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City of San José

2030 GREENHOUSE GAS REDUCTION STRATEGY

August 2020

City of San José

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August 2020

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Acronyms

AB	Assembly Bill
ABAG	Association of Bay Area Governments
ARB	California Air Resources Board
ACE	Altamont Corridor Express
BAAQMD	Bay Area Air Quality Management District
BayREN	Bay Area Regional Energy Network
CAA	Clean Air Act
CAFE	Corporate Average Fuel Economy standards
CEQA	California Environmental Quality Act
City	City of San José
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CSSJ	Climate Smart San José
EPA	United States Environmental Protection Agency
EV	electric vehicle
GHG	greenhouse gas
GHGRS	Greenhouse Gas Reduction Strategy
GWP	global warming potential
IPCC	UN Intergovernmental Panel on Climate Change
kWh	kilowatt hour
MPO	metropolitan planning organization
MT	metric tons
MW	megawatt
NHTSA	National Highway Traffic Safety Administration
OPR	California Office of Planning and Research

RPS	Renewables Portfolio Standard
SAFE	Safer Affordable Fuel-Efficient Vehicles Rule
SB	Senate Bill
SJCE	San José Clean Energy
state	State of California
ZNC	zero net carbon

Glossary

Activity Data	A quantitative measure of an activity that results in GHG emissions during a given period of time (e.g., kilowatt hours of electricity consumed, gallons of gas used, miles driven, tons of waste sent to landfill, etc.).
City and city	The City of San José, or 'City', refers to the local government, and 'city' refers to the geographic area of the plan.
Climate Adaptation	The process of anticipating and adjusting to the actual or expected adverse effects of climate change and taking action to prevent or minimize the damage it can cause or taking advantage of beneficial opportunities that may arise.
Climate Change	A long-term change in global or regional climate patterns. Current climate change is attributed largely to increased levels of atmospheric carbon dioxide produced from fossil fuel use and combustion.
Electric Vehicle	A vehicle that uses an electric motor for propulsion, with three main types of electric vehicles defined based on the extent of their electricity use for energy: battery-electric vehicles (BEV), plug-in hybrid electric vehicles (PHEV), and hybrid electric vehicles (HEV). BEVs are fully-electric with no fossil fuel-based engine. PHEVs and HEVs both include electric motors and a fossil fuel-based engine that is used under certain operating conditions; PHEVs can be plugged in to recharge the electric battery, while HEVs recharge their batteries through regenerative braking alone.
Emissions Factors	A factor that converts activity data into GHG emissions data (e.g., lbs CO_2 emitted per gallon of fuel consumed, MT CO_2e emitted per mile traveled, etc.).
Emissions Intensity	Emissions per unit of output (e.g., CO_2e per GDP, population, or energy use).
Emissions Sector	Primary organizational categories into which GHG emissions are classified, typically including stationary energy, transportation, and waste at a minimum.
Emissions Sub-sector	Secondary organizational categories into which emissions sectors are classified, to provide more detailed information on emissions sources. For example, sub-sectors in the stationary energy sector can include residential

	buildings, commercial and institutional buildings, and fugitive emissions from oil and natural gas systems.
Global Warming Potential	A factor describing the radiative forcing impact (degree of harm to the atmosphere) of one unit of a given GHG relative to one unit of CO_2.
Greenhouse Effect	The process by which radiation from a planet's atmosphere warms the planet's surface to a temperature above what it would be without the atmosphere. This is caused by the presence of greenhouse gases, including water vapor, carbon dioxide, methane, nitrous oxide, ozone, and others.
Mass Emissions	The total amount of emissions in a certain timespan (e.g., 1,000 MT CO_2e/year).
MT CO_2e and MMT CO_2e	Carbon dioxide equivalent (CO_2e) is the universal unit of measurement to indicate the global warming potential (GWP) of each greenhouse gas analyzed, expressed in terms of the global warming potential of one unit of carbon dioxide. CO_2e is used to evaluate the climate impact of releasing (or avoiding the release of) different greenhouse gases on a standardized basis. Emissions are reported as metric tonnes (MT) or million metric tonnes (MM) of CO_2e.
Service Population	The sum of the local resident population plus local employment.
Zero Net Carbon	A term describing buildings that are designed and constructed to be highly energy efficient and produce on-site (or procure off-site) enough carbon-free renewable energy to meet the building's annual energy demand.

City of San José

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CHAPTER 1

Introduction

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1.1 Purpose and Content

The City of San José has a long history of environmental leadership, including local action designed to address the global challenge of climate change. As one aspect of its leadership, the City prepared its first Greenhouse Gas Reduction Strategy (GHGRS) in combination with the *Envision San José 2040 General Plan Update* in 2011. The Greenhouse Gas Reduction Strategy was thereafter updated in 2015. The GHGRS ensures that implementation of the General Plan aligns with the implementation requirements of the California Global Warming Solutions Act (Assembly Bill 32) and followed the regional Bay Area Air Quality Management District (BAAQMD) thresholds of significance.

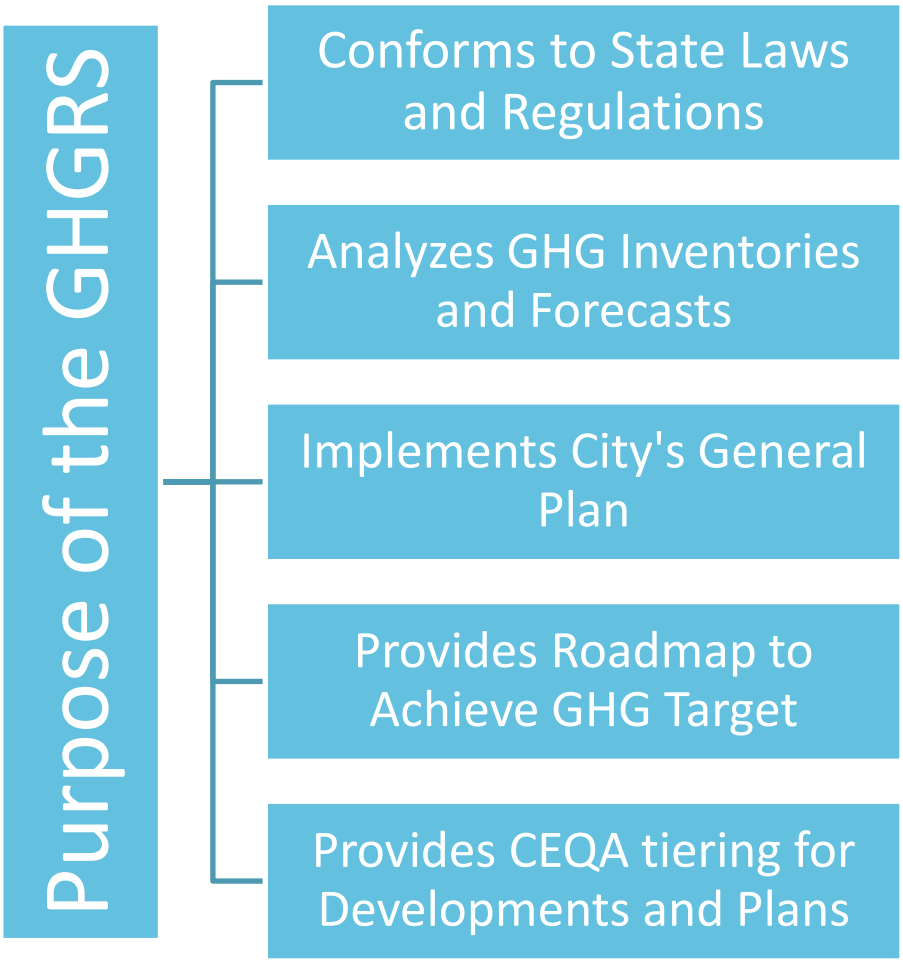
Therefore, the GHGRS was prepared under the BAAQMD California Environmental Quality Act (CEQA) Guidelines, and particularly in conformance with CEQA Guidelines Section 15183.5, which specifically addresses the development of Greenhouse Gas Reduction Plans for tiering and streamlining GHG analysis under CEQA. Since the GHGRS update in 2015, the State of California (state) has expanded on AB 32 by establishing statewide GHG reduction targets for 2030 through Senate Bill 32, followed by an Executive Order (EO B-55-18) defining a carbon neutrality goal for the state to be achieved by 2045.

This GHGRS update (referred to as the 2030 GHGRS or the Plan) builds on the goals of the previous GHGRS and furthers the strategies embedded in other City plans to align with the state's 2030 GHG target (SB 32) and with consideration for the state's long-term emissions goal.

The following bullets summarize the purposes of the 2030 GHGRS and are illustrated in Figure 1.1:

- Develop an emissions target that is consistent with the state's adopted 2030 GHG target and demonstrates San José fair share reductions toward statewide target achievement,
- Analyze and compare the City's prior inventories (2008 and 2014) with the 2017 GHG inventory, emissions trends over time, and forecasts in comparison to the identified emissions target,
- Identify policies, plans, and programs that will contribute to GHG reductions in the city and achievement of the City's 2030 target, including actions that implement the City's Envision San José 2040 General Plan,
- Provide a roadmap by which the City can reduce its GHG emissions to achieve the identified target by application of a development checklist that identifies clear strategies for GHG reductions that new projects in the city must implement to demonstrate consistency with the 2030 GHGRS, and
- Serve as a GHG reduction plan to streamline GHG emissions analysis of future development and plans within the city, according to CEQA Guidelines Sections 15152, 15183, and 15183.5.

Figure 1.1 – Purpose of the 2030 GHGRS



1.2 Organization of the 2030 GHGRS

The 2030 GHGRS is organized into six chapters with three appendices that provide additional detail on subjects covered within the Plan. The following provides a summary of each chapter:

- **Chapter 1, Introduction** provides an overview of the City's previous GHGRS and establishes the purpose of the 2030 GHGRS, describes the Plan's relationship to the City's General Plan and Climate Smart San José, and introduces and defines important concepts and terms related to climate change and GHG emissions.
- **Chapter 2, Regulatory Context** provides an overview of the regulatory context at the federal, state, and regional level for GHG emissions reductions, briefly summarizing relevant legislation and policies.

- **Chapter 3, GHGRS Framework** provides information on San José's citywide GHG inventories for 2008, 2014, and 2017; presents emissions forecasts and the 2030 GHG reduction target; and describes the emissions reduction strategies and the associated quantified GHG reduction estimates to achieve the 2030 target.
- **Chapter 4, Emissions Reduction Policies and Measures** summarizes the various existing policies, plans, and programs the City is currently implementing that contribute to GHG reductions but are, for the most part, not separately quantified to evaluate their emissions reduction potential.
- **Chapter 5, Conclusion** conveys the City's commitment to implementation of the 2030 GHGRS and achieving the necessary GHG reduction targets.

Additional details supporting the target selection and reduction strategies based on the GHG inventory are available as:

- **Appendix A, 2017 Inventory of Community Greenhouse Gas Emissions** presents the 2017 GHG inventory, which serves as the base year for emissions forecasting in the 2030 GHGRS. The memorandum includes a brief overview of the evidence of human-caused climate change, an explanation of the GHG emissions inventory methodology used for the 2017 inventory, and a summary of key findings. The quantitative data supporting the inventory calculations and findings are also provided.
- **Appendix B, Greenhouse Gas Emissions Reduction Target Options Memorandum** describes the target options and considerations evaluated when establishing the GHG target for the City's 2030 GHGRS. In support of this evaluation, the memorandum also provides the detailed target setting calculation methodology.
- **Appendix C, Greenhouse Gas Emissions Reductions Strategies Memorandum** presents a summary of the 2017 citywide GHG inventory, an introduction to the emissions forecasts developed for the Plan, and a comparison of forecasted emissions levels to the City's 2030 GHG target to establish the total GHG reductions needed for target achievement. It then presents the GHG reduction strategies proposed for inclusion in the Plan and shows how their implementation can achieve the 2030 target.

1.3 Context for 2030 GHGRS Update

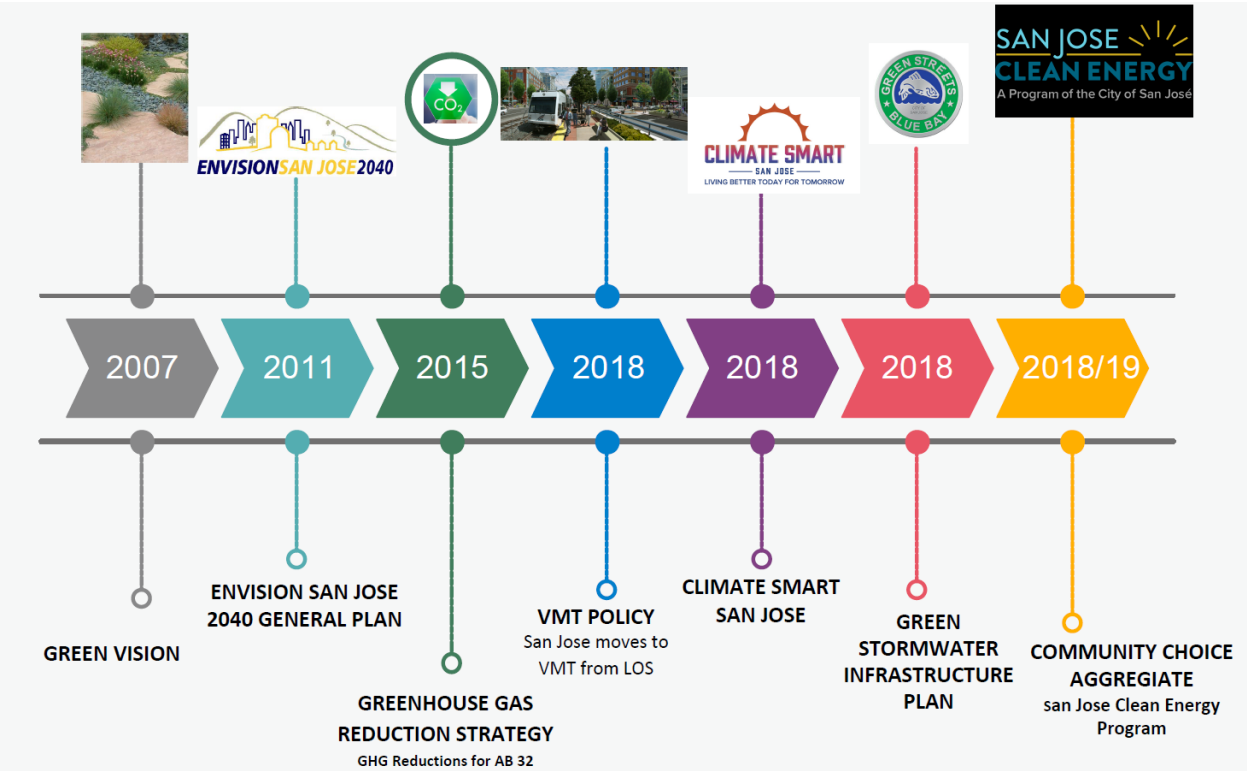
Since the preparation of the City's original GHGRS, the City conducted an emissions inventory with 2014 data as an update to its 2008 emissions inventory to understand the changes in the level of emissions over time. Meanwhile, various City departments have also continued to develop and implement new plans or programs that provide sustainability benefits and contribute to the local GHG reductions beyond those envisioned in the original GHGRS.

Importantly, in 2018 the City adopted *Climate Smart San José* in support of the Paris Agreement as a long-term framework to outline the City's path toward deep carbon reductions. That plan

replaced the City's earlier Green Vision plan, which was a foundational element of the original GHGRS, with a more focused and action-oriented approach.

This 2030 GHGRS is a comprehensive update to the original GHGRS and reflects the plans, policies, and codes[1] that the City of San José has adopted to achieve a 2030 GHG target consistent with the state's SB 32 reduction goals. Figure 1.2 illustrates several of the City's important planning and policy milestones.

Figure 1.2 – Timeline of City Programs and Plans



1.3.1 Relationship to the General Plan

The *Envision San José 2040 General Plan* is the City's guide for growth and development, serving as a tool to shape the city's growth, minimize its impacts on resource consumption, reduce its contribution to global warming, and preserve and enhance its natural environment. The assessment of the General Plan's contribution to future GHG emissions and of the magnitude of GHG emissions reductions necessary to reduce the city's impact was based upon the statewide GHG emissions targets set at the time of the original GHGRS development (i.e., AB 32 which mandates achieving a return to 1990 GHG emissions levels by 2020, and EO S-3-05 which set the goal of achieving GHG

[1] A GHG reduction strategy may be a single plan, or could be a collection of climate action policies, plans, ordinances, programs that have been legislatively adopted by a local jurisdiction.

emissions 80 percent below 1990 levels by 2050). As part of the General Plan, the original GHGRS provides a quantitative and qualitative analysis of the emissions reduction benefits that would be achieved through the General Plan policies along with those that would be achieved through the implementation of the General Plan Land Use/Transportation Diagram.

Since adoption of the General Plan, state legislation was passed under SB 32 to establish a 2030 statewide GHG emissions reduction target of 40 percent below 1990 levels by 2030, which in effect is an interim target between the previous AB 32 target for 2020 and the 2050 goal set in EO S-3-05.

This 2030 GHGRS is developed under General Plan Policy IP-3.7 to monitor and update as necessary the GHG reduction strategy measures and IP-17.2 to develop and maintain a Greenhouse Gas Reduction Strategy to serve as a road map for reducing GHG emissions within San José. To that end, the 2030 GHGRS provides an update of current emissions levels based on a 2017 emissions inventory, establishes a new 2030 emissions target consistent with SB 32, and assesses the City's progress and achievement pathway toward its 2020 and 2030 GHG targets.

The 2030 GHGRS is consistent with the major strategies and policies within the *Envision San José 2040* General Plan and includes additional reduction measures to achieve the Plan's 2030 GHG emissions target. The Plan also includes emissions forecasts that were prepared to align with the future buildout conditions in the *Envision San José 2040 General Plan* horizon year, including its future estimates of the local population, employment, and travel demand consistent with the City's Land Use and Transportation Diagram.

Through the Green Vision (now replaced by *Climate Smart San José*), the *Envision San José 2040 General Plan* proposes various goals, policies, and measures to reduce GHG emissions through the buildout of the General Plan and beyond to 2050. These goals, policies, and measures address green building practices, transportation strategies, energy use, water conservation, waste reduction and diversion, and other sectors that collectively contribute to the City's GHG reductions and advancement of its broad sustainability goals.

1.3.2 Relationship to Climate Smart San José

Climate Smart San José is the City's overarching visionary plan to reduce emissions geared toward the Paris Agreement. It is an update to the City's 2007 Green Vision and was approved by City Council in February 2018. *Climate Smart San José* serves as a roadmap to deep carbon reductions aligned with the state's GHG targets set by AB 32, SB 32, and EO S-3-05, as well as the decarbonization goals of the Paris Agreement, while supporting 40 percent growth in the city's population by 2050 and continued economic growth. It employs a people-centered approach, encouraging the entire San José community to join an ambitious campaign to reduce GHG emissions, save water, and improve the community's quality of life, while also promoting economic growth.

The City recognizes that a transformation of the community to minimize its contributions to global climate change will require participation from multiple stakeholders, including various City

departments and related agencies, the private sector, residents, and community groups. As such, the strategies identified in *Climate Smart San José* are not solely City-led actions; they require action from a range of stakeholders that would both invest in and benefit from its implementation.

This 2030 GHGRS provides a focused near-term or interim target to guide measurable actions the City can take to reduce its GHG emissions over this decade to achieve the 2030 target. While the emissions reduction measures in the 2030 GHGRS are consistent with the *Climate Smart San José* strategies, the 2030 GHGRS is prepared for a slightly different purpose; it is prepared in accordance with BAAQMD's CEQA Guidelines to allow future development projects in the city that demonstrate consistency with the 2030 GHGRS to streamline their GHG emissions analysis for environmental review purposes.

1.3.3 Relationship to the California Environmental Quality Act

Local governments may prepare a greenhouse gas reduction strategy that can be used for CEQA review of subsequent plans and projects that are consistent with the GHG reduction strategies and targets.

This approach allows jurisdictions to:

- Address GHG emissions at a citywide and municipal operations level to determine the most effective and efficient methods to reduce GHG emissions,
- Identify reduction measures that promote goals of the General Plan, and
- Implement reduction measures that achieve multiple City priorities, such as those that provide additional co-benefits beyond their emissions reductions (such as, improving mobility and access, advancing local economic development, reducing household and business utility and transportation costs, improving public health, etc.)

The 2030 GHGRS was developed in accordance with the City's General Plan policies, which directs the City to:

- **Policy IP-3.7:** Monitor, evaluate and annually report on the success of the programs and actions contained within the Greenhouse Gas Reduction City Council Policy to demonstrate progress toward achieving required State of California Greenhouse Gas reduction targets (at or below 1990-equivalent levels) by 2020, 2030, 2040 and 2050. Refine existing programs and/or identify new programs and actions to ensure compliance and update the Council Policy as necessary.
- **Policy IP-17.2**: Develop and maintain a Greenhouse Gas Reduction Strategy or equivalent policy document as a road map for the reduction of greenhouse gas emissions within San José, including those with a direct relationship to land use and transportation. The Greenhouse Gas Reduction Strategy identifies the specific items within the Envision San José 2040 General Plan that contribute to the reduction of greenhouse gas emissions and considers the degree to which

they will achieve its goals. The Envision General Plan and Land Use / Transportation Diagram contain multiple goals and policies which will contribute to the City's reduction of greenhouse gas emissions, including a significant reliance upon new growth taking place in a more compact urban form that facilitates walking, mass transit, or bicycling.

It is also developed in conformance with CEQA Guidelines Section 15183.5 to support tiering and streamlining of environmental review for future development projects.[2] See Chapter 2, BAAQMD Elements of a GHGRS for further description of the CEQA Guidelines requirements and GHGRS compliance.

The 2030 GHGRS will allow the City to analyze and mitigate the significant cumulative effects of GHG emissions at a programmatic level for the reduction of GHG emissions. Once the 2030 GHGRS is adopted following environmental review, later projects that are consistent with the General Plan growth projections and land uses (upon which the GHG modeling in the 2030 GHGRS is based) and the 2030 GHGRS measures and actions may tier from and/or incorporate the Plan by reference in their cumulative GHG impact analyses.

The adoption of the 2030 GHGRS and associated environmental document will allow the use of these documents by future development projects to streamline project-level CEQA requirements. Consistency with the 2030 GHGRS is determined through the Development Compliance Checklist (see Attachment A). The Checklist in conjunction with the Plan provides a path for streamlined CEQA review process for discretionary review for future projects.

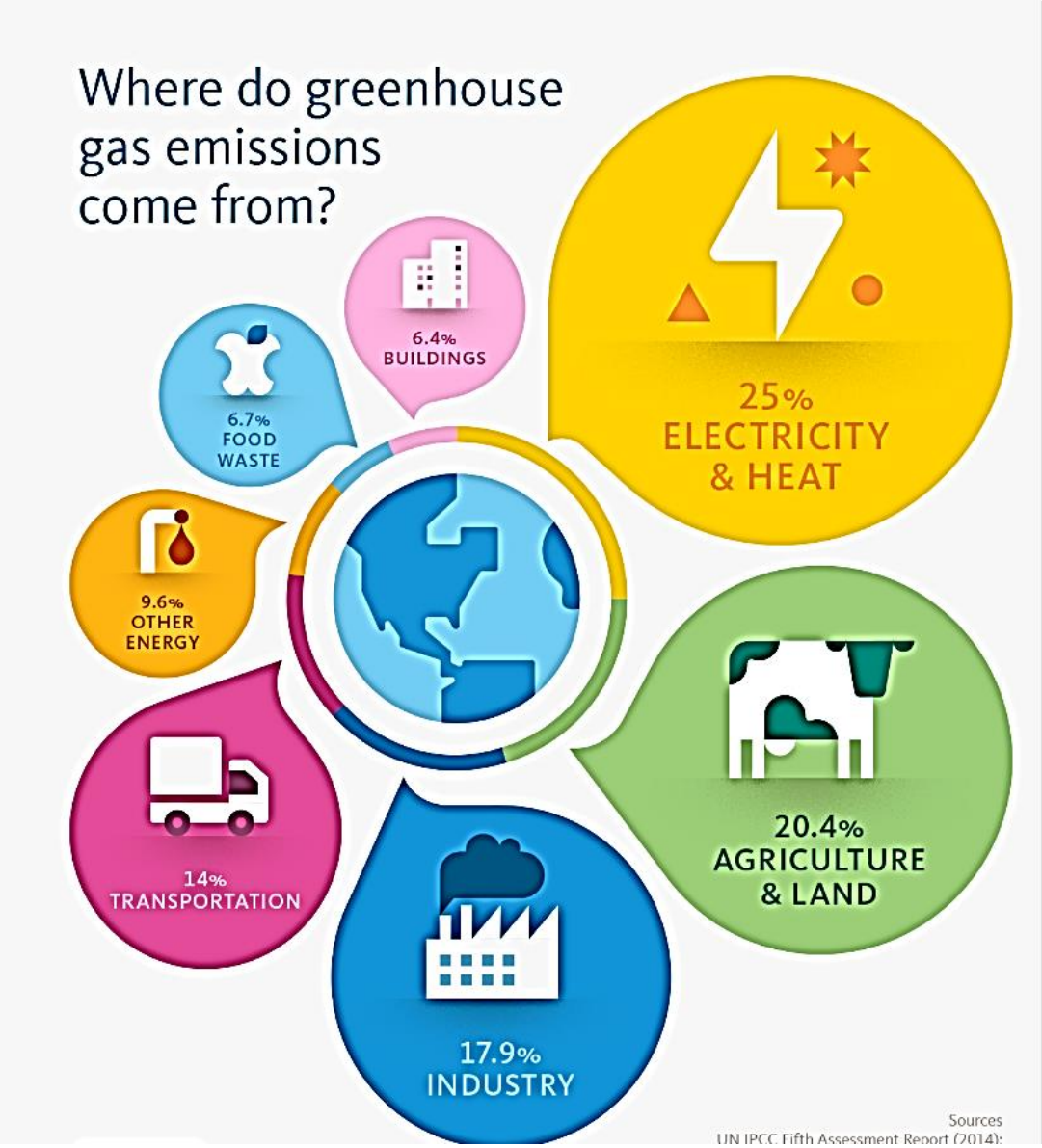
1.4 Overview of Climate Change

1.4.1 Greenhouse Gases and Effect

Certain gases in the earth's atmosphere, classified as greenhouse gases, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space, where a portion of the radiation is absorbed by the earth's surface and a smaller portion is reflected into space. However, infrared radiation is selectively absorbed by GHGs. As a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on Earth. Figure 1.3 illustrates the sources of global GHG emissions.

[2] 15183.5. Tiering and Streamlining the Analysis of Greenhouse Gas - Emissions. https://govt.westlaw.com/calregs/Document/I872A68805F7511DFBF66AC2936A1B85A?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=%28sc.Default%29

Figure 1.3 – General Sources of Greenhouse Gases



Source: UN IPCC Fifth Assessment Report (2014) and University of California

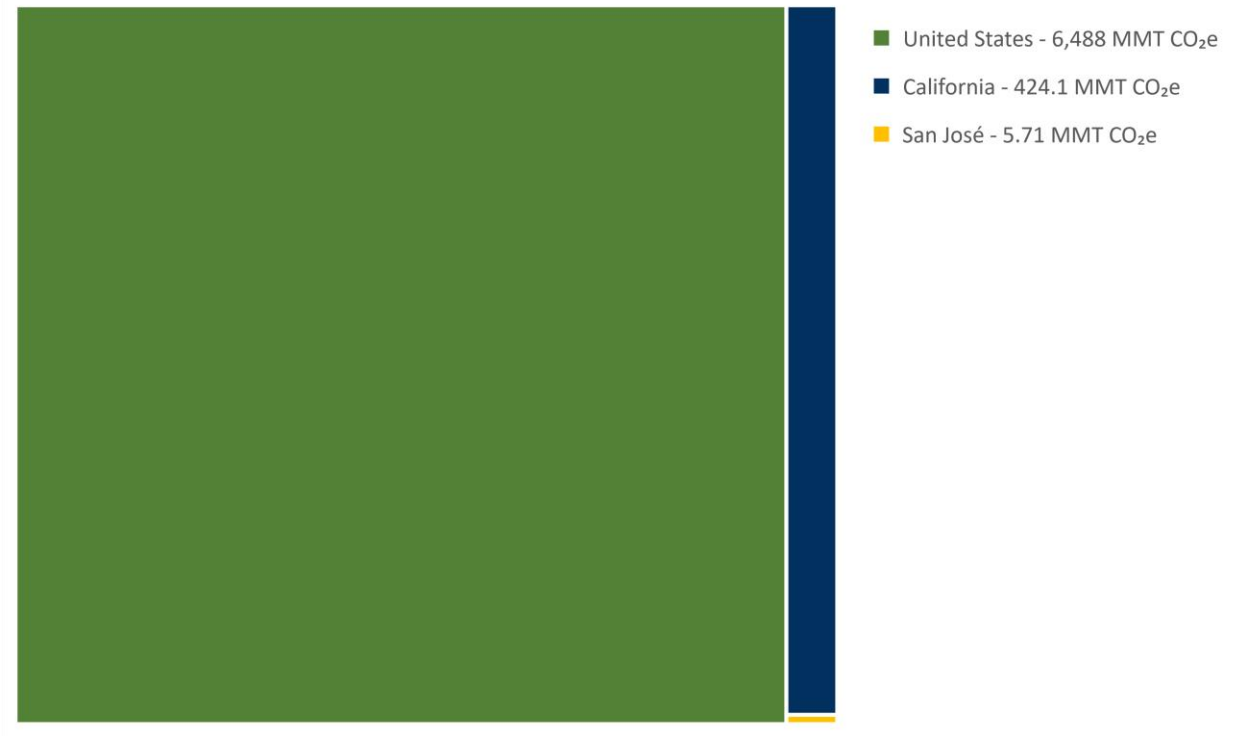
Anthropogenic (human-caused) emissions of these GHGs lead to atmospheric levels in excess of natural ambient concentrations and have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. The United Nation's Intergovernmental Panel on Climate Change (IPCC) concluded that variations in natural phenomena, such as solar radiation and volcanoes, produced most of the warming of the earth from preindustrial times to 1950, and some variations in natural phenomena also had a small cooling effect. However, from 1950 to the present, increasing GHG concentrations resulting from

human activity, such as fossil fuel burning and deforestation, have been responsible for most of the observed temperature increase.[3]

Global surface temperature has increased by approximately 1.53 degrees Fahrenheit (°F) over the last 140 years. However, the rate of increase in global average surface temperature has not been consistent; the last three decades have warmed at a much faster rate per decade. During the same period when increased global warming has occurred, many other changes have occurred in other natural systems. Sea levels have risen; precipitation patterns throughout the world have shifted, with some areas becoming wetter and others drier; the elevation of snowlines has increased, resulting in changes to the snowpack, runoff, and water storage; and changes in numerous other conditions have been observed.[4]

For context, Figure 1.4 illustrates San José's relative contribution of GHG emissions in 2017 when compared to California and the United States. As shown, San José contributes 1.3 percent of California's total emissions, and approximately 0.1 percent of national emissions.

Figure 1.4 - San José GHG Emissions in Perspective – 2017 Comparison



[3] IPCC, 2018: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change sustainable development, and efforts to eradicate poverty [Masson-Delmotte V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla,A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock M. Tignor, and T. Waterfield (eds.)]. In Press.

[4] IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

A. Principal Greenhouse Gases and Sources

GHGs are naturally present in the atmosphere, are released by natural and anthropogenic sources and are formed from secondary reactions taking place in the atmosphere. Natural sources of GHGs include the respiration of humans, animals, and plants; decomposition of organic matter; volcanic activity; and evaporation from the oceans. Examples of anthropogenic sources include the combustion of fossil fuels by stationary and mobile sources, solid waste treatment, and agricultural processes. The following lists the principal GHG pollutants that contribute to climate change and their primary emissions sources:

- **Carbon Dioxide (CO_2):** Natural sources of CO_2 include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungi; and evaporation from oceans. Anthropogenic sources include the burning of coal, oil, natural gas, and wood.
- **Methane (CH_4):** Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and the decay of organic waste in municipal solid waste landfills and some wastewater treatment processes.
- **Nitrous Oxide (N_2O):** Primary human-related sources of nitrous oxide are agricultural soil management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. Nitrous oxide is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests.
- **Fluorinated gases:** These gases are typically emitted in smaller quantities, but because they are potent GHGs, they have an outsize effect on the climate. They are sometimes called high global warming potential (GWP) gases. Gases with a high GWP value are more potent at trapping heat in the atmosphere and contributing to global warming (see section on Global Warming Potential below for further information). A small sample of high-GWP gases is listed below:
    - *Chlorofluorocarbons are used for refrigeration, air conditioning, packaging, insulation, solvents, and aerosol propellants.*
    - *Hydrochlorofluorocarbons have been introduced as temporary replacements for chlorofluorocarbons and are also GHGs.*
    - *Hydrofluorocarbons were introduced as alternatives to ozone-depleting substances serving many industrial, commercial, and personal needs. Hydrofluorocarbons are GHGs emitted as byproducts of industrial processes and are also used in manufacturing.*
    - *Perfluorinated chemicals or perfluorocarbons are emitted as byproducts of industrial processes, such as aluminum production, and are also used in semiconductor manufacturing.*

- *Sulfur hexafluoride is used primarily as an insulator in electrical transmission and distribution systems.*

Human activities such as the burning of fossil fuels for transportation and energy, increasing rates of deforestation, and other urban development have contributed to elevated concentrations of GHGs in the atmosphere. Anthropogenic emissions of GHGs have resulted in above-normal ambient concentrations of GHGs, intensifying the greenhouse effect, and leading to a trend of abnormal warming of the Earth's climate known as global climate change.

B. Global Warming Potential

Global warming potential (GWP) is a term developed to compare the ability of each GHG to trap heat in the atmosphere and contribute to the greenhouse effect relative to the other GHGs. GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time the gas remains in the atmosphere (i.e., its atmospheric lifetime or persistence). The GWP of each gas is measured relative to CO_2, giving CO_2 a GWP of 1.

GHGs with lower global emissions than CO_2 may still contribute importantly to climate change if they are more effective at absorbing infrared radiation than CO_2 (i.e., those with a high GWP). For example, over a 100-year period one ton of methane has the same contribution to the greenhouse effect as approximately 28 tons of CO_2. Therefore, methane is a more potent GHG than CO_2 and has a GWP of 28. Expressing GHG emissions in terms of CO_2 equivalence or CO_2e accounts for the fact that different GHGs have different GWPs and contribute disproportionately to the greenhouse effect. In GHG inventories (and throughout this Plan), emissions are typically expressed in terms of million metric tons of CO_2 equivalent [MMT CO_2e] or metric tons of CO_2 equivalent [MT CO_2e].

1.4.2 Climate Change and Adaptation

Climate change refers to long-term variation in average weather patterns at a global or regional scale, over time frames that range from decades to millions of years. Climate change may result from the Earth's natural internal processes, or from 'external forcing' such as volcanic eruptions, solar variations, and human activity (known as 'anthropogenic climate change') that cause a change in the climate system. Rising temperatures is the driver behind changes in precipitation patterns, rising temperatures, shrinking polar ice caps, sea-level rise, and impacts to biological resources and humans. Climate change is a global problem and can lead to significant fluctuations in regional climates. While there is consensus that global climate change is occurring and that it is exacerbated by human activity, there is less certainty about predicting the timing, severity, and consequences of climate change phenomena, particularly at the local level.

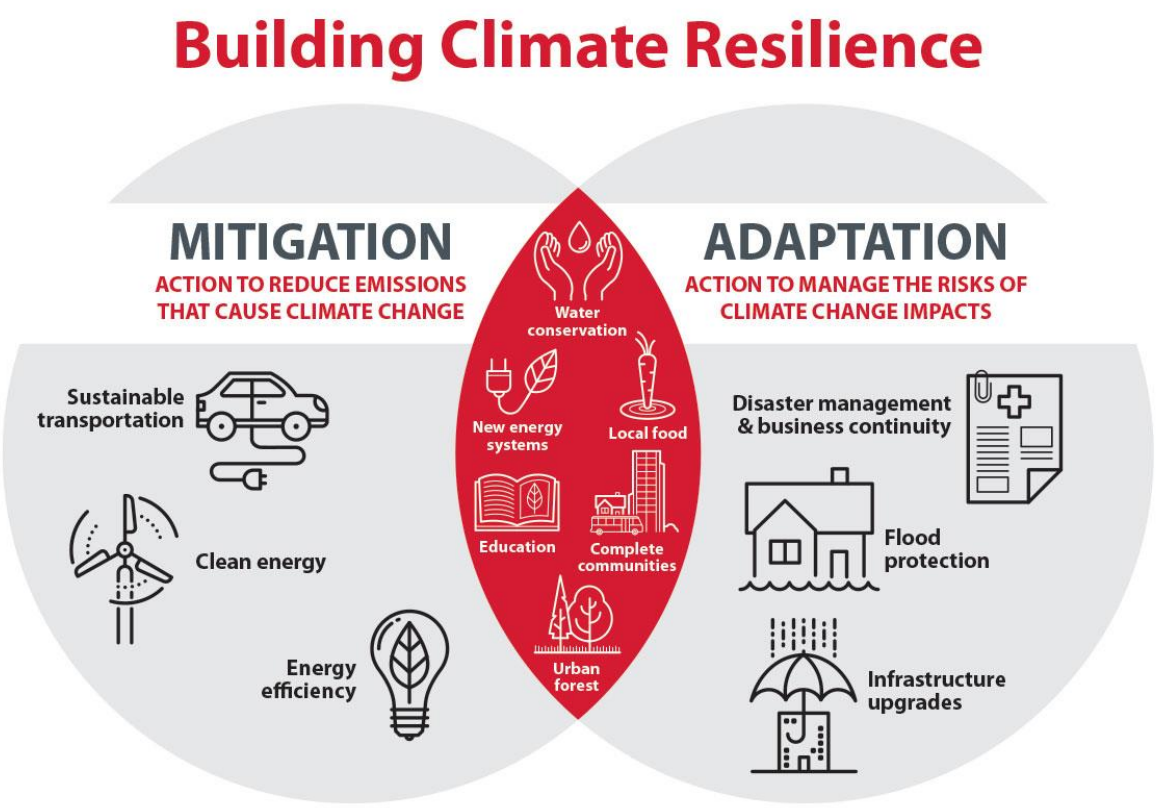
Regardless of the City's continued leadership toward emissions reductions, including implementation of measures identified in this 2030 GHGRS, climate change and its related effects have already been set in motion as a result of past and ongoing GHG emissions that persist in the atmosphere. Responses to the potential localized effects of climate change can come in the form of mitigation and/or adaptation. Climate change mitigation addresses the root cause by reducing GHG

emissions. This Plan represents the City's commitment to sustained action to further reduce its own contributions to climate change in the hope of minimizing its future impacts locally and elsewhere.

Climate change adaptation is a response intended to reduce vulnerability to the projected effects of climate change, such as changes in precipitation patterns, the number of extreme heat days, sea-level rise, or riparian flooding. Climate change adaptation goes beyond resilience by taking actions to address future risks. Adaptation refers to how communities anticipate, plan, and prepare for a changing climate. These adaptation actions can be wide ranging, including actions to address food production and food security, protecting at-risk critical infrastructure, or constructing new infrastructure in response to climate hazards (e.g., sea level rise).

While climate change adaptation is a closely related and important topic, it is separate from the focus of the 2030 GHGRS, which is a focused and tailored plan leveraging recent state and City legislation, policies, and ordinances to enable project-level greenhouse gas reductions in a practical and measurable way. Figure 1.5 from the City of Calgary's Resilience Strategy illustrates the interrelated concept of climate mitigation (i.e., GHG reductions) and adaptation planning when addressing climate resilience.

Figure 1.5 – Climate Mitigation and Adaptation Interrelationship



Source: City of Calgary Climate Resilience Strategy: Mitigation & Adaptation Action Plans, 2018.

CHAPTER 2

Regulatory Context

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This chapter provides an overview of the regulatory context at the federal, state, and regional levels for greenhouse gas emissions reductions.

Regional policy discussion includes elements of a qualified climate action plan under the Bay Area Air Quality Management District (BAAQMD) framework that allows for streamlining under the California Environmental Quality Act.

2.1 Federal Regulations

Although at the time of Plan development there was no overarching federal law specifically related to climate change or the reduction of GHGs, the United States Environmental Protection Agency (EPA) is responsible for implementing the federal Clean Air Act (CAA), which includes regulation of key GHG emissions sources such as mobile emissions, a mandatory emissions reporting program for large stationary emitters, and joint implementation of federal vehicle fuel efficiency standards.

2.1.1 Clean Air Act

The U.S. Supreme Court ruled in its decision in Massachusetts et al. v. Environmental Protection Agency et al. ([2007] 549 U.S. 05-1120), issued on April 2, 2007, that GHGs fit within the CAA's definition of an air pollutant and that the EPA has the authority to regulate emissions of GHGs.

On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- Endangerment Finding: The current and projected concentrations of the six key GHGs—carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorinated chemicals, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to GHG pollution, which threatens public health and welfare.

2.1.2 EPA Mandatory Reporting Rule for GHG Emissions

On September 22, 2009, the EPA issued a final rule for mandatory reporting of GHGs from large emissions sources in the United States. In general, this national reporting requirement provides the EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons or more of CO_2 per year. This publicly available data allows reporters to track their own emissions and compare them to emissions from similar facilities, and aids in identifying cost-effective opportunities to reduce emissions in the future.

2.1.3 Corporate Average Fuel Economy (CAFE) Standards and the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule

The EPA and the National Highway Traffic Safety Administration (NHTSA) implemented the GHG and Corporate Average Fuel Economy (CAFE) standards, which regulate GHG emissions and fuel economy for passenger cars and light trucks. Phase 1 of the CAFE standards was implemented for model years 2012 through 2016, while Phase 2 of the standards addresses model years 2017–2025.

The Safer Affordable Fuel Efficient (SAFE) Vehicles Rule, proposed by the United States Department of Transportation and the EPA in 2018, would amend the existing CAFE standards and establish new standards for model years 2021 through 2026. On September 27, 2019, the EPA and the NHTSA published the "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program." (84 Fed. Reg. 51,310 (Sept. 27, 2019.) The One National Program revokes California's authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. Part 2 of the regulations pertaining to emissions standards for model years 2021 through 2026 was still pending at the time of Plan development.

In addition to standards for light-duty cars and trucks, EPA and NHTSA have implemented medium- and heavy-duty vehicle GHG emissions and fuel efficiency standards. The standards were rolled out in two phases: Phase 1 applied to model years 2014–2018, and Phase 2 applies to model years through 2027. The agencies estimated that the Phase 1 standards would reduce CO_2 emissions by about 270 million metric tons and Phase 2 would lower CO_2 emissions by approximately 1.1 billion metric tons over the lifetime of the vehicles sold under the program.

2.2 State Regulations and Executive Orders

Independent of federal requirements, the State of California has adopted its own GHG regulations and emissions reduction goals. The following presents a summary of the state's GHG emissions targets and related regulations, as well as a summary of key state policies and programs related to emissions sources addressed in the 2030 GHGRS. This list is not exhaustive but represents the most important regulations whose implementation will result in local emissions reductions that can help San José to achieve its GHG targets.

2.2.1 Statewide Emissions Reduction Targets

A. Executive Order S-3-05 (2005) and Assembly Bill 32 (2006)

Brought forth in recognition of California's vulnerability to the effects of climate change, EO S-3-05 established progressive GHG emissions reduction targets for the state, as follows:

- By 2010, reduce GHG emissions to the year 2000 level,
- By 2020, reduce GHG emissions to the year 1990 level, and
- By 2050, reduce GHG emissions to 80 percent below the 1990 level.

The California Global Warming Solutions Act of 2006, commonly known as AB 32, further detailed and put into law the midterm GHG reduction target established in EO S-3-05 to reduce statewide GHG emissions to 1990 levels by 2020 and created a comprehensive, multi-year program to reduce GHG emissions in California. AB 32 also directed the California Air Resources Board (ARB) to accomplish the following core tasks:

- Establish the statewide goal of reducing GHG emissions,
- Establish a mandatory reporting system to track and monitor emissions levels, and
- Develop various compliance options and enforcement mechanisms.

B. EO B-30-15 (2014) and Senate Bill 32 (2016)

EO B-30-15 established a statewide GHG reduction goal of 40 percent below 1990 levels by 2030. This emissions reduction goal was set as an interim goal between the AB 32 target for 2020 and the long-term goal for 2050 set by EO S-3-05. In addition, the executive order aligned California's 2030 GHG reduction goal with the European Union's 2030 reduction target that was adopted in October 2014.

SB 32 subsequently signed into law the emissions goal of EO B-30-15, extending the provisions of AB 32 from 2020 to 2030 with a new target to reduce emissions 40 percent below 1990 levels by 2030.

C. EO B-55-18 (2018)

Most recently, EO B-55-18 established a statewide goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." While not law, this executive order directs ARB to "work with relevant state agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal."

2.2.2 California's Climate Change Scoping Plan

ARB adopted the *Climate Change Scoping Plan* (Scoping Plan) in December 2008, which outlines California's primary strategies for achieving the GHG reductions required by AB 32. The Scoping Plan encourages local governments to align land use, transportation, and housing plans to minimize vehicle trips.

ARB is required to update the Scoping Plan at least once every 5 years to evaluate progress and develop future inventories that may guide this process. The *First Update to the Climate Change Scoping Plan: Building on the Framework* (2014 Scoping Plan Update) determined that the state was on schedule to achieve its 2020 target. However, an accelerated reduction in GHG emissions would be required to achieve the EO S-3-05 emissions reduction target for 2050.

The most recent update*, California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target* (2017 Scoping Plan Update) was driven by the 2030 target pursuant to SB 32. The 2017 Scoping Plan Update established a plan of action, consisting of a suite of strategies to be implemented rather than a single solution, to achieve the state's SB 32 emissions target for 2030.

2.2.3 Transportation Legislation

A. Sustainable Communities and Climate Protection Act of 2008 (SB 375)

The Sustainable Communities and Climate Protection Act of 2008 (SB 375) built upon the existing framework of regional planning. ARB adopted regional GHG targets for passenger vehicles and light trucks for 2020 and 2035 for the 18 metropolitan planning organizations (MPOs) in California. Under this legislation, each MPO is required to incorporate these GHG emissions targets into the regional transportation planning process and adopt either a "sustainable communities strategy" or an "alternative planning strategy" as part of its regional transportation plan to identify land use, housing, and transportation strategies that will achieve the regional GHG reduction targets.

B. Advanced Clean Cars Program/Zero Emission Vehicle Program

AB 1493, also known as the Pavley regulations, required ARB to adopt regulations by January 1, 2005, that would result in the achievement of the "maximum feasible" reduction in GHG emissions from vehicles used in the state primarily for noncommercial, personal transportation. In 2009, the EPA Administrator granted a CAA waiver of preemption to California, allowing the state to implement its own GHG emissions standards for motor vehicles. California agencies worked with federal agencies to conduct joint rulemaking to approve a new emissions-control program for model years 2017–2025.

The program was implemented through a single package of standards called Advanced Clean Cars (California Code of Regulations [CCR] Title 13, Sections 1962.1 and 1962.2), inclusive of the Low-Emission Vehicle III amendments, the Zero-Emission Vehicle program, and the Clean Fuels Outlet regulation.

As described above under Federal Regulations, the SAFE Vehicles Rule Part One: One National Program became effective November 26, 2019. Through this ruling, the EPA withdrew California's waiver of preemption and NHTSA finalized regulatory text related to preemption. California and 22 other states have filed suit to challenge the NHTSA preemptive regulations and California filed suit to challenge EPA's waiver rescission. At the time of development of the 2030 GHGRS, the future status of these programs was unknown.

2.2.4 Energy Legislation

A. Renewables Portfolio Standard

SB 1078, SB 107, EO S-14-08, and SB X1-2 have established increasingly stringent renewables portfolio standard (RPS) requirements for California's utility companies. RPS-eligible energy sources include wind, solar, geothermal, biomass, and small-scale hydro projects.

- **SB 1078** required investor-owned utilities to provide at least 20 percent of their electricity from renewable resources by 2020.
- **SB 107** accelerated the SB 1078 timeframe to take effect in 2010.
- **EO-S-14-08,** codified by **SB X1-2,** increased the RPS further to 33 percent by 2020.
- **SB 350** increased the RPS to 50 percent by 2030.
- **SB 100** increased the RPS to 60 percent by 2030 and required the state's electricity to come from 100 percent carbon-free resources by 2045.

These requirements reduce the GHG emissions from electricity generation and thus reduce GHG emissions associated with electricity use in both existing and new development.

Casa Feliz living roof

Source: City of San José, City Photos

2.2.5 Buildings Legislation

A. Title 24, Part 6

Title 24 of the California Code of Regulations was established in 1978 and serves to enhance and regulate California's building standards. Although not initially developed to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards to save energy,

increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment.

B. Title 24, Part 11

The California Green Building Standards Code (Part 11 of Title 24), commonly referred to as CALGreen, set minimum mandatory standards as well as voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in addition to the California Energy Code requirements), water conservation, material conservation, and interior air quality.

C. Title 20

Title 20 of the California Code of Regulations requires manufacturers of appliances to meet state and federal standards for energy and water efficiency. Performance of appliances must be certified through the California Energy Commission to demonstrate compliance with standards.

2.2.6 Solid Waste Legislation

A. Assembly Bill 341

The passage of AB 341 (2011) established a policy goal for the State of California that not less than 75 percent of solid waste generated be source reduced, recycled, or composted by the year 2020. According to the 2015 CalRecycle AB 431 Report to the Legislature, more than 60 percent of the target would be met in 2020 by the continuation of then existing programs already in place.

B. Assembly Bill 1826

AB 1826 (2014) requires businesses to recycle their organic waste, depending on the amount of waste they generate per week, and requires that local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses. This law phases in the mandatory recycling of commercial organics over time, while also offering an exemption process for rural counties.

C. Senate Bill 1383

SB 1383 (2016) established methane emissions reduction targets in a statewide effort to reduce emissions of short-lived climate pollutants in various sectors of California's economy, including solid waste. SB 1383 sets targets to achieve a 50 percent reduction in statewide disposal of organic waste from the 2014 level by 2020 and a 75 percent reduction by 2025. The law granted CalRecycle the regulatory authority required to achieve the organic waste disposal reduction targets and established an additional target that not less than 20 percent of currently disposed edible food is recovered for human consumption by 2025. Beginning in 2022, SB 1383 will require local governments to provide organic waste collection and/or processing to all residents and businesses and establish an edible food recovery program which may result in major changes to existing waste collection programs.

2.2.7 California Environmental Quality Act

A. Senate Bill 97

While the statewide Scoping Plan established the policy intent to control numerous GHG sources through regulatory, incentive, and market means, CEQA is an important and supporting tool in achieving GHG reductions overall in compliance with state targets. SB 97 (2007) acknowledged that climate change is a prominent environmental issue and directed the adoption of amendments to the California Environmental Quality Act (CEQA) Guidelines for GHG emissions. Thereafter, the Bay Area Air Quality Management District (BAAQMD) adopted updated CEQA Air Quality guidelines in June 2010, subsequently revised in 2017, to address GHG emissions impacts. The overall goal is to ensure that new development projects implement appropriate and feasible emissions reduction measures to mitigate significant air quality impacts. The guidelines established GHG thresholds to support the Bay Area's efforts to meet the state's goals addressing climate change.

2.3 Regional Regulations and Programs

2.3.1 BAAQMD Elements of a GHGRS

Corresponding to the requirements of state CEQA Guidelines Section 15183.5, 15064(h)(3) and 15130(d), BAAQMD encourages local governments to adopt a qualified GHG reduction strategy that is consistent with AB 32. In accordance with the BAAQMD May 2017 CEQA Air Quality Guidelines, it can be presumed that a project consistent with an adopted qualified GHG reduction strategy would not have significant GHG emissions impacts.

A GHG reduction strategy may be a single plan, or could be a collection of climate action policies, plans, ordinances, and programs that have been legislatively adopted by a local jurisdiction. BAAQMD recommends the elements identified in the state CEQA Guidelines, Section 15183.5 as a minimum standard to meet the GHG reduction strategy thresholds of significance option.[5] The following presents those elements and provides a brief overview of how this 2030 GHGRS is consistent with the BAAQMD requirements for a "qualified GHG reduction strategy."

A. Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area

A GHG reduction strategy must include an emissions inventory that quantifies an existing level of baseline and projected GHG emissions for a given period. The City has prepared three GHG inventories (2008, 2014, and 2017) to track community emissions trends and monitor the City's progress toward achieving GHG emissions targets over time.

[5] BAAQMD, California Environmental Quality Act Air Quality Guidelines, May 2017, Accessed June 24, 2019.

The City prepared a GHGRS in 2015 based on 2008 baseline emissions. During the 2016 four-year General Plan review, an updated citywide inventory was prepared based on calendar year 2014 data. This 2030 GHGRS is based on an inventory of 2017 emissions, further detailed in Chapter 3 and in Appendix A. The GHG emissions from the 2008 inventory served as the baseline for the previous GHGRS, whereas the 2030 GHGRS is using the most recent 2017 inventory as a baseline to better reflect the cumulative impact of the City's and other actors' contributions to GHG reductions since the 2008 inventory. Emissions forecasts were also developed using the 2017 inventory as the base year to understand how emissions could grow over time without further mitigating action. The emissions forecasts in this GHGRS are based on the assumed levels of growth and development planned for in the City's *Envision San José 2040 General Plan.*

B. Establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the Plan would not be cumulatively considerable

The intent of this element is to establish a GHG emissions target that meets or exceeds the goals outlined by AB 32 and SB 32 (as described under the *State Regulations* section above). The City's GHG targets established in the GHGRS for 2020 and 2030 are consistent with the state's long-term emissions targets of AB 32 and SB 32. The targets are introduced in Chapter 3, with greater detail explaining development of the 2030 target provided in Appendix B. The 2030 target was developed following ARB's guidance to local governments provided in the 2017 Scoping Plan Update.

C. Identify and analyze the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the defined geographic area

A GHGRS should identify and analyze emissions reductions from anticipated actions to understand the amount of additional reductions needed to meet the defined emissions target. Anticipated actions refer to the local and state policies and regulations that may be planned or adopted but not yet implemented.

The GHGRS highlights existing state and local policies, plans, and programs that contribute to GHG emissions reductions in the community. In most instances, the emissions reduction potential of these actions has not been separately estimated, but the Plan acknowledges that their collective impact will continue to be reflected in the City's inventory updates (i.e., future emissions levels will be lower than if these policies, plans, and programs were not implemented).

Importantly, the GHGRS emissions forecast also partially reflect implementation of specific actions, including the anticipated impact of the City's General Plan on local travel demand (i.e., on-road emissions) as well as the anticipated impact of the state's vehicle efficiency programs reflected in ARB's mobile source emissions model (EMFAC). The emissions forecast (including these two specific

actions) was compared to the City's GHG target to identify the additional GHG reductions required to achieve the 2030 target.

D. Specify measures or a group of measures, including performance standards that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level

The GHG reduction strategy should include mandatory and enforceable measures that impact new development projects. Additionally, a quantification of expected GHG reductions from each identified measure or categories of measures should be part of the GHG reduction strategy.

The 2030 GHGRS presents a set of GHG reduction strategies and a quantification of each strategy's GHG reduction potential that will collectively achieve the City's GHG emissions target for 2030, as well as contribute to regional and statewide emissions reductions (see Chapter 3). Implementation assumptions for these strategies are presented in Appendix C.

According to BAAQMD's guidelines, the GHGRS must also identify reduction measures applicable to new developments to be a qualified GHG reduction strategy. Based on the development characteristics of the city, its base year emissions inventory, and its emissions forecast, the City knows that emissions reductions will need to come from both existing and new development to achieve its 2030 target. Therefore, this 2030 GHGRS includes:

- Measures applicable to existing developments,
- Mandatory and voluntary measures applicable to the new private and public developments, and
- Measures applicable to municipal operations.

The procedure for determining if a proposed project is consistent with the GHGRS is provided through the Development Checklist (see Attachment A). This Checklist identifies applicable regulations, applicability, requirements, and the required monitoring and reporting for new development projects within the City's jurisdiction.

E. Establish a mechanism to monitor the Plan's progress towards achieving the level and to require amendment if the Plan is not achieving specified levels

BAAQMD's CEQA Air Quality Guidelines require inclusion of an implementation Plan for the GHGRS. Additionally, inventories and reductions measures should be updated every three to five years with annual reviews of progress on implementation of specific measures.

Chapter 3 includes a description of the City's GHGRS implementation and monitoring framework to ensure the estimated GHG reductions occur, and to provide guidance on how the GHGRS can be revised if future emissions inventories indicate the City is not on track to achieve its 2030 target.

The City's original GHGRS was developed in 2011 and updated in 2015. It is anticipated that regular revisions to this GHGRS will also occur as new information is made available, state and local regulatory frameworks evolve, and new emissions-reducing technologies are developed. Climate Smart San José also includes a commitment to monitoring that requires the City to maintain a dashboard to monitor progress on that plan and the efficacy of its various GHG reduction measures. The City will identify ways to integrate monitoring of both plans to ensure the success of its near- and long-term GHG targets.

F. Be adopted in a public process following environmental review

A GHG reduction strategy should be evaluated for its environmental impact under CEQA. The 2030 GHGRS has undergone environmental review under CEQA. As part of the adoption process, the 2030 GHGRS (proposed project) and the CEQA findings will be adopted after public hearings.

Downtown San José

Source: City of San José, City Photos

2.3.2 Other Regional Programs

In addition to the legislation presented earlier in this chapter, several programs or partnerships operating within the Bay Area are working regionally to reduce GHG emissions and vulnerability to climate change, enhance economic opportunity, and further myriad objectives related to sustainability. The three programs or partnerships described below help to support GHG reductions locally and provide collaborative frameworks for ambitious regional climate action.

A. BayREN

The Bay Area Regional Energy Network (BayREN) is a collaboration of the nine counties that make up the San Francisco Bay Area. Led by the Association of Bay Area Governments (ABAG), BayREN provides regional-scale energy efficiency programs, services, and resources. BayREN is funded by utility ratepayer funds through the California Public Utilities Commission, as well as other sources. It draws on the expertise, knowledge, and proven track record of Bay Area local governments to develop and administer successful climate, resource, and sustainability programs.

The program focuses on three core services:

- Promoting Healthy and Energy Efficient Buildings for single family and multifamily residents (with future support for small and medium commercial property owners in development),
- Building Government Capacity for local governments to increase their impacts with training, mentoring and a range of other resources throughout the nine Bay Area counties, and
- Reducing Carbon Emissions by catalyzing regional activities and connecting them to existing initiatives.

BayREN's current program areas include:

- **Single Family** – helping residents save energy, increase comfort and safety, and save money with home energy upgrades. Home Energy Advisors help residents of detached single family and up to 4 attached units receive cash rebates for installing energy efficient measures in their home, addressing heating, air conditioning, insulation, and other building systems. Fuel switching rebates will also be available starting in February 2020.
- **Multifamily** – providing property owners a free energy audit and cash rebates to make energy upgrades to their buildings. The program provides technical assistance to plan and finance energy- and water-saving improvements. As with single-family homes, fuel switching rebates will be available starting in February 2020.
- **Businesses** – offering specialized technical assistance to small and medium commercial business property owners to help find the best approach to reducing costs and improving quality of buildings and businesses.
- **Financing** – providing Bay Area municipalities, businesses, and residents access to various financing tools and resources to improve affordability of energy efficiency improvements.
- **Codes and Standards** – assisting local governments to evaluate and improve compliance with energy codes and supporting development of options to accelerate energy efficiency.

As of June 2019, more than 8,000 single family homes had participated in a home upgrade program, nearly 40,000 multi-family units had completed upgrades, and more than 108,000 multi-family units had received technical assistance.[6]

B. Silicon Valley Energy Watch

Silicon Valley Energy Watch (SVEW) helps Santa Clara County Pacific Gas and Electric (PG&E) customers lower their energy use through upgrade programs, rebates, and educational materials, improving energy efficiency and increasing awareness of the importance of energy conservation countywide. Since 2010, SVEW has helped Santa Clara County save over 75 million kWh.

[6] BayREN Program Dashboard, Q2 2019. Available online: https://63bce253-fb1e-40fd-9fe6-f6631fc8865f.filesusr.com/ugd/1ef210_958703c8b3774216acab8bbd30051977.pdf

SVEW offers programs to reduce energy use in homes, public agencies and non-profit organizations, and schools. The program is designed to ensure that all eligible customers take advantage of the broad range of energy efficiency resources available to them. This includes various low- or no-cost services that help participants:

- Benchmark facilities to identify underperforming facilities,
- Perform energy audits to determine and prioritize investment opportunities,
- Understand rebate and funding opportunities to offset out-of-pocket costs, and
- Implement projects by providing technical and management assistance.

SVEW is funded by California ratepayers and administered by the City of San José in collaboration with PG&E to serve Santa Clara County. It has been managed and staffed by the City of San José's Environmental Services Department since 2004.

C. Joint Venture Silicon Valley

Established in 1993, Joint Venture Silicon Valley (Joint Venture) provides analysis and action on issues affecting the region's economy and quality of life. The organization brings together established and emerging leaders—from business, government, academia, labor, and the broader community—to spotlight issues and work toward innovative solutions.

Joint Venture provides a neutral forum for collaborative regional thinking and leadership from both the public and private sectors. It assembles Silicon Valley's leaders in business, government, academia, labor, and the nonprofit sector to build a framework for regional thought, analysis and action to assess challenges, reach consensus on the best strategies for response, and work on solutions together. Joint Venture was designed to act on issues that do not adhere to city limits, county borders, or state lines, including economic development, infrastructure, transportation, communications, education, health care, disaster planning, climate change, and more.

Joint Venture pursues numerous initiatives at any one time, with current initiatives related to the goals of this GHGRS including:

- **Climate Prosperity** – unites local governments, businesses, and institutions in defining and deploying initiatives that address the long-range environmental challenges facing the region and world.
- **EV Infrastructure Group** – provides a structured forum and meeting venue for local organizations and practitioners focused on setting up, managing, and expanding their electric vehicle (EV) infrastructure.
- **Manzanita Talks** – a series of discussions convened by Joint Venture Silicon Valley, in partnership with the Bay Area Council, to explore the logic and desirability of cross-sector collaboration to address "first and last mile" challenges, traffic mitigation, the potential for

coordinating and integrating existing Transportation Management Associations, and whether to form a sub-regional Transportation Management Association on the mid-Peninsula.

- **Public Sector Climate Task Force** – develops effective collaborative solutions for the reduction of GHG emissions from public agency operations and provides a neutral forum for city and county government agencies and special districts to learn from each other and from others about climate protection programs.
- **Silicon Valley Food Rescue** – reduces hunger by gathering prepared food from regional university and corporate campuses, distributing it directly to people in need.

San José International Airport

Source: City of San José, City Photos

CHAPTER 3

GHG Reduction Framework

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This chapter provides an overview of the City of San José's 2008, 2014, and 2017 GHG inventories to compare emissions reductions and review progress toward the City's 2020 GHG reduction target. With the inventory as a foundation, a summary of the 2030 emissions forecasts provides context for the reduction targets.

It introduces the City's 2030 reduction target (interim goal) to align with the state's 2030 GHG reduction target adopted in Senate Bill 32 and demonstrates progress toward the state's 2050 goal set in EO-S-05.

The chapter also presents a set of GHG reduction strategies aligned with the adopted programs and policies to achieve the City's 2030 reduction target. It concludes with the GHGRS implementation and monitoring framework to ensure Plan success.

3.1 Emissions Trends and Forecasts

To date, the City has prepared three GHG inventories, starting with the base year 2008 and updated in 2014 and 2017, to track citywide emissions trends and monitor the City's progress toward GHG reductions over time. Inventory methodologies have continued to evolve since San José prepared its first inventory in 2008, and the City continues to follow the most up-to-date practices in its emissions analysis to remain at the forefront of this subject. Further, while all methodologies have their limitations, the use of a consistent methodology and assumptions can help ensure that the City's inventories are useful tools to track and compare emissions over time. The citywide 2008, 2014, and 2017 inventories were prepared to support consistency across the years to the extent feasible and to establish a framework for the City's future inventories.

The following section summarizes results from the City's 2017 GHG inventory (see Appendix A – 2017 Inventory of Community Greenhouse Gas Emissions for further details), describes high-level emissions trends in the community since 2008, and notes areas where the methodological differences in the City's inventories prevent direct comparisons. An update on progress toward the City's 2020 GHG target is provided based on results from the 2017 inventory. With the San José General Plan buildout year of 2040, an emissions forecast through the year 2040 helps frame the discussion of the interim 2030 GHG reduction target.

3.1.1 2017 Base Year Emissions Inventory

The City prepared its latest GHG inventory for calendar year 2017, which serves as the baseline year for emissions forecasting in the 2030 GHGRS. The 2017 inventory was prepared according to the Global Protocol for Community Scale GHG Inventories (GPC). Additionally, the inventory draws on methods from the U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions developed by ICLEI[7], which provides more detailed methodology specific to the U.S. communities. The City's 2008 and 2014 inventories were prepared based on the U.S. Community Protocol, and during the 2017 inventory preparation, certain aspects of the 2014 inventory were updated or added to support direct comparisons with the 2017 results. The City's original 2008 inventory was not revised as part of this Plan's development.

The City's inventories have been prepared using calculation-based methodologies, which estimate emissions using a combination of activity data and emissions factors. In general, emissions are estimated using the equation:

Emissions = Activity Data X Emissions Factor

Activity Data refer to the measurements of energy use or other GHG-generating processes such as fuel consumption by fuel type (e.g., natural gas, gasoline, diesel), metered annual electricity consumption, annual vehicle miles travelled, or tons of solid waste disposed.

[7] ICLEI U.S. Community Protocol. Available online: https://icleiusa.org/publications/us-community-protocol/

Emissions factors expressed in terms of emissions per unit of activity (e.g., pounds of CO_2 per kilowatt-hour of electricity), are used to convert activity data into quantities of emissions. The 2017 inventory was calculated in the ClearPath[8] tool, which allows users to input activity data (e.g., kilowatt-hour or vehicle miles traveled) and emissions factors to calculate emissions expressed in metric tons of CO_2e (MT CO_2e).

The 2017 inventory measures emissions by categories called sectors and is further organized into sub-sectors, as shown in Table 3.1.

Table 3.1 – 2017 Emissions Sectors and Sub-sectors

Emissions Sector	Emissions Sub-sector
Transportation & Mobile Sources	On-road Vehicles Public Transit (buses and trains) Aviation Off-road Vehicles and Equipment
Building Energy (electricity and natural gas use)	Residential Commercial Industrial
Solid Waste	Solid waste
Water & Wastewater	Water Energy Wastewater Influent/Effluent Wastewater Digester Gas Combustion
Process & Fugitive Emissions	Fugitive Emissions

Source: Appendix A—2017 Inventory of Community Greenhouse Gas Emissions, ICLEI (May 2019)

3.1.2 2017 Emissions by Sectors

In 2017, GHG emissions totaled 5.7 million metric tons of carbon dioxide equivalent (MMT CO_2e). The city's population in 2017 was approximately 1,038,000, which results in approximately 5.50 metric tons CO_2e per capita (MT CO_2e/capita). Similarly, the city's service population (SP) in 2017 was approximately 1,443,000, and results in approximately 3.96 MT CO_2e per service population (MT CO_2e/SP).[9] Emissions come from the following sources:

- **Transportation emissions** remain the largest contributor of total GHG emissions and represent 63 percent of the total citywide GHG emissions. The transportation and mobile sources sector includes emissions from public and private vehicles operating on the road network; use of public transit within the city limits, including buses and trains; flights that begin and end their trips at the San José International Airport or Reid-Hillview County Airport; and the operation of

[8] ICLEI ClearPath. Available online: https://icleiusa.org/clearpath/

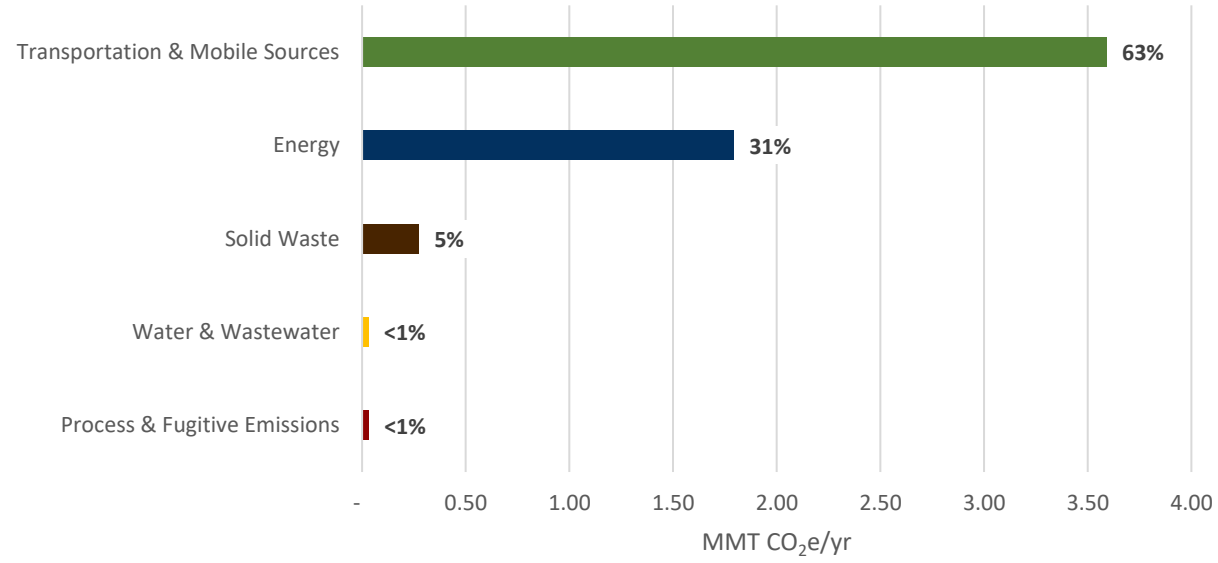
[9] Service population is a metric that represents the sum of the local population plus local employment

off-road vehicles and equipment, such as forklifts, lawnmowers, airport ground support equipment, and waterborne pleasure craft.

- **Building energy emissions** represent 31 percent of the total emissions. This sector includes electricity and natural gas use in the city's residential, commercial/institutional, and industrial buildings.
- **Solid waste emissions** represent 5 percent of the total inventory. These emissions are associated with solid waste that is generated within the community and disposed in a landfill. The anaerobic decomposition process in a landfill environment produces methane as organic waste materials, such as food scraps, paper and cardboard, wood debris, and yard trimmings, decompose over time.
- **Water and wastewater emissions** make up less than 1 percent of the total inventory. Water energy emissions represent the electricity used to supply potable water to residents, businesses, and other building occupants in the city. Wastewater influent and effluent emissions of nitrous oxide (N2O) occur as a result of the wastewater treatment process at the San José-Santa Clara Regional Wastewater Facility. Wastewater emissions also include those associated with combustion of digester gas that is collected during the treatment process.
- **Process and fugitive emissions** contribute less than 1 percent of total emissions and occur because of leaks within the natural gas distribution infrastructure serving the city.

Figure 3.1 shows the 2017 inventory results by emissions sector.

Figure 3.1 – 2017 Emissions by Sector



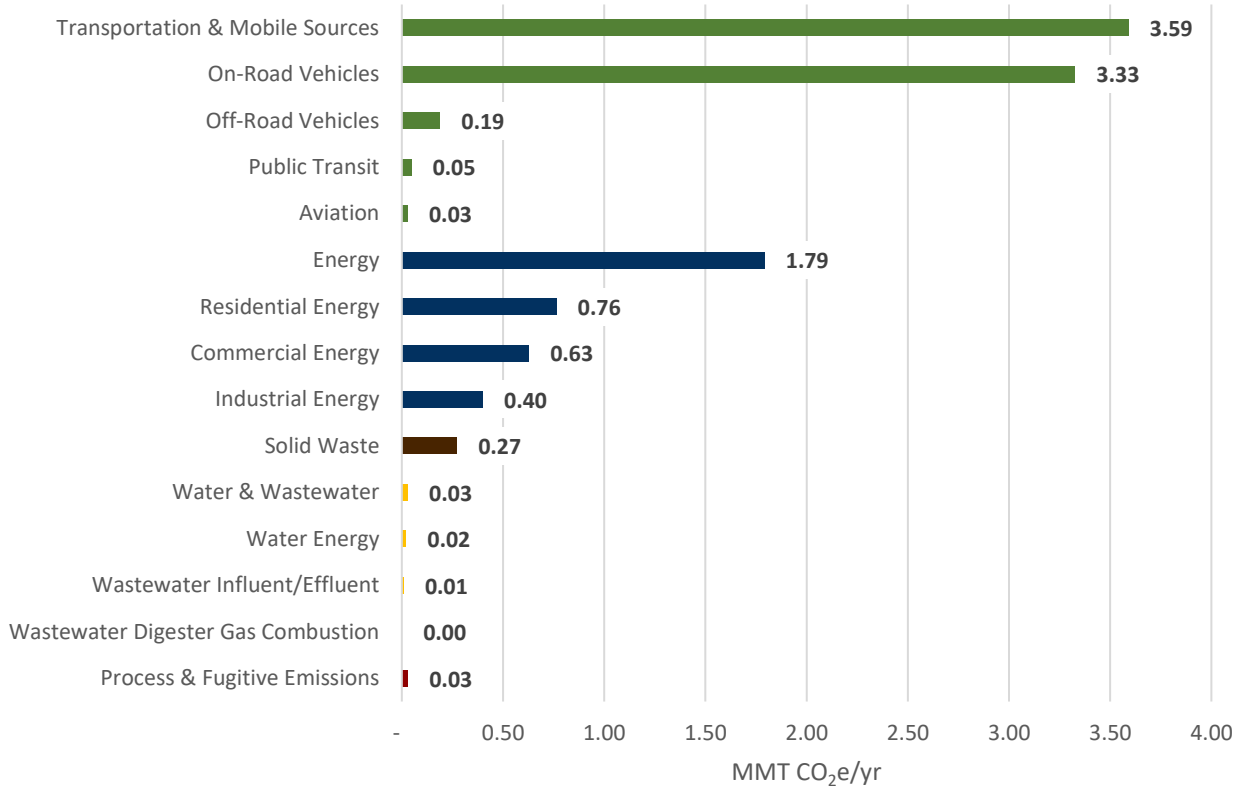
Source: Appendix A — 2017 Inventory of Community Greenhouse Gas Emissions, ICLEI (May 2019)

3.1.3 Emissions by Sub-sectors

Moving beyond the sectors, the sub-sector data provides a deeper understanding of the city's emissions sources. Figure 3.2 illustrates the following:

- On-road vehicles are the most significant sub-sector emissions source overall, contributing 58 percent of the total.
- The building energy sub-sectors are the next largest contributors, with residential, commercial, and industrial energy use contributing 13 percent, 11 percent, and 7 percent of total emissions, respectively.
- Solid waste management emissions contribute 5 percent, and off-road vehicle and equipment use is responsible for another 3 percent.
- Public transit and fugitive emissions each contribute 1 percent of total emissions.
- The remaining 1 percent of emissions come from in-boundary aviation, water system energy use, and the wastewater treatment process.

Figure 3.2 – 2017 Emissions by Sector and Sub-sector



Source: Appendix A — 2017 Inventory of Community Greenhouse Gas Emissions, ICLEI (May 2019)

Notes on Figure 3.2: The total emissions from each sector are represented and followed by the corresponding sub-sector emissions, where applicable; the solid waste and process & fugitive emissions sectors do not include sub-sectors. Sub-sectors are presented in descending order of magnitude within each sector.

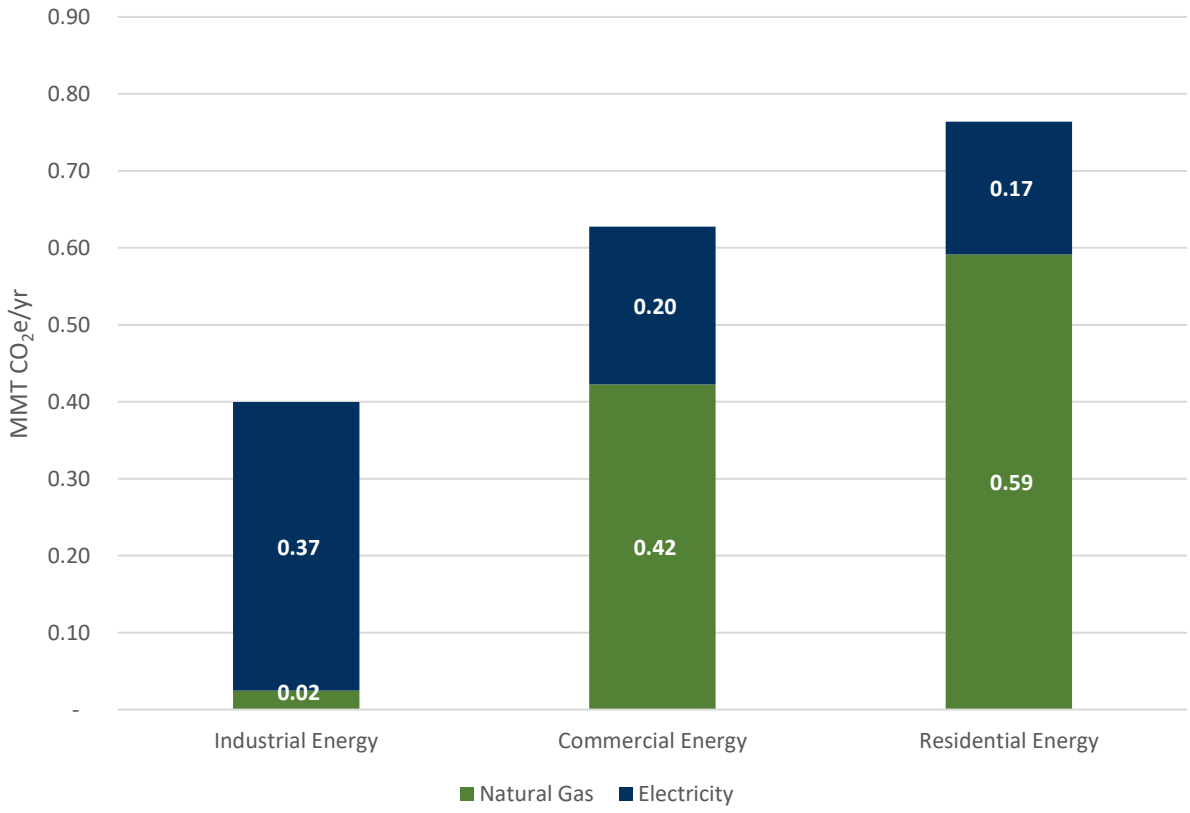
A. Energy Emissions

The energy sub-sector emissions are measured by fuel type, including electricity and natural gas.

- In residential buildings, approximately 25 percent come from electricity use and 75 percent result from natural gas system, such as hot water and space heating and cooking appliances.
- In commercial buildings, approximately 33 percent of emissions come from electricity and 67 percent from natural gas use.
- In industrial buildings, nearly 95 percent of emissions are associated with electricity use and the remainder from natural gas.

Figure 3.3 illustrates the distribution of emissions by fuel type.

Figure 3.3 – 2017 Energy Emissions by Fuel Type

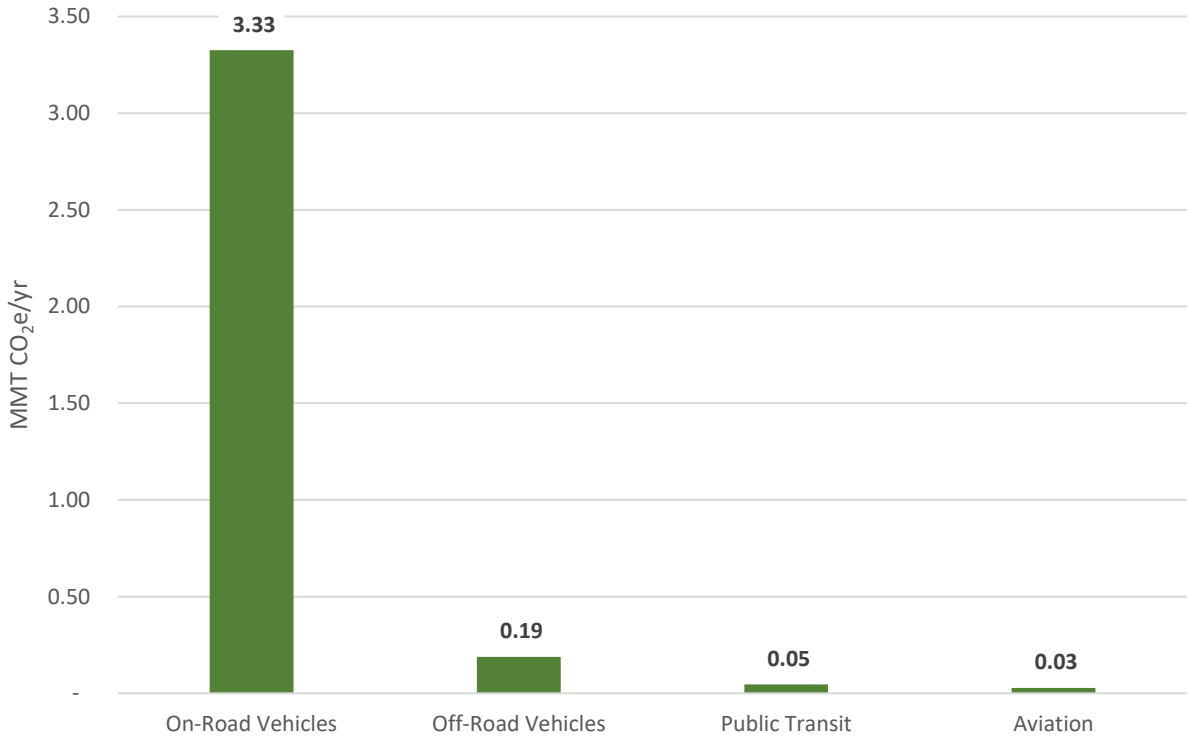


Source: Appendix A — 2017 Inventory of Community Greenhouse Gas Emissions, ICLEI (May 2019)

B. Transportation Emissions

Transportation sector emissions are overwhelmingly the result of on-road vehicles operating within the community, which represent 93 percent of the sector's total. Off-road vehicles and equipment contribute 5 percent of the sector total, while the public transit and aviation sub-sectors produce 1 percent each. Figure 3.4 illustrates the 2017 transportation sub-sector emissions.

Figure 3.4 – 2017 Transportation Emissions by Sub-sector



Source: Appendix A — 2017 Inventory of Community Greenhouse Gas Emissions, ICLEI (May 2019)

3.1.4 Emissions Trends and Key Findings 2008 to 2017

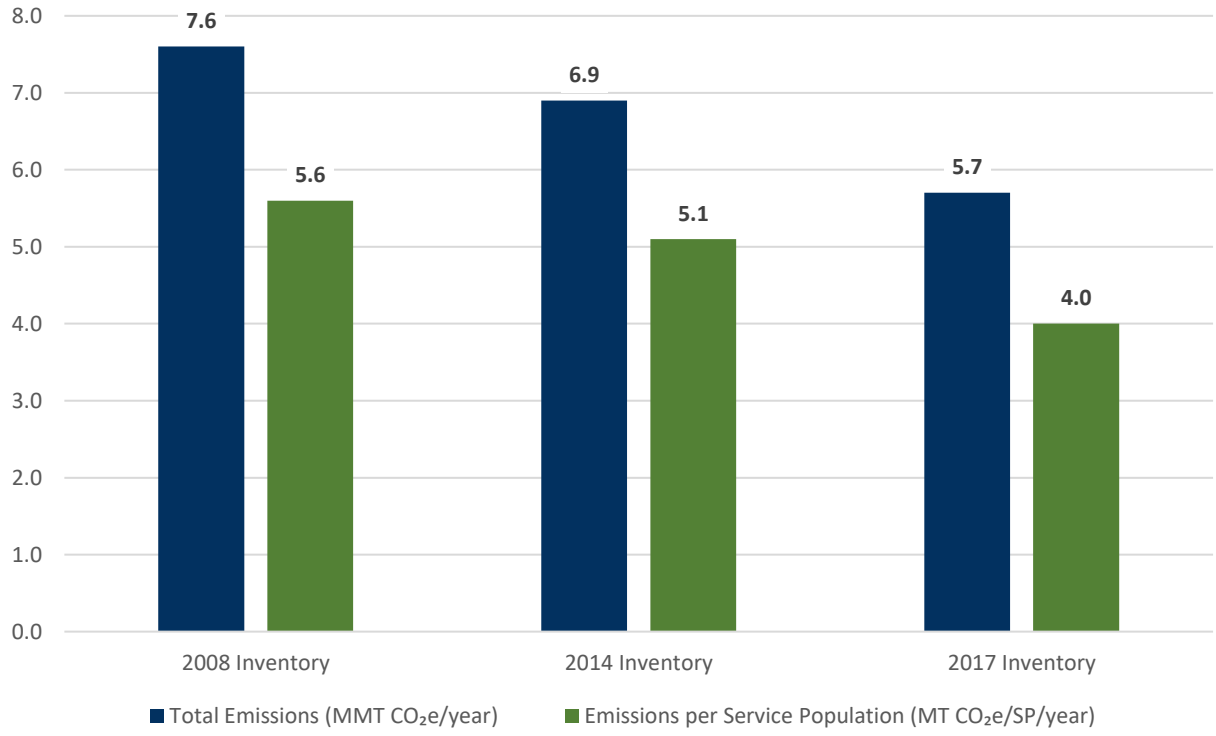
The inventory methodologies and calculations used in the 2008 and 2017 inventories do not support a perfect comparison of results, as data sources, data quality, and the quantification methodologies have changed and improved over time. Nonetheless, overall emissions trends are informative. Comparison between the 2014 and 2017 inventories demonstrates sectoral and sub-sectoral level reductions in two methods of measurements; total emissions metric (also called mass emissions) and an efficiency or intensity metric derived by normalizing the total emissions by the service population (e.g., MT CO_2e per service population).

As illustrated in Figure 3.5, total greenhouse gas emissions decreased from 7.6 to 5.7 MMT CO_2e between 2008 and 2017. This represents a reduction of approximately 25 percent of total mass

emissions at the citywide level. Total emissions decreased by approximately 17.4 percent from 2014 to 2017.

From 2008 to 2017, San José's service population increased by 6.5 percent, yet emissions intensity declined from 5.6 to 4.0 MT CO_2e/SP. This decrease of nearly 30 percent in emissions intensity demonstrates the city's ability to accommodate increased population and employment growth in a more emissions-efficient manner on a per unit basis (e.g., per service population).

Figure 3.5 – Emissions Changes 2008 to 2017



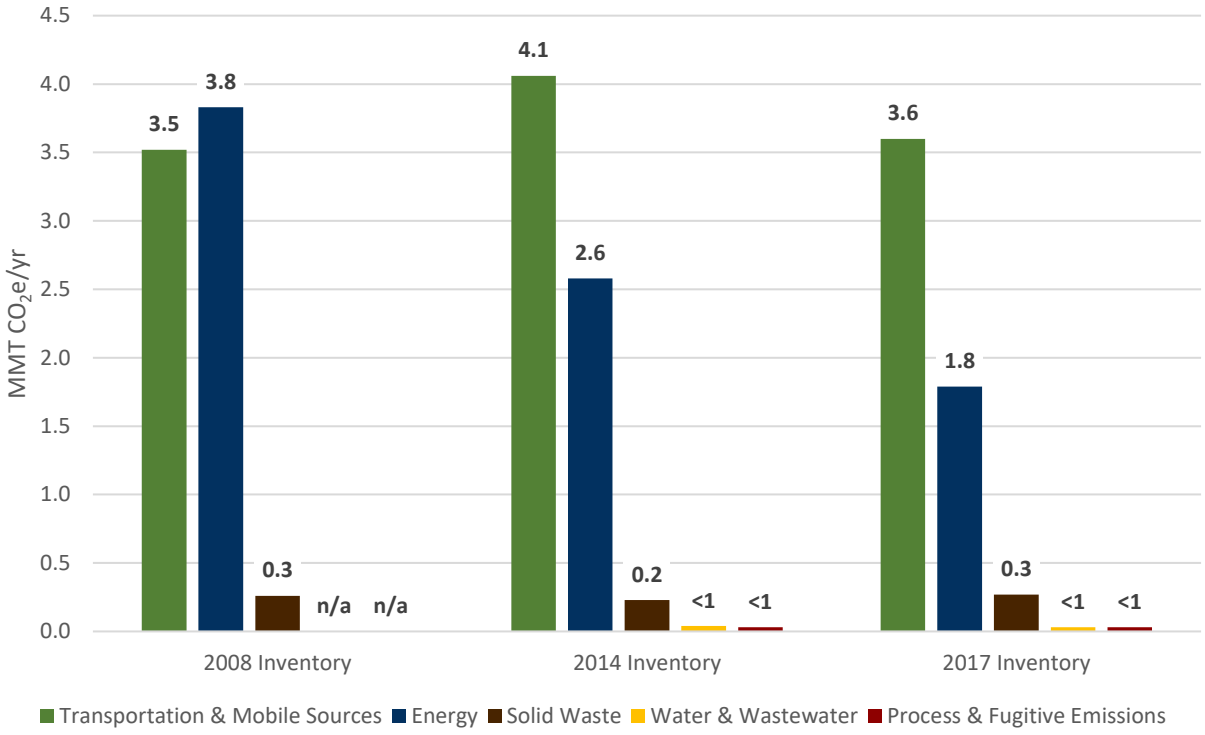
Source: Appendix A — 2017 Inventory of Community Greenhouse Gas Emissions, ICLEI (May 2019)

Total emissions decreased in the energy sector from 2008 to 2017 while emissions increased in the transportation and waste sectors. It is worth noting that the 2008 inventory did not include emissions estimates from the water and wastewater or fugitive emissions sectors, or the public transit and aviation sub-sectors. Figure 3.6 illustrates the emissions changes by sector from 2008 to 2017.

- **Transportation sector emissions** increased 2.3 percent in absolute terms from 2008 to 2017. The 2008 inventory only included estimates for the on-road vehicle and off-road vehicles and equipment sub-sectors. When comparing these same sub-sectors in 2017, transportation sector emissions remained stable from 2008 to 2017. The on-road sub-sector represents most of the city's transportation sector emissions, and this category saw emissions decrease 4 percent from 2008 to 2017.

- **Energy sector emissions** decreased 53 percent in absolute terms from 2008 to 2017, with reductions in each sub-sector (i.e., residential, commercial/institutional, and industrial). Energy emissions from industrial buildings declined by 61 percent from 2008 levels, followed by commercial/institutional buildings with a 53 percent decline, and residential buildings with a 48 percent decline.
- **Waste sector emissions** increased by nearly 4 percent in absolute terms from 2008 to 2017. However, when viewed on a per-service population basis, waste sector emissions decreased by 2.5 percent.

Figure 3.6 – Total Emissions Change by Sector 2008 to 2017



Source: Appendix A — 2017 Inventory of Community Greenhouse Gas Emissions, ICLEI (May 2019)

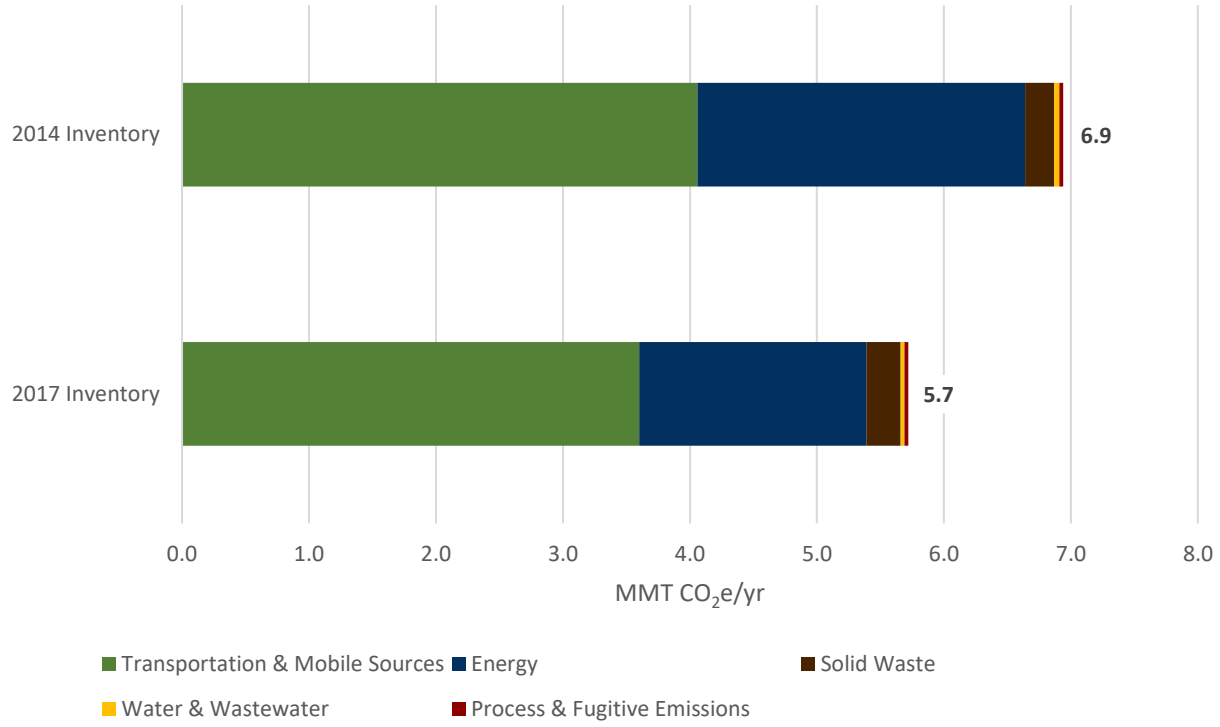
3.1.5 Comparison between 2014 and 2017 Inventories

The 2014 and 2017 inventories were prepared in a way that supports a more direct comparison of results and serve as a useful tool for planning future reduction policies and actions. These inventories also provide additional detail on emissions sub-sectors, such as sources of transportation emissions and building energy-related emissions by fuel type. This comparison can help provide better understanding of the emissions trends and identify specific opportunities for further local action on GHG reductions, as described later in this chapter. The following bullets summarize this comparison and are illustrated in Figure 3.7:

- Overall, in 2017, GHG emissions totaled 5.7 MMT CO_2e, which was an 18 percent reduction in mass emissions below the 2014 emissions of 6.9 MMT CO_2e.
- During this period, the city's emissions intensity decreased from 5.1 MT CO_2e/SP in 2014 to 4.0 MT CO_2e/SP in 2017, a 22 percent improvement on a per service population basis (see Table 3.2 on the following page).
- From 2014 to 2017, the primary sources of emissions reductions were the on-road vehicle sub-sector, and the residential, commercial, and industrial building energy sub-sectors (as shown in Table 3.2). Combined, these sources represent more than 90 percent of emissions reductions from 2014 to 2017.

There were also several areas of emissions growth during this period, including from the solid waste sector and from commercial building natural gas use. Furthermore, emissions from light rail, public buses, and aviation that were not included (or separately analyzed) in the 2014 inventory were added to the 2017 inventory to help provide a more accurate representation of the city's GHG emissions. Collectively, these new emissions sources only represent approximately 1 percent of the 2017 total emissions but provide a more complete picture of the community's emissions-generating sources and activities.

Figure 3.7 – 2014 and 2017 Inventory Comparison



Source: Appendix A — 2017 Inventory of Community Greenhouse Gas Emissions, ICLEI (May 2019)

Table 3.2 – 2014 and 2017 Inventory Comparisons

Sector and Sub-sector	2014 (MT CO_2e)	2017 (MT CO_2e)	Change (MT CO_2e)	% Change
Transportation & Mobile Sources	**4,056,979**	**3,589,158**	**-467,821**	**-11.53%**
On Road Vehicles	3,745,113	3,325,912	-419,201	-11.19%
Public Transit (buses and trains)[1, 2]	19,662	46,381	26,719	135.89%
Aviation (In-boundary flights)	-[1]	28,310	n/a	n/a
Off Road Vehicles and Equipment	292,204	188,555	-103,649	-35.47%
Building Energy	**2,576,473**	**1,791,147**	**-785,326**	**-30.48%**
Residential Energy	**1,096,851**	**763,961**	**-332,890**	**-30.35%**
Residential Electricity	426,701	172,589	-254,112	-59.55%
Residential Natural Gas	670,150	591,372	-78,778	-11.76%
Commercial Energy	**879,322**	**627,496**	**-251,826**	**-28.64%**
Commercial Electricity	486,131	204,923	-281,208	-57.85%
Commercial Natural Gas	393,191	422,573	29,382	7.47%
Industrial Energy	**600,300**	**399,690**	**-200,610**	**-33.42%**
Industrial Electricity	179,530	69,558	-109,972	-61.26%
Industrial Natural Gas	33,888	24,777	-9,111	-26.89%
Direct Access Electricity[3]	386,882	305,355	-81,527	-21.07%
Solid Waste	**234,620**	**271,862**	**37,242**	**15.87%**
Water & Wastewater	**37,788**	**29,235**	**-8,553**	**-22.63%**
Water Energy	29,530	20,822	-8,708	-29.49%
Wastewater Influent/Effluent[4]	8,167	8,326	159	1.95%
Wastewater Digester Gas Combustion[4]	91	87	-4	-4.40%
Process & Fugitive Emissions[5]	**31,935**	**30,262**	**-1,673**	**-5.24%**
Total	**6,937,795** [6]	**5,711,664**	**-1,226,131**	**-17.67%**
Service Population (residents + local jobs)	1,366,290	1,442,690	76,400	5.6%
Emissions Intensity (MT CO_2e/SP)	5.1	4.0	-1.1	-22%

[1] Light rail, public transit buses, and in-boundary airport flights were not included in the 2014 Inventory

[2] 2017 Inventory methodology differs from 2014 Inventory for heavy rail emissions

[3] Direct access includes industrial electricity usage and other usage. Using the sector categories from ClearPath, all direct access electricity is grouped under Industrial Energy.

[4] During development of the 2017 inventory, the Wastewater Treatment calculations for 2014 were updated to remove the lagoon treatment emissions, correct biogas processing estimates, and add the nitrification/denitrification process emissions.

[5] The process & fugitive emissions sector was not included in the original 2014 inventory and was calculated during development of the 2017 inventory to further support direct inventory comparisons.

[6] Note that the 2014 total emissions shown in this table differ from those shown in the City's *Envision San José 2040 General Plan* 4-year review Initial Study; the revisions described in the preceding notes were incorporated to improve the original 2014 estimates and make the 2014 and 2017 inventories more directly comparable.

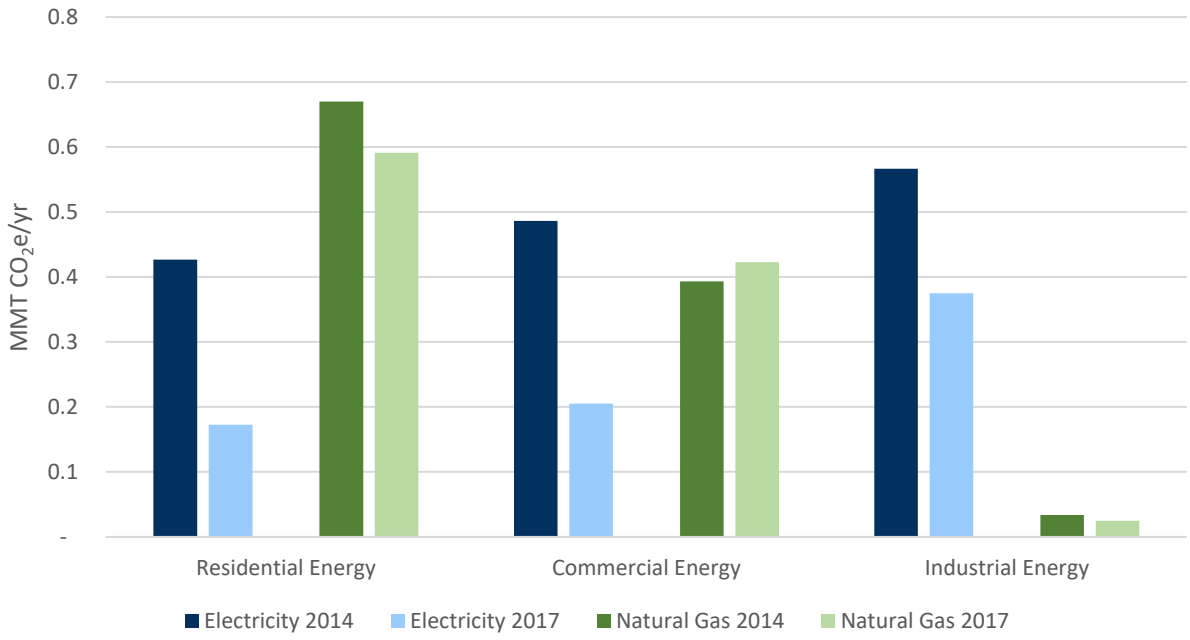
While the City did not perform a detailed contribution analysis on the factors driving the emissions changes from 2014 to 2017, several high-level factors are known based on the data used to compile each inventory.

- Transportation sector emissions decreased by nearly 12 percent from 2014 to 2017 due to:
  - *9 percent decrease in annual vehicle miles travelled*
  - *2.1 percent decrease in single vehicle occupancy driving*
  - *Updated methodology for rail emissions*
  - *Updated off-road vehicle and equipment emissions model*
  - *Improved vehicle efficiency*
- Energy sector emissions decreased by 30 percent from 2014 to 2017 due to:
  - *Increased use of carbon-free energy sources in the electric grid – from 56 percent in 2014 to 78 percent in 201710*
  - *Reduced residential electricity and natural gas use – 4 percent reduction in electricity use and 12 percent reduction in natural gas use*
  - *Reduced commercial electricity use – <1 percent reduction*
  - *Reduced industrial direct access electricity and natural gas use – <1 percent reduction in direct access electricity use and 27 percent reduction in natural gas use*
- Water and wastewater sector emissions decreased by 23 percent from 2014 to 2017 primarily due to a decrease in water-energy sub-sector emissions from:
  - *14 percent decrease in potable water consumption*

Figure 3.8 illustrates changes in building energy use by fuel type, a primary driver of emissions reductions from 2014 to 2017.

[10] Based on PG&E Power Content Labels reported to the California Energy Commission for calendar years 2014 and 2017, where emissions-free energy sources include RPS-eligible renewables, large hydroelectric, and nuclear sources. Power Content Labels available online at: https://ww2.energy.ca.gov/pcl/labels/2017_index.html

Figure 3.8 – Building Energy Emissions by Fuel Type 2014 to 2017



Source: Appendix A — 2017 Inventory of Community Greenhouse Gas Emissions, ICLEI (May 2019)

3.1.6 Comparison to 2020 GHGRS Target

The City of San José prepared its first GHGRS in conjunction with the *Envision San José 2040 General Plan Update* process in 2011 to ensure that implementation of the General Plan Update aligned with the implementation requirements of AB 32. The original GHGRS selected the target year 2020 to align with the statewide GHG target timeline adopted in AB 32 and set an emissions intensity target of 6.6 MT CO_2e/SP. At the time of the GHGRS development, the city's projected 2020 service population was 1,650,000 individuals, which corresponds to a mass emissions target of 10,890,000 MT CO_2e by 2020 or 10.89 MMT CO_2e by 2020. See Table 3.3 below.

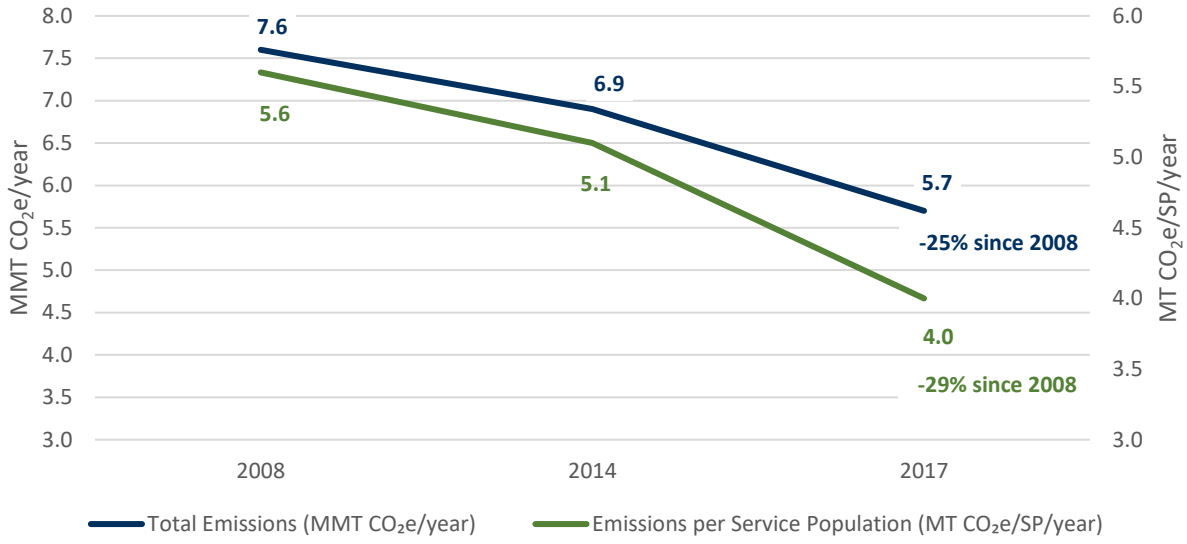
Table 3.3 – Original GHGRS 2020 GHG Target Metrics

Item	Value	Units
Mass Emissions Target	10,890,000	MT CO_2e
Service Population Projection	1,650,000	Residents + Jobs
Emissions Intensity Target	6.6	MT CO_2e/SP

Source: Greenhouse Gas Inventory Reduction Strategy (2015)

Despite the increase in the service population by approximately 6.5 percent from 2008 to 2017, the annual citywide GHG emissions decreased by 25 percent, as shown in Figure 3.9. This also resulted in a GHG emissions intensity reduction of 29 percent over the same period. In 2017, emissions intensity reached 4.0 MT CO_2e/SP, which is well below the City's established 2020 GHG target of 6.6 MT CO_2e/SP. Based on the current emissions trajectory shown in the figure below, the city has continued to demonstrate decreasing emissions intensity since 2008 and is on track to achieve its 2020 GHG target.

Figure 3.9 – Emissions Trends toward 2020 GHGRS Target Year



3.2 Emissions Forecasts

The 2017 GHG inventory also served as a base year from which to develop emissions forecasts through 2030, which provides the context for developing the 2030 target achievement strategies.

3.2.1 Forecasts Development Process

The emissions forecasts estimate the level of emissions that could occur if no additional GHG reduction actions are taken at the statewide or local levels. The notable exception is with the on-road vehicle emissions, which are estimated based on the *Envision San José 2040 General Plan* vehicle miles traveled (VMT) forecasts and using ARB's mobile emissions model to develop future year vehicle emissions factors.[11] The EMFAC2017 emissions factors assume implementation of various statewide actions designed to improve vehicle fleet efficiency and reduce on-road tailpipe emissions. Therefore, the impact of these statewide actions is part of the consideration for the emissions forecasts.

[11] EMFAC2017 was used to maintain consistency with the City's 2017 GHG inventory on-road emissions calculation

Forecasting the emissions sub-sectors used the demographic growth indicators from the Envision San José 2040 General Plan, including population and local employment growth estimates, as well as sub-sector-specific planning forecasts, such as Caltrain ridership forecasts and future wastewater treatment plant influent estimates. See Table 3.4 for the emissions forecast growth indicators for each sub-sector. Details on the emissions forecasting are also available in Appendix C –Greenhouse Gas Emissions Reductions Strategies Memorandum.

The Renewables Portfolio Standard (RPS), a program that requires California's electric utility companies to procure increasing amounts of renewable electricity for their energy portfolios, overlaps significantly with the San José Clean Energy (SJCE) program. As shown later in this chapter, a primary source of future GHG reductions will come from implementation of the SJCE program. Therefore, estimates from the RPS are purposefully excluded from the emissions forecast analysis. For purposes of this analysis, clean electricity reduction estimates have been attributed to SJCE instead of the RPS.

Overall, these forecasts represent an estimate of how future emissions might change based on numerous assumptions and availability of information and data. Continued emissions monitoring, through future inventories or activity data tracking, will help ensure that emissions reductions occur as planned.

Table 3.4 – GHG Forecast Growth Indicators

Emissions Sources	Emissions Growth Indicators
On-Road Vehicles	General Plan VMT forecast; EMFAC2017 vehicle emissions factors
Public Transit	Ridership forecasts from Caltrain, Altamont Corridor Express (ACE), Amtrak, and service population growth
Aviation	Enplaned passenger forecasts for SJC
Off-Road Vehicles	OFFROAD emissions model and service population growth
Electricity	Population and service population
Natural Gas	Population and service population
Solid Waste	Service population
Wastewater Treatment	Influent projection from 2013 Santa Clara WWTP Master Plan
Potable Water	Service population
Fugitive Emissions	Forecast natural gas consumption

Source: Appendix C — Greenhouse Gas Emissions Reductions Strategies Memorandum [August 2019]

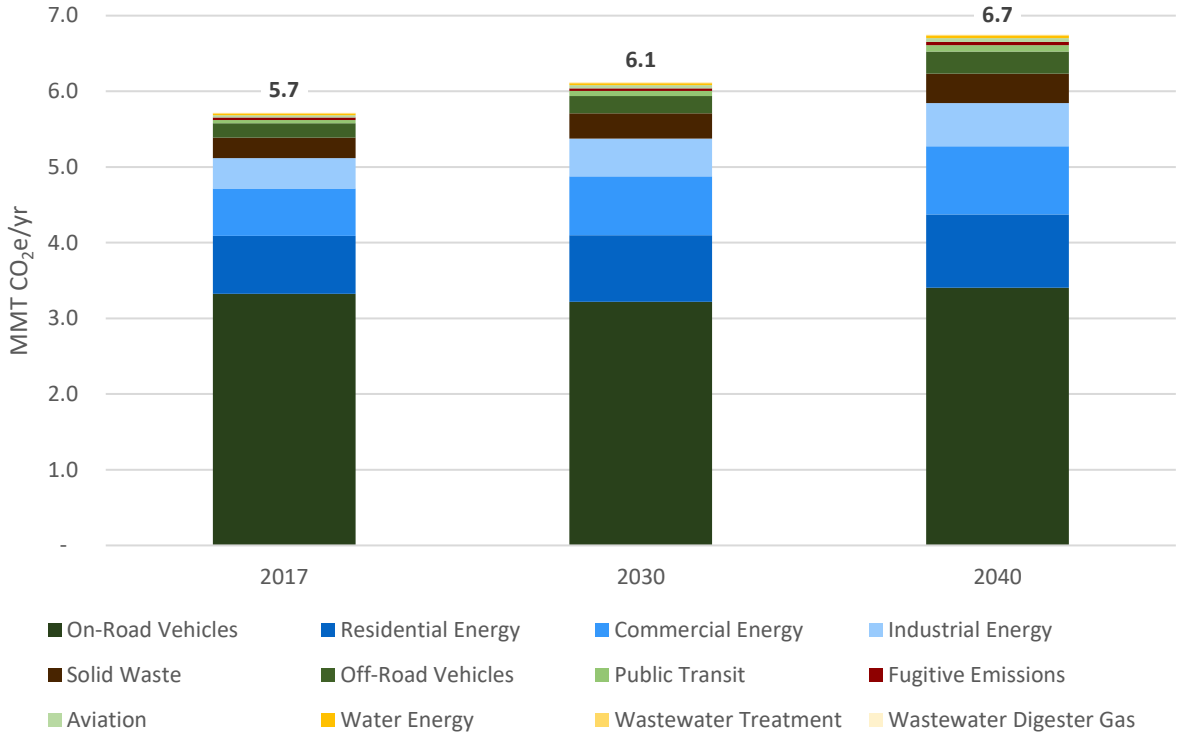
3.2.2 Forecasts for 2030 and 2040

Based on these growth assumptions, Figure 3.10 illustrates the community's emissions forecasts for year 2030 as an interim goal under SB 32. Under SB 32, a 40 percent emissions reduction from 1990 levels is considered a necessary interim target to ensure that the state meets its long-term

goal of an 80 percent reduction from 1990 levels by the year 2050. Further, the 2040 forecasts are also examined as they align with the *Envision San José 2040 General Plan* buildout year.

Emissions are estimated to increase by 7 percent from 2017-2030 and nearly 18 percent from 2017-2040, if no additional reduction actions are taken. Based on population and employment forecasts from the City's 2040 General Plan, per-service population emissions intensity is forecast to decrease by 14 percent below 2017 levels by 2030, from 4.0 MT CO_2e/SP in 2017 to 3.4 MT CO_2e/SP in 2030. Emissions intensity is forecast to decrease further by 2040, declining 17 percent below 2017 levels and reaching 3.3 MT CO_2e/SP.

Figure 3.10 – Emissions Forecast 2017-2040



Source: Appendix C — Greenhouse Gas Emissions Reductions Strategies Memorandum [August 2019]

3.3 GHG Reduction Targets

This section summarizes the City's approach to setting a 2030 GHG reduction target that aligns with that of the state. Further details on the target setting process are included in Appendix B—Target Setting Memorandum. Establishing GHG emissions targets can be used to:

- Demonstrate the City's commitment to global efforts on climate change,
- Illustrate the relationship between the City's reduction target and the state's reduction goals,
- Provide a goal post against which to evaluate the cumulative progress of the City's GHG reduction actions over time, and
- Demonstrate a level of GHG emissions below which the City would have less than cumulatively considerable GHG impacts.[12]

Guidance on local government target setting in California is primarily from the following three sources: the state's GHG targets, ARB's Climate Change Scoping Plan, and the California Office of Planning and Research (OPR) General Plan Guidelines. Together, these sources frame the context for selection of the local GHG targets.

3.3.1 Target Types

GHG targets are measured as mass emissions targets that reflect an absolute emissions level or as emissions intensity targets that set emissions budgets on a per capita or per service population basis.

A. Mass Emissions

Mass emissions targets establish an absolute emissions level to be achieved by a target year, such as 100,000 MT CO_2e/year by 2020. Typically, mass emissions targets are expressed as a percent below the emissions level of a base year, such as 80 percent below 1990 emissions by 2050.

B. Intensity Based Emissions

Alternatively, emissions intensity targets set a target level of emissions per population or per service population, such as 2.25 MT CO_2e/SP by 2035. Emissions intensity targets, also referred to as efficiency metrics, reflect a city's ability to grow in terms of employment and residents (population), while emissions decrease on a per-unit basis. In other words, a city could be growing while still achieving an emissions intensity target when its service population is growing faster than its total emissions. The efficiency metric allows lead agencies to compare projects of various types, sizes, and locations across the city.

[12] The City's target, along with reduction strategies necessary to achieve this target, will facilitate tiering and streamlining for proposed projects under the provisions of CEQA Guidelines Section 15183.5.

Further, OPR in its General Plan Guidelines and ARB through the *2017 Climate Change Scoping Plan* recommends that local governments analyze both a community's mass emissions and its emissions intensity to support a more complete understanding of the issue. As discussed in OPR's Discussion Draft: CEQA and Climate Change (December 2018) and opined in a California Supreme Court case, using an efficiency metric (i.e., intensity target) is an appropriate method to measure global project impacts such as greenhouse gas emissions. Mass emissions represent the total emissions budget that a community could produce annually to stay on course toward its 2030 interim target and eventually 2050 citywide target.

3.3.2 San José 2030 GHG Target

The 2030 GHG emissions target selection process analyzed different target options and ultimately selected a target that aligns with the state's SB 32 target. Using the current guidance to local governments from ARB and OPR, the 2030 GHG target is tailored to match the emissions sectors included locally in the City's inventory and provides a simple calculation metric for tracking progress towards target achievement.

The City's 2030 target is shown in Table 3.5 expressed as an emissions intensity value (i.e., MT CO_2e/SP) and a corresponding mass emissions value (i.e., MMT CO_2e/year) based on the service population forecasts associated with the 2040 General Plan. As shown, the 2030 target is defined as:

- Emissions Intensity – 2.94 MT CO_2e/SP by 2030, and
- Mass Emissions – 5.3 million MT CO_2e/year in 2030

Based on the 2017 emissions levels presented earlier in this chapter, 2030 target achievement will require reductions that total approximately 800,000 MT CO_2e/year. This target achievement would result in an emissions intensity reduction of 26 percent below the 2017 levels, and absolute emissions reductions of 7 percent below the 2017 levels.

Table 3.5 – 2030 GHGRS Target Metrics

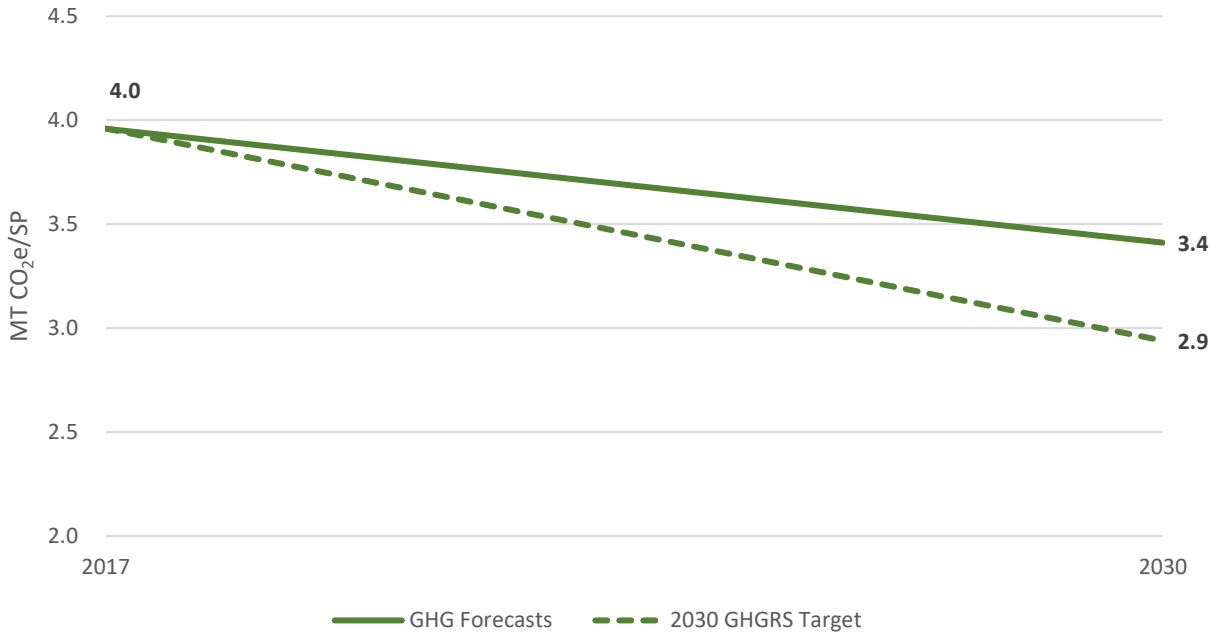
Target Metrics	2017 Inventory	2030 Forecast	2030 Target	Delta Between 2030 Forecast and Target
Mass Emissions (MMT CO_2e/year)	5.7	6.1	5.3	0.8
Emissions Intensity (MT CO_2e/SP)	3.96	3.41	2.94	0.47
Service Population	1,442,690	1,793,289	-	-

Note: The 2030 mass emissions target value is calculated by multiplying the 2030 emissions intensity target and the 2030 service population estimate.

Source: Appendix B — GHG Emissions Reduction Target Options Memorandum [June 2019]

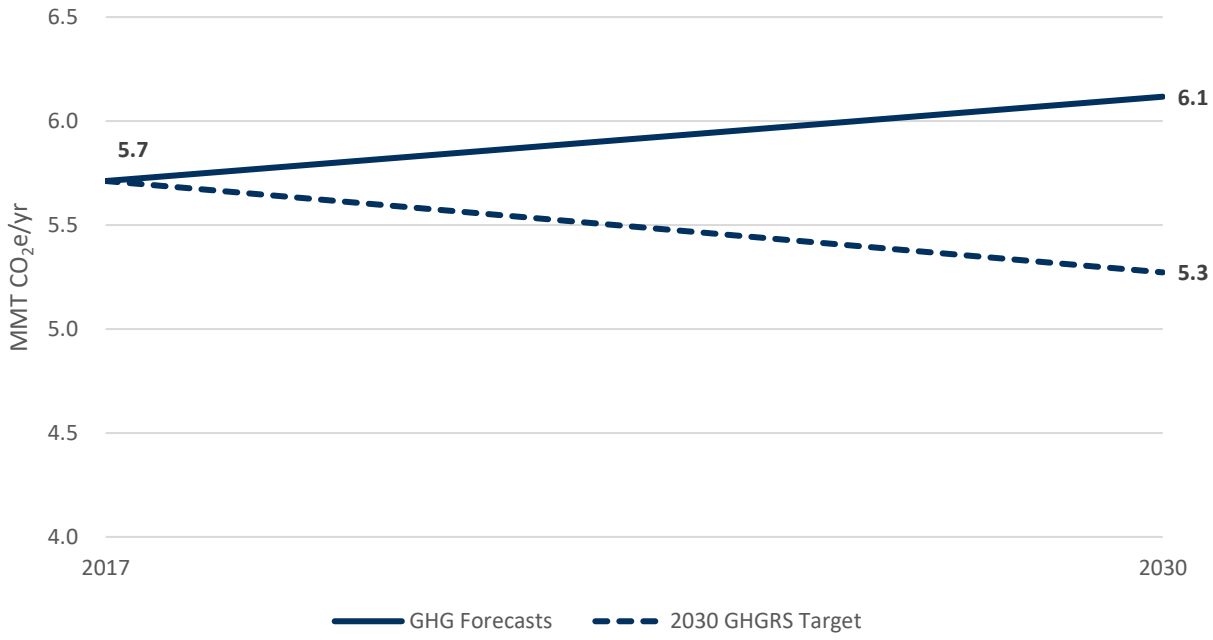
Figure 3.11 shows the comparison between the 2030 forecasts (without the use of the 2030 GHGRS GHG reduction strategies) and the 2030 GHG target expressed as MT CO_2e/SP; Figure 3.12 shows the same information expressed as MMT CO_2e/yr. As illustrated, the target would result in improved emissions intensity levels and mass emissions reductions below 2017 levels.

Figure 3.11 – GHG Forecasts and Target – Emissions Intensity per Service Population



Source: Appendix C — Greenhouse Gas Emissions Reductions Strategies Memorandum [August 2019]

Figure 3.12 – GHG Forecasts and Target – Mass Emissions



Source: Appendix C — Greenhouse Gas Emissions Reductions Strategies Memorandum [August 2019]

3.4 GHG Reduction Strategies and Estimated Impact

The greenhouse gas reduction strategies selected to meet the 2030 target are based on the City's *Climate Smart San José* and the Green Vision, the previous GHGRS with the 2020 target under AB 32, and the *Envision San José 2040 General Plan*. These reduction strategies provide a feasible pathway toward 2030 target achievement by leveraging the City's existing planning efforts and supporting policies and programs. The identified strategies are not an exhaustive list of all possible GHG reduction strategies and do not preclude the use of other feasible ways to reduce emissions.

Additionally, the City will continue to protect and enhance the local environment through the implementation of its various plans, policies, and programs. Chapter 4 summarizes such citywide plans, policies, and programs that could provide additional GHG reductions. Future emissions inventories will account for and reflect their emissions reductions at the citywide level.

3.4.1 GHGRS and Climate Smart San José

As described in Chapter 1, *Climate Smart San José* is the City's long-term, Paris-treaty consistent plan. It outlines an ambitious pathway to achieve deep carbon reductions, including several transformative actions that will need to be widely implemented for plan success. As in similar deep carbon reduction plans, *Climate Smart San José* outlines a potential pathway for achieving the

City's long-term GHG target, but the pathway is contingent upon aggressive implementation assumptions by various stakeholders.

The 2030 GHGRS is consistent with *Climate Smart San José* in terms of the strategies and actions the City will take, since the two planning approaches are complementary. However, the 2030 GHGRS has a shorter time horizon target (i.e., 2030 vs. 2050 in *Climate Smart San José*) and serves a focused purpose as a "qualified climate action plan" for the Reduction of Greenhouse Gases as defined in California's CEQA Guidelines Section 15183.5. Therefore, the 2030 GHGRS is based on different sets of assumptions in some instances to provide a more conservative estimate of the near-term GHG reduction potential of various actions.

3.4.2 Comparison with Climate Smart San José Target

Climate Smart San José (CSSJ), designed as the City's Paris Climate Agreement-compliant 2°C pathway, sets a 2030 GHG reduction target at 3.0 MT CO_2e per capita per year. This was defined as an interim target on the path toward the City's 2050 deep carbon reduction goal. As discussed earlier in Section 1.3.1, the goals within CSSJ for energy, water, transportation and local jobs are made accessible for use by businesses, residents, non-profits, property developers, and regional partners through easy-to-use playbooks. To that end, CSSJ provides the broadest platform for community-level participation through an adopted framework for greenhouse gas reductions.

The purpose of the 2030 GHGRS is narrow and specific; it is built on the pillars and strategies within the CSSJ and leverages other plans and programs. The 2030 GHGRS is tailored for application to development reviews and examination of greenhouse gas emissions and their reductions for future projects under land use planning and the California Environmental Quality Act (CEQA). The interim emissions reduction target of 2.9 MT CO_2e/SP by 2030 was derived through guidance from ARB and OPR to demonstrate consistency with the state's adopted 2030 GHG target (SB 32).

The 2030 targets in CSSJ and the GHGRS are slightly different because the plans serve different purposes. However, both 2030 targets are aligned in that they are consistent with a downward emissions trend toward a longer-term reduction goal represented globally through the Paris Climate Agreement and locally through California's own statewide targets.

3.4.3 GHG Reduction Strategies

The City has identified seven strategies enumerated in Table 3.6, to reduce GHG emissions to achieve the 2030 target. These strategies span across topic areas including energy, building, land use and transportation, water, and waste. The table shows the estimated GHG reductions from each strategy by 2030. The table also identifies the sources of origin for the strategies to demonstrate the overlap with state regulations or policies and the City's sustainability-related plans and policies. Based on the modeled reductions, these strategies collectively reduce annual emissions by approximately 1.2 MMT CO_2e.

Table 3.6 – 2030 GHG Reduction Strategies and Reduction Potential

Strategy Title	2030 Reductions MT CO_2e/year	Strategy Origins
GHGRS – 1 **San José Clean Energy**	655,104	Green Vision Goal 3 Climate Smart San José (CSSJ) Strategy 1.1
GHGRS – 2 **Zero Net Carbon Residential Construction**	43,678	California Energy Efficiency Strategic Plan CSSJ Strategy 2.2 General Plan Goal MS-14
GHGRS – 3 **Renewable Energy Development**	63,697	Green Vision Goal 3 CSSJ Strategy 1.1 General Plan Goal MS-2
GHGRS – 4 **Existing Building Retrofits – Natural Gas**	208,986	Senate Bill 350 CSSJ Strategy 2.2 General Plan Goal MS-2
GHGRS – 5 **Zero Waste Goal**	207,956	Green Vision Goal 5 General Plan Goal MS-5 Council Resolution 74077
GHGRS – 6 **Caltrain Modernization Project**	12,547	CSSJ Strategy 2.4
GHGRS – 7 **Water Conservation**	3,106	CSSJ Strategy 1.2 General Plan Goal MS-3
Total Emission Reductions (MT CO_2e/year)	**1,195,074**	-
Total Emission Reductions in MMT CO_2e/year	**1.2**	-

CSSJ = Climate Smart San José

Source: Appendix C — Greenhouse Gas Emissions Reductions Strategies Memorandum [August 2019]

Table 3.7 demonstrates that the implementation of the GHGRS strategies listed above can help achieve the 2030 GHG target. The table subtracts the estimated GHGRS strategy reductions from the 2030 emissions forecasts (shown as mass emissions and emissions intensity values) to calculate the remaining emissions at the citywide level. It then compares the remaining emissions to the 2030 GHG target to demonstrate target achievement. As seen in Table 3.6, the proposed strategies account for GHG reductions of approximately 1.2 MMT CO_2e per year (mass emissions) and 0.67 MT CO_2e/SP (emissions intensity). After implementation of the 2030 GHGRS, remaining emissions would total 4.9 MMT CO_2e per year and 2.74 MT CO_2e/SP, which would achieve the 2030 target as shown.

Table 3.7 – 2030 GHG Reduction Strategies and Reduction Potential

	Mass Emissions [MMT CO_2e/yr]	Emissions Intensity [MT CO_2e/SP]
2030 Emissions Forecasts	6.1	3.41
2030 GHGRS Reductions	1.2	0.67
2030 Remaining Emissions	4.9	2.74
2030 Target	5.3	2.94
Target Achievement Estimated	**YES**	**YES**

Note: Values may not sum as shown due to rounding.

Figure 3.8 shows the GHG reductions in the context of citywide emissions forecasts and GHG target trajectory through the year 2030. The resulting trajectory trends slightly lower than the 2030 GHG target line.

Figure 3.8 – 2030 GHG Reduction Strategies

Source: Appendix C — Greenhouse Gas Emissions Reductions Strategies Memorandum [August 2019]

3.4.4 Greenhouse Gas Reduction Strategies and Actions

The 2030 GHG reduction strategies encompass energy, buildings, land use and transportation, water, and waste sources. These programs and plans have been adopted over previous years and are ready for initial implementation or expansion upon their previous implementation levels.

These strategies are presented in detail below in an easy-to-use format. Each strategy includes the following:

- An objective statement,
- GHG reduction estimate,
- Performance standards associated with the GHG reductions,
- City departments' oversight and implementation purview, and
- Implementation steps.

Chapter 4 includes a broader list of City and regional policies and programs that are currently underway or planned for implementation and are included in this Plan as reference materials to support project development review and CEQA analysis. Many of those policies and programs may contribute to additional GHG emissions reductions beyond those estimated in Table 3.6 but have not been quantified separately as part of the 2030 GHGRS analysis. Any additional reductions from those actions and policies can act as a buffer for the City's 2030 target achievement should the GHGRS strategies described below fall short of their estimated reduction potential. Future GHG inventories will reflect any implementation results of the Chapter 4 policies and programs and will be used to monitor the City's GHG target progress to ensure that that full complement of GHG reduction activity in the city is considered.

Future transit station rendering

Source: City of San José, City Photos

GHGRS 1 – San José Clean Energy

The City will implement the San José Clean Energy program to provide residents and businesses access to cleaner energy at competitive rates.

Reductions Estimated

- 655,104 MT CO_2e/year (55 percent of total reductions)

Performance Standard

- 98 percent participation in SJCE with 100 percent carbon-free energy[13] sources by 2030

Lead Departments

- City of San José Clean Energy [Lead Department]
- Environmental Services Department [Climate Smart San José]
- Planning, Building and Code Enforcement [Implementation via discretionary review under Planning and CEQA]

Implementation Steps

1. Continue to increase the carbon-free energy content provided in the base Green Source program offering until 100 percent carbon-free energy is achieved.
2. Collect information on participation rates in each program option (i.e., Green Source, Total Green) to support clean energy participation tracking.

[13] City of San José Clean Energy Department's goal is provision of 100 percent emissions-free electricity by year 2021, earlier than the target year 2030.

GHGRS 2 – Zero Net Carbon – Residential Construction

The City will implement its building reach code ordinance (adopted September 2019) and its prohibition of natural gas infrastructure ordinance (adopted October 2019) to guide the city's new construction toward zero net carbon (ZNC) buildings.

Reductions Estimated

- 43,678 MT CO_2e/year (4 percent of total strategy reductions)

Performance Standard

- 50 percent of all new residential construction from 2020-2030 will achieve zero net carbon use

Lead Departments

- Planning, Building and Code Enforcement [Discretionary review under Planning and CEQA]
- Building Division
- Environmental Services Department [Climate Smart San José]

Implementation Steps

1. Continue to implement the City's reach code and natural gas infrastructure ordinance to narrow the achievement gap to zero net carbon residential construction.
2. During the project permitting process, provide project applicants with information about available technical assistance programs and incentives to construct all-electric residential units, as well as information for on-site renewable energy development options.
3. Establish a monitoring process to track the number of zero net carbon residential units constructed in the city.
4. Develop and share case studies of zero net carbon residential projects in the city to promote knowledge sharing and development of solutions to common project challenges.
5. Develop additional resources to help overcome common project challenges, such as additional rebates or other financial incentives to be offered through SJCE.
6. Continually evaluate financial incentives and other methods that encourage customers to pursue improved building energy efficiency, electrification of building appliances and equipment (e.g., hot water heaters, space heaters), and purchase of electric vehicles (EVs).

GHGRS 3 – Renewable Energy Development

The City will expand development of rooftop solar energy through the provision of technical assistance and supportive financial incentives to make progress toward the Climate Smart San José goal of becoming a one-gigawatt solar city.

Reductions Estimated

- 63,697 MT CO_2e/year (5 percent of total strategy reductions)

Performance Standard

- 472.1 net new MW of solar photovoltaics installed 2017-2030

Lead Departments

- City of San José Clean Energy [Lead Department]
- Environmental Services Department [Climate Smart San José]
- Planning, Building and Code Enforcement [Discretionary review under Planning and CEQA]

Implementation Steps

1. Evaluate and implement a feed-in tariff program administered through SJCE that allows customers to sell rooftop solar energy back to the grid.
2. Develop a suite of incentives or technical assistance to sustain rates of local solar development as federal tax credit and other programs expire.
3. Facilitate development of community solar programs to provide solar energy benefits citywide to customers with barriers to direct installation. Monitor annual solar capacity installations to compare progress against this strategy's performance standard.

GHGRS 4 – Building Retrofits – Natural Gas

The City will support a transition to building decarbonization through increased efficiency improvements in the existing building stock and reduced use of natural gas appliances and equipment.

Reductions Estimated

- 208,986 MT CO_2e/year (17 percent of total strategy reductions)

Performance Standard

- 3 percent reduction citywide in natural gas use below 2017 levels

Lead Departments

- City of San José Clean Energy [Lead Department]
- Environmental Services Department [Climate Smart San José]
- Planning, Building and Code Enforcement [Discretionary review under Planning and CEQA]

Implementation Steps

1. Participate in implementation of the state's forthcoming policies or programs to be designed in support of SB 350, which calls for a doubling of energy efficiency savings from electricity and natural gas end uses.
2. Continue to expand program and incentive offerings through SJCE that support a market transformation toward high-efficiency buildings and electrification of building systems (e.g., appliances, equipment), including access to financial rebates and incentives (e.g., on-bill financing) to increase voluntary participation in this strategy.
3. Collect citywide natural gas use data annually from the City's natural gas provider to monitor fuel consumption trends over time by end user type (e.g., residential, small commercial, large commercial) to ensure decreasing use and support additional mitigation program development, if necessary.
4. Continually evaluate financial incentives and other methods that encourage customers to pursue improved building energy efficiency, electrification of building appliances and equipment (e.g., hot water heaters, space heaters), and purchase of electric vehicles (EVs). The City can also consider support for residents and businesses to update fossil fuel back-up generators to renewable energy options.

GHGRS 5 – Zero Waste Goal

As an expansion to Climate Smart San José, the City will update its Zero Waste Strategic Plan and reassess zero waste strategies. Throughout the development of the update, the City will continue to divert 90 percent of waste away from landfills through source reduction, recycling, food recovery and composting, and other strategies.

Reductions Estimated

- 207,956 MT CO_2e/year (17 percent of total strategy reductions)

Performance Standard

- 90 percent of waste diverted from landfills in 2030

Lead Departments

- City of San José Clean Energy [Lead Department]
- Environmental Services Department [Climate Smart San José]
- Planning, Building and Code Enforcement [Discretionary review under Planning and CEQA]

Implementation Steps

1. Continue to implement single-family residential organic waste diversion programs that divert organics from landfills, including food waste.
2. By means of the City's Zero Waste Strategic Plan update, assess local waste characterization studies to understand the composition of San José's waste that is sent to landfills in order to identify additional diversion strategies or enhancements to existing strategies that would address the remaining waste types.
3. Continue and enhance public outreach programming that provides residents with strategies for household waste reduction, including from food waste and shipping and packaging (e.g., on-demand deliveries).
4. Increase participation in food rescue initiatives (such as, Loaves & Fishes' "A La Carte" Food Rescue Initiative) from local businesses to reduce the amount of food waste going to landfill, combat food insecurity, and comply with SB 1383's food recovery regulations.
5. Monitor waste diversion rates annually to demonstrate progress toward this strategy's performance standard.

GHGRS 6 – Caltrain Modernization Project

The City will continue to be a partner in the Caltrain Modernization Project to enhance local transit opportunities while simultaneously improving the city's air quality.

Reductions Estimated

- 12,547 MT CO_2e/year (1 percent of total strategy reductions)

Performance Standard

- 75 percent of diesel trains converted to electric power; reduction of approximately 33,000 daily VMT in San José from increased Caltrain ridership

Lead Departments

- City of San José Department of Transportation [Lead Department in coordination with Caltrain]
- Planning, Building and Code Enforcement [Discretionary review under Planning and CEQA]

Implementation Steps

1. Continue to partner with Caltrain on future modernization projects to further expand use of electric propulsion engines, including potential achievement of 100 percent electrification along the Tamien northbound and Diridon northbound routes, and opportunities to begin electrification on the Tamien southbound route to Gilroy.
2. Continue to integrate land use and transportation planning in the city through General Plan policies and the land use diagram to support increased Caltrain ridership at the city's stations, including planning and programs that better connect the stations to employment and residential centers to help riders get to/from the stations.
3. Partner with Caltrain to collect ridership estimates and/or VMT reduction estimates associated with project implementation to support strategy monitoring.

GHGRS 7 – Water Conservation

The City will expand its water conservation efforts to achieve and sustain long-term per capita reductions that ensure a reliable water supply with a changing climate, through regional partnerships, sustainable landscape designs, green infrastructure, and water-efficient technology and systems.

Reductions Estimated

- 3,106 MT CO_2e/year (<1 percent of total strategy reductions)

Performance Standard

- 107 million gallons per day (MGD) water consumption in 2030

Lead Departments

- Environmental Services Department [Climate Smart San José]
- Planning, Building and Code Enforcement [Discretionary review under Planning and CEQA]

Implementation Steps

1. Implement *Climate Smart San José* Action 1.2 – Embrace our Californian Climate to increase water conservation to residential and commercial buildings, increase access to and use of recycled water, and explore regional green infrastructure options for stormwater management.
2. Encourage water conservation among SJCE customers through technical assistance, rebates, and other incentives.
3. Monitor per capita water consumption to demonstrate progress toward this strategy's performance standard.

3.5 Implementation and Monitoring Framework

3.5.1 Application to Development Review

The prior enumerated strategies address building energy efficiency, use of renewable energy, transit use, water conservation, and recycling. Land Use and transportation efficiencies are part of the *Envision San José 2040 General Plan* framework of major strategies and will continue to be implemented with the adoption of the City's Vehicle Miles Traveled Policy 5-1 for SB 743. The emissions forecasts were developed based on the General Plan's VMT forecasts, which reflect implementation of various General Plan policies and programs to reduce VMT in the city. For this reason, additional land use and transportation strategies were not included in the previous section.

These enumerated strategies are not exclusive and do not preclude the use of other reduction measures. Application of the 2030 GHGRS to development review through the planning entitlement process will ensure that the GHG reduction measures translate to on-the-ground results to achieve the 2030 reduction target. A Development Consistency Checklist (see Attachment A) applies to all discretionary reviews through the City's Planning, Building and Code Enforcement Department (PBCE).

The purpose of the Development Consistency Checklist is to apply the 2030 GHGRS to provide a streamlined review process for proposed new development projects subject to discretionary review and that trigger the environmental review under the California Environmental Quality Act (CEQA).

In accordance with CEQA Guidelines Section 15183.5, analysis of GHG emissions and potential climate change impacts from new developments is a requirement. Furthermore, a project's incremental contribution to cumulative GHG emissions may be determined not to be cumulatively considerable if the project complies with the requirements of the approved qualified climate action plan.

To help facilitate implementation of the 2030 GHGRS, each strategy contains implementation information that identifies the strategy's GHG reduction potential in 2030, the performance standards associated with the GHG reduction estimates, and the initial implementation steps to help achieve the reduction levels.

3.5.2 Monitoring Progress

Actual emissions growth will likely differ from the forecast estimates shown earlier; some strategies may be more effective in implementation than assumed and others less so; and, additional unanticipated measures may be implemented as well. Therefore, a framework for monitoring the implementation of these strategies and emissions changes over time is also necessary to ensure 2030 GHGRS success. This section outlines the considerations and approaches for monitoring and updating the Plan in the future.

The General Plan Implementation Policy IP-2.4 requires the City to *"conduct a Major Review of the Envision General Plan by the City Council every four years to evaluate the City's achievement of key economic development, fiscal and infrastructure/service goals, greenhouse gas emission…reduction goals and targets in land use and development."*

To assess the status of the 2030 GHGRS progress, the City will include an evaluation of the GHG strategies through the four-year major review of the *Envision San José 2040 General Plan.*

3.5.3 Evaluation and Evolution

A. Evaluation

2030 GHGRS progress can be evaluated in at least two ways: (a) evaluation of the changes in the City's overall GHG emissions over time, and (b) evaluation of the performance of individual GHGRS strategies. Citywide emissions inventories provide the best indication of the GHG reduction strategy effectiveness. Periodic inventories can capture the GHG reduction contributions of other local policies and programs not separately quantified in this Plan. Periodic inventories will enable a direct comparison to the 2017 base year inventory and measurement of progress toward meeting the City's reduction targets. At a minimum, inventory updates should occur on a three- to five-year cycle to be consistent with BAAQMD's requirements for a qualified GHGRS. The City will also evaluate the implementation of the 2030 GHGRS as part of the General Plan 4-year major review. As part of this review, the City can reinforce successful strategies and reevaluate or replace under-performing ones.

To track performance of GHG reduction strategies and other measures, the City will collect important data related to the performance standards described earlier in this chapter. These performance standards were developed to be directly linked to the GHG reduction estimates. Therefore, these standards should be evaluated regularly to ensure each strategy is on track to achieve its stated emissions reductions. If during the implementation review process, a strategy is found to be falling short of its performance standards, the City can consider if strategy modifications are required to increase performance. This review should be completed holistically to understand if San José is on track toward its targets despite some strategies falling short of their performance standards. Similarly, if the implementation review indicates that a strategy is unable to achieve its stated reduction level, the City will consider new strategies or enhancements to existing strategies required to achieve the interim 2030 target toward the overall 2050 long-term greenhouse gas reduction goal.

B. Plan Evolution

To remain relevant, the GHGRS will need to be adapted over time. New GHG reduction technologies and strategies will likely be developed, new financing mechanisms will be available, and state and federal legislation will evolve and change over the coming years. It is also likely that future GHG emissions inventories may indicate that the City is not on track to achieve its 2030 target. In such a case, the City will assess the implications of new scientific findings, explore new

emissions reduction technologies, respond to changes in state and federal climate change policy, and modify the Plan accordingly to help the City get back on track toward its 2030 GHG reduction target.

Significant changes to the underlying assumptions in the Plan may also warrant a comprehensive update, including:

- Changes to the underlying emissions forecast growth indicators, including growth estimates from the City's General Plan regarding population, employment, or VMT,
- Changes to the state (or federal) regulatory framework that would substantially influence estimated future reductions from implementation of applicable policies and programs,
- Changes to the state's 2030 GHG target that would require a recalculation of San José's target and/or development of additional strategies to achieve even greater emissions reductions, or
- Changes to the list of 2030 GHGRS strategies presented above or substantial modifications to their corresponding performance standards that are linked to the GHG reduction estimates.

3.5.4 Implementation and Monitoring Steps

The following steps summarize the future City actions that will be required to maintain an up-to-date, feasible, and effective GHGRS:

1. Identify and fund a City position in the PBCE to act as GHGRS coordinator, interfacing with representatives from departments that have already been or will be assigned responsibility roles for implementing strategies.
2. Establish a regular emissions inventory update cycle, budget, and process, to occur no less than every five years; ensure that inventories are prepared for each target year to demonstrate actual target achievement results (beginning in 2021 with the 2020 target year); use inventories to prepare monitoring reports that compare actual emissions levels to emissions forecasts in this GHGRS; use inventories to compare emissions levels to the City's reduction targets set forth in this GHGRS.
3. Monitor and evaluate implementation progress of the 2030 greenhouse gas reduction strategies; prepare a GHGRS implementation report to be shared with City Council as part of the General Plan Four-Year Review; revise GHGRS strategies or incorporate new strategies if implementation of statewide and local actions is deemed insufficient to maintain a trajectory toward GHG targets.

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CHAPTER 4

Emissions Reduction Policies and Measures

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This chapter covers the policies, plans, and programs currently used by the City to reduce greenhouse gas emissions. The information is provided as a reference to support project development review and CEQA.

The chapter is organized by emissions categories of:

- **Buildings and Energy**
- **Transportation and Land Use**
- **Recycling and Waste**
- **Other greenhouse gas reduction areas.**

Each section includes a summary of emissions reductions through 2017 and outlines the implementation actions from the City's programs and plans, the *Envision San José 2040 General Plan* policies and implementation programs, and the municipal code.

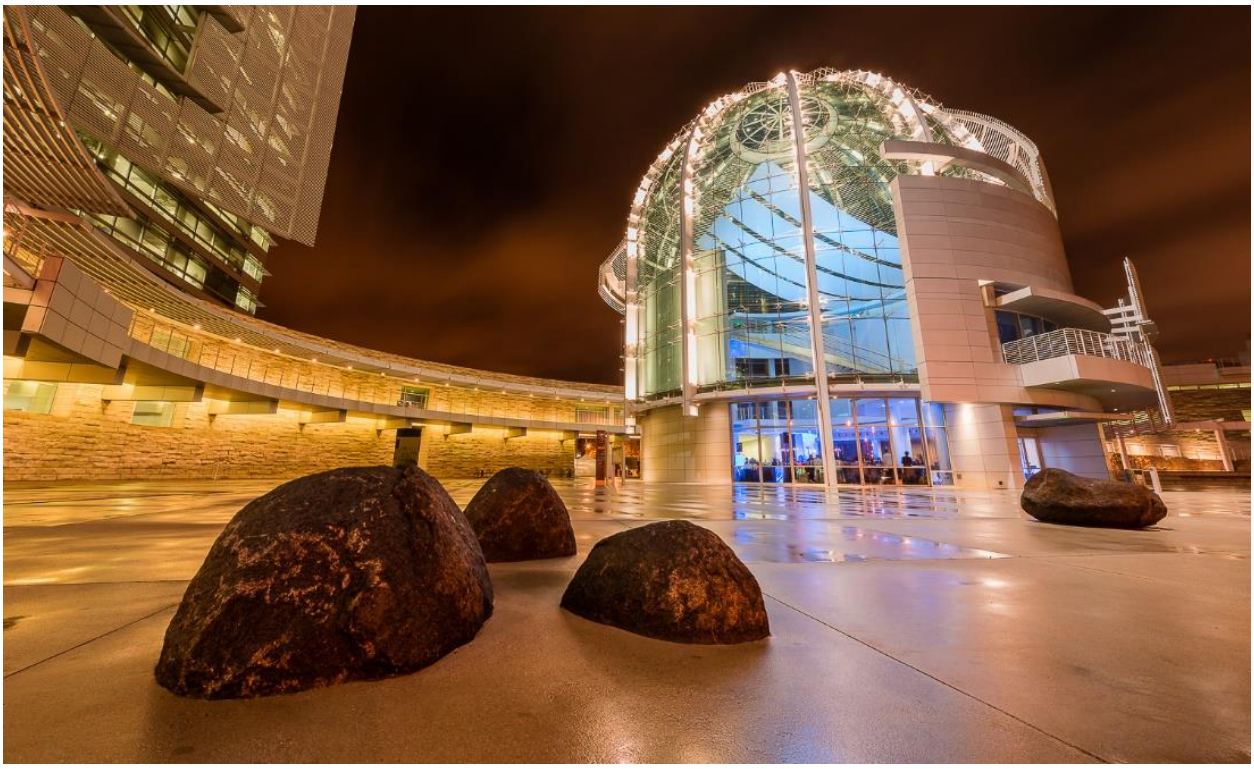
4.1 Buildings and Energy

4.1.1 Reductions through 2017

The energy sector represents emissions that result from electricity and natural gas use in residential, commercial/institutional, and industrial buildings within San José. The energy sector was responsible for approximately one-third of total emissions in 2017. Since the City's first inventory in 2008, total energy sector emissions have decreased by 53 percent, with significant emissions reductions in each sub-sector: residential, commercial/institutional, and industrial.

As summarized in Chapter 3, the 2014 and 2017 inventories provide further detail on emissions by types of fuel for each sub-sector listed above. Between these two inventory years, electricity emissions decreased by 60 percent, while electricity consumption decreased by 2 percent only. This reduction demonstrates the impact of providing clean electricity to residents and businesses as a critical strategy for the overall GHG reductions. During this same period, natural gas emissions and consumption decreased by 5 percent.

The implementation actions presented in the following sections demonstrate the City's leadership in providing opportunities to use energy more efficiently and provide for greater access to renewable and carbon-free energy sources.



San José City Hall

Source: City of San José, City Photos

4.1.2 Implementation Actions

A. City of San José Programs and Plans

Climate Smart San José

As described earlier, Climate Smart San José is the City's long-term climate action path towards Paris Agreement, adopted by City Council in 2018. It is a citywide initiative to reduce air pollution, save water, and improve the quality of life. It establishes a framework to reduce GHG emissions to help prevent catastrophic climate change. The Plan sets ambitious goals for energy, water, transportation, and local jobs.

Electrify San José

This program helps homes switch from existing natural gas heaters to electric heat pump water heaters in support of the Climate Smart San José goals for zero net carbon buildings. It provides rebates to incentivize San José households to switch from natural gas water heaters to electric heat pump water heaters.

San José Clean Energy

San José's community choice electricity supplier, San José Clean Energy (SJCE), provides residents and businesses with cost-competitive electricity with a higher percentage of renewable and carbon-free electricity than PG&E. SJCE gives customers options for their sources of electricity, including a 100 percent renewable energy option. San José Clean Energy also provides programs for solar and other distributed electricity generation systems (wind, biogas, and fuel cells) for commercial customers.

LED Streetlight Conversion Program

The City of San José owns, operates, and maintains more than 64,000 streetlights. In this program, the City is working on replacing the previous yellow sodium vapor streetlights with smart, energy-efficient streetlights, white light-emitting diode (LED) lights, and installing adaptive control systems to improve energy efficiency even further. Nearly half of the street lighting was converted to efficient LED lighting in recent years (Climate Smart San José Semi-Annual Update October 2019).

Green Building Policies

All private sector and municipal building projects with construction or additions of more than 10,000 square feet of occupied space (as defined in the adopted building code) are required to design and construct to achieve at a minimum the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED™) Rating System Silver level of certification, with a goal of reaching LEED Gold or Platinum. Municipal Code Chapter 17.84 – Green Building Regulations for Private Development specifies these requirements.

San José General Plan Policies and Implementation Programs

MS-1.1. Continue to demonstrate leadership in the development and implementation of green building policies and practices. Ensure that all projects are consistent with and/or exceed the City's Green Building Ordinance and City Council Policies as well as State or regional policies which require that projects incorporate various green building principles into their design and construction.

MS-1.2. Continually increase the number and proportion of buildings within San José that make use of green building practices by incorporating those practices into both new construction and retrofit of existing structures.

MS-2.2. Encourage maximized use of on-site generation of renewable energy for all new and existing buildings.

MS-2.3. Encourage consideration of solar orientation, including building placement, landscaping, design, and construction techniques for new construction to minimize energy consumption.

MS-2.7. Encourage the installation of solar panels or other clean energy power generation sources over parking areas.

MS-2.8. Develop policies which promote energy reduction for energy-intensive industries. For facilities such as data centers, which have high energy demand and indirect greenhouse gas emissions, require evaluation of operational energy efficiency and inclusion of operational design measures as part of development review consistent with benchmarks such as those in EPA's ENERGY STAR Program for new data centers. Also require consideration of distributed power production for these facilities to reduce greenhouse gas emissions.

MS-2.11. Require new development to incorporate green building practices, including those required by the Green Building Ordinance. Specifically, target reduced energy use through construction techniques (e.g., design of building envelopes and systems to maximize energy performance), through architectural design (e.g., design to maximize cross ventilation and interior daylight) and through site design techniques (e.g., orienting buildings on sites to maximize the effectiveness of passive solar design).

MS-14.3. Consistent with the California Public Utilities Commission's *California Long Term Energy Efficiency Strategic Plan*, as revised, and when technological advances make it feasible, require all new residential and commercial construction to be designed for zero net energy use.

MS-14.4. Implement the City's Green Building Policies (see Green Building Section) so that new construction and rehabilitation of existing buildings fully implements industry best practices, including the use of optimized energy systems, selection of materials and resources, water efficiency, sustainable site selection, passive solar building design, and planting of trees and other landscape materials to reduce energy consumption.

MS-14.5. Consistent with State and federal policies and best practices, require energy efficiency audits and retrofits prior to or at the same time as consideration of solar electric improvements.

MS-15.3. Facilitate the installation of at least 100,000 solar roofs in San José by 2022 and at least 200,000 solar roofs by 2040.

MS-16.2. Promote neighborhood-based distributed clean/renewable energy generation to improve local energy security and to reduce the amount of energy wasted in transmitting electricity over long distances.

LU-16.2. Evaluate the materials and energy resource consumption implications of new construction to encourage preservation of historic resources.

LU-17.1. Maintain the Greenline/Urban Growth Boundary to delineate the extent of existing and future urban activity and to reinforce fundamental policies concerning the appropriate location of urban development.

B. San José Municipal Code

Chapter 17.84. Green Building Regulations for Private Development

This chapter fosters practices in the design, construction, and maintenance of buildings that will minimize the use and waste of energy, water, and other resources in the City of San José.

Chapter 17.845. Prohibition of Natural Gas Infrastructure in New Single-Family, Low-Rise Residential Buildings, and Detached Accessory Dwelling Units (Ordinance 30330)

This chapter was adopted in October 2019 and overlays the City's reach code ordinance, prohibits natural gas infrastructure in new detached accessory dwelling units, single-family homes, and low-rise multi-family buildings. The intent is to increase building energy efficiencies for new construction beyond that which is required by state law and to help transition San José buildings away from the use of fossil fuels. It also includes robust EV charging infrastructure and solar-readiness requirements.

Chapter 17.85. City of San José Energy and Water Building Performance Ordinance (Ordinance 30197)

This chapter requires commercial and multifamily buildings 20,000 square feet and over to track the yearly complete building energy and water usage data with the EPA platform ENERGY STAR Portfolio Manager® and share this data with the City. Adopted in December 2018, the City will regularly publish a subset of summary data to support market transparency and recognize high-performing buildings across San José.

Chapter 17.86. Solar Energy System Requirements and Expedited Building Permit Process for Small Residential Rooftop Solar Energy Systems

This chapter provides an expedited, streamlined building permit process that complies with state law to achieve timely and cost-effective installations of small residential rooftop solar energy systems.

Solar installation at the Central Service Yard

Source: City of San José, City Photos

Title 20. Zoning

Solar photovoltaic power systems are permitted uses within all zones when mounted on the surface of an existing building or structure.

Chapter 24.10. California Green Building Standards Code

The City has adopted the technical provision of the California Green Building Standard (CALGreen), requiring the mandatory provisions within the CALGreen Code.

Chapter 24.12. California Building Energy Efficiency Standards

The City has adopted the technical provision of the California Building Energy Efficiency Standards and requires the mandatory provisions within the code. This code was amended by the San José Reach Code, approved September 2019, to further support building electrification and energy efficiency, and require solar readiness for non-residential buildings.

Title 26. Community Energy

The Community Energy Department administers and manages San José Clean Energy, providing options to its customers with the percentage of renewable energy in their power mix, but in all cases offers a power mix in which the portion of renewable energy is equal or greater than the Renewables Portfolio Standard procurement level associated with a particular year.

4.2 Land Use and Transportation

4.2.1 Reductions through 2017

The land use and transportation sector in the City's emissions inventory represents emissions that result from various modes of travel in and around San José, including on-road vehicles, public transit, waterborne transportation, aviation, and off-road vehicles and equipment. The transportation sector was responsible for nearly two-thirds of total community emissions in 2017, with on-road travel making up 93 percent of the sector's total emissions. Since the City's first inventory in 2008, on-road travel emissions have decreased by approximately 4 percent. From 2014 to 2017, total on-road vehicle miles traveled decreased by 9 percent, while the corresponding emissions decreased by 11 percent.

The implementation actions presented in the following sections demonstrate the City's efforts to improve active transportation options, such as walking and biking, reduce the total number of personal vehicle trips through land use planning and design strategies, and support the transition to electric vehicle use in the community.

4.2.2 Implementation Actions

A. City of San José Programs and Plans

San José Complete Streets Design Standards and Guidelines

The complete streets program promotes increased use of alternative modes of transportation and reduced vehicle miles traveled. The City of San José's Complete Streets Design Standards and Guidelines provide the framework to plan for, design, construct, operate, and maintain an integrated multi-modal transportation system for the safe accommodation of pedestrians, bicyclists, transit users, motorists, and other users of all ages and abilities in new construction,

retrofit, and reconstruction projects of public streets. These guidelines are specified in Municipal Code Chapter 13.05.

Walk n' Roll San José

This program is funded by the Metropolitan Transportation Commission through its Climate Initiatives Program to increase walking and biking to school, foster a healthy and active lifestyle, and reduce traffic congestion and related air pollution within school zones. The program works with more than 60 schools per year.

Smart Moves San José

This program encourages residents to increase the trips they take by walking, biking, and using public transit. With this program, the City aims to reduce barriers to and enhance the benefits of using environmentally friendly and health-enhancing means of travel.

Clean Air Program

Electric vehicles displaying a Clean Air Permit may park for free at all City of San José parking meters, at participating ParkSJ garages, and at other City of San José Parks and Recreation facilities.

San José Clean Energy Electric Vehicle Rate Program

The City of San José leads the nation in public charging stations per capita. SJCE is committed to increasing the number of electric vehicles in San José to help reduce air pollution. To support this, SJCE offers electricity rates that incentivize charging during off-peak hours.

City Council Policy 5-1. Transportation Analysis Policy

This policy established vehicle miles traveled (VMT) as the metric for CEQA transportation analysis to foster a more sustainable and vibrant city. VMT-based policies support dense, mixed-use, infill projects as established in the General Plan's Planned Growth Areas. By establishing a transportation system that encourages improved land uses with viable transportation options, this policy provides resources to develop a robust multimodal transportation network as envisioned in the General Plan. Projects consistent with this policy will reduce the city's environmental footprint from land use and transportation, and create lively places served by a variety of transportation options.

San José VMT Evaluation Tool

The San José VMT Evaluation Tool is an excel-based tool that evaluates whether proposed land-uses in the City of San José would generate VMT impacts relative to the impact thresholds outlined in the City Council Policy 5-1, the Transportation Analysis Policy. Projects that would trigger a VMT impact can use the tool to evaluate potential impact reductions from a variety of strategies.

San José Access and Mobility Plan

Phase 1 – Transportation Directives of the San José Access and Mobility Plan are complete. This phase brought together the City's transportation policies and goals into one document and proposed key performance indicators to measure success when the plan is implemented. The final plan will lay out a set of strategies to implement transportation goals of the *Envision 2040 San José General Plan* and *Climate Smart San José*, developing projects and policies that make progress on goals such as increased walking, biking, and transit use, decreased auto dependence, increased safety, and street design centered around people, not cars.

Ohlone-Chynoweth Station

Source: City of San José, City Photos

Bike Plan 2020 and Better Bike Plan 2025

The City's *Bike Plan 2020* establishes a vision where biking is an integral part of daily life in San José. The Bike Plan's 2020 goals were to construct 500 miles of bikeways in the network, achieve a 5 percent bike share for total trips taken, reduce bike collisions by 50 percent, add 5,000 bike parking spaces, and achieve Gold-level Bicycle Friendly Community status. The City is updating *Bike Plan 2020* to build on the *Envision San José 2040* goals for providing space for infill and transit-oriented development. The plan aims to create a biking network that is safe, comfortable, and convenient for the community.

Bike share station

Source: City of San José, City Photos

Silicon Valley Regional Intelligent Transportation Systems (SV-ITS)

This program implements real-time transportation management measures using technologies that collect real-time data. The data can be used to adjust traffic management devices and activities to reflect changing traffic conditions. The program also develops procedures and measures to coordinate traffic management activities, reduce travel demand, and encourage the use of alternative modes of travel between program partner agencies. The Transportation Incident Management Center provides a means for improving transportation mobility services across Santa Clara County and its neighboring cities.

B. San José General Plan Policies and Implementation Programs

CD-2.1. Promote the Circulation Goals and Policies in the Envision San José 2040 General Plan. Create streets that promote pedestrian and bicycle transportation by following applicable goals and policies in the Circulation section of the Envision San José 2040 General Plan.

a) Design the street network for its safe shared use by pedestrians, bicyclists, and vehicles. Include elements that increase driver awareness.

b) Create a comfortable and safe pedestrian environment by implementing wider sidewalks, shade structures, attractive street furniture, street trees, reduced traffic speeds, pedestrian-oriented lighting, mid-block pedestrian crossings, pedestrian-activated crossing lights, bulb-outs and curb extensions at intersections, and on-street parking that buffers pedestrians from vehicles.

c) Consider support for reduced parking requirements, alternative parking arrangements, and Transportation Demand Management strategies to reduce area dedicated to parking and increase area dedicated to employment, housing, parks, public art, or other amenities. Encourage de-coupled parking to ensure that the value and cost of parking are considered in real estate and business transactions.

CD-2.3. Enhance pedestrian activity by incorporating appropriate design techniques and regulating uses in private developments, particularly in Downtown, Villages, Corridors, Main Streets, and other locations where appropriate.

a) Include attractive and interesting pedestrian-oriented streetscape features such as street furniture, pedestrian scale lighting, pedestrian oriented way-finding signage, clocks, fountains, landscaping, and street trees that provide shade, with improvements to sidewalks and other pedestrian ways.

b) Strongly discourage drive-up services and other commercial uses oriented to occupants of vehicles in pedestrian-oriented areas. Uses that serve the vehicle, such as car washes and service stations, may be considered appropriate in these areas when they do not disrupt pedestrian flow, are not concentrated in one area, do not break up the building mass of the streetscape, are consistent with other policies in this Plan, and are compatible with the planned uses of the area.

c) Provide pedestrian connections as outlined in the Community Design Connections Goal and Policies.

d) Locate retail and other active uses at the street level.

e) Create easily identifiable and accessible building entrances located on street frontages or paseos.

f) Accommodate the physical needs of elderly populations and persons with disabilities.

g) Integrate existing or proposed transit stops into project designs.

CD-2.5. Integrate Green Building Goals and Policies of the Envision San José 2040 General Plan into site design to create healthful environments. Consider factors such as shaded parking areas, pedestrian connections, minimization of impervious surfaces, incorporation of stormwater treatment measures, appropriate building orientations, etc.

CD-2.10. Recognize that finite land area exists for development and that density supports retail vitality and transit ridership. Use land regulations to require compact, low-impact development that efficiently uses land planned for growth, particularly for residential development which tends to have a long lifespan. Strongly discourage small-lot and single-family detached residential product types in growth areas.

CD-2.11. Within the Downtown and Urban Village Overlay areas, consistent with the minimum density requirements of the pertaining Land Use/Transportation Diagram designation, avoid the construction of surface parking lots except as an interim use, so that long-term development of the site will result in a cohesive urban form. In these areas, whenever possible, use structured parking, rather than surface parking, to fulfill parking requirements. Encourage the incorporation of alternative uses, such as parks, above parking structures.

CD-3.2. Prioritize pedestrian and bicycle connections to transit, community facilities (including schools), commercial areas, and other areas serving daily needs. Ensure that the design of new facilities can accommodate significant anticipated future increases in bicycle and pedestrian activity.

CD-3.3. Within new development, create a pedestrian friendly environment by connecting the internal components with safe, convenient, accessible, and pleasant pedestrian facilities and by requiring pedestrian connections between building entrances and other site features and adjacent public streets.

CD-3.4. Encourage pedestrian cross-access connections between adjacent properties and require pedestrian and bicycle connections to streets and other public spaces, with particular attention and priority given to providing convenient access to transit facilities. Provide pedestrian and vehicular connections with cross-access easements within and between new and existing developments to encourage walking and minimize interruptions by parking areas and curb cuts.

CD-3.6. Encourage a street grid with lengths of 600 feet or less to facilitate walking and biking. Use design techniques such as multiple building entrances and pedestrian paseos to improve pedestrian and bicycle connections.

CD-3.8. Provide direct access from developments to adjacent parks or open spaces and encourage residential development to provide common open space contiguous to such areas.

CD-3.10. New development should increase neighborhood connectivity by providing access across natural barriers (e.g., rivers) and man-made barriers (e.g., freeways).

CD-5.1. Design areas to promote pedestrian and bicycle movements and to facilitate interaction between community members and to strengthen the sense of community.

CD-5.2. Foster a culture of walking by designing walkable urban spaces; strategically locating jobs, residences and commercial amenities; providing incentives for alternative commute modes; and partnering with community groups and health services organizations to promote healthy lifestyles for San José residents.

CD-7.6. Incorporate a full range of uses in each Village Plan to address daily needs of residents, businesses, and visitors in the area. Consider retail, parks, school, libraries, day care, entertainment, plazas, public gathering space, private community gathering facilities, and other neighborhood-serving uses as part of the Village planning process. Encourage multi-use spaces wherever possible to increase flexibility and responsiveness to community needs over time.

PR-2.6. Locate all new residential development over 200 units in size within 1/3 of a mile walking distance of an existing or new park, trail, open space, or recreational school grounds open to the public after normal school hours or shall include one or more of these elements in its project design.

PR-8.5. Encourage all developers to install and maintain trails when new development occurs adjacent to a designated trail location. Use the City's Parkland Dedication Ordinance and Park Impact Ordinance to have residential developers build trails when new residential development occurs adjacent to a designated trail location, consistent with other parkland priorities. Encourage developers or property owners to enter into formal agreements with the City to maintain trails adjacent to their properties.

LU-2.1. Provide significant job and housing growth capacity within strategically identified "Growth Areas" in order to maximize use of existing or planned infrastructure (including fixed transit facilities), minimize the environmental impacts of new development, provide for more efficient delivery of City services, and foster the development of more vibrant, walkable urban settings.

LU-2.2. Include within the General Plan Land Use / Transportation Diagram significant job and housing growth capacity within the following identified Growth Areas:

- Downtown
- Specific Plan Areas
- North San José
- Employment Lands
- Urban Villages: BART / Caltrain Station Areas
- Urban Villages: Transit / Commercial Corridors
- Urban Villages: Commercial Centers
- Urban Villages: Neighborhood Villages

LU-2.3. To support the intensification of identified Growth Areas, and to achieve the various goals related to their development throughout the City, restrict new development on properties in non-Growth Areas.

LU-2.4. To accomplish the planned intensification of employment and residential uses at the Berryessa BART station, modify existing entitlements to expand the area planned for employment uses and to increase the density of employment and residential areas within the BART Station Village area.

LU-3.5. Balance the need for parking to support a thriving Downtown with the need to minimize the impacts of parking upon a vibrant pedestrian and transit oriented urban environment. Provide for the needs of bicyclists and pedestrians, including adequate bicycle parking areas and design measures to promote bicyclist and pedestrian safety.

LU-3.6. Prohibit uses that serve occupants of vehicles (such as drive-through windows) and discourage uses that serve the vehicle (such as car washes and service stations), except where they do not disrupt pedestrian flow, are not concentrated, do not break up the building mass of the streetscape, and are compatible with the planned uses of the area.

LU-5.2. To facilitate pedestrian access to a variety of commercial establishments and services that meet the daily needs of residents and employees, locate neighborhood-serving commercial uses throughout the city, including identified growth areas and areas where there is existing or future demand for such uses.

LU-5.3. Encourage new and intensification of existing commercial development in vertical mixed-use projects and, in some instances, integrated horizontal mixed-use projects, consistent with the Land Use / Transportation Diagram.

LU-5.4. Require new commercial development to facilitate pedestrian and bicycle access through techniques such as minimizing building separation from public sidewalks; providing safe, accessible, convenient, and pleasant pedestrian connections; and including secure and convenient bike storage.

LU-5.5. Provide pedestrian and vehicular connections between adjacent commercial properties with reciprocal-access easements to encourage safe, convenient, and direct pedestrian access and “one-stop” shopping. Encourage and facilitate shared parking arrangements through parking easements and cross-access between commercial properties to minimize parking areas and curb-cuts.

LU-6.4. Encourage the development of new industrial areas and the redevelopment of existing older or marginal industrial areas with new industrial uses, particularly in locations which facilitate efficient commute patterns. Use available public financing to provide necessary infrastructure improvements as one means of encouraging this economic development and revitalization.

LU-9.1. Create a pedestrian-friendly environment by connecting new residential development with safe, convenient, accessible, and pleasant pedestrian facilities. Provide such connections between new development, its adjoining neighborhood, transit access points, schools, parks, and nearby commercial areas. Consistent with Transportation

Policy TR-2.11, prohibit the development of new cul-de-sacs or gated communities that do not provide through- and publicly-accessible bicycle and pedestrian connections.

LU-9.2. Facilitate the development of complete neighborhoods by allowing appropriate commercial uses within or adjacent to residential and mixed-use neighborhoods.

LU-10.1. Develop land use plans and implementation tools that result in the construction of mixed-use development in appropriate places throughout the City as a means to establish walkable, complete communities.

LU-10.3. Develop residentially- and mixed-use-designated lands adjacent to major transit facilities at high densities to reduce motor vehicle travel by encouraging the use of public transit.

LU-10.4. Within identified growth areas, develop residential projects at densities sufficient to support neighborhood retail in walkable, main street type development.

LU-10.5. Facilitate the development of housing close to jobs to provide residents with the opportunity to live and work in the same community.

LU-10.6. In identified growth areas, do not approve decreases in residential density through zoning change or development entitlement applications or through General Plan amendments.

LU-10.8. Encourage the location of schools, private community gathering facilities, and other public/quasi-public uses within or adjacent to Villages, Corridors and other growth areas and encourage these uses to be developed in an urban form and in a mixed-use configuration.

LU-10.9. Model the federal Interagency Partnership for Sustainable Communities (HUD-DOT-EPA) at the local level between Housing and other City Departments to facilitate the creation of smart growth communities.

TN-2.2. Provide direct, safe and convenient bicycle and pedestrian connections between the trail system and adjacent neighborhoods, schools, employment areas and shopping areas.

TN-2.7. Encourage all developers to install and maintain trails when new development occurs adjacent to a designated trail location, in accordance with Policy PR-8.5.

TN-2.13. Provide all residents with access to trails within 3 miles of their homes.

TR-1.1. Accommodate and encourage use of non-automobile transportation modes to achieve San José's mobility goals and reduce vehicle trip generation and vehicle miles traveled (VMT).

TR-1.4. Through the entitlement process for new development fund needed transportation improvements for all transportation modes, giving first consideration to improvement of bicycling, walking and transit facilities. Encourage investments that reduce vehicle travel demand.

TR-1.13. Reduce vehicle capacity on streets with projected excess capacity by reducing either the number of travel lanes or the roadway width, and use remaining public right-of-way to

provide wider sidewalks, bicycle lanes, transit amenities and/or landscaping. Establish criteria to identify roadways for capacity reduction (i.e., road diets) and conduct engineering studies and environmental review to determine implementation feasibility and develop implementation strategies.

TR-2.2. Provide a continuous pedestrian and bicycle system to enhance connectivity throughout the City by completing missing segments. Eliminate or minimize physical obstacles and barriers on City streets that impede pedestrian and bicycle movement, including consideration of grade-separated crossings at railroad tracks and freeways. Provide safe bicycle and pedestrian connections to all facilities regularly accessed by the public, including the San José International Airport.

TR-2.8. Require new development to provide on-site facilities such as bicycle storage and showers, provide connections to existing and planned facilities, dedicate land to expand existing facilities or provide new facilities such as sidewalks and/or bicycle lanes/paths, or share in the cost of improvements.

TR-2.18. Provide bicycle storage facilities as identified in the Bicycle Master Plan.

TR-3.3. As part of the development review process, require that new development along existing and planned transit facilities consist of land use and development types and intensities that contribute toward transit ridership. In addition, require that new development is designed to accommodate and to provide direct access to transit facilities.

TR-3.9. Ensure that all street improvements allow for easier and more efficient bus operations and improved passenger access and safety, while maintaining overall pedestrian and bicycle safety and convenience.

TR-6.1. Minimize potential conflicts between trucks and pedestrian, bicycle, transit, and vehicle access and circulation on streets with truck travel.

TR-6.7. As part of the project development review process, ensure that adequate off-street loading areas in new large commercial, industrial, and residential developments are provided, and that they do not conflict with pedestrian, bicycle, or transit access and circulation.

TR-7.1. Require large employers to develop TDM programs to reduce the vehicle trips and vehicle miles generated by their employees through the use of shuttles, provision for car-sharing, bicycle sharing, carpool, parking strategies, transit incentives and other measures.

TR-8.1. Promote transit-oriented development with reduced parking requirements and promote amenities around appropriate transit hubs and stations to facilitate the use of available transit services.

TR-8.3. Support using parking supply limitations and pricing as strategies to encourage use of non-automobile modes.

TR-8.4. Discourage, as part of the entitlement process, the provision of parking spaces significantly above the number of spaces required by code for a given use.

TR-8.5. Promote participation in car share programs to minimize the need for parking spaces in new and existing development.

TR-8.6. Allow reduced parking requirements for mixed-use developments and for developments providing shared parking or a comprehensive TDM program, or developments located near major transit hubs or within Villages and Corridors and other growth areas.

TR-8.8. Promote use of unbundled private off-street parking associated with existing or new development, so that the sale or rent of a parking space is separated from the rent or sale price for a residential unit or for non-residential building square footage.

TR-8.9. Consider adjacent on-street and City-owned off-street parking spaces in assessing need for additional parking required for a given land use or new development.

TR-8.12. As part of the entitlement process, consider opportunities to reduce the number of parking spaces through shared parking, TDM actions, parking pricing or other measures which can reduce parking demand. Consider the use of reserve landscaped open space or recreational areas that can be used on a short-term basis to provide parking or converted to formal parking in the future if necessary.

TR-9.1. Enhance, expand and maintain facilities for walking and bicycling, particularly to connect with and ensure access to transit and to provide a safe and complete alternative transportation network that facilitates non-automobile trips.

C. San José Municipal Code

Chapter 13.05. Complete Streets Design

This chapter establishes the City of San José Complete Streets Policy and provides for the implementation of Complete Streets Guiding Principles.

Chapter 17.88. Electric Vehicle Charging Stations and Expedited Building Permit Process for Electric Vehicle Charging Stations

This chapter provides an expedited, streamlined building permit process that complies with state law to achieve timely and cost-effective installations of electric vehicle charging stations.

Title 20 (Zoning Code)

The City's Zoning Code guides, controls, and regulates future growth and development in the city in a sound and orderly manner and promotes the achievement of the goals and purposes of the San José General Plan. The following sections support development that would reduce vehicle miles traveled and related GHG emissions from future development:

- **Chapter 20.75. Pedestrian Oriented Zoning Districts**. Intended to foster urban development that encourages pedestrian movements and supports transit, cycling and other alternatives to

vehicular travel through: 1) design standards that place building mass at the street front and emphasize pedestrian connections while minimizing vehicular/pedestrian conflicts; and 2) land use regulations that provide a critical intensity and mix of uses.

- **Chapter 20.90. Parking and Loading**. Sets parking and loading requirements dependent upon the types of land use. Includes requirements for clean air vehicle parking, bicycle parking, and on-site shower and changing rooms to promote alternative modes of transportation.

Chapter 24.12. California Building Energy Efficiency Standards

The City of San José has adopted the technical provision of the California Building Energy Efficiency Standards, requiring the mandatory provisions within the code. Further, amended by the San José Reach Code approved September 2019 to support building electrification and energy efficiency, requiring electric vehicle (EV)-readiness and EV equipment installation.

Cyclists on the Guadalupe River Trail

Source: City of San José, City Photos

4.3 Recycling and Waste

4.3.1 Reductions Up to 2017

The solid waste component of the City's emissions inventory represents emissions resulting from the disposal of community-generated solid waste. Solid waste contributed 5 percent of total community emissions in 2017. Since the City's first inventory in 2008, solid waste emissions have increased nearly 4 percent. From 2014 to 2017, the total volume of solid waste disposal increased 28 percent.

The implementation actions presented in the following sections demonstrate the City's efforts to drastically reduce solid waste generation in the community, increase diversion away from landfills, and improve food recovery efforts to simultaneously address chronic hunger challenges.

4.3.2 Implementation Actions

A. City of San José Programs and Plans

City of San José Integrated Waste Management Zero Waste Strategic Plan

The Environmental Services Department Integrated Waste Management Division supports the solid waste collection, processing, and disposal for residential, commercial, and City facility operations. In 2007, City Council adopted a resolution to reduce the amount of material being landfilled by 75 percent by 2013 to achieve "zero waste" (defined as landfilling no more than 10 percent of waste and recycling no less than 90 percent of waste) by 2022. In addition, all San José businesses comply with AB 341 (mandatory recycling – plastics, paper, metal, glass, etc.) and AB 1826 (mandatory organics recycling – food scraps and yard trimmings) by nature of the collection service within San José, through which recyclable materials are separated by type, baled, and sold to recycled-content manufacturers and food waste and other organic materials are separated and sent to an anaerobic digestion facility or a composting facility. Residential recycling and composting programs are also in place. In addition, per the Zero Waste Strategic Plan, some of the City's contracted residential haulers have transitioned from diesel trucks to cleaner burning compressed natural gas (CNG), further reducing GHG emissions associated with solid waste management activities.

Santa Clara County's "A La Carte" Food Rescue Initiative

Through a partnership with Joint Venture Silicon Valley, the program collects excess edible food from businesses and institutions in the County and distributes it to those in need throughout the County. The City of San José is a participant in the program.

B. San José General Plan Policies and Implementation Programs

MS-5.6. Enhance the construction and demolition debris recycling program to increase diversion from the building sector.

MS-6.5. Reduce the amount of waste disposed in landfills through waste prevention, reuse, and recycling of materials at venues, facilities, and special events.

MS-6.6. Promote the development of energy conversion technologies for converting residual waste into energy.

MS-6.8. Maximize reuse, recycling, and composting citywide.

LU-7.3. Encourage the use of industrially-planned land to provide locations for various forms of recycling services (e.g., collection, handling, transfer, processing, etc.), for the support facilities required by these services (e.g., service yards, truck storage and service) and for companies that manufacture new products out of recycled materials in order to support the City's Solid Waste Program.

LU-16.4. Development approvals that include demolition of a structure eligible for or listed on the Historic Resources Inventory shall require the salvage of the resource's building materials and architectural elements as to allow re-use of those elements and materials and avoid the energy costs of producing new and disposing of old building materials.

C. San José Municipal Code

Chapter 9.10 Solid Waste Management

Solid waste management regulations in the San José Municipal Code are enforced by the City for the oversight of recycling and garbage hauling activities to protect public health and safety and minimize service rates. Ordinances that have been codified under Chapter 9.10 and that contribute to GHG reductions in the community are described briefly below. The City Council sets the collection rates for solid waste disposal. The residential rate schedule is a pay-as-you-throw system in which consumers are charged based on the size of their garbage bins and recycling is unlimited at no additional charge; this creates a direct economic incentive to recycle more and to reduce landfilled waste.

Chapter 9.10 Solid Waste Management; Part 13 – Single-Use Carry-Out Bag

While many single-use bags do get recycled, many more are disposed of as trash and represent an unnecessary waste of resources that can easily be avoided with reusable bags. All grocery, pharmacy, and retail stores may not provide plastic carryout bags at checkout. Retailers may provide a paper bag made of 40 percent post-consumer recycled content for a minimum of 10 cents each upon checkout.

Chapter 9.10 Solid Waste Management; Part 15 – Construction and Demolition Diversion Deposit Program

The Construction and Demolition Diversion program goals include recovery and diversion from landfills of at least 75 percent of construction and demolition debris.

Chapter 9.10 Solid Waste Management; Part 17 – Polystyrene Foam Disposable Food Service Ware

San José's Foam Food Container Ordinance aims to reduce a pervasive and persistent type of litter by banning food service ware made from expanded polystyrene (EPS) foam. Littering of EPS or dumping of EPS into landfills is uniquely problematic because it does not degrade. This ordinance requires all restaurants to use non-foam food service ware for both dine-in and takeout.

Waste collection in a residential neighborhood

Source: City of San José, City Photos

4.4 Other GHG Reduction Areas

4.4.1 Reductions Up to 2017

The water and wastewater components of the City's emissions inventory represent emissions resulting from potable water consumption and wastewater treatment at the City's regional facility. These emissions sources represented less than 1 percent of total community emissions in 2017.

From 2014 to 2017, water-related energy use decreased 13 percent, while the corresponding emissions decreased by 29 percent. This was a result of decreased water use citywide and increasing amounts of renewable energy in the state's electricity grid. During this same period, wastewater treatment emissions were largely unchanged.

The implementation actions presented in the following sections include the City's efforts to further increase water conservation and continue the use of renewable energy sources at the wastewater treatment facility, including a cogeneration facility that will use digester gas from the wastewater treatment process to produce heat and up to 12 megawatts of electrical power. Even though these emissions sources are minor contributors to the total inventory, these actions also contribute to climate change resilience and help achieve the City's broader sustainability goals.

Other actions presented in this section demonstrate the commitment to a healthy and robust urban forest that can sequester carbon, contribute to stormwater management, and mitigate the urban heat island effect, among other co-benefits.

4.4.2 Implementation Actions

A. City of San José Programs and Plans

South Bay Water Recycling Strategic and Master Planning

The San José-Santa Clara Regional Wastewater Facility (RWF) also produces recycled water. Roughly 10 million gallons of the Facility's treated water is recycled daily by South Bay Water Recycling (SBWR) for landscape irrigation, industrial processes, and other non-potable uses. On average, the RWF saves more than 2.2 billion gallons of water per year. SBWR is a recycled water wholesaler to four retailers: San José Water Company, San José Municipal Water System, City of Santa Clara, and the City of Milpitas. In 2014, SBWR completed the Strategic and Master Planning report. This strategic planning process presents a collective vision for the future of SBWR that represents both the wastewater and water supply interests.

Santa Clara Valley Water District – Water Conservation Programs

Valley Water promotes several water conservation programs available to water users within the City of San José. Additionally, the City of San José Municipal Water System, and other water retailers, participate in various committees at Valley Water that address water conservation, water

supply, and groundwater. Water conservation programs of Valley Water include those for residential users such as Graywater Laundry to Landscape and the Landscape Rebate Program, and those for commercial users such as the Water Efficiency Technology Rebate Program, the Submeter Rebate Program, the Landscape Rebate Program, and free materials and equipment to promote water conservation and efficiency.

San José-Santa Clara Regional Wastewater Facility Capital Improvement Program

The City is rebuilding and modernizing the RWF through its Capital Improvement Program (CIP), based on the adopted 2013 Plant Master Plan (PMP), to keep the facility operating at optimal levels into the future. The PMP recommends more than 100 capital improvements over a 30-year planning period, many of which will result in operational efficiencies, reduced emissions generation, and expansion of renewable energy development opportunities, among other numerous community benefits. Within the first phase of the project, RWF will rehabilitate and modernize four anaerobic digesters to enhance gas production and energy self-sufficiency, equipment safety, odor mitigation, and future reliability. The first phase also includes a project to install four new cogeneration engines that convert the gas collected in the anaerobic digesters into electricity, a heat recovery system, and a gas treatment system to improve operational reliability and efficiency and enable full reuse of the digester biogas.

City of San José Tree Policy

In many instances, the City requires a permit for the removal of trees in the community. Tree removal permits are required for: street trees; heritage trees; ordinance-size trees; or any trees located on a multifamily, commercial, industrial, or mixed-use property or in a common area.

B. San José General Plan Policies and Implementation Programs

MS-3.1. Require water-efficient landscaping, which conforms to the State's Model Water Efficient Landscape Ordinance, for all new commercial, institutional, industrial and developer-installed residential development unless for recreation needs or other area functions.

MS-3.2. Promote the use of green building technology or techniques that can help reduce the depletion of the City's potable water supply, as building codes permit. For example, promote the use of captured rainwater, graywater, or recycled water as the preferred source for non-potable water needs such as irrigation and building cooling, consistent with Building Codes or other regulations.

MS-17.2. Ensure that development within San José is planned and built in a manner consistent with sustainable use of current and future water supplies by encouraging sustainable development practices, including low-impact development, water-efficient development and green building techniques. Support the location of new development within the vicinity of the recycled water system and promote expansion of the SBWR system to areas planned for new development. Residential development outside of the Urban Service Area will only be approved at minimal levels and only allowed to use non-

recycled water at urban intensities. For residential development outside of the Urban Service Area, restrict water usage to well water, rainwater collection or other similar sustainable practice. Non-residential development may use the same sources and potentially make use of recycled water, provided that its use will not result in conflicts with other General Plan policies, including geologic or habitat impacts. To maximize the efficient and environmentally beneficial use of water, outside of the Urban Service Area, limit water consumption for new development so that it does not diminish the water supply available for projected development within San José 's urbanized areas.

MS-18.4. Retrofit existing development to improve water conservation.

MS-18.5. Reduce citywide per capita water consumption by 25 percent by 2040 from a baseline established using the 2010 Urban Water Management Plans of water retailers in San José.

MS-19.4. Require the use of recycled water wherever feasible and cost-effective to serve existing and new development.

MS-21.3. Ensure that San José's Community Forest is comprised of species that have low water requirements and are well adapted to its Mediterranean climate. Select and plant diverse species to prevent monocultures that are vulnerable to pest invasions. Furthermore, consider the appropriate placement of tree species and their lifespan to ensure the perpetuation of the Community Forest.

MS-26.1. As a condition of new development, require the planting and maintenance of both street trees and trees on private property to achieve a level of tree coverage in compliance with and that implements City laws, policies or guidelines.

ER-8.5. Ensure that all development project in San José maximize opportunities to filter, infiltrate, store and reuse or evaporate stormwater runoff onsite.

ER-8.7. Encourage stormwater reuse for beneficial uses in existing infrastructure and future development through the installation of rain barrels, cisterns, or other water storage and reuse facilities.

C. San José Municipal Code

Chapter 15.10. Water Waste Prevention and Water Shortage Measures

This chapter requires adherence to permanent water conservation measures to apply to the use of water from all sources on an on-going basis, as well as those to apply during a declared state of water shortage.

Chapter 5.11. Water Efficient Landscape Standards for New and Efficient Landscape Standards

This chapter promotes the conservation and efficient use of water, and prevents the waste of this valuable resource by regulating landscape design, installation, and maintenance consistent with the Water Conservation in Landscaping Act, California Government Code Section 65591 et seq.

Low water use landscaping

Source: City of San José, City Photos

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CHAPTER 5

Conclusion

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This chapter concludes with a high-level summary of the City's continued commitment to leadership in reducing greenhouse gas emissions through diverse policies, programs, and plans that implement the *Envision San José 2040 General Plan*.

The 2030 GHGRS includes a 2030 GHG reduction target that is grounded in an industry-approved methodology. The Plan demonstrates the City's target achievement pathway that is based on a current citywide inventory, emissions projections consistent with the General Plan growth assumptions, and the reductions estimated from implementation of the GHG strategies. The Plan shows that the City's interim 2030 target is achievable and consistent with the state's own 2030 target established in SB 32 and paves the way toward a long-term 2050 reduction goal.

The City of San José has long been a leader in environmental sustainability. The City's *Green Vision*, adopted in 2007, was one of its early initiatives linking progressive sustainability practices, economic growth, and improved quality of life. The City later won a Siemens 2011 *Sustainable Community Award* primarily for the development and implementation of the *Green Vision*. In 2018, *Climate Smart San José* updated and replaced the *Green Vision. Climate Smart San José* was built on the previous plan with an approach to encourage action from the entire community to help achieve deep carbon reductions consistent with the Paris Climate Agreement.

The City prepared and adopted its *Envision San José 2040 General Plan* in 2011-2015 to guide the future character and quality of development in the city and identify the amount, type, and phasing of development required to achieve the City's overarching social, economic, and environmental goals. As physical development and economic growth are an ongoing priority for the City, implementation of a strategic GHG reduction plan is critical to ensure that General Plan implementation aligns with the state's GHG reduction targets.

The previous GHGRS identified measures to achieve reductions consistent with the City's fair share contribution to the state's 2020 GHG target established in AB 32. The 2030 GHGRS builds upon that previous work and interweaves the various sustainability actions taken by the City since the original GHGRS. This Plan identifies opportunities for San José to continue its leadership on addressing climate change, including through a new 2030 GHG target that is consistent with the state's target set in SB 32. Importantly, the 2030 GHGRS is built upon the City's existing policies, plans, and programs to further leverage the impactful work that is underway or has already been completed.

As demonstrated by citywide GHG inventories for 2008, 2014, and 2017, the City has achieved total emissions reductions and a decline in emissions intensity on a per-service population basis over a ten-year period, even as the city's population and employment grew by more than 6 percent in the same ten-year period. This demonstrates the City's success in accommodating population and employment growth in an increasingly emissions-efficient manner, consistent with the vision and policies in the *Envision San José 2040 General Plan.*

If the current emissions trajectory seen in the trends from 2008 to 2017 continues, the City is on track to achieve its original 2020 GHG emissions target and will establish a strong path of progress toward the 2030 target. Current forecasts for the year 2030 estimate that, while the City would continue to see improved emissions intensity levels and mass emissions reductions below 2017 levels, achievement of the 2030 target will require additional emissions reductions of approximately 800,000 MT CO_2e per year. The 2030 GHGRS provides a set of strategies and additional actions that will allow the City to achieve its 2030 target by leveraging the City's existing planning efforts and its supporting policy and program frameworks.

Implementation of the strategies identified in the 2030 GHGRS is critical to the Plan's success and achievement of the City's 2030 GHG target. To ensure the objectives of this Plan come to fruition, the City is committed to:

- Monitor emissions changes over time through regular GHG inventories;
- Implement and track the impact of 2030 GHGRS strategies and actions;
- Update the GHGRS in the future as new information becomes available and the City's and state's emissions planning context continues to evolve; and
- Support development projects in their use of the Development Compliance Checklist to demonstrate consistency with the 2030 GHGRS to allow streamlining of the environmental review process as set in CEQA Guidelines Section 15183.5

In conclusion, the City's long history of environmental leadership has allowed it to also demonstrate leader in the relatively new focus area of GHG emissions reduction planning. Through continued bold actions, such as development of San José Clean Energy and a prohibition of natural gas infrastructure ordinance, the City is charting a path toward a low-emissions future and healthier communities.

San José City Hall

Source: City of San José, City Photos

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