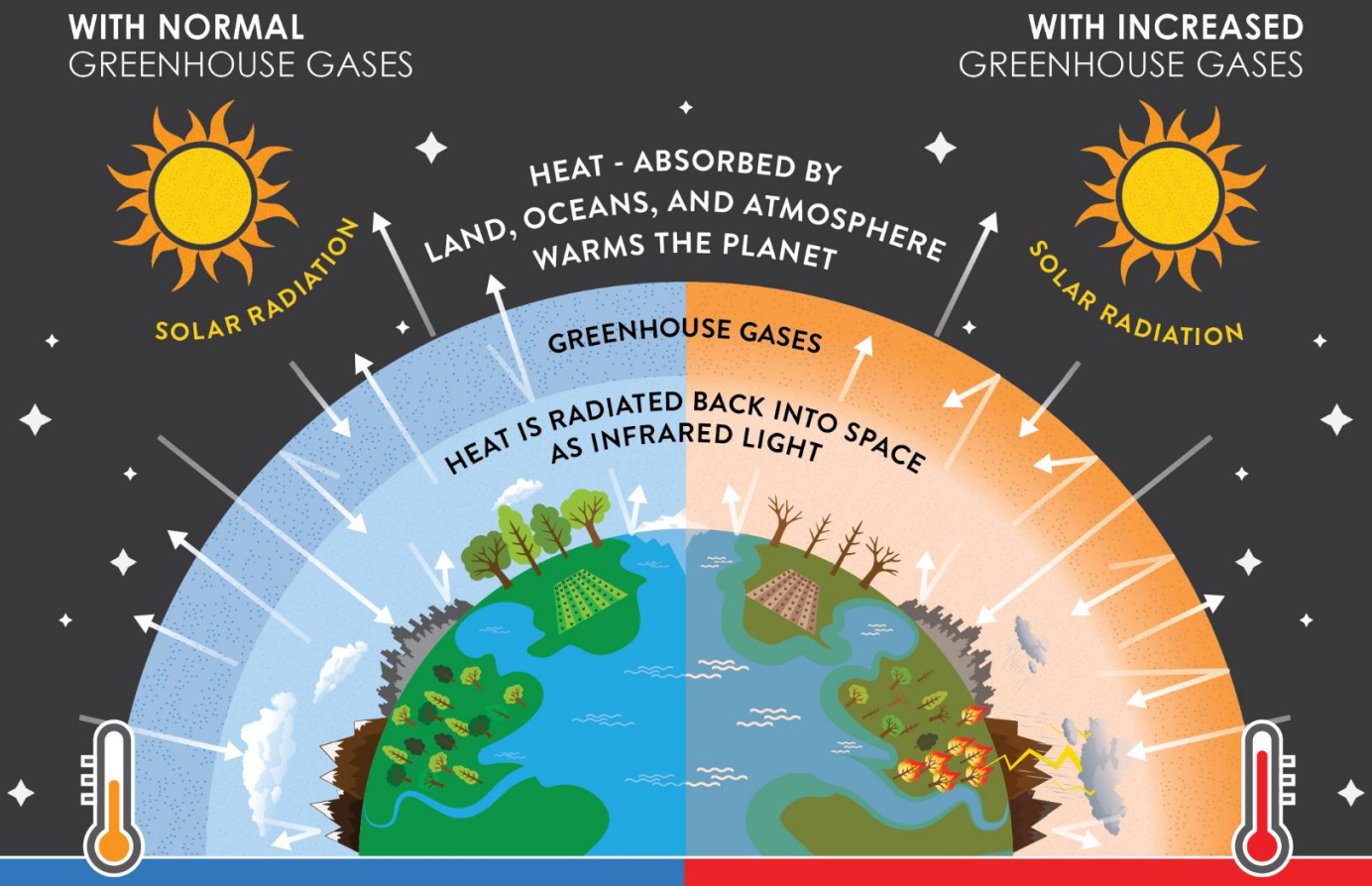
Anthropogenic (human caused) GHG emissions stem primarily from the burning of fossil fuels (including gasoline, natural gas, and coal), decomposition of organic waste in landfills, methane emissions from agriculture, and deforestation. These activities release GHGs into the atmosphere and contribute to climate change. With the accelerated increase in fossil fuel combustion and deforestation since the Industrial Revolution of the 19th century, concentrations of GHG emissions in the atmosphere have increased exponentially. The United States Environmental Protection Agency (U.S. EPA) tracks the country-wide emissions and publishes an annual report: Inventory of U.S. Greenhouse Gas Emissions and Sinks.[10] The Inventory of U.S. Greenhouse Gas

3. https://scied.ucar.edu/longcontent/greenhouse-effect
4. https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions
5. https://www.c2es.org/content/main-greenhouse-gases/
6. https://www.epa.gov/ghgemissions/overview-greenhouse-gases
7. Fluorinated gases, which include four main types: hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride, are man-made gases that can stay in the atmosphere for centuries and contribute to the GHG effect.
8. https://www.ipcc.ch/assessment-report/ar5/
9. https://www.ipcc.ch/assessment-report/ar5/
10. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

Greenhouse Gas Effect

In the last century, human activities such as burning fossil fuels and deforestation have caused a jump in the concentration of greenhouse gases in the atmosphere.

THE RESULT: Extra trapped heat and higher global temperatures.



Some heat continues into space while the rest, trapped by greenhouse gases, help maintain the planet's relatively comfortable temperatures.

LESS GAS =
LESS HEAT TRAPPED IN THE ATMOSPHERE

Retaining more reliable:

- Weather
- Temperature
- Rainfall
- Sea Level

Increased greenhouse gases means less heat escapes to space. Between preindustrial times and now, the earth's average temperature has risen by 1.8°F (1.0°C).

MORE GAS =
MORE HEAT TRAPPED IN THE ATMOSPHERE

More intense:

- Storms
- Heat
- Drought
- Sea Level Rise

Great Blue Heron in Riverview Park

Emissions and Sinks is a comprehensive account of total GHG emissions for all man-made sources in the U.S. including CO_2 removal from the atmosphere by "sinks," (e.g., through the uptake of carbon and storage in forests, vegetation, and soils) from management of lands in their current use, or as lands are converted to other uses. In 2021, the most recent year in which emissions have been calculated, emissions in the U.S. totaled 5,586 million metric tons (MMT) of CO_2e after accounting for sequestration.[11] Emissions increased in 2021 by 6 percent (after accounting for sequestration from the land sector), driven largely by an increase in CO_2 emissions from fossil fuel combustion due primarily to economic activity rebounding after the height of the COVID-19 pandemic.[12]

What does 1 MT of CO_2e really mean?

1 MT CO_2e = 2,564 miles driven by an average gasoline-powered passenger vehicle or 113 gallons of gasoline

That's about the distance from Pittsburg, CA to Pittsburgh, PA!

Source: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results

Legislative Background

California is recognized globally as a leader in climate change, having established a variety of ambitious GHG reduction goals and associated strategies. The primary legislation that has driven statewide GHG emissions reductions are Executive Order (EO) S-3-05, Assembly Bill (AB) 32, EO B-30-15, Senate Bill (SB) 32, EO B-55-18, and most recently AB 1279. Signed in 2005, EO S-3-05 established statewide GHG emission reduction targets 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*. In 2018, the goals of EO S-3-05 were accelerated by EO B-55-18, which established a goal of achieving carbon neutrality by 2045 and was codified in 2022 by AB 1279. Carbon neutrality refers to emitting net zero carbon emissions, which can be achieved by either

11. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks
12. https://www.nature.com/articles/s41558-022-01332-6

eliminating all GHG emissions, or balancing carbon emissions with carbon removal and sequestration.

To meet the state's 2045 goal of carbon neutrality CARB recommends that local agencies long-term targets align with AB 1279. Specifically, 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. See Figure 4 as well as Appendix A for more information on the most influential California legislation related to climate change.

Adaptation, Resilience, and Vulnerability

As we work to mitigate the greatest impacts of climate change, we must also adapt, or adjust, to our changing world both collectively and independently. Even with deep reductions in GHG emissions, it is anticipated that the global temperatures will continue to rise because GHG persist for so long in the atmosphere.[13] Therefore, it is necessary to prepare for the future to increase our adaptive capacity, which is the potential or ability of a system, region, or community to adapt to the effects or impacts of climate change.

Adaptation

Adapting to climate change involves adjusting to and preparing for actual or expected future climate risks as well as taking advantage of any opportunities that are associated with our changing climate.[14] Climate change affects people across the world, however, not equally. Over the last decade, scientists have measured the warmest years on record, while sea level rise has reached a new high.[15] We will adapt to the changing climate by reducing our vulnerability to its impacts, which may require relocating resources to avoid rising sea levels and using new and innovative technologies to overcome challenges.

13. https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/
14. https://climate.nasa.gov/solutions/adaptation-mitigation/
15. https://public.wmo.int/en/media/press-release/eight-warmest-years-record-witness-upsurge-climate-change-impacts

Figure 4. CA Regulatory Timeline

2002	**SB 1078** Renewable Portfolio Standards **AB 1493** Vehicular GHG Emissions
2005	**EO S-3-05** Targets for GHG Emission Reductions **Pittsburg Baseline Emissions Inventory**
2006	**AB 32** Global Warming Solutions Act **SB 107** Renewable Energy Increase
2007	**EO S-1-07** Low Carbon Fuel Standard **SB 97** Climate Change in CEQA
2008	**SB 375** Sustainable Communities **EO S-14-08** Increase RPS
2009	**CALGreen** Green Building Code **SB X7-7** Water Conservation Act
2011	**SB 2X** 33% by 2020 RPS Increase
2012	**AB 341** Mandatory Commercial Recycling
2014	**AB 32 Scoping Plan Update** **AB 1826** Organic Waste Recycling
2015	**SB 350** Clean Energy and Pollution Reduction Act **EO-30-15** 40% below 1990 by 2030
2016	**SB 1383:** Short-lived Climate Pollutants **SB 379** Climate Adaptation and Resilience **Updated Emissions Inventory**
2017	**2017 (AB 32) Scoping Plan Update**
2018	**SB 100** Increase RPS **EO B-55-18** Carbon Neutrality by 2045
2020	**SB N-79-20** Zero-emissions passenger vehicles **Pittsburg Moves**
2021	**SB 27** Carbon sequestration
2022	**SB 379** Residential solar energy systems: permitting **SB 1063** appliance standards and cost-effective measures **AB 1909** Vehicles: bicycle omnibus bill **AB 1857** Solid Waste Incineration **AB 1985** Organic waste procurement targets **AB 1279** California Climate Crisis Act **SB 1020** Increase RPS
2023	**Pittsburg Sustainability Plan** **Envision Pittsburg – General Plan**

Pittsburg Initiatives
State Initiatives

Resilience

The ability to prepare for, recover from, and adapt to climate impacts is called "climate resilience." High-quality resilience planning accounts for both acute events (e.g., heat waves, heavy rain events, and wildfire) and chronic events (e.g., sea level rise, worsening air quality, and climate migration). Overall, California is resilient and Cities throughout the state, including Pittsburg, take steps to enhance resilience by protecting and repairing coastlines, exploring and implementing large scale renewable energy projects, and investing in green technologies of the future. Additional ways to increase resilience include promoting sustainable land management practices, fostering community engagement and education on climate change, encouraging the use of green building materials and designs, and integrating nature-based solutions such as reforestation and ecosystem restoration.

Vulnerability

Vulnerability refers to the level or degree to which an individual or entity are able to cope with the adverse impacts of climate change. The three dimensions that make up climate vulnerability are exposure, sensitivity, and adaptive capacity.

Located at the point where the Sacramento and San Joaquin Rivers meet, ***Pittsburg is a city of both progress and promise.***[16]

Our Changing World

The California Office of Environmental Health Hazard Assessment (OEHHA) reported in 2018 that despite annual variations in weather patterns, California has seen a trend of increased average temperatures, more extreme heat days, higher acidity in the Pacific Ocean, and earlier and reduced snowmelt.[17] Although we will all be impacted, community members will not be affected by environmental hazards in the same way. Impact is dependent on various circumstances, such as age, health, and socioeconomic status. Being resilient will require the City to adapt to these vulnerabilities and continue to operate in a sustainable way to continue establishing a healthy environment and a thriving economy.

Those that are most vulnerable will bear the greatest burden associated with the potential impacts of our changing climate. Race, ethnicity, gender identity, sexual orientation, age, social class, physical ability, religious or ethical value systems, national origin, immigration status, linguistic ability, and zip code do not make an individual inherently vulnerable. Vulnerabilities arise from systemic deficiencies rather than a judgement of any community member or neighborhood. This document provides a foundation to even the playing field and to ultimately reduce potential burdens of climate change, especially on vulnerable populations and disadvantaged communities.

Climate Change in Pittsburg

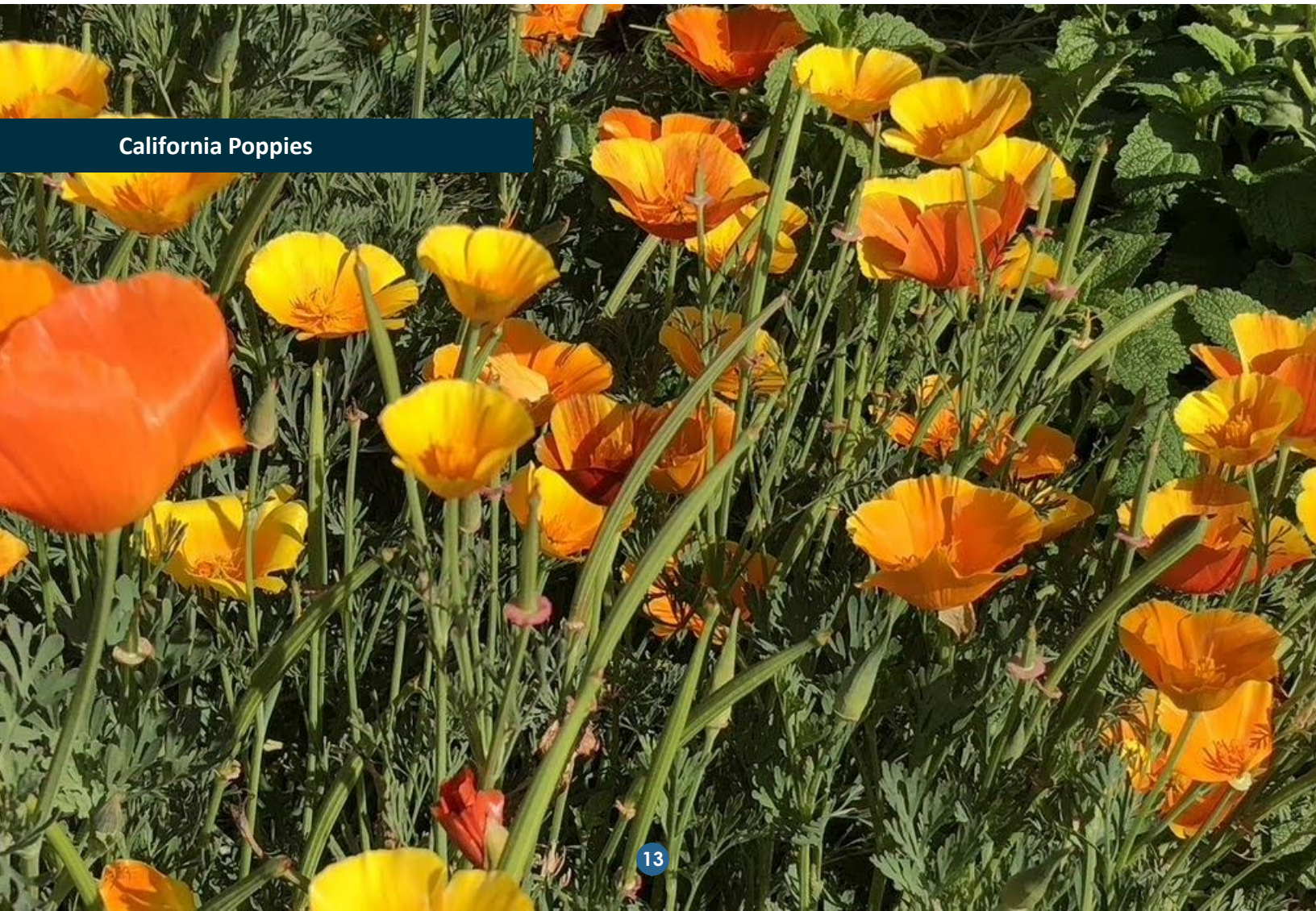
The City of Pittsburg may experience a variety of impacts due to climate change, including an increase in average temperature and changes in precipitation. Public health may be negatively impacted by extreme weather events, such as changes in temperature and rainfall that decrease water supply, worsen air quality, and/or increase allergens and air pollutants. In addition, we will experience increased flooding due to more intense precipitation events. Children, the elderly, asthmatics, and others susceptible to harm from air pollution exposure, are at the greatest risk of the negative impacts associated with climate change.[18] Increases in temperature could also worsen local heat island effects in Pittsburg and the surrounding area, meaning that urban areas could experience a compounded level of heating due to built environments absorbing and re-emitting more heat than rural communities with more natural landscapes.[19]

16. https://www.pittsburgca.gov/our-city/our-history
17. https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf
18. https://ww2.arb.ca.gov/capp-resource-center/community-assessment/sensitive-receptor-assessment
19. https://www.epa.gov/heatislands/learn-about-heat-islands

This could lead to hazardous conditions such as heat stroke and respiratory ailments for community members. Potential impacts to public health include premature death from heat stroke, cardiovascular disease, respiratory disease, and cerebrovascular disease; cardiovascular stress; and kidney and respiratory disorders.[20] Those in the community without health insurance (about 12.6 percent of the population under 65) and those living under the poverty line (approximately 10.3 percent of the population) are particularly vulnerable.[21] Projections of future vulnerabilities were taken from Cal-Adapt,[22] an interactive platform that allows users to explore how climate change might affect California at the local level under different emissions scenarios and climate models. The main emissions scenario used in this analysis is Representative Concentration Pathway (RCP) 8.5, or known as the high emissions scenario, which assumes high population, slow technological progress, and no policy driven mitigation. For an extensive view of potential impacts, RCP 4.5 is also used below. This scenario, known as the stabilizing scenario, assumes emissions peak around 2040 before declining due to the use of emissions reduction technologies and strategies.

Based on the analysis, average maximum temperatures in the City of Pittsburg are expected to rise between 4.7°F (under RCP 4.5, the stabilizing scenario) and 7.8°F (under RCP 8.5, the high emissions scenario) between the baseline (1961 – 1990) and the end of the century (2070 – 2099). Likewise, the average minimum temperature in Pittsburg will increase under both scenarios, with minimum temperatures expected to rise by 4.2°F (under RCP 4.5) and 7.3°F (under RCP 8.5) between the baseline (1961 – 1990) and the end of the century (2070 – 2099). In Pittsburg, extreme heat days are defined as days with temperatures over 100.2°F. By the end of the century, it is anticipated that there will be 19 extreme heat days under RCP 4.5 and 34 extreme heat days under RCP 8.5, up from approximately 4 days

20.https://www.niehs.nih.gov/research/programs/climatechange/health_impacts/heat/index.cfm
21.https://www.census.gov/quickfacts/fact/table/pittsburgcitycalifornia/AGE775221#AGE775221
22. https://cal-adapt.org/

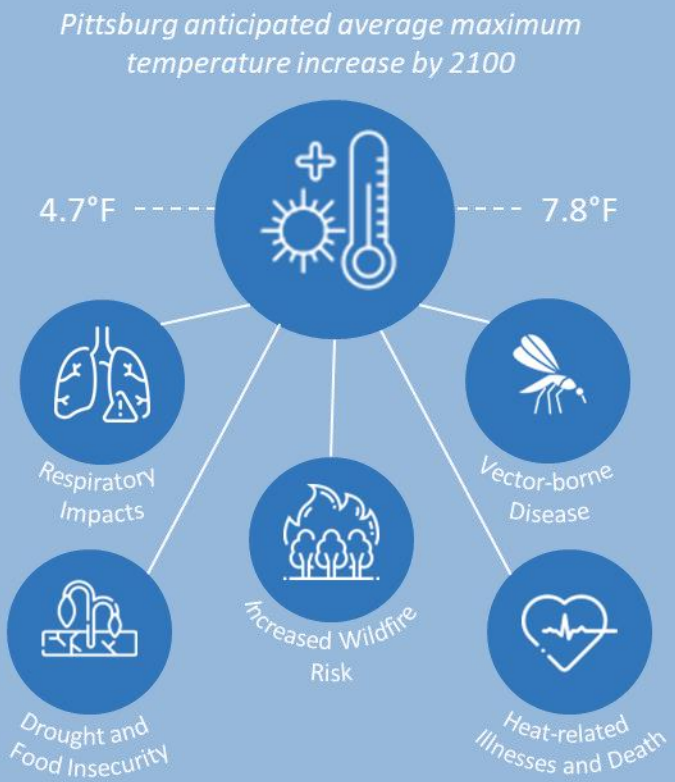


California Poppies

over the 30-year modeled average for 1961 – 1990. Simultaneously, it is anticipated that the maximum length of dry spell, which is defined as the number of consecutive days with less than 1 millimeter of rain, will also increase. Under RCP 4.5, it is anticipated that the maximum length of dry spell will increase by 10 days, from 117 days to 127 days, and under RCP 8.5, it is anticipated to increase by 15 days, to 132. Figure 5 provides a comparison of the anticipated changes in Pittsburg under both scenarios, with more information provided in Appendix B, CalAdapt.

Despite the very real impacts of climate change, there is hope. Hope that is based in science and provides a realistic path forward for us to truly change the world in which we live, work, and play. The Sustainability Plan includes actions in which every part of the community – residents, property owners, businesses, and City government – can participate to improve quality of life. The City of Pittsburg will strive to set an example by doing its part to achieve sustainable goals and fostering a safe, healthy, vibrant, and resilient community. We're excited to work together to build a more sustainable and resilient future!

Figure 4. Climate Changes and Risks in Pittsburg



Recycled Water Irrigation Signage

2. GHG Emissions Inventories, Forecasts, & Targets

Existing GHG Emissions

A GHG emissions inventory identifies the major sources and quantities of GHG emissions produced by community wide activities within a jurisdiction's boundaries for a given year, including the subset of emissions generated by City government (municipal) operations, each of which are summarized in more detail below. Estimating GHG emissions enables local governments to establish an emissions baseline, track emissions trends, identify the greatest sources of GHG emissions within their jurisdiction, and set targets for future reductions.

The Sustainability Plan builds off the 2005 baseline and updated 2016 inventory of GHG emissions from community wide and municipal activities within the City. The 2016 GHG emissions inventory was completed to provide an updated emissions inventory and help measure the GHG emissions reduction progress since 2005. Additionally, the 2005 baseline emissions inventory was updated at the time that the 2016 inventory was drafted to establish a consistent comparison of the City of Pittsburg's change in emissions over time. Both the 2005 and 2016 inventories include GHG emissions from the community, as well as municipal emissions that are generated by City buildings and operations. It is important to note that the municipal operations inventory is a portion of the community inventory, meaning that the municipal emissions are included within the community-wide inventory, and are completed to demonstrate City leadership.

Both inventories are divided into four sectors, or sources of emissions: energy (electricity and natural gas), transportation, solid waste, and water (consumption and wastewater treatment). Emissions estimates were calculated using the International Council for Local Environmental Initiatives (ICLEI) methodologies, specifically, the United States Community Protocol for Accounting and Reporting Greenhouse Gas Emissions Version 1.2 (Community Protocol) is used for community-wide emissions and the Local Government Operations Protocol Version 1.1 (LGOP) was used to quantify municipal emissions. To allow for comparison among GHG emissions sources, all emissions are translated to the equivalent of one metric ton of carbon dioxide, or MT CO_2e. One MT CO_2e is the equivalent of using 113 gallons of gasoline or driving 2,564 miles in an average gasoline-powered vehicle.[23]

2016 Community Emissions

In 2016, Pittsburg emitted approximately 284,129 MT CO_2e. As shown in Table 2 and Figure 6, the transportation sector was the largest source of emissions, generating approximately 155,918 MT CO_2e, or approximately 55 percent of total 2016 emissions. Electricity and natural gas consumption within the residential and commercial sectors was the second largest source of emissions, generating 105,037 MT CO_2e, or 37 percent of the total in 2016. Waste generation, including processing and the decomposition of waste, resulted in seven percent of the City's emissions (20,269 MT CO_2e), while water use and wastewater generation resulted in the remaining approximately one percent of total emissions in 2019, which equates to 2,906 MT CO_2e.

Changes Since 2005

Overall, GHG emissions have decreased by approximately 79,770 MT CO_2e or 22 percent between 2005 and 2016. This decrease was driven primarily by a 58 percent reduction in emissions generated by electricity due to an increase in renewable energy causing a significant decrease in the emission factor for electricity. Emissions from residential natural gas use also decreased, whereas commercial natural gas use slightly increased during the same timeframe. Together, these changes equated to a 30 percent reduction in building energy emissions over the decade. Likewise, total transportation emissions decreased by 25 percent, however, emissions from off-road vehicles and equipment increased by approximately seven percent between 2005 and 2016. Waste emissions stayed relatively constant between the two years, and emissions from water were reduced by over 50 percent. See Table 3 for details on the change in GHG emissions from 2005 to 2016. For additional details on the 2005 inventory sectors and results, see Appendix C.

23. https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator?unit=gasoline&amount=2445

Table 2. Community Greenhouse Gas Emissions Inventory (2016)

Sector and Primary Sources	2016 Emissions (MT of CO_2e)	% of 2016 Emissions
Energy	**105,037**	**37**
Electricity use in residential and non-residential buildings	30,442	11
Natural gas use in residential and non-residential buildings	71,959	25
Electricity transmission and distribution losses	2,636	1
Transportation	**155,918**	**55**
On-road transportation	145,013	51
Off-Road Vehicles and Equipment	9,928	3
BART passenger rail	163	<1
Port transport and goods movement	815	<1
Waste	**20,269**	**7**
Decomposition of solid waste sent to landfills	20,269	7
Water and Wastewater	**2,906**	**1**
Electricity used to treat, transport, and pump water	1,917	1
Wastewater collection and treatment	989	<1
Total	**284,129**	**100.0 %**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent.
Emissions have been rounded to the nearest whole number and therefore sums may not match.

Figure 6. Community Greenhouse Gas Emissions Inventory (2016)

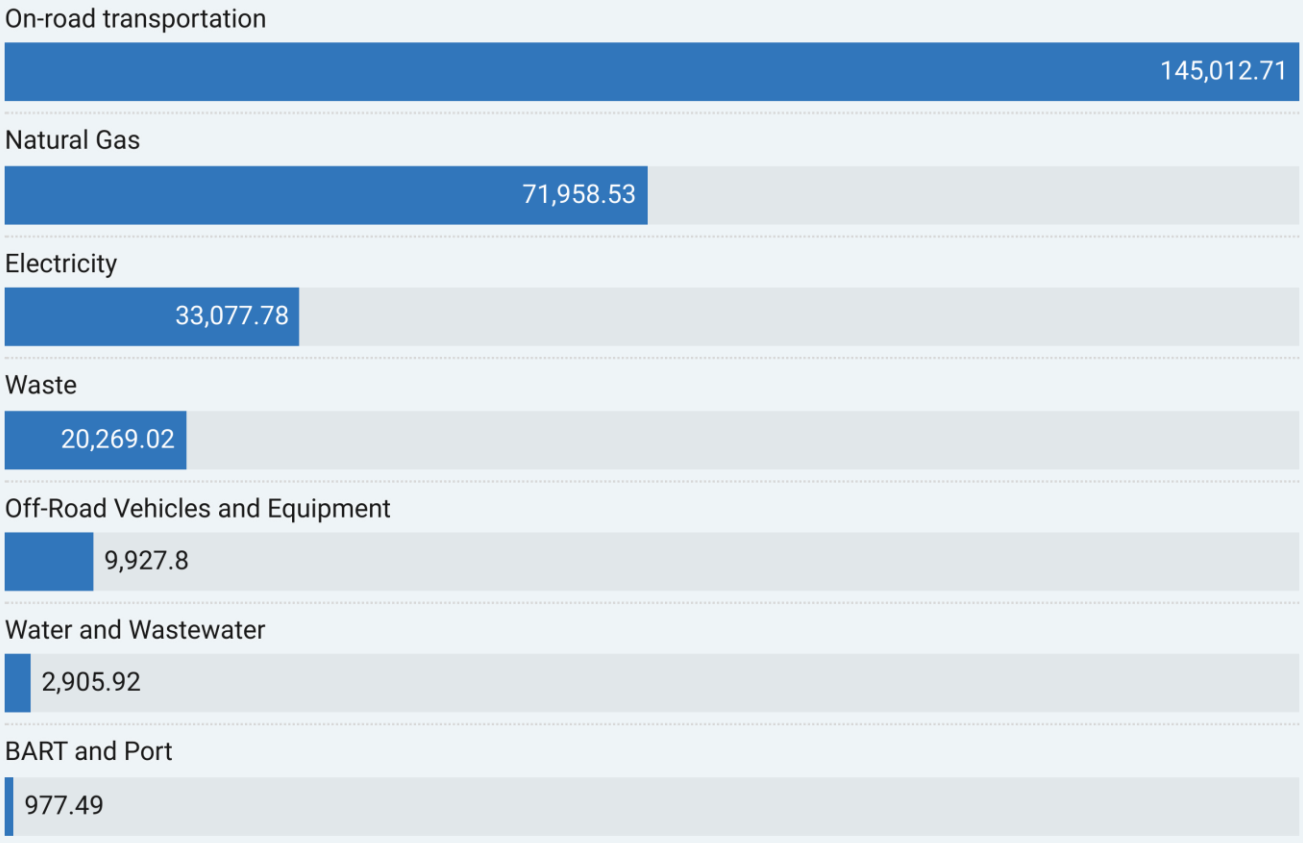


Table 3. Change in Greenhouse Gas Emissions Between 2005 and 2016

Sector and Primary Sources	2005	2016	Change	Percent Change (%)
Energy (MT of CO_2e)	**150,110**	**105,037**	**-45,074**	**-30%**
Electricity use in residential and non-residential buildings (MT of CO_2e)	72,249	30,442	-41,808	-58%
Natural gas use in residential and non-residential buildings (MT of CO_2e)	73,960	71,959	-2,001	-3%
Electricity transmission and distribution losses (MT of CO_2e)	3,901	2,636	-1,265	-32%
Transportation (MT of CO_2e)	**187,784**	**155,918**	**-31,866**	**-17%**
On-road transportation (MT of CO_2e)	175,229	145,013	-30,217	-17%
Off-Road Vehicles and Equipment (MT of CO_2e)	9,248	9,928	679	7%
BART passenger rail (MT of CO_2e)	1,170	163	-1,007	-86%
Port transport and goods movement (MT of CO_2e)	2,136	815	-1,322	-62%
Waste (MT of CO_2e)	**20,101**	**20,269**	**168**	**1%**
Decomposition of solid waste sent to landfills (MT of CO_2e)	20,101	20,269	168	1%
Water and Wastewater (MT of CO_2e)	**5,903**	**2,906**	**-2,997**	**-51%**
Electricity used to treat, transport, and pump water (MT of CO_2e)	4,708	1,917	-2,791	-59%
Wastewater collection and treatment (MT of CO_2e)	1,195	989	-206	-17%
Community-wide Total Emissions (MT of CO_2e)	**363,899**	**284,129**	**-79,770**	**-22%**
Population	61,120	69,805	8,685	14%
Community-wide Total Emissions per Capita (MT of CO_2e/person)[1]	**5.95**	**4.07**	**-1.88**	**-32%**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent.
Emissions have been rounded to the nearest whole number and therefore sums may not match.

1. The inventories are translated to per capita emissions by dividing mass emissions by population for each year.

The decrease in Pittsburg's GHG emission can also be evaluated on a per capita basis to capture the population and economic growth experienced in the period between the two GHG inventories. Even though Pittsburg's service population increased by 14 percent between 2005 and 2016, overall GHG emissions decreased by 22 percent. This equates to a reduction in per capita GHG emissions by 32 percent over the eleven-year period, as shown at the bottom of Table 3.

While the overall GHG emission reductions set us on the right path towards our 2030 GHG reduction target, more work is needed to allow Pittsburg to continue reductions. As demonstrated in Table 5, GHG emissions per capita will continue to decrease through 2045. However, this decrease will occur at a much slower rate than seen between 2005 and 2016. Historically, Pittsburg experienced emission reductions from renewable energy and efficiency gains. These reductions were enough to overcome population and economic growth. In the future, emission reductions from state regulations that can be quantified today will not overcome the projected growth in Pittsburg's population and economy. This means overall GHG emissions will increase through 2045 without local action.

Municipal Emissions

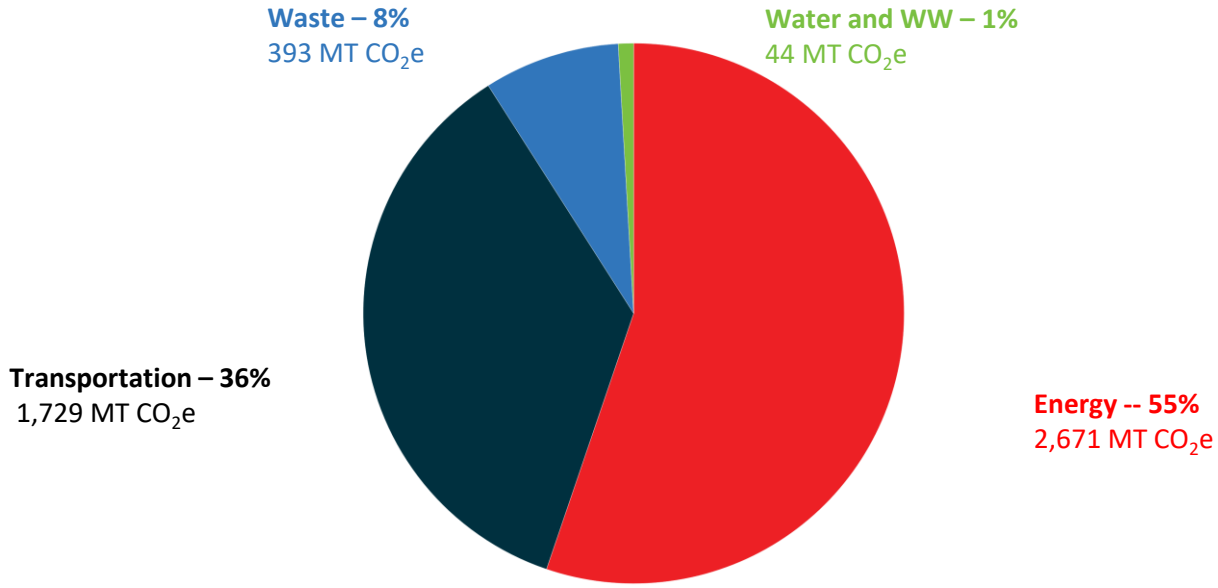
In 2016, the City of Pittsburg's GHG emissions associated with municipal operations totaled 4,837 MT CO_2e. As shown in Table 4 and Figure 7, emissions from the City's energy use were the largest sector (2,671 MT CO_2e, or 55 percent). The second largest source of emissions (1,729 MT CO_2e, or 36 percent) was from the vehicle and transit fleet, as well as employee commute to municipal facilities. The remaining emissions were generated using water and generating wastewater by municipal staff at City-owned facilities, which generated 44 and 393 MT CO_2e, respectively, resulting in a total of nine percent of the annual emissions. For additional details on the sectors included in the 2016 municipal GHG inventory, see Appendix D.

Table 4. Municipal Greenhouse Gas Emissions Inventory (2016)

Sector and Primary Sources	2016 Emissions (MT of CO_2e)	% of 2016 Emissions
Energy	**2,671**	**55%**
Electricity	2,347	48%
Natural gas	325	7%
Transportation	**1,729**	**36%**
Employee commute	339	7%
Vehicle and Transit Fleet	1,390	29%
Waste	**393**	**8%**
Methane generated from decomposition of solid waste sent to landfills	393	8%
Water	**44**	**1%**
Electricity used to treat, transport, and pump water and wastewater to City facilities	44	1%
Total	**4,837**	**100%**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent.
Emissions have been rounded to the nearest whole number and therefore sums may not match.

Figure 7. Municipal Greenhouse Gas Emissions Inventory (2016)



GHG Emissions Forecast

Emissions forecasts provide an estimate of future GHG emissions. The future GHG emissions levels are projected using the 2016 inventory based on a continuation of current activities and projected change in the community over time. The forecast accounts for current and future legislative actions from the state government and is used to help identify actions that must be taken now to meet future GHG reduction targets. This Sustainability Plan identifies GHG emissions reduction targets for the years 2030 (i.e., SB 32 target year) and 2045 (i.e., AB 1279 target year).

Business-as-Usual

A business-as-usual (BAU) forecast assumes that no additional efforts or legislative actions will be made to reduce GHG emissions in the future. The BAU forecast projects changes in population, housing, employment, and transportation activity over time, as detailed in the City's General Plan. The BAU forecast does not account for GHG emissions reductions associated with local GHG reduction strategy implementation or additional legislative actions. The BAU forecast projects how GHG emissions would change in the years 2030, 2035, 2040, and 2045. As shown in Table 5 below, Pittsburg's business-as-usual GHG emissions are projected to increase to 423,267 MT CO_2e in 2030, 481,579 MT CO_2e in 2035, 539,891 MT CO_2e in 2040, and 604,997 MT CO_2e in 2045. Appendix E provides additional details on the projected changes in Pittsburg's population, housing, and employment and the BAU forecasted GHG emissions.

Adjusted Forecast

An adjusted forecast accounts for state regulations that require the reduction of future GHG emissions within the state. Several state regulations (e.g., SB 100, 2019 Title 24 Energy Efficiency Standards, Advanced Clean Truck Rule) have been enacted that will reduce future GHG emissions.

These regulations have been incorporated into an adjusted forecast, which provides a more accurate picture of future emissions growth and the emission reduction the City and community will be responsible for after state regulations have been implemented. As shown in Table 5, Pittsburg's adjusted GHG emissions are projected to increase to 329,938 MT CO_2e in 2030, 345,821 MT CO_2e in 2035, 360,264 MT CO_2e in 2040, and 379,140 MT CO_2e in 2045. Additional details on the GHG adjusted forecast and the state regulations included are provided in Appendix B.

GHG Emissions Targets

GHG reduction targets are used for sustainability and climate action planning to establish measurable metrics intended to guide the community's commitment to begin reducing GHG emissions and help gauge progress on reducing emissions over time. After analyzing the City's 2016 inventory and forecast scenarios, emission targets were set to create quantitative goals that will further the City's ability to measure emission reduction progress from the forecasted scenarios.

Table 5. Pittsburg Business-as-Usual and Adjusted GHG Forecast

Emissions Forecast	2030	2035	2040	2045
Business as Usual Forecast (MT CO_2e)	423,267	481,579	539,891	604,997
Emission Reductions from State Initiatives (MT CO_2e)	116,506	135,758	190,401	225,857
Adjusted Forecast (MT CO_2e)	**329,938**	**345,821**	**360,264**	**379,140**
Population	85,934	90,780	95,626	101,312
Per Capita Adjusted Forecast (MT CO_2e/person)[1]	**3.84**	**3.81**	**3.77**	**3.74**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent.
Emissions have been rounded to the nearest whole number and therefore sums may not match.

1. The adjusted forecast is translated to per capita emissions by dividing mass emissions by population for each year.

In accordance with state guidance, Pittsburg has chosen to set efficiency, or per capita, GHG emission reduction targets (i.e., MT CO_2e per capita) as part of this Sustainability Plan.[24] These types of targets will guide the City towards the state's emission reduction goals while accounting for the City's expected population growth. Table 6 below shows what Pittsburg's GHG emission reduction targets would be if aligned with the state's 2030 goal (i.e., reducing 1990 per capita GHG emissions 40 percent by 2030)[25] prior to reaching the state's long-term goal of carbon neutrality by 2045. However, this target pathway allows Pittsburg's mass emissions, defined as the total emissions generated in the City, to increase above 2016 emission levels before 2030 (shown in the bottom row of Table 6), making future progress towards carbon neutrality more difficult. To account for the City's expected population growth while remaining in line with the reduction path to achieve the state's long-term 2045 goal, Pittsburg has decided to choose a more proactive 2030 GHG emission reduction target based on mass or total Citywide emissions, as shown in Table 7. As such, the following GHG reduction targets have been established by the City of Pittsburg:

- Reduce GHG emissions to 3.0 MT CO_2e per capita by 2030 (the SB 32 target year)
- Reduce GHG emissions to 0.0 MT CO_2e per capita by 2045 (the AB 1279 target year)

Table 7 and Figure 8 on the following page show Pittsburg's established emission reduction targets, the targets translated to a mass emissions pathway, and the emissions remaining each year. The emissions remaining represent the emissions between Pittsburg's adjusted forecast and the established GHG emission reduction targets—these are the emissions after state regulations that Pittsburg would need to reduce through local action to meet their targets. Pittsburg would be required to reduce 72,136 MT CO_2e by 2030, 164,261 MT CO_2e by 2035, 264,638 MT CO_2e by 2040, and 379,140 MT CO_2e by 2045 to meet their targets. The goals and actions developed by City staff and the community in the following section (Section 3, *Emissions Reductions Strategies*) will help the City begin making progress towards reducing these remaining emissions gaps and meeting their future GHG reduction targets. See Appendix E for more information on the GHG emission reduction targets and the target setting process.

24. https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf
25. Per the General Plan Guidelines from the Governor's Office of Planning and Research, 1990 emissions were estimated under the assumption that 2005 emission levels were 15% higher than 1990 levels. https://opr.ca.gov/docs/OPR_C8_final.pdf.

Table 6. SB 32 Per Capita GHG Emissions Target Pathway Scenario

Emissions Forecast or Pathway	2030 (MT CO_2e)	2035 (MT CO_2e)	2040 (MT CO_2e)	2045 (MT CO_2e)
Adjusted Forecast (MT CO_2e)	329,938	345,821	360,264	379,140
Population	85,934	90,780	95,626	101,312
Per Capita Adjusted Forecast (MT CO_2e/person)[1]	3.84	3.81	3.77	3.74
SB 32 Per Capita Target Pathway (MT CO_2e/person)[2]	3.90	2.60	1.30	0
SB 32 Per Capita Target Pathway Translated to Mass Emissions (MT CO_2e)[3]	335,303	236,141	124,373	0
Remaining Emissions Gap (MT CO_2e)[4]	**-5,365**	**109,680**	**235,890**	**379,140**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent

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

1. The adjusted forecast is translated to per capita emissions by dividing mass emissions by population for each year.

2. The target pathway is calculated by reducing 1990 per capita emissions (i.e., 6.5 MT CO_2e/person) by 40% in 2030 and to zero in 2045. This provisional target pathway is consistent with both SB 32 and a trajectory set forth to achieve AB 1279.

3. The target pathways are translated to mass emissions by multiplying the per capita emissions target by the City's estimated population in the respective year. Actual mass emission targets will depend on the City's actual population in the future years.

4. The remaining emissions gaps are calculated by subtracting the mass emission targets from the adjusted forecast for each year.

5. The target pathway is calculated by reducing per capita emissions to 3.00 MT CO_2e/person in 2030 and zero in 2045.

Table 7. Pittsburg GHG Reduction Target Pathway and Remaining Emissions Gap

Emissions Forecast or Pathway	2030 (MT CO_2e)	2035 (MT CO_2e)	2040 (MT CO_2e)	2045 (MT CO_2e)
Adjusted Forecast (MT CO_2e)	329,938	345,821	360,264	379,140
Population	85,934	90,780	95,626	101,312
Per Capita Adjusted Forecast (MT CO_2e/person)[1]	3.84	3.81	3.77	3.74
SB 32 Per Capita Target Pathway (MT CO_2e/person)[2]	3.00	2.00	1.00	0
SB 32 Per Capita Target Pathway Translated to Mass Emissions (MT CO_2e)[3]	257,802	181,560	95,626	0
Remaining Emissions Gap (MT CO_2e)[4]	**72,136**	**164,261**	**264,638**	**379,140**

Notes: MT CO2e = Metric tons of carbon dioxide equivalent

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

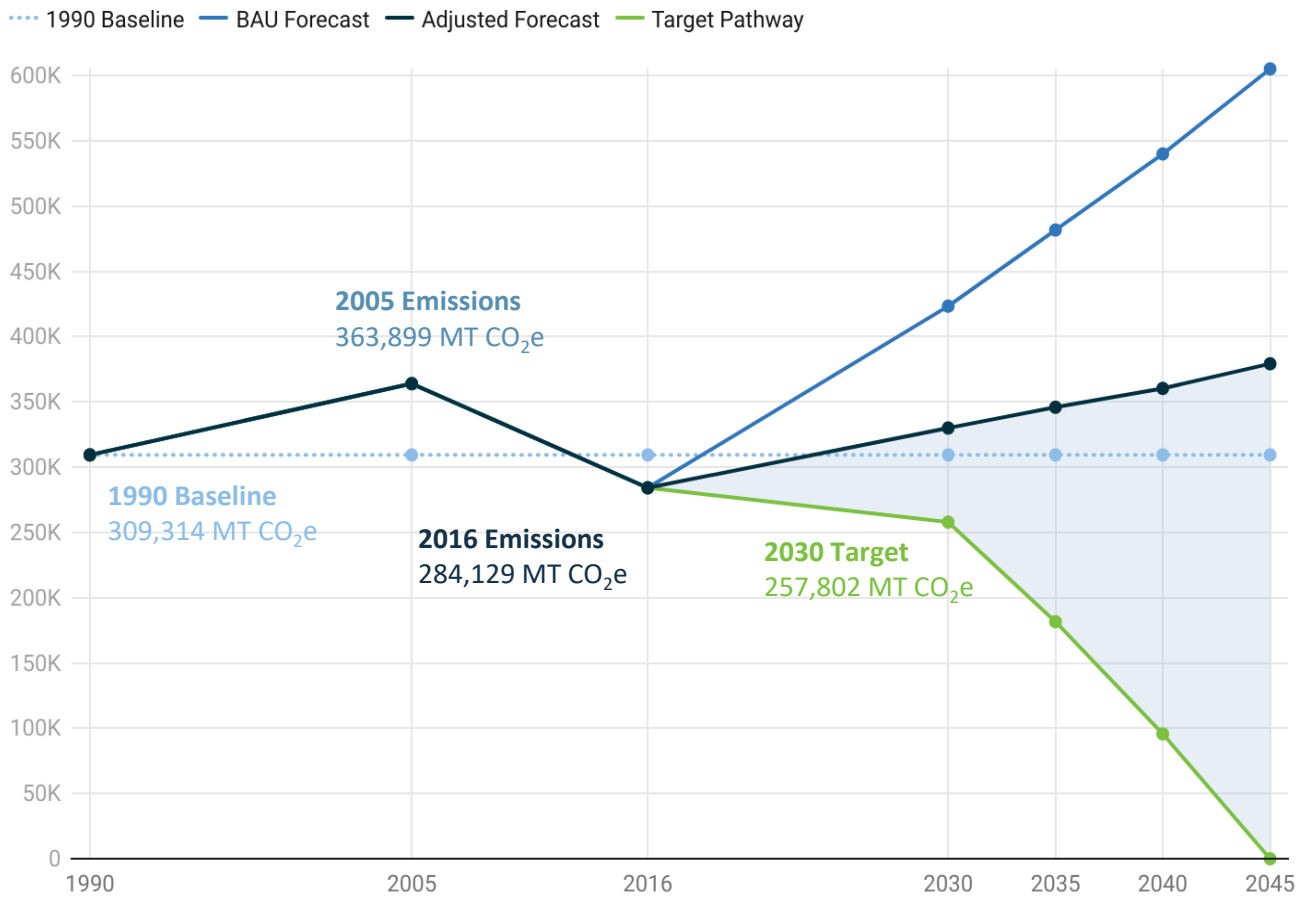
1. The adjusted forecast is translated to per capita emissions by dividing mass emissions by population for each year.

2. The target pathway is calculated by reducing per capita emissions to 3.00 MT CO2e/person in 2030 and zero in 2045.

3. The target pathways are translated to mass emissions by multiplying the per capita emissions target by the City's population in the respective year.

4. The remaining emissions gaps are calculated by subtracting the mass emission targets from the adjusted forecast for each year.

Figure 8. GHG Reduction Target Pathway and Gap Analysis



3. GHG Emissions Reduction Strategies

California Buckeye

GHG Reduction Strategy

It is not too late to limit some of the worst impacts from climate change if we act in earnest now.[26] We must work together to mitigate, or reduce, the flow of GHG emissions into the atmosphere and simultaneously adapt to the changes that have already occurred or will occur in the future.[27] Mitigation strategies are discussed throughout this section and information on how the City of Pittsburg will adapt is interwoven into the co-benefits.

This Sustainability Plan is designed to reduce GHG emissions through implementation of feasible and achievable, yet ambitions GHG emissions reduction strategies and goals that equitably benefit the entire community. The initiatives included in the Sustainability Plan are structured in a stepwise manner, with strategies, goals, and actions. Each strategy provides an overarching statement with which the goals align. The goals included under each strategy are intended to pull in the same direction, providing effective and realistic means for making progress towards the sustainability efforts and GHG emission reductions necessary to reach the 2030 target and establish the blueprint for the deep decarbonization needed to reach the 2045 target of carbon neutrality.[28] Finally, the actions provide supportive steps to begin working towards the quantified or specific targets outlined in each goal. The actions, when implemented, will help Pittsburg make progress towards the goal, however, more work will be needed to continue to move the needle forward and ultimately reach both the 2030 and 2045 targets, such as adopting reach codes and ordinances.

Reducing Emissions in Pittsburg

To develop the goals and actions in the Sustainability Plan, the City utilized guiding principles and considered factors such as co-benefits, costs, and equity. The following sections describe each element in detail. Figure 9 below depicts the structure of the plan's strategies, goals, and actions, as well as the elements used to develop them.

26. https://www.climate.gov/news-features/climate-qa/can-we-slow-or-even-reverse-global-warming#:~:text=Yes.,(%E2%80%9Cblack%20carbon%E2%80%9D).

27. According to NASA, in relation to climate change, there is a time lag between what we do and when we feel it, but that lag is less than a decade.

28. The GHG reduction targets included in this Plan are intended to align with the GHG reduction goal codified by SB 32 of reduce GHG emissions to 40 percent below 1990 levels by 2030. According to the Association of Environmental Professionals (AEP) 2016 White Paper "Beyond 2020 and Newhall," meeting the long-term target of carbon neutrality in 2045 will require substantial advances in cost-effective technological solution related to GHG reductions. As such, the GHG reduction goals will begin substantial progress toward meeting the long-term 2045 target but will need to be reassessed as future advances in technology become available.

Sustainability Pillars

High-quality sustainability and climate action planning is built on six essential pillars that, when incorporated into the design of each goal, where applicable, result in implementable and effective sustainability and GHG emissions reduction strategies. These pillars include:

- **Equity** – Goals should include programs and policies to provide disadvantaged and vulnerable communities the resources to benefit from each goal.
- **Structural change** – Goals should establish institutional and policy framework to facilitate long-term change.
- **Feasibility** – Goals should help the City understand costs, benefits, barriers, and opportunities to develop programs and policies to best serve the community.
- Partnership – Goals should focus on partnerships with outside agencies and community-based organizations to leverage expertise and resources to create programs and policies the City would not be able to achieve alone.
- Funding – Goals should identify funding and financing avenues to support the associated costs and be designed to overcome potential financial impacts of modernization.
- Education – Goals should include community engagement and empower residents and interested parties to act.

These pillars have been used to establish actions that will in-turn work towards the 2030 emissions reduction target and begin progress to the long-term 2045 target of carbon neutrality. The 2030 and 2045 targets represent the City's fair share reductions towards achieving the State's overall climate goals. During the action development process, each initiative was viewed through the

Figure 9. Strategy, Goal, and Action Structure

Over time, the Plan will be reviewed, and additional actions will be added to make greater progress on the established Goals. This Sustainability Plan serves as the City's first step in climate action planning and will continue to be refined.

lens of these pillars to build a comprehensive approach to sustainability. The Cornerstone Goal, Goal C-1.1, illustrates how each of the pillars are integrated into the supportive actions.

The Cornerstone Goal

In construction, the cornerstone is often the first stone set, and all other stones are set in reference from that point, essentially determining the direction or position of the building. Similarly, the Cornerstone Goal (C-1.1) sets the direction of this Plan and is intended to build support around an area of community pride. The Cornerstone Goal of this Plan intends to connect the Plan and the community around the opportunity to leverage sustainability efforts and climate action for continued economic development in Pittsburg. Initiatives from all-electric building retrofits to increased waste diversion will create new jobs. A recent study by the University of California, Los Angeles (UCLA) Luskin Center for Innovation found that 100,000 full-time equivalent jobs would be created across various sectors of the economy as the result of electrifying all of California's new and existing buildings by 2045.[29] Similarly, in the waste and materials sector, the process of re-using materials was found to create 200 times as many jobs as sending those materials to landfills and incinerators while recycling increased jobs by a factor of 50. Done in an intentional and holistic way, Pittsburg can leverage these job opportunities to create high-road jobs for Pittsburg residents in the sustainability industry—that is jobs that will provide Pittsburg residents family-sustaining wages, comprehensive benefits, and opportunities for continued career advancement.[30]

The sustainability pillars provide this intentional and holistic approach in a stepwise manner. Designed to embody each of the identified sustainability pillars, the Cornerstone Goal will be equipped with a framework for transformational change and community engagement to serve as a strong foundation for the Plan and the community as we work towards the City's GHG emission reduction targets.

29. https://innovation.luskin.ucla.edu/2019/11/13/move-to-all-electric-buildings-will-trigger-significant-demand-for-skilled-workers/.
30. https://www.usdn.org/uploads/cms/documents/workforce-guide_4.12.21_form.pdf

The Cornerstone Goal

Provide high-road jobs to low-income community members through a local High-road Workforce Development Program.

The Cornerstone Goal embodies each pillar in the follow ways:

- Focuses on equity by establishing a High-road Workforce Development Program targeted towards disadvantaged community members and vulnerable populations. As such, it aims to focus its employment and training resources on those with the most to gain from them.
- Focuses on structural change by amending the City's bid procurement and evaluation process to include local workforce as a criterion for evaluating capital improvement project bids. Meeting this pillar sets the goal up to create long-term change by establishing policies that will increase demand for local workforce and the program itself.
- Focuses on feasibility by analyzing current opportunities for high-road jobs. Embodying this pillar provides the City important information to design a program that best meets the community's needs.
- Focuses on partnership by collaborating with community-based organizations who have connections to community members in disadvantaged and vulnerable communities. Meeting this pillar allows the City to engage more community members than they would have been able to on their own, increasing the reach of the program across the community.
- Focuses on funding by applying for applicable grants to support the High-road Workforce Development Program's incentives for employers and developers. Meeting this pillar secures the development and sustainability of the program without putting undue pressure on the City's budget.
- Focuses on education by providing resources related to the High-road Workforce Development Program and developing an internship/apprenticeship board for local employers and Los Medanos College to share employment opportunities.

With each pillar, the Cornerstone Goal will be able to make transformational change and engage the community, paving the way for the rest of the goals in the Plan. Continuing this stepwise approach to designing each goal with the pillars, the other Sustainability Plan goals will establish their own foundations to make continued and far-reaching change.

Equity Guardrails

Integral to sustainability planning is ensuring that the impacts, co-benefits, and opportunities associated with each goal are equitably distributed amongst the community and that additional burdens on disadvantaged and vulnerable communities are avoided. The City of Pittsburg defines disadvantaged and vulnerable communities as follows:

- Disadvantaged community (DAC): a low-income area that is disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation.
- Vulnerable community: an area with concentrated populations of seniors, persons with a disability, and lower income residents.[31]

Such communities are often disproportionally affected by the impacts of climate change and the burdens of sustainability actions. For this reason, they must be engaged, represented, and prioritized during the planning process. This kind of equitable community planning can help cities design safe, thoughtful, and specific policies that improve public health across the community, provide equitable job opportunities and better incomes, and minimize disproportionate burdens. Altogether, equitable community planning provides a strong foundation for realistic sustainability initiatives to be developed and implemented by the community.

To engage in equitable community planning, the City developed Equity Guardrails—a set of guiding criteria designed to formalize the Sustainability Plan's foundational goal for improving environmental justice issues as outlined in the Community Health and Environmental Justice Element. The specific criteria are used to instill equity within each goal of the Sustainability Plan. Actions included in this Sustainability Plan were reviewed for each criterion to determine if its associated actions would result in disproportionate burdens, inequities, or discrimination. If determined it could, the actions associated with the goal were updated to instead benefit the community members that have the most to gain. In this way, the criteria are used to instill equity within each goal of the Sustainability Plan, guiding the City towards a paradigm shift in environmental justice and public policy to transform the behaviors, institutions, and systems that disproportionately harm disadvantaged and vulnerable communities.

Table 8, on the following page, lists and defines the Equity Guardrail criteria that were used to assess each goal during the development of the Sustainability Plan.

31. Definitions sourced from the General Plan's Community Health & Environmental Justice Element.

Co-Benefits

Sustainability goals will produce additional benefits beyond GHG emissions reductions that the community will see from implementing the goals and actions. These co-benefits will have long-term positive impacts that will help Pittsburg reach their community goals. The co-benefits identified for each Sustainability Plan actions include:

- **Improved Health and Safety**
  - Creating a healthier community with less respiratory illnesses by improving indoor and outdoor air quality; improving life and property safety through efforts to increase adaptive capacity; and improving quality of life and comfort by creating more opportunities for physical activity, increasing access to green spaces, and maintaining thermal comfort
- **High-Road Job Development**
  - Creating and training Pittsburg residents for high-quality jobs in sustainable industries that provide family-sustaining living wages, comprehensive benefits, and opportunity for career advancement.
- **Community Savings**
  - Providing the community with long-term cost savings in areas such as utility bills

- **Connected Communities** 
  - Promoting a cohesive City with a strong sense of community by creating opportunities for community members to engage in public life and build ties to their neighbors
- **Energy Security** 
  - Increasing the uninterrupted availability of energy sources in the community at an affordable price and from local sources
- **Reduced Reliance on Fossil Fuels** 
  - Reducing the community's reliance on imported, polluting, and price-variable oil and gas

Table 8. Equity Guardrail Criteria

Equity Guardrail	Criteria
Access to Health and Safety Benefits	Each goal must be supported by actions that either mitigate potential negative outcomes, or improve access to the following for DACs and vulnerable communities: ▪ Individual and population health ▪ Life and property safety ▪ Quality of life and comfort Due to the upfront costs of actions such as electrification, many households will need financial support to have access to these health and safety benefits.
Equitable Allocation of Costs and Benefits	Each goal must be supported by actions that equitably allocate both costs and benefits across the community. This could include developing programs to provide equitable access to funding and financing mechanisms that address the specific needs of DACs and vulnerable communities (e.g., mitigating the additional upfront and maintenance costs of new technologies) or by developing equitable fee structures for transit or other services.
Promotes Housing Affordability and Anti-Displacement	Each goal must be supported by actions that: ▪ Improve access to benefits for renters and residents living in multi-family buildings ▪ Do not displace renters or overburden homeowners ▪ Do not place additional disproportionate financial burdens or hardships on DACs and vulnerable communities ▪ Protect DACs and vulnerable communities from cost-of-living increases
Authentic Investment and Engagement	Each goal must be supported by actions that continue engagement with DACs and vulnerable communities over the course of implementation to address identified hurdles as well as unforeseen barriers and constraints.
Provides Local and Accessible High-Road Job Development	Each goal must be supported by actions that create and protect local and accessible high-road job development, particularly for people experiencing barriers to employment. High-road jobs refer to high-quality jobs that provide family-sustaining, living wages, comprehensive benefits, and opportunity for career advancement.

Costs

Implementing the Sustainability Plan's goals may be extremely variable in cost as goals range from outreach and education to major investments in new infrastructure such as bike lanes and electric vehicle charging networks. While it may be tempting to only consider the upfront costs of a goal, there are many other cost considerations that should be part of the decision-making process. These costs were identified for each Sustainability Plan goal and used to categorize each goal as either having no-cost, low-cost, moderate-cost, or high-cost. Each cost category has been defined as follows:

- **No Cost:** Goals associated with operational changes that do not include upfront costs or result in zero lifecycle costs.
- **Low-Cost:** Goals associated with relatively low upfront costs or City staff time, (e.g., policy updates or outreach). For community members, this represents low upfront costs compared to existing alternatives.
- **Moderate-Cost:** Goals involving consultants or moderate infrastructure changes associated with an intermediate level of costs, (e.g., feasibility studies, program development, and retrofitting existing infrastructure). For community members, this represents costs that are not comparable to existing costs nor are offset over the lifetime (e.g., new fees or upfront costs partially offset by rebate opportunities.
- **High-Cost:** Goals that involve longer term projects requiring substantial investments into major infrastructure or technology over time, (e.g., energy storage, bike lanes, or other infrastructure changes). For community members, this represents costs that are not comparable to existing costs nor are offset over the lifetime (e.g., new electric vehicle purchase.

For a complete description of the costs for the Sustainability Plan goals, please see Appendix F.

Moving Towards the State's Goals

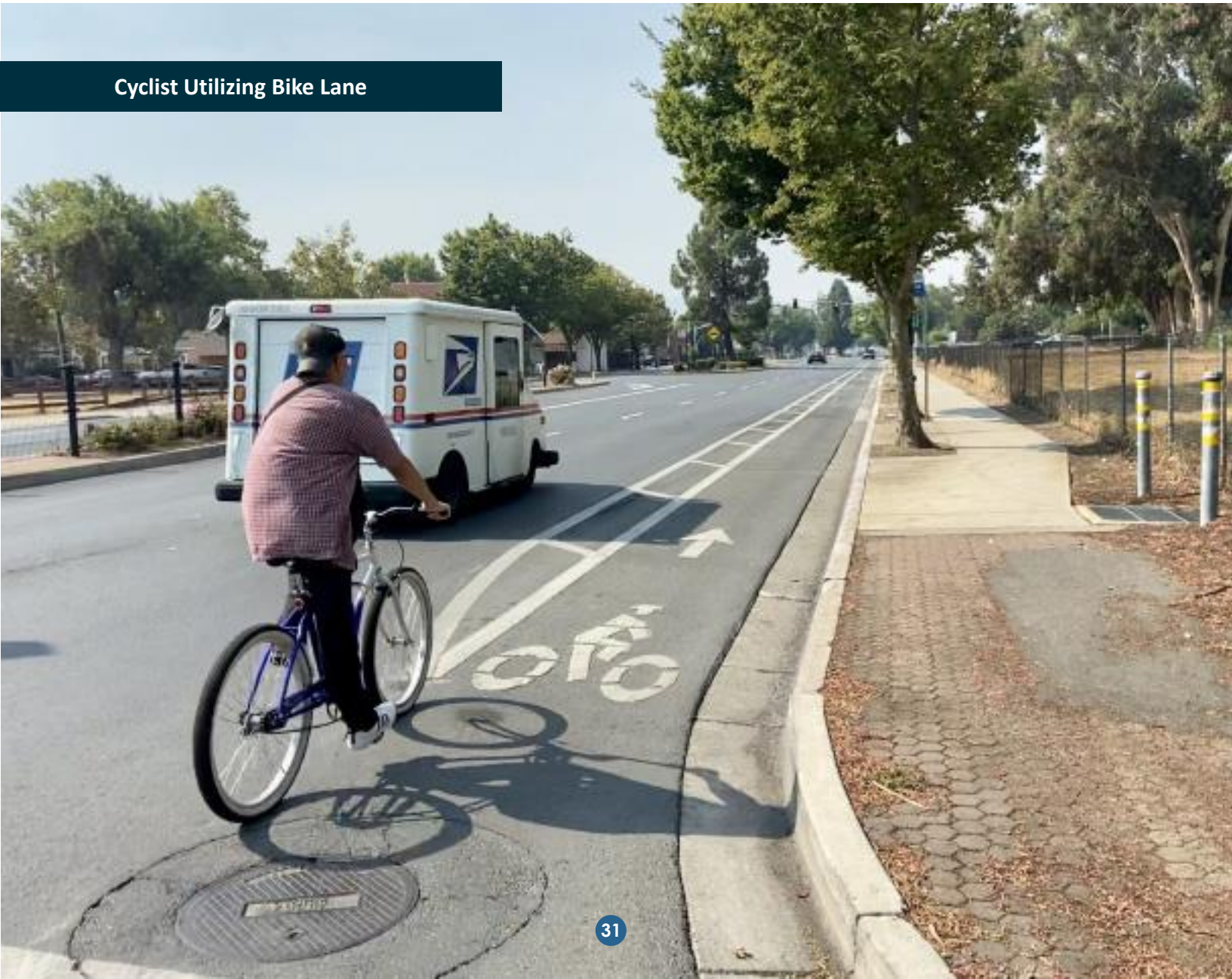
The goals and supporting actions outlined in this section were developed and refined using the elements described above and ultimately establish Pittsburg's first steps to work towards the City's 2 2030 GHG emissions reduction target and begin progress towards meeting the longer-term target of carbon neutrality by 2045. However, more work is needed to effectively reach both the 2030 target and the longer-term 2045 target. It is anticipated that the Plan will be reviewed and updated on a triennial basis, as discussed in Goal M-1.1 and Chapter 5, *Implementation*. Future iterations of the Plan will 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 outlined in this Plan and make the necessary adjustments identified through regularly monitored progress.

Table 9 below summarizes the strategies and goals of the Sustainability Plan. The following section identify the supporting actions associated with each goal and identify the pillars, equity guardrails, co-benefits, and costs associated with each goal or action, as appropriate. In addition, the following sections identify the key performance indicators (KPI) that will be used to monitor progress made on each goal. Together, these KPI's will help gauge overall progress towards the City's GHG emission reduction targets and signal opportunities for additional actions and refinement.

Table 9. Summary of GHG Emission Reduction Goals

ID #	Goal Text
Strategy C-1: Cornerstone to Climate Action Planning	
C-1.1	Provide high-road jobs to members of disadvantaged and vulnerable communities through a local High-road Workforce Development Program.
Strategy E-1 Electrify the Building Stock	
E-1.1	Electrify 75% of new construction in the City by 2026 and 100% of new construction in the City by 2029.
E-1.2	Electrify existing residential buildings to reduce residential natural gas consumption 15% by 2030 and 100% by 2045, from 2016 levels.
E-1.3	Electrify existing commercial buildings to reduce commercial natural gas consumption 15% by 2030 and 100% by 2045, from 2016 levels.
Strategy E-2 Decarbonize Electricity and Increase Use and Storage of Local Renewable Energy	
E-2.1	Increase the number of accounts enrolled in MCE's programs to 95%, with a total of 40% of accounts enrolled in the Deep Green energy option by 2030.
E-2.2	Increase generation and storage of local renewable energy.
Strategy T-1 Reduce Passenger Car Vehicle Miles Traveled	
T-1.1	Implement Pittsburg Moves, increasing active transportation mode share from 1.5% in 2020 to 3% by 2030 and 9% by 2045.
T-1.2	Implement public and shared transit programs to increase public transit mode share from 10.1% in 2020 to 12% by 2030 and 17% by 2045.
Strategy T-2 Increase Zero-Emission Vehicle and Equipment Use	
T-2.1	Increase passenger zero-emission vehicle adoption from 2.3% in 2020 to 15% by 2030 and 100% by 2045.
T-2.2	Increase commercial zero-emission vehicle adoption from less than 1% in 2020 to 10% by 2030 and 100% by 2045.
T-2.3	Transition 5% of all (i.e., commercial and residential) off-road equipment to zero-emission alternatives by 2030 and 100% by 2045.
Strategy W-1 Increase Water Conservation and Local Water Supply	
W-1.1	Reduce per capita water consumption by 10% by 2030 and 30% by 2045, from 2016 levels.
W-1.2	Increase recycled water use in the City.
W-1.3	Increase green stormwater infrastructure.
Strategy W-2 Minimize Water Loss System-wide	
W-2.1	Reduce real and apparent system water loss from a rate of 13% in 2020 to less than 10% by 2030 and less than 7% by 2045.
Strategy SW-1 Organic Waste Diversion	
SW-1.1	Continue to take action to meet SB 1383 organics and recycling requirements, reducing organic waste disposal 75% from 2014 levels by 2025 statewide.
Strategy SW-2 Reduce Community Waste Generation	
SW-2.1	Reduce community-wide waste generation 55% by 2025 and 90% by 2040 statewide, from 2014 levels.

Strategy CS-1 Carbon Sequestration	
CS-1.1	Increase carbon sequestration by planting 150 new trees annually through 2045 to sequester carbon and create urban shade to reduce heat island effect.
CS-1.2	Increase carbon sequestration by applying 0.08 tons of compost per capita annually in the community by 2030, increasing up to 0.10 by 2045.
Strategy M-1 Commit to Climate Action	
M-1.1	Complete annual progress reports on Pittsburg's Sustainability Plan every three years.
Strategy M-2 Reduce Municipal Reliance on Natural Resources	
M-2.1	Electrify 25% of existing City facilities by 2030 and 100% of existing City facilities by 2045, as well as all newly constructed City buildings, while also increasing renewable energy use.
M-2.2	Transition 50% of the City's vehicle and equipment fleet to renewable fuels and electric by 2030 and 100% by 2045.
M-2.3	Reduce the number of single occupancy, fossil fueled vehicle annual employee commute trips 20% by 2030 and 50% by 2045.



Cyclist Utilizing Bike Lane

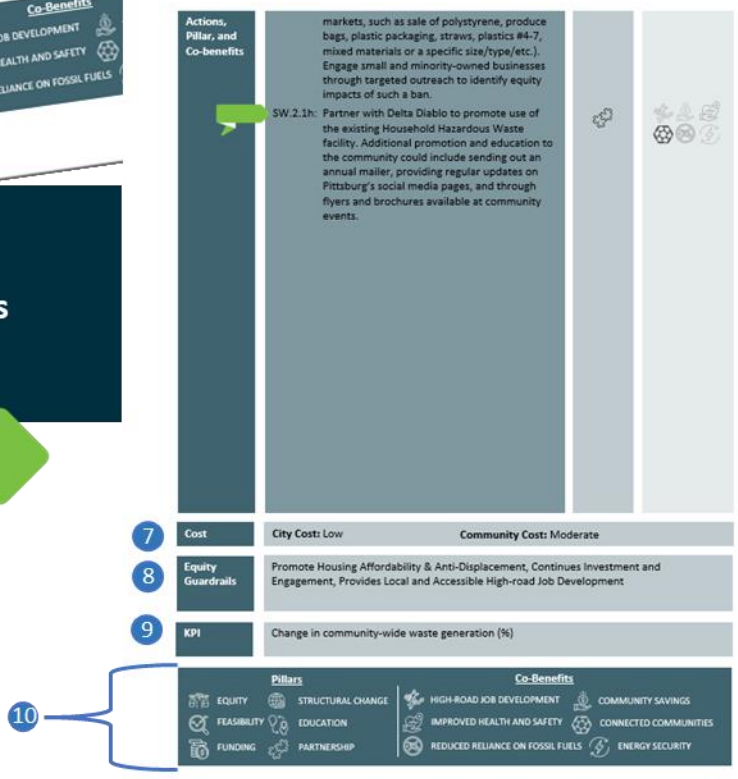
How to read the following pages:

1. Goal
2. Description of Goal
3. Actions
4. Sustainability Pillar
5. Co-benefits
6. Flag denoting inclusion revised text or additional actions based on community feedback
7. Cost
8. Equity Guardrails
9. Key Performance Indicators
10. Key showing pillar and co-benefit icons

Community feedback resulted in 16 new actions and 14 updated actions!

New Action

Updated Action



Cornerstone

C-1 Cornerstone to Climate Action Planning

C-1.1 Provide high-road jobs to members of disadvantaged and vulnerable communities through a local High-road Workforce Development Program.

C-1.1 – Provide high-road jobs to members of disadvantaged and vulnerable communities through a local High-road Workforce Development Program.

Reducing GHG emissions and creating a more sustainable Pittsburg will require initiatives from building retrofits to electric vehicle infrastructure buildout that demand a skilled, trained, and stable green workforce. As a community, we can leverage this demand to create high-road jobs for Pittsburg residents—jobs that will provide Pittsburg residents family-sustaining wages, comprehensive benefits, and opportunities for continued career advancement.[32] Targeted towards community members with the most to gain from these high-quality, stable jobs, we can uplift and improve economic conditions for members of disadvantaged and vulnerable communities providing meaningful social justice in Pittsburg. Through a High-road Workforce Development Program we can create a future that brings renewable energy, ecological restoration, and more scientific-based environmental education to Pittsburg, leveraging efforts to reduce GHG emissions and create a more sustainable City for continued economic development. Additionally, this goal would decrease income inequity by providing workers with better-paying jobs and opportunities for advancement, while reducing poverty through living wages.

Actions, Pillar, and Co-benefits		
	C.1.1a:	Establish a High-road Workforce Development Program that provides incentives to Pittsburg businesses and potential developers to establish apprenticeships programs for Pittsburg members of disadvantaged and vulnerable communities.
	C.1.1b:	Apply for grant opportunities to offer incentives to employers and developers for implementing local workforce apprenticeship programs, through grants such as the Transformative Climate Communities Implementation Grant and High Road Training Partnerships: Resilient Workforce Fund Program.
	C.1.1c:	Perform an analysis on current workforce opportunities within the City that provide potential for high-road jobs through direct engagement with local businesses. Through this analysis establish the criteria for high-road jobs, and identify opportunities for bringing in additional developers and businesses that will provide jobs that meet these criteria.
	C.1.1d:	Partner with community-based organizations with connections to disadvantaged and vulnerable communities to perform direct

Pillars

EQUITY
STRUCTURAL CHANGE
FEASIBILITY
EDUCATION
FUNDING
PARTNERSHIP

Co-Benefits

HIGH-ROAD JOB DEVELOPMENT
COMMUNITY SAVINGS
IMPROVED HEALTH AND SAFETY
CONNECTED COMMUNITIES
REDUCED RELIANCE ON FOSSIL FUELS
ENERGY SECURITY

32. https://cwdb.ca.gov/wp-content/uploads/sites/43/2019/09/High-Road-ECJ-Brief_UPDATED-BRANDING.pdf

Actions, Pillar, and Co-benefits	engagement promoting opportunities within the High-road Workforce Development Program. C.1.1e: Create a City webpage to provide resources related to the High-road Workforce Development Program to allow for posting of available resources and to develop an internship/apprenticeship board for local employers and Los Medanos College to share employment opportunities. C-1.1f: Amend the City's bid procurement and evaluation process to include local workforce (i.e., including Pittsburg residents in the project workforce) as a criterion for evaluating capital improvement project bids.	 	 
Cost	**City Cost:** Moderate **Community Cost:** N/A		
Equity Guardrails	Continues Investment and Engagement, Provides Local and Accessible High-road Job Development		
KPI	Number of apprenticeships created, and value of incentives provided ($)		

Pillars

- EQUITY
- STRUCTURAL CHANGE
- FEASIBILITY
- EDUCATION
- FUNDING
- PARTNERSHIP

Co-Benefits

- HIGH-ROAD JOB DEVELOPMENT
- COMMUNITY SAVINGS
- IMPROVED HEALTH AND SAFETY
- CONNECTED COMMUNITIES
- REDUCED RELIANCE ON FOSSIL FUELS
- ENERGY SECURITY

Energy

E-1 Electrify the Building Stock

E-1.1 Electrify 75% of new construction in the City by 2026 and 100% of new construction in the City by 2029.

E-1.2 Electrify existing residential buildings to reduce residential natural gas consumption 15% by 2030 and 100% by 2045, from 2016 levels.

E-1.3 Electrify existing commercial buildings to reduce commercial natural gas consumption 15% by 2030 and 100% by 2045, from 2016 levels.

E-1.1 – Electrify 75% of new construction in the City by 2026 and 100% of new construction in the City by 2029.[33]

New building electrification is a cost-effective and socially equitable way to reduce GHG emissions, lower community costs, and protect public health. All-electric buildings can be more energy efficient and produce lower energy bills than those powered by natural gas. Implemented with an emphasis on equity, these lower operating costs can help reduce energy bill burdens in the community. Additionally, constructing new all-electric buildings is more cost-effective up-front than building traditional mixed-fuel buildings due to the cost savings obtained from avoiding the installation and expansion of natural gas infrastructure. These long-term and up-front cost savings make all-electric new construction an easy choice for the community. All-electric buildings also provide a critical step towards improving public health. Burning natural gas in poorly ventilated areas (i.e., through gas stoves in particular)[34] can cause a drastic increase of harmful indoor pollutants that are linked to increased risk of respiratory illnesses. For example, studies show that using natural gas stoves is associated with increased risk of asthma in children, as well as more severe asthma symptoms.[35] Electric appliances completely mitigate these indoor air pollutant risks.

Actions, Pillar, and Co-benefits

Updated

E.1.1a:	Conduct a cost effectiveness study by 2025 to analyze the impact of adopting an electrification ordinance for all new construction to inform future consideration of an ordinance.		
E.1.1b:	Identify and partner with local community-based organizations with connections to disadvantaged and vulnerable communities to conduct targeted outreach to identify and analyze equity concerns with an electrification ordinance for all new construction to inform future consideration of an ordinance.		
E.1.1c:	Establish partnerships with the Building Decarbonization Coalition, MCE, Bay Area Regional Energy Network, the International Brotherhood of Electrical Workers, and others, to engage with local interested parties from the building industry, such as local developers, to evaluate the feasibility of adopting an electrification ordinance for all new construction and inform future consideration of an ordinance.		
E.1.1d:	Partner with organizations such as the Building Decarbonization Coalition, MCE, and Bay Area Regional Energy Network to compile a suite of		

Pillars

 EQUITY
 STRUCTURAL CHANGE
 FEASIBILITY
 EDUCATION
 FUNDING
 PARTNERSHIP

Co-Benefits

 HIGH-ROAD JOB DEVELOPMENT
 COMMUNITY SAVINGS
 IMPROVED HEALTH AND SAFETY
 CONNECTED COMMUNITIES
 REDUCED RELIANCE ON FOSSIL FUELS
 ENERGY SECURITY

33. New construction refers to new buildings and building additions and alterations
34. https://ww2.arb.ca.gov/resources/documents/indoor-air-pollution-cooking
35. https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2023/01/18/Gas-Stove-Emissions

Actions, Pillar, and Co-benefits		case studies and cost-effective strategies (e.g., energy efficiency improvements) for electric buildings by prototype, help educate building owners and the construction industry on the cost savings, environmental benefits, and versatility associated with all-electric construction, and educate developers and other interested parties on new appliances and approaches to building electrification. Share the information on the City's website, at City events, and at the City's permit counters.	
	E-1.1e:	Provide education around cooking with electric appliances and partner with local chefs and/or restaurants to host cooking demonstrations at community events such as the Farmers' Market, Green Footprint Festival, or Pittsburg First Fridays.	
	E-1.1f:	Partner with the Bay Area Regional Energy Network and the International Brotherhood of Electrical Workers, or similar entities, to provide technical resources, including hosting workforce development trainings as part of the Highroad Workforce Development Program for installers, local contractors, and building owners/operators to discuss the benefits and technical requirements of electrification. Partner with community-based organizations to connect members of disadvantaged and vulnerable communities to these training programs.	
Cost	**City Cost:** Moderate	**Community Cost:** No cost	
Equity Guardrails	Access to Health and Safety Benefits, Promotes Housing Affordability & Anti-Displacement, Continues Investment and Engagement, Provides Local and Accessible High-road Job Development		
KPI	Share of new construction electrified (%)		

Pillars

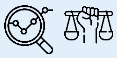
- EQUITY
- STRUCTURAL CHANGE
- FEASIBILITY
- EDUCATION
- FUNDING
- PARTNERSHIP

Co-Benefits

- HIGH-ROAD JOB DEVELOPMENT
- COMMUNITY SAVINGS
- IMPROVED HEALTH AND SAFETY
- CONNECTED COMMUNITIES
- REDUCED RELIANCE ON FOSSIL FUELS
- ENERGY SECURITY

E-1.2 – Electrify existing residential buildings to reduce residential natural gas consumption 15% by 2030 and 100% by 2045, from 2016 levels.

Existing building electrification, which is defined as the replacement of fossil-fueled systems with electric alternatives, provides the same GHG emission reduction, energy bill, and public health benefits as new building electrification. However, since the costs of electrification typically fall on homeowners, there exists additional barriers to ensuring all community members can benefit. Members of disadvantaged and vulnerable communities often face multiple and sometimes compounding economic barriers that make it difficult to prioritize electrification. Further, many members of these communities are renters lacking the property rights to electrify. Yet, these community members will also be the hardest hit if we leave them as the last customers relying on the gas distribution system because they can least afford the significant bill increases anticipated to support aging and stranded infrastructure.[36] Thus, we must pursue residential building electrification equitably to benefit all Pittsburg residents. In addition to reducing long-term cost burdens, electrification will also improve indoor air quality and increase home values.

Actions, Pillar, and Co-benefits			
	E.1.2a:	Develop a residential building electrification strategy with a detailed existing building analysis and electrification costs analysis to understand cost implications, identify potential equity concerns/impacts, and develop equitable strategies and recommended standards for electrifying existing residential buildings such as those that increase energy efficiency and tenant protections. Identify and partner with local community-based organizations with connections to disadvantaged and vulnerable communities to conduct intentional, thoughtful, and specific community outreach during development of the electrification strategy to understand the community's concerns and needs around electrification.	
	E.1.2b:	During the electrification strategy development process, engage the community to evaluate the feasibility of adopting a time of replacement electrification ordinance in the future for HVAC and water heaters.	
	E.1.2c:	Develop a permit tracking program for existing building electrification to track annual progress in achieving the electrification goals.	
Updated	E.1.2d:	Partner with stakeholders such as MCE and PG&E to understand the feasibility of,	




Pillars

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 IMPROVED HEALTH AND SAFETY
 CONNECTED COMMUNITIES
 REDUCED RELIANCE ON FOSSIL FUELS
 ENERGY SECURITY

36. https://greenlining.org/wp-content/uploads/2019/10/Greenlining_EquitableElectrification_Report_2019_WEB.pdf

Actions, Pillar, and Co-benefits				
		establish, and promote funding pathways to ease community costs for electric appliances, electrification retrofits, and panel upgrades through: ▪ Federal and state grants/subsidies ▪ Tariffed On-bill financing ▪ Metered energy efficiency ▪ Linking electrification to existing weatherization programs		
New	E-1.2e:	Partner with PG&E to provide free electrification assessments to rental and multi-family properties to provide recommendations for electric upgrades and funding opportunities.		
New	E.1.2f:	Establish a working group of rental and multi-family property owners, as well as tenants that live in these units to: ▪ Identify common goals (e.g., saving money on utility bills, reducing carbon footprint, improving indoor air quality) ▪ Collaborate on initiatives, which would provide a space for tenants and homeowners to implement initiatives that align with the shared goals (e.g., installing energy-efficient lighting or appliances, adding building insulation, and/or installing solar panels). ▪ Establish communication channels to discuss progress, address hurdles, and work together on implementation. ▪ Share resources between tenants and homeowners.		
	E-1.2g:	Conduct targeted outreach to rental and multi-family property owners to distribute information about available electrification assessments, retrofit incentives, and long-term benefits associated with electrification and weatherization.		
	E-1.2h:	Review and update building codes to provide streamlined permitting for all electric retrofits. Provide Building Department staff training and information on the benefits of electrification for permit applicants.		

Pillars

 EQUITY
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 CONNECTED COMMUNITIES
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 ENERGY SECURITY

Actions, Pillar, and Co-benefits	E-1.2i: Partner with MCE and PG&E to review incentives, rebates, and financing options for procedural equity and ensure that existing and updated incentive programs are being equitably distributed to the community to reduce energy bill burdens. Hurdles to equitable implementation could include credit checks, excessive procedural hurdles and lack of targeted outreach.		
	E-1.2j: Work with MCE to a conduct feasibility study to evaluate the current uptake and effectiveness of Proper Assessed Clean Energy (PACE) financing for installation of renewable energy systems in single-family and multi-family homes. If feasibility study indicates effectiveness, continue to offer PACE financing for single-family and multi-family homes to install renewable energy systems.		
	E-1.2k: Partner with a financing/management company to provide electrification services and financing to the community with prioritization of members of disadvantaged and vulnerable communities.		
	E-1.2l: Partner with Pittsburg Below Market Rate (BMR) housing stock owners to develop a strategy to begin electrifying publicly owned BMR housing. Identify a group of publicly owned BMR housing to conduct a full electrification pilot to help test and further develop the strategy. Promote the pilot as an example to the wider community on the feasibility and benefits of residential electrification.		
Cost	**City Cost:** Moderate	**Community Cost:** Moderate	
Equity Guardrails	Access to Health and Safety Benefits, Equitable Allocation of Costs and Benefits, Promotes Housing Affordability & Anti-Displacement, Continues Investment and Engagement, Provides Local and Accessible High-road Job Development		
KPI	Change in residential natural gas consumption (%)		

Pillars

- EQUITY
- STRUCTURAL CHANGE
- FEASIBILITY
- EDUCATION
- FUNDING
- PARTNERSHIP

Co-Benefits

- HIGH-ROAD JOB DEVELOPMENT
- COMMUNITY SAVINGS
- IMPROVED HEALTH AND SAFETY
- CONNECTED COMMUNITIES
- REDUCED RELIANCE ON FOSSIL FUELS
- ENERGY SECURITY

E-1.3 – Electrify existing commercial buildings to reduce commercial natural gas consumption 15% by 2030 and 100% by 2045, from 2016 levels.

Electrifying existing commercial buildings also provides the same GHG emission reduction, energy bill, and public health benefits as residential building electrification. However, leveraging the benefits from electrifying businesses also faces economic and social barriers. Like residential building electrification, we must pursue commercial building electrification equitably to help small and minority-owned businesses benefit from electrification rather than be left with polluting and increasingly expensive gas appliances.[37] Furthermore, electrifying businesses involves buildings of larger sizes and different purposes. While the technology does exist today to fully electrify all commercial buildings, we must support our business owners understand the options, resources, and benefits to electrifying their business. To successfully electrify commercial buildings and mitigate the greatest impacts of climate change, it is crucial to raise awareness among business owners, provide financial incentives, and offer access to expertise regarding the options, support, and benefits of electrifying their establishments.

Actions, Pillar, and Co-benefits				
	E.1.3a:	Develop a strategy to support commercial building electrification, including initiatives and recommended standards for retrofitting commercial buildings, prioritizing appliance replacements, and avoiding expansion of natural gas infrastructure.		
	E.1.3b:	Conduct engagement efforts for the commercial sector during development of the building electrification strategy to understand potential concerns and barriers to commercial electrification and educate commercial property owners on the potential cost savings and other benefits of electrification. Include targeted outreach to small businesses and minority-owned businesses to understand potential equity concerns with commercial electrification during the strategy development process.		
	E.1.3c:	Continue to work with Bay Area Regional Energy Networks, MCE, and StopWaste to improve, implement, and promote commercial electrification rebates and financing opportunities, as well as other offered incentives. Review the incentives for procedural equity and promote them to small		

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37. https://greenlining.org/wp-content/uploads/2019/10/Greenlining_EquitableElectrification_Report_2019_WEB.pdf

Actions, Pillar, and Co-benefits	and minority-owned businesses through targeted outreach.		
	E.1.3d: Conduct focused interviews with commercial property owners to evaluate the feasibility of adopting a commercial building electrification ordinance to ban the expansion of natural infrastructure and require appliance replacements to be all-electric where technologically feasible. Include interviews specifically with small and minority-owned businesses.		
	E-1.3e: Track annual progress on commercial building electrification through the same permit tracking program developed for residential building electrification.		
	E-1.3f: Conduct engagement efforts for the commercial sector to identify ways the City can support commercial battery storage installations.		
	E-1.3g: Partner with the Chamber of Commerce to inform and facilitate electrification for commercial business owners.		
	E-1.3h: Use municipal electrification efforts to promote the cost-saving benefits and feasibility of electrification to the commercial sector. Promote municipal building electrifications on the City's website and at City permit counters with information on costs, timescale, and utility bill savings for each project.		

Cost	**City Cost:** Low **Community Cost:** Moderate
Equity Guardrails	Access to Health and Safety Benefits, Equitable Allocation of Costs and Benefits, Continues Investment and Engagement, Provides Local and Accessible High-road Job Development
KPI	Change in commercial natural gas consumption (%)

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Energy

E-2 Decarbonize Electricity and Increase Use and Storage of Local Renewable Energy

E-2.1 Increase the number of accounts enrolled in MCE's programs to 95%, with a total of 40% of accounts enrolled in the Deep Green energy option by 2030.

E-2.2 Increase generation and storage of local renewable energy.

E-2.1 – Increase the number of accounts enrolled in MCE's programs to 95%, with a total of 40% of accounts enrolled in the Deep Green energy option by 2030.

Pittsburg currently enrolls residents and businesses in MCE's Light Green electricity service. The service provides electricity sourced from 60 percent renewable energy, helping it achieve a lower carbon intensity than the electricity from Pacific Gas & Electric (PG&E). MCE's Deep Green service eliminates fossil fuels altogether, providing electricity from 100 percent renewable sources (i.e., solar and wind).[38] While the California grid will continue to get cleaner as the Renewable Portfolio Standard progresses, MCE provides Pittsburg significant GHG emission reduction potential in the meantime—especially when paired with all-electric buildings. Helping residents and businesses maintain enrollment in MCE and opt-up to Deep Green will help Pittsburg leverage the benefits of renewable energy, fostering a sustainable and resilient community while reducing GHG emissions.

Actions, Pillar, and Co-benefits			
	E.2.1a:	Continue to work with MCE to conduct an annual analysis of opt-out rates in the City and expand the research to understand why residents and businesses opt out of MCE. Include targeted outreach to residents living on low and fixed incomes and disadvantaged and vulnerable communities to identify barriers to remaining with MCE.	
	E.2.1b:	Partner with MCE to design educational campaigns, including tabling at community events, establishing informational resources on the City's website, regularly posting on social media, and developing energy bill inserts, to highlight the benefits of 100% renewable energy.	
	E.2.1c:	In collaboration with MCE, implement a pilot program to provide Pittsburg's affordable housing units managed by the Pittsburg Housing Authority MCE's Deep Green service by 2025. Identify funding options with MCE such as subsidy of pilot study through the non-discounted customers or grant funding.	
	E.2.1d:	Support an equitable transition to renewables by partnering with MCE to create a funding or	

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38. https://www.mcecleanenergy.org/energy-suppliers/

Actions, Pillar, and Co-benefits	Family Electric Rate Assistance (FERA) programs to opt-up to MCE's Deep Green option. This may include subsidizing costs to customers who participate in CARE/FERA programs through non-discounted customer rate increase or obtainment of funding for disadvantaged and vulnerable communities. Include targeted outreach to educate residents on the availability of energy savings programs to help offset potential rate increases when opting-up.
Cost	**City Cost:** Low **Community Cost:** Low
Equity Guardrails	Equitable Allocation of Costs and Benefits, Promote Housing Affordability & Anti-Displacement, Continues Investment and Engagement
KPI	Accounts enrolled in MCE and MCE's Deep Green (%)

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E-2.2 – Increase generation and storage of local renewable energy.

While all-electric buildings can be more energy efficient and produce lower energy bills than those powered by gas, we must also prioritize reliability and safety. Pairing all-electric buildings with local solar photovoltaics and battery storage can insulate the community from public safety power shutoffs and grid outages, increasing the resilience of our buildings. Additionally, local solar and battery storage can reduce energy bill burdens by reducing the electricity purchased from the grid and avoiding purchase during peak hours. However, solar and battery storage come with high upfront and maintenance costs that may be difficult for members of disadvantaged and vulnerable communities to prioritize and many members of these communities live in rental or multi-family properties that come with physical and legal limitations to installing solar and battery storage. To create an equitable transition to renewable energy, the actions below develop a framework that focuses on partnerships and financing mechanisms to provide local solar to disadvantaged and vulnerable communities and explore future opportunities for community solar.

Actions, Pillar, and Co-benefits				
	E.2.2a:	Establish and streamline standards and permit requirements for electrification-related installations and battery storage systems, to allow for easier implementation of these technologies in Pittsburg.		
Updated	E.2.2b:	Consider adopting a PV (Solar) Ordinance requiring residential and nonresidential building additions and alterations to install PV systems that meet minimum requirements of Tier 2 Voluntary Standards under CalGreen. Engage with local building industry stakeholders to understand concerns and develop exemptions to the ordinance where the installation of PV systems may not be economically feasible.		
	E.2.2c:	Expand the partnership with GRID Alternatives through increased funding/promotion and promote the benefits of renewable energy through multi-lingual educational programs in order to support an equitable transition to renewable energy.		
Updated	E.2.2d:	Work with PG&E, MCE, and/or other partners to support and incentivize local on-site energy generation and storage resources. This could include: • Connecting home and business owners, particularly those in disadvantaged and vulnerable communities, to incentives for renewable energy and storage including Net Metering Programs through PG&E for bill		

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Actions, Pillar, and Co-benefits	credits, the Disadvantaged Communities-single-family Solar Homes program, Self-Generation Incentive Program, and Equity Resilience rebates that provide an upfront rebate for battery storage, as well as the federal investment tax credit. ▪ Promoting installation of storage technology in concert with renewable energy infrastructure through multilingual education programs, outreach, and information provided via City platforms. ▪ Evaluating the feasibility of installing on- and off-site co-located community solar and storage facilities and, if demonstrated effective, installing at least 3 by 2030 to provide cost-saving and resilience benefits to disadvantaged and vulnerable communities. E-2.2e: Provide educational materials and workshops to large commercial developers and large business property owners of the benefits of microgrids and energy resiliency. Provide resources to identify opportunities for solar installations and/or battery storage on site. E-2.2f: Partner with affordable housing providers to conduct a feasibility analysis of battery storage and solar projects at the affordable housing in Pittsburg that are eligible for Equity Resilience Incentives under the Self-Generation Incentive Program.	 	 
Cost	**City Cost:** Moderate	**Community Cost:** Moderate to High	
Equity Guardrails	Equitable Allocation of Costs and Benefits, Promote Housing Affordability & Anti-Displacement, Continues Investment and Engagement, Provides Local and Accessible High-road Job Development		
KPI	Renewable energy and storage capacity installed (Megawatts)		

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Transportation

T-1 Reduce Passenger Car Vehicle Miles Traveled

T-1.1 Implement Pittsburg Moves, increasing active transportation mode share from 1.5% in 2020 to 3% by 2030 and 9% by 2045.

T-1.2 Implement public and shared transit programs to increase public transit mode share from 10.1% in 2020 to 12% by 2030 and 17% by 2045.

T-1.1 – Implement Pittsburg Moves, increasing active transportation mode share from 1.5% in 2020 to 3% by 2030 and 9% by 2045.

In addition to reducing vehicle miles traveled (VMT), and in turn GHG emissions, increasing active transportation provides a robust set of health, mobility, and livability benefits. Increasing opportunities for active transportation—as in any self-propelled, human-powered form of transportation such as walking or biking—increases residents' opportunity for physical exercise and recreational activities providing important physical and mental health benefits. Active transportation also improves mobility, providing community members who cannot drive (e.g., children, seniors) affordable options to travel independently. At the same time, it helps bridge the first- and last-mile gap providing extended mobility options for community members. Lastly, a thriving active transportation network will provide Pittsburg a safe and connected network to interact with neighbors, fostering a sense of community and promoting healthy lifestyles for all residents. The actions below commit Pittsburg to planning and implementing active transportation infrastructure improvements and establish a framework of partnerships, engagement, and education to best serve the community members who have the most to gain from active transportation improvements.

Actions, Pillar, and Co-benefits			
	T.1.1a:	Based on the goals and policies outlined in Pittsburg Moves, coordinate with Contra Costa Transportation Authority to establish a target timeline and funding strategy that address each of the projects in Appendix A. The timeline should outline a path that confirms an equal focus on improvement projects that will benefit residents living in disadvantaged and vulnerable communities.	 
	T.1.1b:	Complete the feasibility analysis outlined in the Pittsburg Moves Project List to begin implementing the supporting projects.	 
New	T.1.1c:	Establish bicycle lockers and bicycle parking minimums for new developments by land use types.	 
New	T.1.1d:	Work with existing commercial and institutional property owners to identify additional opportunities to install safe bicycle lockers and parking spaces to encourage residents and visitors to make short trips via active transportation.	 
	T.1.1e:	Partner with schools, employers, transit agencies, Bike East Bay, the League of American Bicyclists, Metropolitan Transportation Commission, and/or community	 

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Actions, Pillar, and Co-benefits				
		groups to teach bicycle and pedestrian safety in schools and workplaces and to educate residents and businesses about the safe route availability and the health and environmental benefits of walking, bicycling, and using public transit.		
	T.1.1f:	Develop a Specific Capital Improvement Plan for active transportation and mobility projects for disadvantaged and vulnerable communities. Partner with community-based organizations with connections to disadvantaged and vulnerable communities to engage the community in the development and implementation of the plan.		
Updated	T.1.1g:	Partner with community groups to obtain funding through the California Air Resources Board Carsharing and Clean Mobility Options Incentive Program for a pilot bike-share program for disadvantaged and vulnerable communities and to connect disadvantaged and vulnerable communities with the E-Bike Purchase Incentive Program through CalBike and the California Air Resources Board (CARB), 511 Contra Costa, Contra Costa Transportation Authority, and the Bay Area Air Quality Management District.		
	T-1.1h:	Promote active transportation through car-free events by identifying areas of the City to periodically close streets to cars, potentially coupled with the Farmer's Market or other large and regular community events.		
	T-1.1i:	Work with a partner such as Lyft, Lime, Bike East Bay, 511 Contra Costa, or Encina Bicycle Center, to establish a book-a-bike program within the Civic Center.		
	T-1.1j:	Devote staff time to tracking and applying for grant funding to complete projects that would improve active transportation or mobility in the community.		
	T-1.1k:	Implement all policy recommendations included in the Pittsburg Moves to improve pedestrian and bicycle networks and increase		

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Actions, Pillar, and Co-benefits	transit ridership based on the established timeframes. T-1.1l: Install approximately 45 miles of bikeways by 2040, including approximately 26 additional miles of shared-use paths; 7 miles of new buffered bike lanes; 8 miles of new bike boulevards; and 17 miles of new separated bikeways.		
Cost	**City Cost:** High	**Community Cost:** No cost	
Equity Guardrails	Access to Health and Safety Benefits, Equitable Allocation of Costs and Benefits, Promote Housing Affordability & Anti-Displacement, Continues Investment and Engagement, Provides Local and Accessible High-road Job Development		
KPI	Bicycle and pedestrian mode share (%)		

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T-1.2 – Implement public and shared transit programs to increase public transit mode share from 10.1% in 2020 to 12% by 2030 and 17% by 2045.

Increasing public transit mode share provides benefits beyond reducing GHG emissions from vehicles. Public transit and shared transportation can shift communities towards a healthier future by reducing local air pollutants and boosting quality of life. For Pittsburg, this means a safer and more affordable means of transportation, increased mobility, alleviating traffic congestion, improving air quality, enhancing accessibility for marginalized communities, and promoting economic growth by reducing transportation costs for individuals and businesses alike. Public transportation has substantially lower crash rates and lower crash severity[39] than automotive travel and improves public health by reducing air pollution. It also provides cost saving opportunities due to savings from less fuel, maintenance, insurance, and registration costs. Public transportation also fosters public health improvements because most public transit users regularly walk or bike to access points.[40] This trend can result in improved health and reduced medical expenses when coupled with the local air quality improvements that reduced mobile combustion of fossil fuels provides.

Actions, Pillar, and Co-benefits			
	T.1.2a:	Establish guidelines and recommended standards for new development of public space to be transit accessible and multi-functional by co-locating public facilities.	
	T.1.2b:	Consistent with the intention of Senate Bill 10, allow developers to build housing without off-street parking if they're close to frequent transit service.	
	T.1.2c:	Partner with Tri-Delta Transit to conduct a study to determine transit priority corridors and prioritize infrastructure improvements in existing neighborhoods that enable people to better access and use public transit.	
	T.1.2d:	Conduct engagement efforts for the general public and targeted to disadvantaged and vulnerable communities to understand the community's concerns around or barriers to using public and/or shared transit.	
	T.1.2e:	Through the adoption of an Overlay or Specific Plan, encourage employers to develop a Transportation Demand Management (TDM) Plan. Design a baseline TDM Plan for large employers (i.e., businesses with more than 25 employees) to adopt or model their TDM's after. TDM plans should include money-based	

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39. https://www.transportation.gov/mission/health/Expand-Public-Transportation-Systems-and-Offer-Incentives
40. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3407915/

Actions, Pillar, and Co-benefits	incentives for employees to bike, walk, carpool, or take the bus to work. T-1.2f: Conduct engagement efforts for the general public, with a targeted approach to disadvantaged and vulnerable communities to understand the potential concerns around the analysis of disincentive-based policies for driving single passenger vehicles. Through feedback from these engagement efforts, define equity metrics for the implementation of disincentive-based policies and depending on the outcome of the analysis, structure the policies to meet these metrics.		
Cost	**City Cost:** Moderate	**Community Cost:** Moderate	
Equity Guardrails	Access to Health and Safety Benefits, Equitable Allocation of Costs and Benefits, Promote Housing Affordability & Anti-Displacement, Continues Investment and Engagement		
KPI	Public transit and shared transport mode share (%)		

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Transportation

T-2 Increase Zero-Emission Vehicle and Equipment Use

- T-2.1 Increase passenger zero-emission vehicle adoption from 2.3% in 2020 to 15% by 2030 and 100% by 2045.
- T-2.2 Increase commercial zero-emission vehicle adoption from less than 1% in 2020 to 10% by 2030 and 100% by 2045.
- T-2.3 Transition 5% of all (i.e., commercial and residential) off-road equipment to zero-emission alternatives by 2030 and 100% by 2045.

T-2.1 – Increase passenger zero-emission vehicle adoption from 2.3% in 2020 to 15% by 2030 and 100% by 2045.

Widespread adoption of passenger zero-emission vehicles (ZEVs) provides a range of benefits including significantly reduced GHG emissions, improved public health, and cost savings. By avoiding the local combustion of fossil fuels, ZEVs reduce the level of smog, particulate matter, and other harmful pollutants that will, in turn, help reduce the incidence of respiratory illness.[41] Additionally, without fluids to replace and with fewer moving parts, ZEVs produce long-term costs savings through lower operating and maintenance costs than internal combustion engine vehicles. However, it is important that the transition to ZEVs is equitable and accessible to all Pittsburg residents. Purchasing a ZEV and upgrading home infrastructure to allow for charging (e.g., receptacle installation, electrical panel upgrade) can be an upfront cost difficult for members of disadvantaged and vulnerable communities to prioritize. Similarly, residents of rental and multi-family properties may lack the property rights to upgrade infrastructure for charging. The actions below focus on an equitable transition to ZEVs through the installation of publicly-available chargers across the City, the implementation of financing mechanisms for ZEVs and at-home chargers, and extensive research and engagement to begin developing a ZEV network that overcomes local barriers to implementation.

Actions, Pillar, and Co-benefits			
Updated	T.2.1a:	Establish a prioritized list of locations in Pittsburg for new publicly accessible electric vehicle charging stations with consideration for equitable distribution of chargers to renters, residents of multi-family homes, residents living on low and fixed-incomes, and disadvantaged and vulnerable communities. Include locations for Level 2 charging where residents make extended stops and locations for Level 3 charging (DC Fast Charging) for residents without access to overnight charging and for highway travelers. Install at least 50 new publicly accessible charging stations by 2030 and 100 by 2045, through public-private partnerships and on City-owned properties at the identified locations. Promote the availability of new public chargers on social media and on the City's website.		
	T.2.1b:	Continue to maintain a streamlined electric vehicle (EV) infrastructure permitting process and ordinance in accordance with AB 1236.		
	T.2.1c:	Allow for granting of zero emission vehicles (ZEVs) access to preferred parking spaces in new private parking lots, where it is logical, feasible and not cost-prohibitive.		

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41. https://www.sciencedirect.com/science/article/abs/pii/S0048969723003765?via%3Dihub

Actions, Pillar, and Co-benefits				
	T.2.1d:	Work with MCE and PG&E to incentivize residential electric vehicle charger installations and panel upgrades through on-bill financing. Promote the incentives through multi-lingual outreach material on the City's website and at community events.		
	Updated T.2.1e:	Coordinate with community-based organizations, local agencies, and non-profits to conduct ZEV education events for residents and targeted events for members of disadvantaged and vulnerable communities that would engage the community to evaluate the barriers to ZEV adoption, promote information on the costs and benefits of owning ZEVs, and promote steps on how to purchase a ZEV and receive incentives (including education on pre-owned EVs and how to determine current battery range).		
	T-2.1f:	Develop outreach and education materials and distribute to local businesses, rental and multi-family property owners, and developers on the financial (e.g., new funding streams), environmental, and health and safety benefits of ZEVs. Provide information on available funding opportunities and the City's streamlined permitting process.		
	Updated T-2.1g:	Conduct outreach, including interviews with residents and business owners to evaluate the feasibility of adopting an electric vehicle charging infrastructure reach code that meets or exceeds the minimum requirements of the Tier 2 Voluntary Standards under CALGreen. Partner with community-based organizations with connections to disadvantaged and vulnerable communities to include targeted outreach and interviews to members of disadvantaged and vulnerable communities to understand equity impacts of the reach code and barriers to adoption.		
	T-2.1h:	Explore opportunities to assist disadvantaged and vulnerable community members to purchase and operate ZEVs including:		

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Actions, Pillar, and Co-benefits	▪ Opportunities with CARB, BAAQMD, or other agencies to start a purchase rebate program and provide higher trade-in value for combustion vehicles ▪ Opportunities with MCE and other agencies to discount charger and/or electricity rates for those with an electric vehicle. T-2.1i: Collaborate with neighboring jurisdictions and the Contra Costa Transportation Authority to develop a connected network for zero emission vehicle car share. T-2.1j: Support zero-emission vehicle car share companies in coming to the City. Coordinate with car share companies and community-groups to develop an affordable, zero-emission vehicle car share to serve affordable housing and/or multifamily developments with a priority to target disadvantaged and vulnerable communities.	 	 
Cost	**City Cost:** High	**Community Cost:** Low	
Equity Guardrails	Access to Health and Safety Benefits, Equitable Allocation of Costs and Benefits, Promote Housing Affordability & Anti-Displacement, Continues Investment and Engagement, Provides Local and Accessible High-road Job Development		
KPI	Passenger ZEV adoption (%)		

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T-2.2 – Increase commercial zero-emission vehicle adoption from less than 1% in 2020 to 10% by 2030 and 100% by 2045.

In addition to improving air quality and reducing GHG emissions, increasing commercial ZEV adoption brings cost-savings, improved energy security, and increased competitiveness for businesses. Commercial ZEVs, such as electric delivery trucks, can help to reduce operating costs by minimizing fuel and maintenance expenses, while also providing cost-savings through improved energy efficiency. For this transition to be successful, it is important to confirm Pittsburg businesses of all sizes have access to the resources and support they need to make the transition. Furthermore, increasing commercial ZEV adoption can also lead to improved public health outcomes by reducing local air pollution in the City. Diesel-powered commercial vehicles are a significant source of particulate matter and other harmful pollutants, which can have negative health impacts, especially for vulnerable populations such as children, the elderly, and those with respiratory conditions. By transitioning to ZEVs, businesses can contribute to cleaner air and a healthier community and play an active role in establishing the most sustainable future. Additionally, increasing commercial ZEV adoption can also enhance energy security by reducing reliance on imported fossil fuels, which can be subject to price volatility and supply disruptions.

Actions, Pillar, and Co-benefits			
	T.2.2a: Consider establishing a licensing fee for commercial delivery vehicles operating on fossil fuels (such as Amazon and FedEx) to provide funding for new active transportation and EV charging/ZEV fueling infrastructure and discounting the fee for the proportion of electric vehicles the delivery company uses. Evaluation of the fee would include: ▪ Engaging directly with delivery service providers operating in the City ▪ Determining if phasing is needed ▪ Identifying gaps in ZEV fueling/charging infrastructure to maintain route efficiency.		
	T.2.2b: Encourage commercial vehicle fleet operators to accelerate electrification by providing them educational material on the benefits of ZEVs (e.g., fuel cost savings through networked charging and current availability of ZEVs ahead of State mandates), educating them on the City's streamlined permitting process, and compiling and distributing information on potential funding opportunities. Include Pittsburg Unified School District's zero-emission buses as a case study to demonstrate the feasibility and benefits of transitioning commercial fleets to ZEVs.		

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Cost	**City Cost:** Low **Community Cost:** Low
Equity Guardrails	Access to Health and Safety Benefits, Provides Local and Accessible High-road Job Development
KPI	Commercial ZEV adoption (%)

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T-2.3 – Transition 5% of all (i.e., commercial and residential) off-road equipment to zero-emission alternatives by 2030 and 100% by 2045.

Like the adoption of ZEVs, decarbonizing off-road equipment offers significant GHG emission reductions and air quality improvements. Off-road equipment, such as landscaping equipment and construction equipment, emit both GHG emissions and local smog-forming emissions. In California, total smog-forming emissions from small off-road engines exceed emissions from light-duty passenger vehicles. Likewise, operating a commercial leaf blower for one hour emits smog-forming pollution comparable to driving a new light-duty passenger car about 1,100 mile or over 15 hours of driving.[42] These characteristics mean zero-emission alternatives for off-road equipment can help create a cleaner and healthier Pittsburg. However, decarbonizing off-road equipment requires upfront costs that can be difficult for residential and business members of disadvantaged and vulnerable communities to navigate. An equitable transition to zero-emission alternatives requires a multi-faceted approach that addresses both the technical and financial barriers to adoption.

Actions, Pillar, and Co-benefits		
	T-2.3a:	Develop small off-road equipment (SORE) guidelines in alignment with CARB's goals encouraging that at time of replacement, zero emission landscape equipment be used starting in 2024 and portable generators be zero-emissions by 2028.
	T-2.3b:	Partner with BAAQMD to identify funding opportunities to encourage residents to replace gas-powered landscaping equipment and off-road engines with zero emission equipment with a focus on funding opportunities for members of disadvantaged and vulnerable communities and small and minority-owned businesses.
	T-2.3c:	Conduct an investigation of major commercial off-road equipment fleets in Pittsburg and identify fleets with highest decarbonization potential and fleets in disadvantaged and vulnerable communities that will need targeted support to transition.
	T-2.3d:	Develop an Off-road Equipment Replacement Outreach Campaign that provides information to contractors, residents, and fleet operators in Pittsburg, with a target towards those identified with high decarbonization potential

Pillars

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42. https://ww2.arb.ca.gov/resources/fact-sheets/sore-small-engine-fact-sheet

Actions, Pillar, and Co-benefits		and small businesses owned by traditionally disadvantaged and vulnerable community members. Information should include equivalent alternatives to fossil-fueled off-road equipment, public health, and safety benefits of alternative equipment technology, and funding opportunities available (i.e., Clean Off-Road Equipment Voucher Incentive Program [CORE]).		
	T-2.3e:	Partner with BAAQMD to develop a rebate and incentive program for upgrading off-road equipment and switching to electric or biofuels. Develop the program with a focus on procedural equity and prioritize funding distribution to disadvantaged and vulnerable communities.		
	New T-2.3f	As part of the tool lending program at the library (see Action SW.2.1f), offer electric garden and landscape maintenance equipment including electric leaf blowers.		
Cost	**City Cost:** Moderate		**Community Cost:** Low	
Equity Guardrails	Access to Health and Safety Benefits, Equitable Allocation of Costs and Benefits, Promote Housing Affordability & Anti-Displacement, Continues Investment and Engagement			
KPI	Zero-emission off-road equipment adoption (%)			

Pillars

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Co-Benefits

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Water

W-1 Increase Water Conservation and Local Water Supply

W-1.1 Reduce per capita water consumption 10% by 2030 and 30% by 2045, from 2016 levels.

W-1.2 Increase recycled water use in the City.

W-1.3 Increase green stormwater infrastructure.

W-1.1 – Reduce per capita water consumption 10% by 2030 and 30% by 2045, from 2016 levels.

California has experienced its driest two decades in at least 1,200 years,[43] with models predicting the current "megadrought" to continue despite occasional heavy precipitation events, such as what the state experienced in winter 2023. This new reality underscores the pressing need for communities to take proactive steps to reduce water consumption, in order to build a resilient and sustainable future for all. By reducing community water consumption, we can help to preserve and protect this precious resource, ensuring that it remains available for the long-term. Moreover, reducing water consumption can also lead to significant cost savings for both residents and businesses alike, as lower utility bills can translate into real monetary savings. At the community level, reducing water consumption can enable fewer investments in water treatment and delivery infrastructure, resulting in a more efficient and cost-effective water system. In addition to the economic benefits, reducing water consumption can also have positive environmental impacts, such as reducing the energy required to pump and treat water, thus leading to energy savings.

Actions, Pillar, and Co-benefits			
Updated	W.1.1a:	Adopt a Water Conservation and Water Shortage Contingency Program Ordinance to establish a clear protocol of drought thresholds that trigger varying water use reduction strategies that focus primary on domestic water use, health and sanitation, and fire protection.	
	W.1.1b:	Continue to implement and enforce Model Water Efficient Landscape Ordinance to encourage use of efficient irrigation systems, greywater usage, onsite storm water capture, and limit the portion of landscapes that can be covered in turf.	
	W.1.1c:	Continue the "Delta Water Education Program" to promote and reinforce the importance of water resources, water conservation, and local management of watersheds and water quality, to children in the local community.	
	W.1.1d:	Continue to partner with Contra Costa Water District to promote water conservation messaging, including multi-lingual education materials such as publications, website pages, community events and booths, workshops and presentations, newsletters, newspaper ads, and bill inserts. Include targeted outreach to disadvantaged and vulnerable communities to reduce utility bill burdens.	

Pillars

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43. https://www.nytimes.com/2022/02/14/climate/western-drought-megadrought.html

Actions, Pillar, and Co-benefits			
	W-1.1e: Continue to partner with Contra Costa Water District to provide water conserving fixtures/fittings and rebates for appliances to residents throughout Pittsburg, with a focus on disadvantaged and vulnerable communities to reduce utility bill burdens.		
	W-1.1f: Maintain a comprehensive, coordinated education campaign focused on property owners, landlords, property management companies, and occupants for reducing the use of water in homes and businesses. Establish a shared understanding of existing incentives for appliances, fittings and fixtures; lawns; and irrigation systems, and how to access them, including Contra Costa Water District incentive programs and rebates.		
	W-1.1g: Perform analysis to understand the feasibility and potential potable water savings of adopting a Dual Drainage Plumbing Ordinance to provide information to community members.		
	W-1.1h: Promote the Living Green Gardens, the City's water-wise public demonstration garden, to encourage efficient landscape and watering practices and to provide a hands-on learning experience for members of the community. Additionally, develop more classes on new materials and continue active maintenance of the garden.		
	W-1.1i: Implement water conservation strategies, such as increasing efficiency and use of recycled water, in City landscaping and grounds maintenance procedures.		
	W-1.1j: Consider the adoption of an ordinance in the Municipal Code that requires hospitality agencies (i.e., hotels and motels) to only provide daily services upon request and share such information with guests. Engage hospitality agencies and other stakeholders in the evaluation process.		

Pillars

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Actions, Pillar, and Co-benefits	W-1.1k: Continue to partner with Contra Costa Water District (CCWD) to promote the "Lawn to Garden Rebate" to encourage residents and business owners to transition their existing lawns to waterwise landscaping. Provide specific outreach to multi-family and commercial entities, including providing flyers in water bills and partnering with "My Pittsburg Chamber" to provide information to business entities in the community.		
New			
New	W-1.1.l: Apply for a rebate to transition non-essential municipal lawns to native, waterwise landscaping, and promote the Living Green Garden to continue offering a place for community members to visit and learn more about waterwise landscaping and available incentives and rebates, as well as information on local nurseries that provide native waterwise landscaping.		

Cost	**City Cost:** Moderate **Community Cost:** No cost
Equity Guardrails	Promote Housing Affordability & Anti-Displacement, Provides Local and Accessible High-road Job Development
KPI	Per capita water use (gallons)

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W-1.2 – Increase recycled water use in the City.

Increasing recycled water use in the City can increase adaptative capacity in Pittsburg while providing environmental and economic benefits. First and foremost, recycling water can help increase the adaptive capacity of the community by establishing an additional water supply that can be utilized during times of extreme drought or water scarcity. This additional water supply can also expand the community's access to a regenerative water source, providing strong equity benefits to Pittsburg communities. Additionally, recycling water can reduce the environmental impact of upstream water processes when compared to those for "new" water — such as extraction or the energy used to pump and deliver water long distances. When used to replace existing drinking water supplies for non-potable uses (e.g., irrigation and industrial uses), recycled water can lower water utility bills.[44] Additionally, recycled water can be used for groundwater recharge. Groundwater recharge through recycled water not only helps replenish depleted aquifers, but it also plays a crucial role in enhancing water availability during drought periods and mitigating the effects of over-extraction. By injecting treated recycled water into underground aquifers, the natural storage capacity of groundwater is replenished, creating a sustainable and reliable source of water for future generations. These characteristics equate to a dependable and affordable water supply that provides local businesses an incentive to remain in the City.

Actions, Pillar, and Co-benefits				
	W-1.2a:	Work with Delta Diablo to perform a feasibility study on increasing local recycled water supply through expansion in purple piping infrastructure or inclusion of tertiary treated wastewater effluent to supplement existing potable water supply. The feasibility study would evaluate potential impacts to cost of service and investigate ways to maintain or decrease costs of service through the projects.		
	W-1.2b:	Complete a feasibility study to identify opportunities for increased access to recycled water and to accurately determine the quantity of recycled water available to the City. The feasibility study would analyze possible land use types (i.e., landscaping and fields) and specific projects that could switch from potable to recycled water.		
	W-1.2c	Pursue funding opportunities at the State and federal level, such as the Clean Water State Revolving Fund and the US Bureau of Reclamation's WaterSMART grants, to create more financial incentive for increased recycled water infrastructure.		
New	W.1-2d	Continue to partner with Contra Costa Water District to identify new incentives and rebates		

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44. https://www.sciencedirect.com/science/article/pii/S0921344921005577

Actions, Pillar, and Co-benefits	and promote existing programs on the City's water webpage for opportunities such as the "Landscape to Laundry Greywater Rebates" to install a greywater system and "Car Wash Coupons" for car wash facilities that use recycled water to incentive residents to "go grey."		
Cost	**City Cost:** Moderate	**Community Cost:** N/A	
Equity Guardrails	Promote Housing Affordability & Anti-Displacement, Provides Local and Accessible High-road Job Development		
KPI	Change in recycled water use (million gallons)		

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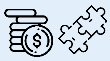
W-1.3 – Increase green stormwater infrastructure.

Green stormwater infrastructure refers to the construction and retrofit of storm drainage to reduce runoff volumes, disperse runoff to vegetated areas, harvest and use runoff where feasible, promote infiltration and evapotranspiration, and use bioretention and other natural systems to detain and clean runoff before it reaches our creeks and the Bay. It is a nature-based solution that in addition to improving water quality, increasing community resilience to precipitation events, and reducing consumption of potable water, provides a multitude of important co-benefits to the community. Green stormwater infrastructure can serve as visible green projects for the community that beautify neighborhoods, create ecological habitats, enhance economic vitality for local businesses, and demystify the groundwater management system by brining it above ground. Green stormwater infrastructure—such as pervious pavement, rain gardens, and rainwater harvesting systems—can be incorporated into construction on new and previously developed parcels, as well as new and rebuilt streets, roads, and other infrastructure within the public right-of-way. The actions below leverage the work Pittsburg is already doing to increase green stormwater infrastructure in the community and create a framework of incentives and education to increase the community's awareness of and participation in green stormwater infrastructure.

Actions, Pillar, and Co-benefits				
	W-1.3a:	Continue to implement the Green Infrastructure Plan to retrofit 4 acres of existing impervious surfaces through private and public developments; and update the plan as needed to monitor progress and revise project priorities.		
	W-1.3b:	Continue compliance with the City's National Pollutant Discharge Elimination System (NPDES) permit to require new developments to convey runoff to engineered bioretention basins or vegetative features.		
New	W-1.3c:	Partner with Contra Costa Water District to create incentives as part of their Rainwater Harvesting Program to help residents install rain barrels.		
	W-1.3d:	Develop and promote incentive programs and rebates for residents and businesses to replace their impervious surfaces with pervious surfaces, including water-wise landscaping.		
Updated	W-1.3e:	Continue to partner with Delta Diablo and Contra Costa Water District to conduct an on-going educational campaign to provide community members information on the benefits of green stormwater infrastructure and opportunities to incorporate green		

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44. https://www.sciencedirect.com/science/article/pii/S0921344921005577

Actions, Pillar, and Co-benefits	stormwater infrastructure into their homes and business properties (including ways to harvest and use the rainwater). Consider developing an interactive map that identifies completed and ongoing green stormwater infrastructure projects in the City (including those at City-owned properties) for community members to explore.		
Cost	**City Cost:** Moderate	**Community Cost:** N/A	
Equity Guardrails	Promote Housing Affordability & Anti-Displacement, Provides Local and Accessible High-road Job Development		
KPI	Change in recycled water use (million gallons)		

Pillars


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ENERGY SECURITY

Water

W-2 Minimize Water Loss System-wide

W-2.1 Reduce real and apparent system water loss from a rate of 13% in 2020 to less than 10% by 2030 and less than 7% by 2045

W-2.1 – Reduce real and apparent system water loss from a rate of 13% in 2020 to less than 10% by 2030 and less than 7% by 2045

While reducing water consumption and increasing recycled water use helps increase resilience and affordability, a resilient and affordable water supply system is also one that minimizes real and apparent water losses. Although water loss from small household leaks might seem insignificant, leaks can seriously add up over the long-term. According to the US EPA, the average family can waste 180 gallons per week, or 9,400 gallons of water annually[45] from household leaks. These leaks are equivalent to the amount of water needed to wash more than 300 loads of laundry. These cumulative leaks not only waste water but also contribute to higher utility bills for consumers and put additional strain on water infrastructure systems. For this reason, reducing real and apparent system water loss from a rate of 13% in 2020 to less than 10% by 2030 and less than 7% by 2045 in the City can provide substantial water savings to the community and help alleviate utility bill burdens for members of disadvantaged and vulnerable communities.

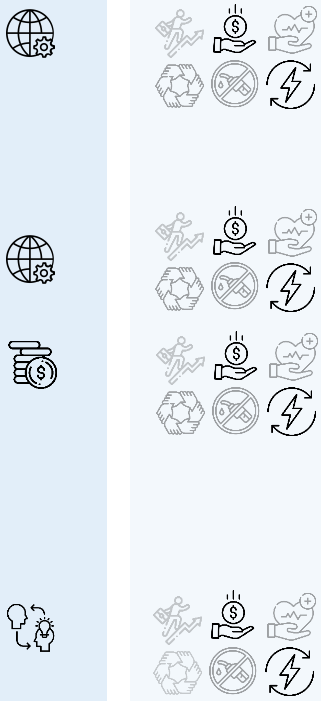
Actions, Pillar, and Co-benefits

W.2.1a: Maintain and continually improve the advanced metering and public facing software that allows water customers to check real-time water consumption data and explore water conservation recommendations based on their actual water consumption history.

W.2.1b: Continue to enforce standards set by water waste prevention ordinances stipulated in the Municipal Code.

W.2.1c: Continue to partner with CCWD to promote their water efficiency rebates for residential and commercial customers. Develop flyers and other promotional material on the rebates to distribute at community events and perform targeted outreach to members of disadvantaged and vulnerable communities to help reduce utility bill burdens.

W.2.1d: Create a "How to Find and Fix a Leak at Home Guide" for distribution at public counters and events, promote "National Fix A Leak Week" in March of every year, and continue to incorporate water waste messaging into communications strategy.



Pillars

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45. https://www.epa.gov/watersense/statistics-and-facts

Actions, Pillar, and Co-benefits	W.2.1e: Continue to partner with CCWD to provide Water Wise House Calls to residential customers and work with CCWD to expand the program to commercial customers to complete leak detections, provide tips to avoid high water bills, increase indoor and outdoor water efficiency, and provide information on how to monitor personal water use. Perform targeted outreach to promote the program to members of disadvantaged and vulnerable communities to help reduce utility bill burdens.		
Cost	**City Cost:** Moderate	**Community Cost:** No cost	
Equity Guardrails	Equitable Allocation of Costs and Benefits, Promote Housing Affordability & Anti-Displacement, Continues Investment and Engagement, Provides Local and Accessible High-road Job Development		
KPI	Real and apparent system water loss (%)		

Pillars

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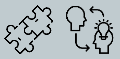
Solid Waste

SW-1 Organic Waste Diversion

SW-1.1 Continue to take action to meet SB 1383 organics and recycling requirements, reducing organic waste disposal 75% from 2014 levels by 2025.

SW-1.1 – Continue to take action to meet SB 1383 organics and recycling requirements, reducing organic waste disposal 75% from 2014 levels by 2025 statewide.

Sustainable solid waste management is a critical component to a healthy and inclusive Pittsburg. While waste may not be the most glamorous sector, it holds important connections to GHG emissions and community health, and when reimagined serves as a tangible touchpoint to every Pittsburg resident and business. Landfilled organic waste emits 20% of the state's total methane emissions[46]—a powerful GHG pollutant 28 times more potent than carbon dioxide. Meeting SB 1383 requirements and reducing emissions of short-lived climate pollutants (SLCP) like methane will not only have the most immediate impact on mitigating climate change, but also improve the health and safety of the community by reducing air pollutants, building access and security to healthy food through local food recovery programs, and fostering a connected Pittsburg by encouraging residents to participate in composting workshops and peer-to-peer learning events. Additionally, the implementation of these measures can lead to job creation and economic growth by stimulating the development of innovative technologies and the expansion of green industries.

Actions, Pillar, and Co-benefits		
	SW.1.1a: Adopt municipal procurement policies to comply with SB 1383 requirements for jurisdictions to purchase recovered organic waste products.	 
New	SW.1.1b: Work with Mt. Diablo Resource Recovery to establish and implement a detailed outreach and engagement plan for restaurants, grocery stores, and other commercial entities that generate organic waste to provide education and available resources for increased organic diversion.	 
	SW.1.1c: Support the County with information and collaborative planning to provide sufficient edible food reuse infrastructure to accept the capacity needed to recover 20% of edible food disposed or identify proposed new or expanded food recovery capacity.	 
Updated	SW.1.1d: Continue working with the Bay Area Recycling Outreach Coalition and Mt. Diablo Resource Recovery and Pittsburg Unified School District to establish and provide exciting education and outreach programs for school children and adults around food waste prevention, nutrition education, and the importance of edible food recovery. The education program may include:	 

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46. https://calrecycle.ca.gov/organics/slcp/

Actions, Pillar, and Co-benefits			
	▪ Composting principals, including information on what composting means and why it is important. ▪ Materials that can be composted, which typically include food scraps, yard waste, paper, and other organic matter. ▪ Methods for composting, such as aerobic, anaerobic, and vermicomposting. ▪ Composting equipment required for each potential composting methodology. ▪ Suggestions to troubleshoot or resolve any problems that arise, including information on potential odors and pests. ▪ How to efficiently apply and incorporate compost into soil.		
New	SW.1.1e: Investigate the opportunity to participate in a regional compost trading program to help meet organic waste procurement goals.		
Updated	SW.1.1f: Create relationships with local food recovery organizations, such as FoodShift, the Food Bank of Contra Costa and Solano, religious organizations, and edible food generators to support the establishment of an edible food recovery program to minimize food waste in the City.		
	SW.1.1g: Foster County partnerships to host home composting workshops in the City of Pittsburg and to provide reduced priced composting bins.		
	SW.1.1h: Provide free compost bins and kitchen-top food waste containers to members of disadvantaged and vulnerable communities and elderly households to increase participation in Mt. Diablo Resource Recovery's residential organics curbside program.		
	SW.1.1i: Monitor bill increases from participation in the residential organics curbside program and consider City incentive programs for members of disadvantaged and vulnerable communities to increase participation and reduce utility bill burdens.		

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Actions, Pillar, and Co-benefits New	SW.1.1j: Establish a Pittsburg Food System Alliance organization to build a network of leaders in Pittsburg to foster a local food system that eliminates food waste, alleviates the food desert, and brings affordable, organic produce to all. Partner with the City's Chamber of Commerce connect with business owners and serve as a conduit for the City.
Cost	**City Cost:** Moderate **Community Cost:** No cost
Equity Guardrails	Access to Health and Safety Benefits, Equitable Allocation of Costs and Benefits, Promote Housing Affordability & Anti-Displacement, Continues Investment and Engagement, Provides Local and Accessible High-road Job Development
KPI	Change in landfilled organic waste (%)

Pillars

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Solid Waste

SW-2 Reduce Community Waste Generation

SW-2.1 Reduce community-wide waste generation 55% by 2025 and 90% by 2040 statewide, from 2014 levels.

SW-2.1 – Reduce community-wide waste generation 55% by 2025 and 90% by 2040 statewide, from 2014 levels.

Reducing waste conserves the energy and water that goes into the manufacturing and transportation of the products while mitigating the potential air, soil, and water contamination its disposal would cause. Additionally, minimizing waste also contributes to the overall sustainability and long-term well-being of our planet by preserving natural resources and reducing GHG emissions. Achieving communitywide waste reduction, and eventually a state-envisioned zero waste future,[47] starts at the local level and requires improving existing recycling programs and creating new pathways for waste reduction and reuse. Leveraging critical partnerships with groups like Mt. Diablo Resource Recovery and implementing waste diversion plans and targeted education/outreach will prove instrumental to supporting the community's efforts in waste generation reduction. Other actions include waste characterization studies to inform waste management planning, potential "problem material" bans, and additional partnerships to promote repair and reuse, all of which will help reduce, directly or indirectly, the environmental and health impacts of landfilled material.

Actions, Pillar, and Co-benefits			
	SW.2.1a: In partnership with Mt. Diablo Resource Recovery, create a Waste Diversion Plan to reduce waste and increase reuse in the City. Upon finalization, provide the plan to Pittsburg Unified School District, Los Medanos College, retirement communities, and other large institutions to use as a model for adopting their own policies to reduce waste and increase reuse.		
	SW.2.1b: Require large events, as defined in SB 1383, and encourage smaller events to employ or designate an event waste management team and have easy to understand waste, recycling, and organics bin signage to assist with source separation of waste generated at events.		
	SW.2.1c: Conduct periodic waste characterization studies of all City waste streams at the Recycling Center & Transfer Station to evaluate progress, hone approaches, customize outreach/policy, and inform targeted campaigns and policy. Fill in waste generation gaps by collecting data from take-back locations (e.g., grocery stores, auto shops, carpets, mattresses, battery collection).		

Pillars

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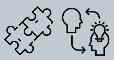
 ENERGY SECURITY

47. https://calrecycle.ca.gov/zerowaste/

Actions, Pillar, and Co-benefits			
	SW.2.1d: Partner with Mt. Diablo Resource Recovery to conduct targeted, multi-lingual, culturally appropriate, and geographically diverse waste prevention educational and technical assistance campaigns based on outcomes of waste characterization studies (e.g., food waste prevention, edible food recovery strategies, proper storage, how to fix clothes/electronics, how to donate, reusable alternatives, effects of over consumption, sustainable consumption habits, buying second hand, buying durable, sharing, and repurposing).		
	SW.2.1e: Impose a fee on single use bags and foodware to fund the waste reduction programs and studies.		
Updated	SW.2.1f: Partner with local businesses, nonprofits, and community groups or organizations to establish pop-up repair cafes for commonly broken and easily repaired items. Additionally, partner with the library to promote reuse by increasing accessibility to shared tools through a tool lending program. In addition to providing available resources, also work with experts in various fields to provide quick reference guidance documents or record short videos that residents can refer to when borrowing specific equipment to learn the most effective ways of using the tools available. Tools provided through the library could include: ▪ Power tools ▪ Hand tools ▪ Electrical tools ▪ Gardening tools ▪ Auto repair tools ▪ Bike repair tools ▪ Sewing and clothing repair tools		
	SW.2.1g: Based on waste characterization studies explore banning top "problem materials" (i.e., items without means of recycling or recycling		

Pillars

- EQUITY
- STRUCTURAL CHANGE
- FEASIBILITY
- EDUCATION
- FUNDING
- PARTNERSHIP

Co-Benefits

- HIGH-ROAD JOB DEVELOPMENT
- COMMUNITY SAVINGS
- IMPROVED HEALTH AND SAFETY
- CONNECTED COMMUNITIES
- REDUCED RELIANCE ON FOSSIL FUELS
- ENERGY SECURITY

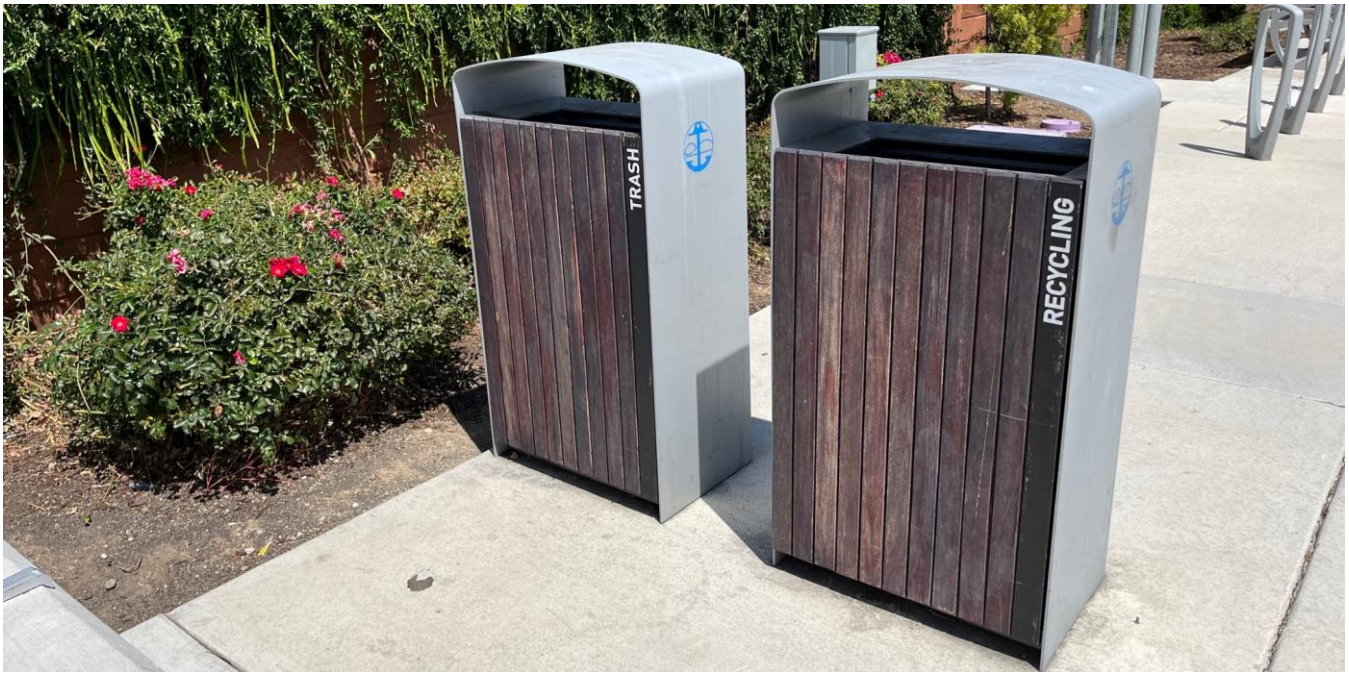
Actions, Pillar, and Co-benefits	markets, such as sale of polystyrene, produce bags, plastic packaging, straws, plastics #4-7, mixed materials or a specific size/type/etc.). Engage small and minority-owned businesses through targeted outreach to identify equity impacts of such a ban. **New** SW.2.1h: Partner with Delta Diablo to promote use of the existing Household Hazardous Waste facility. Additional promotion and education to the community could include sending out an annual mailer, providing regular updates on Pittsburg's social media pages, and through flyers and brochures available at community events.		
Cost	**City Cost:** Low	**Community Cost:** Moderate	
Equity Guardrails	Promote Housing Affordability & Anti-Displacement, Continues Investment and Engagement, Provides Local and Accessible High-road Job Development		
KPI	Change in community-wide waste generation (%)		

Pillars

- EQUITY
- STRUCTURAL CHANGE
- FEASIBILITY
- EDUCATION
- FUNDING
- PARTNERSHIP

Co-Benefits

- HIGH-ROAD JOB DEVELOPMENT
- COMMUNITY SAVINGS
- IMPROVED HEALTH AND SAFETY
- CONNECTED COMMUNITIES
- REDUCED RELIANCE ON FOSSIL FUELS
- ENERGY SECURITY



Carbon Sequestration

CS-1 Carbon Sequestration

CS.1.1 Increase carbon sequestration by planting 150 new trees annually through 2045 to sequester carbon and create urban shade to reduce heat island effect.

CS.1.2 Increase carbon sequestration by applying 0.08 tons of compost per capita annually in the community by 2030, increasing up to 0.10 by 2045.

CS-1.1 – Increase carbon sequestration by planting 150 new trees annually through 2045 to sequester carbon and create urban shade to reduce heat island effect.

Increasing urban tree canopy coverage and protecting existing trees is essential for a healthier, more livable Pittsburg. Along with carbon sequestering benefits, a healthy urban tree canopy can support local cooling, stormwater absorption, and provide a wide variety of health benefits[48] for residents. By providing shade and cooling the air, adequate canopy coverage can reduce the urban heat island effect and mitigate the effects of climate change. For disadvantaged and vulnerable communities where there is below average tree equity, this can prove especially beneficial for both reducing energy costs due to cooling and minimizing disproportionate heat-health related problems. Further, by absorbing and filtering rainwater, trees can help to reduce stormwater runoff and improve water quality. This benefit can help to reduce the strain on the City's stormwater systems and prevent flooding. Studies have also shown that individuals have less mental distress, less anxiety and depression, greater wellbeing and healthier cortisol profiles[49] when living in urban areas with more greenspace. The wide-ranging benefits of a healthy urban tree canopy are clear, and the actions provide a framework for Pittsburg to economically and equitably implement tree planting and urban forestry management programs.

Actions, Pillar, and Co-benefits			
	CS.1.1a:	Conduct an urban forest inventory and canopy study to inventory the existing urban forest as a baseline and continue to identify areas in Pittsburg that have below average canopy coverage, such as census block group 60133141033 and 60133120001, to design and implement a tree planting program focusing on the least covered portions of the City. As part of the Urban Forest Inventory, establish a goal of having no significant difference in canopy coverage between census blocks by 2040.		
	CS.1.1b:	Continue protecting existing trees on private property through the Tree Preservation and Protection Ordinance and create a City incentive program (e.g., water bill rebate) for new tree plantings on private properties with a focus on members of disadvantaged and vulnerable communities and in areas where there is below average tree equity or canopy coverage.		
	CS.1.1c:	Amend the Municipal Code to include street tree requirements for all zoning districts, strengthen shade tree requirements for new developments, and include permeable surface requirements for new development.		

Pillars

 EQUITY
 STRUCTURAL CHANGE
 FEASIBILITY
 EDUCATION
 FUNDING
 PARTNERSHIP

Co-Benefits

 HIGH-ROAD JOB DEVELOPMENT
 COMMUNITY SAVINGS
 IMPROVED HEALTH AND SAFETY
 CONNECTED COMMUNITIES
 REDUCED RELIANCE ON FOSSIL FUELS
 ENERGY SECURITY

48. https://www.frontiersin.org/articles/10.3389/fevo.2021.603757/full
49. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5663018/

Actions, Pillar, and Co-benefits			
	CS.1.1d: Continue to dedicate staff time or create a staff position for obtaining grant funding for tree planting and urban forest management. Identify and apply for applicable federal (e.g., USDA) and state (e.g., California ReLeaf, Affordable Housing and Sustainable Communities Program (AHSC), Urban and Community Forestry Program) available grants for Tree Planting projects.		
	CS.1.1e: Develop and adopt an Urban Forest Management Plan that identifies the City's potential capacity for new tree planting, identifies a timeframe for implementation, provides a management plan for existing trees, and establishes a tracking system to assess progress towards annual benchmarks. Collaborate with community-based organizations with connections to disadvantaged and vulnerable communities in the development of the plan.		
	CS.1.1f: As an expansion to the Adopt-a-Spot Program, establish an Adopt-a-Tree program that enables individuals, businesses, and community organizations to plant and care for trees in selected communities with below average canopy coverage and disadvantaged and vulnerable communities. Program should provide formalized information on appropriate trees eligible for planting in Pittsburg (i.e., native, drought tolerant, locations).		
	CS.1.1g: Establish a Tree Trust or Tree Endowment where the interest on the principal can be used for purchasing trees in selected communities with below average tree canopy coverage, paying for tree maintenance in disadvantaged and vulnerable communities, or supporting staff resources for the Urban Forest Management Program.		
New	CS-1.1h: Continue the City's annual Citywide celebration Arbor Day event that encourages and educates residents on the importance of planting native trees and provides resources and support for		

Pillars

- EQUITY
- STRUCTURAL CHANGE
- FEASIBILITY
- EDUCATION
- FUNDING
- PARTNERSHIP

Co-Benefits

- HIGH-ROAD JOB DEVELOPMENT
- COMMUNITY SAVINGS
- IMPROVED HEALTH AND SAFETY
- CONNECTED COMMUNITIES
- REDUCED RELIANCE ON FOSSIL FUELS
- ENERGY SECURITY

Actions, Pillar, and Co-benefits		community-led tree planting initiatives. Grow this event to include distributing free or discounted tree seedlings, hosting educational workshops on proper planting techniques and tree maintenance, partnering with local organizations and businesses to sponsor and organize planting events, and establishing a volunteer network to help maintain newly planted trees.		
	New CS-1.1i	Work with the Contra Costa County Resource Conservation District, East Bay Regional Park District, and community-based organizations such as Save Mount Diablo to preserve and expand greenspaces (i.e., large open spaces and regional parks) in Pittsburg to increase carbon sequestration and increase access to greenspaces.		
	New CS-1.1j	Partner with community-based organizations such as Healthy Hearts and the John Muir Land Trust to increase the number of and access to urban community gardens in Pittsburg. Utilize such gardens to increase carbon sequestration; increase access to greenspaces for renters, residents living in multi-family housing, and members of vulnerable and disadvantaged communities; and provide high-road job development opportunities for members of vulnerable and disadvantaged communities.		

Cost	**City Cost:** Moderate **Community Cost:** No cost
Equity Guardrails	Access to Health and Safety Benefits, Equitable Allocation of Costs and Benefits, Promote Housing Affordability & Anti-Displacement, Continues Investment and Engagement, Provides Local and Accessible High-road Job Development
KPI	Number of new trees planted annually

Pillars


EQUITY


STRUCTURAL CHANGE


FEASIBILITY


EDUCATION


FUNDING


PARTNERSHIP

Co-Benefits


HIGH-ROAD JOB DEVELOPMENT


COMMUNITY SAVINGS


IMPROVED HEALTH AND SAFETY


CONNECTED COMMUNITIES


REDUCED RELIANCE ON FOSSIL FUELS


ENERGY SECURITY

CS-1.2 – Increase carbon sequestration by applying 0.08 tons of compost per capita annually in the community by 2030, increasing up to 0.10 by 2045.

Beginning in 2022, Senate Bill (SB) 1383 requires cities to annually procure 0.08 tons of compost per capita. Meeting this annual procurement target provides Pittsburg an opportunity to reduce GHG emissions, leverage economic development, and foster environmental benefits. Applying compost to lands is an effective way to sequester carbon by storing it in the soil rather than releasing it to the atmosphere. Compost also provides additional environmental benefits including improving soil health, increasing water conservation, and providing erosion control—all of which can be important benefits for community parks, institutions, and other natural working lands. Moreover, applying compost at scale to meet the SB 1383 requirement will require new programs and investments in infrastructure. These investments provide Pittsburg an opportunity to support a green, self-sustaining economy that leverages high-road jobs development for the local workforce.

Actions, Pillar, and Co-benefits			
	CS.1.2a:	Conduct an informal audit of compost needs in the City to establish a baseline procurement and application level that meets City needs and increases over time.	 
	CS.1.2b:	Complete a feasibility study to identify locations within the City to apply mulch to help meet the procurement requirements of SB 1383 and maximize the application of compost over time, working with the City's Parks Department to maximize compost usage at City parks.	 
	CS.1.2c:	Collaborate with Los Medanos College and local schools to identify opportunities to apply compost to landscaping.	 
	CS.1.2d:	Work with Alameda County and StopWaste to identify opportunities for a regional compost procurement program.	 
	CS.1.2e:	Develop and adopt urban park guidelines that 1) provide flexible solutions for developing urban parks in infill areas where traditional neighborhood and community parks are not feasible; 2) establishes guidelines for achieving the greatest carbon sequestration potential of parks via design; 3) are equitable in ensuring such urban parks are accessible for members of disadvantaged and vulnerable communities while avoiding displacement; and	 

Pillars

- EQUITY
- STRUCTURAL CHANGE
- FEASIBILITY
- EDUCATION
- FUNDING
- PARTNERSHIP

Co-Benefits

- HIGH-ROAD JOB DEVELOPMENT
- COMMUNITY SAVINGS
- IMPROVED HEALTH AND SAFETY
- CONNECTED COMMUNITIES
- REDUCED RELIANCE ON FOSSIL FUELS
- ENERGY SECURITY

Actions, Pillar, and Co-benefits	4) align with requirements of the Clean California Local Grant Program for potential funding opportunities. Encourage urban parks as an opportunity to beautify the community and integrate art into sustainability projects.		
Cost	**City Cost:** Moderate	**Community Cost:** N/A	
Equity Guardrails	Promote Housing Affordability & Anti-Displacement, Continues Investment and Engagement, Provides Local and Accessible High-road Job Development		
KPI	Compost applied annually (tons per capita)		

Pillars

- EQUITY
- STRUCTURAL CHANGE
- FEASIBILITY
- EDUCATION
- FUNDING
- PARTNERSHIP

Co-Benefits

- HIGH-ROAD JOB DEVELOPMENT
- COMMUNITY SAVINGS
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- CONNECTED COMMUNITIES
- REDUCED RELIANCE ON FOSSIL FUELS
- ENERGY SECURITY

Municipal

M-1 Commit to Climate Action

M-1.1 Complete annual progress reports on Pittsburg's Sustainability Plan every three years.

M-1.1 – Complete annual progress reports on Pittsburg's Sustainability Plan every three years.

Municipal leadership is essential to effective climate policy implementation and serves as a sustainability model the community can follow. With changes in lifestyle and behaviors playing a significant role in mitigating climate change, Pittsburg will lead by example through the promotion of effective and accelerative actions, and the exhibition of their work through publicly available progress reports on the City's Sustainability Plan every three years. Assessing, tracking, and reporting key sustainability metrics over time will help targets be met, continuously address equity, and confirm that local actions are in line with state climate legislation. Additionally, fostering strong partnerships with local businesses and organizations will further enhance the city's climate efforts and create a more comprehensive and collaborative approach towards sustainability. Completing annual progress reports, increasing transparency, and spurring the progression of the Sustainability Plan will also further connect the community by providing a sense of accountability for goals that can only be reached through a collaborative effort.

Actions, Pillar, and Co-benefits			
	M.1.1a:	Designate staff to manage sustainability programs that implement the Sustainability Plan actions by managing technical studies, leading outreach efforts, updating the website, networking with partners and stakeholders, and pursuing grant opportunities.	
	M.1.1b:	Update the community wide GHG emissions inventory and progress on goals biannually in the monitoring tool and share the results with the community on the City's website to measure progress and maintain transparent accountability in making progress towards the Sustainability Plan goals.	
	M.1.1c:	Update the Environmental Services webpage at least annually to provide updates on policies implemented as part of the Sustainability Plan.	
	M.1.1d:	Devote staff time to tracking and applying for grant funding to complete regular Sustainability Plan updates.	
	M.1.1e:	Hold regular sustainability outreach events, such as workshops, presentations, focus groups targeted at specific community groups, public contests or challenges, and an annual event such as Earth Day. Inform the community on	

Pillars

Co-Benefits

Actions, Pillar, and Co-benefits	potential climate change impacts, as well as weatherization and other actions that community members can take to implement actions outlined throughout the Plan. M-1.1f: Track and audit where goals are geographically implemented to determine that communities who are most impacted by climate change, including traditionally disadvantaged and vulnerable communities who would benefit the most from adaptation and mitigation efforts.		
Cost	**City Cost:** Moderate	**Community Cost:** N/A	
Equity Guardrails	Continues Investment and Engagement		
KPI	Number of community outreach events hosted, and value of grants acquired ($), annual progress report published		

Pillars

- EQUITY
- STRUCTURAL CHANGE
- FEASIBILITY
- EDUCATION
- FUNDING
- PARTNERSHIP

Co-Benefits

- HIGH-ROAD JOB DEVELOPMENT
- COMMUNITY SAVINGS
- IMPROVED HEALTH AND SAFETY
- CONNECTED COMMUNITIES
- REDUCED RELIANCE ON FOSSIL FUELS
- ENERGY SECURITY

Municipal

M-2 Reduce Municipal Reliance on Natural Resources

M-2.1 Electrify 25% of existing City facilities by 2030 and 100% of existing City facilities by 2045, as well as all newly constructed City buildings, while also increasing renewable energy use.

M-2.2 Transition 50% of the City's vehicle and equipment fleet to renewable fuels and electric by 2030 and 100% by 2045.

M-2.3 Reduce the number of single occupancy, fossil fueled vehicle annual employee commute trips 20% by 2030 and 50% by 2045.

M-2.1 – Electrify 25% of existing City facilities by 2030 and 100% of existing City facilities by 2045, as well as all newly constructed City buildings, while also increasing renewable energy use.

As the sustainability leader for the community, the City of Pittsburg will implement programs, policies, and objectives within our own operations to demonstrate the feasibility, cost-effectiveness, and climate and health benefits of various sustainability initiatives. These initiatives includes electrifying 25% of existing City facilities by 2030 and 100% of existing City facilities by 2045, as well as requiring all newly constructed City buildings to be all-electric. Electrification of the built environment will be critical to reducing municipal GHG emissions from fossil fuel combustion and eliminate the health risks of natural gas use in poorly ventilated areas. Leading by example is crucial because when the community witnesses the City's commitment to sustainability through tangible actions, it inspires and motivates them to adopt similar practices, fostering a collective effort towards a greener future.

Actions, Pillar, and Co-benefits			
	M.2.1a:	Complete energy audits for all City facilities and implement feasible recommendations for fuel switching and efficiency upgrades.	 
	M.2.1b:	Opt-up 100% of municipal accounts to MCE's Deep Green energy option by 2030.	 
Updated	M.2.1c:	Establish a policy requiring all new City-owned buildings be all-electric and a policy requiring all existing natural gas-powered equipment in City-owned buildings be replaced with electric or other zero-emission alternatives at the end of useful life, where technologically feasible.	 
	M.2.1d:	Identify a municipal building to pilot an all-electric retrofit. Track the change in energy usage and utility bill costs before and after the retrofit to study net benefits.	 
	M.2.1e:	Partner with PG&E through the Sustainable Solutions Turnkey (SST) program to install renewable energy technology at municipal facilities (such as City Hall) and become a net-zero energy organization.	 
	M-2.1f:	Partner with PG&E to identify and install battery energy storage systems at appropriate City facilities (including the City Hall/Police Station and the Pittsburg Marina), and leverage projects to further promote benefits of	 

Pillars

- EQUITY
- STRUCTURAL CHANGE
- FEASIBILITY
- EDUCATION
- FUNDING
- PARTNERSHIP

Co-Benefits

- HIGH-ROAD JOB DEVELOPMENT
- COMMUNITY SAVINGS
- IMPROVED HEALTH AND SAFETY
- CONNECTED COMMUNITIES
- REDUCED RELIANCE ON FOSSIL FUELS
- ENERGY SECURITY

Actions, Pillar, and Co-benefits	distributed energy storage, which are directly connected to a renewable resource. M-2.1g: Complete analysis to identify the electrical capacity and utility infrastructure upgrades needed to electrify the recreational pool heating system. Pursue replacement funding through PG&E on-bill financing and California Energy Commission 1% Loans, or other funding sources.		
Cost	**City Cost:** Moderate	**Community Cost:** N/A	
Equity Guardrails	Access to Health and Safety Benefits, Provides Local and Accessible High-road Job Development		
KPI	Facilities electrified (%), share of new municipal construction electrified (%), and capacity of renewable energy installed (Megawatt)		

Pillars

- EQUITY
- STRUCTURAL CHANGE
- FEASIBILITY
- EDUCATION
- FUNDING
- PARTNERSHIP

Co-Benefits

- HIGH-ROAD JOB DEVELOPMENT
- COMMUNITY SAVINGS
- IMPROVED HEALTH AND SAFETY
- CONNECTED COMMUNITIES
- REDUCED RELIANCE ON FOSSIL FUELS
- ENERGY SECURITY

M-2.2 – Transition 50% of the City's vehicle and equipment fleet to renewable fuels and electric by 2030 and 100% by 2045.

The City of Pittsburg will continue to position ourselves as a sustainability leader and role model for the community by leveraging fleet electrification. We will transition 50% of our vehicle and equipment fleet to renewable fuels and electric alternatives by 2030 and 100% by 2045. Reducing GHG emissions from the transportation sector can have arguably the largest impact on mitigating climate change, and with the prices of EV batteries[50] and renewable energy[51] near all time lows. Making the switch now has never been more favorable. With more federal and state funding becoming available through the Inflation Reduction Act and various clean vehicle programs, the transition will also be cost-competitive and provide cost savings (from reduced fossil fuel, maintenance, etc.) over the life cycle of the vehicles and equipment.

Actions, Pillar, and Co-benefits			
	M.2.2a:	Conduct a study to assess the technological and economic feasibility of replacing the City-owned fleets and off-road equipment and develop a time of replacement schedule for applicable vehicle and equipment types.	
	M.2.2b:	Upon completion of the study, adopt a ZEV-first purchasing policy for non-essential City fleet vehicles, using the transition to encourage residents to convert as well.	
	M.2.2c:	Upon completion of the study, develop and implement a plan to replace all City owned end-of-life off-road equipment with zero-emission equipment. The plan should include evaluation of current City-owned equipment, alternative low or zero-emission options, prioritize equipment to replace first (e.g., largest GHG emission reduction potential), and a timeline for replacements that align with goals and feasibility of replacement.	
	M.2.2d:	Secure funding from programs such as the California Air Resources Board's Clean Vehicle Rebate Project and the Truck and Bus Voucher Incentive Program to increase procurement of EV or ZEV cars, trucks, and other vehicles and installation of EV/ZEV charging/fueling infrastructure at municipal facilities. Additionally explore opportunities for Low Carbon Fuel Standard credit generation from	




Pillars

- EQUITY
- STRUCTURAL CHANGE
- FEASIBILITY
- EDUCATION
- FUNDING
- PARTNERSHIP

Co-Benefits

- HIGH-ROAD JOB DEVELOPMENT
- COMMUNITY SAVINGS
- IMPROVED HEALTH AND SAFETY
- CONNECTED COMMUNITIES
- REDUCED RELIANCE ON FOSSIL FUELS
- ENERGY SECURITY

50. https://www.energy.gov/eere/vehicles/articles/fotw-1272-january-9-2023-electric-vehicle-battery-pack-costs-2022-are-nearly
51. https://www.washingtonpost.com/politics/2022/09/16/clean-energy-just-got-lot-more-cost-competitive-report-says/

Actions, Pillar, and Co-benefits	use of low carbon fuels/electricity for fleet vehicles. M-2.1e: Install new public and employee EV chargers at City-owned facilities. M-2.1f: Transition to all-electric landscaping equipment, including leaf blowers, for municipal operations. Use this to promote all-electric equipment in the community, providing information on the City website outlining available incentives for residents and businesses.		
Cost	**City Cost:** High	**Community Cost:** N/A	
Equity Guardrails	Access to Health and Safety Benefits, Provides Local and Accessible High-road Job Development		
KPI	Percent of fleet and equipment decarbonized (%)		

Pillars

- EQUITY
- STRUCTURAL CHANGE
- FEASIBILITY
- EDUCATION
- FUNDING
- PARTNERSHIP

Co-Benefits

- HIGH-ROAD JOB DEVELOPMENT
- COMMUNITY SAVINGS
- IMPROVED HEALTH AND SAFETY
- CONNECTED COMMUNITIES
- REDUCED RELIANCE ON FOSSIL FUELS
- ENERGY SECURITY

M-2.3 – Reduce the number of single occupancy, fossil fueled vehicle annual employee commute trips 20% by 2030 and 50% by 2045.

Reducing the number of single occupancy, fossil-fueled vehicle employee commute trips annually can significantly reduce the GHG emissions resulting from municipal employee travel. Alongside GHG emissions reductions, reducing the number of single occupancy, fossil-fueled vehicle commute trips can provide cost-savings for employees and the City. While not as high during peak inflation periods in 2022, average California motor gasoline prices[52] are still hovering close to the highest they've been in two decades. Reducing single occupancy, fossil-fueled vehicle employee commute trips can equate to reduced fuel demands and therefore reduced commute/travel expenses for employees and the City. By exploring alternative modes of transportation for employees and offering telecommute or flexible schedule options to reduce commute/travel time, the City can heavily influence the transition to more efficient and economical employee commuting.

Actions, Pillar, and Co-benefits

M.2.3a: Complete a survey to understand how staff currently travel and what would make them change their patterns to establish an accurate baseline in which to build future goals.

M.2.3b: Expand EV charging at public facilities: Install new public and employee EV chargers at City-owned facilities, and:

- Consider developing and implement a fee for use of City-owned chargers to encourage efficient use and turnover, especially for those without home charging capability
- Consider allocating EV charger fee revenue towards projects that support EV infrastructure, alternative fuel projects, and active transportation projects in neighborhoods that are historically underrepresented

M.2.3c: Provide bicycles and bicycle storage for employees to use during work hours for short business or personal trips. Additionally, establish bike lockers at City Hall that are usable to the public.

M.2.3d: Expand the subsidized transit commute program to reduce employee commute miles in single occupancy vehicles.

Pillars

EQUITY
STRUCTURAL CHANGE
FEASIBILITY
EDUCATION
FUNDING
PARTNERSHIP

Co-Benefits

HIGH-ROAD JOB DEVELOPMENT
COMMUNITY SAVINGS
IMPROVED HEALTH AND SAFETY
CONNECTED COMMUNITIES
REDUCED RELIANCE ON FOSSIL FUELS
ENERGY SECURITY

52. https://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_sca_a.htm

Actions, Pillar, and Co-benefits	M-2.3e: Partner with Tri-Delta Transit, BAAQMD, Bike East Bay, the League of American Bicyclists, and/or Metropolitan Transportation Commission to expand employee use of carbon-free and low carbon transportation by providing education programs on the benefits of commute options including public transportation, EV/ZEV options, and vanpools. M-2.3f: Permit 25% of employees located at the City of Pittsburg to telecommute or utilize flexible schedules through 2030 to reduce travel time, vehicle miles traveled (VMT), and GHG emissions.	 	 
Cost	**City Cost:** High	**Community Cost:** N/A	
Equity Guardrails	Access to Health and Safety Benefits, Promote Housing Affordability & Anti-Displacement		
KPI	Change in annual single occupancy, fossil fueled vehicle employee commute trips (%)		

Pillars

- EQUITY
- STRUCTURAL CHANGE
- FEASIBILITY
- EDUCATION
- FUNDING
- PARTNERSHIP

Co-Benefits

- HIGH-ROAD JOB DEVELOPMENT
- COMMUNITY SAVINGS
- IMPROVED HEALTH AND SAFETY
- CONNECTED COMMUNITIES
- REDUCED RELIANCE ON FOSSIL FUELS
- ENERGY SECURITY

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4. Implementation & Monitoring

Sustainability Plan: The First Step

The Sustainability Plan is the City's roadmap to work towards the established 2030 target which is consistent with the state's goal to reduce GHG emissions 40 percent below 1990 levels by 2030 While the Sustainability Plan goals and actions establish the City's first steps to work towards the 2030 target, more local work, goal development, and state actions will be needed to effectively reach the 2030 target and the longer-term carbon neutrality target in 2045. Additionally, the actions included in this Plan were developed to meet minimum state requirements, but the City reserves the right to exceed these requirements if determined beneficial for the community. Therefore, this plan should be viewed as a strategic framework that will be reevaluated on a triennial basis. This section details how the City will implement the actions, monitor progress, and prepare updates over time.

Team Pittsburg

Achieving long-term GHG emission reduction targets will require participation from everyone. The City can help provide new services and technologies by implementing actions from training the local workforce and providing electric vehicle charging infrastructure to designating bike lanes, but it is up to the broader community to embrace these new services and technologies and gain the benefits outlined in this plan. Making meaningful progress towards reducing our GHG emissions starts with City leadership, through policies, education, and investments that act as catalysts for change throughout the wider community. Community partners like MCE, Tri Delta Transit, and local utility providers also support these policies with incentives and programs. Businesses can then leverage these policies to provide new services and adopt more sustainable practices. Finally, residents and visitors that have been provided with the incentives and education can actively work together to reduce our environmental impacts, become more sustainable, and decrease GHG emissions. As policies and programs are developed and infrastructure is constructed, City staff will continue to engage the community, provide progress updates and create ongoing opportunities to solicit community feedback.

The City looks forward to working together with you to become more sustainable and reduce our long-term impact from GHG emissions through new/updated programs and opportunities that will help us meet our goals. *Thank you for being part of our team!*

Cost of Implementation

Anticipated cost estimates for each goal are provided as a range in Section 3, *GHG Reduction Strategy*. For each goal, the cost estimate focuses on both internal costs (municipal-focused) and external costs (community-focused) and provides insight into the variability of these costs. The primary variables that may affect cost effectiveness include upfront versus lifecycle costs and the cost of inaction, which are discussed further below in more detail.

Upfront versus Lifetime Costs

When evaluating how much specific initiatives cost, it is important to differentiate between the upfront costs, such as purchasing an electric vehicle, versus the lifecycle costs which include purchasing, operating, maintaining, and ultimately disposing of that vehicle. Purchasing an electric vehicle could cost more than the industry average vehicle. However, the lifecycle costs of owning an electric vehicle are comparable and sometimes lower than the lifecycle costs of owning an internal combustion engine vehicle. While electric vehicles are more expensive upfront, their operating and maintenance costs are lower since they do not have fluids to replace, have fewer moving parts like transmissions, and experience less brake wear. These lower operating and maintenance costs make the lifecycle costs of owning an electric vehicle comparable and many times lower than an internal combustion engine vehicle, even though the upfront costs were higher. This example demonstrates the importance of considering the lifecycle costs for each goal rather than just the upfront costs.

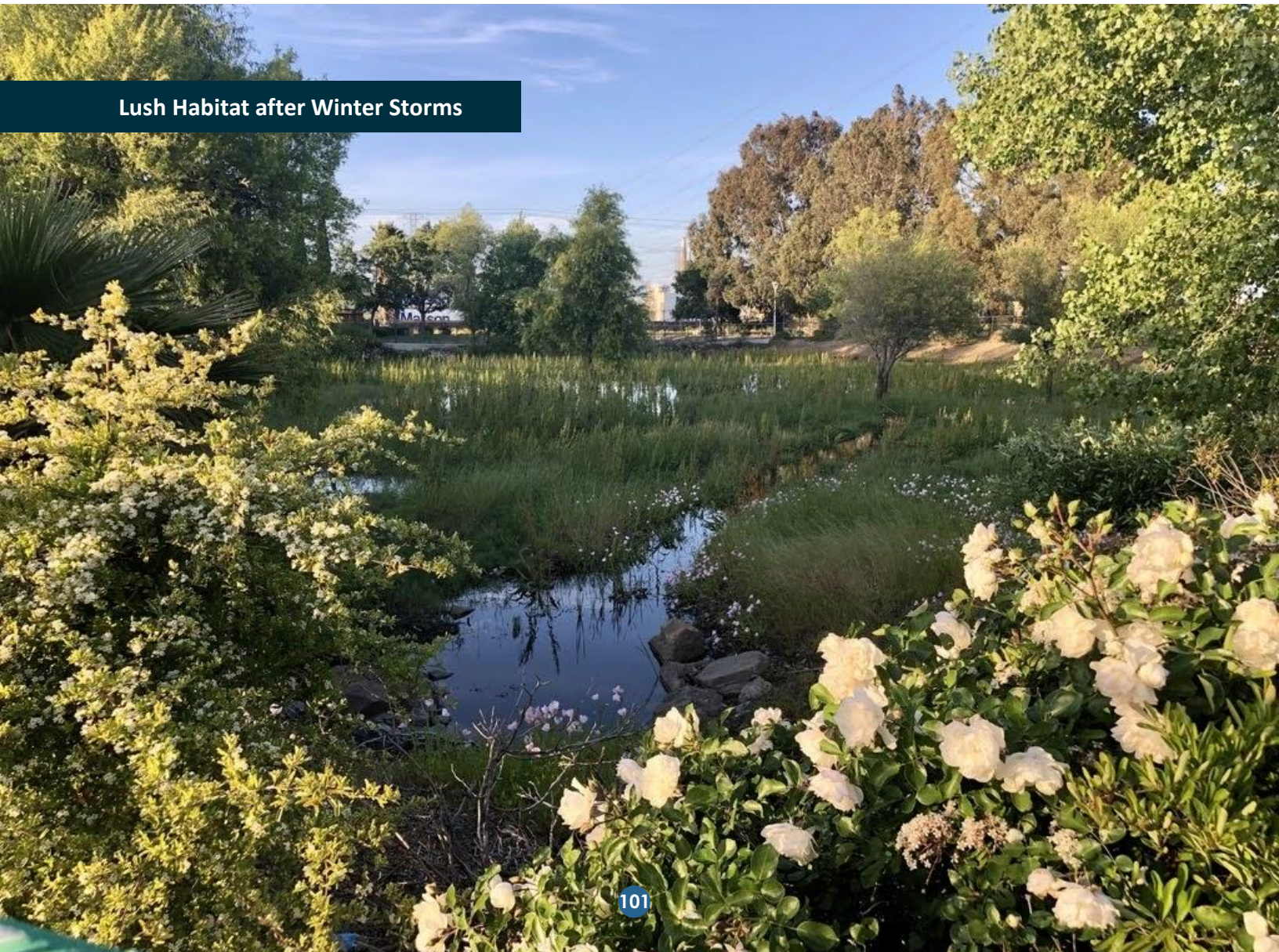
Additionally, it is anticipated that the cost of electric vehicles will continue to go down as manufacturers continue to implement innovative battery technologies and refine the process to build more affordable models.

It is important to keep in mind that doing nothing to prepare for and mitigate climate change will also carry a cost. The alternative to implementing these goals is not zero.

The Cost of Inaction

One immediate example demonstrating the cost of inaction is installing conduit and panel capacity for electric vehicle chargers for all new construction. While this action increases upfront can be an order of magnitude higher (~$3,000). Given the move towards electric vehicles, the cost of not installing EV infrastructure today could cost the community significantly more in the future. In a similar vein, adaptation goals will cost the City and the community today. Planting trees, installing microgrids, and setting up cooling centers all have upfront costs. However, it's important to weigh these costs against the costs of a future without these adaptive goals given what we know about impacts from a changing climate. Research published in the journal Nature, predict the global cost of not decreasing emissions to reach carbon neutrality by mid-century could range between $149.78 trillion to $791.98 trillion by the end of the century.[53] That same study found that if we

53. https://www.nature.com/articles/s41467-020-15453-z



Lush Habitat after Winter Storms

mitigate climate change and achieve carbon neutrality by mid-century the world could see a $127 to $616 trillion economic benefit after considering the cost of mitigation. The humanitarian impact is also significant. The Red Cross and Red Crescent Societies estimate that the number of people in need of humanitarian aid each year could double to 200 million annually by 2050 due to climate change, costing approximately $20 billion per year.[54] Furthermore, the World Resources Institute has found that investing in adaptation and resilience provides a benefit-cost ratio ranging from 2:1 to 10:1, meaning that for every dollar invested in resilience and adaptation can equate to $2 to $10 dollars' worth of benefits.

Prioritization of Funding

In general, three main principles guide how strategies and future sustainability initiatives should be prioritized, which include:

1. **Equity.** The costs of implementing policies should be equitably spread amongst the community, taking extra care to limit new costs being placed upon segments of the population that are least able to shoulder them (i.e., disadvantaged and vulnerable communities). Where certain segments of the community will benefit disproportionately from an action, the costs should be spread accordingly.

2. **Cost-Effectiveness.** Strategy implementation should prioritize cost-effective actions, which can generate cost savings that will offset the costs to those who are required to pay for its implementation. While some actions may require some initial capital outlay, whenever possible these actions should generate long-term cost savings that will repay and even generate a return on investment.

3. **Ability to Leverage Local Resources.** Leveraging will involve using outside sources of funding to augment local resources to fund implementation of the Sustainability Plan whenever possible. The City will seek grants, matching funds, in-kind contributions, and other resources from State, Federal, and philanthropic sources to help pay for actions and limit the cost to the City, residents, and businesses.

These components were identified and analyzed for each of the goal during the development phase to establish a plan that can be successfully implemented over time, with the smallest burden on the community.

What can we do Today?

One of the main goals of the Sustainability Plan is to bring awareness to sustainability in the community across all sectors and provide information about what we can each do today to make a difference and set our community on the path towards a more sustainable future with significant GHG emission reductions.

City Leadership

Due to the systemic nature of climate change, relying on voluntary, individual actions will not be enough to reduce GHG emissions in a significant way. However, that does not derail the progress of our individual actions, which could collectively result in real change. Local governments across the United States are stepping up as leaders of climate action and innovation. Reducing GHG emissions is going to require serious commitment, and communities like Pittsburg are perfectly situated to begin implementing new solutions to reduce GHG emissions in our local municipalities.

Making meaningful progress towards reducing Pittsburg's GHG emissions starts with the leadership of City government, through strong actions like providing permit incentives and developing equitable outreach programs that spur change in the community. There is a wealth of opportunities for the City of Pittsburg to take action to improve the community while also reducing its GHG emissions. It is important that these opportunities are taken advantage of, so

54. https://reliefweb.int/report/world/cost-doing-nothing-humanitarian-price-climate-change-and-how-it-can-be-avoided

real momentum can be built upon, and Pittsburg can establish a path towards the 2030 GHG emission reduction targets.

Actions that the Pittsburg City government can take today to lead the way on local sustainability action include:

- Providing incentives for residential and commercial electrification that have been reviewed and updated for procedural equity
- Developing outreach programs to educate residents about available incentives for energy efficiency retrofits, such as installing LED lightbulbs or upgrading old appliances
- Applying for grants to provide funding for sustainability programs and green infrastructure, such as building new bike lanes or improving the City's urban canopy

Community Role

As a resident or visitor of Pittsburg, we can also create direct change by making conscientious choices and actively engaging in sustainable initiatives. Figure 10 shows six example actions that individuals can take to be more sustainable and reduce their personal GHG emissions in the short-term. For additional actions that you can take today that will reduce your GHG emissions, see Section 3 (*GHG Emission Reduction Strategies*), where individual actions for residents and businesses are discussed that align with the City's emission reduction and adaptation strategies, respectively.

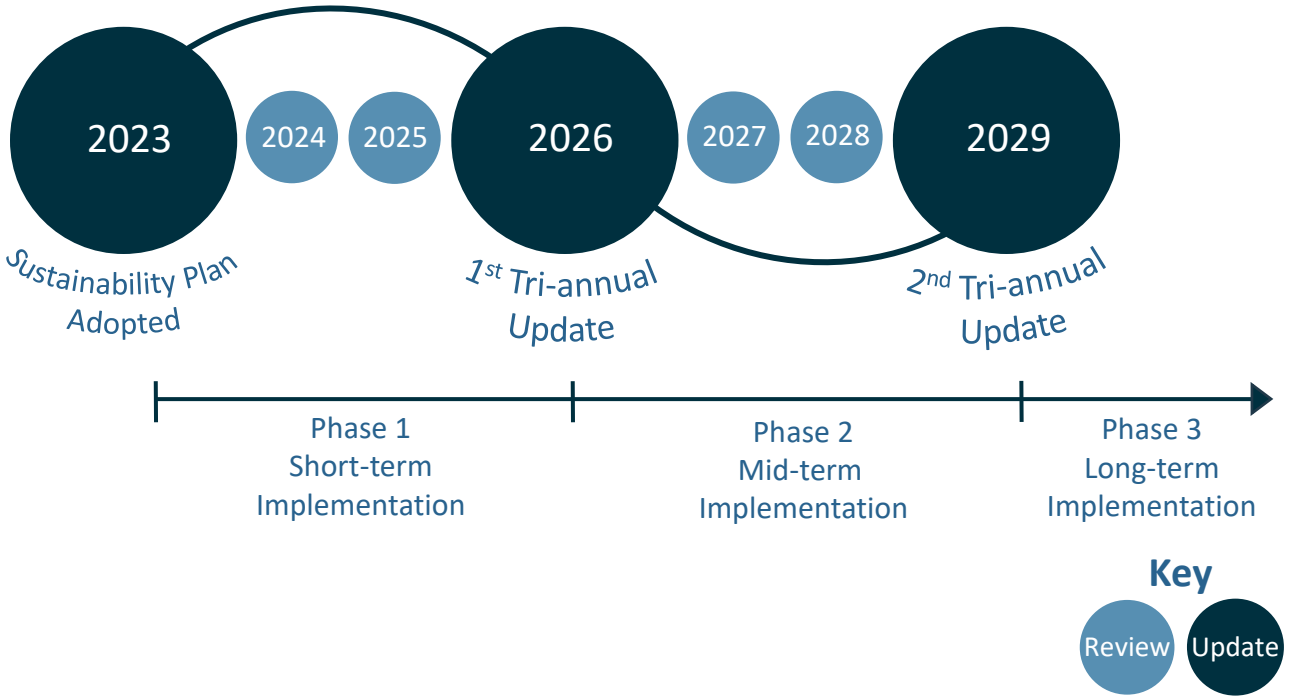
Monitoring Timeframe and Tools

As part of the Sustainability Plan, the City will complete an annual progress report using CAPDash as well as a triennial review and update of the plan. The timeline in Figure 11 shows the monitoring and triennial update schedule for the plan, with a phased approach to goal implementation. The annual progress reports will include calculating an annual community wide GHG emissions inventory in CAPDash, as well as updating the progress of the emission reduction measures in the tool.

The City will conduct internal annual implementation monitoring of the GHG emissions reduction goals and report on this progress to City Council every third year beginning in 2026. The process for monitoring and quantifying goal implementation status relies on key target metrics identified for each of the goals and actions, as summarized in Section 3.

Figure 10. What Can I do Today?

Figure 11. Monitoring Timeline



By committing to annual monitoring of implementation progress and adjusting where necessary, Pittsburg can rise to meet the local and global imperative of reducing GHG emissions. In the process of meeting that challenge, we will benefit from the supplemental health, economic, resilience, and other co-benefits of the GHG emissions reduction measures. This plan marks another major milestone in the City's commitment to a sustainable future. A full implementation summary is saved in Table 10.

Table 10. Implementation and Monitoring Table

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Strategy C-1 Cornerstone to Climate Action Planning				
Goal C-1.1 Provide high-road jobs to members of disadvantaged and vulnerable communities through a local High-road Workforce Development Program.				
C-1.1a	Establish a High-road Workforce Development Program that provides incentives to Pittsburg businesses and potential developers to establish apprenticeships programs for Pittsburg members of disadvantaged and vulnerable communities.	Community Development – Economic Development	1	
C.1.1b:	Apply for grant opportunities to offer incentives to employers and developers for implementing local workforce apprenticeship programs, through grants such as Transformative Climate Communities Implementation Grant and High Road Training Partnerships: Resilient Workforce Fund Program.	Community Development – Economic Development	1	
C.1.1c:	Perform an analysis on current workforce opportunities within the City that provide potential for high-road jobs through direct engagement with local businesses. Through this analysis establish the criteria for high-road jobs and identify opportunities for bringing in additional developers and businesses that will provide jobs that meet these criteria.	Community Development – Economic Development	1	
C.1.1d:	Partner with community-based organizations with connections to disadvantaged and vulnerable communities to perform direct engagement promoting opportunities within the High-road Workforce Development Program.	Community Development – Planning and Economic Development	1	
C.1.1e:	Create a City webpage to provide resources related to the High-road Workforce Development Program to allow for posting of available resources and to develop an internship/apprenticeship board for local employers and Los Medanos College to share employment opportunities.	Community Development – Economic Development	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal C-1.1 Provide high-road jobs to members of disadvantaged and vulnerable communities through a local High-road Workforce Development Program.				
C.1.1f:	Amend the City's bid procurement and evaluation process to include local workforce (i.e., including Pittsburg residents in the project workforce) as a criterion for evaluating capital improvement project bids.	Public Works – Engineering	1	
Strategy E-1 Electrify the Building Stock				
Goal E-1.1 Electrify 75% of new construction in the City by 2026 and 100% of new construction in the City by 2029.				
E-1.1a	Conduct a cost effectiveness study by 2025 to analyze the impact of adopting an electrification ordinance for all new construction to inform future consideration of an ordinance.	Community Development – Planning and Building, Environmental Services	1	
E-1.1b	Identify and partner with local community-based organizations with connections to disadvantaged and vulnerable communities to conduct targeted outreach to identify and analyze equity concerns with an electrification ordinance for all new construction to inform future consideration of an ordinance.	Community Development – Planning and Building, Environmental Services	1	
E-1.1c	Establish partnerships with the Building Decarbonization Coalition, MCE, Bay Area Regional Energy Network, the International Brotherhood of Electrical Workers, and others, to engage with local interested parties from the building industry, such as local developers, to evaluate the feasibility of adopting an electrification ordinance for all new construction and inform future consideration of an ordinance.	Community Development – Planning and Building, Environmental Services	1	
E-1.1d	Partner with organizations such as the Building Decarbonization Coalition, MCE, and Bay Area Regional Energy Network to compile a suite of case studies and cost-effective strategies (e.g., energy efficiency improvements) for electric buildings by prototype, help educate building owners and the construction	Environmental Services, Community Development – Planning and Building	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal E-1.1 Electrify 100% of new construction in the City by 2026.				
	industry on the cost savings, environmental benefits, and versatility associated with all-electric construction, and educate developers and other interested parties on new appliances and approaches to building electrification. Share the information on the City's website, at City events, and at the City's permit counters.			
E-1.1e	Provide education around cooking with electric appliances partner with local chefs and/or restaurants to host cooking demonstrations at community events such as the Farmers' Market, Green Footprint Festival, or Pittsburg First Fridays.	Community Development – Economic Development, Environmental Services	1	
E-1.1f	Partner with the Bay Area Regional Energy Network and the International Brotherhood of Electrical Workers, or similar entities, to provide technical resources, including hosting workforce development trainings as part of the Highroad Workforce Development Program for installers, local contractors, and building owners/operators to discuss the benefits and technical requirements of electrification. Partner with community-based organizations to connect members of disadvantaged and vulnerable communities to these training programs.	Community Development – Economic Development, Environmental Services	1	
Goal E-1.2 Electrify existing residential buildings to reduce residential natural gas consumption 15% by 2030 and 100% by 2045, from 2016 levels.				
E-1.2a	Develop a residential building electrification strategy with a detailed existing building analysis and electrification costs analysis to understand cost implications, identify potential equity concerns/impacts, and develop equitable strategies and recommended standards for electrifying existing residential buildings such as those that increase energy efficiency and tenant protections. Identify and partner with local community-based organizations with connections to disadvantaged and vulnerable communities to conduct	Community Development – Building, Environmental Services	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal E-1.2 Electrify existing residential buildings to reduce residential natural gas consumption 15% by 2030 and 100% by 2045, from 2016 levels.				
	intentional, thoughtful, and specific community outreach during development of the electrification strategy to understand the community's concerns and needs around electrification.	Community Development – Planning and Building	2	
E-1.2b	During the electrification strategy development process, engage the community to evaluate the feasibility of adopting a time of replacement electrification ordinance in the future for HVAC and hot water heaters.	Community Development – Building, Environmental Services	1	
E-1.2c	Develop a permit tracking program for existing building electrification to track annual progress in achieving the electrification goals.	Community Development – Planning, Environmental Services	1	
E-1.2d	Partner with stakeholders such as MCE and PG&E to understand the feasibility of, establish, and promote funding pathways to ease community costs for electric appliances, electrification retrofits, and panel upgrades through: • Federal and state grants/subsidies • Tariffed On-bill financing • Metered energy efficiency • Linking electrification to existing weatherization programs	Community Development – Economic Development, Environmental Services	1	
E-1.2e	Partner with PG&E to provide free electrification assessments to rental and multi-family properties to provide recommendations on electric upgrades and funding opportunities.	Community Development – Planning and Building, Environmental Services	1	
E-1.2f	Establish a working group of rental and multi-family property owners, as well as tenants that live in these units to: • Identify common goals (e.g., saving money on utility bills, reducing carbon footprint, improving indoor air quality) • Collaborate on initiatives, which would provide a space for tenants and homeowners to implement initiatives that align with the shared goals (e.g., installing energy-efficient lighting or appliances, adding building insulation, and/or installing solar panels).	Environmental Services	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal E-1.2 Electrify existing residential buildings to reduce residential natural gas consumption 15% by 2030 and 100% by 2045, from 2016 levels.				
	• Establish communication channels to discuss progress, address hurdles, and work together on implementation. • Share resources between tenants and homeowners.			
E-1.2g	Conduct targeted outreach to rental and multi-family property owners to distribute information about available retrofit incentives and long-term benefits, associated with electrification and weatherization.	Community Development – Planning and Building, Environmental Services	1	
E-1.2h	Review and update building codes to provide streamlined permitting for all electric retrofits. Provide Building Department staff training and information on the benefits of electrification for permit applicants.	Community Development – Building	1	
E-1.2i	Partner with MCE and PG&E to review incentives, rebates, and financing options for procedural equity and ensure that existing and updated incentive programs are being equitably distributed to the community to reduce energy bill burdens. Hurdles to equitable implementation could include credit checks, excessive procedural hurdles and lack of targeted outreach.	Environmental Services	1	
E-1.2j	Work with MCE to a conduct feasibility study to evaluate the current uptake and effectiveness of Proper Assessed Clean Energy (PACE) financing for installation of renewable energy systems in single-family and multi-family homes. If feasibility study indicates effectiveness, continue to offer PACE financing for single-family and multi-family homes to install renewable energy systems.	Community Development –Building	1	
E-1.2k	Partner with a financing/management company - to provide electrification services and financing to the community with prioritization of members of disadvantaged and vulnerable communities.	Community Development – Economic Development, Environmental Services	2	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal E-1.2 Electrify existing residential buildings to reduce residential natural gas consumption 15% by 2030 and 100% by 2045, from 2016 levels.				
E-1.2l	Partner with Pittsburg Below Market Rate (BMR) housing stock owners to develop a strategy to begin electrifying publicly owned BMR housing. Identify a group of publicly owned BMR housing to conduct a full electrification pilot to help test and further develop the strategy. Promote the pilot as an example to the wider community on the feasibility and benefits of residential electrification.	Community Services-Building, Community Services – Housing Authority, Environmental Services	2 – 3	
Goal E-1.3. Electrify existing commercial buildings to reduce commercial natural gas consumption 15% by 2030 and 100% by 2045, from 2016 levels.				
E-1.3a	Develop a strategy to support commercial building electrification, including initiatives and recommended standards for retrofitting commercial buildings, prioritizing appliance replacements, and avoiding expansion of natural gas infrastructure.	Community Development – Building, Environmental Services	1	
E-1.3b	Conduct engagement efforts for the commercial sector during development of the building electrification strategy to understand potential concerns and barriers to commercial electrification and educate commercial property owners on the potential cost savings and other benefits of electrification. Include targeted outreach to small businesses and minority-owned businesses to understand potential equity concerns with commercial electrification during the strategy development process.	Community Development – Building, Planning, and Economic Development, Environmental Services	1	
E-1.3c	Continue to work with Bay Area Regional Energy Networks, MCE, and StopWaste to improve, implement, and promote commercial electrification rebates and financing opportunities, as well as other offered incentives. Review the incentives for procedural equity and promote them to small and minority-owned businesses through targeted outreach.	Environmental Services, Community Development – Economic Development	1	
E-1.3d	Conduct focused interviews with commercial property owners to evaluate the feasibility of adopting a commercial building	Community Development –	2	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal E-1.3. Electrify existing commercial buildings to reduce commercial natural gas consumption 15% by 2030 and 100% by 2045, from 2016 levels.				
	electrification ordinance to ban the expansion of natural gas infrastructure and require appliance replacements to be all-electric where technologically feasible. Include interviews specifically with small and minority-owned businesses.	Economic Development and Building, Environmental Services		
E-1.3e	Track annual progress on commercial building electrification through the same permit tracking program developed for residential building electrification.	Community Development – Building	2	
E-1.3f	Conduct engagement efforts for the commercial sector to identify ways the City can support commercial battery storage installations.	Community Development – Building and Economic Development	2	
E-1.3g	Partner with the Chamber of Commerce to inform and facilitate electrification for commercial business owners.	Environmental Services, Community Development – Economic Development	2	
E-1.3h	Use municipal electrification efforts to promote the cost-saving benefits and feasibility of electrification to the commercial sector. Promote municipal building electrifications on the City's website and at City permit counters with information on costs, timescale, and utility bill savings for each project.	Community Development – Economic Development and Building, Environmental Services	2	
Strategy E-2 Decarbonize Electricity and Increase Use and Storage of Local Renewable Energy				
Goal E-2.1. Increase the number of accounts enrolled in MCE's programs to 95%, with a total of 40% of accounts enrolled in the Deep Green energy option by 2030.				
E-2.1a	Continue to work with MCE to conduct an annual analysis of opt-out rates in the City and expand the research to understand why residents and businesses opt out of MCE. Include targeted outreach to residents living on low and fixed incomes and disadvantaged and vulnerable communities to identify barriers to remaining with MCE.	Environmental Services	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal E-2.1. Increase the number of accounts enrolled in MCE's programs to 95%, with a total of 40% of accounts enrolled in the Deep Green energy option by 2030.				
E-2.1b	Partner with MCE to design educational campaigns, including tabling at community events, establishing informational resources on the City's website, regularly posting on social media, and developing energy bill inserts, to highlight the benefits of 100% renewable energy.	Environmental Services	1	
E-2.1c	In collaboration with MCE, implement a pilot program to provide Pittsburg's affordable housing units managed by the Pittsburg Housing Authority MCE's Deep Green service by 2025. Identify funding options with MCE such as subsidy of pilot study through the non-discounted customers or grant funding.	Community Services – Housing Authority	1	
E-2.1d	Support an equitable transition to renewables by partnering with MCE to create a funding or subsidy program for customers enrolled in the California Alternate Rates for Energy (CARE) or Family Electric Rate Assistance (FERA) programs to opt-up to MCE's Deep Green option. This may include subsidizing costs to customers who participate in CARE/FERA programs through non-discounted customer rate increase or obtainment of funding for disadvantaged and vulnerable communities. Include targeted outreach to educate residents on the availability of energy savings programs to help offset potential rate increases when opting-up.	Community Development – Economic Development	2	
Goal E-2.2. Increase generation and storage of local renewable energy.				
E-2.2a	Establish and streamline standards and permit requirements for electrification-related installations and battery storage systems, to allow for easier implementation of these technologies in Pittsburg.	Community Development – Building	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal E-2.2. Increase generation and storage of local renewable energy.				
E-2.2b	Consider adopting a PV (Solar) Ordinance requiring residential and nonresidential building additions and alterations to install PV systems that meet minimum requirements of Tier 2 Voluntary Standards under CalGreen. Engage with local building industry stakeholders to understand concerns and develop exemptions to the ordinance where the installation of PV systems may not be economically feasible.	Community Development – Planning, Building, and Economic Development	1	
E-2.2c	Expand the partnership with GRID Alternatives through increased funding/promotion and promote the benefits of renewable energy through multi-lingual educational programs in order to support an equitable transition to renewable energy.	Environmental Services	2	
E-2.2d	Work with PG&E, MCE, and/or other community partners to support and incentivize local on-site energy generation and storage resources. This could include: • Connecting home and business owners, particularly those in disadvantaged and vulnerable communities, to incentives for renewable energy and storage including Net Metering Programs through PG&E for bill credits, the Disadvantaged Communities-single-family Solar Homes (DAC_SASH) program, Self-Generation Incentive Program (SGIP), and Equity Resilience rebates that provide an upfront rebate for battery storage, as well as the federal investment tax credit. • Promoting installation of storage technology in concert with renewable energy infrastructure through multilingual education programs, outreach, and information provided via City platforms. • Evaluating the feasibility of installing on- and off-site co-located community solar and storage facilities and, if demonstrated effective, installing at least 3 by 2030 to provide cost-saving and resilience benefits to disadvantaged and vulnerable communities.	Community Development – Economic Development, Environmental Services	2	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal E-2.2. Increase generation and storage of local renewable energy.				
E-2.2e	Provide educational materials and workshops to large commercial developers and large business property owners of the benefits of microgrids and energy resiliency resources to identify opportunities for solar installations and/or battery storage on site.	Community Development – Economic Development, Environmental Services	2	
E-2.2f	Partner with affordable housing providers to conduct a feasibility analysis of battery storage and solar projects at the affordable housing in Pittsburg that are eligible for Equity Resilience Incentives under the Self-Generation Incentive Program.	Environmental Services, Community Services – Housing Authority	3	
Strategy T-1 Reduce Passenger Car Vehicle Miles Traveled				
Goal T-1.1 Implement Pittsburg Moves, increasing active transportation mode share from 1.5% in 2020 to 3% by 2030 and 9% by 2045.				
T-1.1a	Based on the goals and policies outlined in Pittsburg Moves, coordinate with Contra Costa Transportation Authority to establish a target timeline and funding strategy that address each of the projects in Appendix A. The timeline should outline a path that confirms an equal focus on improvement projects that will benefit residents living in disadvantaged and vulnerable communities.	Public Works – Engineering	1	
T-1.1b	Complete the feasibility analysis outlined in the Pittsburg Moves Project List to begin implementing the supporting projects.	Community Development – Planning	1	
T-1.1c	Establish bicycle lockers and bicycle parking minimums for new developments by land use types.	Community Development – Planning	1	
T-1.1d	Work with existing commercial and institutional property owners to identify additional opportunities to install safe bicycle lockers and parking spaces to encourage residents and visitors to make short trips via active transportation.	Community Development – Planning	1	
T-1.1e	Partner with schools, employers, transit agencies, Bike East Bay, the League of American Bicyclists, Metropolitan Transportation Commission, and/or community groups to teach bicycle and	Community Development – Planning, Environmental	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal T-1.1 Implement Pittsburg Moves, increasing active transportation mode share from 1.5% in 2020 to 3% by 2030 and 9% by 2045.				
	pedestrian safety in schools and workplaces and to educate residents and businesses about the safe route availability and the health and environmental benefits of walking, bicycling, and using public transit.	Services		
T-1.1f	Develop a Specific Capital Improvement Plan for active transportation and mobility projects for disadvantaged and vulnerable communities. Partner with community-based organizations with connections to disadvantaged and vulnerable communities to engage the community in the development and implementation of the plan.	Community Development – Planning, Public Works – Engineering	1	
T-1.1g	Partner with community groups to obtain funding through the California Air Resources Board Car Sharing and mobility Options program for a pilot bike-share program for disadvantaged and vulnerable communities and to connect disadvantaged and vulnerable communities with the E-Bike Purchase Incentive Program through CalBike and the California Air Resources Board (CARB), 511 Contra Costa, Contra Costa Transportation Authority, and the Bay Area Air Quality Management District.	Community Development – Planning, Public Works – Engineering	1	
T-1.1h	Promote active transportation through car-free events by identifying areas of the City to periodically close streets to cars, potentially coupled with the Farmer's Market or other large and regular community events.	Community Development – Economic Development, Environmental Services	1	
T-1.1i	Work with partners such as Lyft, Lime, Bike East Bay, 511 Contra Costa, or Encina Bicycle Center to establish a book-a-bike program within the Civic Center.	Community Development – Economic Development and Planning, Public Works – Engineering	1 – 2	
T-1.1j	Devote staff time to tracking and applying for grant funding to complete projects that would improve active transportation or mobility in the community.	Community Development – Economic Development and Planning, Public Works – Engineering	1 – 3	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal T-1.1 Implement Pittsburg Moves, increasing active transportation mode share from 1.5% in 2020 to 3% by 2030 and 9% by 2045.				
T-1.1k	Implement all policy recommendations included in the Pittsburg Moves to improve pedestrian and bicycle networks and increase transit ridership based on the established timeframes.	Community Development – Economic Development and Planning, Public Works – Engineering	1 – 3	
T-1.1l	Install approximately 45 miles of bikeways by 2040, including approximately 26 additional miles of shared-use paths; 7 miles of new buffered bike lanes; 8 miles of new bike boulevards; and 17 miles of new separated bikeways.	Public Works – Engineering	1 – 3	
Goal T-1.2 Implement public and shared transit programs to increase public transit mode share from 10.1% in 2020 to 12% by 2030 and 17% by 2045.				
T-1.2a	Establish guidelines and recommended standards for new development of public space to be transit accessible and multi-functional by co-locating public facilities.	Community Development – Economic Development, Public Works – Engineering	1	
T-1.2b	Consistent with the intention of Senate Bill 10, allow developers to build housing without off-street parking if they're close to frequent transit service	Community Development – Planning	1	
T-1.2c	Partner with Tri-Delta Transit to conduct a study to determine transit priority corridors and prioritize infrastructure improvements in existing neighborhoods that enable people to better access and use public transit.	Community Development – Planning, Public Works – Engineering	1	
T-1.2d	Conduct engagement efforts for the general public and targeted to disadvantaged and vulnerable communities to understand the community's concerns around or barriers to using public and/or shared transit.	Community Development – Economic Development	1	
T-1.2e	Through the adoption of an Overlay or Specific Plan, encourage employers to develop a Transportation Demand Management (TDM) Plan. Design a baseline TDM Plan for large employers (i.e., businesses with more than 25 employees) to adopt or model their TDM's after. TDM plans should include money-	Community Development – Economic Development and Planning	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal T-1.2 Implement public and shared transit programs to increase public transit mode share from 10.1% in 2020 to 12% by 2030 and 17% by 2045.				
	based incentives for employees to bike, walk, carpool, or take the bus to work.	Community Development – Economic Development and Planning	2	
T-1.2f	Conduct engagement efforts for the general public, with a targeted approach to disadvantaged and vulnerable communities to understand the potential concerns around the analysis of disincentive-based policies for driving single passenger vehicles. Through feedback from these engagement efforts, define equity metrics for the implementation of disincentive-based policies and depending on the outcome of the analysis, structure the policies to meet these metrics.	Community Development – Economic Development and Planning	3	
Strategy T-2.1 Increase Zero-Emission Vehicle and Equipment Use				
Goal T-2.1 Increase passenger zero-emission vehicle adoption from 2.3% in 2020 to 15% by 2030 and 100% by 2045.				
T-2.1a	Establish a prioritized list of locations in Pittsburg for new publicly accessible electric vehicle charging stations with consideration for equitable distribution of chargers to renters, residents of multi-family homes, residents living on low and fixed-incomes, and disadvantaged and vulnerable communities. Include locations for Level 2 charging where residents make extended stops and locations for Level 3 charging (DC Fast Charging) for residents without access to overnight charging and for highway travelers. Install at least 50 new publicly accessible charging stations by 2030 and 100 by 2045, through public-private partnerships and on City-owned properties at the identified locations. Promote the availability of new public chargers on social media and on the City's website.	Community Development – Planning, Environmental Services	1	
T-2.1b	Continue to maintain a streamlined electric vehicle (EV) infrastructure permitting process and ordinance in accordance with AB 1236.	Community Development – Planning and Building	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal T-2.1 Increase passenger zero-emission vehicle adoption from 2.3% in 2020 to 15% by 2030 and 100% by 2045.				
T-**2.1**c	Allow for granting of zero emission vehicles (ZEVs) access to preferred parking spaces in new private parking lots, where it is logical, feasible and not cost-prohibitive.	Community Development – Planning, Public Works – Engineering	1	
T-2.1d	Work with MCE and PG&E to incentivize residential electric vehicle charger installations and panel upgrades through on-bill financing. Promote the incentives through multi-lingual outreach material on the City's website and at community events.	Community Development – Economic Development and Planning	1	
T-2.1e	Coordinate with community-based organizations, local agencies, and non-profits to conduct ZEV education events for residents and targeted events for members of disadvantaged and vulnerable communities that would engage the community to evaluate the barriers to ZEV adoption, promote information on the costs and benefits of owning ZEVs, and promote steps on how to purchase a ZEV and receive incentives (including education on pre-owned EVs and how to determine current battery range).	Environmental Services	1	
T-2.1f	Develop outreach and education materials and distribute to local businesses, property owners, and developers on the financial (e.g., new funding streams), environmental, and health and safety benefits of ZEVs. Provide information on available funding opportunities and the City's streamlined permitting process.	Community Development – Economic Development, Environmental Services	1	
T-2.1g	Conduct outreach, including interviews with residents and business owners to evaluate the feasibility of adopting an electric vehicle charging infrastructure reach code that meets or exceeds the minimum requirements of the Tier 2 Voluntary Standards under CALGreen. Partner with community-based organizations with connections to disadvantaged and vulnerable communities to include targeted outreach and interviews to members of disadvantaged and vulnerable communities to	Community Development – Economic Development, Environmental Services	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal T-2.1 Increase Zero-Emission Vehicle and Equipment Use Goals and Actions				
	understand equity impacts of the reach code and barriers to adoption.			
T-2.1h	Explore opportunities to assist disadvantaged and vulnerable community members to purchase and operate ZEVs including: • Opportunities with CARB, BAAQMD, or other agencies to start a purchase rebate program and provide higher trade-in value for combustion vehicles • Opportunities with MCE and other agencies to discount charger and/or electricity rates for those with an electric vehicle.	Community Development – Economic Development, Environmental Services	2	
T-2.1i	Collaborate with neighboring jurisdictions and the Contra Costa Transportation Authority to develop a connected network on zero-emission vehicle car share.	Public Works – Engineering	2	
T-2.1j	Support zero-emission vehicle car share companies in coming to the City. Coordinate with car share companies and community-groups to develop an affordable, zero-emission vehicle car share to serve affordable housing and/or multifamily developments with a priority to target disadvantaged and vulnerable communities.	Community Development – Economic Development	3	
Goal T-2.2 Increase commercial zero-emission vehicle adoption from less than 1% in 2020 to 10% by 2030 and 100% by 2045.				
T-2.2a	Consider establishing a licensing fee for commercial delivery vehicles operating on fossil fuels (such as Amazon and FedEx) to provide funding for new active transportation and EV charging/ZEV fueling infrastructure and discounting the fee for the proportion of electric vehicles the delivery company uses. Evaluation of the fee would include: • Engaging directly with delivery service providers operating in the City to understand zero emission vehicle capacity • Determining if phasing is needed to allow for time to increase available zero-emission vehicles in fleet • Identifying gaps in the zero-emission vehicle fueling/charging infrastructure to maintain route efficiency.	Community Development – Economic Development, Public Works – Engineering	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal T-2.2 Increase commercial zero-emission vehicle adoption from less than 1% in 2020 to 10% by 2030 and 100% by 2045.				
T-2.2b	Encourage commercial vehicle fleet operators to accelerate electrification by providing them educational material on the benefits of zero emission vehicles (e.g., fuel cost savings through networked charging and current availability of zero emission vehicles ahead of State mandates), educating them on the City's streamlined permitting process, and compiling and distributing information on potential funding opportunities. Include Pittsburg Unified School District's zero-emission buses as a case study to demonstrate the feasibility and benefits of transitioning commercial fleets to ZEVs.	Community Development – Economic Development, Environmental Services	1	
Goal T-2.3 Transition 5% of all (i.e., commercial and residential) off-road equipment to zero-emission alternatives by 2030 and 100% by 2045.				
T-2.3a	Develop small off-road equipment (SORE) guidelines in alignment with CARB's goals encouraging that at time of replacement, zero emission landscape equipment be used starting in 2025 and portable generators be zero-emissions by 2029.	Community Development – Planning and Economic Development	1	
T-2.3b	Partner with BAAQMD to identify funding opportunities to encourage residents to replace gas-powered landscaping equipment and off-road engines with zero emission equipment with a focus on funding opportunities for members of disadvantaged and vulnerable communities and small and minority-owned businesses.	Community Development – Planning and Economic Development	1	
T-2.3c	Conduct an investigation of major commercial off-road equipment fleets in Pittsburg and identify fleets with highest decarbonization potential and fleets in disadvantaged and vulnerable communities that will need targeted support to transition.	Community Development – Public Works – Engineering	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal T-2.2 Increase commercial zero-emission vehicle adoption from less than 1% in 2020 to 10% by 2030 and 100% by 2045.				
T-2.3d	Develop an Off-road Equipment Replacement Outreach Campaign that provides information to contractors, residents, and fleet operators in Pittsburg, with a target towards those identified with high decarbonization potential and small businesses owned by traditionally disadvantaged and vulnerable community members. Information should include equivalent alternatives to fossil-fueled off-road equipment, public health, and safety benefits of alternative equipment technology, and funding opportunities available (i.e., Clean Off-Road Equipment Voucher Incentive Program [CORE]).	Community Development – Planning and Economic Development, Environmental Services	1	
T-2.3e	Partner with BAAQMD to develop a rebate and incentive program for upgrading off-road equipment and switching to electric or biofuels. Develop the program with a focus on procedural equity and prioritize funding distribution to disadvantaged and vulnerable communities.	Community Development – Planning and Economic Development	2	
T-2.3f	As part of the tool lending program at the library (see Action SW.2.1f), offer electric garden and landscape maintenance equipment including electric leaf blowers.	Environmental Services	2	
Strategy W-1 Increase Water Conservation and Local Water Supply				
Goal W-1.1 Reduce per capita water consumption 10% by 2030 and 30% by 2045, from 2016 levels.				
W-1.1a	Adopt a Water Conservation and Water Shortage Contingency Program Ordinance to establish a clear protocol of drought thresholds that trigger varying water use reduction strategies that focus primary on domestic water use, health and sanitation, and fire protection.	Environmental Services, Public Works – Water	1	
W-1.1b	Continue to implement and enforce Model Water Efficient Landscape Ordinance to encourage use of efficient irrigation systems, greywater usage, onsite storm water capture, and limit the portion of landscapes that can be covered in turf.	Public Works – Operations & Maintenance **(Future state – Public Works – Water)*	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal W-1.1 Reduce per capita water consumption 10% by 2030 and 30% by 2045, from 2016 levels.				
W-1.1c	Continue the “Delta Water Education Program" to promote and reinforce the importance of water resources, water conservation, and local management of watersheds and water quality, to children in the local community.	Environmental Services	1	
W-1.1d	Continue to partner with Contra Costa Water District (CCWD) to promote water conservation messaging, including multi-lingual education materials such as publications, website pages, community events and booths, workshops and presentations, newsletters, newspaper ads, and bill inserts. Include targeted outreach to disadvantaged and vulnerable communities to reduce utility bill burdens.	Environmental Services, Public Works - Water	1	
W-1.1e	Continue to partner with Contra Costa Water District to provide water conserving fixtures/fittings and rebates for appliances to residents throughout Pittsburg, with a focus on disadvantaged and vulnerable communities to reduce utility bill burdens.	Environmental Services	1	
W-1.1f	Maintain a comprehensive, coordinated education campaign focused on property owners, landlords, property management companies, and occupants for reducing the use of water in homes and businesses. Establish a shared understanding of existing incentives for appliances, fittings and fixtures; lawns; and irrigation systems, and how to access them, including Contra Costa Water District incentive programs and rebates	Environmental Services, Public Works – Operations & Maintenance **(Future state – Public Works – Water)*	1	
W-1.1g	Perform analysis to understand the feasibility and potential potable water savings of adopting a Dual Drainage Plumbing Ordinance to provide information to community members.	Community Development – Building	1	
W-1.1h	Promote the Living Green Gardens, the City's water-wise public demonstration garden, to encourage efficient landscape and watering practices and to provide a hands-on learning experience for members of the community. Additionally, develop more classes on new materials and continue active maintenance of the garden.	Environmental Services	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal W-1.1 Reduce per capita water consumption 10% by 2030 and 30% by 2045, from 2016 levels.				
W-1.1i	Implement water conservation strategies, such as increasing efficiency and use of recycled water, in City landscaping and grounds maintenance procedures.	Services, Public Works – Operations & Maintenance *(Future state – Public Works – Water)*	1	
W-1.1j	Consider the adoption of an ordinance in the Municipal Code that requires hospitality agencies (i.e., hotels and motels) to only provide daily services upon request and share such information with guests. Engage hospitality agencies and other stakeholders in the evaluation process.	Community Development – Planning and Building	1	
W-1.1k	Continue to partner with Contra Costa Water District to promote the "Lawn to Garden Rebate" to encourage residents and business owners to transition their existing lawns to waterwise landscaping. Provide specific outreach to multi-family and commercial entities, including providing flyers in water bills and partnering with "My Pittsburg Chamber" to provide information to business entities in the community.	Environmental Services, Parks	1	
W-1.1l	Apply for a rebate to transition non-essential municipal lawns to native, waterwise landscaping, and promote the Living Green Garden to continue offering a place for community members to visit and learn more about waterwise landscaping and available incentives and rebates, as well as information on local nurseries that provide native waterwise landscaping.	Environmental Services, Parks	1	
Goal W-1.2 Increase recycled water use in the City.				
W-1.2a	Work with Delta Diablo to perform a feasibility study on increasing local recycled water supply through either expansion in purple piping infrastructure or inclusion of tertiary treated wastewater effluent to supplement existing potable water supply. The feasibility study would evaluate potential impacts to cost of service and investigate ways to maintain or decrease costs of service through the projects.	Public Works – Engineering, Operations & Maintenance, and Water	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal W-1.2 Increase recycled water use in the City.				
W-1.2b	Complete a feasibility study to identify opportunities for increased access to recycled water and to accurately determine the quantity of recycled water available to the City. The feasibility study would analyze possible land use types (i.e., landscaping and fields) and specific projects that could switch from potable to recycled water. The feasibility study would also evaluate potential impacts to cost of service and investigate ways to maintain or decrease costs of service through the projects.	Public Works – Operations & Maintenance *(Future state – Public Works – Water)*	1	
W-1.2c	Pursue funding opportunities at the State and federal level, such as the Clean Water State Revolving Fund and the US Bureau of Reclamation's WaterSMART grants, to create more financial incentive for increased recycled water infrastructure.	Environmental Services, Public Works – Engineering *(Future state – Public Works – Water)*	1	
W-1.2d	Continue to partner with Contra Costa Water District to identify new incentives and rebates and promote existing programs on the City's water webpage for opportunities such as the "Landscape to Laundry Greywater Rebates" to install a greywater system and "Car Wash Coupons" for car wash facilities that use recycled water to incentive residents to "go-grey."	Environmental Services, Public Works -– Water	1	
Goal W-1.3 Increase green stormwater infrastructure.				
W-1.3a	Continue to implement the Green Infrastructure Plan to retrofit 4 acres of existing impervious surfaces through private and public developments; and update the plan as needed to monitor progress and revise project priorities.	Environmental Services, Public Works -– Water	1	
W-1.3b	Continue compliance with the City's National Pollutant Discharge Elimination System (NPDES) permit to require new developments to convey runoff to engineered bioretention basins or vegetative features.	Environmental Services, Public Works -– Water	1	
W-1.3c	Partner with Contra Costa Water District to create incentives as part of their Rainwater Harvesting Program to help residents install rain barrels.	Environmental Services, Public Works -– Water	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal W-1.3 Increase green stormwater infrastructure.				
W-1.3d	Develop and promote incentive programs and rebates for residents and businesses to replace their impervious surfaces with pervious surfaces, including native water-wise landscaping.	Environmental Services, Public Works -– Water	1	
W-1.3e	Continue to partner with Delta Diablo and Contra Costa Water District to conduct an on-going educational campaign to provide community members information on the benefits of green stormwater infrastructure and opportunities to incorporate green stormwater infrastructure into their homes and business properties (including ways to harvest and use the rainwater). Consider developing an interactive map that identifies completed and ongoing green stormwater infrastructure projects in the City (including those at City-owned properties) for community members to explore.	Environmental Services, Public Works – Engineering **(Future state – Public Works – Water)*	1 – 3	
Strategy W-2 Minimize Water Loss System-wide				
Goal W-2.1 Reduce real and apparent system water loss from a rate of 13% in 2020 to less than 10% by 2030 and less than 7% by 2045.				
W-2.1a	Maintain and continually improve the advanced metering and public facing software that allows water customers to check real-time water consumption data and explore water conservation recommendations based on their actual water consumption history.	Public Works – Operations & Maintenance	1	
W-2.1b	Continue to enforce standards set by water waste prevention ordinances stipulated in the Municipal Code.	Public Works - Water	1	
W-2.1c	Continue to partner with CCWD to promote their water efficiency rebates for residential and commercial customers. Develop flyers and other promotional material on the rebates to distribute at community events and perform targeted outreach to members of disadvantaged and vulnerable communities to help reduce utility bill burdens.	Public Works – Operations & Maintenance, Environmental Services	1	
W-2.1d	Create a "How to Find and Fix a Leak at Home Guide" for distribution at public counters and events, promote "National Fix A Leak Week" in March of every year, and continue to incorporate water waste messaging into communications strategy.	Community Development – Building, Public Works – Water, Environmental Services	2	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal W-2.1 Reduce real and apparent system water loss from a rate of 13% in 2020 to less than 10% by 2030 and less than 7% by 2045.				
W-2.1e	Continue to partner with CCWD to provide Water Wise House Calls to residential customers and work with CCWD to expand the program to commercial customers to complete leak detections, provide tips to avoid high water bills, increase indoor and outdoor water efficiency, and provide information on how to monitor personal water use. Perform targeted outreach to promote the program to members of disadvantaged and vulnerable communities to help reduce utility bill burdens.	Public Works – Operations & Maintenance, Environmental Services	1-2	
Strategy SW-1 Organic Waste Diversion				
Goal SW-1.1 Continue to take action to meet SB 1383 organics and recycling requirements, reducing organic waste disposal 75% from 2014 levels by 2025 statewide.				
SW-1.1a	Adopt municipal procurement policies to comply with SB 1383 requirements for jurisdictions to purchase recovered organic waste products.	Public Works – Engineering and Water	1	
SW-1.1b	Work with Mt. Diablo Resource Recovery to establish and implement a detailed outreach and engagement plan for restaurants, grocery stores, and other commercial entities that generate organic waste to provide education and available resources for increased organic diversion.	Environmental Services	1	
SW-1.1c	Support the County with information and collaborative planning to provide sufficient edible food reuse infrastructure to accept the capacity needed to recover 20% of edible food disposed or identify proposed new or expanded food recovery capacity.	Environmental Services	1	
SW-1.1d	Continue working with the Bay Area Recycling Outreach Coalition and Mt. Diablo Resource Recovery and Pittsburg Unified School District to establish and provide exciting education and outreach programs for school children and adults around food waste prevention, nutrition education, and the importance of edible food recovery. The education program may include: • Composting principals, including information on what composting means and why it is important.	Environmental Services	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal SW-1.1 Continue to take action to meet SB 1383 organics and recycling requirements, reducing organic waste disposal 75% from 2014 levels by 2025 statewide.				
	• Materials that can be composted, which typically include food scraps, yard waste, paper, and other organic matter. • Methods for composting, such as aerobic, anaerobic, and vermicomposting. • Composting equipment required for each potential composting methodology. • Suggestions to troubleshoot or resolve any problems that arise, including information on potential odors and pests. • How to efficiently apply and incorporate compost into soil.			
SW-1.1e	Investigate the opportunity to participate in a regional compost trading program to help meet organic waste procurement goals.	Environmental Services	1	
SW-1.1f	Create relationships with local food recovery organizations, such as FoodShift, the Food Bank of Contra Costa and Solano, religious organizations, and edible food generators to support the establishment of an edible food recovery program to minimize food waste in the City.	Environmental Services	1	
SW-1.1g	Foster County partnerships to host home composting workshops in the City of Pittsburg and to provide reduced priced composting bins.	Environmental Services	1	
SW-1.1h	Provide free compost bins and kitchen-top food waste containers to members of disadvantaged and vulnerable communities and elderly households to increase participation in Mt. Diablo Resource Recovery's residential organics curbside program.	Environmental Services	1	
SW-1.1i	Monitor bill increases from participation in the residential organics curbside program and consider City incentive programs for members of disadvantaged and vulnerable communities to increase participation and reduce utility bill burdens.	Environmental Services	1	
SW-1.1j	Establish a Pittsburg Food System Alliance organization to build a network of leaders in Pittsburg to foster a local food system	Environmental Services	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal SW-1.1 Continue to take action to meet SB 1383 organics and recycling requirements, reducing organic waste disposal 75% from 2014 levels by 2025 statewide.				
	that eliminates food waste, alleviates the food desert, and brings affordable, organic produce to all. Partner with the City's Chamber of Commerce connect with business owners and serve as a conduit for the City.			
Strategy SW-2 Reduce Community Waste Generation				
Goal SW-2.1 Reduce community-wide waste generation 55% by 2025 and 90% by 2040 statewide, from 2014 levels.				
SW-2.1a	In partnership with Mt. Diablo Resource Recovery, create a Waste Diversion Plan to reduce waste and increase reuse in the City. Upon finalization, provide the plan to Pittsburg Unified School District, Los Medanos College, retirement communities, and other large institutions to use as a model for adopting their own policies to reduce waste and increase reuse.	Environmental Services	1	
SW-2.1b	Require large events, as defined in SB 1383, and encourage smaller events to employ or designate an event waste management team and have easy to understand waste, recycling, and organics bin signage to assist with source separation of waste generated at events.	Environmental Services, Community Development –	1	
SW-2.1c	Conduct periodic waste characterization studies of all City waste streams at the Recycling Center & Transfer Station to evaluate progress, hone approaches, customize outreach/policy, and inform targeted campaigns and policy. Fill in waste generation gaps by collecting data from take-back locations (e.g., grocery stores, auto shops, carpets, mattresses, battery collection).	Environmental Services	1	
SW-2.1d	Partner with Mt. Diablo Resource Recovery to conduct targeted, multi-lingual, culturally appropriate, and geographically diverse waste prevention educational and technical assistance campaigns based on outcomes of waste characterization studies (e.g., food waste prevention, edible food recovery strategies, proper storage, how to fix clothes/electronics, how to donate, reusable alternatives, effects of over consumption, sustainable	Environmental Services	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal SW-2.2 Continue to take action to meet SB 1383 organics and recycling requirements, reducing organic waste disposal 75% from 2014 levels by 2025 statewide.				
	consumption habits, buying second hand, buying durable, sharing, and repurposing).	Environmental Services	1	
SW-2.1e	Impose a fee on singe use bags and foodware to fund the waste reduction programs and studies.	Environmental Services	1	
SW-2.1f	Partner with local businesses, nonprofits, and community groups or organizations to establish pop-up repair cafes for commonly broken and easily repaired items. Additionally, partner with the library to promote reuse by increasing accessibility to shared tools through a tool lending program. In addition to providing available resources, also work with experts in various fields to provide quick reference guidance documents or record short videos that residents can refer to when borrowing specific equipment to learn the most effective ways of using the tools available. Tools provided through the library could include: power tools, hand tools, electrical tools, gardening tools, auto repair tools, bike repair tools, and sewing and clothing repair tools.	Environmental Services	2	
SW-2.1g	Based on waste characterization studies explore banning top "problem materials" (i.e., items without means of recycling or recycling markets, such as sale of polystyrene, produce bags, plastic packaging, straws, plastics #4-7, mixed materials or a specific size/type/etc.). Engage small and minority-owned businesses through targeted outreach to identify equity impacts of such a ban.	Environmental Services, Community Development –	2	
SW-2.1h	Partner with Delta Diablo to promote use of the existing Household Hazardous Waste facility. Additional promotion and education to the community could include sending out an annual mailer, providing regular updates on Pittsburg's social media pages, and through flyers and brochures available at community events.	Environmental Services	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Strategy CS-1 Carbon Sequestration				
Goal CS-1.1 Increase carbon sequestration by planting 150 new trees annually through 2045 to sequester carbon and create urban shade to reduce heat island effect.				
CS-1.1a	Conduct an urban forest inventory and canopy study to inventory the existing urban forest as a baseline and continue to identify areas in Pittsburg that have below average canopy coverage, such as census block group 60133141033 and 60133120001, to design and implement a tree planting program focusing on the least covered portions of the City. As part of the Urban Forest Inventory, establish a goal of having no significant difference in canopy coverage between census blocks by 2040.	Parks	1	
CS-1.1b	Continue protecting existing trees on private property through the Tree Preservation and Protection Ordinance and create a City incentive program (e.g., water bill rebate) for new tree plantings on private properties with a focus on members of disadvantaged and vulnerable communities and in areas where there is below average tree equity or canopy coverage.	Community Development – Planning, Public Works – Operations & Maintenance	1	
CS-1.1c	Amend the Municipal Code to include street tree requirements for all zoning districts, strengthen shade tree requirements for new developments, and include permeable surface requirements for new development.	Community Development – Planning, Public Works – Operations & Maintenance	1	
CS-1.1d	Continue to dedicate staff time or create a staff position for obtaining grant funding for tree planting and urban forest management. Identify and apply for applicable federal (e.g., USDA) and state (e.g., California ReLeaf, Affordable Housing and Sustainable Communities Program (AHSC), Urban and Community Forestry Program) available grants for Tree Planting projects.	Parks	1	
CS-1.1e	Develop and adopt an Urban Forest Management Plan that identifies the City's potential capacity for new tree planting, identifies a timeframe for implementation, provides a management plan for existing trees, and establishes a tracking	Parks	2	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal CS-1.1 Continue to take action to meet SB 1383 organics and recycling requirements, reducing organic waste disposal 75% from 2014 levels by 2025 statewide.				
	system to assess progress towards annual benchmarks. Collaborate with community-based organizations with connections to disadvantaged and vulnerable communities in the development of the plan.			
CS-1.1f	As an expansion to the Adopt-a-Spot Program, establish an Adopt-a-Tree program that enables individuals, businesses, and community organizations to plant and care for trees in selected communities with below average canopy coverage and disadvantaged and vulnerable communities. Program should provide formalized information on appropriate trees eligible for planting in Pittsburg (i.e., native, drought tolerant, locations).	Environmental Services, Parks	2	
CS-1.1g	Establish a Tree Trust or Tree Endowment where the interest on the principal can be used for purchasing trees in selected communities with below average tree canopy coverage, paying for tree maintenance in disadvantaged and vulnerable communities, or supporting staff resources for the Urban Forest Management Program.	Environmental Services, Parks	2	
CS-1.1h	Continue the City's annual Arbor Day celebration event that encourages and educates residents on the importance of planting native trees and provides resources and support for community-led tree planting initiatives. Grow this event to include distributing free or discounted tree seedlings, hosting educational workshops on proper planting techniques and tree maintenance, partnering with local organizations and businesses to sponsor and organize planting events, and establishing a volunteer network to help maintain newly planted trees.	Public Works – Operation & Maintenance	1	
CS-1.1i	Work with the Contra Costa County Resource Conservation District, East Bay Regional Park District, and community-based organizations such as Save Mount Diablo to preserve and expand greenspaces (i.e., large open spaces and regional parks) in Pittsburg to increase carbon sequestration and increase access to greenspaces.	Environmental Services, Parks	1 – 3	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal CS-1.1 Continue to take action to meet SB 1383 organics and recycling requirements, reducing organic waste disposal 75% from 2014 levels by 2025 statewide.				
CS-1.1j	Partner with community-based organizations such as Healthy Hearts and the John Muir Land Trust to increase the number of and access to urban community gardens in Pittsburg. Utilize such gardens to increase carbon sequestration; increase access to greenspaces for renters, residents living in multi-family housing, and members of vulnerable and disadvantaged communities; and provide high-road job development opportunities for members of vulnerable and disadvantaged communities.	Environmental Services, Parks	1 – 3	
Goal CS-1.2 Increase carbon sequestration by applying 0.08 tons of compost per capita annually in the community by 2030, increasing up to 0.10 by 2045.				
CS-1.2a	Conduct an informal audit of compost needs in the City to establish a baseline procurement and application level that meets City needs and increases over time.	Environmental Services	1	
CS-1.2b	Complete a feasibility study to identify locations within the City to apply mulch to help meet the procurement requirements of SB 1383 and maximize the application of compost over time, working with the City's Parks Department to maximize compost usage at City parks.	Environmental Services, Parks	1	
CS-1.2c	Collaborate with Los Medanos College and local schools to identify opportunities to apply compost to landscaping.	Environmental Services	1	
CS-1.2d	Work with Alameda County and StopWaste to identify opportunities for a regional compost procurement program.	Environmental Services	2	
CS-2.2e	Develop and adopt urban park guidelines that 1) provide flexible solutions for developing urban parks in infill areas where traditional neighborhood and community parks are not feasible; 2) establishes guidelines for achieving the greatest carbon sequestration potential of parks via design; and 3) are equitable in ensuring such urban parks are accessible for members of disadvantaged and vulnerable communities while avoiding displacement; and 4) align with requirements of the Clean	Community Development – Planning, Parks	2	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal CS-1.2 Increase carbon sequestration by applying 0.08 tons of compost per capita annually in the community by 2030, increasing up to 0.10 by 2045.				
	California Local Grant Program for potential funding opportunities. Encourage urban parks as an opportunity to beautify the community and integrate art into sustainability projects.	Community Development – Planning, Parks	2	
Strategy M-1 Commit to Climate Action				
Goal M-1.1 Complete annual progress reports on Pittsburg's Sustainability Plan every three years.				
M-1.1a	Designate staff to manage sustainability programs that implement the SUS Plan actions by managing technical studies, leading outreach efforts, updating the website, networking with partners and stakeholders, and pursuing grant opportunities.	Environmental Services, Community Development – Planning, Building, and Code Enforcement	1	
M-1.1b	Update the community wide GHG emissions inventory and progress on measures biannually in the monitoring tool and share the results with the community on the City's website to measure progress and maintain transparent accountability in making progress towards the Sustainability Plan goals.	Environmental Services	1 – 3	
M-1.1c	Update the Environmental Services webpage at least annually to provide updates on policies implemented as part of the Sustainability Plan.	Environmental Services	1 – 3	
M-1.1d	Devote staff time to tracking and applying for grant funding to complete regular Sustainability Plan updates.	Environmental Services	1 – 3	
M-1.1e	Hold regular sustainability outreach events, such as workshops, presentations, focus groups targeted at specific community groups, public contests or challenges, and an annual event such as Earth Day. Inform the community on potential climate change impacts, as well as weatherization and other actions that community members can take to implement actions outlined throughout the Sustainability Plan.	Environmental Services	1 – 3	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal M-1.1 Complete annual progress reports on Pittsburg's Sustainability Plan every three years.				
M-1.1f	Track and audit where measures are geographically implemented to determine that communities who are most impacted by climate change, including traditionally disadvantaged and vulnerable communities who would benefit the most from adaptation and mitigation efforts.	Environmental Services	1 – 3	
Strategy M-2 Reduce Municipal Reliance on Natural Resources				
Goal M-2.1 Electrify 25% of existing City facilities by 2030 and 100% of existing City facilities by 2045, as well as all newly constructed City buildings, while also increasing renewable energy use.				
M-2.1a	Complete energy audits for all City facilities and implement feasible recommendations for fuel switching and efficiency upgrades.	Public Works – Operations & Maintenance	1	
M-2.1b	Opt-up 100% of municipal accounts to MCE's Deep Green energy option by 2030.	Public Works – Operations & Maintenance	1	
M-2.1c	Establish a policy requiring all new City-owned buildings be all-electric and a policy requiring all existing natural gas-powered equipment in City-owned buildings be replaced with electric or other zero-emission alternatives at the end of useful life, where technologically feasible.	Public Works – Operations & Maintenance	1	
M-2.1d	Identify a municipal building to pilot an all-electric retrofit. Track the change in energy usage and utility bill costs before and after the retrofit to study net benefits.	Public Works – Operations & Maintenance	1	
M-2.1e	Partner with PG&E through the Sustainable Solutions Turnkey (SST) program to install renewable energy technology at municipal facilities (such as City Hall) and become a zero net energy organization.	Environmental Services, Public Works – Operations & Maintenance	2 - 3	
M-2.1f	Partner with PG&E to identify and install battery energy storage systems at appropriate City facilities (including the City Hall/Police Station and the Pittsburg Marina), and leverage projects to further promote benefits of distributed energy storage, which are directly connected to a renewable resource.	Environmental Services	2 - 3	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal M-2.1 Electrify 25% of existing City facilities by 2030 and 100% of existing City facilities by 2045, as well as all newly constructed City buildings, while also increasing renewable energy use.				
M-2.1g	Complete an analysis to identify the electrical capacity and utility infrastructure upgrades needed to electrify the recreational pool heating system. Pursue replacement funding through PG&E on-bill financing and California Energy Commission 1% Loans, or other funding sources.	Public Works – Operations & Maintenance	2	
Goal M-2.2 Transition 50% of the City's vehicle and equipment fleet to renewable fuels and electric by 2030 and 100% by 2045.				
M-2.2a	Conduct a study to assess the technological and economic feasibility of replacing the City-owned fleets and off-road equipment and develop a time of replacement schedule for applicable vehicle and equipment types.	Environmental Services, Public Works – Engineering and Operations & Maintenance	1	
M-2.2b	Upon completion of the study, adopt a ZEV-first purchasing policy for non-essential City fleet vehicles, using the transition to encourage residents to convert as well.	Environmental Services	1	
M-2.2c	Upon completion of the study, develop and implement a plan to replace all City owned end-of-life off-road equipment with zero-emission equipment. The plan should include evaluation of current City-owned equipment, alternative low or zero-emission options, prioritize equipment to replace first (e.g., largest GHG emission reduction potential), and a timeline for replacements that align with goals and feasibility of replacement.	Public Works – Operations & Maintenance, Parks	1	
M-2.2d	Secure funding from programs such as the California Air Resources Board's Clean Vehicle Rebate Project and the Truck and Bus Voucher Incentive Program to increase procurement of EV or ZEV cars, trucks, and other vehicles and installation of EV/ZEV charging/fueling infrastructure at municipal facilities. Additionally explore opportunities for Low Carbon Fuel Standard credit generation from use of low carbon fuels/electricity for fleet vehicles.	Environmental Services	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal M-2.2 Transition 50% of the City's vehicle and equipment fleet to renewable fuels and electric by 2030 and 100% by 2045.				
M-2.2e	Install new public and employee EV chargers at City-owned facilities.	Public Works – Engineering and Operations & Maintenance	1	
M-2.2f	Transition to all-electric landscaping equipment, including leaf blowers, for municipal operations. Use this to promote all-electric equipment in the community, providing information on the City website outlining available incentives for residents and businesses.	Parks, Public Works – Operations & Maintenance	2	
Goal M-2.3 Reduce the number of single occupancy, fossil fueled vehicle annual employee commute trips 20% by 2030 and 50% by 2045.				
M-2.3a	Complete a survey to understand how staff currently travel and what would make them change their patterns to establish an accurate baseline in which to build future goals.	Environmental Services	1	
M-2.3b	Expand EV charging at public facilities: Install new public and employee EV chargers at City-owned facilities, and: • Consider developing and implement a fee for use of City-owned chargers to encourage efficient use and turnover, especially for those without home charging capability Consider allocating EV charger fee revenue towards projects that support EV infrastructure, alternative fuel projects, and active transportation projects in neighborhoods that are historically underrepresented • Provide bicycles and bicycle storage for employees to use during work hours for short business or personal trips. Additionally, establish bike lockers at City Hall that are usable to the public.	Public Works – Engineering, Environmental Services	1	
M-2.3c	Provide bicycles and bicycle storage for employees to use during work hours for short business or personal trips. Additionally, establish bike lockers at City Hall that are usable to the public.	Environmental Services	1	

Strategies, Goals, and Actions		Lead	Phase	Notes/Comments (Future Use)
Goal M-2.3 Reduce the number of single occupancy, fossil fueled vehicle annual employee commute trips 20% by 2030 and 50% by 2045.				
M-2.3d	Expand the subsidized transit commute program to reduce employee commute miles in single occupancy vehicles.	Human Resources	1	
M-2.3e	Partner with Tri-Delta Transit, BAAQMD, Bike East Bay, the League of American Bicyclists, and/or Metropolitan Transportation Commission to expand employee use of carbon-free and low carbon transportation by providing education programs on the benefits of commute options including public transportation, EV/ZEV options, and vanpools.	Environmental Services	1 - 2	
M-2.3f	Permit 25% of employees located at the City of Pittsburg to telecommute or utilize flexible schedules through 2030 to reduce travel time, vehicle miles traveled (VMT), and GHG emissions.	Human Resources	2 - 3	


381 PITTSBURG MARINA
TRI DELTA TRANSIT

Appendix A: Regulatory Context

Regulatory Summary

As the impacts of climate change are being recognized, many strategies that address climate change have emerged at all levels of government. This section provides an overview of the regulatory context at the international, state, and local levels relative to the City of Pittsburg's actions toward reducing greenhouse gas (GHG) emissions.

International Climate Action Guidance

United Nations Framework Convention on Climate Change (1992)

The primary international regulatory framework for GHG reduction is the United Nations Framework Convention on Climate Change Paris Agreement (UNFCCC). The UNFCCC is an international treaty adopted in 1992 with the objective of stabilizing atmospheric GHG concentrations to prevent disruptive anthropogenic climate change. The framework established non-binding limits on global GHG emissions and specified a process for negotiating future international climate-related agreements.[1]

Kyoto Protocol (1997)

The Kyoto Protocol is an international treaty that was adopted in 1997 to extend and operationalize the UNFCCC. The protocol commits industrialized nations to reduce GHG emissions per county-specific targets, recognizing that they hold responsibility for existing atmospheric GHG levels. The Kyoto Protocol involves two commitment periods during which emissions reductions are to occur, the first of which took place between 2008-2012 and the second of which has not entered into force. [2]

The Paris Agreement (2015)

The Paris Agreement is the first-ever universal, legally binding global climate agreement that was adopted in 2015 and has been ratified by 189 countries worldwide.[3] The Paris Agreement establishes a roadmap to keep the world under 2° C of warming with a goal of limiting an increase of temperature to 1.5°C. The agreement does not dictate one specific reduction target, instead relying on individual countries to set nationally determined contributions (NDCs) or reductions based on GDP and other factors. According to the International Panel on Climate Change (IPCC) limiting global warming to 1.5° C will require global emissions to reduce through 2030 and hit carbon neutrality by mid-century.[4]

1 United Nations Framework Convention on Climate Change (UNFCCC). United Nations Framework Convention on Climate Change. https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf
2 UNFCCC. What is the Kyoto Protocol? https://unfccc.int/kyoto_protocol
3 UNFCCC. Paris Agreement - Status of Ratification. https://unfccc.int/process/the-paris-agreement/status-of-ratification
4 IPCC. Global Warming of 1.5 C. https://www.ipcc.ch/sr15/

Glasgow Climate Pact (2021)

The Glasgow Climate Pact[5] (Pact) was adopted by nearly 200 nations in 2021 and builds on the 2015 Paris Agreement. The Pact includes an agreement to revisit the remissions reduction plans to keep the 1.5°C target achievable and is the first global climate agreement that commits to phasing down the use of unabated coal. Further, the Pact includes a commitment to provide climate finance to developing countries.

California Regulations and State GHG Targets

California remains a global leader in the effort to reduce GHG emissions and combat climate change through its mitigation and adaptation strategies. With the passage of Assembly Bill (AB) 32 in 2006, California became the first state in the United States to mandate GHG emission reductions across its entire economy. To support AB 32, California has enacted legislation, regulations, and executive orders (EO) that put it on course to achieve robust emission reductions and address the impacts of a changing climate. The following is a summary of executive and legislative actions most relevant to the CAP.

2002 Senate Bill 1078

In 2002, SB 1078, established the California Renewables Portfolio Standards (RPS) Program and was accelerated in 2006 by SB 107, requiring that 20 percent of retail electricity sales be composed of renewable energy sources by 2010. EO S-14-08 was signed in 2008 to further streamline California's renewable energy project approval process and increase the state's RPS to the most aggressive in the nation at 33 percent renewable power by 2020.

2002 Assembly Bill 1493

In 2002, AB 1493, also known as the Pavley Regulations, directed the California Air Resources Board (CARB) to establish regulations to reduce GHG emissions from passenger vehicles to the maximum and most cost-effective extent feasible. CARB approved the first set of regulations to reduce GHG emissions from passenger vehicles in 2004, with the regulations initially taking effect with the 2009 model year.

2005 Executive Order S-3-05

Executive Order (EO) S-3-05 was signed in 2005, establishing statewide GHG emissions reduction targets for the years 2020 and 2050. The EO calls for the reduction of GHG emissions in California to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. The 2050 emission reductions target would put the state's emissions in line with the worldwide reductions needed to reach long-term climate stabilization as concluded by the IPCC *2007 Fourth Assessment Report*.

2006 Assembly Bill 32

California's major initiative for reducing GHG emissions is outlined in AB 32, the "California Global Warming Solutions Act of 2006," which was signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 and requires CARB to prepare a Scoping Plan

5 https://unfccc.int/documents/310475

that outlines the main state strategies for reducing GHG emissions to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions.

Based on this guidance, CARB approved a 1990 statewide GHG baseline and 2020 emissions limit of 427 million metric tons of CO_2 equivalent (MMT CO_2e). The Scoping Plan was approved by CARB on December 11, 2008 and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards,[6] and Cap-and-Trade) have been adopted since approval of the Scoping Plan.

In May 2014, CARB approved the first update to the AB 32 Scoping Plan. The 2014 Scoping Plan update defined CARB's climate change priorities for the next five years and set the groundwork to reach post-2020 statewide goals. The update highlighted California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluated how to align the state's longer-term GHG reduction strategies with other state policy priorities, including those for water, waste, natural resources, clean energy, transportation, and land use (CARB 2014).

2007 Executive Order S-1-07

Also known as the Low Carbon Fuel Standard, EO S-1-07, issued in 2007, established a statewide goal that requires transportation fuel providers to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. EO S-1-07 was readopted and amended in 2015 to require a 20 percent reduction in carbon intensity by 2030, the most stringent requirement in the nation. The new requirement aligns with California's overall 2030 target of reducing climate changing emissions 40 percent below 1990 levels by 2030, which was set by Senate Bill 32 and signed by the governor in 2016.

2007 Senate Bill 97

Signed in August 2007, SB 97 acknowledges that climate change is an environmental issue that requires analysis in California Environmental Quality Act (CEQA) documents. In March 2010, the California Natural Resources Agency adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG and climate change impacts.

2008 Senate Bill 375

SB 375, signed in August 2008, enhances the state's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations (MPOs), including the San Bernardino Council of Governments (SBCOG), of which Montclair is a member of, to prepare a "sustainable communities strategy" (SCS) that contains a

6 On September 19, 2019 the National Highway Traffic Safety Agency (NHTSA) and the US Environmental Protection Agency (EPA) issued a final action entitled the One National Program on Federal Preemption of State Fuel Economy Standards Rule. This action finalizes Part I of the Safer, Affordable, Fuel-Efficient (SAFE) Vehicles Rule. This rule states that federal law preempts State and local tailpipe greenhouse gas (GHG) emissions standards as well as zero emission vehicle (ZEV) mandates. The SAFE Rule withdraws the Clean Air Act waiver it granted to California in January 2013 as it relates to California's GHG and zero emission vehicle programs.

growth strategy to meet these emission targets for inclusion in the MPO's Regional Transportation Plan (RTP).

2009 California Green Building Code

The California Green Building Standards Code (CALGreen) is Part 11 of the California Building Standards Code or Title 24 and is the first statewide "green" building code in the nation. The purpose of CALGreen is to improve public health, safety, and general welfare by enhancing the design and construction of buildings. Enhancements include reduced negative impact designs, positive environmental impact designs, and encouragement of sustainable construction practices. The first CALGreen Code was adopted in 2009 and has been updated in 2013, 2016, and 2019. The CALGreen Code will have subsequent, and continually more stringent, updates every three years.

2009 Senate Bill X7-7

In 2009, SB X7-7, also known as the Water Conservation Act, was signed, requiring all water suppliers to increase water use efficiency. This legislation sets an overall goal of reducing per capita urban water use by 20 percent by2020.

2011 Senate Bill 2X

In 2011, SB 2X was signed, requiring California energy providers to buy (or generate) 33 percent of their electricity from renewable energy sources by 2020.

2012 Assembly Bill 341

AB 341 directed the California Department of Resources Recycling and Recovery (CalRecycle) to develop and adopt regulations for mandatory commercial recycling. As of July 2012, businesses are required to recycle, and jurisdictions must implement a program that includes education, outreach, and monitoring. AB 341 also set a statewide goal of 75 percent waste diversion by the year 2020.

2014 Assembly Bill 32 Scoping Plan Update

In 2014, CARB approved the first update to the Scoping Plan. This update defines CARB's climate change priorities and sets the groundwork to reach the post-2020 targets set forth in EO S-3-05. The update highlights California's progress toward meeting the near-term 2020 GHG emissions reduction target, defined in the original Scoping Plan. It also evaluates how to align California's longer-term GHG reduction strategies with other statewide policy priorities, such as water, waste, natural resources, clean energy, transportation, and land use.

2014 Assembly Bill 1826

AB 1826 was signed in 2014 to increase the recycling of organic material. GHG emissions produced by the decomposition of these materials in landfills were identified as a significant source of emissions contributing to climate change. Therefore, reducing organic waste and increasing composting and mulching are goals set out by the AB 32 Scoping Plan. AB 1826 specifically requires jurisdictions to establish organic waste recycling programs by 2016, and phases in mandatory commercial organic waste recycling over time.

2015 Senate Bill 350

SB 350, the Clean Energy and Pollution Reduction Act of 2015, has two objectives: to increase the procurement of electricity from renewable sources from 33 percent to 50 percent by 2030 and to double the energy efficiency of electricity and natural gas end users through energy efficiency and conservation.

2015 Executive Order B-30-15

In 2015, EO B-30-15 was signed, establishing an interim GHG emissions reduction target to reduce emissions to 40 percent below 1990 levels by 2030. The EO also calls for another update to the CARB Scoping Plan.

2016 Senate Bill 32

On September 8, 2016, the governor signed SB 32 into law, extending AB 32 by requiring the state to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). The bill charges CARB to adopt the regulation so that the maximum technologically feasible emissions reductions are achieved in the most cost-effective way.

2016 Senate Bill 1383

Adopted in September 2016, SB 1383 requires CARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants. The bill requires the strategy to achieve the following reduction targets by 2030:

- Methane – 40 percent below 2013 levels
- Hydrofluorocarbons – 40 percent below 2013 levels
- Anthropogenic black carbon – 50 percent below 2013 levels

SB 1383 also requires the CalRecycle, in consultation with the CARB, to adopt regulations that achieve specified targets for reducing organic waste in landfills. The bill further requires 20% of edible food disposed of at the time to be recovered by 2025.

2017 Scoping Plan Update

On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 goal set by SB 32. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently adopted policies, such as SB 350 and SB 1383 .

The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2014 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally appropriate quantitative thresholds consistent with statewide per capita goals of six metric tons (MT) CO2e by 2030 and two MT CO2e by 2050 (CARB 2017). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (city, county, subregional, or regional level), but not for specific individual projects because they include all emissions sectors in the state (CARB 2017).

2018 Senate Bill 100

Adopted on September 10, 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the State's Renewables Portfolio Standard Program, which was last updated by SB 350 in 2015. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

2018 Executive Order B-55-18

Also, on September 10, 2018, the governor issued Executive Order B-55-18, which established a new statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter. This goal is in addition to the existing statewide GHG reduction targets established by SB 375, SB 32, SB 1383, and SB 100.

2020 Executive Order N-79-20

On September 23, 2020, the governor issued EO N-79-20, which sets new statewide goals for phasing out gasoline-powered cars and trucks in California, which is applicable to state agencies. The EO requires 100% of in-state sales of new passenger cars and trucks to be zero-emission by 2035; 100% of in-state sales of medium- and heavy-duty trucks and busses to be zero-emission by 2045, where feasible; and 100% of off-road vehicles and equipment sales to be zero-emission by 2035, where feasible.

2021 Senate Bill 27

Adopted on September 23, 2021, SB 27 requires the state Natural Resources Agency to establish carbon sequestration goals for natural and working lands by July 2023. SB 27 also requires the Natural Resources Agency to create a registry of projects for public and private investment and track the carbon benefits of each project. The projects that would be part of this program may not generate compliance offsets under California's Cap-and-Trade program. Additionally, as part of the next Scoping Plan Update, CARB is required to establish specific CO_2 removal targets starting in 2030.

2022 Scoping Plan Update

On November 16, 2022, CARB adopted the 2022 Scoping Plan, which lays out a path to achieve goals for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045, as directed by Assembly Bill 1279. The actions and outcomes in the 2022 Scoping Plan will achieve significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action on natural and working lands to reduce emissions and sequester carbon, and the capture and storage of carbon.

The 2022 Scoping Plan also puts an increased emphasis on natural and working lands to achieve net negative emissions. The updated Scoping Plan is based on the most recent climate science in the *2021 IPCCC Sixth Assessment Report* and in line with reaching no more than 1.5° C of warming.

2022 Senate Bill 1020

Adopted September 16, 2022, SB 1020 expedites the previous goals established by SB 100, by establishing a clean electricity goal for end-use customers of 90% by 2035, and 95% by 2040.

Additionally, SB 1020 requires 100% of all electricity procured to serve all state agencies be clean energy by December 31, 2035.

2022 Senate Bill 379

Adopted September 16, 2022, SB 379 requires cities and counties to implement an online, automated permitting platform to verify solar installation code compliance and issue permits in real time for residential solar energy systems no larger than 38.4 kilowatt hours.

2022 Senate Bill 1063

Adopted September 16, 2022, SB 1063 creates appliance efficiency standards set by the State Energy Resources Conservation and Development Commission, which may now take effect sooner than one year after their adoption/revision. SB 1063 builds on Title 20 efficiency standards enforced through the California Energy Commission and first adopted in 1977.

2022 Assembly Bill 1909

Adopted September 16, 2022, AB 1909 removes prohibition of operating motorized electric bicycles or Class 3 bikes on bicycle paths or trails, bikeways, or bicycle lanes. However, the bill also includes an exemption for the Department of Parks and Recreation, which may prohibit these classes of bicycles on any bicycle path or trail within the department's jurisdiction, where appropriate.

2022 Assembly Bill 1857

Adopted September 16, 2022, AB 1857 amends various sections of the California Integrated Waste Management Act of 1989, which required jurisdictions to divert 50% of solid waste through source reduction, recycling, and composting activities, with no more than 10% through transformation. AB 1857 repeals the provision that jurisdictions may divert 10% through transformation (e.g., incineration). Additionally, AB 1857 requires the Department of Resources Recycling and Recovery to establish the Zero-Waste Equity Grant Program to support targeted strategies and investments in communities transitioning to zero-waste circular economies.

2022 Assembly Bill 1985

Adopted September 16, 2022, AB 1985 establishes penalties applied to jurisdictions for not meeting SB 1383 requirements. Penalty will be based on the percentage of the target the jurisdiction was able to achieve.

2022 Assembly Bill 1279

Adopted September 16, 2022, AB 1279 codifies previous legislation and establishes legally a binding goal for California to achieve carbon neutrality no later than 2045 (codifies current EO B-55-18). Additionally, AB 1279 establishes a goal of reducing emissions 85% below statewide 1990 emissions levels by 2045.

City of Pittsburg Plans and Regulations

The City of Pittsburg has established actions related to increasing bike access across the City to help improve community health, air quality, and equity. These actions are outlined in in the City's 2020

Active Transportation Plan. Additionally, the City recently updated the General Plan and developed an inaugural Climate Action Plan.

City of Pittsburg Greenhouse Gas Emissions Inventories

The City of Pittsburg established a baseline 2005 greenhouse gas (GHG) emissions inventory to quantify the emissions that are generated in the City. The inventory was updated in 2019 to be consistent with the currently accepted methodologies for on-road vehicles, water, and wastewater. Additionally, at that time, a 2016 GHG emissions inventory was calculated to provide an update on current emissions levels and provide a path for the City to begin forecasting future emissions. The GHG emissions inventories included emissions from the community and municipal operations. These emissions inventories provide the first step in understanding the City's current baseline and establishing a process to reduce GHG emissions and meet energy, waste, and water use reduction requirements required by the State of California through adoption of a Climate Action Plan.

Active Transportation Plan – Pittsburg Moves

Pittsburg Moves, the City's Active Transportation Plan (ATP) envisions Pittsburg as the most bicycle and pedestrian friendly community in East Contra Costa County. It also aims to eliminate bicycle and pedestrian deaths by the year 2040. To realize this vision, the Plan calls for: 1) emphasizing land use patterns and development projects that promote walking and bicycling; 2) creating a walking and bicycling network that enhances safety, access, comfort, and convenience for everyone; 3) maintaining the network so that it is attractive, comfortable, and free of hazards; and 4) implementing a range of education, encouragement, enforcement, and evaluation programs that support walking and bicycling. The Plan recommends over 250 bicycle and pedestrian improvement projects throughout the City and provides a comprehensive crosswalk policy for marking and enhancing crosswalks.[7]

General Plan Update – Envision Pittsburg

Each city in California is required to have a General Plan which serves as a guiding document for the City's long-term growth and development. Pittsburg's previous general plan dates back to 2001, and a lot has changed. The General Plan Update, Envision Pittsburg, addresses a range of important community topics like land use, housing, economic development, transportation, parks and recreation, public safety, and more. It is anticipated that Envision Pittsburg will be complete in Fall 2023 and will be available here: https://pittsburg.generalplan.org/

7 https://www.pittsburgca.gov/services/community-development/planning/advanced-planning-special-projects/pittsburg-moves-atp

Appendix B: Cal-Adapt

Local Climate Change Snapshot

Pittsburg

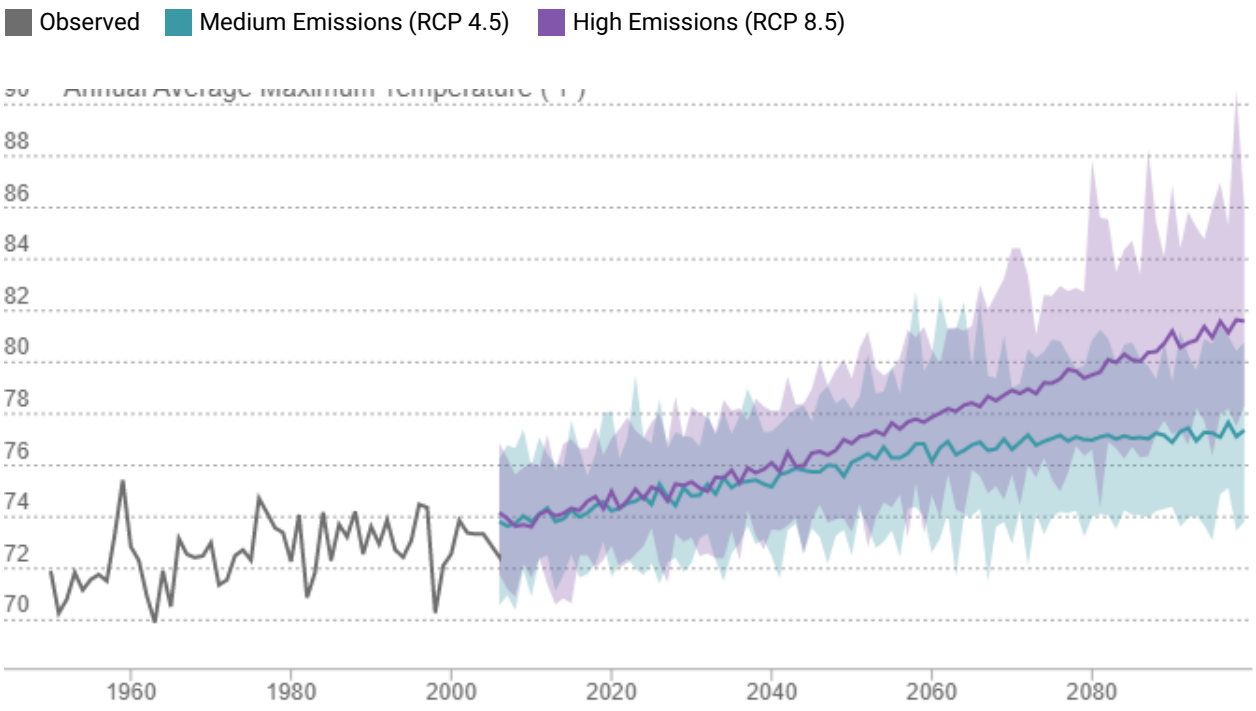
California

Temperature

Overall temperatures are projected to rise in California during the 21st century. While the entire state will experience temperature increases, the local impacts will vary greatly with many communities and ecosystems already experiencing the effects of rising temperatures.

Annual Average Maximum Temperature

Average of all the hottest daily temperatures in a year.



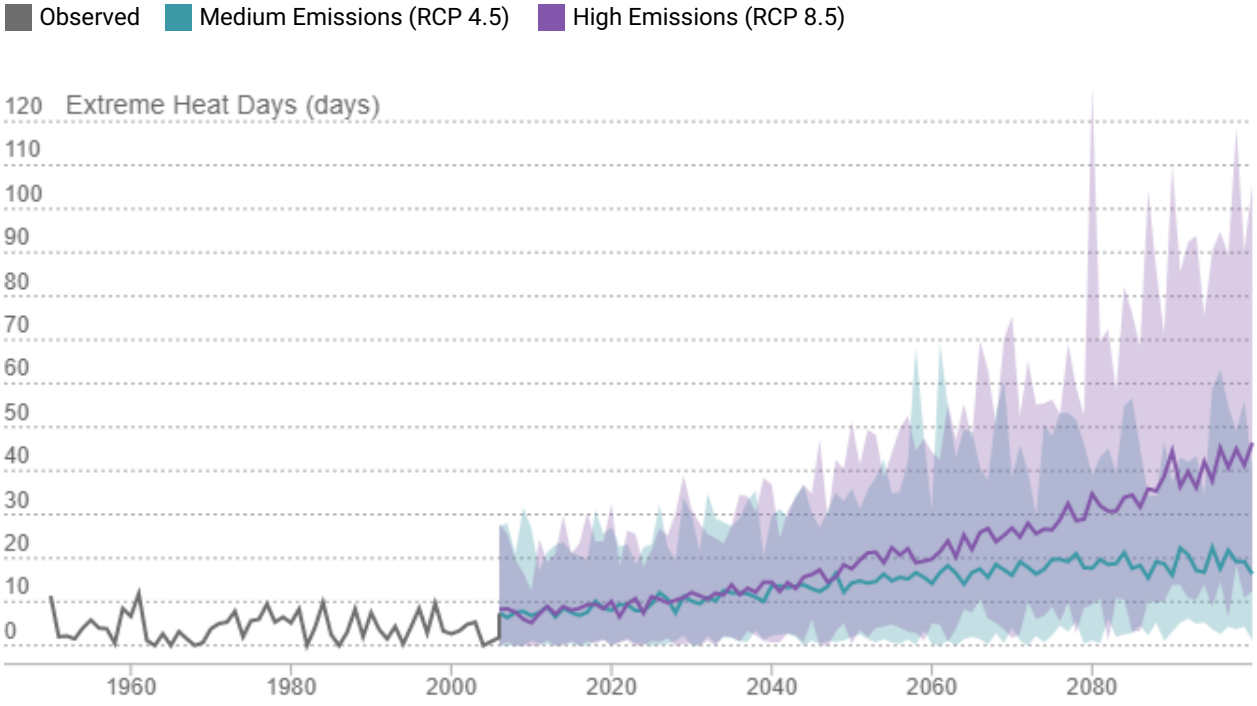
Observed (1961-1990) 30yr Average: 72.6 °F

	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	72.4 °F	72.2 - 72.7 °F
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+3.6 °F	76.0 °F	74.6 - 77.3 °F
HIGH EMISSIONS (RCP 8.5)	+4.5 °F	76.9 °F	75.0 - 78.6 °F
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+4.7 °F	77.1 °F	75.2 - 79.4 °F
HIGH EMISSIONS (RCP 8.5)	+7.8 °F	80.2 °F	77.4 - 83.9 °F

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented are aggregated over all LOCA grid cells that intersect Pittsburg boundary.

Extreme Heat Days

Number of days in a year when daily maximum temperature is above a threshold temperature



Observed (1961-1990) 30yr Average: 4 days

	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	4 days	2 - 4 days
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+10 days	14 days	9 - 23 days
HIGH EMISSIONS (RCP 8.5)	+14 days	18 days	9 - 29 days
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+15 days	19 days	10 - 36 days
HIGH EMISSIONS (RCP 8.5)	+30 days	34 days	20 - 66 days

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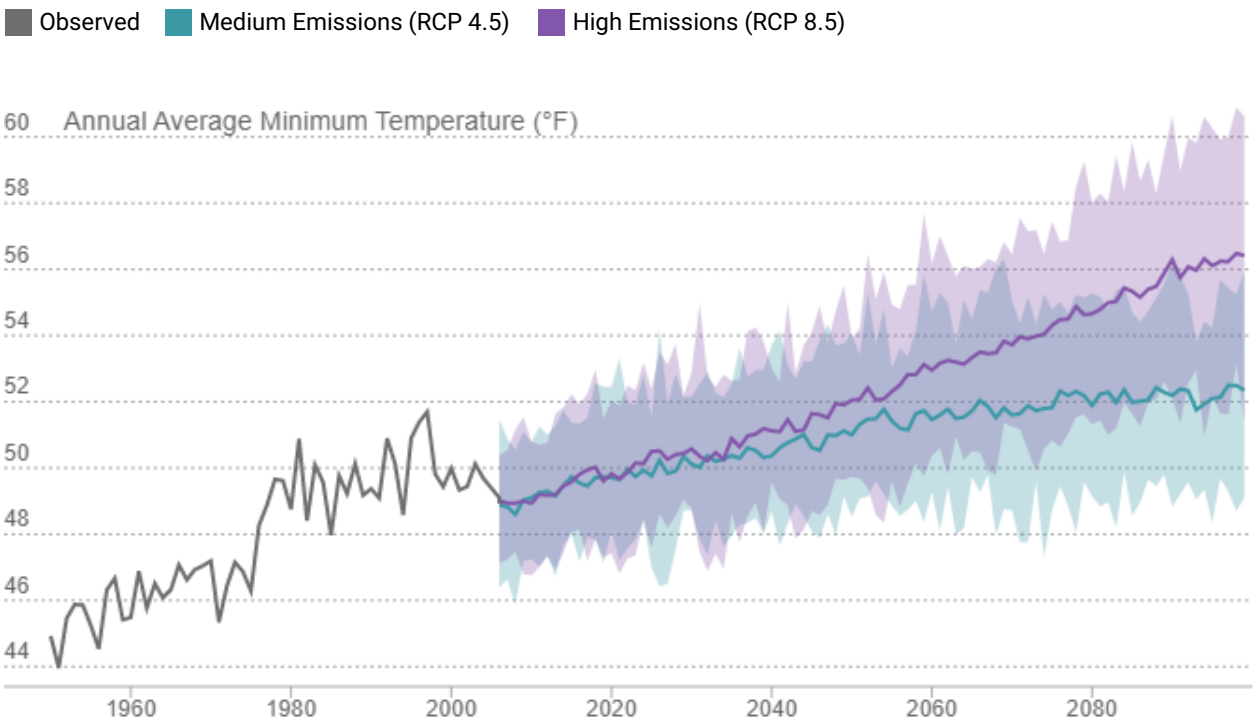
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented are aggregated over all LOCA grid cells that intersect Pittsburg boundary.
4. Threshold temperature for a location is defined as the 98th percentile value of historical daily maximum/minimum temperatures (from 1961–1990, between April and October) observed at that location.

Annual Average Minimum Temperature

Average of all coldest daily temperatures in a year.



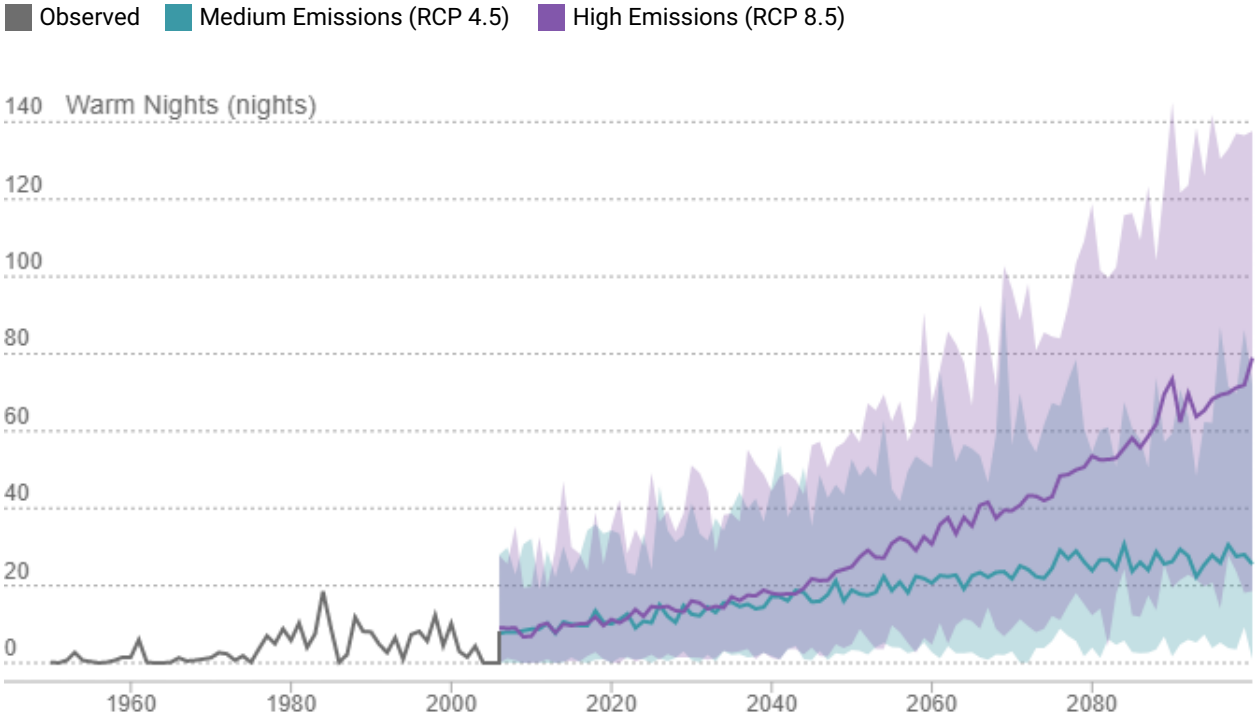
Observed (1961-1990) 30yr Average: 47.9 °F

	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	47.9 °F	47.6 - 48.2 °F
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+3.2 °F	51.1 °F	49.4 - 52.4 °F
HIGH EMISSIONS (RCP 8.5)	+4.1 °F	52.0 °F	50.2 - 53.6 °F
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+4.2 °F	52.1 °F	49.7 - 54.2 °F
HIGH EMISSIONS (RCP 8.5)	+7.3 °F	55.2 °F	52.0 - 58.0 °F

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented are aggregated over all LOCA grid cells that intersect Pittsburg boundary.

Warm Nights

Number of days in a year when daily minimum temperature is above a threshold temperature



Observed (1961-1990) 30yr Average: 4 nights

	Change from baseline	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	4 nights	1 - 8 nights
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+14 nights	18 nights	8 - 32 nights
HIGH EMISSIONS (RCP 8.5)	+21 nights	25 nights	12 - 42 nights
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+22 nights	26 nights	11 - 52 nights
HIGH EMISSIONS (RCP 8.5)	+53 nights	57 nights	24 - 102 nights

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented are aggregated over all LOCA grid cells that intersect Pittsburg boundary.
4. Threshold temperature for a location is defined as the 98th percentile value of historical daily maximum/minimum temperatures (from 1961–1990, between April and October) observed at that location.

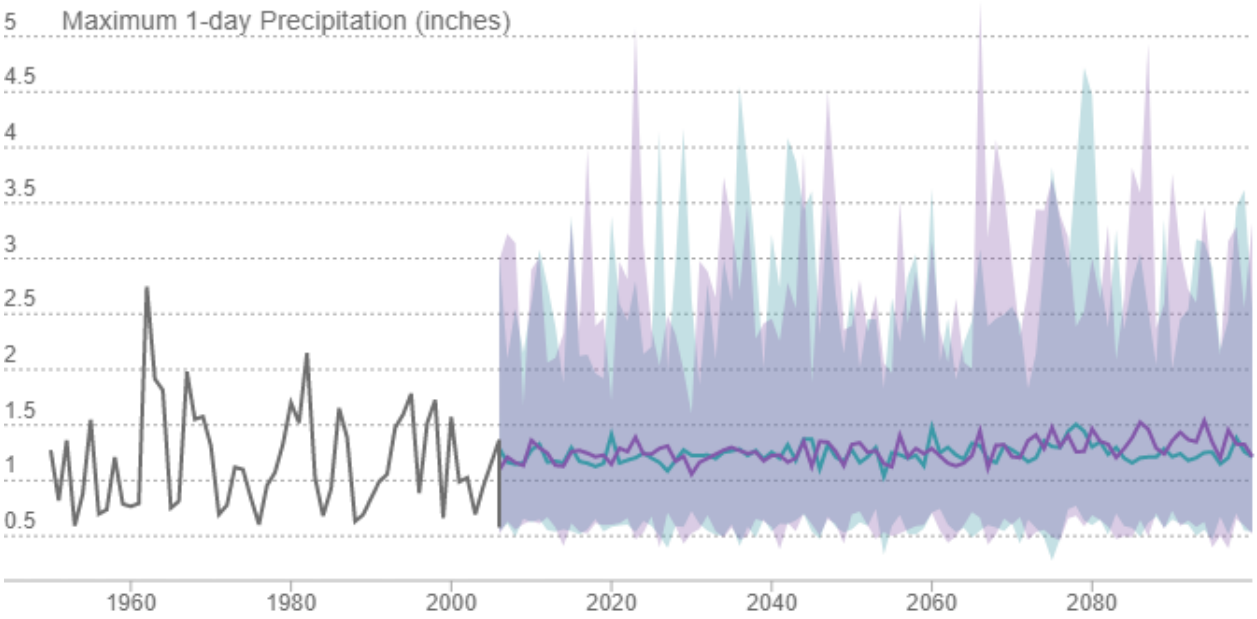
Precipitation

California's climate varies between wet and dry years. Research suggests that for much of the state, wet years will become wetter and the dry years will become drier. Dry years are also likely to be followed by dry years, increasing the risk of drought. While California does not see the average annual precipitation changing significantly in the next 50-75 years, precipitation will likely be delivered in more intense storms and within a shorter wet season. We are already seeing some of the impacts from a shift towards larger year to year fluctuations.

Maximum 1-day Precipitation

The maximum daily precipitation amount for each year. In other words, the greatest amount of daily rain or snow (over a 24 hour period) for each year.

Observed Medium Emissions (RCP 4.5) High Emissions (RCP 8.5)



Observed (1961-1990) 30yr Average: 1.232 inches

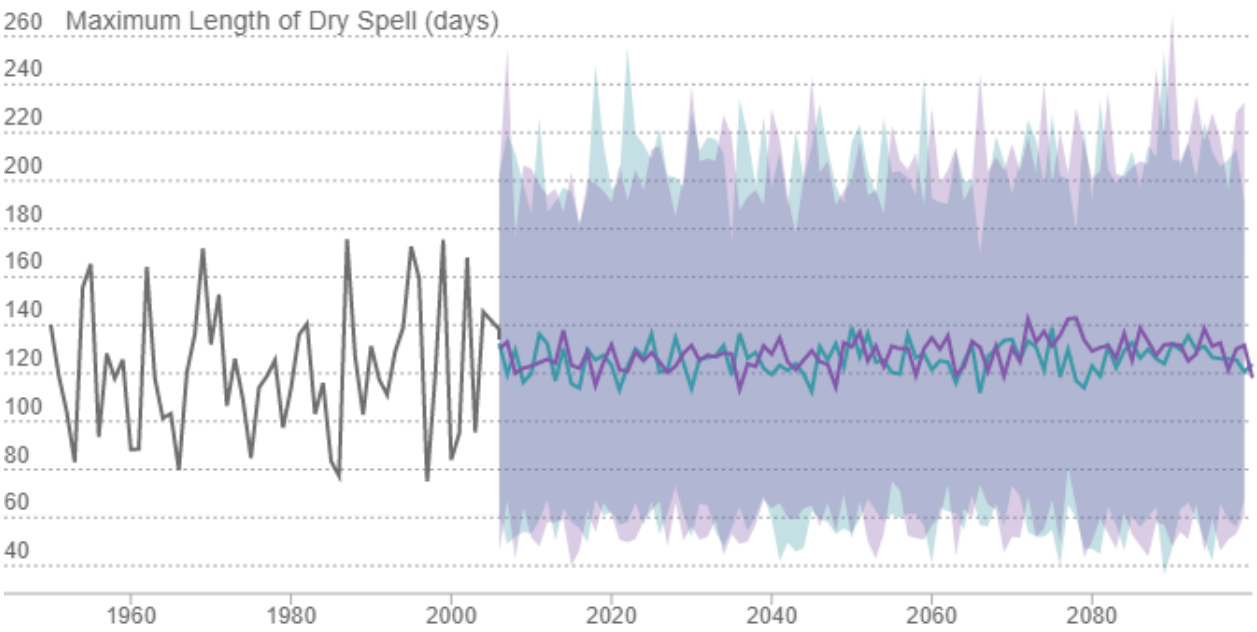
	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	1.157 inches	0.993 - 1.326 inches
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+0.084 inches	1.241 inches	1.066 - 1.603 inches
HIGH EMISSIONS (RCP 8.5)	+0.083 inches	1.240 inches	1.053 - 1.452 inches
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+0.111 inches	1.268 inches	1.059 - 1.624 inches
HIGH EMISSIONS (RCP 8.5)	+0.191 inches	1.348 inches	1.078 - 1.720 inches

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented are aggregated over all LOCA grid cells that intersect Pittsburg boundary.

Maximum Length of Dry Spell

The maximum length of dry spell for each year. In other words, the maximum number of consecutive days with precipitation < 1mm for each year.

Observed Medium Emissions (RCP 4.5) High Emissions (RCP 8.5)



Observed (1961-1990) 30yr Average: 119 days

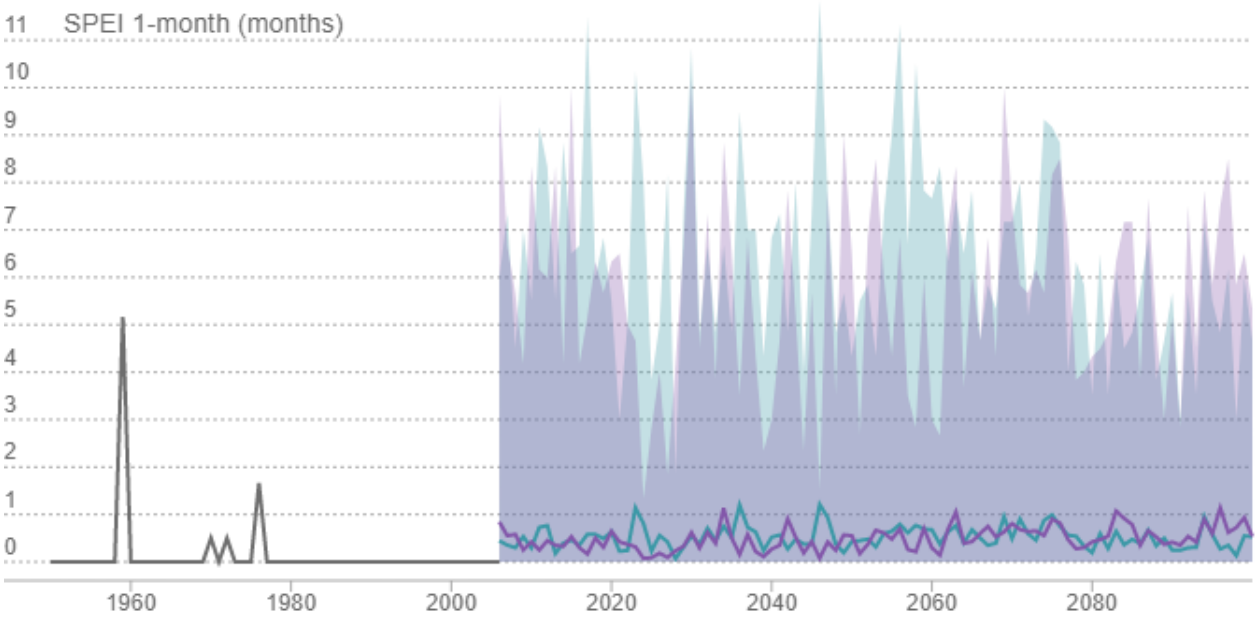
	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	117 days	107 - 135 days
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+8 days	125 days	107 - 147 days
HIGH EMISSIONS (RCP 8.5)	+10 days	127 days	107 - 143 days
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+10 days	127 days	109 - 146 days
HIGH EMISSIONS (RCP 8.5)	+15 days	132 days	98 - 163 days

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented are aggregated over all LOCA grid cells that intersect Pittsburg boundary.

SPEI 1-month

Number of months in a year with a Standardised Precipitation-Evapotranspiration Index (SPEI) <= -1. SPEI is a multi-scalar drought index and can be used to detect, monitor and analyze droughts.

The standardized precipitation-evaporation index (SPEI) depicts the combined impacts of precipitation deficits and potential evapotranspiration on soil moisture. SPEI does not include impacts from effects like wind speed, relative humidity or solar radiation impacts (typically short-term forcing) – making it more reflective of long-term hydrological and ecological drought conditions. Here we present SPEI calculated for a 9-month period, attempting to reflect a length slightly longer than California's typical



Observed (1961-1990) 30yr Average: 0.1 months

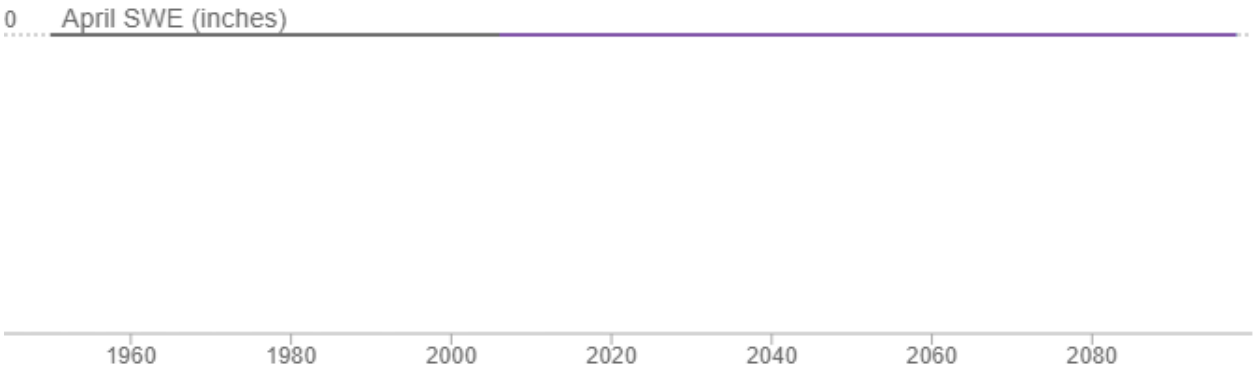
	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	0.2 months	0.0 - 0.7 months
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+0.4 months	0.6 months	0.0 - 1.3 months
HIGH EMISSIONS (RCP 8.5)	+0.2 months	0.4 months	0.0 - 1.2 months
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+0.3 months	0.5 months	0.0 - 1.4 months
HIGH EMISSIONS (RCP 8.5)	+0.4 months	0.6 months	0.0 - 2.0 months

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented are aggregated over all LOCA grid cells that intersect Pittsburg boundary.

April SWE

Snow Water Equivalent (SWE), is a commonly used measurement used by hydrologists and water managers to gage the amount of liquid water contained within the snowpack.

Observed Medium Emissions (RCP 4.5) High Emissions (RCP 8.5)



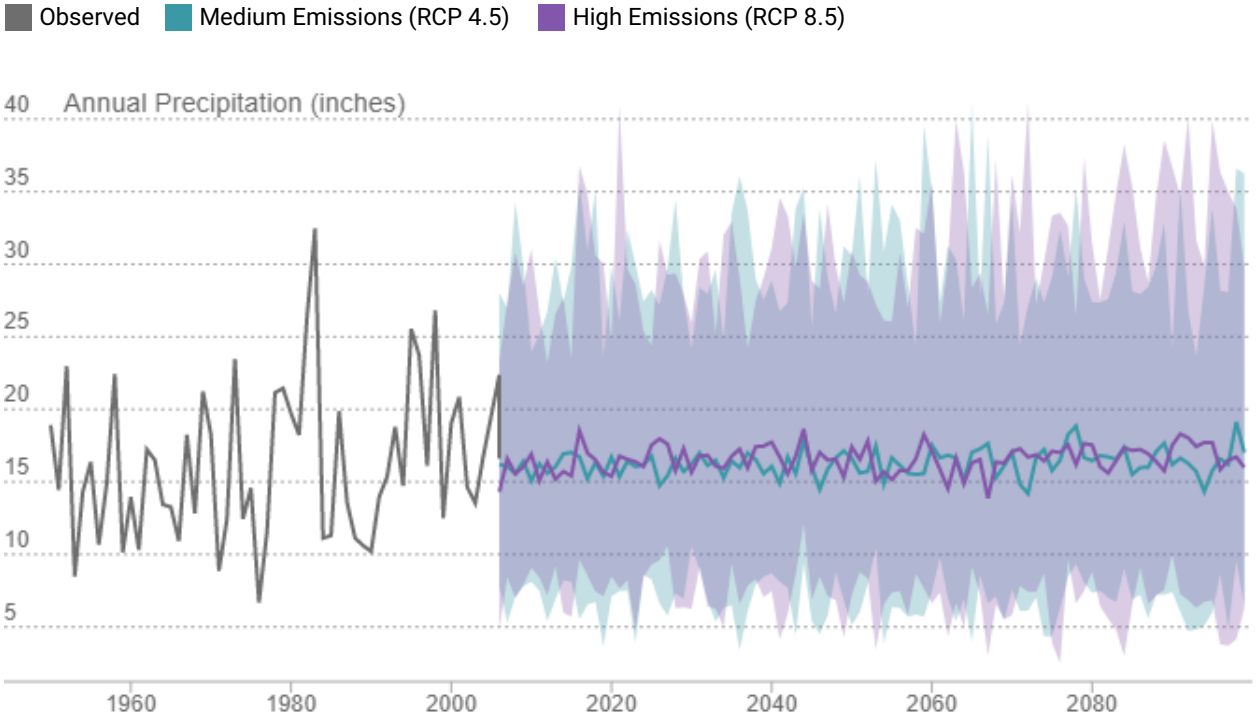
Observed (1961-1990) 30yr Average: 0.0 inches

	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	0.0 inches	0.0 - 0.0 inches
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	-	0.0 inches	0.0 - 0.0 inches
HIGH EMISSIONS (RCP 8.5)	-	0.0 inches	0.0 - 0.0 inches
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	-	0.0 inches	0.0 - 0.0 inches
HIGH EMISSIONS (RCP 8.5)	-	0.0 inches	0.0 - 0.0 inches

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented are aggregated over all LOCA grid cells that intersect Pittsburg boundary.

Annual Precipitation

Total precipitation projected for a year



Observed (1961-1990) 30yr Average: 15.7 inches

	Change from baseline	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	16.4 inches	14.9 - 17.7 inches
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	-0.2 inches	16.2 inches	14.3 - 22.1 inches
HIGH EMISSIONS (RCP 8.5)	+0.1 inches	16.5 inches	13.2 - 20.9 inches
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+0.1 inches	16.5 inches	13.6 - 21.0 inches
HIGH EMISSIONS (RCP 8.5)	+0.5 inches	16.9 inches	11.6 - 22.6 inches

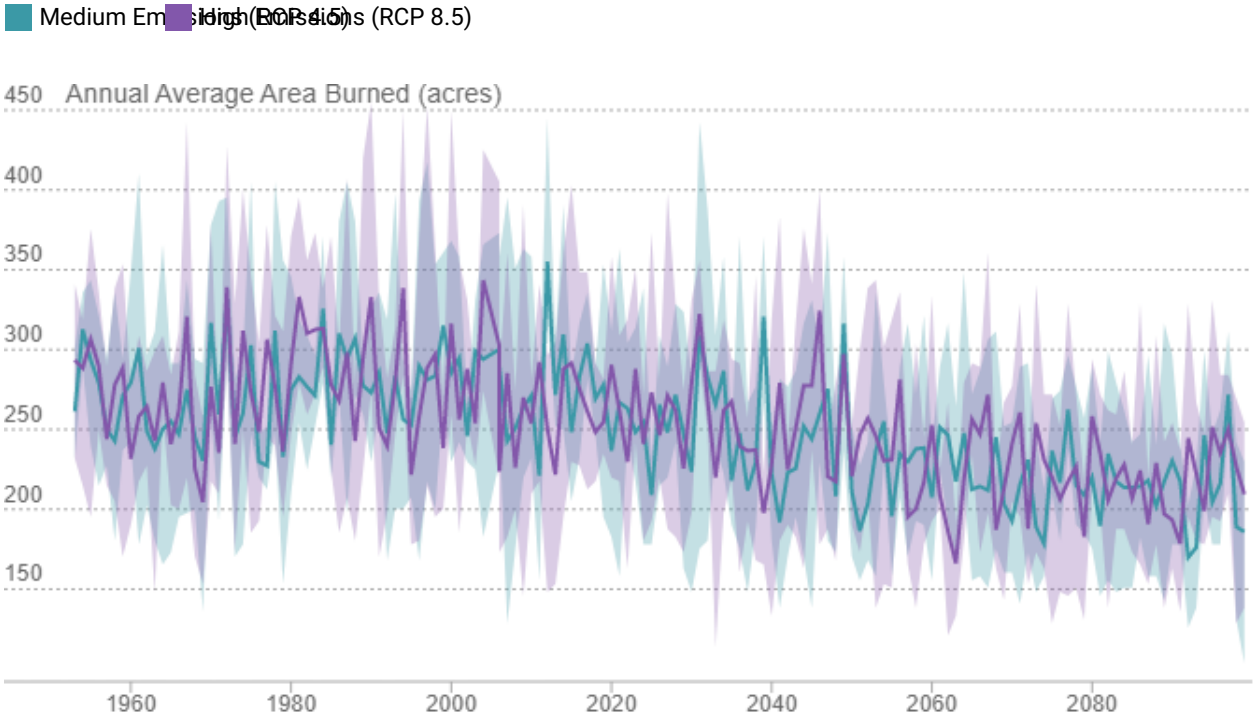
1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented are aggregated over all LOCA grid cells that intersect Pittsburg boundary.

Wildfire

The frequency, severity and impacts of wildfire are sensitive to climate change as well as many other factors, including development patterns, temperature increases, wind patterns, precipitation change and pest infestations. Therefore, it is more difficult to project exactly where and how fires will burn. Instead, climate models estimate increased risk to wildfires. The Annual Average Area Burned can help inform at a high level if wildfire activity is likely to increase. However, this information is not complete - many regions across the state have no projections (such as regions outside combined fire state and federal protection responsibility areas), and more detailed analyses and projections are needed for local decision-making. These projections are most robust for the Sierra Nevada given model inputs. However, as we have seen in recent years, much of California can expect an increased risk of wildfire, with a wildfire season that starts earlier, runs longer, and features more extreme fire events. Fire danger is complex. It is impacted by human activity, vegetation, wind, temperature, relative humidity, atmospheric stability, etc. The Keetch-Byram Drought Index (KBDI) represents a simplified proxy for favorability of occurrence and spread of wildfire but is not itself a predictor of fire.

Annual Average Area Burned

Average of the area projected to be at risk to burning in a year.



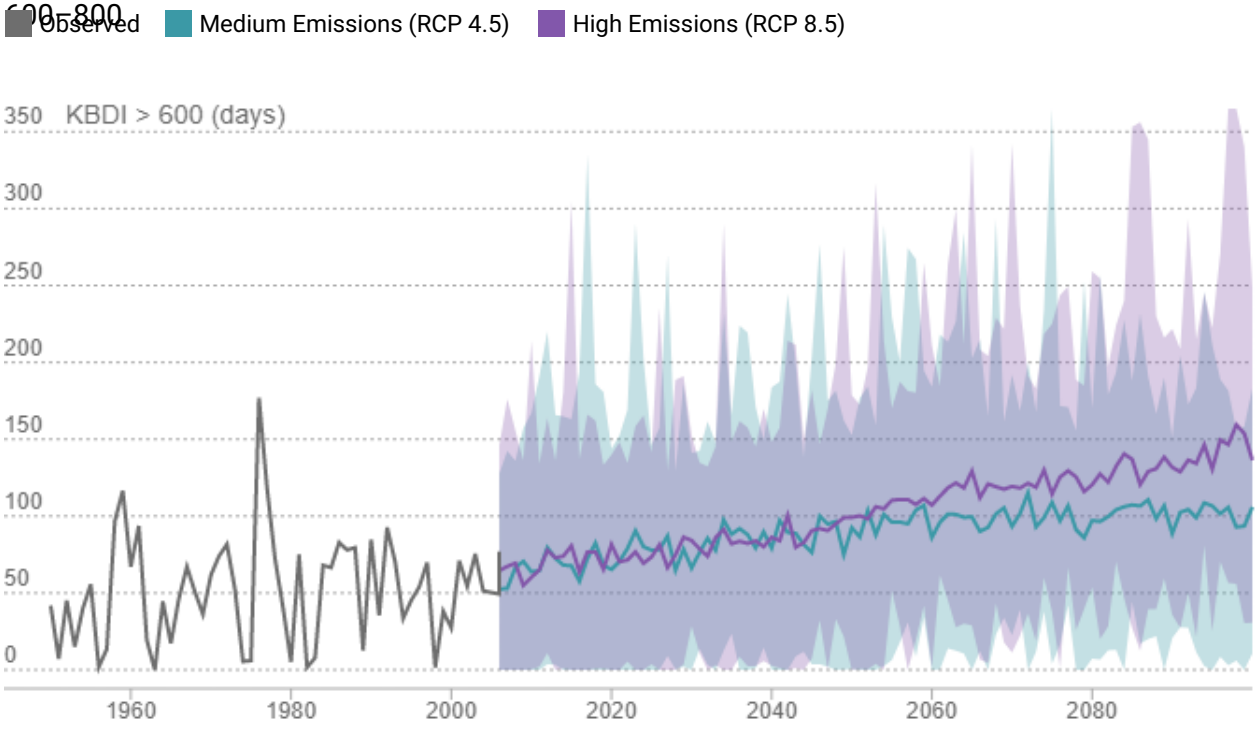
	Change from baseline	30yr Average	30yr Range
Baseline (1961-1990)			
MEDIUM EMISSIONS (RCP 4.5)	-	271.4 acres	262.5 - 280.4 acres
HIGH EMISSIONS (RCP 8.5)	-	277.3 acres	271.8 - 286.7 acres
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	-36.5 acres	234.9 acres	223.2 - 246.9 acres
HIGH EMISSIONS (RCP 8.5)	-39.5 acres	237.8 acres	214.9 - 258.0 acres
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	-58.2 acres	213.2 acres	195.3 - 221.4 acres
HIGH EMISSIONS (RCP 8.5)	-56.2 acres	221.1 acres	215.0 - 226.7 acres

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented are aggregated over all LOCA grid cells that intersect Pittsburg boundary.
4. Pittsburg boundary may contain locations outside the combined fire state and federal protection responsibility areas. These locations were excluded from wildfire simulations and have no climate projections.

KBDI > 600

Number of days in a year where Keetch-Byram Drought Index (KBDI) > 600. KBDI provides an estimate for how dry the soil and vegetative detritus is.

KBDI is cumulative. The KBDI values increase on dry and warm days and decrease during rainy periods. In California we would expect KBDI to increase from the end of the wet season (spring) into the dry season (summer & fall). The list below explains what values of KBDI represent:
0–200
200–400
400–600
600–800



Observed (1961-1990) 30yr Average: 54 days

	Change from baseline ⓘ	30yr Average	30yr Range
Baseline (1961-1990)			
MODELED HISTORICAL	-	39 days	18 - 61 days
Mid-Century (2035-2064)			
MEDIUM EMISSIONS (RCP 4.5)	+53 days	92 days	51 - 125 days
HIGH EMISSIONS (RCP 8.5)	+59 days	98 days	65 - 132 days
End-Century (2070-2099)			
MEDIUM EMISSIONS (RCP 4.5)	+62 days	101 days	64 - 135 days
HIGH EMISSIONS (RCP 8.5)	+92 days	131 days	103 - 187 days

1. Data derived from 32 LOCA downscaled climate projections generated to support California's Fourth Climate Change Assessment. Details are described in Pierce et al., 2018.
2. Observed historical data derived from Gridded Observed Meteorological Data. Details are described in Livneh et al., 2015.
3. Data presented are aggregated over all LOCA grid cells that intersect Pittsburg boundary.

Appendix C: 2005 GHG Inventory Methodology

City of Pittsburg

Sustainability Plan

Appendix C
2005 Greenhouse Gas Emission Inventory Methodology & Calculations

prepared by

City of Pittsburg
Environmental Services Department
65 Civic Avenue
Pittsburg, California 94565

prepared with the assistance of

Rincon Consultants, Inc.
449 14th Street, Suite 303
Oakland, California 94612

Updated January 2023

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

Table of Contents

Tables

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Introduction

This appendix outlines the methodologies followed to estimate the greenhouse gas (GHG) emissions for the incorporated City of Pittsburg for the 2005 calendar year. Baseline emissions in 2005 were estimated for both the incorporated communities within Pittsburg as well as those emissions resulting from City municipal operations. As for the 2016 inventory update, the 2005 GHG inventory relies on activity data for each of the primary emissions sectors including electricity, natural gas, transportation, waste and water. The majority of this data is reported in the original inventory published in 2008; however, some sectors have been updated with new methodologies and more complete data as available, described below. The following appendix provides a description of the specific methodologies, assumptions, and variables used for the 2005 GHG emissions inventory update.

Throughout this report, rounding is often required in calculations and tables. Values are rounded to the nearest integer of a higher order of magnitude. No rounding is performed in the intermediary steps of the calculation. As a result of rounding, some totals may differ slightly from the values summed.

Inventory Scope

The 2005 updated baseline inventory's geographical scope, data collection protocols, included and excluded emission sectors and GHG global warming potentials are consistent with those of the 2016 inventory, described in *Inventory Scope* of Appendix D to the City of Pittsburg's Sustainability Plan. Notably, off-road transportation and equipment were not included in the originally published 2005 inventory, but this sector has been added to this inventory update due to data availability and to provide a more complete comparison to 2005 communitywide activity.

Inventory Methodology

The following section describes the methodologies used for the municipal and community-wide inventory updates. GHG emissions are calculated by multiplying activity data (kilowatt-hours of electricity, metric tons of solid waste) by an emission factor. Calculations are adapted with regional and City-specific data where available, as described below. Sectors included in the communitywide inventory are electricity, natural gas, on-road, off-road, passenger rail and marine transportation, solid waste, water, and wastewater. Sectors included in the municipal inventory are employee commutes and vehicle fleet, energy, waste, water and wastewater.

Transportation

On-Road Communitywide Transportation

The originally published 2005 inventory relied on a Contra Costa Transit Authority (CCTA) travel model to estimate on-road vehicle miles traveled (VMT) and emissions. The CCTA travel model is currently undergoing updates to be complete in late 2019. CCTA staff recommend using the Metropolitan Transportation Commission (MTC) model for VMT, as outputs from the two models have increasingly differed with updates in recent years. For comparison between the 2005 and 2016 inventories, 2005 on-road transportation emissions were thus updated using an MTC model as described below. The following methodology matches that described in Appendix D for the 2016 inventory update.

On-road transportation data was obtained for residential, commercial and other vehicles by identifying average emissions and VMT per category, as described in the *Transportation* section of Appendix D. Residential travel composed the majority of on-road transportation-related emissions in the City of Pittsburg in 2005, with 71% of emissions.

Table 1 Citywide Transportation Emissions and Vehicle Miles Traveled (2005)

Vehicle Category	Emissions (MT CO2e/yr)
Residential	125,159
Commercial	50,069
Total	**175,229**
Daily VMT	811,671
Annual VMT	281,649,837

Note: VMT = vehicle miles traveled

Sources: California Air Resource Board (CARB) EMission FACtors model (EMFAC2014) Version 1.0.7 (v1.0.7); Personal communication with Harold Brazil, Bay Area Metro, 2/28/2018; BAAQMD VMT Data Portal 2015

Vehicle Miles Traveled

The City of Pittsburg Emissions Inventory estimated on-road vehicle emissions using the origin-destination model recommended in the ICLEI Community Protocol to establish vehicle miles traveled (VMT). Refer to *Transportation: Vehicle Miles Traveled* in Appendix D for description of the origin-destination model.

VMT was separated by Passenger and Commercial vehicle categories as defined by the MTC VMT model using the same methodology described the the *Transportation* section of Appendix D. Passenger VMT in 2005 per the origin-destination model are shown in Table 2 below.

Table 2 Passenger VMT by Origin-Destination in the City of Pittsburg (2005)

Origin-Destination of Trips	VMT
Internal-Internal	78,126
Internal-External/External-Internal	1,267,562
External-External	110,098,642
Weighted Jurisdictional	711,907

Source: BAAQMD VMT Data Portal 2015

To account for different emission factors of combustion engines and electric vehicles (EVs) among passenger vehicles,[1] passenger EV VMT was also calculated. Countywide EV VMT in 2005 was provided by the California Air Resources Board (CARB) 2014 EMission FACtors model (EMFAC2014) Version 1.0.7 (v1.0.7) and scaled by population to City level. EV trips accounted for less than one percent of VMT in 2005.

Vehicle Mix and Emissions

Passenger sector vehicle emissions data were derived from the EMFAC2014 (v1.0.7) using City-based emission factors, the model mix of all vehicle classes (classes are identified by those in EMFAC2007), model years, speed bins, and associated fuel types for the City of Pittsburg in 2005. Methodologies are further described in *Transportation: Vehicle Mix and Emissions* in Appendix D.

Commercial sector vehicle emissions data was provided by staff at Bay Area Metro utilizing an MTC transportation model, also described in Appendix D. The City of Pittsburg's commercial vehicle emissions for 2005 are shown in Table 3 below.

Table 3 Commercial VMT and Emissions the City of Pittsburg (2005)

Transportation Variable	Quantity
City LEHD Share	6.3%
Countywide Emissions/Day (MT CO_2e)	2,051
Countywide VMT/Day (miles)	1,584,529
Citywide Emissions/Day (MT CO_2e)	129
Citywide VMT/Day (miles)	99,764

Source: Personal communication with Harold Brazil, Bay Area Metro, 2/28/2018

The electric vehicle (EV) emission factor was derived from PG&E's electricity emissions factor for 2005 provided by the Institute for Local Governments (ILG). This methodology is also consistent with that for the 2016 inventory and described in Appendix D. The inventory quantification variables, data sources, and total emissions for EVs in 2005 are shown in Table 4 below.

[1] EVs are included in EMFAC vehicle categories LDA and LDT1, both residential categories in this inventory (see Table 4).

Table 4 Electric Vehicle Emission Variables and Consumption (2005)

Inventory Variable	Variable/Quantity	Data Source
Electricity Emission Factor	0.222 MT CO_2/MWh	ILG[1]
EV Fuel Economy of Light-Duty Vehicles	35 kWh/100 mi	U.S. DOE Fuel Economy Database[2] and Alternative Fuel Data Center[3]
EV Emissions per mile	77.8 g CO_2e/mi	Calculated (EF x Fuel Economy)
EV Annual VMT in Incorporated City	116,549 VMT	CARB EMFAC2014 (v1.0.7) Model
Total Annual EV Emissions	9.1 MT CO_2e	Calculated (EF x Consumption x VMT)

[1] California Institute for Local Government (ILG) 2011. Greenhouse Gas Emissions Factors Info Sheet. Accessed March 2019 at https://www.ca-ilg.org/sites/main/files/file-attachments/ghg_emission_factor_guidance.pdf

[2] U.S. DOE. (2018). Fuel Economy Database. "Compare Electric Vehicles Side by Side." Accessed September 2018 at https://www.fueleconomy.gov/feg/evsbs.shtml

[3] U.S. DOE. (2018). Alternative Fuel Data Center. "Charging Plug-in Electric Vehicles at Home." Accessed September 2018 at https://www.afdc.energy.gov/fuels/electricity_charging_home.html

On-Road Municipal Transportation

Municipal Commute Emissions

City employee commute data was provided by the City of Pittsburg and sourced from an employee survey conducted in November 2008 which estimated 2005 full-time employee commute patterns and 2008 seasonal employee commute patterns as a proxy for 2005. One hundred twenty-five employees participated in the commute survey, including approximately 38% of full-time and 5% of seasonal staff. Employees commuted an average of 22 miles per day, with the majority driving alone five days per week. Total emissions were 887 MT CO_2e. Details of methodology are provided in the City of Pittsburg's original 2005 Inventory Appendix B: Data Sources.

Municipal Vehicle Fleet Emissions

City-owned and operated vehicle fleet data for 2005 was provided by the City of Pittsburg's purchase and data logs. Emissions were calculated based on volume of gasoline and diesel fuel purchased and consumed by the Environmental Services Department, police and other municipal fleet vehicles. The City reported 105,000 gal of gasoline and 27,000 gal of diesel use in 2005, totaling 1,207 MT CO_2e. Details of methodology are provided in the City of Pittsburg's original 2005 Inventory Appendix B: Data Sources.

Off-road Transportation

Activity data for the community GHG emissions inventory was modeled using the CARB OFFROAD2021 (v1.0.2) Emissions Inventory.[2] This database provides annual fuel consumption totals for various off-road equipment types in California counties. The database compiles the outputs from the most up-to-date off-road emissions models developed by CARB. The OFFROAD2021 database was queried for Contra Costa County for the forecast years to obtain fuel consumption for gasoline, diesel, and natural gas/liquefied petroleum gas. The county-wide fuel consumption totals were then scaled down to be representative to Pittsburg using attribution metrics based on jobs, population,

[2] California Air Resources Board. 2021. OFFROAD2021 (v1.0.2) Emissions Inventory. Available: <https://arb.ca.gov/emfac/>. Accessed February 17, 2022.

and service population. Off-road equipment sectors that were outside of the City's jurisdictional control, already counted in the inventory, or not relevant to Pittsburg were excluded from the City's off-road emissions calculations. Table 5 provides the attribution metrics used for each off-road equipment sector, and Table 6 provides the attribution metrics used to scale county-wide fuel totals to the City of Pittsburg.

Table 5 Off-road Emissions Attribution Metrics per Equipment Sector

Off-road Equipment Sector	Attribution Metric	Attribution Metric Value
Agricultural	Excluded - No Agricultural Land Use[1]	0
Airport Ground Support	Excluded - No Airport Land Use[1]	0
Cargo Handling	Excluded - No Major Port Facilities[2]	0
Commercial Harbor Craft	Excluded - No Major Port Facilities[2]	0
Construction and Mining	Number of Jobs	3.51%
Industrial	Number of Jobs	3.51%
Lawn and Garden	Service Population	4.85%
Light Commercial	Number of Jobs	3.51%
Locomotive	Excluded - Not under Jurisdictional Control[3]	0
Ocean Going Vessels	Included in Inventory as Marine Transportation	0
Oil and Gas	Excluded - Not under Jurisdictional Control[4]	0
Pleasure Craft	Population	5.58%
Portable	Number of Jobs	3.51%
Transportation Refrigeration Units	Number of Jobs	3.51%
Recreational	Population	5.58%

[1] Excluded based on land uses included in the 2001 City of Pittsburg General Plan. (https://www.pittsburgca.gov/home/showpublisheddocument/4674/637479142624630000).

[2] The City of Pittsburg has some port facilities used for industrial land uses in the City; however, based on the CARB 2011 Cargo Handling Equipment GHG Emissions Inventory Methodology, the ports within Pittsburg are not considered as part of the statewide inventory. (https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2011/cargo11/cargoappb.pdf).

[3] Locomotives are not considered in this GHG emission inventory, as the City of Pittsburg does not have jurisdictional control to affect this emissions source through land use policies.

[4] Oil and Gas equipment is not considered in this GHG emission inventory, as the City of Pittsburg does not have jurisdictional control to affect this emissions sources, which are regulated through the State's Cap-and-Trade Program.

Table 6 Off-road Emissions Attribution Metric Calculation

Metric	Pittsburg	Contra Costa County	Pittsburg % of County Total
Population	56,430	1,010,490	5.58%
Jobs	11,035	314,330	3.51%
Service Population	67,465	1,392,285	4.85%

Data Source:

Association of Bay Area Governments. Plan Bay Area 2040. Projections 2040 by Jurisdiction. Available: https://data.bayareametro.gov/Demography/Projections-2040-by-Jurisdiction/grqz-amra. Accessed June 16, 2022.

To estimate GHG emissions from off-road transportation, the above attribution metrics were applied to the fuel outputs of the OFFROAD2021 model, which were then multiplied by off-road equipment emissions factors from the United States Environmental Protection Agency's GHG

Emission Factors Hub.[3] Fuel consumption totals, GHG emissions factors, and total off-road GHG emissions are provided in Table 7.

Table 7 Off-road Emissions Attribution Metric Calculation

Fuel	Gallons	Emissions Factor (MT CO_2e/gallon)	Emissions (MT CO_2e)
Diesel	423,547	0.010357799	4,387
Gasoline	499,446	0.009034422	4,512
NG/LPG	59,902	0.00583028	349
Total	**982,895**		**9,248**

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; NG/LPG = natural gas/liquefied petroleum gas

Marine Transportation

Marine vessels operating at the City-owned Port of Pittsburg included two lessees in 2005—Koch Carbon and USS POSCO, steel manufacturer. These operators use the port to import materials and export goods periodically throughout the year. The City of Pittsburg provided marine vessel number of port calls from lessees. The CARB provided an estimate of combined vessel transportation emissions by water segment for lessees, while port operations (i.e., hoteling, berthing) were based on estimates from the nearby Carquinez and Richmond ports. Because shore-power electricity was provided to USS Posco during hoteling, its hoteling emissions were included in the electricity sector. Emissions for port operations are shown in Table 8 below. Details of methodology are provided in the City of Pittsburg's original 2005 Inventory Appendix B, *Data Sources*, and Appendix F, *Secondary Emission Sources*.

Table 8 Marine Vessel Emissions (2005)

Vessel Operation Phase	Emissions (MT CO_2e)
Koch Carbon	
Number of Calls (Annual)	20
Hoteling Emissions (MT CO_2e)	1,863
Maneuvering Emissions (MT CO_2e)	44
Annual Emissions (MT CO_2e)	**1,907**
USS Posco	
Number of Calls (Annual)	25
Hoteling Emissions (MT CO_2e)	0
Maneuvering Emissions (MT CO_2e)	54
Annual Emissions (MT CO_2e)	**54**
Transit Emissions (MT CO_2e)	175
Total Emissions (MT CO_2e)	**2,136**

Passenger Rail Transportation

The originally published 2005 inventory included all Bay Area Rapid Transit (BART) emissions in the commercial electricity sector, as BART energy is sourced largely from electricity. To provide more

[3] USEPA.2022. Emission Factors for Greenhouse Gas Inventories. Retrieved from: https://www.epa.gov/system/files/documents/2022-04/ghg_emission_factors_hub.pdf.

accurate data for 2005 and to compare changes in emissions to 2016, communitywide passenger rail emissions data for 2005 was provided by Bay Area Rapid Transit (BART) in this inventory update. BART had one station in 2005, Pittsburg/Bay Point, located near the intersection of Highway 4 and Bailey Road in central Pittsburg, which began serving passengers in December 1996. BART performs an annual energy and passenger rail usage analysis. In 2005, emissions by station were not available; instead, available 2007 systemwide emissions and available 2005 and 2007 ridership by station were used to estimate 2005 emissions. In 2005, the Pittsburg/Bay Point station accounted for and estimated 1.6% of the BART systemwide usage. BART emissions and station usage are shown in Table 9 below.

Table 9 Pittsburg/Bay Point Passenger Rail Emissions (2005)

Inventory Variable	Value
Annual Ridership at Pittsbug/Bay Point Station (passengers exiting)	4,818
Percent of BART Systemwide Emissions	1.6%
BART Systemwide Emissions (MT CO_2e)1	75,480
Total Station Emissions (MT CO_2e)	1,170

[1] 2007 emissions of 82,438 MT CO2e and the change in systemwide ridership from 2005 to 2007 used to estimate 2005 total emissions

Sources: Personal communication with Norman Wong, BART, January 25, 2019; BART 2008. BART Fiscal Year Weekday Average Exists, FY01-FY08.

Energy

Electricity

Electricity use within the City of Pittsburg includes residential and commercial consumption for the community-wide inventory, and government-owned building consumption for the municipal inventory. Because electricity is an indirect, Scope 2 emissions source, this category includes emissions that may occur outside the City bounds at regional power plants. Electricity consumed for water treatment and distribution was excluded from the electricity use category and instead incorporated in the water and wastewater source category. Electricity consumed for electric vehicles operating entirely within the City and half of electric vehicles operating partially within the City were excluded from the electricity use category and instead incorporated in the transportation source category as part of the residential on-road sector.

Electricity use was provided by PG&E in the form of kilowatt-hours per year (kWh/yr) for the residential, commercial and industrial customer groups for 2005. As described in the *Electricity* section of Appendix D, the California Public Utilities Commission (CPUC) Decision 14-05-016 has made industrial energy data no longer publicly available.[4] To compare energy sector emissions between the two inventory years consistently, industrial data originally provided by PG&E and reported in the 2005 inventory is excluded from this inventory update. Details of electricity methodology are provided in the City of Pittsburg's original 2005 Inventory Appendix B, *Data Sources* and Appendix D, *PG&E Power Mix*. Transmission and distribution losses in 2005 were

[4] California Public Utilities Commission. 2014. Decision 14-05-016. Decision Adopting Rules to Provide Access to Energy Usage and Usage-Related Data while Protecting Privacy of Personal Data. Accessed from http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M090/K845/90845985.PDF

determined to be 1.057 from the statewide average loss rate of 5.4%, as a PG&E-specific factor was unavailable.[5]

Electricity for City municipal administration and operations was provided by the City of Pittsburg's energy management software. Municipal emissions were calculated similarly to communitywide emissions, multiplying by the PG&E emission factor in the City of Pittsburg service area. Table 10 shows the electricity usage and emissions in the City of Pittsburg in 2005 for communitywide and municipal activities.

Table 10 Citywide Electricity Emissions Calculation Factors (2005)

Inventory Variable	Quantity	Data Source
Commercial Energy Consumption (kWh)	187,429,876	PG&E
Residential Energy Consumption (kWh)	135,750,067	PG&E
Transmission and Distribution Losses	17,451,717	PG&E
Commercial Electricity Emissions (MT CO_2e)	41,901	PG&E
Residential Electricity Emissions (MT CO_2e)	30,348	PG&E
Transmission and Distribution Losses Emissions (MT CO_2e)	3,901	PG&E
Communitywide Electricity Emissions (MT CO_2e)	72,249	Total (Excludes T&D Losses)
Municipal Building Electricity Consumption (kWh)	3,722,239	City data summaries
Streetlighting Electricity Consumption (kWh)	2,437,026	City data summaries
Municipal Water and Wastewater Facilities (kWh)	6,017,169	City data summaries
Municipal Electricity Emissions (MT CO_2e)	2,724	

Natural Gas

Natural gas use within the City of Pittsburg includes residential and commercial consumption for the community-wide inventory, and government-owned building consumption for the municipal inventory. Because natural gas is a direct, Scope 1 emissions source, with all emissions occurring at the point of consumption (such as indoor furnaces and stoves), no emissions external to the incorporated City must be considered.

Natural gas use was provided by PG&E in the form of therms per year for the residential, commercial and industrial customer groups for 2005. As described above and in the *Energy* section of Appendix D, CPUC Decision 14-05-016 made 2016 industrial energy data no longer publicly available. To compare energy sector emissions between the two inventory years consistently, industrial data originally provided by PG&E and reported in the 2005 inventory is excluded from this inventory update. Details of natural gas methodology are provided in the City of Pittsburg's original 2005 Inventory Appendix B, *Data Sources*. Total usage and emissions for the community and municipal operations are shown in Table 11 below.

[5]Wong, Lana. 2011. A Review of Transmission Losses in Planning Studies. California Energy Commission. CEC-200-2011-009. Accessed from https://www.energy.ca.gov/2011publications/CEC-200-2011-009/CEC-200-2011-009.pdf

Table 11 Citywide Natural Gas Use and Emissions (2005)

Inventory Variable	Quantity	Data Source
Commercial Consumption (therms)	5,585,485	PG&E
Residential Consumption (therms)	8,239,892	PG&E
Commercial Emissions (MT CO_2e)	29,880	PG&E
Residential Emissions (MT CO_2e)	44,080	PG&E
Community-wide Emissions (MT CO_2e)	73,960	Calculated
Municipal Building Consumption (therms)	100,501	City data summaries
Municipal Water and Wastewater Facilities (therms)	17,889	
Municipal Emissions (MT CO_2e)	633	Calculated

Solid Waste

Emissions from solid waste include CO_2 resulting from decomposition in aerobic environments and CH_4 resulting from decomposition in anaerobic environments. GHG tailpipe emissions from waste collection and management vehicles are excluded from this sector and incorporated in the mobile sources sector. Details of waste sector methodology are provided in the City of Pittsburg's original 2005 Inventory Appendix B, *Data Sources*.

Community-Generated Solid Waste

Communitywide solid waste generated in 2005 was provided by the City of Pittsburg and includes all community-generated waste regardless of whether or not the waste disposed at a facility located within incorporated City bounds. The mix of municipal solid waste was provided by CalRecycle's 2004 Statewide Waste Characterization Study. While the original 2005 inventory used an IPCC recommended methane recovery rate of 60%, the current ICLEI Protocol recommends a recovery rate of 70%. Therefore, emissions were recalculated for comparability with the 2016 inventory, following the method described in *Solid Waste* of Appendix D and utilizing 2005 waste generation data. Total waste generated and emissions from solid waste in 2005 are shown in Table 12 below.

Table 12 Community-Generated Solid Waste, Recycling and Alternative Daily Cover (2005)

Waste Totals	Quantity
Solid Waste Entering Landfills (wet short tons)	59,559
Special Waste (MT)	9,354
Municipal Alternative Daily Cover (MT)	11,383
Biomass Incineration (MT)	13,594
Municipal Recycling (MT)	3,660
Municipal Composted (MT)	1,976
Total Community-wide Emissions (MT CO2e)	**20,101**
Municipal Solid Waste (wet short tons)	611

Municipal Emissions (MT CO2e)	206

Source: City of Pittsburg, 2008

In addition to landfilled waste, the community has implemented various residential and community composting, recycling, and waste diversion programs. Many of these began in 1990 and others began later in the decade. They include curbside pick-up, self-hauling, and facility drop-off programs.

Municipally-Generated Solid Waste

Total waste disposed by municipal facilities in 2005 was provided by Garaventa Enterprise and totaled 611 MT, resulting in emissions of 206 MT CO_2e, also shown in Table 12. Similar to community waste diversion, municipal facilities participated in composting, recycling and biomass waste diversion in 2005.

Water

Water emissions come from extraction, conveyance, treatment, distribution and storage of water to the incorporated community and municipal operations. Emissions vary by water origin and distance to treatment facility, water treatment process and equipment used at the facility. Emissions resulting from water use at City facilities are included in this total. Emissions from electricity used for pumping, storage and treatment are also included in water sector emissions and excluded from electricity sector emissions.

Energy intensities, emission factors and sources are shown in Table 13 below.

Table 13 Water Energy Intensities and Emissions Factors (2005)

Inventory Variable	Quantity	Data Source
Water Consumption	7,290 MG	Pittsburg 2010 UWMP and 2015 UWMP
Municipal Water Consumption	155 MG	Pittsburg 2005 UWMP
Electricity Emissions Factor	0.000222 MT CO_2e/ kWh	PG&E
Extraction Energy Intensity	1,069 kWh/MG	Pittsburg 2015 UWMP
Treatment & Conveyance Energy Intensity	2,198 kWh/MG	Pittsburg 2015 UWMP
Distribution Energy Intensity	91 kWh/MG	Pittsburg 2015 UWMP
Storage Energy Intensity	105 kWh/MG	Pittsburg 2015 UWMP
Recycled Water Energy Intensity	3,466 kWh/MG	Pittsburg 2015 UWMP
Communitywide GHG Emissions	4,708 MT CO_2e	Calculated (EF x Community Consumption)
Municipal GHG Emissions	33 MT CO_2e	Calculated (EF x Municipal Consumption)

The City of Pittsburg's Urban Water Management Plans (UWMPs) provided data on water supply to the incorporated community and City municipal facilities for 2005. To identify municipal water use, the proportion of municipal to communitywide use in 2016 provided by the City was multiplied by the 2005 total water supply. To identify municipal water use by source, the calculated total

municipal supply was multiplied by proportion by source communitywide in 2005 provided in the UWMPs. In 2005, the City population served was 62,600.

Table 14 Water Supplied to Incorporated Community and Municipal Operations (2005)

Step	Communitywide Quantity (MG/Year)	Municipal Quantity (MG/Year)
Groundwater	326	7
Surface Water	3,764	80
Recycled Water	3,200	68
Total Supplied	**7,290**	**155**
Percent Municipal Use	2.12%	
Per Capita Supply (gal/person/day)[1]	319	

MG = million gallons

Per Capita Supply = Total Water Supplied/Population Served/365.25

Source: City of Pittsburg, 2019. Water Supply and Treatment Report 2005-2018.

1. Based on a population of 62,605.

Recycled water composes the majority of water sector emissions, followed by treatment and conveyance and extraction, while distribution and storage compose only a small contribution to water processing emissions. Table 15 below shows the contribution of water sourcing and processing emissions by step.

Table 15 Water Emissions by Sourcing and Processing Step (2005)

Processing Step	Emissions (MT CO_2e)
Groundwater Extraction	77
Surface Water Treatment and Conveyance	1,994
Storage	95
Distribution	82
Recycled Water Use	2,460
Total	**4,708**

Source: City of Pittsburg 2005, 2010 and 2015 UWMPs

Table 16 shows water volume in each step of processing, along with energy intensity per volume water, electricity use and emissions. Groundwater extraction, surface water treatment and conveyance, water distribution, water storage and water recycling electricity consumptions were reported in the City's 2015 Urban Water Management Plan and used as a proxy for 2005. Water volume multiplied by energy intensity allowed for an estimate of electricity consumption for each step. These values were multiplied by the PG&E provided electricity emission factor to obtain total emissions. Electricity consumption required for water processing is excluded from electricity sector emissions to avoid double counting.

Table 16 Energy Use and Emissions by Water Processing Step (2005)

Processing Step	Volume (MG)	Energy Intensity (kWh/MG)[1]	Electricity Consumption (MWh)[1]	Emissions (MT CO_2e)	Percent of Emissions
Surface Water					
Treatment and Conveyance	4,090	2,197	13,488	1,994	42%
Groundwater					
Extraction	326	1,069	348	77	2%
Local Supply					
Recycled	3,200	3,466	15	2,460	52%
Other Processes					
Distribution	4,090	91	558	82	2%
Storage	4,090	105	643	95	2%
Total			**21,227**	**4,708**	**100%**

MG = million gallons; kWh = kilowatt-hour; MWh = megawatt-hour

[1] 2015 UWMP factors were used as these were not provided in previous UWMPs.

Source: City of Pittsburg 2005, 2010, 2015 Urban Water Management Plans

Surface Water Supply

Volume of water supplied to the incorporated community was provided by the City of Pittsburg's 2005 Urban Water Management Plan (UWMP) for surface water supply. The City purchases Central Valley Project (CVP) water pumped from the California Delta by Contra Costa Water District (CCWD), its wholesale supplier.

Groundwater Supply

In addition to water supplied by CCWD, approximately 4.5 percent of the total water supplied by CCWD was sourced from groundwater extracted from City-owned wells. This water is extracted from the Pittsburg Plain Groundwater Basin, shown in Figure 5 in Appendix D.

Surface Water Emissions

Surface water volume provided in the City's 2005 UWMP was multiplied by treatment, conveyance and distribution energy intensities provided in the City's 2015 UWMP and by PG&E's electricity emissions factor in 2005 to estimate associated surface water emissions. The 2015 UWMP was provided as a proxy for 2005 energy intensity factors since these were not provided in the 2005 UWMP. The provided conveyance and distribution intensity factor encompasses energy used in the conveyance of surface water from the Contra Costa Canal to the City's water treatment plant (WTP), and the treatment of this water at the WTP prior to distribution to the City's local service reservoirs.

Groundwater Emissions

Emissions associated with groundwater extraction were calculated by multiplying PG&E's electricity emission factor in 2005 with extraction volume based on the 2005 UWMP and with the groundwater extraction energy intensity provided in the 2015 UWMP. Groundwater in Pittsburg is blended with surface water after extraction and treated at the City's WTP; therefore, treatment energy use of groundwater is included in surface water emissions and only energy associated with extraction is accounted for here. Electricity and associated emissions from distribution of extracted groundwater are included in total water distribution emissions as shown in Table 16. Electricity used by groundwater extraction was excluded from electricity sector emissions to avoid double counting.

Recycled Water Emissions

Recycled water volume was based on the 2010 UWMP and multiplied by recycled water energy intensity provided in the 2015 UWMP to identify electricity use and associated emissions. No further treatment is assumed for recycled water beyond tertiary treatment at water reclamation facilities. Recycled water is provided for non-potable uses in industrial cooling and irrigation. Recycled water electricity and emissions totals were also excluded from the electricity sector.

Wastewater

Wastewater treatment processes include both direct and indirect emissions. Direct emissions include combustion of digester gas produced at the wastewater treatment plant (WWTP) and fugitive emissions from processing methods. Indirect emissions result from processes related to wastewater collection and treatment, but not emitted directly from the WWTP itself. These are further described in the *Wastewater* section of Appendix D. Calculation of wastewater fugitive and process emissions are based on a population of 62,605.

Delta Diablo Sanitation District (DDSD) provides treatment services for the Cities of Pittsburg and Antioch and the unincorporated area of Bay Point. Treatment occurs at a centralized WWTP for which DDSD provided the volume of water treated in 2005, 4.453 million gallons. The methodology for identifying Pittsburg's contribution to DDSD-treated wastewater are further described in Appendix D, *Wastewater Treatment Servicer*, along with DDSD's wastewater treatment methods. Methodology for 2005 wastewater treatment emissions is consistent with that of the 2016

inventory and also described in the *Wastewater Treatment Emissions* section of Appendix D. Table 17 provides emissions by source in 2005 for both direct and indirect emissions resulting from wastewater treatment.

Table 17 Community Wastewater Emissions by Source (2005)

Source	Emissions (MT CO_2e)
Direct Emissions	
Anaerobic Digester Gas Combustion	4
Fugitive N_2O from Process Emissions	75
Total Direct Emissions	79
Indirect Emissions	
Fugitive N_2O from Effluent Discharge	438
Collection Energy	111
Treatment Energy	567
Total Indirect Emissions	1,116
Total Emissions	**1,195**

Source: City of Pittsburg, 2019

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Appendix D: 2016 GHG Inventory Methodology

City of Pittsburg

Sustainability Plan

Appendix D
2016 Greenhouse Gas Emission Inventory Methodology & Calculations

prepared for

City of Pittsburg
Environmental Services Department
65 Civic Avenue
Pittsburg, California 94565

prepared with the assistance of

Rincon Consultants, Inc.
449 14th Street, Suite 303
Oakland, California 94612

Updated January 2023

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

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Introduction

This appendix outlines the methodologies followed to estimate the greenhouse gas (GHG) emissions for the incorporated City of Pittsburg for the 2016 calendar year. Baseline emissions in 2016 were estimated for both the incorporated communities within Pittsburg as well as those emissions resulting from City municipal operations. The GHG inventory relies on activity data for each of the primary emissions sectors including electricity, natural gas, transportation, waste and water. The following Appendix provides a description of the specific methodologies, assumptions, and variables used in the GHG emissions inventory.

Throughout this report, rounding is often required in calculations and tables. Values are rounded to the nearest integer of a higher order of magnitude. No rounding is performed in the intermediary steps of the calculation. As a result of rounding, some totals may differ slightly from the values summed.

Inventory Scope

The following section details the 2016 baseline inventory's geographical scope, data collection protocols, included and excluded emission sectors and GHG global warming potentials.

Boundary

This community-wide GHG emissions inventory includes emissions from actions taken within the incorporated community in the City of Pittsburg. This includes residential, commercial and, where applicable, industrial activities. The City operations inventory includes activities taken by the City government directly. These activities include electricity used in government buildings, fuel used in the government fleet vehicles, as well as water and waste generated by the City directly. Some City operations may take place outside of incorporated areas of the City, but are included as part of the inventory because those actions are under the operational control of the City. The City operations inventory is not additive to the community inventory, but is a subset of those emissions over which the City has direct control.

Accounting Protocol and Emission Sectors

The community-wide and municipal GHG emissions inventories utilize data methodology standards outlined in ICLEI USA's *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions* (the ICLEI Community Protocol, 2013). The California Air Resources Board (CARB) recommends the ICLEI Community Protocol for community-scale GHG emissions inventories in *California's 2017 Climate Change Scoping Plan Update (Scoping Plan Update).* The ICLEI Community Protocol recommends including emissions from five source sectors for a comprehensive community-scale GHG inventory. These sectors include:

- Electricity
- Natural gas
- On-road transportation
- Solid waste
- Water and wastewater

GHG emissions are calculated by multiplying activity data (i.e. kilowatt-hours of electricity, metric tons of solid waste) by a process-specific emissions factor (i.e. emission per kilowatt-hour, per ton, per therm). Calculations are refined with regional and City-specific data where available.

In addition to the basic sectors outlined by the ICLEI Community Protocol, inventories can include other sectors depending on community activity and characteristics. For the City of Pittsburg community-wide inventory, the following optional sectors were also included:

- Marine transportation
- Off-road transportation
- Passenger rail transportation

The inclusion of these sectors corresponds with the baseline inventory of 2005 for the City of Pittsburg to offer a comparison of change over the 11-year period.

Excluded Emissions

The baseline inventory focuses on Scope 1 and 2 emissions released within the jurisdictional boundary: direct emissions from owned (primary party) operations, and indirect emissions from operations owned by a second party (such as residential electricity or water consumption producing electricity and wastewater treatment emissions at local facilities). It also includes several Scope 3 emissions, indirect emissions by second and third parties. These include the optional ICLEI inventory sectors mentioned above of off-road equipment, marine goods movement and transportation, and the regional landfill. Scope 3 emissions excluded from the inventory include outsourced waste activities, aircraft operations at regional facilities, and consumption-based value chain emissions of goods and materials.

Aircraft Emissions

No public or private airports exist in the City of Pittsburg. Aircraft emissions are under the jurisdiction of the U.S. Federal Aviation Administration (FAA) and are considered Scope 3 transportation-related activities. As expressed in the ICLEI Community Protocol, these emissions are outside the scope of a community-wide inventory and are not included in the inventory for the City of Pittsburg.

Consumption-Based Emissions

Value chain or lifecycle GHG emissions include those related to extraction, production, use and disposal of purchased goods and materials within the City. These are considered Scope 3 emissions. Currently there exists no standard methodology for reporting consumption-based emissions. As expressed in the ICLEI Community Protocol, Scope 3 emissions are outside the scope required of a community-wide inventory. Consumption-based emissions are not included in the inventory for the unincorporated City of Pittsburg.

Other Stationary Sources

Stationary source emissions from activities other than natural gas combustion, electricity demand, solid waste, water and wastewater treatment are excluded from this inventory since they are not under City jurisdictional control. These include privately-owned operations such as petroleum refining and steel production.

Global Warming Potentials

The City of Pittsburg GHG inventory accounts for three primary GHGs: carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). GHGs have varying global warming potentials (GWPs) or potency for trapping heat in the atmosphere, so a measurement referred to as “carbon dioxide equivalent” (CO_2e) is used to compare these with the GWP of CO_2 as a common base. For example, per the Intergovernmental Panel on Climate Change (IPCC)’s Fourth Assessment Report (AR4, 2007), CH_4 and N_2O are respectively 25 and 298 times more potent than CO_2 in their heat trapping abilities

in the first 100 years after initial emission.[1] Thus, they have 100-year GPWs of 25 and 298. The GWPs used in this baseline GHG emissions inventory are from the IPCC AR4[17]. A metric ton of CO_2e (MT CO_2e) is the standard measurement of GHG emissions produced and released into the atmosphere.

[1] Gases have different decay rates and retain their heat trapping abilities long after the first 100 years. However, this 100-year GWP is a standard base value for comparison. Intergovernmental Panel on Climate Change (IPCC). 2007. *Fourth Assessment Report: Climate Change 2007*. "Direct Global Warming Potentials." Accessed August 2018 at https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10- 2.html.

Inventory Methodology

The following section describes the methodologies used for the municipal and community-wide inventory updates. GHG emissions are calculated by multiplying activity data (kilowatt-hours of electricity, metric tons of solid waste) by an emission factor. Calculations are adapted with regional and City-specific data where available, as described below. Sectors included in the community-wide inventory are electricity, natural gas, on-road, off-road, passenger rail and marine transportation, solid waste, landfill waste, water, and wastewater. Sectors included in the municipal inventory are employee commutes, energy, vehicle fleet, waste, water and wastewater.

Transportation

On-Road Community-wide Transportation

Transportation data was obtained for passenger, commercial and other vehicles by identifying average emissions and VMT per category. The California Air Resources Board (CARB) 2014 EMissions FACtor model (EMFAC2014) Version 1.0.7 (v1.0.7) provided emissions factors for residential and other vehicles and the Bay Area Air Quality Management District (BAAQMD) VMT Dataportal provided VMT for residential vehicles.[2] Bay Area Metro provided city-specific VMT and emissions data using an MTC transportation model. Passenger travel composed the majority of on-road transportation-related emissions in the City of Pittsburg in 2016, with 69 percent of emissions.

Vehicle Miles Traveled

The City of Pittsburg Emissions Inventory estimated on-road vehicle emissions using the origin-destination model recommended in the ICLEI Community Protocol to establish vehicle miles traveled (VMT). The origin-destination model estimates trip mileage using a demand-based modeling system that incorporates traffic and activity in the surrounding areas and factors in various demographic and economic information including employment, vehicle types, school locations, public transit routes, population projections, and non-work or school related activities.[3] The origin-destination model is also consistent with CARB's Regional Targets Advisory Committee (RTAC) recommendations for compliance with SB 375.[4]

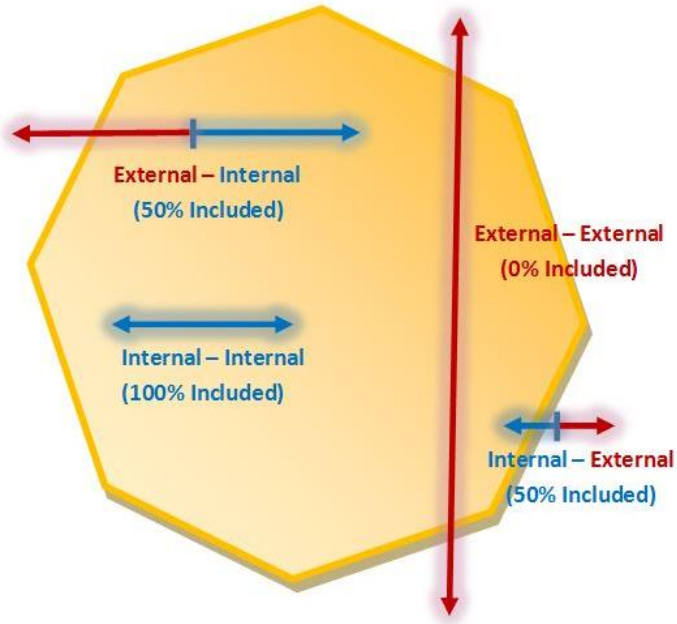
The origin-destination model better attributes transportation emissions by jurisdiction of a trip's origin and destination. Trips that begin and end within the jurisdiction (internal-internal) are 100% attributed to the jurisdiction; trips that being outside and within the jurisdiction (external-internal) are 50 percent attributed to the jurisdiction; trips that begin within and end outside the jurisdiction (internal-external) are 50 percent attributed to the jurisdiction; and trips that begin and end outside the jurisdiction, and are simply passing through, are entirely excluded. See Figure 1 below for an illustration.

[2] California Air Resources Board. 2014. EMFAC2014 (v1.0.7) Emissions Inventory. Available: <https://arb.ca.gov/emfac/>. Accessed February 17, 2022.

[3] Metropolitan Transportation Commission. CAP VMT Travel Model One. http://capvmt.us-west-2.elasticbeanstalk.com/about

[4] California Air Resources Board. (August 2009). "Recommendations of the Regional Target Advisory Committee (RTAC) Pursuant to Senate Bill 375". Accessed August 2018 from https://www.arb.ca.gov/cc/ sb375/rtac/report/092909/finalreport.pdf

Figure 1 The Origin-Destination Model



VMT was separated by Passenger and Commercial as defined by the MTC VMT model (see Table 1 below). Total daily commercial vehicle VMT for the City was obtained from personal communication with staff at Bay Area Metro who provided city-specific values based on countywide data from MTC. VMT was then multiplied by 347 to obtain average annual VMT.

Total daily residential vehicle VMT was obtained from the Bay Area Air Quality Management District (BAAQMD)'s VMT Data Portal, which provides city-wide non-commercial vehicle trip rates by origin and destination. Following the origin-destination model, half of partially inside trips (originating or ending inside the city), all inside trips (originating and ending inside the city), and no outside trips were included in estimating residential VMT. To obtain 2016 data, VMT was assumed to increase linearly from 2015 to 2020 using the values provided by the Data Portal. VMT per the origin-destination model are shown in Table 1 below.

Table 1 Residential VMT by Origin-Destination in the City of Pittsburg (2016)

Origin-Destination of Trips	Daily VMT
Internal-Internal	76,739
Internal-External/ External-Internal	1,226,050
External-External	114,879,831
Weighted Jurisdictional	689,764

Source: BAAQMD VMT Data Portal 2015

To account for different emission factors of combustion engines and electric vehicles (EVs) among passenger vehicles,[5] passenger EV VMT was also calculated. Countywide EV VMT in 2016 was provided by EMFAC2014 (v1.0.7) and scaled by population to City level. EV trips accounted for less than one percent of VMT in 2016.

[5] EVs are included in EMFAC vehicle categories LDA and LDT1, both residential categories in this inventory (see Table 4).

Vehicle Mix and Emissions

Passenger sector vehicle emissions data were derived from the CARB EMFAC2014 model (v1.0.7) using City-based emission factors, the model mix of all vehicle classes (classes are identified using EMFAC2007 categories), model years, speed bins, and associated fuel types for the City of Pittsburg in 2016. EMFAC speed bin distributions of each 5 mile-per-hour (mph) bin up to 90 mph were used to identify VMT and associated emissions. Passenger sector emissions were calculated from the average of all EMFAC vehicle classes in the corresponding MTC vehicle category (i.e., Passenger, as shown in Table 2 below). MTC categories were also used to identify inventory vehicle sector. Average EMFAC emissions per sector were then divided by EMFAC VMT per sector to obtain emissions per mile. This emissions factor was multiplied by the Passenger sector VMTs, as described in Section 4.4.1 above, to obtain total emissions.

Table 2 EMFAC Categories (2016)

EMFAC Class	MTC Vehicle Category	Transportation Sector
LDA	Passenger	Residential
LDT1	Passenger	Residential
LDT2	Passenger	Residential
MDV	Passenger	Residential
T6 (all)	Commercial	Commercial
T7 (all)	Commercial	Commercial
LHD1	Commercial	Commercial
LHD2	Commercial	Commercial
PTO	Commercial	Commercial

Source: Personal communication with Harold Brazil, Bay Area Metro, 2/28/2018.

Commercial sector vehicle emissions data was provided by staff at Bay Area Metro utilizing an MTC transportation model. U.S. Census Bureau regional employment and job flow data, known as Longitudinal Employer-Household Dynamics (LEHD), was used to estimate the citywide share of county commercial transportation. Countywide emissions and VMT obtained from the MTC model was then scaled with this citywide share to identify the City of Pittsburg's commercial emissions, as shown in Table 3 below.

Table 3 Commercial VMT and Emissions the City of Pittsburg (2016)

Origin-Destination of Trips	VMT
City LEHD Share	5.83%
Countywide Emissions/Day (MT CO_2e)	1,979
Countywide VMT/Day (miles)	1,458,983
Citywide Emissions/Day (MT CO_2e)	115
Citywide VMT/Day (miles)	85,001

Source: Personal communication with Harold Brazil, Bay Area Metro, 2/28/2018

The electric vehicle (EV) emission factor was derived from PG&E's electricity emissions factor for 2016. The EMFAC2014 model estimated VMT for EVs countywide, which was scaled to City level by percent of county population pre the U.S. Census Bureau. To estimate electricity required of EVs per VMT, U.S. Department of Energy (US DOE) current average fuel economy data was used for all-electric light-duty passenger vehicle and low-weight light-duty truck models. The calculated EV emissions factor was added into EMFAC2014 countywide data for the two corresponding electric vehicle classes (LDA and LDT1) to determine the aggregate Passenger sector emissions factor. The inventory quantification variables, data sources, and total emissions for EVs are shown in Table 4 below. Electricty consumption from EVs is not added to inventory emissions totals, as this energy consumption is expected to already be captured under the energy sector.

Table 4 Electric Vehicle Emission Variables & Consumption (2016)

Inventory Variable	Variable/Quantity	Data Source
Electricity Emission Factor	0.133 MT CO_2/MWh	PG&E[1]
EV Fuel Economy of Light-Duty Vehicles	35 kWh/100 mi	U.S. DOE Fuel Economy Database[2] and Alternative Fuel Data Center[3]
EV Emissions per mile	46.6 g CO_2e/mi	Calculated (EF x Fuel Economy)
EV Annual VMT in Incorporated City	2,177,046 VMT	CARB EMFAC2014 Model (v1.0.7)
Total Annual EV Emissions	101.3 MT CO_2e	Calculated (EF x Consumption x VMT)

[1] PG&E. 2017. Corporate Responsibility and Sustainability Report 2017. Environment Chapter: Climate Change. Accessed March 2019 at http://www.pgecorp.com/corp_responsibility/reports/2017/

[2] U.S. DOE. (2018). Fuel Economy Database. "Compare Electric Vehicles Side by Side." Accessed September 2018 at https://www.fueleconomy.gov/feg/evsbs.shtml

[3] U.S. DOE. (2018). Alternative Fuel Data Center. "Charging Plug-in Electric Vehicles at Home." Accessed September 2018 at https://www.afdc.energy.gov/fuels/electricity_charging_home.html

On-Road Municipal Transportation

Municipal Commute Emissions

City employee commute data was provided by the City of Pittsburg and sourced from a Bay Area Commuter Benefits Program employee survey conducted in August 2014 per requirements of the BAAQMD (Regulation 14, Rule 1). At this time, the City had 239 full-time employees. One hundred eleven employees participated in the commute survey, approximately 46% of full-time staff. Respondents provided their home address by zip code (Figure 2), from which an average commute distance from urban or geographic centers in each zip code on major roads to the location of municipal central offices (65 Civic Avenue) was estimated (Table 5). Those selecting public transit (two respondents) were assumed to commute locally from within the 94565 zip code a slightly shorter distance than those who drive alone. This was estimated at two miles for one-way public transit commutes.

Figure 2 Employee Home Zip Code and Average Commute Distance

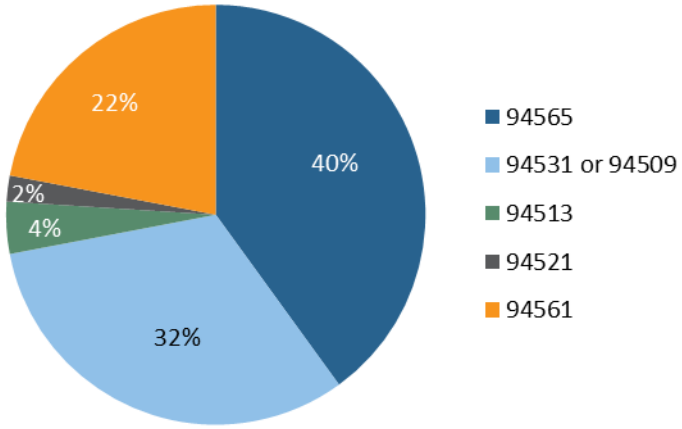


Table 5 Commute Distances by Zip Code

Zip Code	One-Way Daily VMT
94565	3
945311	6
945091	10
94513	16
94521	11
94561	12

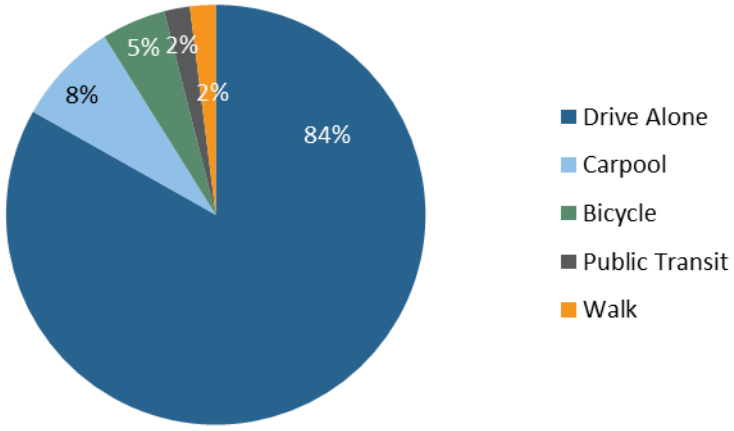
Note: VMT = vehicle miles traveled.

[1] Zip codes 94509 and 94513 were combined into one category the commute survey, creating an average of 8 VMT/day.

Sources: Google Maps 2019; UnitedStatesZipCodes.org 2019

Respondents also provided their preferred commute method (Figure 3). EMFAC2014 (v1.0.7) average on-road emissions for 2016 the MTC Passenger Vehicle category (categories listed in Table 2 of the *Vehicle Mix and Emissions* section above) were used to calculate employee commute emissions for those selecting "Drive Alone" and "Carpool". Carpools were conservatively assumed to include two people commuting daily; therefore, the per capita carpool emission factor was halved compared to driving alone. EMFAC "UBUS" (Urban Bus) gas and diesel classes were used to estimate a per person "Public Transit" emission factor assuming a bus load of 15 people. In addition, all employees were assumed to commute to and from work daily for 250 days per year. Survey responses, calculation values and emissions are shown in Table 6 below.

Figure 3 Employee Preferred Commute Method



Note: Values may not add to 100% due to rounding.

Table 6 City Employee Commute Emissions & Vehicle Miles Traveled

Inventory Variable	Value
Passenger Vehicle Emissions (g CO2e/mi)	415.1
Daily VMT	3,261
Annual VMT	815,212
Annual Carpool and Drive Alone Emissions (MT CO2e)	338
Urban Bus Emissions (g CO2e/mi)	21.5
Per Passenger Urban Bus Emissions (g CO2e/mi)	1.4
Daily VMT	18
Annual VMT	4,422
Annual Public Transit Emissions (MT CO2e)	0.6
Total Commute Emissions	**339**

Note: VMT = vehicle miles traveled.

Sources: City of Pittsburg 2014. Bay Area Commuter Benefits Program employee commute survey.

CARB EMFAC2014 (v1.0.7). 2016 Average Fleet Mix.

Municipal Vehicle Fleet Emissions

City-owned and operated vehicle fleet data was provided by the City of Pittsburg's Environmental Services Department. Emissions were calculated based on the annual; volume of fuel purchased by the City, and an estimated emission factor for the entire municipal fleet. CO_2 emissions were calculated using the ICLEI Local Governments Operations Protocol (LGOP), utilizing the volume of fuel combusted multiplied by the provided default national emission factors by fuel type. As CH_4 and N_2O emissions vary by vehicle class, year, and fuel type, and mileage data was not available for the fleet, an emissions per volume of fuel combusted emission factor was derived for each on-road vehicle in the municipal fleet using the appropriate EPA emissions per mile emission factor and the United States Energy Information Administration (EIA) estimated fuel economy for the year and class of each vehicle. These emission factors were averaged to obtain an average fleet emission factor which was multiplied by the total volume of gasoline purchased by the City in 2016. All non-highway equipment was assumed to use diesel fuel, and separate diesel CH_4 and N_2O emissions factor were determined for on-road diesel vehicles. The volume of diesel fuel purchased in 2016

was multiplied by the proportion of on-road or off-road diesel fueled vehicles, and the appropriate emission factor to determine CH_4 and N_2O emissions. Emission factors and calculated emission values are shown in Table 7.

Table 7 Municipal Fleet Emissions & Vehicle Miles Traveled (2016)

Fuel Type	Emission Factor	Emissions (MT CO_2e)[1]
CO_2		
Gasoline	8,870 grams/gallon[2]	1,120
Diesel	10,180 grams/gallon[2]	255
CH_4		
Gasoline	0.12 grams/gallon	0.4
Diesel (Off-Road)	0.58 grams/gallon	0.3
Diesel (On-Road)	0.03 grams/gallon	<0.1
N_2O		
Gasoline	0.34 grams/gallon	12.7
Diesel (Off-Road)	0.26 grams/gallon	1.52
Diesel (On-Road)	0.03 grams/gallon	<0.1
Total Fleet Emissions		**1,390**

Note: VMT = vehicle miles traveled

[1] U.S. Energy Information Administration (EIA). 2019. Total Energy Overview, Motor Vehicle Mileage, Consumption and Fuel Economy. https://www.eia.gov/totalenergy/data/browser/?tbl=T01.08 Accessed July 2019.

[2] U.S. EPA. 2018. Greenhouse Gas Emissions from a Typical Passenger Vehicle. https://nepis.epa.gov/Exe/ZyPDF.cgi/P100JPPH.PDF?Dockey=P100JPPH.PDF. Accessed June 2019.

Source: City of Pittsburg Environmental Services Department purchase records

Off-road Community-wide Transportation

Activity data for the community GHG emissions inventory was modeled using the CARB OFFROAD2021 (v1.0.2) Emissions Inventory.[6] This database provides annual fuel consumption totals for various off-road equipment types in California counties. The database compiles the outputs from the most up-to-date off-road emissions models developed by CARB. The OFFROAD2021 database was queried for Contra Costa County for the forecast years to obtain fuel consumption for gasoline, diesel, and natural gas/liquefied petroleum gas. The county-wide fuel consumption totals were then scaled down to be representative to Pittsburg using attribution metrics based on jobs, population, and service population. Off-road equipment sectors that were outside of the City's jurisdictional control, already counted in the inventory, or not relevant to Pittsburg were excluded from the City's off-road emissions calculations. Table 8 provides the attribution metrics used for each off-road equipment sector, and Table 9 provides the attribution metrics used to scale county-wide fuel totals to the City of Pittsburg.

[6] California Air Resources Board. 2021. OFFROAD2021 (v1.0.2) Emissions Inventory. Available: <https://arb.ca.gov/emfac/>. Accessed February 17, 2022.

Table 8 Off-road Emissions Attribution Metrics per Equipment Sector

Off-road Equipment Sector	Attribution Metric	Attribution Metric Value
Agricultural	Excluded - No Agricultural Land Use[1]	0
Airport Ground Support	Excluded - No Airport Land Use[1]	0
Cargo Handling	Excluded - No Major Port Facilities[2]	0
Commercial Harbor Craft	Excluded - No Major Port Facilities[2]	0
Construction and Mining	Number of Jobs	3.13%
Industrial	Number of Jobs	3.13%
Lawn and Garden	Service Population	5.26%
Light Commercial	Number of Jobs	3.13%
Locomotive	Excluded - Not under Jurisdictional Control[3]	0
Ocean Going Vessels	Included in Inventory as Marine Transportation	0
Oil and Gas	Excluded - Not under Jurisdictional Control[4]	0
Pleasure Craft	Population	6.45%
Portable	Number of Jobs	3.13%
Transportation Refrigeration Units	Number of Jobs	3.13%
Recreational	Population	6.45%

[1] Excluded based on land uses included in the 2001 City of Pittsburg General Plan. (https://www.pittsburgca.gov/home/showpublisheddocument/4674/637479142624630000).

[2] The City of Pittsburg has some port facilities used for industrial land uses in the City; however, based on the CARB 2011 Cargo Handling Equipment GHG Emissions Inventory Methodology, the ports within Pittsburg are not considered as part of the statewide inventory. (https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2011/cargo11/cargoappb.pdf).

[3] Locomotives are not considered in this GHG emission inventory, as the City of Pittsburg does not have jurisdictional control to affect this emissions source through land use policies.

[4] Oil and Gas equipment is not considered in this GHG emission inventory, as the City of Pittsburg does not have jurisdictional control to affect this emissions sources, which are regulated through the State's Cap-and-Trade Program.

Table 9 Off-road Emissions Attribution Metric Calculation

Metric	Pittsburg	Contra Costa County	Pittsburg % of County Total
Population	70,931	1,100,268	6.45%
Jobs	12,774	407,762	3.13%
Service Population	83,705	1,591,735	5.26%

Data Source:

Association of Bay Area Governments. Plan Bay Area 2040. Projections 2040 by Jurisdiction. Available: https://data.bayareametro.gov/Demography/Projections-2040-by-Jurisdiction/grqz-amra. Accessed June 16, 2022.

To estimate GHG emissions from off-road transportation, the above attribution metrics were applied to the fuel outputs of the OFFROAD2021 model, which were then multiplied by off-road equipment emissions factors from the United States Environmental Protection Agency's GHG

Emission Factors Hub.[7] Fuel consumption totals, GHG emissions factors, and total off-road GHG emissions are provided in Table 10.

Table 10 Off-road Emissions Attribution Metric Calculation

Fuel	Gallons	Emissions Factor (MT CO_2e/gallon)	Emissions (MT CO_2e)
Diesel	478,338	0.010357799	4,955
Gasoline	510,763	0.009034422	4,614
NG/LPG	61,544	0.00583028	359
Total	**1,050,645**		**9,928**

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; NG/LPG = natural gas/liquefied petroleum gas

Marine Community-wide Transportation

Marine vessels operating at the City-owned Port of Pittsburg included three lessees in 2016—Koch Carbon, Dow Chemical and USS POSCO steel manufacturer. These operators use the port to import materials and export goods periodically throughout the year. The City of Pittsburg provided marine vessel data from lessees, approximated from 2016 or the nearest year available. The ICLEI Community Protocol's TR.7.A Marine Vessel methodology was used to identify emissions from these sources. Emissions include distance traveled within the Pittsburg Port waters, and energy used while during hoteling activities. In port shore power was provided for USS Posco vessels, while Dow Chemical and Koch Carbon hoteling activities were powered by auxiliary engines contained on the vessel. All vessels accounted for in this inventory are Dry Bulkers with a deadweight tonnage (DWT) of 35,000. Values and emissions are shown in Table 11 below.

[7] USEPA.2022. Emission Factors for Greenhouse Gas Inventories. Retrieved from: https://www.epa.gov/system/files/documents/2022-04/ghg_emission_factors_hub.pdf.

Table 11 Marine Vessel Emissions (2016)

Port Lessee	Variable
Dow Chemical	
Number of Vessels	5
Activity Hours per Day	12
Days in Port	5
Annual Hoteling Hours per Vessel	60
Vessel Auxillary Engine Power Rating	2,259
Vessel Auxillary Engine Load Factor	10
Hoteling Emissions (MT CO2e)	46.9
Transport & Maneuvering Emissions (MT CO2e)	17.3
Koch Carbon	
Number of Vessels	28
Activity Hours per Day	12
Days in Port	5
Annual Hoteling Hours per Vessel	60
Vessel Auxillary Engine Power Rating	2,259
Vessel Auxillary Engine Load Factor	10
Hoteling Emissions (MT CO2e)	262.7
Transport & Maneuvering Emissions (MT CO2e)	96.6
USS Posco	
Number of Vessels	18
Annual Activity Hours per Vessel	973
Annual Hoteling Hours	905
Shore Power Electricity (kWh)	1,678
Annual Shore Power Emissions (MT CO2e)	0.22
Transport & Maneuvering Emissions (MT CO2e)	390.8
Total Emissions (MT CO2e)	**814.5**

Passenger Rail Community-wide Transportation

Passenger rail emissions data was provided by Bay Area Rapid Transit (BART). BART has one station, Pittsburg/Bay Point, located near the intersection of Highway 4 and Bailey Road in central Pittsburg, which began serving passengers in December 1996. Another station, Pittsburg Center/Antioch opened in May 2018. However, emissions from this e-BART station are excluded from the inventory as the station was opened after the 2016 inventory year. BART, in coordination with Arup Consulting, performs an annual energy and passenger rail usage analysis, including current emissions by station and Climate Action Plan analysis of future emissions. Station-based emissions encompass all related operational emissions, including the station and support facilities, as well as BART systemwide apportioned to station use. In 2016, the Pittsburg/Bay Point station accounted for 1.5 percent of the BART systemwide usage. BART's energy sources also changed substantially in 2016, acquiring more renewable energy and releasing fossil fuel-based operations. Therefore, both portion of system use and station-based GHG emissions decreased markedly from the previous year. BART emissions and station usage are shown in Table 12 below.

Table 12 Pittsburg/Bay Point Passenger Rail Emissions (2016)

Inventory Variable	Value
Average Station Weekday Ridership (passenger exiting)	6,526
Percent of BART Systemwide Emissions	1.5%
Portion of BART Systemwide Emissions (MT CO2e)	127
Station Operational Emissions (MT CO2e)	36
Total Station Emissions (MT CO2e)	**163**

Source: BART 2019

Energy

Electricity

Electricity use within the City of Pittsburg includes residential and commercial consumption for the community-wide inventory, and government-owned building consumption for the municipal inventory. Because electricity is an indirect, Scope 2 emissions source, this category includes emissions that may occur outside the City bounds at regional power plants. Electricity consumed for water treatment and distribution was excluded from the electricity use category and instead incorporated in the water and wastewater source category. Electricity consumed for electric vehicles operating entirely within the City and half of electric vehicles operating partially within the City were excluded from the electricity use category and instead incorporated in the transportation source category as part of the passenger on-road sector.

Electricity use was provided by PG&E in the form of kilowatt-hours per year (kWh/yr) for the residential and commercial customer groups for 2016 and for the industrial group from 2005 to 2013. The California Public Utilities Commission (CPUC) passed a final regulation in May 2014 (Decision 14-05-016) prohibiting public access to a utility's commercial and/or industrial energy data if any one entity within the category exceeds 15 percent of total usage.[8] The decision also prohibits access to the combined total of commercial and industrial data if any one entity exceeds 15 percent of the usage total when combined. Known as the "15/15 Aggregation Rule", this new regulation prevents public access to all commercial natural gas and industrial electricity and natural gas data in the City of Pittsburg after 2014 because of large energy users existing in the community. Industrial usage is not under the City's direct operational control and larger facilities are subject to the CARB's Mandatory Regulation for GHG Reporting (MRR) if they exceed 25,000 MT per year. Therefore, the industrial sector, including industrial data originally reported in the 2005 inventory, is excluded from the scope of this inventory update.

The ICLEI Community Protocol's "Built Environment 2" methodology was used to estimate incorporated City commercial, residential and municipal electricity consumption. In addition to energy consumption, the amount of emissions generated due to electricity transmission and distribution (T&D) losses were determined. Although emissions generated due to electricity T&D losses are outside of the City's operational control, emissions related to T&D loses are directly

[8] California Public Utilities Commission. 2014. Decision 14-05-016. Decision Adopting Rules to Provide Access to Energy Usage and Usage-Related Data while Protecting Privacy of Personal Data. Accessed from http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M090/K845/90845985.PDF

related to electricity use within the community. Transmission and distribution losses were determined by multiplying a 2016 loss factor for PG&E of 8.66 percent with annual electricity consumption. The electricity consumption emission factor was calculated from The Climate Registry's PG&E 2016 report and the T&D loss factor from the CPUC 2017 statewide energy grid report. These were multiplied by megawatt-hours (MWh) of electricity use to estimate total annual emissions in metric tons of CO_2e per MWh.

PG&E provided the emissions factor for electricity in data year 2016, a value reflecting its portfolio mix of renewable energy. PG&E's emission factor was reported in its Corporate Responsibility and Sustainability Report 2017 and to the California Climate Action Registry as 0.133 MT CO_2/MWh (0.294 lb CO_2/kWh).

Because eGRID uses GWPs from the IPCC Second Assessment Report rather than AR4, additional calculations were made to identify the updated electricity carbon-dioxide equivalent emissions and to allow for consistency across inventory sectors. N_2O and CH_4 emission factors from eGRID 2016 data for the California CAMX subregion were multiplied with the updated GWPs (298 for N_20 and 25 for CH_4, updated from SAR 310 for N_2O and 21 for CH_4). Then these were combined with the CO_2 emission factor to produce the total carbon dioxide-equivalent emissions in pounds CO_2e/MWh. This calculation is shown in Table 13 below.

Electricity for City municipal administration and operations was provided by the City of Pittsburg's energy management software. Municipal emissions were calculated similarly to community-wide emissions, multiplying by the PG&E emission factor in the City of Pittsburg service area. Table 13 shows the emission factors for community-wide electricity use in the City of Pittsburg in 2016, and for municipal operations.

Table 13 Citywide Electricity Emissions Calculation Factors (2016)

Inventory Variable	Quantity	Data Source
PG&E Emission Factor	0.133 MT CO2/MWH	PG&E and TRC
CO_2e Emission Factor	529.879 lb/MWh	Calculated (CO2 EF + N2O EF x 298+ CH4 EF x 25)
Community-wide Electricity Consumption	228,272,687 kWh	PG&E
Community-wide Electricty GHG Emissions	30,442 MT CO_2e	Calculated (EF x Electricity Consumption)
Transmission & Distribution Loss Factor	8.66%	CPUC 2017
Transmission & Distribution Loss GHG Emissions	2,636 MT CO_2e	Calculated (EF x Electricity Consumption x Loss Factor))
Municipal Electricity Consumption	17,597,150 kWh	PG&E/City invoices/purchase records
Municipal Electricity Consumption GHG Emissions	2,347 MT MT CO_2e	Calculated (EF x Electricity Consumption)

Sources: US EPA. (February 2018). eGRID 2016 Data File. Accessed June 2019 at https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid

The Climate Registry. 2018. CRIS Public Reports. https://www.theclimateregistry.org/our-members/cris-public-reports/

CPUC Decision 15-11-027 http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M156/K044/156044151.PDF

PG&E. 2017. Corporate Responsibility and Sustainability Report 2017. Environment Chapter: Climate Change. Accessed June 2019 at http://www.pgecorp.com/corp_responsibility/reports/2017/

CPUC. 2017 Report System Efficiency of California's Electricity Grid. Accessed June 2019 at http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/About_Us/Organization/Divisions/Policy_and_Planning/PPD_Work/PPD_Work_Products_(2014_forward)/System_Efficiency_Report%20PPD_May_24_Final.pdf

Natural Gas

Natural gas use within the unincorporated City of Pittsburg includes residential and commercial consumption for the community-wide inventory, and government-owned building consumption for the municipal inventory. Because natural gas is a direct, Scope 1 emissions source with all emissions occurring at the point of consumption (such as indoor furnaces and stoves), no emissions external to the incorporated City must be considered. Table 7 and Figure 6 of the Greenhouse Gas Inventory show the sources of natural gas emissions in the City of Pittsburg in 2016.

The ICLEI Community Protocol's "Built Environment 1" methodology for Stationary Fuel Combustion was used to estimate unincorporated City natural gas consumption. The natural gas emission factor provided by PG&E was multiplied by natural gas consumed (in million therms, MM therms) to estimated total annual emissions in metric tons of CO_2e per MM therms. Natural gas use was provided by PG&E for the residential customer group in the form of therms per year (therms/yr).

Due to CPUC Decision 14-05-016 passed in May 2014,[9] described above, commercial natural gas usage became publicly unavailable after 2013. This is caused by large energy users existing in the community that individually account for over 15 percent of commercial natural gas usage. To accommodate for missing data, a linear extrapolation of 2005 to 2013 PG&E reported data in kWh/yr was performed to estimate commercial natural gas usage in 2016. Total usage and the variables used for natural gas calculations are shown in Table 14 below.

Table 14 Citywide Natural Gas Emissions Factors & Consumption (2016)

Inventory Variable	Quantity	Data Source
Emissions Factor	0.005350 MT CO_2e /therm	PG&E
Residential Consumption	7,779,936 therm	PG&E
Commercial Consumption	5,671,373 therms	Calculated from PG&E
Community-wide Consumption	13,451,309 therms	Calculated from PG&E
Municipal Consumption	60,666 therms	City of Pittsburg
Community-wide GHG Emissions	71,959 MT CO_2e	Calculated (EF x Community-wide Consumption)
Municipal GHG Emissions	325 MT CO_2e	Calculated (EF x Municipal Consumption)

Solid Waste

Emissions from solid waste include CO_2 resulting from decomposition in aerobic environments and CH_4 resulting from decomposition in anaerobic environments. GHG tailpipe emissions from waste collection and management vehicles are excluded from this sector and incorporated in the mobile sources sector.

Based on *ICLEI Community Protocol* standard methodology, waste CH_4 emissions were calculated from community-wide solid waste emissions using the "Solid Waste 4" method. Method 4 uses solid waste generated and deposited at landfill during the baseline year to estimate future emissions.

[9] California Public Utilities Commission. 2014. Decision 14-05-016. Decision Adopting Rules to Provide Access to Energy Usage and Usage-Related Data while Protecting Privacy of Personal Data. Accessed from http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M090/K845/90845985.PDF

This allows for an encompassing estimate of annual solid waste emissions reflecting the slow rate of waste decomposition. Because no landfills exist within the incorporated city, waste-in-place landfill emissions were not calculated into solid waste emissions.

Community-Generated Solid Waste

Community-generated solid waste emissions include waste disposal from the incorporated City and City municipal operations exclusive of whether or not waste disposal location was within the incorporated City. One active landfill exists just outside the City of Pittsburg—Keller Canyon Landfill—to which much of the waste is disposed. The rest of landfilled waste is sent to Altamont and Vasco Road Sanitary landfills. Calculations utilize the *ICLEI Community Protocol* "Solid Waste 4", Community-Generated Waste Sent to Landfills, methodology to estimate emissions. This method multiples an emissions factor that accounts for lifetime waste decomposition for mixed solid waste to community waste disposal volume in wet short tons. Since recycled waste and biomass material are removed from solid waste prior to landfill diversion, the impact of these efforts on emissions reductions are reflected in a lower landfill waste volume and emissions.

Community-wide solid waste generated in 2016 was provided by the California Department of Resources Recycling and Recovery (CalRecycle) Disposal Reporting System (DRS) in wet short tons per quarter. An emissions factor for CH_4 per wet short ton was multiplied with volume of disposed solid waste to calculate total solid waste emissions. Following *ICLEI Community Protocol* guidelines, landfill gas capture was assumed to be 75 percent with a 10 percent oxidation rate. Total waste generated, the emissions factor used, and total emissions from solid waste are shown in Table 15 below.

Table 15 Community-Generated Solid Waste (2016)

Waste Totals	Quantity
Keller Canyon Waste Disposal (wet short tons)	59,559
Altamont Landfill Waste Disposal (wet short tons)	488
Vasco Road Sanitary Landfill (wet short tons)	9
Other Landfills (wet short tons)	7,651
Total Community Waste to Landfills (wet short tons)	67,707
Waste Disposal Per Capita (MT/person/day)	0.28
Emission Factor (MT/wet short ton)	0.30
Total Community-wide Emissions (MT CO_2e)	**20,269**

Sources: City of Pittsburg, 2019; Calrecycle, 2018. Altamont and Vasco Road Landfill Quarterly Tonnage Reports. https://www2.calrecycle.ca.gov/LGCentral/ DisposalReporting/. Accessed June 2019

In addition to landfilled waste, the community has implemented various residential and community composting, recycling, and waste diversion programs. Many of these began in 1990 and others began later in the decade. They include curbside pick-up, self-hauling, and facility drop-off programs. Together, these programs reduced landfilled waste by 42,734 MT in 2016, as shown in Table 16.

Table 16 Community-Generated Alternative Daily Cover, Recycling and Biomass GHG Reduction Potential (2016)

Waste Totals	Quantity
Alternative Daily Cover (wet short tons)	11,033
Other Diverted Waste[1]	2,378
Community Composting (MT)	14,704
Community Biomass (MT)	6,633
Community Green Waste Total (MT)	21,337
Community Recycling (MT)	8,111
Total Diversion	**42,734**

[1] Includes diverted large items such as mattresses, tires, hazardous material, metal, concrete, carpeting and aluminum.
Sources: City of Pittsburg, 2019. Contra Costa Waste and Mt. Diablo Recycling Tonnage Report 2016.
City of Pittsburg, July 2018. Calrecycle Annual Report Summary: Pittsburg 2016.

Municipally-Generated Solid Waste

Municipal emissions composed two percent of total community-wide emissions from landfilled waste in 2016. Similarly, to community waste diversion, municipal facilities participate in composting, recycling and biomass waste diversion. Pittsburg schools, including Los Menados College's Pittsburg campus, contribute the majority of waste diversion, while municipal facilities contribute a smaller amount. Total waste disposal, diversion, and associated emissions are shown in Table 17 below.

Table 17 Municipally-Generated Solid Waste, Recycling and Alternative Daily Cover (2016)

Waste Totals	Quantity
Municipal Solid Waste Entering Landfills (wet short tons)	1,164
Municipal Recycling (short tons)	24
Municipal Composted (short tons)	3
Emission Factor (MT CO_2e/wet short ton)	0.34
Total Municipal Emissions (MT CO_2e)	**396**

Source: City of Pittsburg 2019.

Water

Water emissions come from extraction, conveyance, treatment, distribution and storage of water to the incorporated community and municipal operations. Emissions vary by water origin and distance to treatment facility, water treatment process and equipment used at the facility. Emissions resulting from water use at City facilities are included in this total. Emissions from electricity used for pumping, storage and treatment are also included in water sector emissions and excluded from electricity sector emissions.

ICLEI Community Protocol's "Wastewater 14" method was utilized to calculate emissions separately for each step in water sourcing (extraction, treatment and conveyance, storage and distribution). The City of Pittsburg 2015 Urban Water Management Plan provides total electricity used for these each step in the 2015 fiscal year (FY), as well as the energy intensity per water volume for recycled water treatment and distribution. Energy intensities, emission factors and sources are shown in Table 18 below.

Table 18 Water Energy Intensities & Emissions Factors (2016)

Inventory Variable	Quantity	Data Source
Water Consumption	14,845 acre-feet	City of Pittsburg
Electricity Emissions Factor	0.133 MT CO2/MWH	PG&E
Extraction Energy Intensity	471,299 kWh	Pittsburg 2015 UWMP
Treatment & Conveyance Energy Intensity	5,862,859 kWh	Pittsburg 2015 UWMP
Distribution Energy Intensity	242,376 kWh	Pittsburg 2015 UWMP
Storage Energy Intensity	279,423 kWh	Pittsburg 2015 UWMP
Recycled Water Energy Intensity	3,466 kWh/MG	Pittsburg 2015 UWMP
Community-wide GHG Emissions	1,917 MT CO2e	Calculated (EF x Community Consumption)
Municipal Water Consumption	341 acre-feet	Calculated (Community Consumption x 2.3%)
Municipal GHG Emissions	44 MT CO2e	Calculated (EF x Municipal Consumption)

The City of Pittsburg provided data on surface and groundwate supply to the incorporated community for the 2015 fiscal year (FY) and 2016 FY, and City municipal facilities for 2016. The 2015 FY data, which encompasses July 2015 through June 2016, is used as a proxy for all 2016 data as delivered water totals are comparable between the years and more complete data is available for the 2015 FY. Recycled water supply was provided by the City's 2015 UWMP. Table 19 lists total water supplied to the City and municipal operations in 2016.

The City of Pittsburg provided data on surface and groundwater supply to the incorporated community for the 2015 fiscal year (FY) and 2016 FY, and City municipal facilities for 2016. The 2015 FY data, which encompasses July 2015 through June 2016, is used as a proxy for all 2016 data as delivered water totals are comparable between the years and more complete data is available for the 2015 FY. Recycled water supply was provided by the City's 2015 UWMP. Table 19 lists total water supplied to the City and municipal operations in 2016.

Table 19 Water Supplied to Incorporated Community & Municipal Operations (2016)

Step	Community-wide Quantity (MG/Year)	Municipal Quantity (MG/Year)
Groundwater	441	9
Surface Water	2,227	47
Recycled Water	2,169	46
Total Supplied	**4,837**	**103**
Percent Municipal Use	2.3%	
Per Capita Supply (gal/person/day)	186	

MG = million gallons

Per Capita Supply = Total Water Supplied / Population Served / 365.25

Source: City of Pittsburg, 2019. Water Supply and Treatment Report 2005-2018.

Recycled water composes the majority of water sector emissions, followed by treatment and conveyance and extraction, while distribution and storage compose only a small contribution to water processing emissions. Figure 4 and Table 20 below show the contribution of water sourcing and processing emissions by step.

Table 20 Water Emissions by Sourcing and Processing Step (2016)

Processing Step	Emissions (MT CO_2e)
Groundwater Extraction	63
Surface Water Treatment and Conveyance	782
Storage	37
Distribution	32
Recycled Water Use	1,002
Total	1,917

Source: City of Pittsburg, 2019.

Figure 4 Water Emissions by Sourcing and Processing Step (2016)

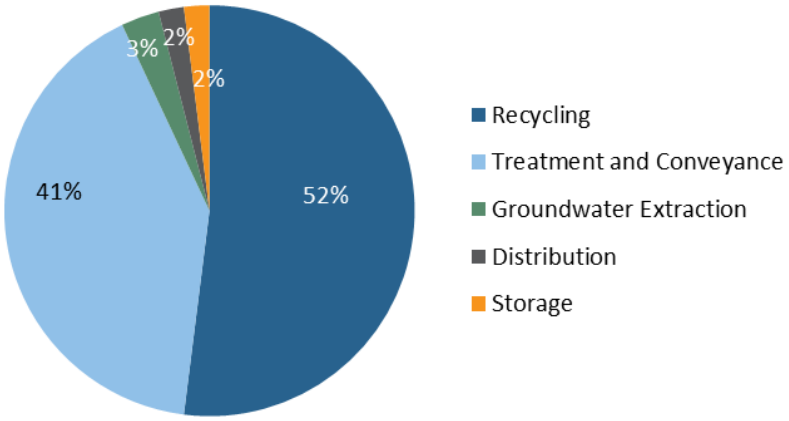


Table 21 shows water volume in each step of processing, along with energy intensity per volume water, electricity use and emissions. Water volume multiplied by energy intensity allowed for an estimate of electricity consumption for recycled water treatment and distribution. Groundwater extraction, total surface water treatment and conveyance, water distribution, and water storage electricity consumptions were reported in the City's 2015 Urban Water Management Plan and do not have associated energy intensities. These values were multiplied by the PG&E provided electricity emission factor to obtain total emissions. Electricity consumption required for water processing is excluded from electricity sector emissions to avoid double counting.

Table 21 Energy Use and Emissions by Water Processing Step (2016)

Processing Step	Volume (MG)	Energy Intensity (kWh/MG)1	Electricity Consumption (MWh)[1]	Emissions (MT CO_2e)	Percent of Emissions
Surface Water					
Treatment and Conveyance	2,227	–	5,863	782	41%
Groundwater					
Extraction	441	–	471	63	3%
Local Supply					
Recycled	2,169	3,466	7,518	1,002	52%
Other Processes					
Distribution	–	–	242	32	2%
Storage	–	–	279	37	2%
Total	**4,837**		**14,374**	**1,917**	**100%**

MG = million gallons; kWh = kilowatt-hour; MWh = megawatt-hour

[1] City of Pittsburg. 2016. City of Pittsburg 2015 Urban Water Management Plan. Energy intensities were not provided for all processing steps. Where energy intensities per volume were not provided, total electricity consumption by each process was used to calculate emissions.

Source: City of Pittsburg, 2019. Water Supply and Treatment Report 2005-2018

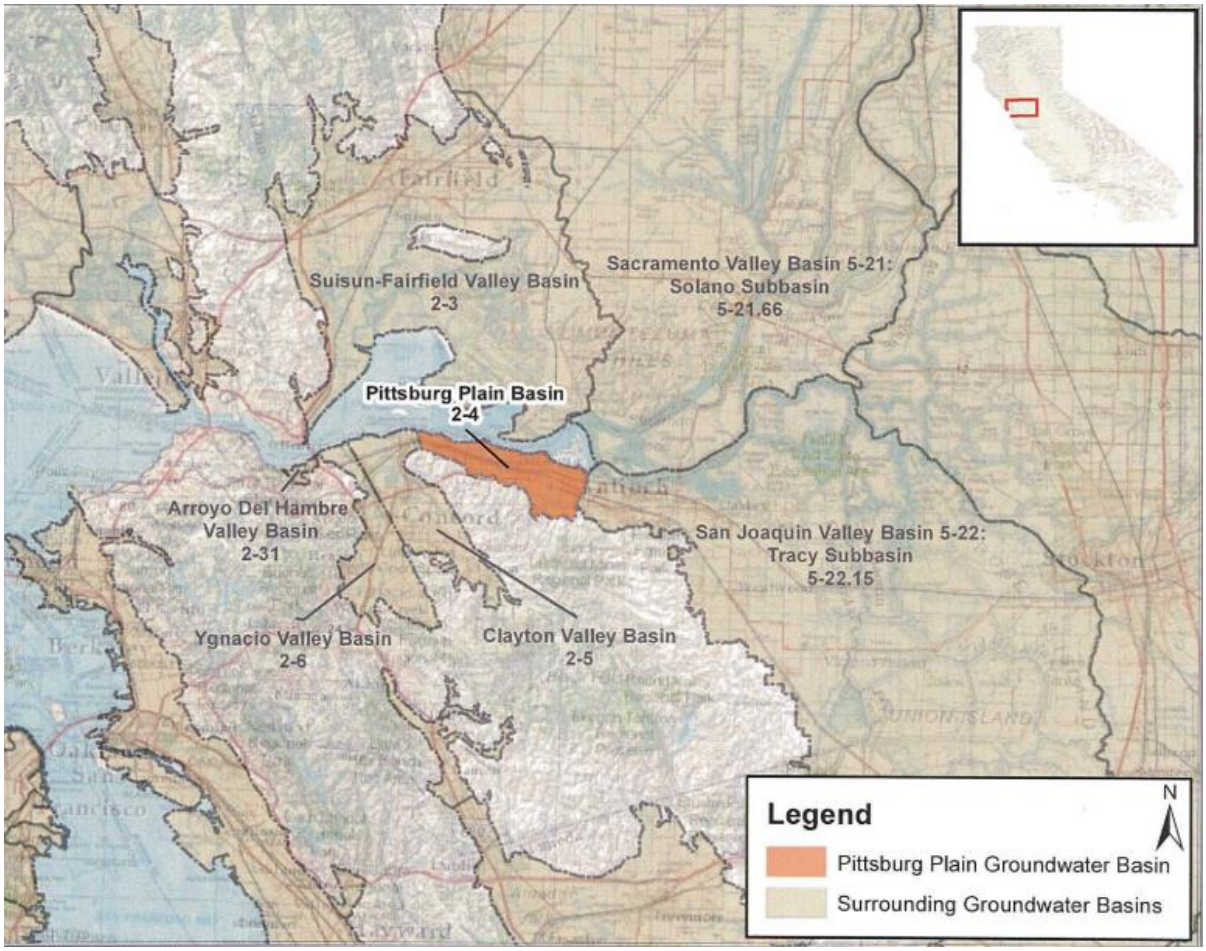
Surface Water Supply

Volume of water supplied to the incorporated community and municipal operations was provided by the City of Pittsburg. The population served by this water supply was 71,342 in 2016. The City purchases Central Valley Project (CVP) water pumped from the California Delta by Contra Costa Water District (CCWD), its wholesale supplier. According to its 2015 Urban Water Management Plan, the City obtains 85% to 95% of its water supply from CCWD pursuant to a contractual arrangement.

Groundwater Supply

In addition to water supplied by CCWD, approximately 9 percent of the total water supplied by CCWD was sourced from groundwater extracted from two City-owned wells. This water is extracted from the Pittsburg Plain Groundwater Basin. The basin is bounded by Suisun Bay to the north, the Tracy Sub-basin of the San Joaquin Valley Groundwater Basin on the east, and the Clayton Valley Groundwater Basin on the west, as shown in Figure 5 below.

Figure 5 Groundwater Basin Serving the City of Pittsburg



Source: Luhdorff and Scalmanini Consulting Engineers and MWH Global, Inc. (October 2012). *Pittsburg Plain Groundwater Basin Groundwater Management Plan.* Executive Summary, Figure ES-1. Retrieved March 2019 from http://apps.ci.pittsburg.ca.us/sirepub/cache/2/o5dzrgyc1geldijjtxvlkt55/28508570311201905333273 2.PDF

Surface Water Emissions

Electricity consumption for surface water treatment and conveyance was multiplied by PG&E's electricity emissions factor in 2016 to estimate associated emissions. The provided electricity consumption encompasses energy used in the conveyance of surface water from the Contra Costa Canal to the City's water treatment plant (WTP), and the treatment of this water at the WTP prior to distribution to the City's local service reservoirs.

Groundwater Emissions

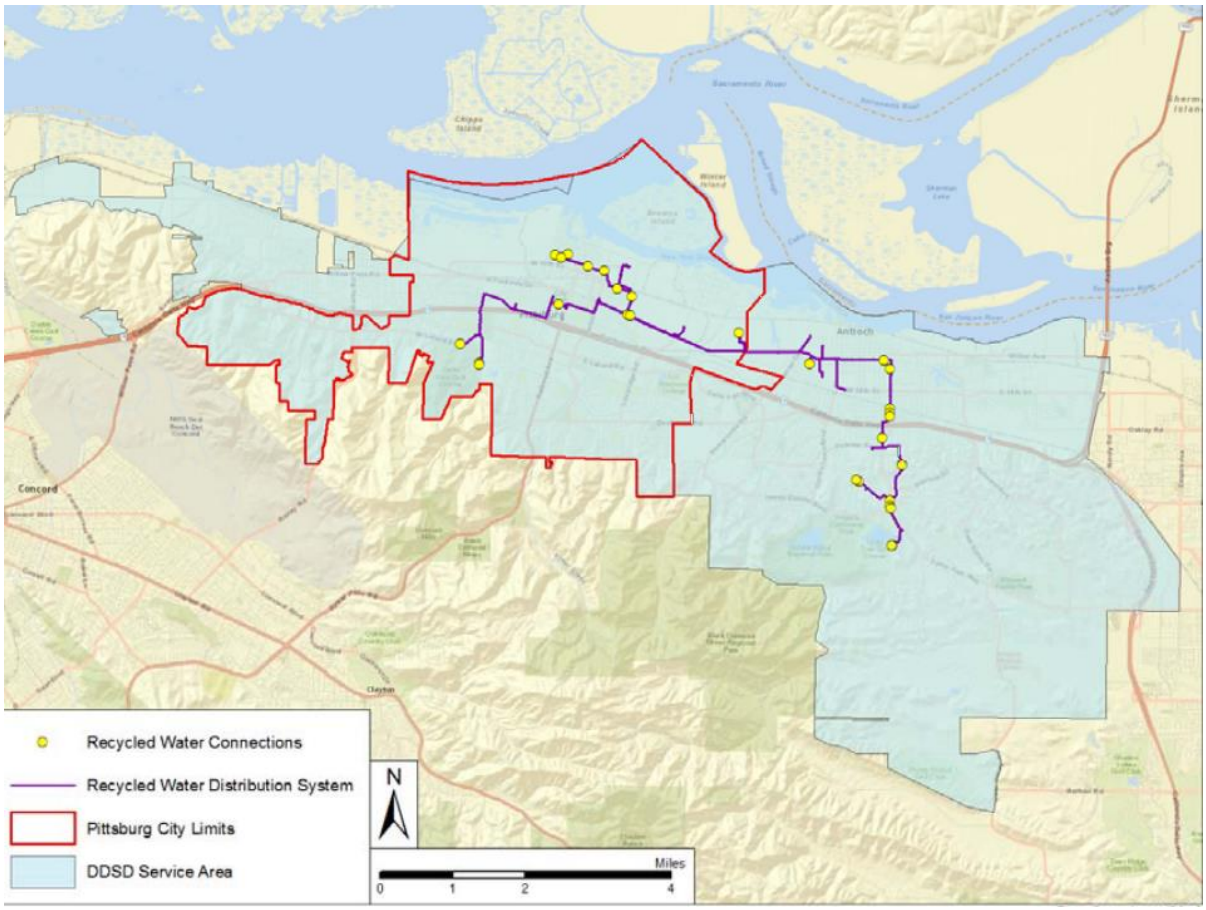
Electricity consumption associated with groundwater extraction was multiplied by PG&E's electricity emission factor in 2016 to identify emissions from groundwater extraction. Groundwater in Pittsburg is blended with surface water after extraction and treated at the City's WTP; therefore, treatment energy use of groundwater is included in surface water emissions and only energy associated with extraction is accounted for here. Electricity and associated emissions from distribution of extracted groundwater are included in total water distribution emissions as shown in

Table 21. Electricity used by groundwater extraction was excluded from electricity sector emissions to avoid double counting.

Recycled Water Emissions

Recycled water volume was multiplied by recycled water treatment and distribution energy intensity to identify electricity use and associated emissions. No further treatment is assumed for recycled water beyond tertiary treatment at water reclamation facilities. Recycled water is provided for non-potable uses in industrial cooling and irrigation. Recycled water electricity and emissions totals were also excluded from the electricity sector. Figure 6 below shows DDSD's recycled water system in the City of Pittsburg.

Figure 6 Delta Diablo Sanitation District Recycled Water System



Source: City of Pittsburg. June 2016. *City of Pittsburg 2015 Urban Water Management Plan*. Figure 6-1 Recycled Water System, p. 25. Prepared by RMC Water and Environment and City of Pittsburg Water Utilities Department. Accessed March 2018 at http://www.ci.pittsburg.ca.us/Modules/ShowDocument.aspx?documentid=8283

Wastewater

Wastewater treatment processes include both direct and indirect emissions. Direct emissions include combustion of digester gas produced at the wastewater treatment plant (WWTP) and fugitive emissions from processing methods. Digester gas combustion produces CH_4 and N_2O emissions, while process emissions include fugitive CH_4 and/or N_2O, depending on the treatment process utilized. Indirect emissions result from processes related to wastewater collection and

treatment, but not emitted directly from the WWTP itself. These include energy use emissions associated with the collection and treatment of wastewater, as well as fugitive N_2O resulting from additional chemical reactions when effluent discharge reaches a natural watershed.

Wastewater Treatment Servicer

Delta Diablo Sanitation District (DDSD) provides treatment services for the Cities of Pittsburg and Antioch and the unincorporated area of Bay Point. Treatment occurs at a centralized WWTP for which DDSD provided the volume of water treated in 2016, 4.453 million gallons. The total population served by the district was then divided by City of Pittsburg population in 2016 to identify Pittsburg's contribution to DDSD-treated wastewater. Since DDSD's facility emission factors are not known, default ICLEI Community Protocol emission factors were used for calculating wastewater treatment emissions.

The DDSD WWTP provides primary, secondary and tertiary treatment of wastewater. Primary treatment is a mechanical process which utilizes screens, grit chambers and settling tanks to remove trash and settable solids. Secondary treatment utilizes biological processes to convert suspended particles into sludge, which then undergoes anaerobic digestion to break down organic solids. The anaerobic digestion process produces methane gas which is captured and burned to power treatment plant facilities. Secondarily treated water is discharged to the New York Slough without nitrification/denitrification processing. A portion of the wastewater undergoes tertiary treatment, requiring additional chemical and treatment and filtration. This water is recycled and used for industrial cooling and irrigation.

Wastewater Treatment Emissions

The *ICLEI Community Protocol's* "Wastewater 1 alt.", "Wastewater 2 alt." and "Wastewater 8" methods were used to calculate direct emissions from wastewater treatment. "Wastewater 1 alt." and "Wastewater 2 alt." methods calculate CH_4 and N_2O emissions resulting from the combustion of captured digester gas produced by anaerobic digestion of biosolids. These calculations use the default values provided by the *ICLEI Community Protocol* for digester gas generation based on WWTP service population and for efficiency of digester gas combustion. Method "Wastewater 8" accounts for N_2O process emissions in WWTPs which do not support nitrification or denitrification, based on population served by the WWTP. Default values provided by the *ICLEI Community Protocol* for N_2O emissions factors were used, with the assumption that the WWTP received wastewater with high nitrogen loading of industrial or commercial discharge. A population of 70,233 was used for calculation of community GHG emissions.

Indirect emissions associated with wastewater consumption were calculated using *ICLEI Community Protocol* "Wastewater 12 alt." and "Wastewater 15.1". These calculations include N_2O emissions from effluent discharge and energy use emissions from wastewater collection and treatment modalities. "Wastewater 12 alt" method was used for calculating fugitive N_2O emissions resulting from effluent discharge of secondarily treated wastewater. This calculation used the nitrogen load discharged, 1,500 kg or nitrogen per day provided by DDSD, scaled by the population of Pittsburg, as well as default *ICLEI Community Protocol* values for emission factors. Energy use emissions calculated using method "Wastewater 15.1" utilized default values provided by the *ICLEI Community Protocol* for energy intensities per unit volume of collection and treatment at a centralized WWTP. The DDSD utilizes conventional aerobic treatment for sludge; therefore, only this treatment modality is included in calculations. The treatment energy intensity used for calculations was 2,000 kilowatt-hours per million gallons (kWh/MG), the default for WWTPs with a capacity of 5-20 million

gallons per day. The median default value was chosen for collection energy intensity, 280 kWh/MG. Wastewater treatment volumes for 2016 were provided by DDSD and scaled to represent the population of Pittsburg. Table 22 provides emissions by source for both direct and indirect emissions resulting from wastewater treatment.

Table 22 Community Wastewater Emissions by Source (2016)

Source	Emissions (MT CO_2e)
Direct Emissions	
Anaerobic Digester Gas Combustion	5
Fugitive N_2O from Process Emissions	84
Total Direct Emissions	89
Indirect Emissions	
Fugitive N_2O from Effluent Discharge	438
Collection Energy	57
Treatment Energy	406
Total Indirect Emissions	901
Total Emissions	**990**

Source: City of Pittsburg, 2019

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Appendix E: GHG Forecast and Targets Analysis

Rincon Consultants, Inc.

449 15th Street, Suite 303
Oakland, California 94612

510 834 4455 OFFICE

info@rinconconsultants.com
www.rinconconsultants.com

December 5, 2022
Project No: 19-08506

Sara Bellafronte
Senior Analyst
City of Pittsburg
65 Civic Avenue
Pittsburg, California 94565
Via email: SBellafronte@pittsburgca.gov

Subject: **City of Pittsburg Greenhouse Gas Emissions Forecasts and Provisional Target Memorandum**

Dear Ms. Bellafronte,

Rincon Consultants, Inc. (Rincon) has calculated the greenhouse gas (GHG) emissions forecast and provisional GHG reduction targets based on the 2005 and 2016 GHG emissions inventories. The 2005 and 2016 GHG emissions inventories, as provided in the *City of Pittsburg Greenhouse Gas Emissions Inventories Updated 2005 and 2016* (updated in July 2022), identify the major sources and quantities of GHG emissions produced by communitywide activities within Pittsburg's boundaries. The inventories were developed to establish a baseline comparable to the State's 1990 emissions level baseline, track GHG emissions reductions in the City of Pittsburg (City), and set targets for future reductions.

The GHG emissions forecast provides an estimate of how the City's GHG emissions are expected to change in the years 2020, 2030 (Senate Bill [SB] 32 horizon year), 2040 (General Plan Update horizon year), and 2045 (Assembly Bill [AB] 1279 horizon year) as a result of projected economic and population changes, as well as the impacts that state climate related legislation will have on these future GHG emissions. Additionally, this memorandum includes provisional GHG emissions reduction targets that are consistent with the state's goals and provides a pathway to determine the quantity of GHG emissions that Pittsburg needs to contribute their fair share reduction towards achieving California's long-term GHG emission reduction goals.[1] Below, please find a brief regulatory background detailing California's GHG reduction goals and strategies followed by a summary of the methodology used to calculate the forecasts and the provisional GHG reduction targets.

Regulatory Background

California considers GHG emissions and the impacts of climate change to be a serious threat to public health, the environment, economic well-being, and natural resources of the state, and has taken an aggressive stance to mitigate the impact on climate change through the adoption of legislation and policies, the most relevant of which are summarized below.

[1] California's long-term GHG emissions reduction goals were established by Assembly Bill 32, Senate Bill 32, Executive Order B-55-18, and Assembly Bill 1279. Collectively, these legislative actions provide a GHG reduction trajectory for the state of reducing statewide GHG emissions to 40% below 1990 GHG emissions levels 2030, and carbon neutrality by 2045.

- **Assembly Bill (AB) 32,** known as *the Global Warming Solutions Act of 2006,* requires that California's GHG emissions be reduced to 1990 levels by the year 2020 (approximately a 15 percent reduction from 2005 to 2008 levels). The AB 32 Climate Change Scoping Plan, 2008, identifies mandatory and voluntary measures to achieve the statewide 2020 emissions goal, and encourages local governments to reduce municipal and community GHG emissions proportionate with state goals.[2] AB 32 is discussed in order to provide context, however, because 2020 has passed, no targets were identified in association with this bill.
- **Senate Bill (SB) 32,** signed by the Governor in 2016, requires a statewide GHG reduction of 40 percent below 1990 levels by 2030. The California Air Resources Board (CARB) formally adopted an updated Climate Change Scoping Plan in December 2017, laying the roadmap to achieve the 2030 goal and giving guidance to achieve substantial progress toward the 2050 state goal.[3]
- **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 include reducing emissions by at least 85 percent below 1990 levels in addition to achieving carbon neutrality.[4] The 2022 Climate Change Scoping Plan Update (November 2022) provides the pathway for reaching the State's AB 1279 goal.[5]

GHG Emissions Forecasts

A GHG emissions inventory establishes 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 changes to future GHG emissions by accounting for projected changes in the local population and economy. 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 of Pittsburg in the years 2020, 2030, 2040, and 2045 in a business-as-usual scenario (BAU) forecast and a legislative adjusted scenario (adjusted) forecast, which are defined as follows:

- *Business-as-usual scenario* - Provides a forecast of how future GHG emissions would change if current activities continued as they did in 2016 and growth trends were to occur absent of any new policies or legislation that would reduce local emissions. The BAU forecast is based on growth trends projected in population, housing, employment, and transportation activity over time, consistent with regional projections. The growth trends are consistent with the City of Pittsburg's 2040 General Plan Update projections.

[2] Specifically, the AB 32 Scoping Plan states that CARB, "encourages local governments to adopt a reduction goal for municipal operations emissions and move toward establishing similar goals for community emissions that parallel the State commitment to reduce GHG emissions by approximately 15 percent from current levels by 2020" (p. 27). "Current" as it pertains to the AB 32 Scoping Plan is commonly understood as between 2005 and 2008.

[3] California Air Resources Board (CARB). 2017. California's 2017 Climate Change Scoping Plan. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf. Accessed November 21, 2022.

[4] According to AB 1279, carbon neutrality or net zero GHG emissions means emissions of greenhouse gases to the atmosphere are balanced by removals of greenhouse gas emissions over a period of time.

[5] California Air Resources Board (CARB). 2022. 2022 Scoping Plan for Achieving Carbon Neutrality. Available: https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp.pdf. Accessed November 21, 2022.

- *Adjusted scenario* - Provides a forecast of how currently adopted legislation would reduce GHG emissions from the business-as-usual scenario. The adjusted scenario represents the state's contribution to reducing local GHG emissions to meet state goals without any additional contribution from local policies or actions.

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

Business-as-usual Forecast

Future GHG emissions were calculated by multiplying projected activity data under the BAU forecast with baseline emission factors, established by the 2016 community GHG emissions inventory. Indicator growth factors were developed for each sector based on the 2016 activity data and GHG emissions levels. These factors were then applied to demographic projections to estimate future year emissions. On-road transportation and off-road equipment GHG emissions were separately projected using modeled activity data for the forecast years.[6] Emission factors for the BAU forecast were derived from the 2016 GHG inventory and remain constant for all forecast years. A description of the demographic metrics used to project activity data and associated growth factors for each forecasted GHG emission source are provided in Table 1 for each for the GHG emission sources in the 2016 community GHG emissions inventory.

[6] California Air Resources Board (CARB). Modeling Tools On-road and Off-road. 2022. https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-modeling-tools. Accessed June 14, 2022.

Table 1 GHG Emission Sources and Growth Factors for BAU Scenario Forecast

GHG Emissions Source	Demographic Projection Metric	Growth Factor	Value
Energy			
Residential Electricity	Population	Electricity Consumption (kWh) per Resident	2,103.21
Non-residential Electricity	Jobs	Electricity Consumption (kWh) per Job	6,316.13
Residential Natural Gas	Population	Natural Gas Consumption (therms) per Resident	111.45
Non-residential Natural Gas	Jobs	Natural Gas Consumption (therms) per Job	443.98
Transmission and Distribution Losses (T&D Losses)	N/A	T&D Losses Factor (9%) applied to total Electricity Consumption[1]	N/A
Transportation			
On-Road Passenger Transportation	Population	Passenger VMT per Resident	3,428.81
On-Road Commercial Transportation	Jobs	Commercial VMT per Job	2,309.01
Off-Road Equipment	N/A	Obtained from CARB's OFFROAD2021 off-road transportation emissions model	N/A
Port Transportation and Goods Movement	Jobs	Number of Port Calls per Job	0.003992
BART	Service Population	BART Passenger Trips per Service Population	0.07903
Electric Vehicle Electricity Consumption	Population	EV Charging Electricity Consumption (kWh) per Population	9.396
Water			
Electricity Used to Treat, Transport, and Pump Water	Service Population	Water Supply Electricity Consumption (kWh) per Service Person	174.07
Wastewater Collection and Treatment	Service Population	Wastewater Collection and Treatment Electricity Consumption (kWh) per Service Person	42.02
Wastewater Fugitive and Process Emissions	Population	Wastewater Process and Fugitive Emissions (MT CO_2e) per Resident[2]	1.00
Solid Waste			
Solid Waste Disposal	Service Population	Solid Waste Disposed (tons) per Service Person	0.8199

Notes: MT CO_2e = 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 transmission and distribution loss factors for the GHG emissions forecast are based on the loss factor used in development of the 2016 GHG emissions inventory.

[2] Activity data for wastewater fugitive and process emissions uses the City population; therefore, activity data for this emissions source is the same as projected population.

The BAU forecast relies on population, job, and service population projections from the 2040 Pittsburg General Plan Update in development. A summary of the demographics and projection metrics for each forecast year in the BAU forecast are provided in Table 2.

Table 2 BAU Forecast Demographic and Projection Metrics by Forecast Year

Demographics/ Sector	Data Source	2020	2030	2040	2045
Population[1]	2040 Pittsburg General Plan Update	76,242	85,934	95,626	101,312
Employment[1]	2040 Pittsburg General Plan Update	13,330	25,754	38,177	45,027
Service Population[2]	Calculated	89,572	111,688	133,803	146,339
Off-road Diesel (gallons)	OFFROAD2021	543,937	709,984	809,995	860,001
Off-road Gasoline (gallons)	OFFROAD2021	558,587	604,688	676,229	711,999
Off-road Natural Gas (gallons)	OFFROAD2021	66,368	75,775	81,738	84,720

[1] Population and employment projections for the City of Pittsburg are from the City of Pittsburg Community and Economic Development Department's Notice of Preparation (April 20, 2022) for the in-progress 2040 Pittsburg General Plan Update.

[2] Service population: the sum of the population and employees in the City of Pittsburg, based on 2040 Pittsburg General Plan Update projections.

[3] Passenger VMT was calculated based on results from the MTC Transportation Demand Model and augmented to include motorcycle VMT using data from EMFAC2021.

[4] Commercial VMT was calculated using percent increase metrics in commercial VMT for Contra Costa County from EMFAC2021, which were applied to the commercial VMT total for 2016 from the 2016 community inventory, originally obtained from MTC. Commercial VMT was augmented to include bus VMT using data from EMFAC2021.

The BAU forecast was calculated using the growth factors in Table 1, the projected growth metrics in Table 2, and the 2016 community inventory emission factors. In the BAU forecast, GHG emissions are expected to increase through 2045 with growth of the population and jobs projected for the region. A summary of the BAU forecast results by GHG emission sector is provided in Table 3.

Table 3 BAU Forecast Results Summary by Emission Sector (MT CO_2e)

GHG Emissions Sector	2016	2020	2030	2040	2045
Energy	104,933	112,563	162,175	211,787	239,449
Transportation	156,021	168,368	229,623	290,403	324,315
Waste	20,269	21,985	27,414	32,842	35,919
Water/Wastewater	2,906	3,252	4,055	4,858	5,314
Total	**284,129**	**306,169**	**423,267**	**539,891**	**604,997**

Notes: All values are presented in metric tons of carbon dioxide equivalent (MT CO_2e)

Adjusted Forecast

Several federal and state regulations have been enacted that would reduce Pittsburg's GHG emissions in 2020, 2030, 2040, and 2045. The impact of these regulations was quantified and incorporated into the adjusted forecast to project future emissions growth and the responsibility of the Pittsburg once established state regulations have been implemented. The state legislation included in the adjusted forecast result in GHG emission reductions related to 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. This adjusted forecast does not take into account waste or water reductions from legislation such as SB X7-7, AB 341 or SB 1383 as discussed further below. The GHG emissions reduction that would be achieved by these will be accounted for in the GHG reduction goals, as they require discreet actions by the City, and therefore, the City can take credit for the GHG reduction resulting from the implementation.

The adjusted forecast additionally includes GHG emissions reductions from the City's switch from Pacific Gas and Electric (PG&E)-provided electricity to Marin Clean Energy (MCE)-provided electricity in 2018. MCE is a community choice aggregation (CCA) in Contra Costa County, which provides lower-emissions electricity options to Pittsburg. The GHG emissions reductions from this local action were included in the adjusted forecast because the action has already occurred and the GHG emissions reductions for the forecast are significant. GHG emissions reductions from MCE-provided electricity are detailed separately from state-driven legislative reductions in the following section for increased transparency.

Transportation Legislation

Several major regulations and projections are incorporated into CARB's 2021 transportation model (EMFAC2021) including the Advanced Clean Truck Rule, Innovative Clean Transit Rule, electric vehicle sales projections and the repeal of the SAFE Vehicle Rule. These initiatives and programs are included in this adjusted GHG emissions forecast using EMFAC2021 derived GHG emissions factors.[7]

Adopted in 2020, the Advanced Clean Truck Rule requires manufacturers of heavy-duty on-road trucks to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales would need to be 55 percent of Class 2b – 3 truck sales, 75 percent of Class 4 – 8 vocational truck sales, and 40 percent of Class 7-8 truck tractor sales.

Adopted in 2018, Innovative Clean Transit regulation is a program that aims to transform California transit bus fleets to zero-emissions technologies. This regulation applies to all transit agencies that own, operate, or lease buses with gross vehicle weight ratings above 14,000 lbs. It requires all public transit agencies to gradually transition to a 100 percent zero-emission bus fleet and encourages them to provide innovative first and last-mile connectivity and improved mobility for transit riders.

In September 2019, the U.S. Environmental Protection Agency (US EPA) and the National Highway Traffic Safety Administration (NHTSA) issued the Safer Affordable Fuel-Efficient or SAFE Vehicles Rule. This rule reduced vehicle fleet efficiency standard to a maximum increase of 1.5 percent per year above 2020 standards through 2026. However, this rule has since been repealed.

Reduction in GHG emissions from the above referenced standards were calculated using CARB's EMFAC2021 model for Contra Costa County. The newly updated EMFAC2021 model integrates the estimated reduction from state and federal transportation legislation into the mobile source emissions portion of the model.[8] The degree to which GHG emissions from on-road transportation will be reduced

[7] California Air Resources Board. 2021. EMFAC2021 Volume III Technical Document Version 1.0.1. Available: https://ww2.arb.ca.gov/sites/default/files/2021-08/emfac2021_technical_documentation_april2021.pdf. Accessed August 18, 2021.

[8] Additional details are provided in CARB's EMFAC2017 Technical Documentation, July 2018. (https://www.arb.ca.gov/msei/downloads/emfac2017-volume-iii-technical-documentation.pdf). Note that the Low Carbon Fuel Standard (LCFS) regulation is excluded from EMFAC2017 because most of the emissions benefits due to the LCFS come from the production cycle (upstream emissions) of the fuel rather than the combustion cycle (tailpipe). As a result, LCFS is assumed to not have a significant impact on CO_2 emissions from EMFAC's tailpipe emission estimates.

can be quantified as the difference between transportation emissions calculated using the 2016 provided emission factors and calculated using the reduced emission factors for the target years.

Title 24

The California Code of Regulations Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first 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. Since the 2019 GHG inventory year, the 2019 Title 24 Energy Efficiency Standards have come into effect, creating significantly more efficient new building stock. For example, new residential developments must 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 improve energy efficiency for residential buildings by 53% for electricity end uses and 7% for natural gas end uses, relative to the 2016 standards. These percentage savings relate to space heating and cooling, lighting, and water heating only and do not include other appliances, outdoor lighting that is not attached to buildings, plug loads, or other energy uses.

The SB 32 Scoping Plan calls for the continuation of ongoing triennial updates to Title 24 that will yield regular increases in the mandatory energy and water savings for new construction. Future updates to Title 24 standards for residential and non-residential alterations past 2019 are not taken into consideration due to lack of data and certainty about the magnitude of energy savings that will be realized with each subsequent update. It should be noted that on January 1st of 2023 an updated Title 24 building code will be adopted. The energy consumption impacts of this update have not yet been determined but are expected to further increase building efficiency. Therefore, this forecast is expected to be a conservative estimate for new building efficiency post 2023.

Renewables Portfolio Standard & SB 100

Established in 2002 under Senate Bill 1078, enhanced in 2015 by Senate Bill 350, and accelerated in 2018 under Senate Bill 100, California's Renewables 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 these entities to increase procurement from GHG-free sources to 100 percent of total procurement by 2045. PG&E and MCE currently provide electricity in Pittsburg and are subject to RPS requirements. PG&E and MCE emission factors that included compliance with RPS were used to project emissions through 2045.[9] As shown in Table 4, the RPS and SB 100 requirements to reduce overall carbon intensity would reduce Pittsburg's emissions.

[9] MCE provides two electricity options in Pittsburg: Light Green and Deep Green portfolios. The Light Green portfolio contains 60 percent renewables while the Deep Green portfolio contains 100 percent renewables. The quantification of the impact of joining MCE conservatively assumes that there is an 89.7% participation rate in MCE's Light Green option, which is based on January 2022 enrollment data.

Table 4 Pittsburg Forecasted RPS and Electricity Emission Factors

Metric	2020	2030	2040	2045
PG&E Renewables Mix	40.7%	60.0%	86.7%	100.0%
PG&E Emission Factor (lbs CO_2e/MWh)	260	176	58.5	0
MCE Light Green Renewables Mix	61%	85%	95%	100%
MCE Light Green Emission Factor (lbs CO_2e/MWh)	77.0	29.7	9.90	0

Notes: lbs CO_2e = pounds of carbon dioxide equivalent; MWh = megawatt-hour

Data Source: PG&E RPS Procurement Plan. 2020. https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_5906-E.pdf. Accessed March 23, 2022.

MCE. Operational Integrated Resource Plan 2021-2030. 2020. https://www.mcecleanenergy.org/wp-content/uploads/2021/11/MCE-Operational-Integrated-Resource-Plan_2022.pdf.pdf. Accessed March 23, 2022

State Legislation not Considered in Adjusted Forecast

The following discussion highlights state legislation that plays an integral role to reducing GHG emissions, however, was not included in the emissions forecast calculations.

AB 939 & AB 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 (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. AB 341 aims to reduce waste sent to landfill before 2020, with GHG reductions achieved through the avoidance of landfill generated methane. Since the GHG emissions forecast analysis is considered for a post-2020 timeframe, the GHG reductions of Assembly Bill 341 may have already been achieved prior to this time period. As such, accounting for this bill in the GHG emissions forecast could result in double counting of GHG emissions reduction that may have already been achieved.

SB 1383

In 2016, SB 1383 established a methane emission reduction target for short-lived climate pollutants[10] (SLCP) in various sectors of the economy. 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 (CalRecycle 2019).[11] Additionally, SB 1383 requires a 20 percent reduction in "current" edible food disposal by 2025. Although SB 1383 has been signed into law, compliance at the jurisdiction-level is un-proven. For example, Santa Clara County, in their *SB 1383 Rulemaking Overview* presentation (June 20, 2018),[12] suggest that the 75 percent reduction in organics is not likely achievable under the current structure; standardized bin colors are impractical; and the

[10] Short-lived climate pollutants (SLCP) are powerful climate forcers that have relatively short atmospheric lifetimes. These pollutants include the greenhouse gases methane and hydrofluorocarbons, and anthropogenic black carbon. CARB 2019. https://ww2.arb.ca.gov/our-work/programs/short-lived-climate-pollutants

[11] CalRecycle. April 16, 2019. Short-Lived Climate Pollutants (SLCP): Organic Waste Methane Emissions Reductions (General Information). https://www.calrecycle.ca.gov/climate/slcp

[12] Santa Clara County. June 20, 2018. SB 1383 Rulemaking Overview. https://www.sccgov.org/sites/rwr/rwrc/Documents/SB%201383%20PowerPoint.pdf

general requirement is too prescriptive. As such, SB 1383 has not been included as part of the adjusted forecast. Instead, goals addressing compliance with SB 1383 will be included and quantified through GHG reduction goals included in the Pittsburg Sustainability Plan.

SB X7-7

Senate Bill (SB) X7-7, also known as the Water Conservation Act of 2009, requires that all water suppliers increase their water use efficiency. SB X7-7 establishes an urban water use reduction target of 20 percent below 2010 per capita daily water use levels by 2020. This legislation is not included in the GHG emissions forecast, as the reductions in per-capita water consumption will result from direct action by the City of Pittsburg for which the City should claim credit through policies in the Sustainability Plan. Furthermore, most of the impacts from SB X7-7 are already captured by the GHG inventory.

Legislative GHG Emission Reduction Contribution

Based on the above-described legislation and emissions reduction potential for each, the City of Pittsburg can expect significant help from these state regulations in meeting state GHG emissions reduction goals. These GHG emissions reductions primarily contribute to the energy sector and transportation sectors, with some impact from California RPS on GHG emissions from water due to the energy required to treat, transport, and deliver water. Emissions reductions from legislation reductions and MCE reductions were calculated sequentially and separately to reflect the additivity of reductions. Title 24 reductions were accounted for first followed by California RPS reductions associated exclusively with PG&E electricity while MCE reductions were calculated outside of the legislation and added into the forecasted emissions separately. PG&E and MCE proportions of electricity were calculated by taking opt-out rates and applying them to total projected electricity use through 2045. The legislative emissions reductions for Title 24, California RPS, and MCE are known to be additive and were calculated to avoid double counting. A summary of the reductions from the BAU forecast that can be expected under the adjusted forecast are provided in Table 5.

Table 5 Summary of Legislative GHG Emissions Reductions (MT CO_2e)

Legislation	2020	2030	2040	2045
California RPS	4,313	21,080	55,309	78,149
Title 24	1,308	3,278	5,248	6,404
Transportation Legislation (Pavley, Innovative Clean Transit, etc.)	23,519	68,970	119,069	141,304
MCE Impact	22,276	23,177	10,774	0
Total	**51,416**	**116,506**	**190,401**	**225,857**

Notes: All values are presented in metric tons of carbon dioxide equivalent (MT CO_2e)

Adjusted Forecast Results

In the adjusted 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. 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 from Title 24. Transportation emissions are expected to decrease through 2045 due to existing fuel efficiency requirements, fleet turnover rates, and increasing vehicle electrification driven by the electric vehicle market. 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. A detailed summary of the projected GHG emissions under the adjusted forecast by sector and year through 2045 can be found in Table 6.

Table 6 Adjusted Forecast Results (MT CO_2e)

GHG Emissions Source	2005 (Previous GHG Emissions Inventory	2016 (Previous GHG Emissions Inventory)	2020	2030	2040	2045
Residential Electricity	30,348	19,682	18,075	12,958	4,574	0
Non-residential Electricity	41,901	10,759	9,935	12,950	6,399	0
Residential Natural Gas	44,080	41,619	45,188	50,563	55,937	59,089
Non-residential Natural Gas	29,880	30,339	31,660	61,167	90,674	106,942
Electricity Transmission and Distribution Losses	3,901	2,636	2,434	2,251	953	0
Energy Sector Total	**150,110**	**105,036**	**107,293**	**139,889**	**158,536**	**166,032**
On-road Passenger Vehicles	125,160	99,355	92,343	80,469	79,185	82,351
On-road Commercial Vehicles	50,069	45,658	40,117	63,357	69,473	75,037
BART	1,170	163	156	132	53	0
Off-road Equipment	9,248	9,928	11,067	13,259	14,976	15,834
Port Transportation and Goods Movement	2,136	814	850	1,642	2,434	2,871
EV Electricity Consumption[1]	0	103	262	1,018	996	0
Transportation Sector Total	**187,784**	**155,918**	**144,795**	**159,877**	**167,116**	**176,093**
Solid Waste	**20,101**	**20,269**	**21,985**	**27,414**	**32,842**	**35,919**
Electricity Used to Treat, Transport, and Pump Water	4,708	1,917	1,840	1,548	618	0
Wastewater Collection and Treatment	678	463	444	374	149	0
Wastewater Fugitive and Process Emissions	517	526	671	837	1,003	1,307
Water/wastewater Sector Total	**5,903**	**2,906**	**2,955**	**2,758**	**1,770**	**1,096**
Total GHG Emissions	**363,899**	**284,129**	**277,028**	**329,938**	**360,264**	**379,140**

Notes: All values are presented in metric tons of carbon dioxide equivalent (MT CO_2e)

[1] Electric Vehicle Electricity Consumption is not included in GHG emissions totals for the transportation sector for the 2016 inventory year, as this electricity consumption is already included in the community electricity consumption. For forecast years, this electricity consumption for electricity vehicle charging was backed out of the community electricity consumption.

GHG Reduction Targets

GHG reduction targets are used for climate action planning to establish measurable metrics intended to guide the community's commitment to achieve GHG emissions reductions and help gauge progress on reducing emissions over time. GHG emission targets are developed relative to a baseline emissions level. California has established statewide GHG emission reduction goals for 2030 and 2045. CARB's 2017 Scoping Plan recommends that local agencies provide their fair share GHG reduction to achieve the

State's goals.[13] 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 climate action plans to comply with legislated GHG emissions reductions goals and California Environmental Quality Act Guidelines (CEQA) § 15183.5(b). For example, as mentioned above, in the 2017 Scoping Plan, CARB encouraged local governments to adopt an evidence based GHG reduction target for community emissions that are based on local emissions sectors and population projections that parallel the state commitment to reduce GHG emissions. In 2016, the state adopted SB 32, mandating a reduction of GHG emissions by 40 percent below 1990 levels by 2030. In 2022 the state adopted AB 1279 establishing a state goal of carbon neutrality by 2045 through a reduction of anthropogenic GHG emissions by 85 percent below 1990 levels. Pursuant to the Scoping Plan Update's recommendations, community GHG reduction targets should be developed based on local levels of GHG emissions that would be proportional to the statewide goals, relative to 1990.

Provisional GHG Reduction Targets

GHG reduction targets can be set as either an efficiency target (i.e., MT CO2e per capita) or as a community-wide mass emissions target (i.e., total MT CO2e). In the below section, both pathways are presented relative to a baseline. The City of Pittsburg previously conducted a comprehensive GHG emissions inventory for the year 2005, which can be used as the baseline for GHG emissions reduction target setting. The Governor's Office of Planning and Research's General Plan Guidelines recommends using a 2005 GHG emissions inventory for comparison to state GHG emissions reduction goals, by estimating that 2005 GHG emissions levels were 15% higher than 1990 levels.[14] The GHG emissions reduction targets setting provided below uses this as the basis for GHG emissions reductions pathways. The targets setting also uses a population estimate of 47,564 in 1990 for the City.[15]

GHG Emissions Reduction Target Setting

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 goals. As such, the targets identified herein should remain provisional until the quantification and analysis of potential GHG reduction goals has been completed. The purpose of target setting is to develop the trajectory toward achieving the State's 2030 goal and prepare for the deep decarbonization needed by 2045 in a cost-effective manner by setting an incremental path toward achieving the AB 1279 goals. CARB guidance is for jurisdictions to first strive to exceed the SB 32 targets of reducing GHG emissions 40 percent below 1990 levels, while

[13] California Air Resources Board (CARB). 2017. California's 2017 Climate Change Scoping Plan. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf. Accessed November 21, 2022.
[14] Governor's Office of Planning and Research. 2017. General Plan Guidelines. Chapter 8: Climate Change. Available: https://opr.ca.gov/docs/OPR_C8_final.pdf. Accessed June 26, 2022.
[15] Bay Area Census. City of Pittsburg 1990 Census. Available: http://www.bayareacensus.ca.gov/cities/Pittsburg70.htm. Accessed November 18, 2022.

establishing a policy framework to achieve the long-term target of carbon neutrality by 2045 through a reduction of anthropogenic GHG emissions by 85 percent below 1990 levels by 2045.

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.

The table below presents the GHG reduction target pathways calculated for the City.

Table 7 GHG Reduction Target Pathways and Gap Analysis

Emissions Forecast or Pathway	2005 (Previous Inventory)	2016 (Previous Inventory)	2030	2035	2040	2045
SB 32 Mass Emissions Target Pathway Scenario						
Adjusted Forecast (MT CO_2e)	363,899	284,129	329,938	345,821	360,264	379,140
SB 32 Mass Emissions Target Pathway (MT CO_2e)[1]	363,899	284,129	185,588	123,726	61,863	0
Remaining Emissions Gap (MT CO_2e)[2]	0	0	144,349	222,095	298,401	379,140
SB 32 Per Capita Emissions Target Pathway Scenario						
Population	61,120	69,805	85,934	90,780	95,626	101,312
Per Capita Adjusted Forecast (MT CO_2e/person)	5.95	4.07	3.84	3.81	3.77	3.74
SB 32 Per Capita Target Pathway (MT CO_2e/person)[3]	5.95	4.07	3.90	2.60	1.30	0
SB 32 Per Capita Target Pathway Translated to Mass Emissions (MT CO_2e)[4]	363,899	284,129	335,303	236,141	124,373	0
Remaining Emissions Gap (MT CO_2e) [2]	N.A	N.A	-5,365	109,680	235,890	379,140
Custom Per Capita Emissions Target Pathway Scenario						
Custom Per Capita Target Pathway (MT CO_2e/person)[5]	5.95	4.07	3.00	2.00	1.00	0
Custom Per Capita Target Pathway Translated to Mass Emissions (MT CO_2e)[4]	363,899	284,129	257,802	181,560	95,626	0
Remaining Emissions Gap (MT CO_2e) [2]	N.A	N.A	72,136	164,261	264,638	379,140

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; N.A = Not applicable

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 (i.e., 309,314 MT CO2e) by 40% in 2030 and to zero in 2045. This provisional target pathway is consistent with both SB 32 and a trajectory set forth to achieve AB 1279.

2. The remaining emissions gaps are calculated by subtracting the mass emission targets from the adjusted forecast for each year.

3. The target pathway is calculated by reducing 1990 per capita emissions (i.e., 6.5 MT CO2e/person) by 40% in 2030 and to zero in 2045. This provisional target pathway is consistent with both SB 32 and a trajectory set forth to achieve AB 1279.

4. The target pathways are translated to mass emissions by multiplying the per capita emissions target by the City's population in the respective year.

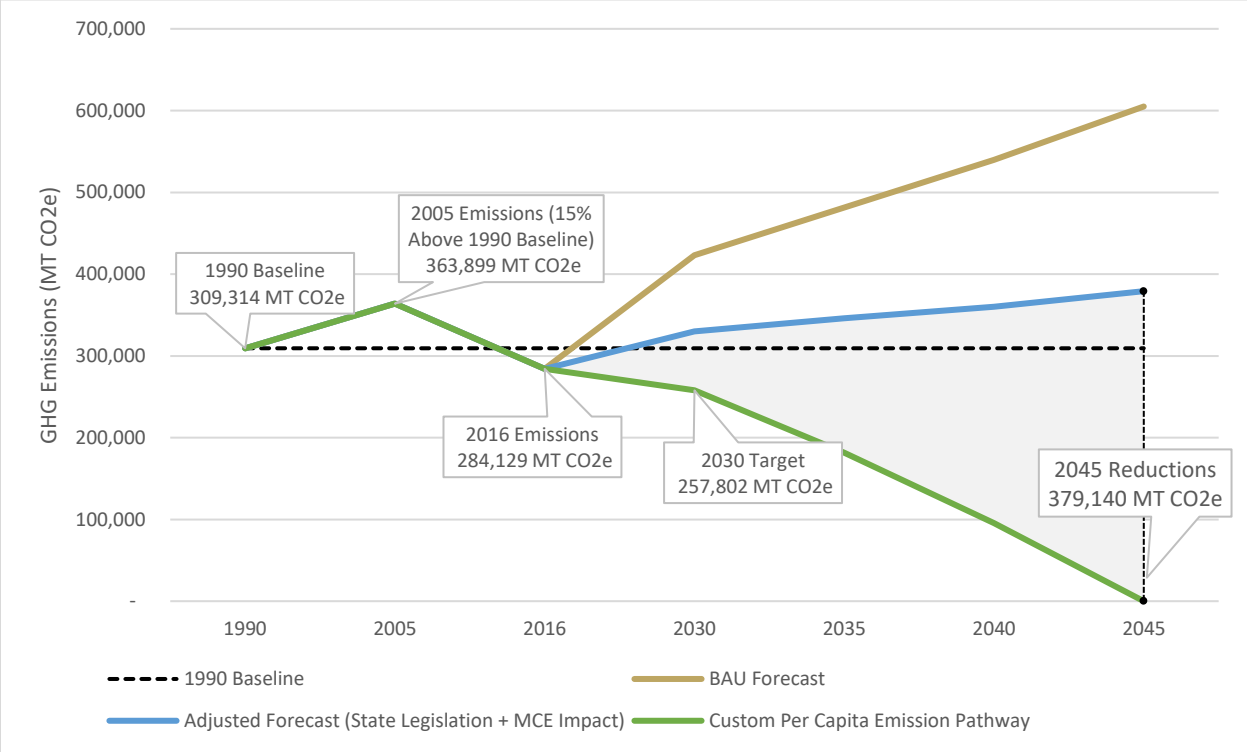
5. The target pathway is calculated by reducing per capita emissions to 3.00 MT CO2e/person in 2030 and zero in 2045.

Each GHG reduction pathway provides a different reduction trajectory for the City with reductions emphasized before 2030, after 2030, or distributed more evenly through 2045. The SB 32 Mass Emissions Target Pathway establishes a 2030 target that is consistent with SB 32 but does not account for the City's expected population growth, making it challenging for a growing City. The SB 32 Per Capita Emissions Target Pathway is consistent with SB 32 and accounts for the City's expected population growth. However, it allows the City's per capita GHG emissions to increase through 2030, decreasing defensibility and potentially public support. In addition, this increase requires accelerated reductions after 2030 to meet the 2045 target. The Custom Per Capita Emissions Target Pathway provides a middle ground between the two previous pathways. This pathway accounts for the City's expected population growth while establishing a 2030 target that will demonstrate the City's commitment to achieving carbon neutrality in 2045, consistent with AB 1279.

As the recommended target pathway for Pittsburg, the Custom Per Capita Emissions Target Pathway establishes a minimum GHG emission target of **257,802 MT CO_2e for 2030** (i.e., the SB 32 target year) and a long-term target of net **0 MT CO_2e, or carbon neutrality, for 2045**. However, as noted at the beginning of this section, the long-term reduction targets are provisional and may need to be adjusted based on the reductions that can realistically be achieved from feasible GHG reduction goals that will be identified during the climate action planning process. The intent of the City of Pittsburg Sustainability Plan will be to establish the first steps toward achieving the long-term state reduction targets. New opportunities are anticipated to emerge that could yield additional reductions beyond those identified in the City's Sustainability Plan. Another phase of local climate action planning will be needed to continue and expand the actions in the Sustainability Plan and to explore new strategies to meet the 2045 GHG reduction target.

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 future Sustainability Plan will assess the GHG reduction gap based on the difference between the adjusted forecast, discussed previously, and the established GHG reduction targets. Table 7, above, provides a summary of the gap for total community GHG emissions. Figure 1, below, provides a visual representation of future GHG emissions, with the impacts of state legislation and the remaining gap the City of Pittsburg will be responsible for the meet the GHG emission reduction targets.

Figure 1 GHG Emissions Forecast and Provisional Target Pathways



Meeting the Targets

The 2030, 2035, 2040, and 2045 targets identified above will be achieved through a combination of existing state measures and the implementation of local goals that will be identified in the City's Sustainability Plan. Local goals will be identified through a comprehensive assessment of existing local and regional policies, programs, and actions and by assessing any gaps and identifying additional opportunities. Additional goals will be 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, the Office of Planning and Research, CARB, and AEP.

Sincerely,
Rincon Consultants, Inc.

Erik Feldman, MS, LEED AP
Principal

Hannah Mize
Sustainability Project Manager

Appendix F: Cost Summary

1 Cost of Implementation

In coordination with Rincon Consultants, Inc. (Rincon) and the community of Pittsburg, the City of Pittsburg has developed a Sustainability Plan that establishes a roadmap to create a more sustainable future and begin reducing greenhouse gas (GHG) emissions. Making progress on the City's 2030 GHG reduction target and 2045 reduction target will require strategic investments into many City and community elements including infrastructure and technology systems and policies and programs to influence behavior change on the part of the community. To develop transparency around the prioritization of these investments, Rincon has assembled this technical appendix. The appendix details the estimated cost associated with the implementation of each of the 22 identified Goals in the Sustainability Plan.

Climate action and sustainability plans exhibit variability in implementation costs depending on the Goals identified, their level of specificity, and the accompanying funding and financing strategies. For example, costs may vary from capital-intensive investments like the installation of bike infrastructure to encourage alternative means of transportation to less capital-intensive but more staff-intensive investments to conduct outreach and education campaigns to increase organic waste diversion. The intent of this appendix is to distill these variable considerations into a document that provides a clear understanding of the potential costs and the primary variables that affect each Goal to help the City prioritize Goal implementation to best work towards their GHG reduction targets.

Cost Considerations

This appendix considers several types of cost when assessing each Goal. First, the appendix considers internal and external costs. Internal costs are those felt by the City (aka. municipal costs) while external costs are those felt by the community (e.g., residents and businesses). Each Goal is assessed separately for both City and community costs. Second, the appendix considers upfront and lifecycle costs. Upfront costs include the costs associated with purchasing and installing an item. Lifecycle costs include the costs associated with purchasing and installing the item along with operating, maintaining, and disposing of that item. Lastly, the appendix considers comparative costs. This cost represents the difference in cost between an item and a similar item. Costs can include monetary costs, such as purchases and investments, and less tangible costs such as time.

These costs have been broken down into four categories presented in Table 1.

Table 1 Cost Categories

Cost Category	City	Community
No-Cost	Goals associated with operational changes that do not include upfront costs or result in zero lifecycle costs. • Partnering with local community-based organizations to promote new initiatives.	Goals associated with changes that do not include upfront costs or result in zero lifecycle costs. • Switching transportation modes from single occupancy vehicles to active transportation.

Low-Cost	Goals associated with low upfront costs and will only require staff time to implement, such as: ▪ Policy Updates ▪ Community Outreach	Goals associated with low upfront costs compared to existing alternatives, such as: ▪ Additional energy bill costs for renewable energy compared to fossil fuel-based energy
Moderate-Cost	Goals associated with moderate upfront costs to the City and require moderate capital costs or consultant time along with staff time, such as: ▪ Feasibility Studies ▪ Incentive and Compliance Programs ▪ Pilot Projects	Goals associated with moderate upfront costs that are not comparable to existing costs nor are offset over lifetime, such as: ▪ New fees ▪ Upfront costs partially offset by rebate opportunities
High-Cost	Goals associated with high upfront costs and require substantial investments into infrastructure and technology system upgrades, such as: ▪ Bike Lanes ▪ Energy Storage Systems ▪ EV Charging Networks	Goals associated with high upfront costs that are not comparable to existing cost nor are offset over lifetime, such as: ▪ New electric vehicle purchase prior to existing vehicle replacement

Table 2 presents the cost analysis and cost category for the City and community for each of each Goal in the Sustainability Plan.

Table 2 Sustainability Plan GHG Emissions Reduction Goals and Cost

Goal ID	Goal Text	City Cost Categorization	City Cost Variables	Community Cost Categorization	Community Cost Categorization and Variables
Strategy C-1 Cornerstone to Climate Action Planning					
Goal C-1.1	Provide high-road jobs to members of disadvantaged and vulnerable communities through a local High-road Workforce Development Program.	Moderate	▪ Capital costs and staff time to develop the incentive program (moderate) ▪ Staff time to update the bid procurement and evaluation process, obtain grants, perform engagement, and perform outreach (low)	N/A	N/A
Strategy E-1 Electrify the Building Stock					
Goal E-1.1	Electrify 100% of new construction in the City by 2026.	Moderate	▪ Consultant and staff time to conduct cost-effectiveness study (moderate) ▪ Staff time to develop partnerships and perform outreach, engagement, and education (low) ▪ Staff time to assess feasibility of and prepare an ordinance (low)	No-cost	▪ Upfront cost savings of building all-electric homes and buildings (no-cost) ▪ Long-term energy bill savings (no-cost)
Goal E-1.2	Electrify existing residential buildings to reduce residential natural gas consumption 15% by 2030 and 100% by 2045, from 2016 levels.	Moderate	▪ Consultant and staff time to conduct cost analysis and develop and implement a permit tracking program (moderate) ▪ Staff time to develop an electrification strategy, develop partnerships and working groups, perform engagement, update incentive programs, and update building codes (low) ▪ Staff time to assess feasibility of ordinance (low) ▪ Capital costs and staff time for Below Market Rate (BMR) housing electrification pilot (moderate)	Moderate	• Long-term energy bill savings (no-cost) • Additional cost from installation of electric appliance compared to installation of traditional appliance (moderate)

Goal ID	Goal Text	City Cost Categorization	City Cost Variables	Community Cost Categorization	Community Cost Categorization and Variables
Goal E-1.3	Electrify existing commercial buildings to reduce commercial natural gas consumption 15% by 2030 and 100% by 2045, from 2016 levels.	Low	▪ Staff time to develop partnerships, update incentives, and perform engagement, outreach, and education (low) ▪ Staff time to assess feasibility of ordinance (low)	Moderate	• Long-term energy bill savings (no-cost) • Additional cost from installation of electric appliance compared to installation of traditional appliance (moderate)
Strategy E-2 Decarbonize Electricity and Increase Use and Storage of Local Renewable Energy					
Goal E-2.1	Increase the number of accounts enrolled in Marin Clean Energy's programs to 95%, with a total of 40% of accounts enrolled in the Deep Green energy option by 2030.	Low	▪ Staff time to support Marin Clean Energy with analysis and perform outreach and education (low) ▪ Staff time to support Marin Clean Energy in implementing a pilot program for affordable housing units and developing a funding/subsidy program (low)	Low	Additional energy bill costs of opting-up (i.e., rate increase) compared to prior rate costs (low)
Goal E-2.2	Increase generation and storage of local renewable energy.	Moderate	▪ Consultant and staff time to conduct feasibility study for municipally owned facilities and affordable housing sites (moderate) ▪ Staff time to update standards and permit requirements, support Marin Clean Energy, perform engagement, and perform education (low) ▪ Staff time to assess feasibility of ordinance (low)	Moderate to High	▪ Long-term energy bill savings of renewable energy generation (no-cost) ▪ Infrastructure costs of battery installation (i.e., costs not covered by funding opportunities) (moderate to high)
Strategy T-1 Reduce Passenger Car Vehicle Miles Traveled					
Goal T-1.1	Implement Pittsburg Moves, increasing active transportation mode share from 1.5% in 2020 to 3% by 2030 and 9% by 2045.	High	▪ Consultant and staff time to conduct a feasibility study, develop a timeline and funding strategy for Pittsburg Moves, and develop a Specific Capital Improvement Plan (moderate) ▪ Capital costs and staff time to develop a pilot bike-share program, develop a book-	No-cost	Cost savings of reducing single occupancy vehicle use (no-cost)

Goal ID	Goal Text	City Cost Categorization	City Cost Variables	Community Cost Categorization	Community Cost Categorization and Variables
			a-bike program, and implement Pittsburg Moves recommendations (moderate) ▪ Staff time to obtain grants and develop partnerships and perform education, engagement, and community events (low) ▪ Infrastructure investments to install bikeways (high)		
Goal T-1.2	Implement public and shared transit programs to increase public transit mode share from 10.1% in 2020 to 12% by 2030 and 17% by 2045.	Moderate	▪ Consultant and staff time to develop guidelines and standards, adopt an Overlay/Specific Plan, and conduct a priority corridors study (moderate) ▪ Staff time to update codes and perform engagement (low) ▪ Consultant and staff time to analyze and potentially develop disincentive-based policies (moderate)	Moderate	▪ Employee cost savings from TDM incentives (no-cost) ▪ Business costs of implementing TDM incentives (moderate) ▪ Potential costs of disincentive-based policies (moderate) ▪ Cost savings of reducing single occupancy vehicle use (no-cost)
Strategy T-2 Increase Zero-Emission Vehicle and Equipment Use					
Goal T-2.1	Increase passenger zero-emission vehicle adoption from 2.3% in 2020 to 15% by 2030 and 100% by 2045.	High	▪ Infrastructure investments to install chargers (high) ▪ Staff time to develop a prioritized list, support car share companies, work with Marin Clean Energy on incentives, and collaborate on a regional car share network (low) ▪ Staff time to maintain permit process, perform engagement and education, and develop partnerships (low) ▪ Staff time to assess feasibility of ordinance (low)	Low	Additional cost of zero-emission vehicle ownership compared to internal combustion engine ownership (i.e., higher upfront costs but lower operating costs) (low)
Goal T-2.2	Increase commercial zero-emission vehicle adoption from less than 1% in 2020 to 10% by 2030 and 100% by 2045.	Low	▪ Staff time to evaluate licensing fee and perform education (low)	Low	Additional cost of zero-emission vehicle ownership compared to internal combustion engine ownership (i.e., higher upfront costs but lower operating costs) (low)

Goal ID	Goal Text	City Cost Categorization	City Cost Variables	Community Cost Categorization	Community Cost Categorization and Variables
Goal T-2.3	Transition 5% of all (i.e., commercial and residential) off-road equipment to zero-emission alternatives by 2030 and 100% by 2045.	Moderate	▪ Staff time to develop guidelines and perform outreach (low) ▪ Consultant and staff time to conduct a commercial fleet investigation (moderate) ▪ Capital costs and staff time to work with BAAQMD on an incentives and rebate program (moderate)	Low	Additional cost of zero-emission vehicle/equipment ownership compared to standard vehicle/equipment ownership (i.e., higher upfront costs but lower operating costs) (low)
Strategy SW-1 Organic Waste Diversion					
Goal SW-1.1	Continue to take action to meet SB 1383 organics and recycling requirements, reducing organic waste disposal 75% from 2014 levels by 2025 statewide.	Moderate	▪ Staff time to update municipal procurement policies, support the County, establish education and outreach programs, and develop partnerships (low) ▪ Capital costs and staff time to provide compost bins, monitor bill increases, and develop incentive programs (moderate)	No-cost	Cost savings on food (no-cost)
Strategy SW-2 Reduce Community Waste Generation					
Goal SW-2.1	Continue to take action to meet SB 1383 requirements, reducing community-wide waste generation 55% by 2025 and 90% by 2040 statewide, from 2014 levels.	Low	▪ Staff time to develop plan, update policy, and perform waste characterization study (low) ▪ Staff time to perform education and develop partnerships (low)	Moderate	▪ Fee on single-use items (moderate) ▪ Cost savings from increase in repair and reuse (no-cost)
Strategy W-1 Increase Water Conservation and Local Water Supply					
Goal W-1.1	Reduce per capita water consumption 10% by 2030 and 30% by 2045, from 2016 levels.	Moderate	▪ Staff time to continue partnerships and education (low) ▪ Staff time to assess feasibility of ordinances (low) ▪ Capital costs and staff time to implement water conservation strategies at City facilities, enforce ordinances, and create incentives (moderate)	No-cost	Water bill savings from conservation (no-cost)

Goal ID	Goal Text	City Cost Categorization	City Cost Variables	Community Cost Categorization	Community Cost Categorization and Variables
Goal W-1.2	Increase recycled water use in the City.	Moderate	Consultant and staff time to perform feasibility studies and pursue funding (moderate)	N/A	N/A
Strategy W-2 Minimize Water Loss System-wide					
Goal W-2.1	Reduce real and apparent system water loss from a rate of 13% in 2020 to less than 10% by 2030 and less than 7% by 2045.	Moderate	▪ Capital costs and staff time to maintain advanced metering and software, and enforce standards (moderate) ▪ Staff time to partner and perform promotion and education (low) ▪ Staff time to work with CCWD to continue and expand water wise house calls (low)	No-cost	Water bill savings from reduced losses (no-cost)
Strategy CS-1 Carbon Sequestration					
Goal CS-1.1	Increase carbon sequestration by planting 150 new trees annually through 2045 to sequester carbon and create urban shade to reduce heat island effect.	Moderate	▪ Staff and consultant time to conduct inventory, develop a tree planting program, and develop and implement a management plan (moderate) ▪ Staff time to update policy and obtain funding (low) ▪ Staff time to continue ordinance enforcement, create an Adopt-a-Tree program, and create a Tree Trust (moderate)	No-cost	▪ Property value appreciation from increased tree canopy (no-cost) ▪ Potential energy bill savings from tree shade (no-cost)
Goal CS-1.2	Increase carbon sequestration by applying 0.08 tons of compost per capita annually in the community by 2030, increasing up to 0.10 by 2045.	Moderate	▪ Consultant and staff time to conduct audit and feasibility study (moderate) ▪ Staff time to develop partnerships to assess opportunities and develop guidelines (low)	N/A	N/A
Strategy M-1 Commit to Climate Action					
Goal M-1.1	Complete annual progress reports on Pittsburg's Sustainability Plan every three years.	Moderate	▪ Staff time to manage programs, obtain funding, and audit measures (moderate) ▪ Consultant and staff time to update inventory and measure progress (low)	N/A	N/A

Goal ID	Goal Text	City Cost Categorization	City Cost Variables	Community Cost Categorization	Community Cost Categorization and Variables
			▪ Staff time to maintain the webpage and perform outreach (low)		
Strategy M-2 Reduce Municipal Reliance on Natural Resources					
Goal M-2.1	Electrify 25% of existing City facilities by 2030 and 100% of existing City facilities by 2045, as well as all newly constructed City buildings, while also increasing renewable energy use.	High	▪ Consultant and staff time and capital costs to conduct energy audits, implement upgrades, and conduct a retrofit pilot (moderate) ▪ Capital costs to opt-up to Deep Green and staff time to update policies (low) ▪ Infrastructure investments to install energy storage systems (high)	N/A	N/A
Goal M-2.2	Transition 50% of the City's vehicle and equipment fleet to renewable fuels and electric by 2030 and 100% by 2045.	High	▪ Staff time to conduct feasibility study, develop transition plan, and obtain funding (moderate) ▪ Staff time to update policy (low) ▪ Infrastructure costs to install chargers and transition fleets (high)		N/A
Goal M-2.3	Reduce the number of single occupancy, fossil fueled vehicle annual employee commute trips 20% by 2030 and 50% by 2045.	High	▪ Staff time to conduct survey, consider implementing fees, update telecommuting policy, and perform education (low) ▪ Infrastructure costs to install bike storage and lockers (moderate) ▪ Infrastructure cots to install public electric vehicle chargers (high)		N/A

Appendix G: Categorical Exemption

City of Pittsburg Sustainability Plan

CEQA Categorical Exemption Report

prepared by

City of Pittsburg
65 Civic Avenue
Pittsburg, California 94565

prepared with the assistance of

Rincon Consultants, Inc.
449 15th Street, Suite 303
Oakland, California 94612

April 2023

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

City of Pittsburg Sustainability Plan

CEQA Categorical Exemption Report

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Rincon Consultants, Inc.
449 15th Street, Suite 303
Oakland, California 94612

April 2023

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

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1 CEQA Exemption Report

This report serves as the technical documentation of an environmental analysis performed for the City of Pittsburg Sustainability Plan (project). The intent of this analysis is to document and demonstrate the project's eligibility for a Class 8 and Class 22 Categorical Exemption (CE), pursuant to the California Environmental Quality Act (CEQA). Additionally, the project would be covered by the common sense exemption that CEQA applies only to projects where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment. (Association of Environmental Planners [AEP] 2023; CEQA Guidelines section 15061(b)(3)). This report provides an introduction, project description, and evaluation of the project's consistency with the requirements for a Class 8 and Class 22 CE, as well as the common sense exemption. The report concludes that the project is eligible for these exemptions.

1.1 Introduction

The project qualifies for a CE under CEQA. Public Resources Code Section 21084 requires the *CEQA Guidelines* to include a list of classes of projects that have been determined not to have a significant effect on the environment and that are, therefore, exempt from CEQA (see Chapter 19 Sections 15301 through 15333 of the *CEQA Guidelines*). Categorically Exempt projects under CEQA fall into several distinct categories. Classes 8 and 22 apply to the proposed project, as well as the common sense exemption as outlined in CEQA Guidelines Section 15061(b)(3).

> *Section 15308 – Actions by Regulatory Agencies for Protection of the Environment:* Class 8 consists of actions taken by regulatory agencies, as authorized by state or local ordinance, to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment. Construction activities and relaxation of standards allowing environmental degradation are not included in this exemption.
>
> *Section 15322 – Educational or Training Programs Involving No Physical Changes:* Class 22 consists of the adoption, alteration, or termination of educational or training programs which involve no physical alteration in the area affected or which involve physical changes only in the interior of existing school or training structures.

Projects that are consistent with the categorical exemptions identified in *CEQA Guidelines* sections 15301 through 15333 are not automatically exempt from CEQA review. *CEQA Guidelines* Sections 15300.2(a) through (f) list specific exceptions for which a CE shall not be used. These exceptions are as follows:

a. **Location.** Classes 3, 4, 5, 6, and 11 are qualified by consideration of where the project is to be located – a project that is ordinarily insignificant in its impact on the environment may in a particularly sensitive environment be significant. Therefore, these classes are considered to apply in all instances, except where the project may impact an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.

b. **Cumulative Impact.** All exemptions for these classes are inapplicable when the cumulative impact of successive projects of the same type in the same place, over time is significant.

c. **Significant Effect from Unusual Circumstances.** A categorical exemption shall not be used for an activity where there is a reasonable possibility that the activity will have a significant effect on the environment due to unusual circumstances.

d. **Scenic Highways.** A categorical exemption shall not be used for a project which may result in damage to scenic resources, including but not limited to, trees, historic buildings, rock outcroppings, or similar resources, within a highway officially designated as a state scenic highway. This does not apply to improvements which are required as mitigation by an adopted negative declaration or certified EIR.

e. **Hazardous Waste Sites.** A categorical exemption shall not be used for a project located on a site which is included on any list compiled pursuant to Section 65962.5 of the Government Code.

f. **Historical Resources.** A categorical exemption shall not be used for a project which may cause a substantial adverse change in the significance of a historical resource.

Rincon Consultants, Inc. (Rincon) evaluated the project in relation to the purpose of Class 8 and 22 exemption categories and the exceptions to an exemption to confirm the project's eligibility for the exemptions (Section 2 of this report). None of the exceptions would apply to the project; therefore, the project is eligible for a Class 8 and 22 CE, as well as the common sense exemption.

1.2 Project Site and Existing Conditions

The City of Pittsburg Sustainability Plan applies to all areas within the City of Pittsburg limits. **Error! Reference source not found.** shows the regional location, and **Error! Reference source not found.** shows the plan location. The plan location includes all of Pittsburg's incorporated lands.

The City of Pittsburg is located within Contra Costa County, situated on the southern side of the Suisun Bay in the San Francisco East Bay region. Pittsburg occupies 19.16 square miles, 17.22 square miles of which are on land and another 1.94 square miles located in the water (see **Error! Reference source not found.**,World Media Group, LLC. 2023). The City is bordered by Bay Point, a census-designated place, to the west, Antioch to the east, the Suisun Bay, and Browns Island to the north, and unincorporated Contra Costa County to the south.

1.3 Project Description

The project would involve the development of a Sustainability Plan for the City of Pittsburg. The Pittsburg Sustainability Plan is a living document that was designed to engage, excite, and empower the community to take incremental steps towards a healthier, more sustainable future. This plan will serve as a first step towards reducing greenhouse gas (GHG) emissions in the City and establishes practices that the community can implement that are practical and result in change that can reduce GHG emission production in the City. It includes an inventory of GHG emissions sources in Pittsburg for 2005 and 2016, forecasts future emissions through 2045, and establishes GHG emissions reduction targets that align with goals set by California for both 2030 and 2045. The Sustainability Plan also includes emissions reduction goals and actions the City can implement to put the community on a path towards reducing GHG emissions with a focus on community health and a thriving economy. The goals and actions were refined based on City staff, stakeholder, and community feedback, to establish a robust set of voluntary actions. Additionally, the Sustainability Plan will complement the goals established in Envision Pittsburg (the City's General Plan Update).

One of the main goals of the Sustainability Plan is to bring awareness to sustainability and opportunities to reduce GHG emissions in the community across all sectors (or emissions sources, e.g., transportation, energy, waste, and water) and provide information about what the community can do to make a difference to set Pittsburg on the path towards more significant GHG reductions.

Figure 1 Regional Location

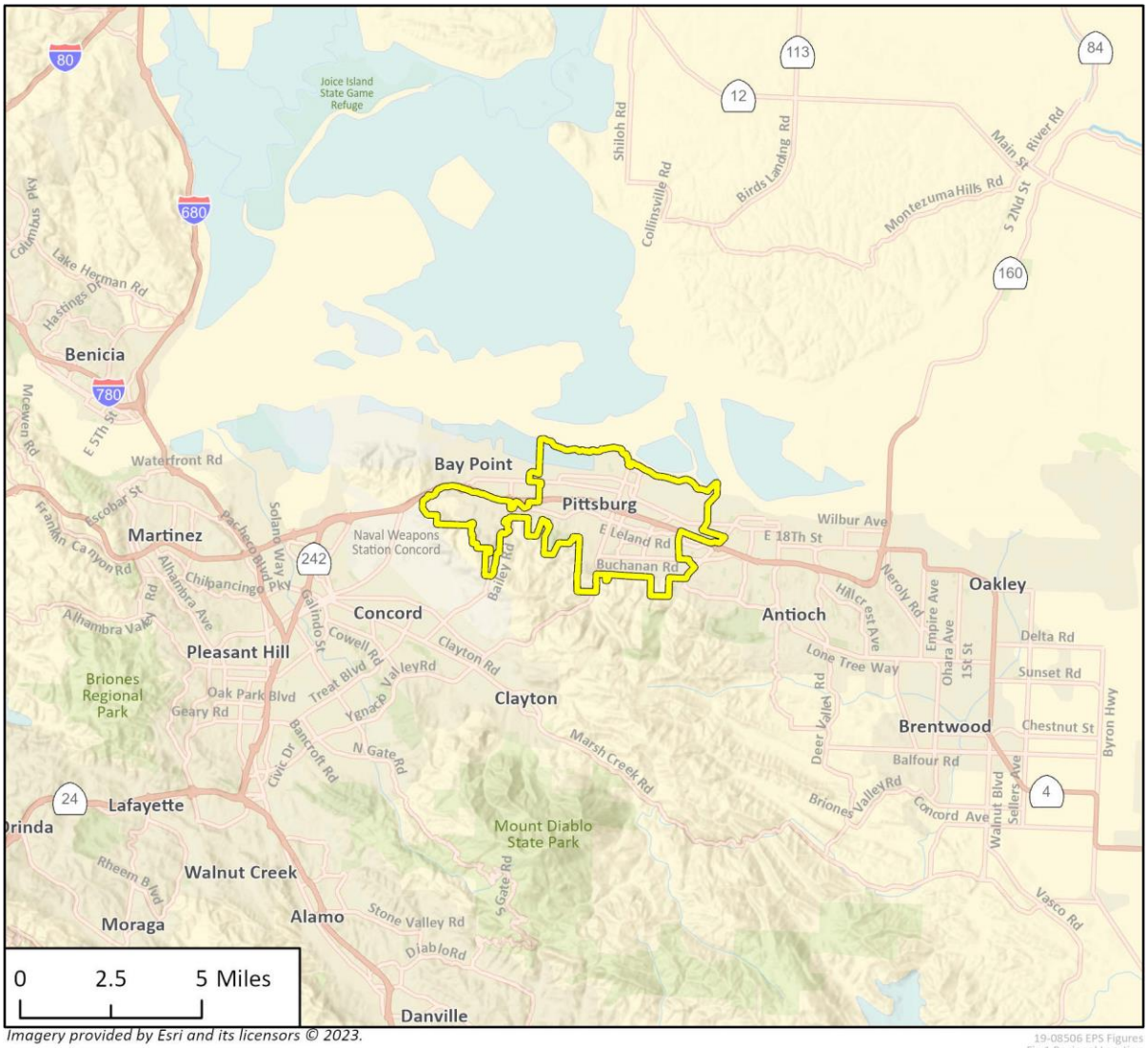
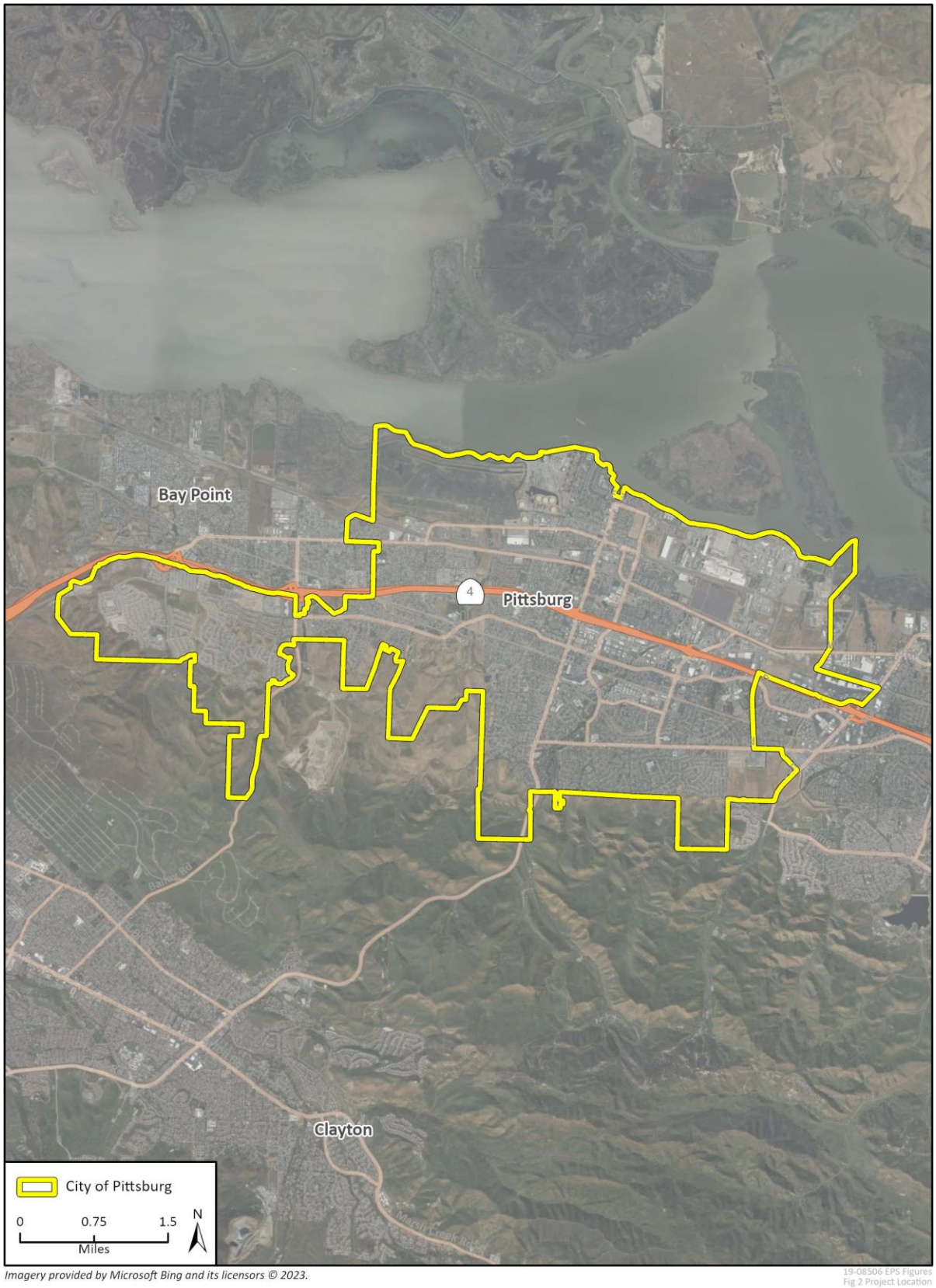


Figure 2 Project Site



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19-08506 EPS Figures
Fig 2 Project Location

1.4 Class 8 CE Applicability

Section 15308 of the *CEQA Guidelines* states that a Class 8 CE is allowable for projects that involve "actions taken by regulatory agencies, as authorized by state or local ordinance, to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment."

The proposed project consists of the development of a long-range planning document. The City has developed the Sustainability Plan to establish a pathway to achieve several objectives, including a demonstration of environmental leadership, compliance with state environmental initiatives, promotion of green jobs, and increased sustainable development. The Sustainability Plan development process was built off the work done for the previous GHG emissions inventories and included development of future GHG emissions forecasts and emissions reduction targets in line with the state's goals. The primary legislation that has driven statewide GHG emissions reductions are Executive Order (EO) S-3-05, Assembly Bill (AB) 32, EO B-30-15, Senate Bill (SB) 32, EO B-55-18, and most recently AB 1279. Signed in 2005, EO S-3-05 established statewide GHG emission reduction targets 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. In 2018, the goals of EO S-3-05 were accelerated by EO B-55-18, which established a goal of achieving carbon neutrality by 2045 and was codified by AB 1279. After the targets were established in line with the state's laws, emissions reduction goals and supporting actions were designed based on the success of the work done previously in the City and current best practices. The goals were refined based on City staff, stakeholder, and community feedback, to establish a robust set of voluntary actions, that as currently proposed in the Sustainability Plan are not enforceable and are intended to act as an educational foundation to motivate future change. Once the goals and supporting actions were finalized, an implementation plan (Chapter 5 of the Sustainability Plan, Implementation Plan) was developed to track and monitor the City's progress towards the previously identified targets. As such, the Sustainability Plan includes actions to assure the maintenance, restoration, enhancement, or protection of the environment. Therefore, the preparation of a Sustainability Plan would meet the applicability requirements for a Class 8 CE pursuant to Section 15308 of the *CEQA Guidelines*.

1.5 Class 22 CE Applicability

Section 15322 of the *CEQA Guidelines* states that a Class 22 CE is allowable for projects that "consists of the adoption, alteration, or termination of educational or training programs which involve no physical alteration in the area affected or which involve physical changes only in the interior of existing school or training structures."

Implementation of the proposed project would include multiple educational and training programs. For example, the Cornerstone Goal aims to "Provide high-road jobs to low-income community members through a local High-road Workforce Development Program." The Cornerstone Goal would not require physical alteration, including interior changes to an existing school or training structure. The program would instead be facilitated through existing locations that would not need to be physically modified or renovated. Additionally, each of the goals are built on six essential pillars that, when incorporated into the design of each goal, where applicable, result in implementable and effective sustainability and GHG emissions reduction strategies. The measures

and actions do not include enforcement and are voluntary. As such they are intended to motivate change through education rather than enforce the change Examples of educational or training programs, which involve no physical alteration in the area affected, detailed in the Sustainability Plan include providing education around cooking with electric appliances through partnerships with local chefs or restaurants; providing targeted outreach to rental and multi-family property owners, as well as commercial entities; providing educational resources through existing platforms, such as bill inserts, existing community events; and use of social media and the City's website. Therefore, the Class 22 exemption is applicable.

1.6 Common Sense Exemption Applicability

Section 15061 of the *CEQA Guidelines* states that a project is exempt from CEQA if, "the activity is covered by the common sense exemption that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA."

In determining whether the common sense exemption applies, the lead agency must determine whether reasonably foreseeable physical impacts may result. (*Wal–Mart Stores, Inc. v. City of Turlock* (2006) 138 Cal.App.4th 273, 291). Here, the Sustainability Plan is a long-range policy document and will not directly or indirectly cause a physical change to the environment, as further described in Section 1.7 below. Nor does the Sustainability Plan direct any specific actions that would result in a physical change to the environment. Any future projects would separately analyze the outcome of incorporated policies in relation to the physical impacts of the project under consideration at that time. Further, the Sustainability Plan is intended to benefit the environment and community, and would not create any potentially adverse changes to the physical condition of the environment. (CREED-21 v. City of San Diego (2015) 234 Cal.App4th 488, 512). As a long-range policy document, the Sustainability Plan would not have a significant impact on the environment and the project activity is not subject to CEQA.

1.7 Exceptions to CE Applicability

The applicability of CEs is qualified by the exceptions listed in Section 15300.2(a) through (f) of the *CEQA Guidelines*. In the discussion below, each exception (in italics) is followed by an explanation of why the exception does not apply to the proposed project.

15300.2(a) ***Location.*** *Classes 3, 4, 5, 6, and 11 are qualified by consideration of where the project is to be located – a project that is ordinarily insignificant in its impact on the environment may in a particularly sensitive environment be significant. Therefore, these classes are considered to apply in all instances, except where the project may impact an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.*

The Pittsburg Sustainability Plan proposes to adopt a Class 8 and 22 CE, as well as a common sense exemption. The Sustainability Plan is a long-range planning document containing goals and supporting actions to reduce GHG emissions. The proposed Sustainability Plan does not involve identified site-specific development, nor would it facilitate new development. Implementation of

the goals and voluntary actions could result in projects that may be located on listed hazardous materials sites. However, future projects would be reviewed for consistency with the General Plan and Municipal Code and would be required to comply with applicable local, state, and federal regulations, including CEQA. Therefore, this exception to a CE does not apply to the project.

15300.2(b) ***Cumulative Impact.*** *All exemptions for these classes are inapplicable when the cumulative impact of successive projects of the same type in the same place, over time is significant.*

The proposed project is a long-range planning document and would not result in significant environmental impacts. Implementation of the Sustainability Plan would result in a cumulatively beneficial reduction of GHG emissions across the City. Implementation of the Sustainability Plan would be consistent with General Plan policies aimed at reducing emissions of GHGs and air pollutants, reducing vehicle miles traveled (VMT), reducing energy and water supply demands on utilities, and decreasing solid waste generation. Therefore, no significant cumulative impact would result from successive projects of the same type in the same place over time. This exception to a CE does not apply to the proposed project.

15300.2(c) ***Significant Effect from Unusual Circumstances.*** *A categorical exemption shall not be used for an activity where there is a reasonable possibility that the activity will have a significant effect on the environment due to unusual circumstances.*

The circumstances of the proposed project, which would result in development of a long-range Sustainability Plan, are not considered unusual because: (1) the GHG emissions reduction targets included in the Plan align with the state's laws; (2) the Sustainability Plan is a long-range policy document, and would not involve changes to land use or zoning; or (3) the Sustainability Plan does not have the potential to cause significant environmental impacts that involve unique or complex circumstances, requiring a more detailed analysis under CEQA. Due to the absence of unusual circumstances, the project would not have a reasonable possibility of a significant effect on the environment. This exception to a CE does not apply to the proposed project.

15300.2(d) ***Scenic Highways.*** *A categorical exemption shall not be used for a project which may result in damage to scenic resources, including but not limited to, trees, historic buildings, rock outcroppings, or similar resources, within a highway officially designated as a state scenic highway. This does not apply to improvements which are required as mitigation by an adopted negative declaration or certified EIR.*

There are no officially State- or County-designated scenic highways within the vicinity of the project site. Interstate 160, located approximately 4.5 miles east of the City's boundary, is the nearest eligible State scenic highway (Caltrans 2018). The City of Pittsburg is not located at visible distance from Interstate 160 and thus would not impact scenic resources. Therefore, the proposed project would not damage scenic resources within a highway officially designated as a state scenic highway. Consequently, this exception to a CE does not apply to the proposed project.

15300.2(e) ***Hazardous Waste Sites.*** *A categorical exemption shall not be used for a project located on a site which is included on any list compiled pursuant to Section 65962.5 of the Government Code.*

The Sustainability Plan is a policy document containing goals and supporting actions to reduce GHG emissions. The Sustainability Plan does not include site-specific proposals and development, but

implementation of the measures and actions could result in projects that may be located on listed hazardous materials site. However, future projects would be reviewed for consistency with the General Plan and Municipal Code and would be required to comply with applicable local, State, and federal regulations, including CEQA. Therefore, this exception to the applicability and use of a CE does not apply to the project.

15300.2(f) ***Historical Resources.*** *A categorical exemption shall not be used for a project which may cause a substantial adverse change in the significance of a historical resource.*

The Sustainability Plan would not involve land use or zoning changes but would promote building energy retrofits as well as infrastructure development and redevelopment that would be complimentary to existing development. Projects in Pittsburg would be required to comply with the Historic Structures and Establishment of Historic Districts (Municipal Code Chapter 15.84) and General Plan Downtown, Land Use, and Urban Design Chapters, which include policies aimed at continuing the preservation, rehabilitation, and reuse of historically significant structures within the downtown encouraging the repetition of key historical architectural features—such as windows and displays, cornice details, and roofline/pitch elements—in the redevelopment of commercial structures in Downtown (Policy 5-P-26) and continuing the preservation, rehabilitation, and reuse of historically significant structures (Policy 5-P-27) (Pittsburg 2022 and Pittsburg 2001). The proposed project is a planning document and would not include the removal or replacement of permanent buildings. Therefore, this exception is not applicable to the proposed project.

2 Summary

Based on the above analysis, the City of Pittsburg Sustainability Plan meets all criteria for Class 8 and Class 22 Categorical Exemptions pursuant to Section 15301 of the *CEQA Guidelines*, as well as the common sense exemption as outlined in CEQA Guidelines Section 15061(b)(3). Furthermore, exceptions to the applicability of a CE, as specified in Section 15300.2(a) through (f) of the *CEQA Guidelines*, do not apply to the project. Therefore, the proposed project is exempt from CEQA.

3 References

Association of Environmental Professionals (AEP). 2023. 2023 California Environmental Quality Act (CEQA) Statute & Guidelines. https://www.califaep.org/statute_and_guidelines.php (accessed April 17, 2023)

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