Initial Study/Addendum

San Jose Greenhouse Gas Reduction Strategy 2030 Update

Prepared by

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

In Consultation with

DAVID J. POWERS & ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS & PLANNERS

August 2020

TABLE OF CONTENTS

Section 1.0 Acronyms and Abbreviations 3

Section 2.0 Addendum 4

2.1 Project Title 4

2.2 Lead Agency Name and Address 4

2.3 Purpose of Addendum 4

2.4 Contact Person and Phone Number 5

2.5 Description of the Project Analyzed in the 2011 FPEIR 5

Section 3.0 Environmental Setting, Checklist, and Impact Discussion 16

3.1 Aesthetics 16

3.2 Agriculture and Forestry Resources 18

3.3 Air Quality 20

3.4 Biological Resources 22

3.5 Cultural Resources 24

3.6 Energy 26

3.7 Geology and Soils 29

3.8 Greenhouse Gas Emissions 31

3.9 Hazards and Hazardous Materials 36

3.10 Hydrology and Water Quality 38

3.11 Land Use and Planning 41

3.12 Mineral Resources 43

3.13 Noise 44

3.14 Population and Housing 46

3.15 Public Services 48

3.16 Recreation 50

3.17 Transportation 52

3.18 Tribal Cultural Resources 55

3.19 Utilities and Service Systems 57

3.20 Wildfire 59

Section 4.0 References 62

Section 5.0 Lead Agency and Consultants 63

5.1 Lead Agency 63

5.2 Consultants 63

Figures

Figure 2.5-1: Progress Toward 2020 GHGRS Target 8
Figure 2.5-2: Emissions Forecasts 2017-2040 9
Figure 3.8-1: Emissions by Sector 33

Tables

Table 2.5-1: Current GHGRS GHG Target Metrics for 2020 7
Table 3.8-1: 2030 GHGRS Actions and Reduction Estimates 34
Table 3.8-2: Achievement of GHG Targets 35

Appendices

Appendix A: Greenhouse Gas Reduction Strategy 2030 Update

SECTION 1.0 ACRONYMS AND ABBREVIATIONS

Assembly Bill 32 (AB 32)

Bay Area Air Quality Management 2017 Clean Air Plan (2017 CAP)

Bay Area Air Quality Management District (BAAQMD)

California Environmental Quality Act (CEQA)

Carbon dioxide equivalent (CO_2e)

Envision San José 2040 General Plan (General Plan)

Greenhouse Gas Reduction Strategy (GHGRS)

Greenhouse gases (GHGs)

Million metric tons (MMT)

Pacific Gas and Electric Company (PG&E)

Peninsula Corridor Electrification Project (PCEP)

San José Clean Energy (SJCE)

San José Reach Code Ordinance (Reach Code)

Senate Bill (SB)

Zero Net Carbon (ZNC)

SECTION 2.0 ADDENDUM

2.1 PROJECT TITLE

The 2030 Greenhouse Gas Reduction Strategy

2.2 LEAD AGENCY NAME AND ADDRESS

City of San José
Planning, Building, and Code Enforcement Department
200 East Santa Clara Street
San Jose, CA 95113

2.3 PURPOSE OF ADDENDUM

This addendum to the Envision San José 2040 General Plan Greenhouse Gas Reduction Strategy EIR analyzes potential environmental impacts that would result from changes to the project description since certification and adoption of the EIR by the City of San José in June 2011.

Criteria for Preparation of an Addendum to the Previous EIR & CEQA Determination California Environmental Quality Act (CEQA) Guidelines, Sections 15162 and 15164, provide that an addendum to a previously certified EIR can be prepared for a project if the criteria and conditions summarized below are satisfied:

- ***No Substantial Project Changes***: There are no substantial changes proposed in the project which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.
- ***No Substantial Changes in Circumstances:*** Substantial changes have not occurred with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.
- ***No Substantial New Information:*** There is no new information of substantial importance which was not known or could not have been known at the time of the previous EIR that shows any of the following:

  a) The project will have one or more significant effects not discussed in the previous EIR;

  b) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

c) Mitigation measures or alternatives previously found not to be feasible would, in fact, be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternatives; or

d) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative

The proposed Project as revised, and as described in this addendum, does not create any of the conditions described in Section 15162 of the CEQA Guidelines that call for the preparation of a subsequent EIR. No new significant impacts would occur, and no previously examined significant effects would be substantially more severe than shown in the EIR. Thus, an addendum to the adopted EIR is the appropriate environmental documentation to analyze the potential environmental impacts that would result from the refinement to the Project description.

2.4 CONTACT PERSON AND PHONE NUMBER

Meenaxi Raval, AICP
Supervising Environmental Planner
City of San José
Planning, Building, and Code Enforcement Department
200 East Santa Clara Street, 3rd Floor
San Jose, CA 95113

2.5 DESCRIPTION OF THE PROJECT ANALYZED IN THE 2011 FPEIR

The City's Greenhouse Gas Reduction Strategy was analyzed as part of the Envision San José 2040 General Plan (General Plan) in 2011 and was amended in 2015. The City's Greenhouse Gas Reduction Strategy (GHGRS) details how the City will comply with state mandated greenhouse gas emissions reduction targets by 2020 under AB 32. In 2016, the City initiated its four-year review process as required in the General Plan. The result of that process was a reduction in the planned jobs for the City in 2040 to 751,650 jobs (an 87,800 job reduction).

2.5.1 Greenhouse Gas Reduction Strategy

The GHGRS (2011) established greenhouse gas reduction targets and proposed measures designed to reduce the City's greenhouse gas emissions levels to 1990 levels by the year 2020 in accordance with Assembly Bill 32. The following represents a summary of the measures proposed in the original GHGRS.

Built Environment and Energy Measures

- Install Energy Efficient Appliances
- Green Building Ordinance
- Green Building Incentives
- Community Energy Programs
- Establish on-site renewable energy systems – solar
- Install Higher Efficiency Public Street and Area Lighting
- Replace traffic lights with LED traffic lights

Land Use and Transportation Measures

- Increase density of development
- Increase location efficiency
- Mixed-Use developments
- Provide bike parking in non-residential projects
- Provide bike parking in Multi-unit residential projects
- Provide 100 miles of interconnected trails
- Ensure that 100 percent of fleet vehicles run on alternative fuels
- Recycling and Waste Reduction
- Use reclaimed water
- Extend recycling services

Other GHG reduction measures

- Urban tree planting
- Establish a farmer's market
- Establish community gardens

The City's greenhouse gas emissions in 2020 were estimated to be 6.2 MT Co_2e per service population which would satisfy the GHG emissions reduction goal of 6.6 MT of CO_2e per service population by 2020 under AB 32. Incorporation of the GHGRS measures was estimated to reduce the City's greenhouse gas emissions to approximately 13.45 MMT Co_2e, or 6.3 MT Co_2e per service population per year through buildout of the General Plan, a reduction of seven percent from business as usual conditions.

2.5.2 Description of the Proposed Project

2.5.2.1 *Background*

The City of San José prepared its first GHGRS in conjunction with the Envision San José 2040 General Plan process in 2011 to ensure that implementation of the General Plan aligned with the implementation requirements of AB 32. Table 1.5-1 summarizes the current GHGRS reduction targets for 2020.

Table 2.5-1: Current GHGRS GHG Target Metrics for 2020		
	Value	**Units**
Mass Emissions Target	10,890,000	MT CO_2e
Service Population Projection	1,650,000	Resident + Jobs
Emissions Intensity Target = Mass Emissions ÷ Service Population	6.6	MT Co_2e per service population

In 2015, the City of San José adopted a Supplemental PEIR to reevaluate the projected greenhouse gas emissions impacts of implementation of the City of San José's 2040 General Plan. No changes to the 2040 General Plan land use and transportation assumptions were proposed at that time from what was previously evaluated in the 2040 General Plan Final PEIR (2011). The Supplemental PEIR included an analysis of the Envision San José 2040 General Plan for consistency with the emission reduction measures applicable to local governments as provided in the December 2008 Climate Change Scoping Plan from the California Air Resources Board, and the 2014 Scoping Plan Update, as relevant. It also included an analysis of greenhouse gas emissions from the planning area by comparing citywide baseline emissions of 7.6 million metric tons (MMT) in 2008 with citywide projected emissions in 2035 and a determination in good faith whether a cumulatively significant contribution to global climate change would result.

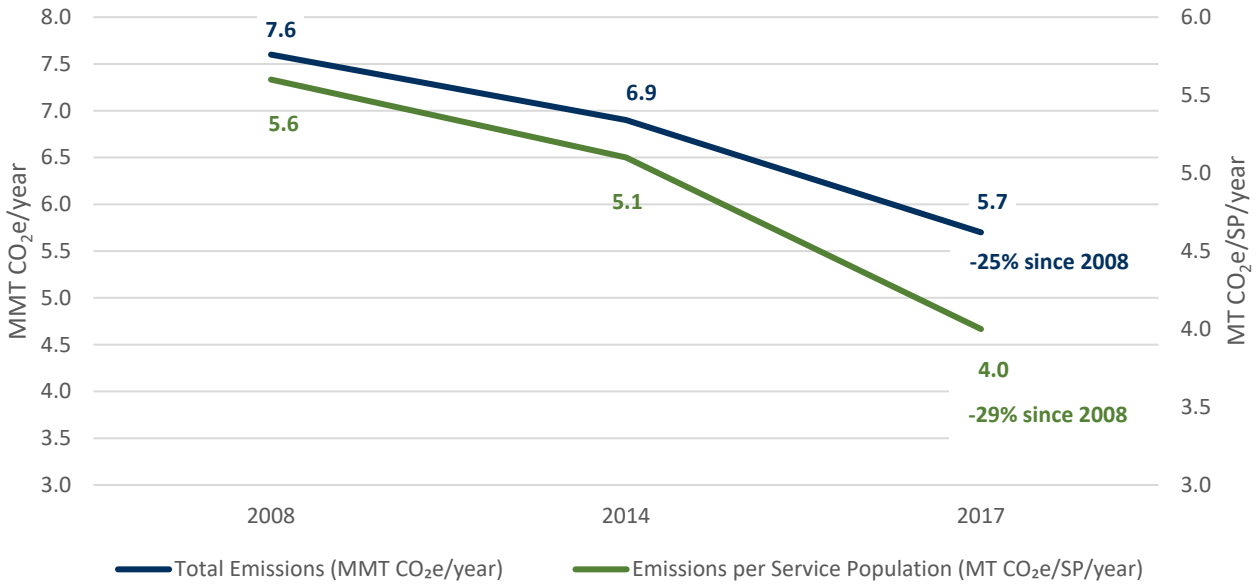
Executive Order S-3-05 (EO S-3-05) was issued in 2005 and established a long-term GHG emission reduction targets for California by 2050, the state would reduce GHG emissions to 80 percent below 1990 levels. The long-term 2050 target represents the level scientists believe is necessary to reach atmospheric GHG concentrations (below 350 ppm CO2e) that will stabilize climate change. The 2015 Supplemental PEIR found significant cumulative greenhouse gas emissions projected for 2035 (in total, compared to 2008, and as an average carbon efficiency) could prevent the State of California from maintaining a statewide trajectory to achieve Executive Order S-3-05 emission levels in 2050. Mitigation measures, in the form of additional policies to be implemented by the City, were identified; however, given the uncertainties of achieving the needed emission reductions, the identified significant impacts were determined to be significant and unavoidable. The achievement of the 2050 GHG reduction goals requires an aggressive multiple-pronged approach that includes policy decisions and additional emission controls at the federal and state level, new and substantially advanced technologies, and substantial behavioral changes to reduce single occupant vehicle trips—especially to and from workplaces. Future policy and regulatory decisions by other agencies (such as CARB, California Public Utilities Commission, California Energy Commission, MTC, and BAAQMD) and technological advances are outside the City's control, and therefore could not be

relied upon as feasible mitigation strategies at the time of the latest revisions to the GHG Reduction Strategy (2015).

The Supplemental PEIR was certified by the City Council in December 2015 and the Greenhouse Gas Reduction Strategy adopted. Since adoption, individual development projects in San José that would be constructed by 2020 and comply with this qualified Greenhouse Gas Reduction Strategy may be considered to reduce a project's contribution to cumulative greenhouse gas emission impacts to a less than significant level (through 2020).

Between 2008 and 2017, San José experienced population growth of approximately 6.5 percent, while annual communitywide GHG emissions concurrently decreased by 25 percent. As shown in Figure 2.5-1, this resulted in a GHG emissions intensity of 4.0 MT CO_2e per service population in 2017, which is below the City's established 2020 GHG target of 6.6 MT CO_2e per service population. The reductions were primarily due to decreased emissions in the energy sector.

Figure 2.5-1: Progress Toward 2020 GHGRS Target

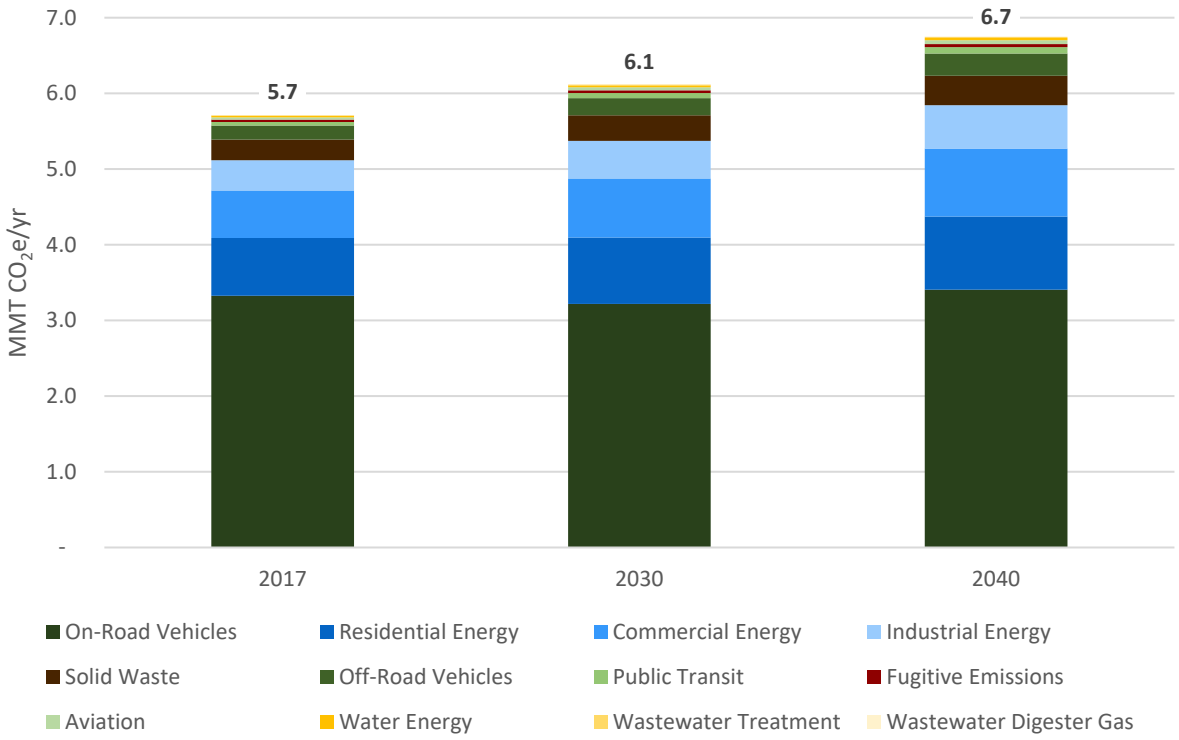


Source: AECOM, 2030 GHGRS

Progress Toward 2030 Goal

A GHG inventory was conducted using 2017 data to establish a benchmark year from which to further develop emissions' forecasts and targets through 2030. Based on current guidance from the Air Resources Board and the Governor's Office of Planning and Research, the City has set a 2030 target of 2.94 MT CO_2e per service population by 2030, which equates to a total emissions level of approximately 5.3 million MT CO_2e/year in 2030. This 2030 target is an interim goal under SB 32 which requires that a 40 percent reduction from the 1990 levels is considered as a necessary interim target to ensure that the state meets its long-term goal or reductions to 80 percent below 1990 levels by the year 2050. Figure 2.5-2 shows San José's most recent GHG inventory (2017) and projected GHG emissions in 2030 and 2040, without implementation of the proposed 2030 GHGRS.

Figure 2.5-2: Emissions Forecasts 2017-2040



Source: AECOM, 2030 GHGRS

As shown in Figure 1.5-2 above, without additional GHG reduction measures, emissions are estimated to increase by seven percent from 2017-2030 to 6.1 million MT CO_2e/service population, 0.8 million MT CO_2e/service population above the City's Target of 5.3 million MT CO_2e/year in 2030. Based on the forecast GHG emissions levels above, the City has developed the following measures to achieve the 2030 GHG emissions target.

2.5.2.2 *Proposed 2030 GHGRS*

The 2030 Greenhouse Gas Reduction Strategy (proposed project) establishes greenhouse gas reduction targets and proposed measures designed to reduce the City's greenhouse gas emissions levels to 40 percent below 1990 levels by the year 2030 in accordance with Assembly Bill 32 (AB 32).

Several greenhouse gas reduction measures included in the proposed project are derived from adopted policy documents that are being implemented citywide. Although the GHGRS 2030 addresses GHG emissions from new construction, it would also require emissions reductions from the current built environment. The following list provides a summary of the greenhouse gas reduction measures proposed in the 2030 GHGRS along with an explanation of the previously published and adopted policy documents from which they originate.

San José Clean Energy (SJCE)

Created by City Council in May 2017, San José Clean Energy (SJCE) is San José's newest electricity service supplier. Two years after its creation, SJCE launched its service in February 2019, providing renewably sourced electric energy to residential and commercial customers in San José. SJCE is the default electricity provider to residential and commercial customers.

Under the proposed project, it is estimated that 98 percent of San José customers would participate in SJCE and that 100 percent of electricity supplied through SJCE will be renewable or GHG-free by 2030. Implementation of this action will be achieved through continuing to increase the emissions-free content program provided in the Greensource Program until 100 percent emissions-free energy is achieved; collecting information on participation rates in each program option to support GHGRS monitoring efforts; and continually evaluating financial incentives and other offerings that encourage customers to pursue improvements in building energy efficiency, electrification of building appliances and equipment, and purchase of electric vehicles.

Origin Policy: CSSJ Strategy 1.1

- Transition to a renewable energy future through implementation of SJCE – switching commercial and residential customers to electric service through SJCE will reduce emissions because SJCE is powered by renewable sources.

Zero Net Energy Residential Construction

Zero Net Energy Residential Construction is a building energy efficiency goal set by the California Public Utilities Commission in 2015 that calls for all new residential buildings to produce as much energy on-site (from renewable sources such as solar) as the building consumes. The City of San José anticipates this new generation of buildings will be predominately multi-family and built in the City's Urban Villages.

Under the proposed project, it is estimated that 50 percent of new residential construction from 2020 to 2030 would achieve zero-net energy use. Implementation of this action will be achieved through continuing to implement the City's Reach Code and natural gas infrastructure ordinance; providing 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 during the permitting process; establishing a monitoring process to track the number of zero net energy residential units constructed in the city; developing and sharing case studies of zero net energy residential projects in the city to promote knowledge sharing and development of solutions to common project challenges; and developing additional City resources to help overcome these challenges, such as additional rebates or other financial incentives to be offered through SJCE. One such effort is Electrify San José, a new program that will

provide incentives for households to switch from a natural gas water heater to an electric heat pump water heater and get one step closer to Zero Net Carbon (ZNC).[1]

Origin Policy: California Energy Efficiency Strategic Plan

- Adopted by California Public Utilities Commission on June 9, 2015, the strategic plan outlines an intent to upgrade Title 24 to promote Zero Net Energy residential buildings from 2020 onwards.

Origin Policy: CSSJ Strategy 2.2

- Make homes efficient and affordable for our residents and families who live in newly constructed ZNE buildings can use these features right away, phasing improvements in our existing stock of residential homes.

Origin Policy: General Plan Goal MS-14

- Reduce per capita energy consumption by at least 50 percent compared to 2008 levels by 2022 and maintain or reduce net aggregate energy consumption levels equivalent to the 2022 green vision level through 2040.

Renewable Energy Development

Installation of solar photovoltaic facilities through San José since 2011 is estimated to have the capacity to generate 195.9 megawatts of electric power for the city (estimated in 2017). Under the proposed project, 472.1 net new megawatts of solar PV would be installed between 2017 and 2030. The increase in solar PVs represents a 10.5 percent annual increase through 2030 for a total of 668 megawatts.

Implementation of this action will be achieved through evaluating and implementing a feed-in tariff program administered through SJCE that allows customers to sell rooftop solar energy back to the grid; developing a suite of incentives and technical assistance to sustain rates of local solar development as federal tax credit and other programs expire; facilitating development of community solar programs to provide solar energy benefits citywide to customers with barriers to direct installation; and monitoring annual solar capacity installations to compare progress against this action's performance standard and provide further incentives as necessary to meet the target.

Origin Policy: CSSJ Strategy 1.1

- Transition to a renewable energy future through implementation of SJCE – switching commercial and residential customers to electric service through SJCE will reduce emissions because SJCE is powered through renewable energy.

[1] City of San José. "Electrify San José." Accessed February 14, 2020. https://www.sanjoseca.gov/your-government/departments/environmental-services/climate-smart-san-jos/zero-net-carbon-buildings

Origin Policy: General Plan Goal MS-2

- Maximize the use of green building practices in new and existing development to maximize energy efficiency and conservation and to maximize the use of renewable energy sources.

Existing Building Retrofits – Natural Gas

Existing buildings would receive upgrades and improvements including installing thermal insulation into loft spaces and wall cavities to reduce cooling and heating costs, enhance natural ventilation, and reduce electrical loads from home appliances.

Under the proposed project, it is estimated that there would be a four percent reduction in natural gas use below 2017 levels. Implementation of this action will be achieved through participation in the State's forthcoming policies or programs in support of SB 350, which calls for doubling energy efficiency savings from electricity and natural gas end uses; continuing to expand program and incentive offerings through SJCE that support a market transformation toward high-efficiency buildings and electrification of building systems; and collecting communitywide natural gas use data annually from the City's natural gas provider to monitor fuel consumption trends over time by end user type.

Origin Policy: Senate Bill 350

- Increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. Requires the state to double statewide energy efficiency savings in electricity and natural gas end uses by 2030.

Origin Policy: CSSJ Strategy 2.2

- Plans for retrofits to existing residential buildings including installation of thermal insulation into loft spaces and wall cavities to reduce heating costs, enhance natural ventilation to reduce air conditioning demand, reduce electrical load from home energy appliances with more efficient equipment or smart homes, and home electrification.

Origin Policy: General Plan Goal MS-2

- Maximize the use of green building practices in new and existing development to maximize energy efficiency and conservation and to maximize the use of renewable energy sources.

Zero Waste Goal

This measure calls for diversion of 100 percent of solid waste generated within the city away from landfills. Under the proposed project, 90 percent of solid waste would be diverted from landfills in 2030.

Implementation of this action will be achieved through development and implementation of a single-family residential organic waste diversion program that diverts food waste from landfills; development of a local waste characterization study to identify additional diversion strategies or enhancements; continuation and enhancement of the public outreach programming that provides residents with strategies for household waste reduction, including from food waste and shipping and packaging; increases in participation from local businesses in Santa Clara County's "A La Carte" Food Rescue Initiative; and monitoring waste diversion rates annually to demonstrate progress toward this action's performance standards.

Origin Policy: General Plan Goal MS-5

- Divert 100 percent of waste from landfills by 2022 and maintain 100 percent diversion through 2040.

Origin Policy: Council Resolution 74077

- City became a signatory of the United Nations World Environment Day, Urban Environmental Accords which includes a waste diversion goal of 75 percent diverted from landfills by 2013 and 100 percent diverted from landfills by 2022.

<u>Caltrain Modernization Project</u>

This measure involves electrification upgrades to existing infrastructure and vehicles on the Caltrain Peninsula Corridor. Under the proposed project, Caltrain plans to convert 75 percent of diesel trains to electric powered by Pacific Gas & Electric Company (PG&E) grid, resulting in approximately 33,000 daily VMT reductions (approximately 9.5 percent) in San José from increased Caltrain daily ridership.

City implementation of this action will be achieved through continuation of the partnership with Caltrain on future modernization projects; continuing the integration of land use and transportation planning in the city through General Plan policies and the land use diagram to support increased ridership in the city's stations; and partnership with Caltrain to collect ridership estimates and/or VMT reduction estimates associated with project implementation to support action monitoring.

Origin Policy: CSSJ Strategy 2.4

- Develop Integrated, Accessible Public Transport Infrastructure.
- Caltrain Electrification. FTA approved funds for Peninsula Corridor Electrification Project estimated to be complete in 2021 will boost ridership by 21 percent through increased train frequency.

<u>Water Conservation</u>

This policy involves reduction of commercial and residential water demand through several actions in new and existing properties. Under the proposed project, water consumption in San José would be reduced 12 percent below 2017 levels to 107 million gallons per day in 2030.

Implementation of this action will be achieved through implementation of the Climate Smart San José Action 1.2 – Embrace our California Climate to provide water conservation in residential and commercial buildings by increased access to recycled water, and exploring regional green infrastructure options for stormwater; encouraging water conservation among SJCE customers through technical assistance, rebates, and other incentives; and partnering with the City's water providers to monitor per capita water consumption to demonstrate progress toward this action's performance standard.

Origin Policy: CSSJ Strategy 1.2

- Reduce overall water consumption through replacing water intense landscaping with drought tolerant plants, low water use fixtures and auto shutoff fixtures, harvest rainwater in residential projects and use green infrastructure

Origin Policy: General Plan Goal MS-3

- Maximize the use of green building practices in new and existing development to minimize use of potable water and to reduce water pollution

2.5.3 Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

On July 9, 2018, a representative of the Ohlone Indian Tribe, Inc., requested notification of projects in accordance with Public Resources Code Section 21080.3.1 subd (b). In response to a more specific verbal request in a meeting with City staff and the Ohlone Indian Tribe, Inc. representative on July 12, 2018, clarification was received that such notification be sent only for projects in the City of San José that involve ground-disturbing activities, and that such requests may be sent via e-mail only for future projects that require a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report. As discussed below, the proposed project is a policy direction setting the target for GHG reductions by 2030. It is a programmatic analysis under CEQA and qualifies for an Addendum to the General Plan FPEIR and would not involve ground-disturbing activities (refer to Section 3.18 Tribal Cultural Resources).

2.5.4 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☒	Aesthetics	☒	Agriculture and Forestry Resources	☒	Air Quality
☒	Biological Resources	☒	Cultural Resources	☒	Energy
☒	Geology /Soils	☒	Greenhouse Gas Emissions	☒	Hazards & Hazardous Materials
☒	Hydrology / Water Quality	☒	Land Use / Planning	☒	Mineral Resources
☒	Noise	☒	Population / Housing	☒	Public Services
☒	Recreation	☒	Transportation	☒	Tribal Cultural Resources
☒	Utilities / Service Systems	☒	Wildfire	☒	Mandatory Findings of Significance

2.5.5 Determination

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☒ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature Date

SECTION 3.0 ENVIRONMENTAL SETTING, CHECKLIST, AND IMPACT DISCUSSION

3.1 AESTHETICS

3.1.1 Environmental Setting

3.1.1.1 *Changes to the Regulatory Framework*

There have been no substantive changes to the regulatory framework for aesthetic conditions.

3.1.1.2 *Changes to the Environmental Conditions*

There have been no substantive changes to the environmental conditions for aesthetics.

3.1.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
1) *Have a substantial adverse effect on a scenic vista?*	☐	☐	☐	☒	☐
2) *Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*	☐	☐	☐	☒	☐
3) *Conflict with applicable zoning and other regulations governing scenic quality?*	☐	☐	☐	☒	☐
4) *Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*	☐	☐	☐	☒	☐

3.1.2.1 *Response*

Implementation of the Proposed 2030 GHGRS would occur within urban environments as part of the development review process. This planning process also examines consistency with all applicable zoning and other regulations concerning scenic quality.

Renewable Energy Development and Zero Net Energy Residential Construction

Implementation of the proposed Renewable Energy Development and Zero Net Energy Residential Construction actions could involve installation of solar panels which could obstruct scenic vistas and create new sources of glare. Impacts of development on scenic resources and light and glare were analyzed in Section 3.12 of the General Plan FPEIR.

The General Plan FPEIR concluded that implementation of General Plan policies would substantially reduce potential impacts to scenic resources on hillsides through careful siting and design. Furthermore, the General Plan FPEIR concluded that discretionary review of development projects will include design review to ensure consistency with the City's Design Guidelines. Application of the City's policies, design guidelines, and lighting standards would ensure reduction to and management of lighting and glare at a less than significant level.

Other Actions

The City's role in implementation of the Caltrain Modernization action would involve encouraging density near train stations. The aesthetic impacts associated with such increased density near transit were previously analyzed in the General Plan FPEIR and determined to be less than significant with the implementation of General Plan policies and existing regulations.

Implementation of the Existing Building Retrofits for Natural Gas action would facilitate interior alterations to existing properties and would not result in significant aesthetics impacts beyond that already analyzed in the General Plan FPEIR.

Conversion of residential and commercial electricity service from PG&E to SJCE has already occurred and implementation of the proposed project would not involve any physical changes to the environment which would result in significant adverse aesthetics impacts.

Implementation of the proposed zero waste goal and water conservation actions would increase the efficiency and restrict the use of existing resources and would not result in physical changes affecting aesthetic resources.

3.1.2.2 *Conclusion*

The proposed 2030 GHGRS would not result in any new or substantially more severe aesthetics impacts than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.2 AGRICULTURE AND FORESTRY RESOURCES

3.2.1 Environmental Setting

3.2.1.1 *Changes to the Regulatory Framework*

There have been no substantive changes to the regulatory framework for agriculture and forest resources.

3.2.1.2 *Changes to the Environmental Conditions*

There have been no substantive changes to the environmental conditions for agriculture and forest resources.

3.2.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
1) *Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*	☐	☐	☐	☒	☐
2) *Conflict with existing zoning for agricultural use, or a Williamson Act contract?*	☐	☐	☐	☒	☐
3) *Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?*	☐	☐	☐	☒	☐
4) *Result in a loss of forest land or conversion of forest land to non-forest use?*	☐	☐	☐	☒	☐

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
5) *Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?*	☐	☐	☐	☒	☐

3.2.2.1 *Response*

Agricultural Resources

The proposed project would involve implementation actions which would reduce citywide GHG emissions to achieve state mandated reduction goals. Proposed actions would occur within existing buildings and developed areas of the city and would not result in new impacts to Prime Farmland within the City Limits of San José. The proposed actions will occur within existing developed areas of the city and would not directly or indirectly affect additional Prime Farmland within the City or surrounding areas of Santa Clara County.

Forest Resources

There is no land within the City of San José's Urban Service Area that meets the State of California definition of forest land or that is zoned for forestry uses.

3.2.2.2 *Conclusion*

The proposed 2030 GHGRS would not result in any new or substantially more severe agricultural and forestry resources impacts than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.3 AIR QUALITY

3.3.1 Environmental Setting

3.3.1.1 *Changes to the Regulatory Framework*

Clean Air Plan (2017)

In 2017, the Bay Area Air Quality Management District (BAAQMD), the agency primarily responsible for assuring that the federal and state ambient air quality standards are maintained in the San Francisco Bay Area, issued an update to the air quality plan for the Bay Area Air Basin. The Bay Area 2017 Clean Air Plan (2017 CAP) focuses on two related BAAQMD goals: protecting public health and protecting the climate. To protect public health, the 2017 CAP describes how BAAQMD will continue its progress toward attaining state and federal air quality standards and eliminating health risk disparities from exposure to air pollution among Bay Area communities. To protect the climate, the 2017 CAP includes control measures designed to reduce emissions of methane and other super-greenhouse gases (GHGs) that are potent climate pollutants in the near-term, and to decrease emissions of carbon dioxide by reducing fossil fuel combustion.[2]

3.3.1.2 *Existing Conditions*

BAAQMD continues to monitor trends in air pollution through measurements at regional air monitoring locations. Ozone and particulate matter remain criteria pollutants of concern along with community risks associated with toxic air contaminant emissions.

3.3.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
1) *Conflict with or obstruct implementation of the applicable air quality plan?*	☐	☐	☐	☒	☐
2) *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?*	☐	☐	☐	☒	☐

[2] BAAQMD. *Final 2017 Clean Air Plan.* April 19, 2017. http://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans.

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
3) *Expose sensitive receptors to substantial pollutant concentrations?*	☐	☐	☐	☒	☐
4) *Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?*	☐	☐	☐	☒	☐

3.3.2.1 *Response*

Existing Building Retrofits – Natural Gas

Air quality impacts associated with renovation of existing buildings were previously analyzed in the General Plan FPEIR and determined to be less than significant with implementation of standard conditions of approval and existing regulations.

Caltrain Modernization

Implementation of the Caltrain Modernization action would involve encouraging density near train stations. The air quality impacts associated with such increased density near transit were previously analyzed in the General Plan FPEIR and were found to be significant and unavoidable with the implementation of General Plan policies, regulations, and programs. Thus, impacts would be the same as previously analyzed in the General Plan FPEIR.

Other Actions

The proposed SJCE, Zero Net Energy, Renewable Energy Development, Zero Waste, and Water Conservation actions were previously analyzed in the General Plan FPEIR and, therefore the GHGRS 2030 would not result in any new impact on air quality.

3.3.2.2 *Conclusions*

The proposed 2030 GHGRS would not result in any new or substantially more severe air quality impacts than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.4 BIOLOGICAL RESOURCES

3.4.1 Environmental Setting

3.4.1.1 *Changes in the Regulatory Framework*

There have been no substantive changes to the regulatory framework for biological resources in the General Plan FPEIR, as amended.

3.4.1.2 *Changes to the Environmental Conditions*

There have been no significant changes to the environment with respect to biological resources.

3.4.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
1) *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or United States Fish and Wildlife Service (USFWS)?*	☐	☐	☐	☒	☐
2) *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS?*	☐	☐	☐	☒	☐
3) *Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*	☐	☐	☐	☒	☐

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
4) *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, impede the use of native wildlife nursery sites?*	☐	☐	☐	☒	☐
5) *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*	☐	☐	☐	☒	☐
6) *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*	☐	☐	☐	☒	☐

3.4.2.1 *Response*

The actions proposed in the 2030 GHGRS would not change the areas of the city in which new development or redevelopment would occur or allow development closer to sensitive habitats or habitats occupied by special status plant or wildlife species. It would not change policies or Municipal Code requirements designed to protect riparian habitats or maintain the health of the City's urban forest.

The Habitat Plan assumes that all projects within the plan area within San José will comply with the provisions of the Habitat Plan, including payment of fees to establish management preserves designed to offset the effects of development in San José on serpentine grasslands and serpentine species. The Habitat Plan adopted by the City in 2013 and analyzed in the ESJ General Plan Four-Year EIR Addendum was concluded to be a new less than significant impact. Therefore, compared to the analysis in the General Plan FPEIR, as amended, conformance with the GHGRS 2030 would not conflict with nor result in a new impact to the Habitat Plan.

3.4.2.2 *Conclusion*

The proposed 2030 GHGRS would not result in any new or substantially more severe biological resources impacts than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.5 CULTURAL RESOURCES

3.5.1 Environmental Setting

3.5.1.1 *Changes in the Regulatory Framework*

There have been no substantive changes to the regulatory framework for cultural resources in the General Plan FPEIR, as amended.

3.5.1.2 *Changes to the Environmental Conditions*

Since adoption of the General Plan, one historic resource, the Flames Restaurant at 449 South Winchester Boulevard, has been demolished within San José.[3]

3.5.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
1) *Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5?*	☐	☐	☐	☒	☐
2) *Cause a substantial adverse change in the significance of an archaeological resource as pursuant to CEQA Guidelines Section 15064.5?*	☐	☐	☐	☒	☐
3) *Disturb any human remains, including those interred outside of dedicated cemeteries?*	☐	☐	☐	☐	☒

3.5.2.1 *Response*

Existing Building Retrofits – Natural Gas, Renewable Energy Development, Zero Net Energy Residential Construction

Cultural resources impacts associated with development and redevelopment of existing buildings were previously analyzed in the General Plan FPEIR and determined to be less than significant with implementation of standard conditions of approval and compliance with Design Guidelines and existing state and local regulations at a programmatic level. The proposed project would involve implementation actions which would reduce citywide GHG emissions to achieve state mandated

[3] City of San José. Online Permit Center, Demolition Permit PD18-045. July 29, 2019.

reduction goals. Proposed actions would occur within existing buildings and developed areas of the city and would not result in new impacts to cultural resources not previously considered in the General Plan FPEIR. Project level cultural resources impacts are examined through project-level CEQA reviews. Retrofits of existing development would be subject to City permitting requirements and processes and reviewed for consistency with the City's Historic Preservation Ordinance, Guide for Preserving San José Homes, and applicable historic district design guidelines which would ensure retrofits of existing development would not result in significant impacts to adjacent development.

Other Actions

Implementation of the SJCE and Zero Waste Goal action would not involve alteration and/or demolition of existing structures or ground disturbing activities; for this reason, impacts to cultural resources would be less than significant.

Implementation of the Caltrain Modernization action would involve encouraging density near train stations. The cultural resources impacts associated with such increased density near transit were previously analyzed in the General Plan FPEIR and found not to result in significant impacts with the implementation of General Plan polices and existing regulations.

Ground disturbance associated with Water Conservation actions, such as extension of reclaimed water pipelines, would be subject to General Plan policies requiring review of potential archaeological resources and monitoring, as needed.

3.5.2.2 *Conclusions*

The proposed 2030 GHGRS would not result in any new or substantially more severe cultural resources impacts than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.6 ENERGY

3.6.1 Environmental Setting

3.6.1.1 *Changes in the Regulatory Framework*

Building Codes

At the state level, the Energy Efficiency Standards for Residential and Nonresidential buildings, as specified in Title 24, Park 6, of the California Code of Regulations (Title 24), were established in 1978 in response to legislative mandate to reduce California's energy consumption. Title 24 is updated approximately every three years. The 2019 Standards will continue to improve upon the 2016 Standards for construction of, and additions and alterations to, residential and nonresidential buildings. The effective date of the 2019 Standards is January 1, 2020. Compliance with Title 24 is mandatory at the time new building permits are issued by city and county governments.

Climate Smart San José

Approved by the City Council in February 2018, Climate Smart San José utilizes a people-focused approach, encouraging the entire San José community to join an ambitious campaign to reduce greenhouse gas emissions, save water and improve quality of life. The adoption of Climate Smart San José made San José one of the first U.S. cities to chart a path to achieving the greenhouse gas emissions reductions contained in the international Paris Agreement on climate change. Climate Smart San José focuses on three areas: energy, mobility, and water. Climate Smart San José encompasses nine overarching strategies:

- Transition to a renewable energy future
- Embrace our California climate
- Densify our city to accommodate our future neighbors
- Make homes efficient and affordable for families
- Create clean, personalized mobility choices
- Develop integrated, accessible public transport infrastructure
- Create local jobs in our city to reduce vehicle miles traveled
- Improve our commercial building stock
- Make commercial goods movement clean and efficient

3.6.1.2 *Changes in the Environmental Conditions*

In February 2018, the City of San José launched SJCE, the newest electricity provider for residents and businesses in the City of San José. SJCE sources the electricity and the PG&E delivers it to customers over their existing utility lines. SJCE customers are automatically enrolled in the GreenSource program, which currently provides 80 percent GHG emission-free electricity.

Customers can choose to enroll in SJCE's TotalGreen program at any time to receive 100 percent GHG emission-free electricity from entirely renewable sources.

3.6.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
1) *Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources, during project construction or operation?*	☐	☐	☐	☒	☐
2) *Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?*	☐	☐	☐	☒	☐

3.6.2.1 *Response*

Caltrain Modernization

Implementation of the proposed Caltrain Modernization action would involve encouraging density near train stations. The energy impacts associated with such increased density near transit were previously analyzed in the General Plan FPEIR and determined to be less than significant. Thus, impacts would be the same as previously analyzed in the General Plan FPEIR.

Existing Building Retrofits – Natural Gas

Energy impacts associated with development and redevelopment of existing buildings were previously analyzed in Section 3.13 of the General Plan FPEIR and determined to be less than significant impacts with respect to energy resources. Therefore, impacts would be the same as the approved project.

Other Actions

The proposed SJCE, Zero Net Energy Development, Renewable Energy Development, Zero Waste Goal, and Water Conservation actions were previously analyzed in Section 3.13 of the General Plan FPEIR and determined to be less than significant impacts with respect to energy resources. Therefore, impacts would be the same as the approved project.

3.6.2.2 *Conclusion*

The proposed 2030 GHGRS would not result in any new or substantially more severe energy impacts than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.7 GEOLOGY AND SOILS

3.7.1 Environmental Setting

3.7.1.1 *Changes to the Regulatory Framework*

The regulatory framework, in terms of Building Code requirements and required Geological Hazards Clearance and erosion control, in the City of San José is similar to that at the time of certification of the General Plan FPEIR.

3.7.1.2 *Changes to the Environmental Conditions*

Overall, the geologic and soils conditions in the city have not changed since adoption of the Envision San José 2040 General Plan.

3.7.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
1) *Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:*					
– *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42)?*	☐	☐	☐	☒	☐
– *Strong seismic ground shaking?*	☐	☐	☐	☒	☐
– *Seismic-related ground failure, including liquefaction?*	☐	☐	☐	☒	☐
– *Landslides?*	☐	☐	☐	☒	☐
2) *Result in substantial soil erosion or the loss of topsoil?*	☐	☐	☐	☒	☐

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
3) *Be located on a geologic unit or soil that is unstable, or that will become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?*	☐	☐	☐	☒	☐
4) *Be located on expansive soil, as defined in the current California Building Code, creating substantial direct or indirect risks to life or property?*	☐	☐	☐	☒	☐
5) *Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?*	☐	☐	☐	☒	☐
6) *Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?*	☐	☐	☐	☒	

3.7.2.1 *Response*

Implementation of the proposed 2030 GHGRS would not change the areas of the City in which new development or redevelopment would occur or allow development on steeper slopes prone to landslides or other hazardous areas. It would not change policies or Municipal Code requirements designed to reduce substantial risks to people, structures, or infrastructure from geologic hazards.

3.7.3 Conclusions

The proposed 2030 GHGRS would not result in any new or substantially more severe geology and soils impacts than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as the Approved Project)**

3.8 GREENHOUSE GAS EMISSIONS

The following discussion is based on the 2030 Greenhouse Gas Reduction Strategy and Greenhouse Gas Reduction Strategy GHG Actions Memo prepared by AECOM and included as Appendices A in this Addendum.

3.8.1 Environmental Setting

3.8.1.1 *Regulatory Framework*

State

Executive Order S-3-05

Governor Arnold Schwarzenegger issued Executive Order S-3-05 (EO S-3-05) in 2005 establishing the following near-term, mid-term, and long-term GHG emission reduction targets for California:

- by 2010, reduce GHG emissions to 2000 levels;
- by 2020, reduce GHG emissions to 1990 levels;
- by 2050, reduce GHG emissions to 80 percent below 1990 levels.

The long-term 2050 target represents the level scientists believe is necessary to reach atmospheric GHG concentrations (below 350 ppm CO_2e) that will stabilize climate change. 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.

Senate Bill 32

In 2016, Senate Bill (SB) 32 was signed into law, amending the California Global Warming Solution Act. SB 32, and accompanying Executive Order B-30-15, require CARB to ensure that statewide GHG emissions are reduced to 40 percent below the 1990 level by 2030. CARB updated its Climate Change Scoping Plan in December of 2017 to express the 2030 statewide target in terms of million metric tons of CO_2E ($MMTCO_2e$). Based on the emissions reductions directed by SB 32, the annual 2030 statewide target emissions level for California is 260 $MMTCO_2e$.

Regional and Local

2017 Clean Air Plan

To protect the climate, the 2017 CAP (prepared by BAAQMD) includes control measures designed to reduce emissions of methane and other super-GHGs that are potent climate pollutants in the near-term, and to decrease emissions of carbon dioxide by reducing fossil fuel combustion.

Climate Smart San José

In February 2018, the City of San Jose adopted the Climate Smart San José Plan as a guide for the City to reduce air pollution, save water, and create a healthier community. The plan contains nine strategies to reduce carbon emissions consistent with the Paris Climate Agreement. These strategies include use of renewable energy, densification of neighborhoods, electrification and sharing of vehicle fleets, investments in public infrastructure, creating local jobs, and improving building energy-efficiency.

Reach Building Code

In 2019, the San José City Council approved Ordinance No. 30311 and adopted the Reach Code Ordinance (Reach Code) to reduce energy-related GHG emissions consistent with the goals of Climate Smart San José. The Reach Code applies to new construction projects in San Jose. It requires new residential construction to be outfitted with entirely electric fixtures. Mixed-fuel buildings (i.e., use of natural gas) are required to demonstrate increased energy efficiency through a higher Energy Design Ratings and be electrification ready. In addition, the Reach Code requires EV charging infrastructure for all building types (above current CALGreen requirements), and solar readiness for non-residential buildings.

Transportation Analysis Policy (City Council Policy 5-1)

As established in City Council Policy 5-1, Transportation Analysis Policy, the City of San José uses VMT as the metric to assess transportation impacts from new development. When adopted in February 2018, this regulatory change established a new threshold for CEQA significance and incentivized infill development and projects that are accessible via mass transit and active modes of travel, contributing to a reduction in GHG emission from transportation.

ADU Ordinance Updates

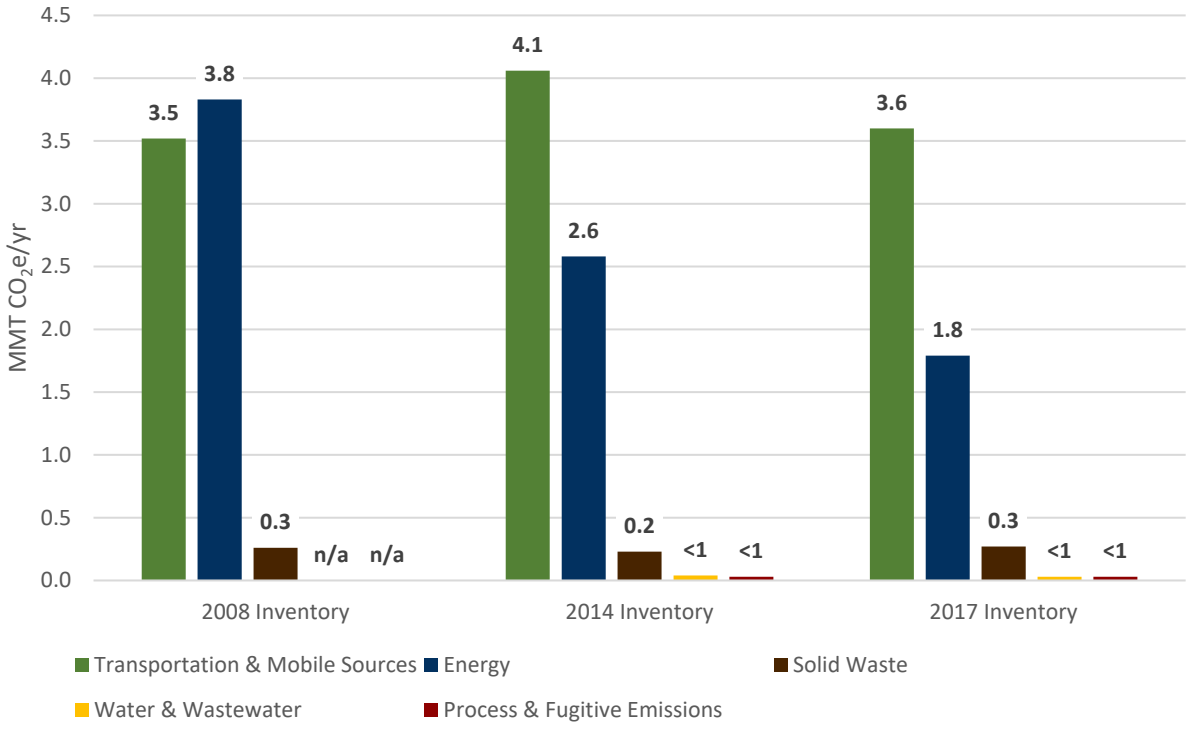
The San José City Council approved two rounds of updates to the Zoning Code in 2018 and 2019 to ease the requirements for ADUs and to align with new California State laws that went into effect on January 1, 2020. These ordinance updates allow for intensification of development within existing developed areas of the city, increasing affordable housing opportunities closer to jobs and reducing GHG emissions from transportation.

3.8.1.2 *Changes to the Environmental Conditions*

In accordance with General Plan Implementation Policy IP-2.4, an inventory of San José community-wide GHG emissions and a comparison to the 2008 inventory prepared for the General Plan FPEIR is provided in Appendix A. A summary of the results of the inventory is provided below. Details on the methodologies used for estimating emissions in the energy, transportation, water and waste sectors are provided in Appendix A.

GHG emissions in 2017 totaled an estimated 5.7 million metric tons (MMT) of carbon dioxide equivalent (CO_2e). In contrast, San José's communitywide inventory in 2014 totaled 6.9 MMT CO_2e, and in 2008 totaled 7.6 MMT CO_2e. Total emissions and a breakdown by sector is provided in Figure 3.8-1.

Figure 3.8-1: Emissions by Sector



Source: AECOM, 2030 GHGRS

In 2017, more than half of the emissions were associated with transportation and vehicular use. Approximately one-third was from energy use in the built environment (e.g., electricity and natural gas). Together these two sectors, transportation and energy make up 90 percent of total emissions. Compared to 2008, total transportation emissions increased by 3 percent and total energy emissions decreased by 53 percent.

In 2017, waste sector emissions were approximately five percent of total emissions, and potable water consumption, at less than one MMT CO_2e provides the remaining GHG emissions. Water supply emissions were not separately estimated in 2008.

The decrease in energy emissions in 2017 compared with 2014 and 2008 is associated with implementation of energy efficiency programs, such as Title 24 of the Building Code, and use of electricity sources with lower GHG emissions. Transportation emissions decreased as a result of reduced annual VMT, reduced single vehicle occupancy, updated methodology for rail emissions and off-road vehicle and equipment emissions, and improved vehicle efficiency. Since 2008, the service population has increased 6.5 percent.

3.8.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
1) *Generate greenhouse gas (GHG) emissions, either directly or indirectly, that may have a significant impact on the environment?*	☐	☐	☐	☐	☒
2) *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?*	☐	☐	☐	☐	☒

3.8.2.1 *Response*

The proposed 2030 GHGRS would involve implementation of identified actions and reduction measures specifically designed to reduce citywide GHG emissions consistent with established reduction targets. As noted in Figure 2.5-2, according to the most recent GHG emissions inventory, San José is projected to generate 6.1 MMT CO_2e per year by 2030.

A summary of the GHG reductions estimated to result from implementation of the proposed project are included in Table 3.8-1 and Table 3.8-2.

Table 3.8-1: 2030 GHGRS Actions and Reduction Estimates

Proposed Action	2030 Reductions MT CO_2e/ year
San José Clean Energy	451,918
Zero Net Energy Residential Construction	43,678
Renewable Energy Development	63,697
Existing Building Retrofits – Natural Gas	208,986
Zero Waste Goal	207,956
Caltrain Modernization Project	12,547
Water Conservation	3,106
Total (MT CO_2e/ year)	**991,888**
Total (MMT CO_2e/ year)	**1.0**

Table 3.8-2: Achievement of GHG Targets	
GHG Target Impact	**MMT CO_2 e/yr**
2030 Emissions without GHGRS	6.1
Estimated GHGRS reduction	(1.0)
2030 Emissions with Proposed GHGRS (total)	5.1
2030 Target	*5.3*
Target Achievement Estimated	**Yes**
2030 Emissions without GHGRS (mass emissions/ service population)	*2.95*
Estimated GHGRS reduction (MMT CO_2e/ year)	(0.09)
2030 Emissions with Proposed GHGRS (per service population)	2.86
2030 Target	*2.94*
Target Achievement Estimated	**Yes**
Note: Emissions reductions are subtracted from emissions estimates and identified with (*) .	

As shown in Table 3.8-1, the proposed 2030 GHGRS would reduce overall citywide GHG emissions by approximately 1.0 MMT CO_2e per year, resulting in citywide GHG emissions of 5.1 MMT CO_2e in 2030, which is below the 2030 target of 5.3 MMT CO_2e per year. For these reasons, the proposed GHGRS 2030 Update would have less than significant GHG emissions and less impact than the approved project.

3.8.2.2 *Conclusions*

The proposed 2030 GHGRS would not result in any new or substantially more severe greenhouse gas emissions impacts than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Less Impact than Approved Project)**

3.9 HAZARDS AND HAZARDOUS MATERIALS

3.9.1 Environmental Setting

3.9.1.1 *Changes to the Regulatory Framework*

The regulatory framework, in terms of federal, state, and local requirements related to hazards and hazardous material use and the characterization and clean-up of contaminated sites is similar to that at the time of certification of the Envision San José 2040 General Plan and Supplemental FPEIR.

3.9.1.2 *Existing Conditions*

Citywide, hazardous materials use and storage and contaminants of concern to regulatory agencies are similar to that described in the General Plan FPEIR. Identified hazard zones associated with airports and potential wildland fires in foothill areas have not changed.

3.9.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
1) *Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*	☐	☐	☐	☒	☐
2) *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*	☐	☐	☐	☒	☐
3) *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*	☐	☐	☐	☒	☐
4) *Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, will it create a significant hazard to the public or the environment?*	☐	☐	☐	☒	☐

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
5) *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area?*	☐	☐	☐	☒	☐
6) *Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?*	☐	☐	☐	☒	☐
7) *Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?*	☐	☐	☐	☒	☐

3.9.2.1 *Response*

Implementation of the proposed 2030 GHGRS would not change the areas of the City in which new development or redevelopment would occur or allow development in hazardous areas not previously identified in the General Plan FPEIR. It would not change policies or Municipal Code requirements designed to reduce substantial risks to people, structures, or infrastructure from hazards and hazardous materials.

3.9.2.2 *Conclusions*

The proposed 2030 GHGRS would not result in any new or substantially more severe hazards and hazardous materials impacts than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.10 HYDROLOGY AND WATER QUALITY

3.10.1 Environmental Setting

3.10.1.1 *Changes in the Regulatory Framework*

There have been no substantive changes to the regulatory framework for hydrology and water quality in the General Plan FPEIR, as amended.

3.10.1.2 *Changes in the Existing Conditions*

Watersheds within the City of San José remain the same as described in the General Plan FPEIR. The storage capacity of Anderson Reservoir has been temporarily reduced as seismic repairs are made by Santa Clara Valley Water District to the dam structure.

Projected sea level rise and flooding remain a concern in the Alviso area. Various state and regional agencies have initiated planning efforts to predict the potential extent of sea level rise and storm surge. The South San Francisco Bay Shoreline Phase I Study, undertaken by agencies including the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, Coastal Conservancy, in coordination with the Santa Clara Valley Water District, includes a program to provide tidal flood protection to the community of Alviso and infrastructure along Alviso Slough and Coyote Creek. The planned flood protection levee will also allow for restoration of former salt ponds to tidal marsh. Pre-construction work on the levee began in May 2019.[4]

3.10.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
1) *Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?*	☐	☐	☐	☒	☐
2) *Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?*	☐	☐	☐	☒	☐

[4] Santa Clara Valley Water District, et al. "South San Francisco Bay Shoreline Project. Accessed January 28, 2020. Available at: http://www.southbayshoreline.org/

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
3) *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:*	☐	☐	☐	☒	☐
– *result in substantial erosion or siltation on- or off-site;*	☐	☐	☐	☒	☐
– *substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;*	☐	☐	☐	☒	☐
– *create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or*	☐	☐	☐	☒	☐
– *impede or redirect flood flows?*	☐	☐	☐	☒	☐
4) *In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?*	☐	☐	☐	☒	☐
5) *Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*	☐	☐	☐	☒	☐

3.10.2.1 *Response*

Implementation of the proposed 2030 GHGRS would not change the areas of the City in which new development or redevelopment would occur or allow development in hazardous areas not previously identified in the General Plan FPEIR.

It does not change City policies or Municipal Code requirements designed to: 1) reduce substantial risks to people, structures, or infrastructure from flooding and stormwater runoff or 2) minimize and reduce water quality impacts associated with new and existing development.

3.10.2.2 *Conclusion*

The proposed 2030 GHGRS would not result in any new or substantially more severe hydrological and water quality impacts than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.11 LAND USE AND PLANNING

3.11.1 Environmental Setting

3.11.1.1 *Changes in the Regulatory Framework*

The regulatory framework, in terms of land use is similar to that at the time of certification of the General Plan FPEIR. The Downtown Strategy 2040 was approved in 2018 and allowed for 4,000 additional residential units and 10,000 new jobs in Downtown San José. The increased residential capacity in Downtown was moved from Horizon 3 Urban Villages and the job capacity was moved from North Coyote Valley. The overall development capacity of the General Plan remains consistent with the analysis in the General Plan FPEIR, as amended.

3.11.1.2 *Changes to the Existing Conditions*

Citywide, hazardous materials use and storage and contaminants of concern to regulatory agencies are similar to that described in the General Plan FPEIR, as amended. Identified hazard zones associated with airports and potential wildland fires in foothill areas have not changed.

3.11.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
1) *Physically divide an established community?*	☐	☐	☐	☒	☐
2) *Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?*	☐	☐	☐	☒	☐

3.11.2.1 *Response*

Implementation actions proposed in the 2030 GHGRS would not change the areas of the City in which new development or redevelopment would occur or allow development which would physically divide existing communities or create a significant environmental impact due to conflict with existing land use plans or policies.

3.11.2.2 *Conclusion*

The proposed 2030 GHGRS would not result in any new or substantially more severe land use impacts than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.12 MINERAL RESOURCES

3.12.1 Environmental Setting

3.12.1.1 *Changes in the Regulatory Framework*

There have been no substantial changes to the regulatory framework for mineral resources identified in the General Plan FPEIR, as amended.

3.12.1.2 *Changes in the Environmental Conditions*

There have been no substantial changes to environmental conditions regarding mineral resources within the City of San José.

3.12.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
1) *Result in the loss of availability of a known mineral resource that will be of value to the region and the residents of the state?*	☐	☐	☐	☒	☐
2) *Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*	☐	☐	☐	☒	☐

3.12.2.1 *Response*

Mineral resources were addressed in Section 3.6 Geology and Soils of the General Plan FPEIR. No significant impacts to mineral resources of regional or statewide significance were identified. Therefore, similar to the certified General Plan FPEIR, implementation of the proposed 2030 GHGRS Update would not result in impacts to mineral resources.

3.12.2.2 *Conclusion*

The proposed 2030 GHGRS would not result in any new or substantially more severe impacts to mineral resources than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.13 NOISE

3.13.1 Environmental Setting

3.13.1.1 *Changes in the Regulatory Framework*

There have been no substantial changes to the regulatory framework for noise and vibration identified in the General Plan FPEIR, as amended.

3.13.1.2 *Existing Conditions*

As overall vehicle miles traveled and vehicle trips have increased along with the increased population and jobs in San José, noise levels on some roadways are expected to have increased, as projected in the General Plan FPEIR.

3.13.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project result in:					
1) *Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*	☐	☐	☐	☒	☐
2) *Generation of excessive groundborne vibration or groundborne noise levels?*	☐	☐	☐	☒	☐
3) *For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*	☐	☐	☐	☒	☐

3.13.2.1 *Response*

Caltrain Modernization

Implementation of the Caltrain Modernization action would involve encouraging density near train stations. The noise and vibration impacts associated with such increased density near transit were previously analyzed in the General Plan FPEIR and determined to have a less than significant impact with implementation of standard conditions of approval and compliance with General Plan policies. Therefore, impacts would be less than significant, same as the approved project.

Renewable Energy Development and Existing Building Retrofits

Noise and vibration impacts associated with new development and redevelopment of existing buildings in San José were previously analyzed in the General Plan FPEIR and determined to have a less than significant impact with implementation of standard conditions of approval and compliance with General Plan policies. The proposed project would involve implementation actions which would reduce citywide GHG emissions to achieve state mandated reduction goals. Proposed actions would occur within existing buildings and developed areas of the city and would not result in new noise and vibration impacts not previously considered in the General Plan FPEIR. Therefore, noise and vibration impacts would be less than significant, same as the approved project.

Other Actions

Implementation of Zero Waste Goal and Water Conservation actions would not result in physical changes to the environment such that significant noise and vibration impacts would occur. Ground disturbance associated with Water Conservation actions, such as extension of reclaimed water pipelines, would be subject to General Plan policies requiring minimization of temporary construction noise and vibration. Therefore, impacts associated with implementation of these actions would have the same impact as the approved project.

3.13.2.2 *Conclusion*

The proposed 2030 GHGRS would not result in any new or substantially more severe noise impacts than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.14 POPULATION AND HOUSING

3.14.1 Environmental Setting

3.14.1.1 *Changes in the Regulatory Framework*

Housing Element Update (2014-2023)

In January 2015, City Council adopted the 2014-2023 Housing Element which is one of the seven state-required elements of the General Plan and provides important information for the California Department of Housing and Community Development and California Department of Finance calculations of statewide housing needs.

3.14.1.2 *Changes in the Environmental Conditions*

At the start of the General Plan FPEIR in calendar year 2008, the population of San José was 985,307 and there were 369,450 jobs. The current population is 1,043,085 (2019), and there are an estimated 359,128 jobs (2015).[5] [6]

3.14.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
1) *Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*	☐	☐	☐	☒	☐
2) *Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?*	☐	☐	☐	☒	☐

[5] State of California Department of Finance. *E-1 Population Estimates for Cities, Counties, and the State – January 1, 2018 and 2019.* Accessed January 30, 2020. http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-1/
[6] City of San José. *City of San José 2014-2023 Housing Element*. January 27, 2015.

3.14.2.1 *Response*

The proposed 2030 GHGRS involves implementation actions which would reduce citywide GHG emissions to achieve state mandated reduction goals. Proposed actions would occur within existing buildings and developed areas of the city and would not involve any changes to land use, housing, or jobs such that the city's population would exceed levels previously identified and analyzed in the General Plan FPEIR.

Moreover, because the proposed GHGRS 2030 Update includes implementation actions and does not involve specific development projects, it would not result in direct displacement of substantial numbers of existing people or housing such that construction of replacement housing is necessary.

3.14.2.2 *Conclusions*

The proposed 2030 GHGRS would not result in any new or substantially more severe impacts to population and housing than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.15 PUBLIC SERVICES

3.15.1 Environmental Setting

3.15.1.1 *Changes in the Regulatory Framework*

There have been no substantial changes to the regulatory framework for public services.

3.15.1.2 *Environmental Conditions*

There have been no substantial changes to the environmental conditions for public services in the City of San José.

3.15.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
1) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:					
1) Fire Protection?	☐	☐	☐	☒	☐
2) Police Protection?	☐	☐	☐	☒	☐
3) Schools?	☐	☐	☐	☒	☐
4) Parks?	☐	☐	☐	☒	☐
5) *Other Public Facilities?*	☐	☐	☐	☒	☐

3.15.2.1 *Response*

The proposed 2030 GHGRS involves implementation actions designed to reduce GHG emissions produced throughout the City to achieve state mandated reduction goals. Proposed actions would occur within existing buildings and previously developed areas of the city and would not involve any changes to land use, housing, or jobs such that the city's service population would exceed levels previously identified and analyzed in the General Plan FPEIR.

3.15.2.2 *Conclusion*

The proposed 2030 GHGRS 2030 Update would not result in any new or substantially more severe public services impacts than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.16 RECREATION

3.16.1 Environmental Setting

3.16.1.1 *Changes in the Regulatory Framework*

There have been no substantial changes to the regulatory framework for recreation.

3.16.1.2 *Changes in the Environmental Conditions*

As of February 2016, the total City-managed parkland increased to 3,534 acres from 3,435 acres at the time of preparation of the General Plan FPEIR. [7]

3.16.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
1) *Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility will occur or be accelerated?*	☐	☐	☐	☒	☐
2) *Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?*	☐	☐	☐	☒	☐

3.16.2.1 *Response*

The proposed 2030 GHGRS involves implementation actions designed to reduce citywide GHG emissions and to achieve state mandated reduction goals. Proposed actions would occur within existing buildings and previously developed areas of the city and would not involve any changes to land use, housing, or jobs such that the city's service population would exceed levels previously identified and analyzed in the General Plan FPEIR.

[7] City of San José, Parks and Recreation Commission. *Sustainable Parks Maintenance Memorandum.* January 28, 2019. Available at: https://www.sanjoseca.gov/Home/ShowDocument?id=47601

3.16.2.2 *Conclusion*

The proposed 2030 GHGRS would not result in any new or substantially more severe recreation impacts than previously identified in the Envision San José 2040 General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.17 TRANSPORTATION

3.17.1 Environmental Setting

3.17.1.1 *Changes in the Regulatory Framework*

Regional

Regional Transportation Plan

In July 2017, the Metropolitan Transportation Commission and the Association of Bay Area Governments adopted Plan Bay Area 2040, which includes a Regional Transportation Plan to guide regional transportation investment for revenues from federal, state, regional, and local sources through 2040.

Local

Transportation Analysis Policy (City Council Policy 5-1)

As established in City Council Policy 5-1, Transportation Analysis Policy, the City of San José uses VMT as the metric to assess transportation impacts from new development. According to the policy, an employment (e.g., office or research and development) or residential project's transportation impact would be less than significant if the project VMT is 15 percent or more below the existing average regional per capita VMT. For industrial projects (e.g., warehouse, manufacturing, distribution), the impact would be less than significant if the project VMT is equal to or less than existing average regional per capita VMT. The threshold for a retail project is whether it generates net new regional VMT, as new retail typically redistributes existing trips and miles traveled as opposed to inducing new travel. Screening criteria have been established to determine which projects require a detailed VMT analysis. If a project meets the relevant screening criteria, it is considered to a have a less than significant VMT impact.

If a project's VMT does not meet the established thresholds, mitigation measures would be required, where feasible. The policy also requires preparation of a Local Transportation Analysis to analyze non-CEQA transportation issues, including local transportation operations, intersection level of service, site access and circulation, and neighborhood transportation issues such as pedestrian and bicycle access and recommend transportation improvements. The VMT policy does not negate Area Development policies and Transportation Development policies approved prior to adoption of Policy 5-1; however, it does negate the City's Protected Intersection policy as defined in Policy 5-3.

3.17.1.2 *Existing Conditions*

On-Road Vehicle Travel

Based on the traffic model analysis developed in support of the 2017 GHG Inventory, annual VMT from on-road vehicles operates within the city's boundaries decreased by approximately nine

percent from 2014 to 2017 from 6,997 million VMT in 2014 to 6,361 million VMT in 2017. The City's service population (population and jobs) grew 5.6 percent during that same period.

Active Transportation Program

The Active Transportation Program in San José's Department of Transportation implements projects that support bicycling as a viable means of transportation. Goals of the program are to achieve five (5) percent of trips by bike by 2020; 2) achieve 15 percent by 2040; build a 400-mile on-street bikeways network; and work with the City's Parks, Recreation & Neighborhood Services Department's Trail Program to complete a 100-mile off-street bikeways network. These goals can be found in three City Council-approved plans: Bike Plan 2020, Envision San José 2040 General Plan, and the Climate Smart San José Plan.

As of the winter 2020, the City has completed approximately 320 miles of on-street bikeways and 59 miles of off-street trails and multi-use paths. San José is also among five Bay Area cities taking part in the Bay Area Bike Share, a 700 bike, 70 station regional bikeshare pilot project managed by BAAQMD. This pilot project allows check out of a bike for short trips in downtown San José. There currently are 150 bikes and 16 stations in Downtown San José.[8]

3.17.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
1) *Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle lanes and pedestrian facilities?*	☐	☐	☐	☒	☐
2) *For a land use project, conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?*	☐	☐	☐	☒	☐
3) *Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible land uses (e.g., farm equipment)?*	☐	☐	☐	☒	☐

[8] City of San José, "San José Better Bike Plan 2025." Accessed January 10, 2020. Available at https://www.bikesanjose.com/

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
4) *Result in inadequate emergency access?*	☐	☐	☐	☒	☐

3.17.2.1 *Response*

Caltrain Modernization

The Caltrain Modernization project and City implementation actions were considered in the General Plan FPEIR. Implementation of the Caltrain Modernization action would include encouraging increased density near train stations. Therefore, the proposed Caltrain Modernization action would result in the same impact to transportation as detailed in the General Plan FPEIR.

Other Actions

The proposed 2030 GHGRS involves implementation actions which would reduce citywide GHG emissions to achieve reduction goals. Proposed actions would occur within existing buildings and developed areas of the city and would not involve any changes to land use, housing, or jobs such that it would conflict with an existing transportation program or policy, create a geometric hazard or result in inadequate emergency access, consistent with the conclusions of the General Plan FPEIR.

3.17.2.2 *Conclusions*

The proposed 2030 GHGRS would not result in any new or substantially more severe transportation impacts than previously identified in the General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.18 TRIBAL CULTURAL RESOURCES

3.18.1 Environmental Setting

3.18.1.1 *Changes in the Regulatory Framework*

There have been no substantive changes to the regulatory framework for tribal cultural resources in the General Plan FPEIR, as amended.

3.18.1.2 *Changes in the Environmental Conditions*

There have been no substantial changes to the environmental conditions for tribal cultural resources. The City regularly coordinates with Ohlone Indian Tribe, Inc. and other tribes based on consultation requests for projects resulting in ground disturbance and circulation of an ND, MND, or EIR (refer to Section 1.5.3).

3.18.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:					
1) *Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?*	☐	☐	☐	☒	☐

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
2) *A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.*	☐	☐	☐	☒	☐

3.18.2.2 *Response*

Because the General Plan was approved in 2011, prior to passage of AB 52, the General Plan FPEIR adhered to SB 18 requirements that local governments consult with Native American tribes prior to approving the General Plan. However, for annual General Plan Amendments, the City consults with the Native American tribes under AB 52 and SB 18. Tribal consultation completed for the General Plan amendments since 2011 did not result in the identification of tribal cultural resources that would be affected by the 2030 GHGRS.

The proposed GHGRS 2030 Update would involve implementation of policy actions designed to reduce GHG emissions citywide. Implementation of the proposed 2030 GHGRS would not change the areas of the City in which new development or redevelopment would occur or allow development which would cause a substantial adverse change to a tribal cultural resource.

3.18.2.3 *Conclusion*

The proposed 2030 GHGRS would not result in any new or substantially more severe impacts to Tribal Cultural Resources. **(Same Impact as Approved Project)**

3.19 UTILITIES AND SERVICE SYSTEMS

3.19.1 Environmental Setting

3.19.1.1 *Regulatory Framework*

There have been no substantive changes to the regulatory framework for utilities and service systems in the General Plan FPEIR, as amended.

3.19.1.2 *Existing Conditions*

There have been no substantial changes to the environmental conditions for utilities and service systems in the City of San José.

3.19.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
1) *Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?*	☐	☐	☐	☒	☐
2) *Have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?*	☐	☐	☐	☒	☐
3) *Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?*	☐	☐	☐	☒	☐

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
Would the project:					
4) *Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?*	☐	☐	☐	☒	☐
5) *Be noncompliant with federal, state, and local management and reduction statutes and regulations related to solid waste?*	☐	☐	☐	☒	☐

3.19.2.1 *Response*

The proposed 2030 GHGRS involves implementation of citywide GHG reduction actions. Proposed actions would occur within existing buildings and previously developed areas of the city and would not involve any changes to land use, housing, or jobs such that the city's service population would exceed levels previously identified and analyzed in the General Plan FPEIR.

The 2030 GHGRS includes water conservation measures which may result in the extension of reclaimed water lines. Ground disturbance from the extension of reclaimed water lines would be subject to the same General Plan policies previously identified to mitigate potential effects.

3.19.2.2 *Conclusion*

The proposed 2030 GHGRS would not result in any new or substantially more severe utilities and service system impacts than previously identified in the General Plan Final Program EIR, the Supplemental EIR, and addenda thereto. **(Same Impact as Approved Project)**

3.20 WILDFIRE

3.20.1 Environmental Setting

3.20.1.1 *Changes in the Regulatory Framework*

Since certification of the FPEIR, a set of amendments to the CEQA Guidelines were passed in 2018, requiring wildfire to be addressed as a separate section in the Appendix G checklist. Although questions related to wildfire hazard were previously discussed under Section 3.9, Hazards and Hazardous Materials, of the 2011 General Plan FPEIR, additional questions were added in 2018 that were not previously addressed in that FPEIR.

3.20.1.2 *Changes in the Existing Conditions*

There are no changes in the environmental conditions with respect to wildfire.

3.20.2 Impact Discussion

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:					
1) *Substantially impair an adopted emergency response plan or emergency evacuation plan?*	☐	☐	☐	☒	☐
2) *Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?*	☐	☐	☐	☒	☐
3) *Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?*	☐	☐	☐	☒	☐

	New Potentially Significant Impact	New Less than Significant with Mitigation Incorporated	New Less than Significant Impact	Same Impact as Approved Project	Less Impact than Approved Project
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:					
4) *Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?*	☐	☐	☐	☒	☐

3.20.2.1 *Response*

Although wildfire impacts were previously analyzed in Section 3.9 of the 2011 General Plan FPEIR, this analysis did not address specific hazards associated with development within wildfire hazard zones. As noted in the 2011 General Plan FPEIR, all very high fire hazard severity zones within the City limits are located outside the Urban Growth Boundary. The proposed 2030 GHGRS involves implementation of citywide GHG reduction actions. Proposed actions would occur within existing buildings and previously developed areas of the city which are not located in or near state responsibility areas or lands classified as very high fire hazard severity zones. The project, therefore, would not result in any impact related to emergency response or evacuation, exposure of project occupants to pollutant concentrations from uncontrolled spread of wildfire, the installation of infrastructure to combat wildfire, or exposure of people or structures to risks of flooding or landslides resulting from post-fire runoff, slope instability, or drainage changes. Therefore, the proposed project would not result in wildfire impacts substantially different from those previously identified in the General Plan FPEIR.

3.20.2.2 *Conclusion*

The proposed 2030 GHGRS would not result in any new or substantially more severe wildfire impacts than previously identified in the General Plan FPEIR. **(Same Impact as Approved Project)**

3.21 CONCLUSION

Based in part, on the analysis above, which compares the potential effects of the proposed project with the potential environmental impacts as discussed in the General Plan FPEIR, the proposed Project, the 2030 GHGRS would not require revisions of the General Plan FPEIR due to:

- ***No Substantial Project Changes***: There are no substantial changes proposed in the project which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects (State CEQA Guidelines Section 15162(a)(1)).
- ***No Substantial Changes in Circumstances:*** In addition, no substantial changes have not occurred with respect to the circumstances under which the project would be undertaken which would require major revisions of the General Plan FPEIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects (State CEQA Guidelines Section 15162(a)(2)).
- ***No Substantial New Information:*** Finally, no new information of substantial importance has been presented which shows any of the following:
  a) The proposed project would have one or more significant effects not discussed in the prior General Plan FPEIR,
  b) Significant effects previously examined will be substantially more severe than shown in the previous General Plan FPEIR,
  c) Mitigation measures or alternatives previously found not to be feasible would, in fact, be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternatives; or
  d) Mitigation measures or alternatives which are considerably different from those analyzed in the General Plan FPEIR would substantially reduce one or more significant effects on the environment, but the project proponents declined to adopt the mitigation measure or alternative (State CEQA Guidelines Section 15162(a)(3)).

Therefore, none of the conditions described in Section 15162 of the State CEQA Guidelines requiring preparation of a subsequent EIR have occurred. The proposed Project, and as described in this addendum, does not create any of the conditions described in Section 15162 of the CEQA Guidelines that call for the preparation of a subsequent EIR.

Thus, an addendum to the adopted EIR is the appropriate environmental documentation to analyze the potential environmental impacts that would result from the refinement to the Project description.

SECTION 4.0 REFERENCES

The analysis in this Initial Study/Addendum is based on the professional judgement and expertise of the environmental specialists preparing this document, based upon review of the site, surrounding conditions, site plans, and the following references:

BAAQMD. *Final 2017 Clean Air Plan.* April 19, 2017. http://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans.

Great Oaks Water Company. *2015 Urban Water Management Plan*. February 25, 2016.

San José, City of. *City of San José 2014-2023 Housing Element*. January 27, 2015.

San José, City of. "San José Better Bike Plan 2025." Accessed January 10, 2020. Available at https://www.bikesanjose.com/

City of San José. Online Permit Center, Demolition Permit PD18-045. July 29, 2019.

City of San José, Parks and Recreation Commission. *Sustainable Parks Maintenance Memorandum.* January 28, 2019. Available at: https://www.sanjoseca.gov/Home/ShowDocument?id=47601

San José Municipal Water System. *2015 Urban Water Management Plan.* June 2016.

San José Water Company. *2015 Urban Water Management Plan*.

Santa Clara Valley Water District, et al. "South San Francisco Bay Shoreline Project. Accessed January 28, 2020. Available at: http://www.southbayshoreline.org/

State of California Department of Finance. *E-1 Population Estimates for Cities, Counties, and the State – January 1, 22018 and 2019.* Accessed January 30, 2020. http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-1/

SECTION 5.0 LEAD AGENCY AND CONSULTANTS

5.1 LEAD AGENCY

City of San José Department of Planning, Building, and Code Enforcement

Rosalyn Hughey, Director
Meenaxi Raval, Supervising Environmental Planner

5.2 CONSULTANTS

David J. Powers & Associates, Inc.

Environmental Consultants and Planners

Will Burns, Principal Project Manager
Amie Ashton, Senior Project Manager
Carolyn Neer, Associate Project Manager

AECOM

Environmental Consultants and Planners

Josh Lathan, Project Manager

City of San José

2030 GREENHOUSE GAS REDUCTION STRATEGY

August 2020

City of San José

2030 GREENHOUSE GAS REDUCTION STRATEGY

August 2020

Department of Planning, Building and Code Enforcement

Project Manager
Meenaxi Raval, AICP

Prepared by

AECOM

Project Manager
Joshua Lathan

Prepared with Contributions from:

Environmental Services Department

Ken Davies
Julie Benabente
Phil Cornish
Yael Kissel
Napp Fakuda
Jeffrey Sinclair
Jeffrey Provenzano
Pedro Hernandez

Planning, Building and Code Enforcement

Cheryl Wessling
Page Benway
Jared Hart
Jeanette Mondala
Edward Shriender

San José Clean Energy Department [CCA]

Kevin Meehan
Zachary Struyk
Jared Sherwood

Mineta San José International Airport

Cary Greene
Patrick Hansen
Ryan Sheelan

Department of Transportation

Wilson Tam
Agustin Leon Cuello

Local Government for Sustainability [ICLEI]

Hoi-Fei Mok
Kale Roberts

City and County of San Francisco's Planning Department

Josh Pollack
Tanya Shreyner
Jessica Range

Environmental Consultants

AECOM
ESA Consulting
Stantec
Circlepoint Associates, Inc.

This page intentionally left blank

Table of Contents

Acronyms vii

Glossary ix

Chapter 1 Introduction 1

1.1 Purpose and Content 3

1.2 Organization of the 2030 GHGRS 4

1.3 Context for 2030 GHGRS Update 5

1.3.1 Relationship to the General Plan 6
1.3.2 Relationship to Climate Smart San José 7
1.3.3 Relationship to the California Environmental Quality Act 8

1.4 Overview of Climate Change 9

1.4.1 Greenhouse Gases and Effect 9
1.4.2 Climate Change and Adaptation 13

Chapter 2 Regulatory Context 15

2.1 Federal Regulations 18

2.1.1 Clean Air Act 18
2.1.2 EPA Mandatory Reporting Rule for GHG Emissions 18
2.1.3 Corporate Average Fuel Economy (CAFE) Standards and the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule 18

2.2 State Regulations and Executive Orders 19

2.2.1 Statewide Emissions Reduction Targets 19
2.2.2 California's Climate Change Scoping Plan 20
2.2.3 Transportation Legislation 21
2.2.4 Energy Legislation 21
2.2.5 Buildings Legislation 22
2.2.6 Solid Waste Legislation 23
2.2.7 California Environmental Quality Act 24

2.3 Regional Regulations and Programs 24

2.3.1 BAAQMD Elements of a GHGRS 24
2.3.2 Other Regional Programs 27

Chapter 3 GHG Reduction Framework 31

3.1 Emissions Trends and Forecasts 34

3.1.1 2017 Base Year Emissions Inventory 34
3.1.2 2017 Emissions by Sectors 35
3.1.3 Emissions by Sub-sectors 37
3.1.4 Emissions Trends and Key Findings 2008 to 2017 39

3.1.5 Comparison between 2014 and 2017 Inventories ... 42
3.1.6 Comparison to 2020 GHGRS Target ... 46

3.2 Emissions Forecasts ... 47

3.2.1 Forecasts Development Process ... 47
3.2.2 Forecasts for 2030 and 2040 ... 48

3.3 GHG Reduction Targets ... 50

3.3.1 Target Types ... 50
3.3.2 San José 2030 GHG Target ... 51

3.4 GHG Reduction Strategies and Estimated Impact ... 53

3.4.1 GHGRS and Climate Smart San José ... 53
3.4.2 Comparison with Climate Smart San José Target ... 54
3.4.3 GHG Reduction Strategies ... 54
3.4.4 Greenhouse Gas Reduction Strategies and Actions ... 57

3.5 Implementation and Monitoring Framework ... 65

3.5.1 Application to Development Review ... 65
3.5.2 Monitoring Progress ... 65
3.5.3 Evaluation and Evolution ... 66
3.5.4 Implementation and Monitoring Steps ... 67

Chapter 4 Emissions Reduction Policies and Measures ... 69

4.1 Buildings and Energy ... 72

4.1.1 Reductions through 2017 ... 72
4.1.2 Implementation Actions ... 73

4.2 Land Use and Transportation ... 77

4.2.1 Reductions through 2017 ... 77
4.2.2 Implementation Actions ... 77

4.3 Recycling and Waste ... 89

4.3.1 Reductions Up to 2017 ... 89
4.3.2 Implementation Actions ... 89

4.4 Other GHG Reduction Areas ... 92

4.4.1 Reductions Up to 2017 ... 92
4.4.2 Implementation Actions ... 92

Chapter 5 Conclusion ... 97

Attachment A: Development Compliance Checklist

Appendix A: 2017 Inventory of Community Greenhouse Gas Emissions

Appendix B: Greenhouse Gas Emissions Reduction Target Options Memorandum

Appendix C: Greenhouse Gas Emissions Reductions Strategies Memorandum

List of Tables

Table 3.1 – 2017 Emissions Sectors and Sub-sectors 35
Table 3.2 – 2014 and 2017 Inventory Comparisons 44
Table 3.3 – Original GHGRS 2020 GHG Target Metrics 46
Table 3.4 – GHG Forecast Growth Indicators 48
Table 3.5 – 2030 GHGRS Target Metrics 51
Table 3.6 – 2030 GHG Reduction Strategies and Reduction Potential 55
Table 3.7 – 2030 GHG Reduction Strategies and Reduction Potential 56

List of Figures

Figure 1.1 – Purpose of the 2030 GHGRS 4
Figure 1.2 – Timeline of City Programs and Plans 6
Figure 1.3 – General Sources of Greenhouse Gases 10
Figure 1.4 - San José GHG Emissions in Perspective – 2017 Comparison 11
Figure 1.5 – Climate Mitigation and Adaptation Interrelationship 14
Figure 3.1 – 2017 Emissions by Sector 36
Figure 3.2 – 2017 Emissions by Sector and Sub-sector 37
Figure 3.3 – 2017 Energy Emissions by Fuel Type 38
Figure 3.4 – 2017 Transportation Emissions by Sub-sector 39
Figure 3.5 – Emissions Changes 2008 to 2017 40
Figure 3.6 – Total Emissions Change by Sector 2008 to 2017 41
Figure 3.7 – 2014 and 2017 Inventory Comparison 43
Figure 3.8 – Building Energy Emissions by Fuel Type 2014 to 2017 46
Figure 3.9 – Emissions Trends toward 2020 GHGRS Target Year 47
Figure 3.10 – Emissions Forecast 2017-2040 49
Figure 3.11 – GHG Forecasts and Target – Emissions Intensity per Service Population 52
Figure 3.12 – GHG Forecasts and Target – Mass Emissions 53
Figure 3.8 – 2030 GHG Reduction Strategies 56

This page intentionally left blank

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

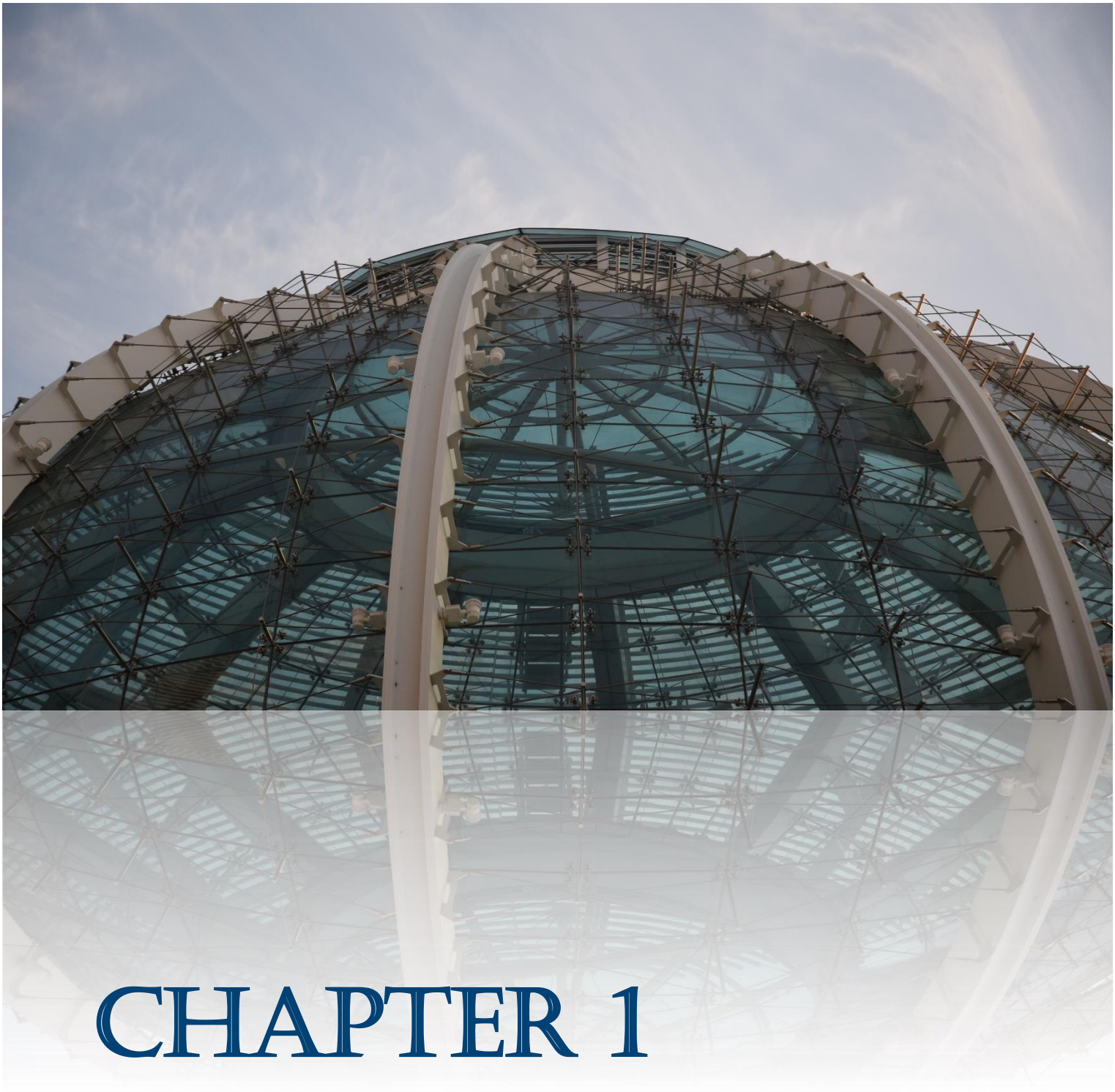
	buildings, commercial and institutional buildings, and fugitive emissions from oil and natural gas systems.
Global Warming Potential	A factor describing the radiative forcing impact (degree of harm to the atmosphere) of one unit of a given GHG relative to one unit of CO_2.
Greenhouse Effect	The process 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

2030 GREENHOUSE GAS REDUCTION STRATEGY

August 2020

This page intentionally left blank



CHAPTER 1

Introduction

This page intentionally left blank

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.

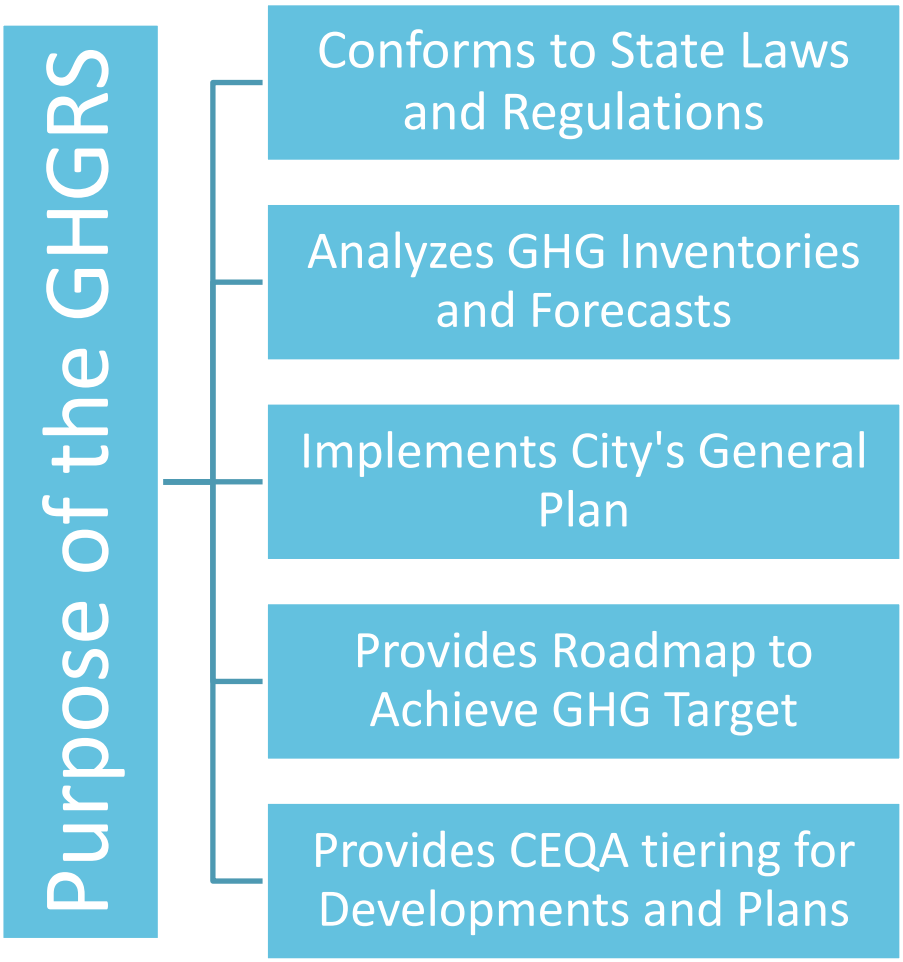
Therefore, the GHGRS was prepared under the BAAQMD California Environmental Quality Act (CEQA) Guidelines, and particularly in conformance with CEQA Guidelines Section 15183.5, which specifically addresses the development of Greenhouse Gas Reduction Plans for tiering and streamlining GHG analysis under 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

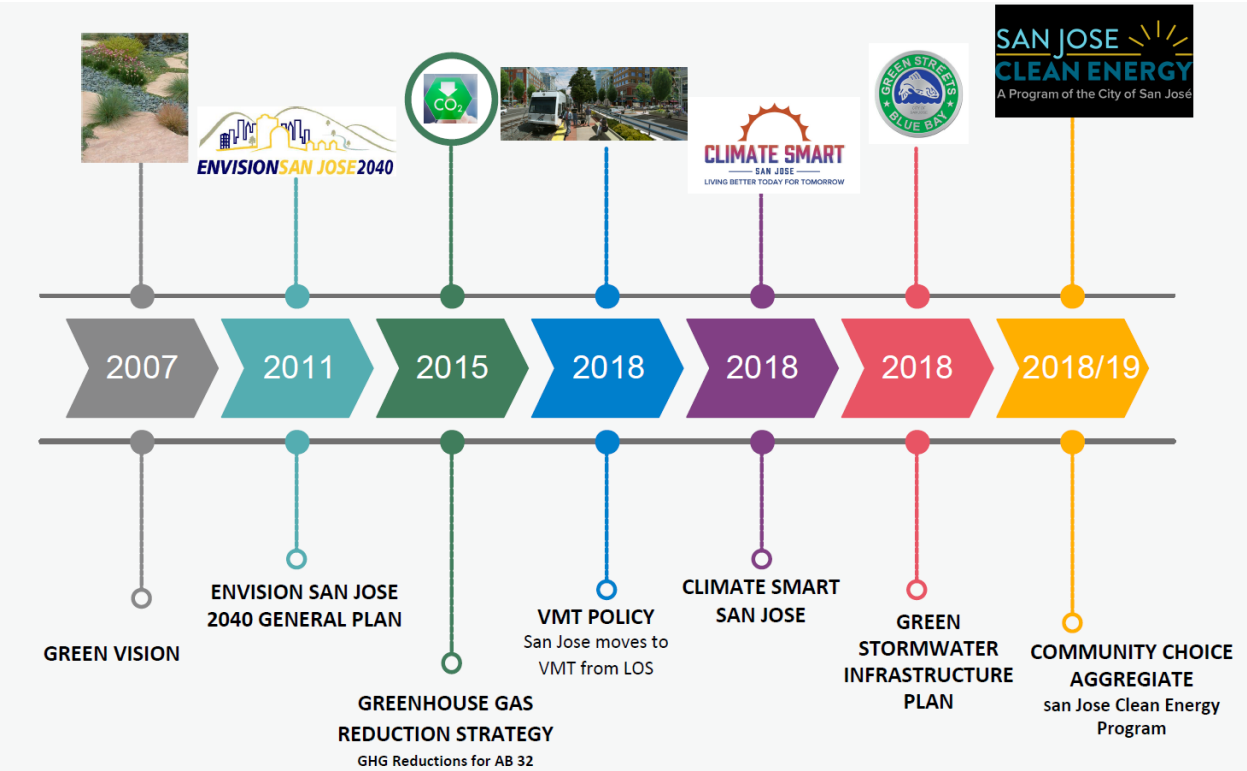
Since the preparation of the City's original GHGRS, the City conducted an emissions inventory with 2014 data as an update to its 2008 emissions inventory to understand the changes in the level of emissions over time. Meanwhile, various City departments have also continued to develop and implement new 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

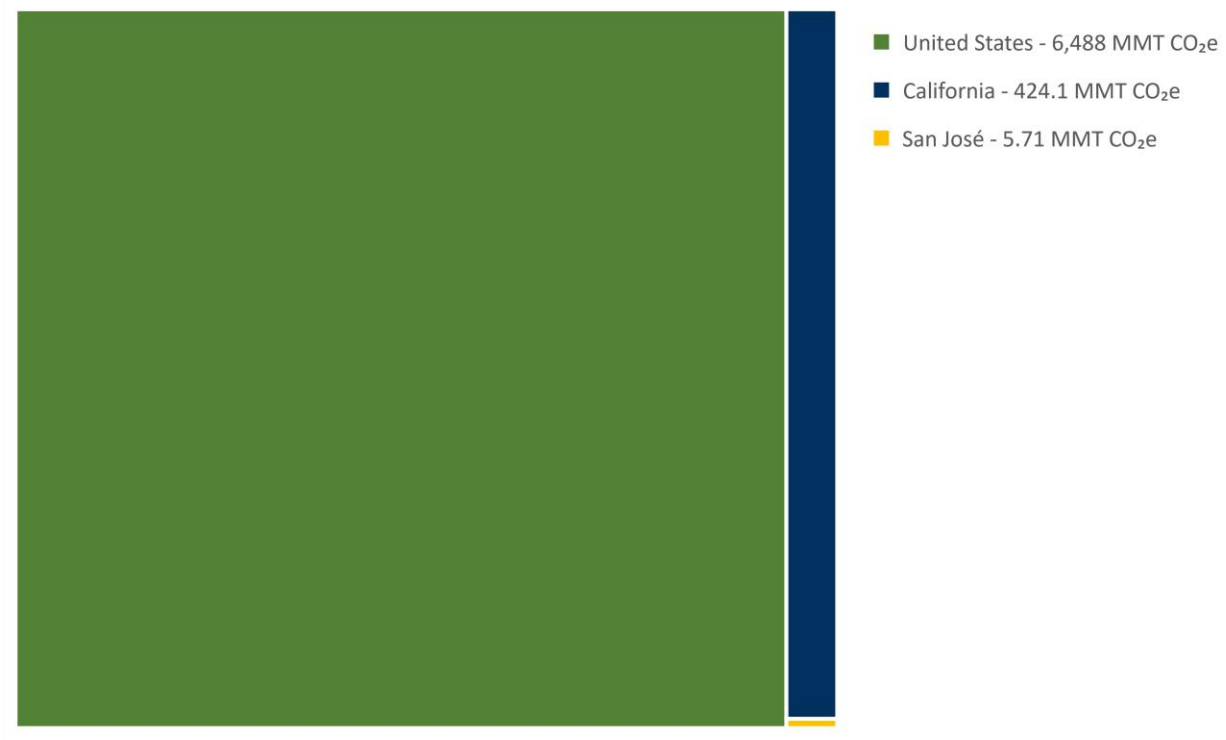
Anthropogenic (human-caused) emissions of these GHGs lead to atmospheric levels in excess of natural ambient concentrations and have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. The United Nation's Intergovernmental 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.

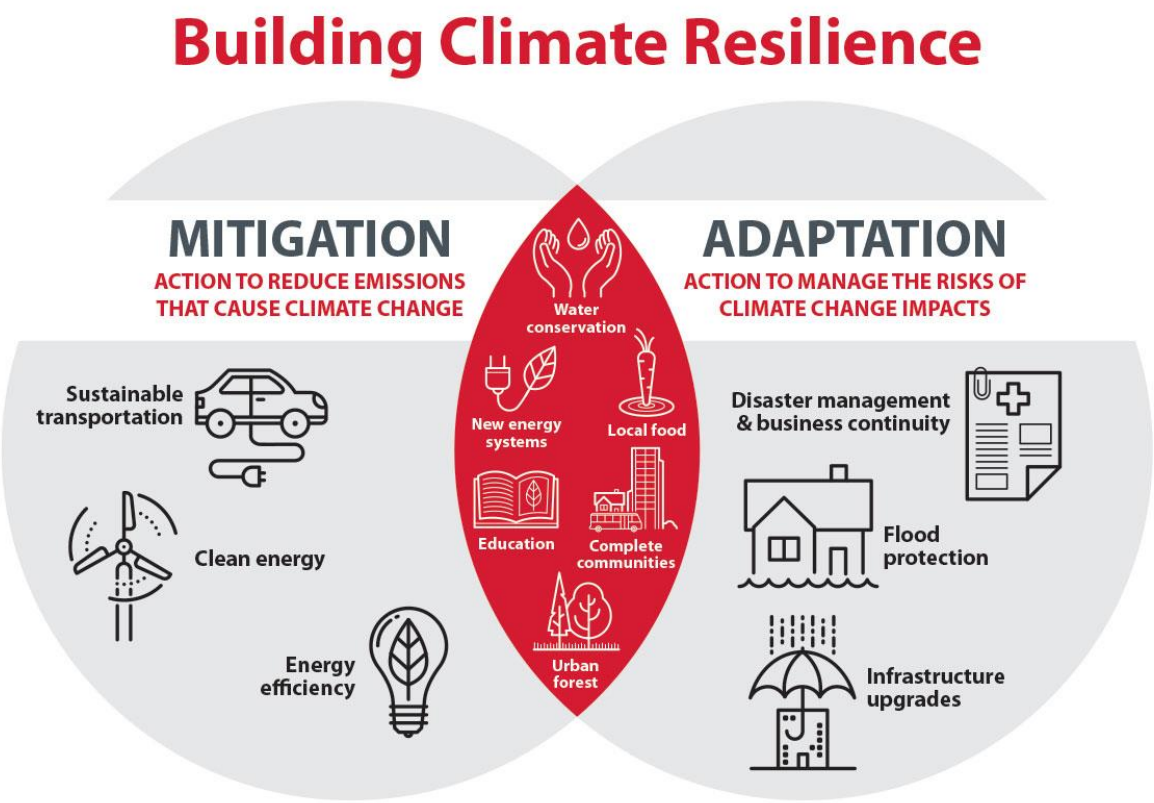
Regardless of the City's continued leadership toward emissions reductions, including implementation of measures identified in this 2030 GHGRS, climate change and its related effects have already been set in motion as a result of past and ongoing GHG emissions that persist in the atmosphere. Responses 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.

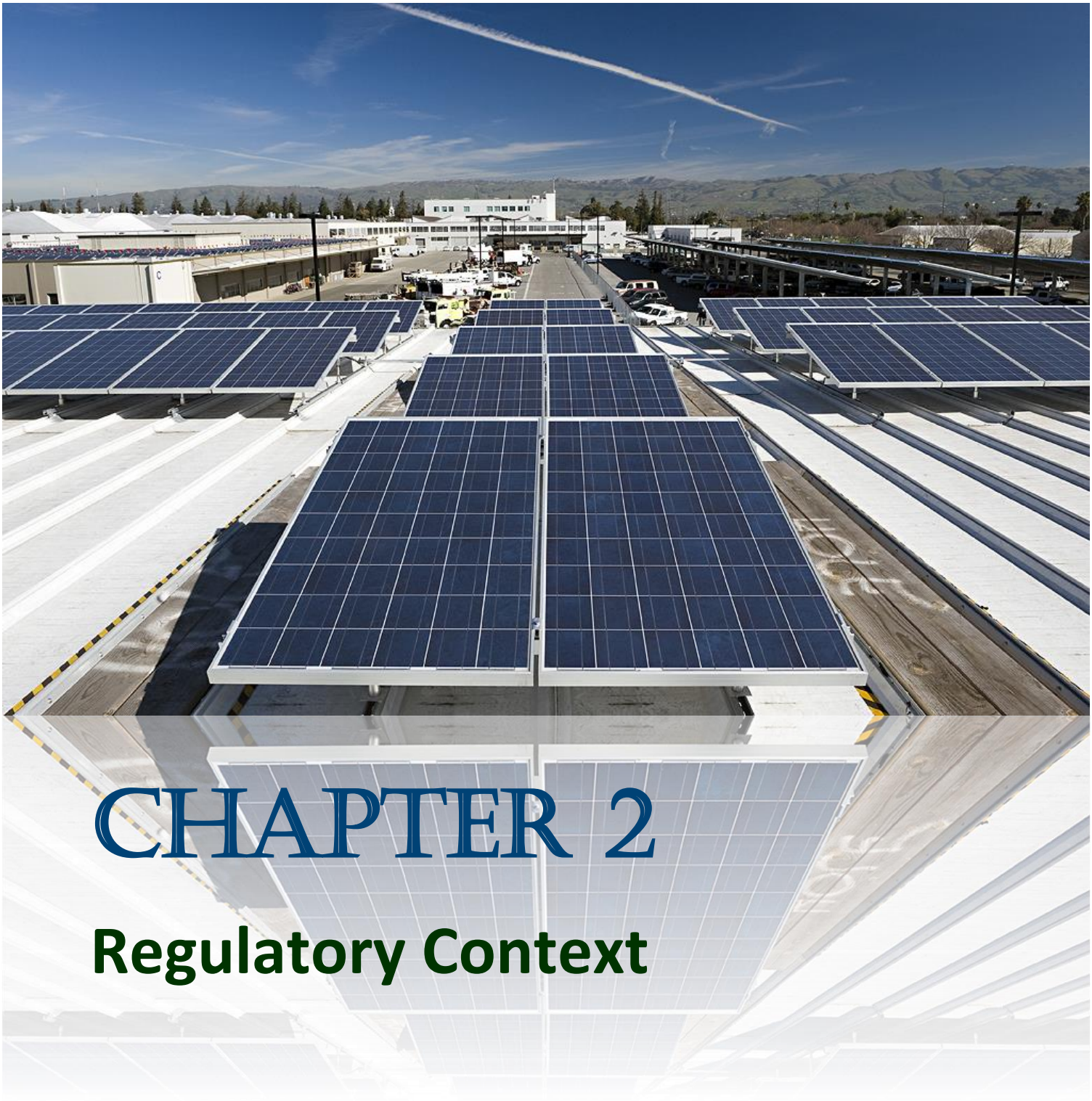
Climate change adaptation is a response intended to reduce vulnerability to the projected effects of climate change, such as changes in precipitation patterns, the number of extreme heat days, sea-level rise, or riparian flooding. Climate change adaptation goes beyond resilience by taking actions to 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

This page intentionally left blank

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:

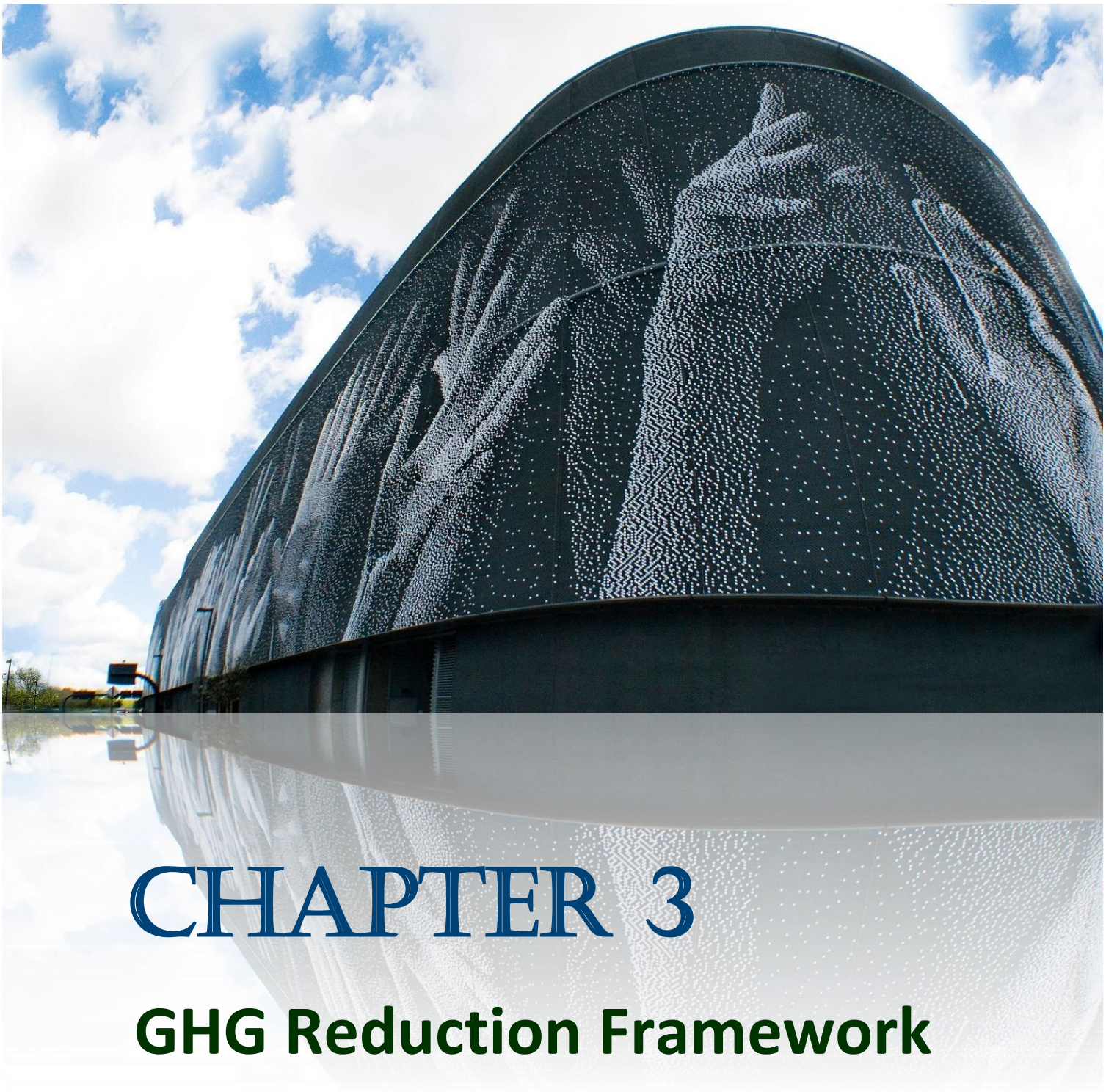
- **Climate Prosperity** – unites local governments, businesses, and institutions in defining and deploying initiatives that address the long-range environmental challenges facing the region and world.
- **EV Infrastructure Group** – provides a structured forum and meeting venue for local organizations 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

This page intentionally left blank

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/

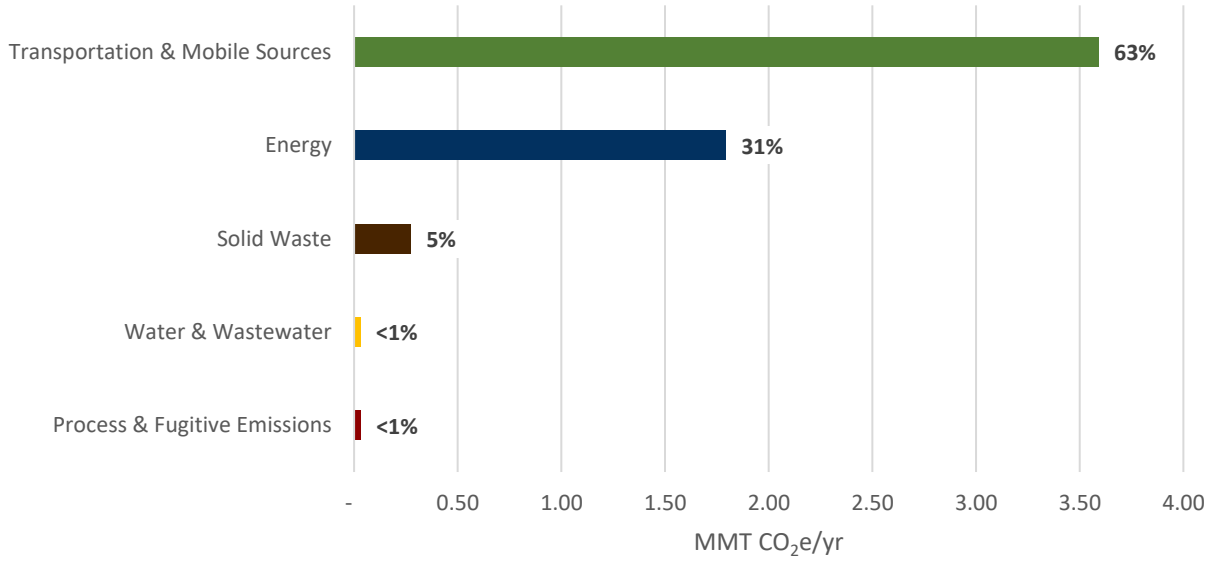
[9] Service population is a metric that represents the sum of the local population plus local employment

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



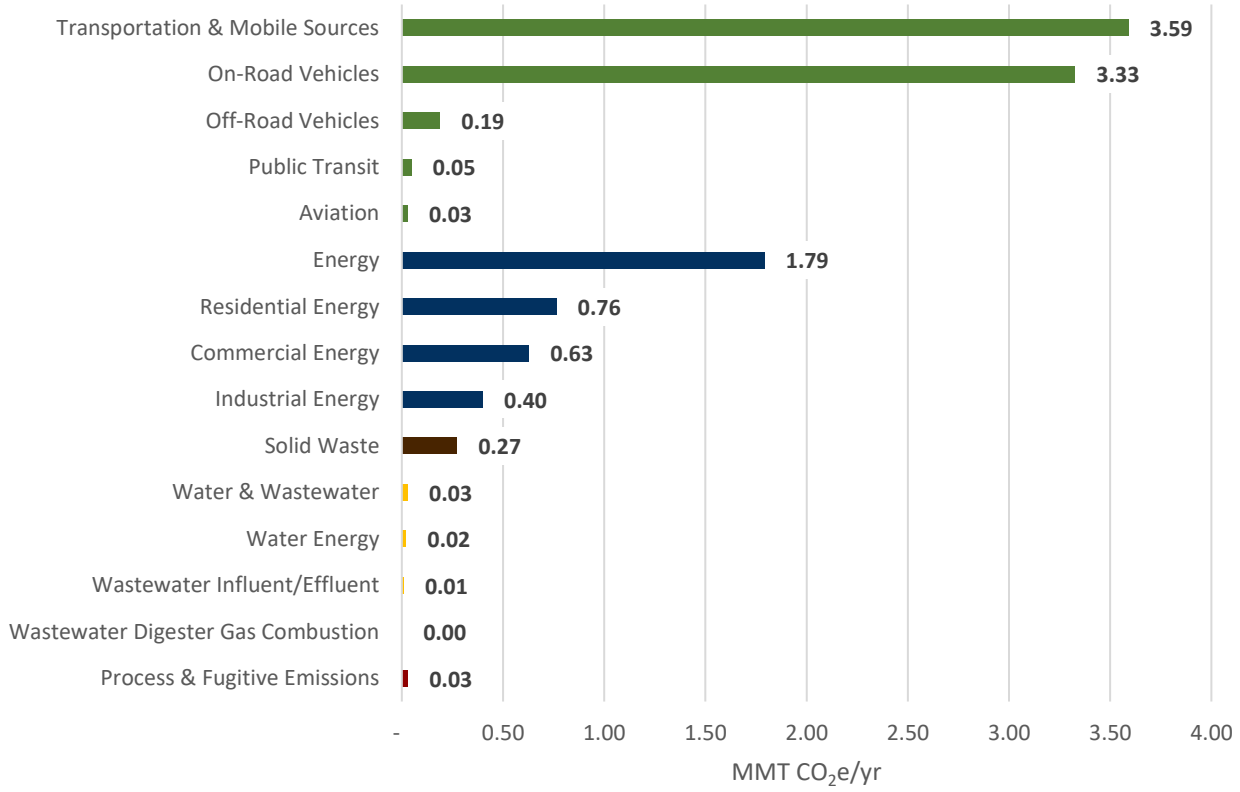
Source: Appendix A — 2017 Inventory of Community Greenhouse Gas Emissions, ICLEI (May 2019)

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.

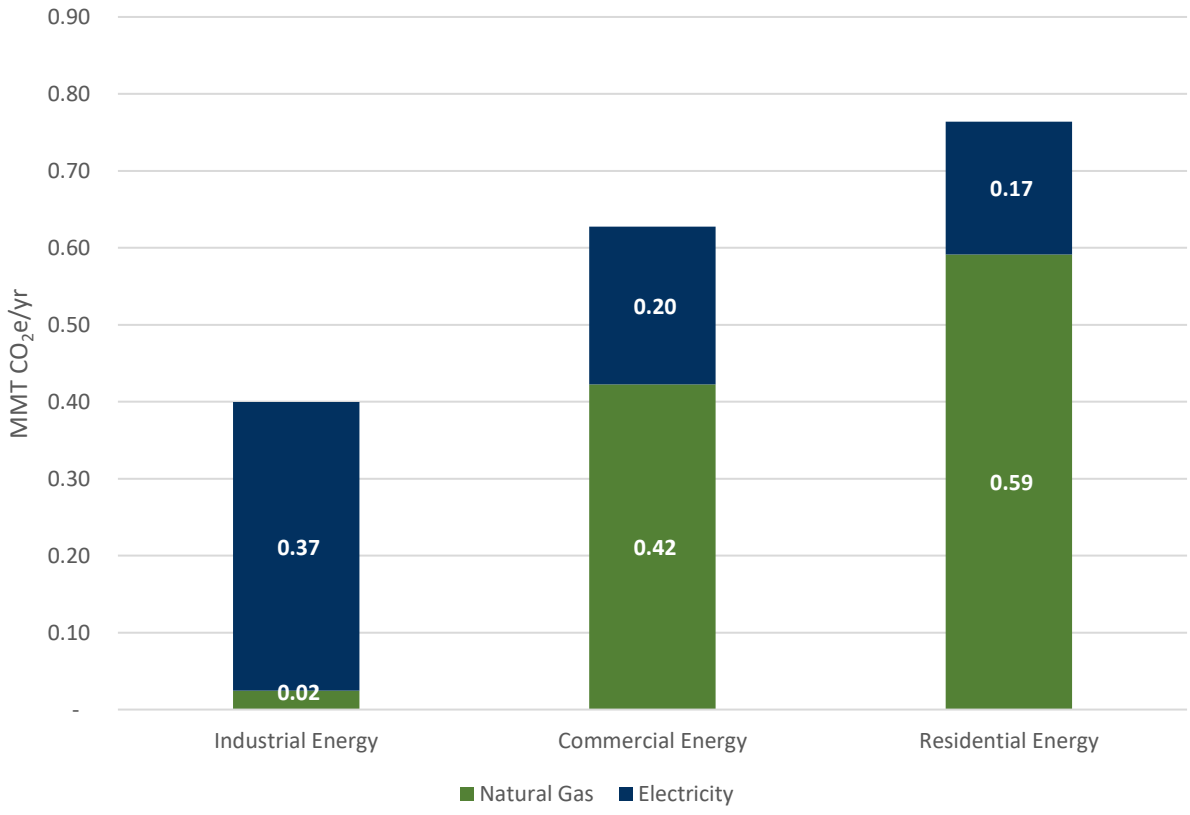
A. Energy Emissions

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

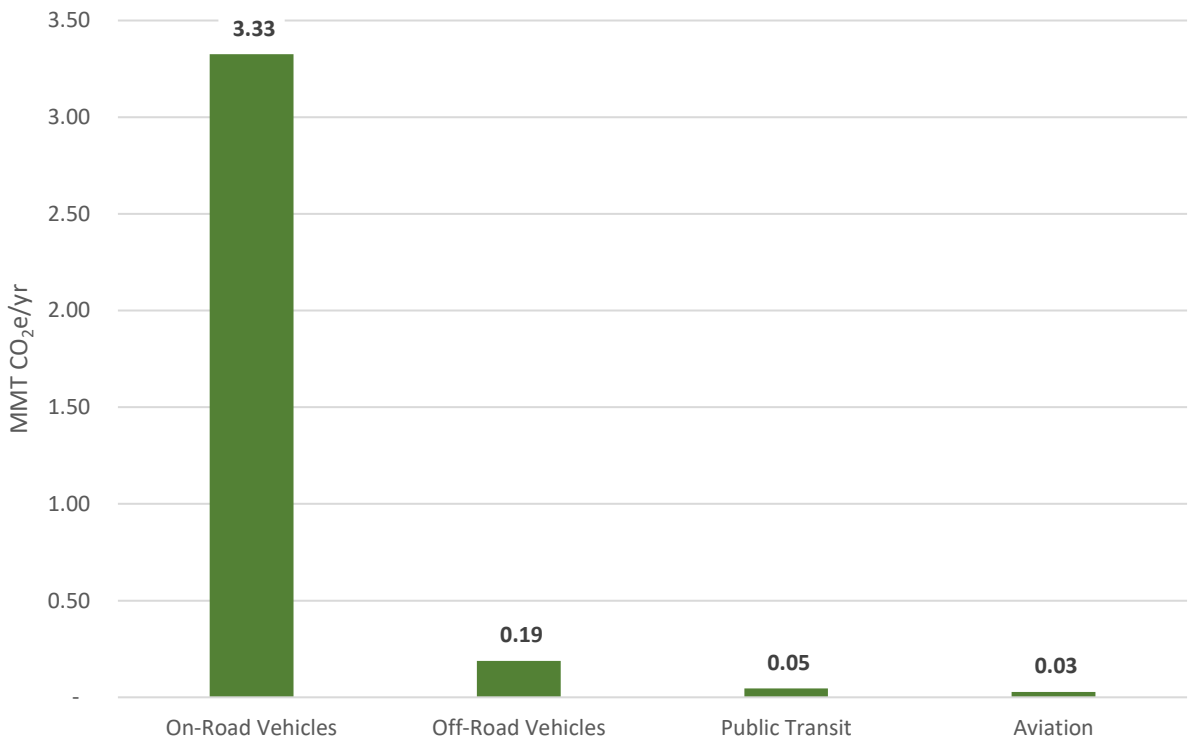


Source: Appendix A — 2017 Inventory of Community Greenhouse Gas Emissions, ICLEI (May 2019)

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

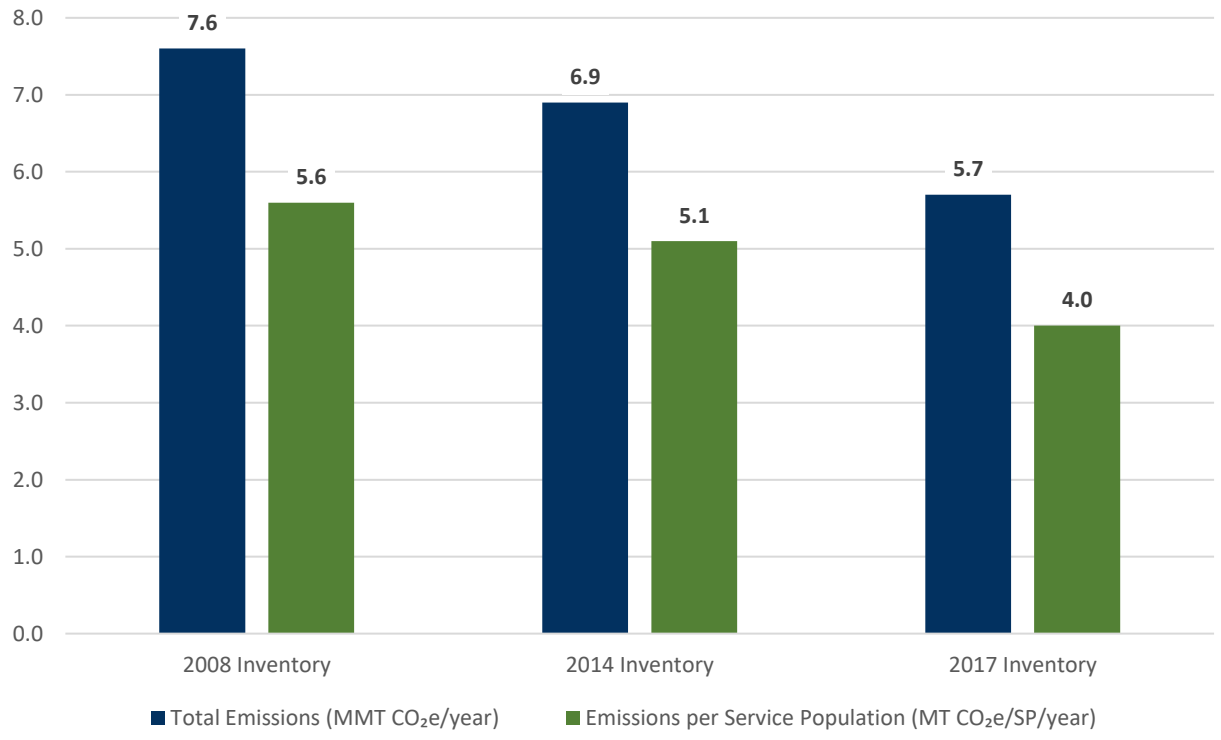
The inventory methodologies and calculations used in the 2008 and 2017 inventories do not support a perfect comparison of results, as data sources, data quality, and the quantification methodologies have changed and improved over time. Nonetheless, overall emissions trends are informative. Comparison 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



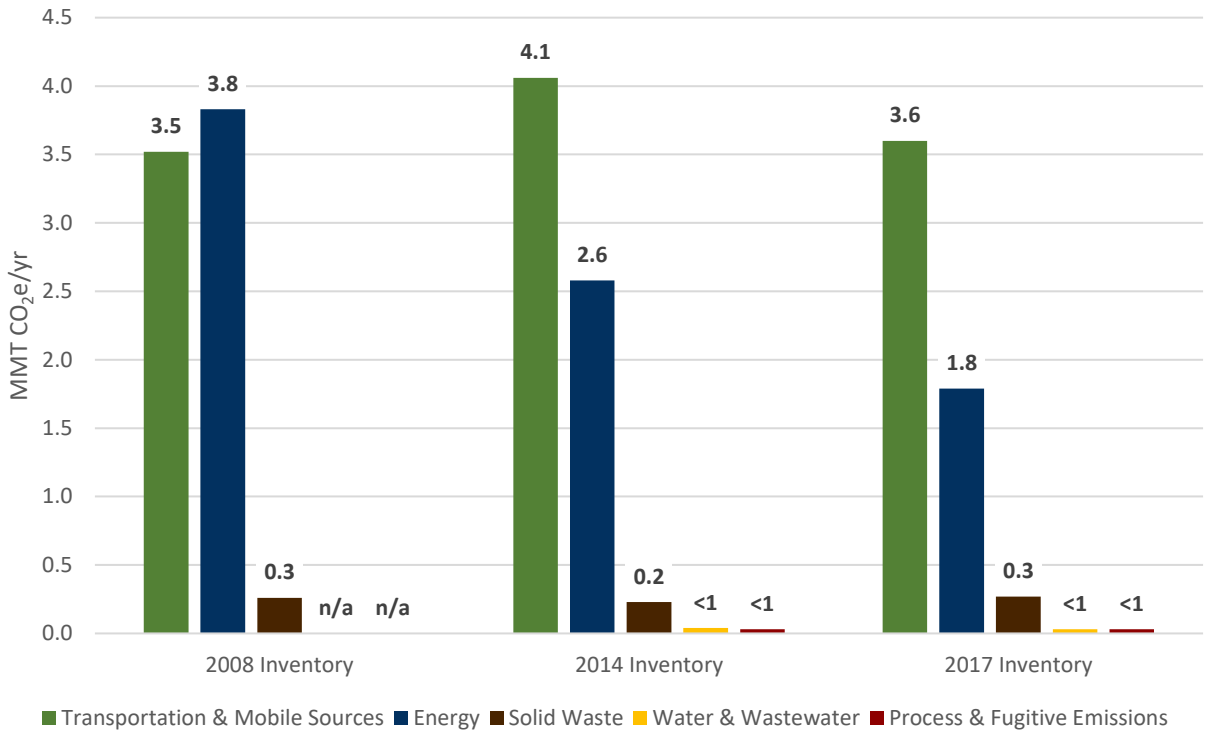
Source: Appendix A — 2017 Inventory of Community Greenhouse Gas Emissions, ICLEI (May 2019)

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)

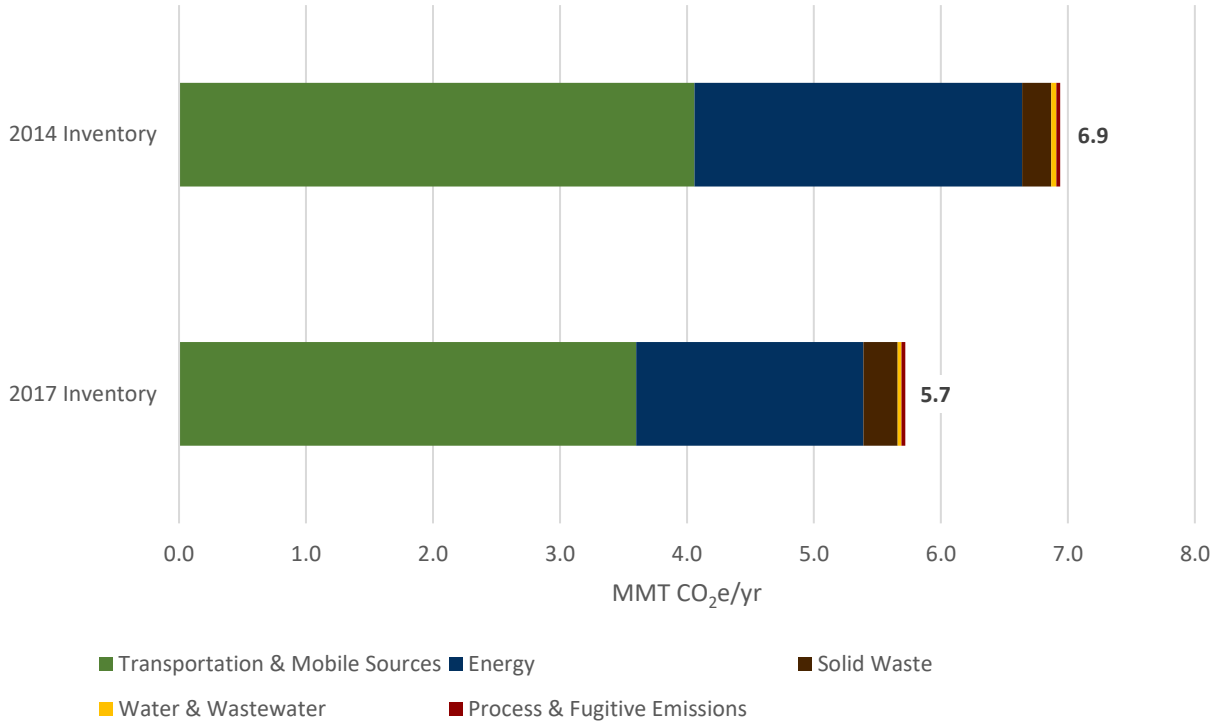
3.1.5 Comparison between 2014 and 2017 Inventories

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.

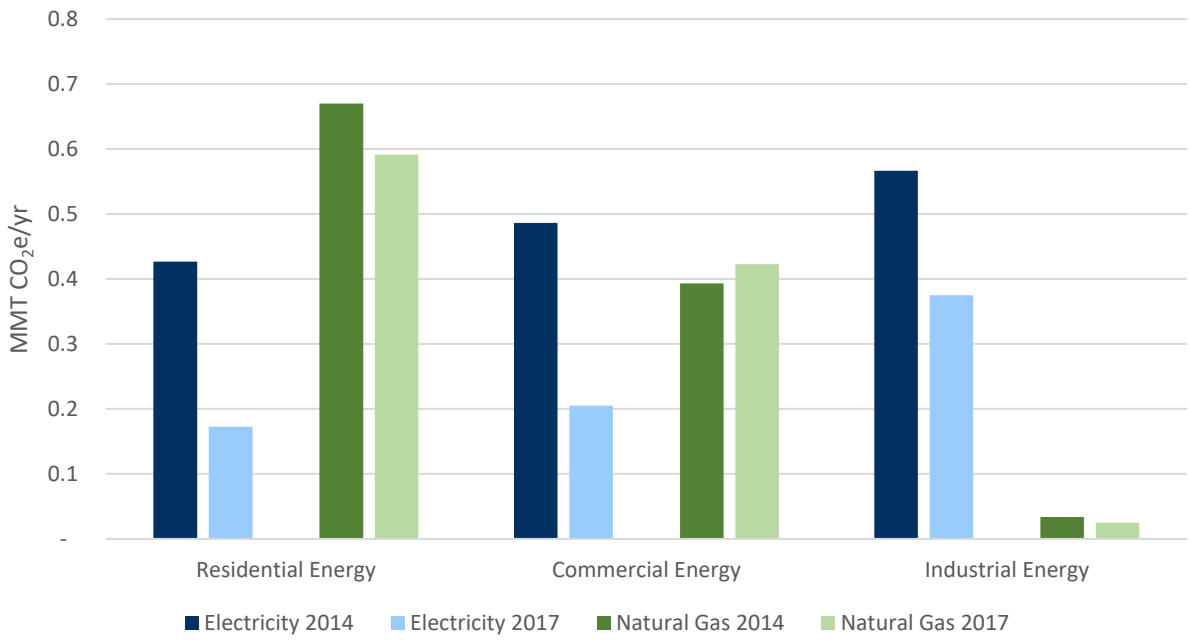
While the City did not perform a detailed contribution analysis on the factors driving the emissions changes from 2014 to 2017, several high-level factors are known based on the data used to compile each inventory.

- 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.

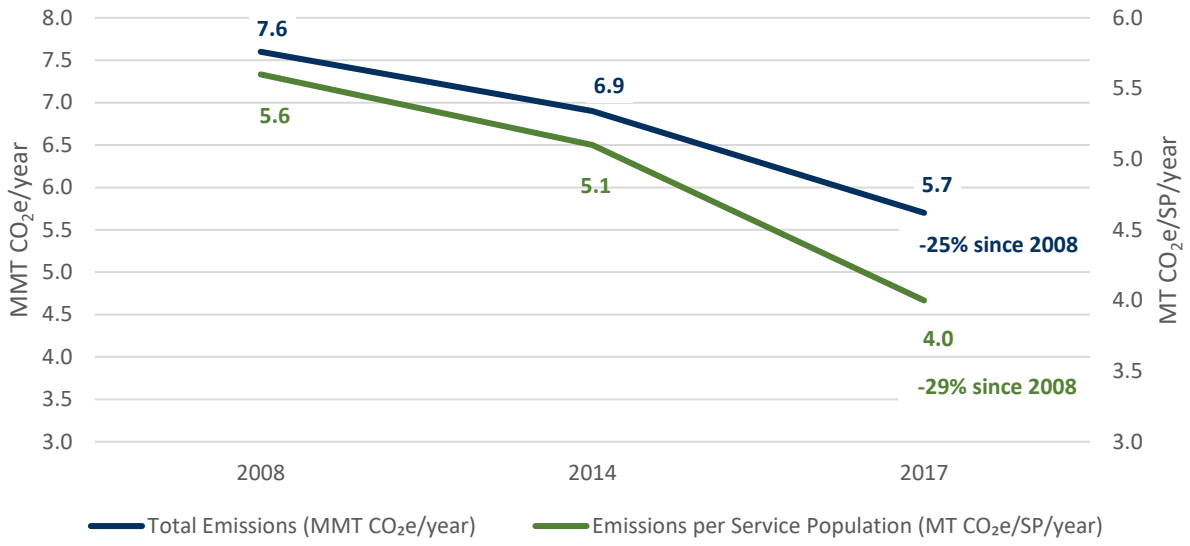
Table 3.3 – Original GHGRS 2020 GHG Target Metrics

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]

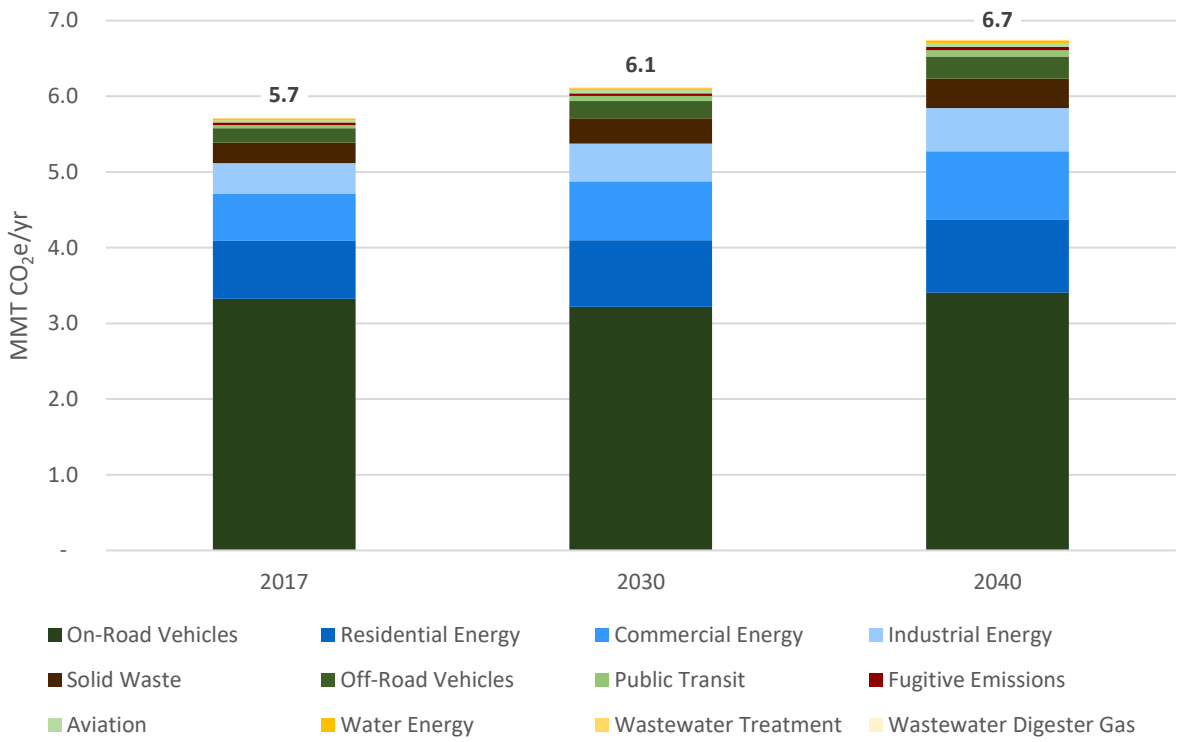
3.2.2 Forecasts for 2030 and 2040

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

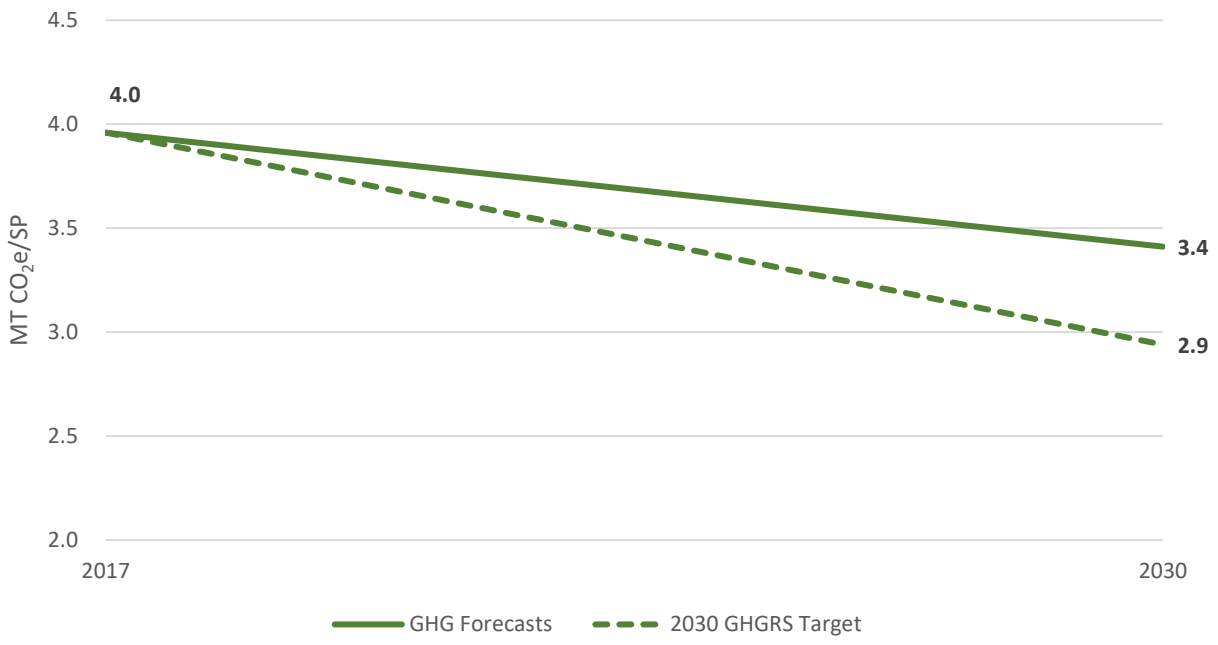
Target Metrics	2017 Inventory	2030 Forecast	2030 Target	Delta Between 2030 Forecast and Target
Mass Emissions (MMT CO_2e/year)	5.7	6.1	5.3	0.8
Emissions Intensity (MT CO_2e/SP)	3.96	3.41	2.94	0.47
Service Population	1,442,690	1,793,289	-	-

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]

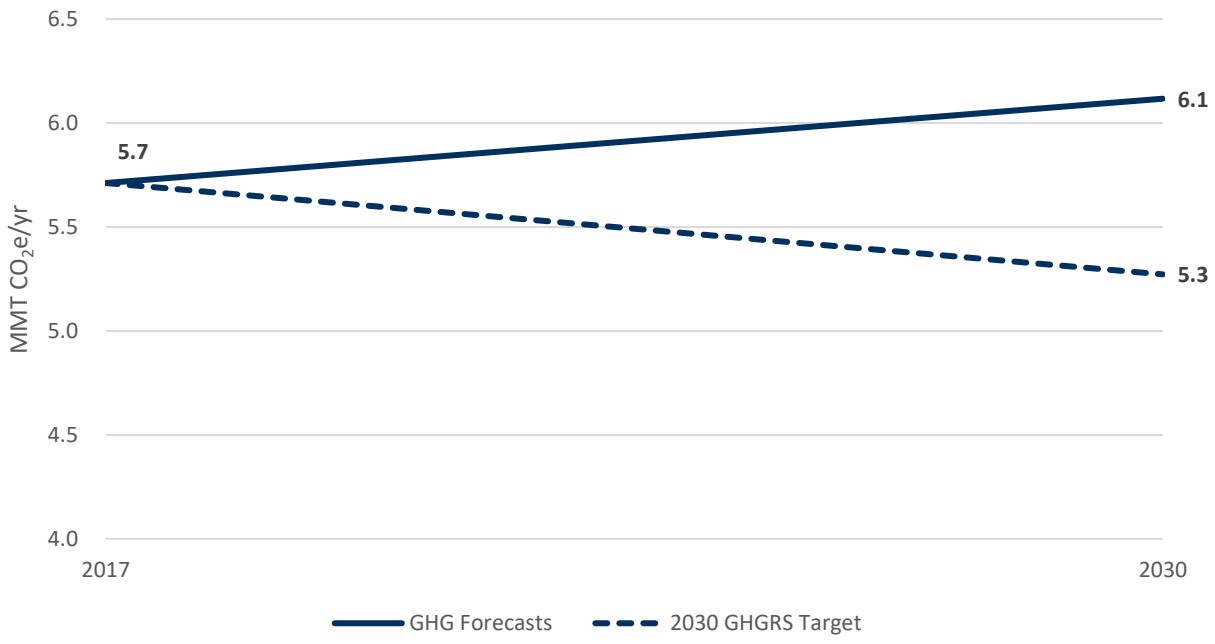
Figure 3.11 shows the comparison between the 2030 forecasts (without the use of the 2030 GHGRS GHG reduction strategies) and the 2030 GHG target expressed as MT CO_2e/SP; Figure 3.12 shows the same information expressed as MMT CO_2e/yr. As illustrated, the target would result in improved emissions intensity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

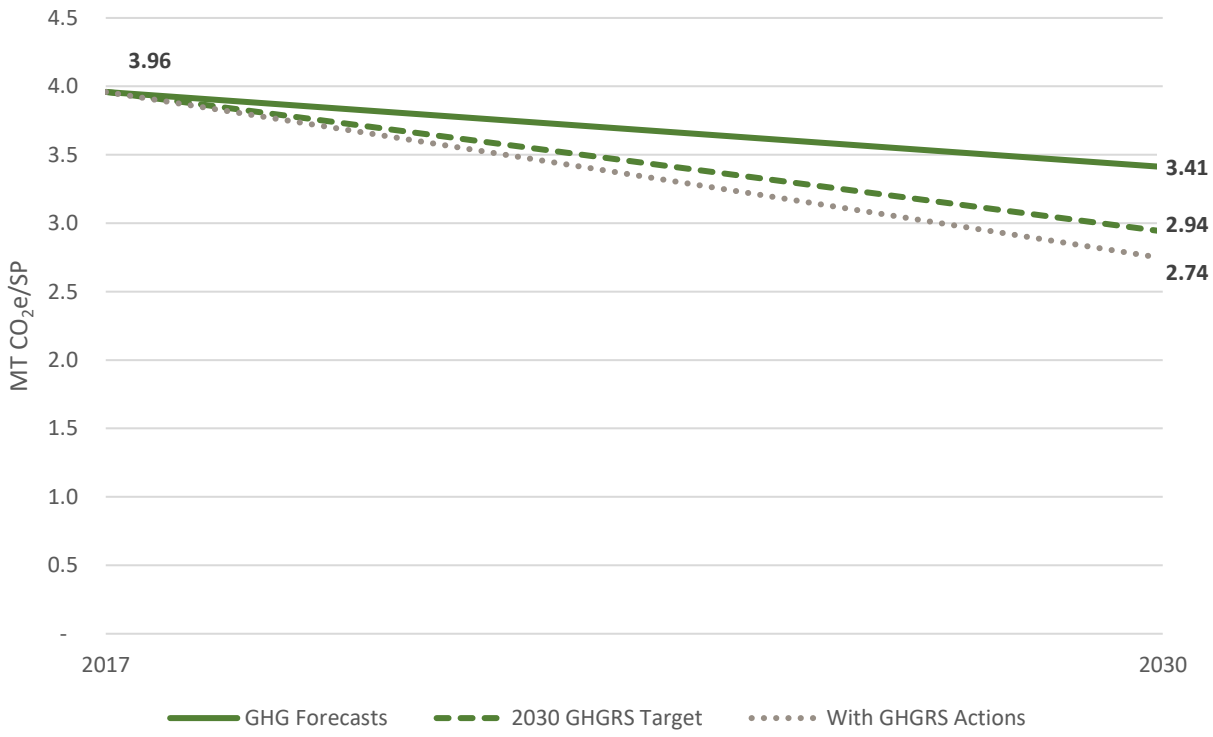
Table 3.7 – 2030 GHG Reduction Strategies and Reduction Potential

	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.

This page intentionally left blank

CHAPTER 4

Emissions Reduction Policies and Measures

This page intentionally left blank

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.

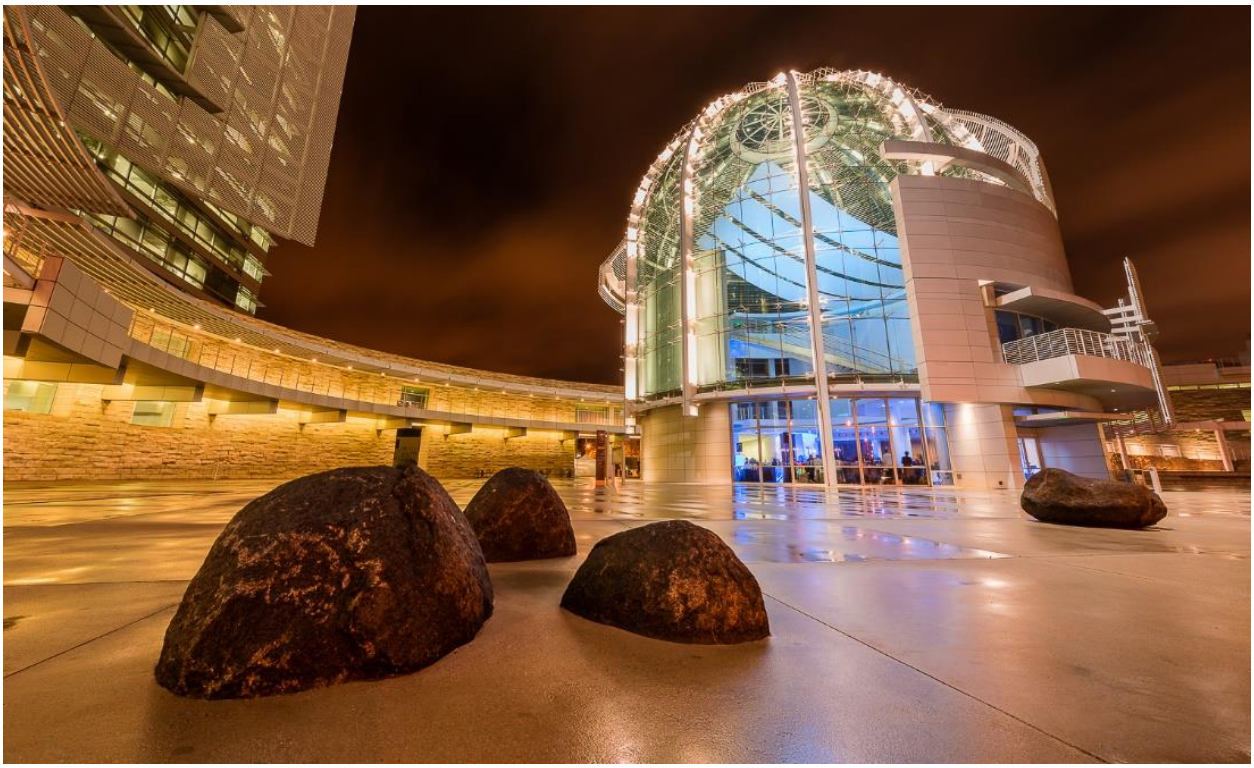
4.1 Buildings and Energy

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

This page intentionally left blank

CHAPTER 5

Conclusion

This page intentionally left blank

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

This page intentionally left blank

City of San José

2030 GREENHOUSE GAS REDUCTION STRATEGY

Appendices

August 2020

Appendix A

2017 Inventory of Community Greenhouse Gas Emissions

City of San José

2017 Inventory of Community Greenhouse Gas Emissions

Produced by ICLEI - Local Governments for Sustainability USA for City of San José through the Statewide Energy Efficiency Collaborative (SEEC)

April 2019

CREDITS AND ACKNOWLEDGEMENTS

City of San José

Julie Benabente, Environmental Programs Manager, Environmental Services Department (ESD)
Phil Cornish, Supervising Environmental Services Specialist, ESD
Agustin Cuello Leon, Engineer, Department of Transportation
Eric Dunlavey, Environmental Program Manager, ESD
Patrick Hansen, Environmental Programs Manager, Mineta San José International Airport
Pedro Hernandez, Supervising Environmental Services Specialist, ESD
Jason Nettleton, Senior Engineer, ESD
Meenaxi Raval, Supervising Environmental Planner, Planning, Building and Code Enforcement

Regional Entities

Ken Betts, Assistant Director, Santa Clara County Airport
Timothy S. Guster, Vice President and General Counsel, Legal and Regulatory Affairs, Great Oaks Water Co.
Mark Taormina, Manager of Operations, San José Water
Gino Yekta, Senior Waste Management Engineer, Waste Permitting, Compliance and Mitigation Division, CalRecycle
Tranika White, Principal Budget and Performance Analyst, Capitol Corridor Joint Powers Authority

Funding Source

Statewide Energy Efficiency Collaborative (SEEC)

ICLEI-Local Governments for Sustainability USA

This report was prepared by Hoi-Fei Mok, Senior Program Officer – Climate Equity with support from Calyn Hart, SEEC Associate at ICLEI USA. ICLEI USA would like to thank City of San José staff for providing much of the insight and local information necessary for the completion of this report.

Table of Contents

Abbreviations **4**
List of Figures **5**
List of Tables **5**

Introduction **7**
EVIDENCE OF HUMAN-CAUSED CLIMATE CHANGE **8**

Inventory Methodology **9**
UNDERSTANDING A GREENHOUSE GAS EMISSIONS INVENTORY **9**
QUANTIFYING GREENHOUSE GAS EMISSIONS **9**
Emissions Scopes 9
Base Year 10
Quantification Methods 10
WHAT IS THE FIVE MILESTONES FRAMEWORK? **11**
INVENTORY DATA SOURCES **12**
Energy 12
Waste 13
Transportation & Mobile Sources 14
Water and Wastewater 17
Process & Fugitive Emissions 18
INVENTORY SECTORS NOT INCLUDED **18**
District Heating and Cooling 18
Agricultural Livestock and Fertilizer Emissions 18
Septic Tanks 19
INVENTORY CALCULATIONS **19**

2017 Inventory Key Findings **20**
INTERPRETATION **22**
Comparison with 2014 Inventory 22
Contribution Analysis 25

Conclusion **26**

Appendix A: Community Inventory Details **27**

Abbreviations

ACE	Altamont Corridor Express
ADC	Alternative disposal coverage
ATADS	Federal Aviation Administration Air Traffic Activity System
CARB	California Air Resources Board
CH4	Methane
CO2	Carbon dioxide
CPUC	California Public Utility Commission
GHG	Greenhouse gas
GPC	Global Protocol for Community Scale GHG Inventories
GOW	Great Oaks Water Company
IPCC	Intergovernmental Panel on Climate Change
MWS	San José Municipal Water System (City-owned)
N2O	Nitrous oxide
PG&E	Pacific Gas and Electric
SJWC	San José Water Company
VMT	Vehicle miles traveled
VTA	Santa Clara Valley Transportation Authority
US EIA	United States Energy Information Administration

FIGURES AND TABLES

List of Figures

1	Observations and other indicators of a changing global climate system
2	City of San José 2014 and 2017 GHG Inventor

List of Tables

1	Population and Housing Data for the City of San José
2	Energy Emissions Factors for 2017 Inventory
3	CalRecycle Waste Characterization Profile for City of San José
4	Transportation CO2, N20, and CH4 Emissions Factors Calculated from EMFAC2017
5	Transportation Emission Factors for Buses and Light Rail
6	Inventory Comparisons 2014-2017
7	2017 Inventory Emissions by Sector
A-1	PG&E 2017 Energy Data
A-2	Past Direct Access Electricity
A-3	On-Road Transportation Data and Emission Factors
A-4	City VMT Model Outputs
A-5	ORION2017 Off Road Results
A-6	SJC Fuel Usage and Emissions in Vehicles, Including Airport Ground Support Equipment
A-7	2014 Pleasure Boating Attendance and Emissions
A-8	Regional Trains 2017 Fuel Usage
A-9	Bus and Light Rail 2017 Fuel Usage
A-10	ATADS Airport Operations for Reid-Hillview and Mineta San José Airports
A-11	Airport Local Flight Data 2017
A-12	CalRecycle Disposal Report 2017 for City of San José
A-13	Water Source Breakdown from Urban Water Management Plans 2015

A-14	Water Energy Intensity Factors for San José Water Company
A-15	Water Energy and Emissions
A-16	Wastewater Facility Emissions

Introduction

Naturally occurring gases dispersed in the atmosphere determine the Earth's climate by trapping solar radiation. This phenomenon is known as the greenhouse effect. Overwhelming evidence shows that human activities are increasing the concentration of greenhouse gases (GHGs) and changing the global climate. The most significant contributor is the burning of fossil fuels for transportation, electricity generation and other purposes, which introduces large amounts of carbon dioxide and other GHGs into the atmosphere. Collectively, these gases intensify the natural greenhouse effect, causing global average surface and lower atmospheric temperatures to rise.

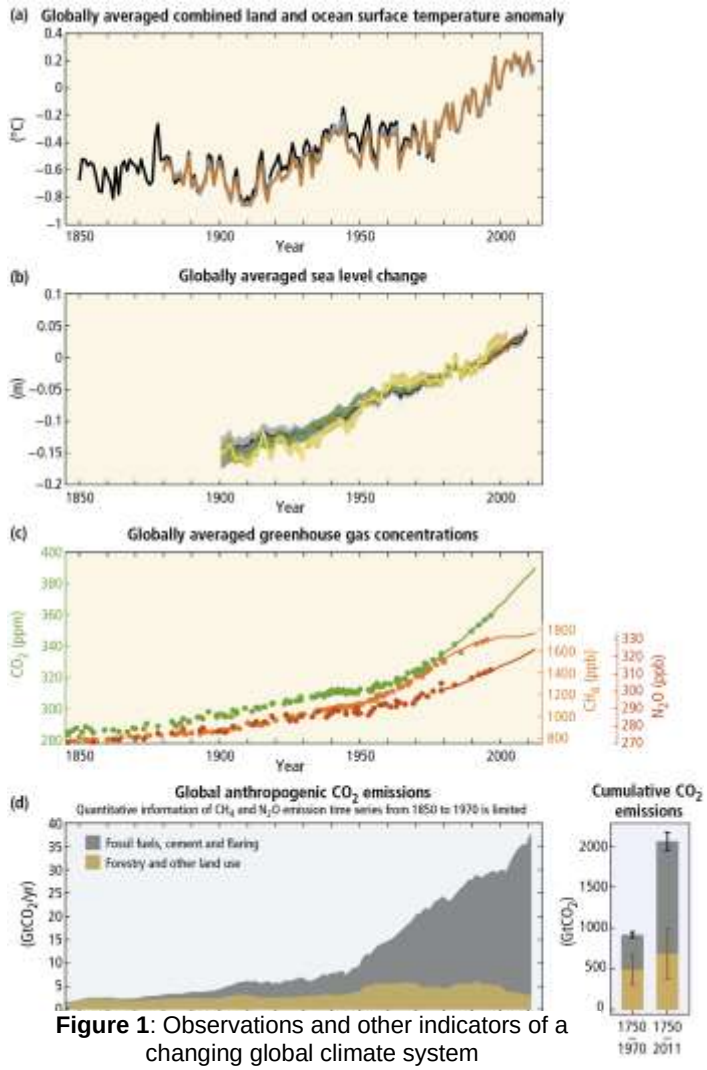


Figure 1: Observations and other indicators of a changing global climate system

The City of San José is likely to be impacted by climate change: San José already experiences an average of four extreme heat days a year and that number is modeled to go up to 15 days a year by 2070[1]. Like the rest of California, San José may expect increased upstream water shortages, air pollution from wildfire, flooding, and the disruption of ecosystems, habitats, and agricultural activities.

Reducing fossil fuel use in the community can have many benefits in addition to reducing greenhouse gas emissions. More efficient use of energy decreases utility and transportation costs for residents and businesses. Retrofitting homes and businesses to be more efficient creates local jobs. In addition, money not spent on energy is more likely to be spent at local businesses and add to the local economy. Reducing fossil fuel use improves air quality, and increasing opportunities for walking and bicycling improves residents' health.

[1] Cal Adapt 2019

EVIDENCE OF HUMAN-CAUSED CLIMATE CHANGE

There is overwhelming scientific consensus that the global climate is changing, and that human actions, primarily the burning of fossil fuels, are the main cause of those changes. The Intergovernmental Panel on Climate Change (IPCC) is the scientific body charged with bringing together the work of thousands of climate scientists. The IPCC's Fifth Assessment (2013) asserts that:

> "It is *extremely likely* that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic forcings together. Globally, economic and population growth continued to be the most important drivers of increases in CO2 emissions from fossil fuel combustion. Changes in many extreme weather and climate events have been observed since about 1950. Some of these changes have been linked to human influences, including a decrease in cold temperature extremes, an increase in warm temperature extremes, an increase in extreme high sea levels and an increase in the number of heavy precipitation events in a number of regions."

In short, the Earth is already responding to climate change drivers introduced by mankind.

Inventory Methodology

UNDERSTANDING A GREENHOUSE GAS EMISSIONS INVENTORY

The first step requires identifying baseline emissions levels and the sources and activities generating emissions in the community. This report presents emissions from the San José community as a whole. A separate municipal operations inventory will be prepared in the future.

As local governments have continued to join the climate protection movement, the need for a standardized approach to quantify GHG emissions has proven essential. This inventory uses the approach and methods provided by the Global Protocol for Community Scale GHG Inventories (GPC). The GPC was developed in 2014 by C4O, ICLEI, and the World Resources Institute as a global standard protocol for GHG inventorying. The GPC is the official protocol specified by the Global Covenant of Mayors, and defines what emissions must be reported and how. In addition, this inventory draws on methods from the U.S. Community Protocol[2], which provides more detailed methodology specific to U.S. communities. Inventory calculations were performed using the ClearPath[3] tool.

QUANTIFYING GREENHOUSE GAS EMISSIONS

Emissions Scopes

There are three emissions scopes for community emissions:

- **Scope 1:** GHG emissions from sources located within the city boundary, such as stationary fuel consumption.
- **Scope 2:** GHG emissions occurring as a consequence of the use of grid-supplied electricity, heat, steam, and/or cooling within the city boundary
- **Scope 3:** All other GHG emissions that occur outside the city boundary as a result of activities taking place within the city boundary

This inventory follows the city-inducted framework in the GPC, which totals GHG emissions attributable to activities taking place within the geographic boundary of the city. Under the BASIC reporting level as defined by GPC, the inventory requirements covers scope 1 and scope 2 emissions from stationary energy and transportation, as well as all emissions resulting from waste generating within the city boundary.

[2] http://icleiusa.org/publications/us-community-protocol/
[3] http://icleiusa.org/clearpath/

Base Year

The inventory process requires the selection of a base year with which to compare current emissions. San José's community GHG emissions inventory utilizes 2008 as its base year. The City of San José worked with AECOM to conduct its inventories in 2008 and 2014.

Quantification Methods

GHG emissions can be quantified in two ways:

- Measurement-based methodologies refer to the direct measurement of GHG emissions (from a monitoring system) emitted from a flue of a power plant, wastewater treatment plant, landfill, or industrial facility.
- Calculation-based methodologies calculate emissions using activity data and emission factors. To calculate emissions accordingly, the basic equation below is used: *Activity Data x Emission Factor = Emissions*

Emissions sources in this inventory are quantified using calculation-based methodologies, consistent with previous inventories. Activity data refer to the relevant measurement of energy use or other GHG-generating processes such as fuel consumption by fuel type, metered annual electricity consumption, and annual vehicle miles traveled.

Known emission factors are used to convert energy usage or other activity data into associated quantities of emissions. Emissions factors are usually expressed in terms of emissions per unit of activity data (e.g. lbs. CO_2/kWh of electricity).

WHAT IS THE FIVE MILESTONES FRAMEWORK?

The Five Milestones build on ICLEI's over 20 years of experience as the leader in local emissions management. Over 1000 communities nationwide have benefited from ICLEI's well-managed approach to building more sustainable, climate-friendly communities. The proven Five Milestones framework offers a systematic approach for analyzing baseline greenhouse gas emissions, developing an emissions reduction target, developing and implementing a climate action plan, and monitoring emissions reduction progress. This framework helps you reduce energy costs, be a responsible steward of the global environment, and improve quality of life for your community.

ICLEI's Five Milestones program provides a framework, methodology, and comprehensive assistance for local governments to identify and reduce greenhouse gas emissions.

1. **Conduct an inventory and forecast of local greenhouse gas emissions;**
2. **Establish a greenhouse gas emissions reduction target;**
3. **Develop a climate action plan for achieving the emissions reduction target;**
4. **Implement the climate action plan; and,**
5. **Monitor and report on progress.**

INVENTORY DATA SOURCES

For the sake of standardizing the inventory and comparison with the Community-Wide GHG Emissions Inventory and Forecast prepared by AECOM in 2016, the emission sources for this inventory (2017 Inventory) were matched as closely as possible to past data sources. Since the Community-Wide GHG Emissions Inventory and Forecast was prepared using 2014 data, it will be referred to as 2014 Inventory in this Report.

In the cases where data specific to the City or the inventory year was not available, census data such as population or housing was used to scale regional data or previous inventory data to the appropriate time and location. Table 1 lists the census data used.

Table 1: Population and Housing Data for the City of San José

Sector	Year: 2014	Year: 2017
Population	986,320	1,023,031
Housing	322,187	331,510
Source	American Factfinder	American Factfinder

Energy

Electricity and natural gas usage data was obtained from PG&E. The commercial and industrial non-governmental electricity usage was combined together under the 15/15 privacy rule ("15/15 rule"). Agricultural electricity was also included in the commercial non-governmental usage.

Direct access county and city usage was provided, but direct access non-governmental electricity failed the 15/15 rule and was not included with the 2017 PG&E data. To have a more consistent comparison with 2014, the county and city direct access data provided by PG&E was discarded in lieu of an average of previous PG&E data from 2014-2016, which included county, city, district, and non-governmental direct access usage. While customer count likely decreased from 2014, causing the privacy test failure, total usage may follow a different trend; in lieu of other data, it is assumed that the direct access is within the order of magnitude of previous years. Direct access electricity aggregated all sectors, but was entered as industrial electricity in ClearPath due to a lack of a direct access or combined sector calculator. Since PG&E transmits but does not generate electricity consumed by those customers, it was not appropriate to apply the PG&E electricity emission factor to the direct access data. Instead, the regional eGRID electricity emission factor for WECC California was used instead, following the methodology in the 2014 inventory.

In AECOM's 2014 Inventory, the 2014 PG&E data was not yet available and the energy emissions were calculated using the 2013 PG&E emission factor (499 lb CO2/MWh). The 2017 inventory used the recently published 2017 PG&E emission factor (210 lb CO2/MWh).

Table 2: Energy Emissions Factors for 2017 Inventory

Sector	Emission Factor	Unit	Reference
Electricity – Residential, Commercial, Industrial	210	CO2 lb/kWh	PG&E 2017
Natural Gas	53.02	CO2 kg/MMBtu	US Community Protocol
Electricity – Direct Access, Potable Water	527.862	CO2 lb/kWh	eGRID 2016 (WECC California)
Electricity – All	33	CH4 lb/GWh	eGRID 2016 (WECC California)
Electricity – All	4	N2O lb/GWh	eGRID 2016 (WECC California)

Waste

Solid waste emissions were calculated based on the methane commitment model outlined in the GPC. Solid waste disposal totals and the waste characterization data were obtained from California's statewide waste agency, CalRecycle. Disposal data is reported from each landfill.

The waste characterization data comes from a statewide survey and is likely not specific to the City of San José beyond population proportion and the type of industries operating in the area. The waste categories listed in Table 3 are categories that appear from CalRecycle's profile. However, ClearPath's waste characterization profile has slightly different sectors, so some of the categories were aggregated based on best fit. The CalRecycle waste characterization profile is not updated on an annual basis, so the data in Table 3 reflects 2014 statewide data as retrieved from the website in 2018. The residential and commercial reports were aggregated together for overall sector totals seen in Table 3.

ICLEI corresponded with CalRecycle to determine which landfills had methane capture and which did not. ClearPath adjusted for reduced methane emissions for those that had methane capture. See Table A-12 for the specific landfill sites with and without methane capture.

Table 3: CalRecycle Waste Characterization Profile

Sector	Percentage	Included Categories
Newspaper	2.05%	Newspaper
Office paper	2.37%	White Ledger Paper
		Other Office Paper
Magazines/Third Mail	13.96%	Magazines and Catalogs
		Phone Books and Directories
		Other Miscellaneous Paper - Compostable
		Other Miscellaneous Paper - Other
		Remainder / Composite Paper - Compostable
		Remainder / Composite Paper - Other

		Paper Bags
Cardboard	8.86%	Cardboard
Food scraps	20.64%	Food scraps
Grass	5.81%	Leaves and Grass
Leaves	1.71%	Prunings and Trimmings
Branches	0.26%	Branches and Stumps
Lumber	5.84%	Clean Dimensional Lumber
		Clean Engineered Wood
		Clean Pallets & Crates
		Other Wood Waste
Other Inert Material*	38.50%	Electronics category, Household Hazardous Waste (HHW) category, Mixed Residue category, Inerts and Other category (minus Lumber and Gypsum Board sub-types), and Special Waste category (minus Tires sub-type)

***Not included in ClearPath

Transportation & Mobile Sources

On Road Passenger and Commercial Transportation

Total daily vehicle miles traveled (VMT) for City of San José was obtained from the City's travel demand model[4] for passenger and commercial vehicles. This origin-destination VMT model is used for the City's General Plan and other plans and it was deemed best to be consistent internally rather than use other regional travel demand models. As in previous inventories, the annualization factor is 347; alternative factors were considered but no factor emerged as a superior choice.

The On-Road Factor calculation method from ClearPath was used for the transportation calculations, requiring breakdown of the VMT by vehicle and fuel type and assigning a CO2, CH4, and N2O emission factor per set. The CO2, CH4, and N2O transportation emission factors were calculated for Santa Clara County in 2017 using the EMFAC2017 statewide database and are detailed in Table 4. Since the VMT model is broken down by speed bins, the emission factors were also broken down by speed bin up until 65 MPH. Emissions factors for vehicle classes that represent a higher percentage of VMT for a particular speed bin were weighted according to their relative VMT proportion for that speed bin. The result was a weighted emission factor for each speed bin that represents all vehicle classes weighted by VMT within the County.

Table 4: Transportation CO2, N20, and CH4 Emissions Factors Calculated from EMFAC2017

Speed Bin	Emission Factor CO2 g/mile	Emission Factor CH4 g/mile	Emission Factor N2O g/mile
5	1772.3812	0.13002257	0.17746873

[4] In December 2017, the City completed the update and validation of the City's travel demand model. The 2017 inventory uses this updated model, which provides a more accurate estimate of annual VMT in San José. Although both 2014 and 2017 inventories use a consistent methodology to estimate VMT, the changes made to the travel demand model may explain part of the differences between them.

10	1752.8843	0.14126494	0.18216312
15	1048.4531	0.06097761	0.07849646
20	733.86536	0.07625292	0.05493624
25	480.88704	0.01539967	0.02579484
30	351.14484	0.0103032	0.01266186
35	358.65625	0.00961798	0.01755909
40	339.27345	0.00846879	0.01571957
45	321.80778	0.00723228	0.0124594
50	390.88388	0.00758924	0.02126992
55	380.84586	0.00724264	0.01990702
60	377.30713	0.00744519	0.01746956
65	437.29405	0.00804096	0.02795722

Public Transit Buses

Public transit bus and light rail annual VMT and fuel usage data for the Santa Clara Valley Transportation Authority (VTA), which serves the municipalities of Campbell, Cupertino, Gilroy, Los Altos, Los Altos Hills, Los Gatos, Milpitas, Monte Sereno, Morgan Hill, Mountain View, Palo Alto, San José, Santa Clara, Saratoga and Sunnyvale, was obtained from the National Transit Database agency profile and fuel report for 2017. The annual revenue VMT and fuel usage for the service area was proportioned down to City of San José by population. The bus MPG, CH4 and N2O emission factors were obtained from the US Energy Information Administration (US EIA) (Table 5). It was assumed that PG&E provided the light rail electricity for the VTA.

Table 5: Transportation Emission Factors for Buses and Light Rail

Sector		Electricity	Gas	Diesel	Unit	Reference
Buses	MPG		17.34141	17.34141	miles per gallon	US EIA 2015
	CO2		0.07024	0.073934	MT/MMBtu	US Community Protocol
	CH4		0.0201	0.001	g/mile	US EIA 2015
	N2O		0.017	0.0015	g/mile	US EIA 2015
Light Rail		210			CO2 lb/kWh	PG&E 2017

Commuter Trains

The City of San José has train stations that serve the San Joaquin, Altamont Corridor Express (ACE), Capitol Corridor, and other Amtrak lines. Fuel usage and total system mileage was obtained from annual sustainability or financial reports from Caltrains, Amtrak, and ACE for FY16. The total revenue vehicle fuel usage for Caltrains was expressed as kBtu in the sustainability report due to the fuel mixture for the vehicles; this was converted into diesel gallons for emissions calculations. The track mileage within San

José was used to calculate the proportion of train fuel usage within the city boundaries. This methodology differs from the 2014 and 2008 Inventories which used ridership to estimate emissions.

Airport Local Flights

The City of San José has two airports within its jurisdiction, the Mineta San José International Airport (SJC) and the Reid-Hillview County Airport. Emissions from local flights that begin and end their trips within the city boundaries were calculated for this community inventory. Total fuel usage data was obtained from SJC and Reid-Hillview County Airport staff. Total flight count and local flight count for the two airports were obtained from the Federal Aviation Administration's Air Traffic Activity System (ATADS) Airport Operations (Table A-11). Using the proportion of local flights to total flights, the total fuel usage attributable to local flights was calculated for each airport.

Off-Road Mobile Emissions

The off-road transportation results from California Air Resources Board (CARB)'s OFFROAD2017 model were used. Model results were calculated for Santa Clara County and scaled down to City of San José via population. These account for emissions from sources such as construction equipment, lawn and garden equipment, agricultural vehicles, industrial equipment, and other vehicles. The off-road transportation model from CARB is a coarse model and it is expected that the model results are a broad estimate for the sector. The pleasure boating and airport ground support equipment emissions were aggregated with the off-road mobile emissions into one total.

Pleasure Boating

Pleasure boats and power boats attendance in the various park marinas in Santa Clara County and within City of San José were estimated. This provided the ratio of boat attendance by boat type in Santa Clara County to City of San José. The ratio was applied to the CARB's OFFROAD model. Due to a lack of updated data, the 2014 total annual boat attendances by boat type and park and overall total emissions were scaled up by population for 2017.

Airport Ground Support Equipment and Other Vehicles

Mineta San José International Airport provided the total fuel usage and emissions calculated for all vehicles, including airside transport, machinery, ground service equipment (GSE), and de-icing trucks for 2017. Airport ground support equipment fuel usage by itself was not specifically tracked by SJC. Total emissions of 1419.3 MTCO2e from all airport equipment fuel usage were entered as a coarse estimate

for ground airport support equipment usage. Airport ground support equipment data was not requested from Reid-Hillview County Airport to keep consistent with the 2014 Inventory methodology.

Water and Wastewater

Wastewater

Wastewater generated within the City is treated at the San José-Santa Clara Regional Wastewater Facility (SJSC-RWF), which is operated, managed, and maintained by the City of San José Environmental Services Department. Wastewater treatment process emissions include fugitive methane and nitrous oxide (N2O) emissions during combustion of digester gas, the nitrification/denitrification treatment process, and effluent discharge. These process emissions are considered indirect emissions associated with the community-wide inventory. Energy related emissions for the facility operation are included in the PG&E-provided energy data (i.e., electricity and natural gas) and represented in the energy sector.

The Environmental Services Department indicated that digester gas produced in the process was combusted on site. Emissions from the digester gas combusted were calculated based on the volume of digester gas combusted daily (1,456,584 scf) and the energy content of the gas (0.00061 MMBtu/scf).

The N2O emissions from the nitrification/denitrification process were calculated based on a default assumption of 1.25 multiplier of residential to industrial/commercial wastewater discharges into the RWCF and a service population of 1.4 million.

The N2O emissions from the effluent discharge were calculated based on the daily N load from the effluent (5,472 kg N/day) and the service population of 1.4 million.

Since lagoons are not part of the active wastewater treatment system, lagoon influent emissions were not included.

Potable Water Energy

The water emissions sector includes energy-related emissions associated with the pumping, treatment, conveyance, and distribution of potable water for land uses within the city. Three water companies provide potable water service to the city's residents and businesses, including the City-owned Municipal Water System (MWS), the privately-owned Great Oaks Water Company (GOWC), and the privately-owned San José Water Company (SJWC). Potable water consumption data was obtained from each of the three water agencies.

Potable water process energy intensity values were obtained from the 2010 report *Embedded Energy in Water Studies – Study 2: Water Agency Function Component Study and Embedded Energy-Water Load*

Profiles prepared by GEI Consultants/Navigant Consulting for the California Public Utilities Commission (CPUC). Appendix B of the report provides water agency profiles. Water energy intensity values were only available for SJWC, so it was assumed that the water intensity for the other agencies would be similar. Furthermore, the water intensity methodology encapsulates more of the upstream extraction and distribution process than what energy is used on-site and directly reported from the agency. However, in lieu of more updated data and to remain consistent with past inventories, this water intensity methodology and 2010 water intensity values were used. The groundwater and surface water source breakdowns were obtained from the Urban Water Management Plans for each water agency (Table A-13).

Total water consumption was multiplied to the annual water intensity factor for extraction, treatment, and distribution, as seen in Table A-14. Extraction processes applied to groundwater; treatment processes applied to surface water and recycled water; and distribution processes applied to the total water volume. The electricity emission factor was then multiplied to calculate the total emissions. Given the upstream processes included, it cannot be guaranteed that all the processes occurred within the PG&E grid territory. Therefore, the electricity emissions factor applied to the potable water sector comes from the US EPA's eGRID 2016 analysis for the CAMX subregion (WECC California), as seen in Table 2.

Process & Fugitive Emissions

Fugitive emissions from natural gas distribution were calculated from the ClearPath calculator, following a default 0.3% leakage rate. The total natural gas usage from the residential, commercial, and industrial sectors was used as the input. This sector was not included in the 2014 Inventory. Since this sector is a requirement for GPC compliance, it was added to this inventory and to the updated 2014 Inventory number shown in this report. The formally adopted 2014 Inventory will not be amended to include this sector.

INVENTORY SECTORS NOT INCLUDED

District Heating and Cooling

District heating and cooling do not occur in San José.

Agricultural Livestock and Fertilizer Emissions

San José does not have any animal production or manure usage.

Septic Tanks

In an urban area such as San José, it is unlikely that there are households or facilities using septic tanks. Furthermore, data on septic tank usage is scarce – the most recent statewide data is from a 1990 survey and the San Joaquin County wastewater department does not track septic tank permits on a city-by-city basis.

INVENTORY CALCULATIONS

The 2017 Inventory was calculated following the US Community Protocol and ICLEI's ClearPath software, which City of San José has used before. To be consistent with the past inventories, the 4th IPCC Climate Assessment was used for the methane conversion for all inventories. ClearPath's inventory calculators allow for input of the sector activity (ie kWh or VMT) and emission factor to calculate the final CO2e emissions.

2017 Inventory Key Findings

The total emissions for the 2017 inventory were calculated at 5,711,665MTCO2e (Table 6). This represents a just over 17% decrease (-1,226,130MTCO2) from the 2014 Inventory. The greatest declines from 2014-2017 were seen in residential, commercial, and industrial energy sectors, likely from PG&E's significantly cleaner electricity grid (Figure 2) as well as reduced energy consumption (Table 7). Transportation emissions declined, but transportation remained the biggest contributor of emissions at 63% of the inventory total. The dominance of transportation emissions is consistent with the trend seen in other urban areas in California.

Table 6: Inventory Comparisons 2014-2017

Sector	Sub Sector	MT CO2e 2014	MT CO2e 2017	Change	% Change
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*	386,882	305,355	-81,527	-21.07%
Transportation & Mobile Sources		4,056,979	3,589,159	-467,820	-11.53%
	On Road	3,745,113	3,325,912	-419,201	-11.19%
	Trains/Heavy Rail (all)**	19,662	22,873	3,211	16.33%
	Light Rail	-***	1,214	1,214	n/a
	Public Buses	-***	22,294	22,294	n/a
	City and County Airport In-Boundary Flights	-***	28,310	28,310	n/a
	Off Road (all)	292,204	188,555	-103,649	-35.47%
Solid Waste		234,620	271,862	37,242	15.87%
Water and Wastewater		37,788	29,235	-8,553	-22.63%
	Water Energy	29,530	20,822	-8,708	-29.49%
	Nitrification/Denitrification Process N2O Emissions****	3,651	3,651	0	
	Combustion of Digester Gas****	91	87	-4	-4.40%

	Process N2O from Effluent Discharge	4,516	4,675	159	3.53%
Process & Fugitive Emissions		31,935*****	30,262	-1,673	-5.24%
	Total	6,937,796	5,711,665	-1,226,130	-17.67%

*Direct access includes industrial electricity usage as well as other usage. Using the sector categories from ClearPath, all direct access is grouped under Industrial Energy.

**2017 Inventory methodology differs from 2014 Inventory for heavy rail emissions

***Light rail, public transit buses, and in-boundary airport flights were not included in the 2014 Inventory.

****The Wastewater Treatment sector for 2014 was updated to remove the lagoon treatment emissions, correct biogas processing, and add the nitrification/denitrification process. More details are provided in the Interpretation section below. Approximately 70% of the N2O from the wastewater facility originates from City of San José while the remaining 30% originates from other municipalities in the facility service area.

****The fugitive emissions sector was not included in the previous inventory but was calculated as part of this inventory update for an apples-to-apples comparison.

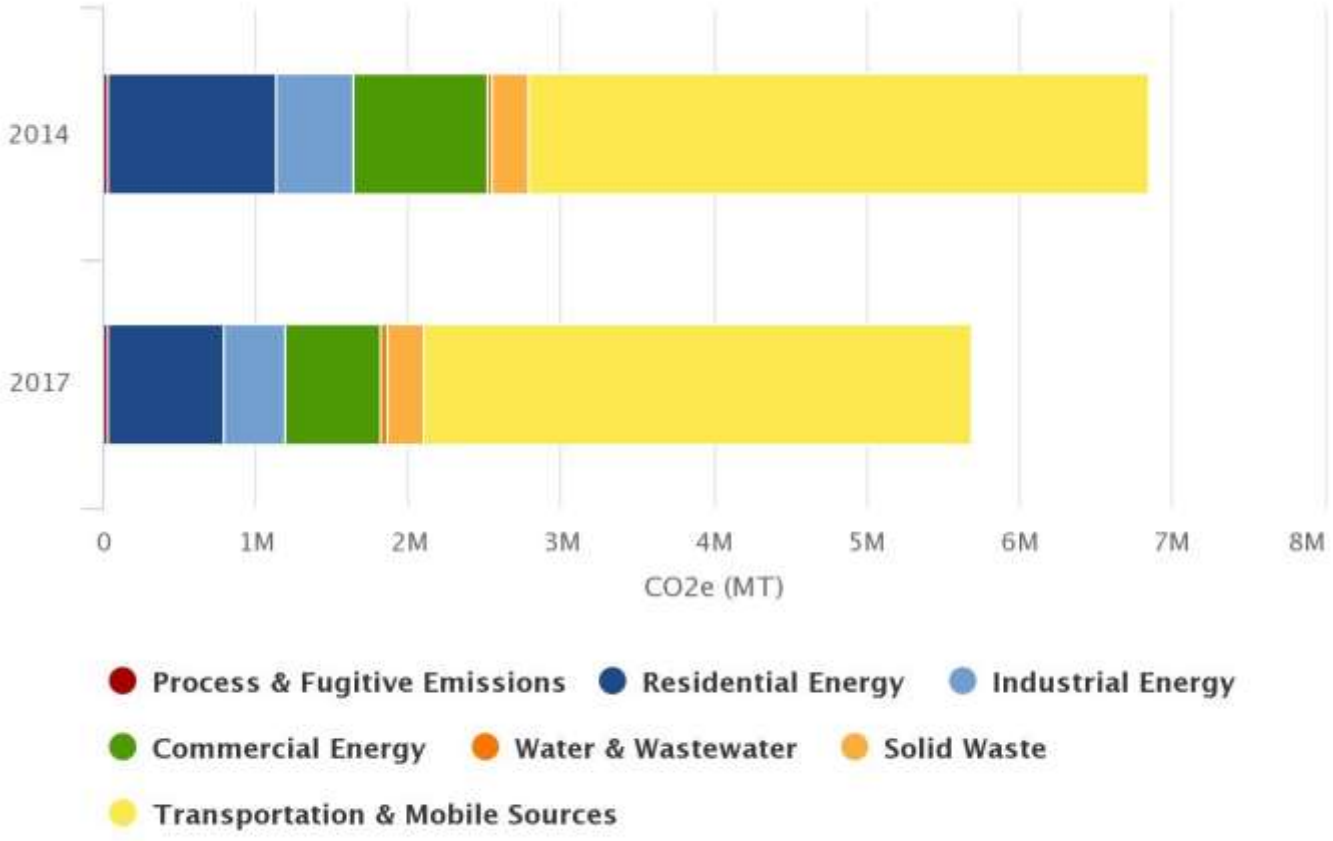


Figure 2: City of San José 2014 and 2017 GHG Inventories

Table 7 shows the comparison of inventory sector activities for select sectors where similar data was collected for 2014 and 2017.

Table 7: Select 2017 Inventory Activities by Sector

Sector	Sub Sector	2014 Activity	2017 Activity	Unit	Change	% Change
Residential Energy	Residential Electricity	1,875,919,122	1,794,638,836	kWh	-81,280,286	-4.33%
	Residential Natural Gas	125,908,563	111,212,910	therms	-14,695,653	-11.67%
Commercial Energy	Commercial Electricity	2,137,197,590	2,130,855,532	kWh	-6,342,058	-0.30%
	Commercial Natural Gas	73,873,260	79,468,661	therms	5,595,401	7.57%
Industrial	Industrial Electricity	721,229,093	723,290,596	kWh	2,061,503	0.29%
	Industrial Natural Gas	6,366,849	4,668,285	therms	-1,698,564	-26.68%
	Direct Access	1,274,752,335	1,270,463,928	kWh	-4,288,407	-0.34%
Transportation & Mobile Sources	On Road (all)	6,997,490,044	6,361,979,892	annual VMT	-635,510,152	-9.08%
Solid Waste		661,857	844,152	solid waste tonnage	182,295	27.54%
Water and Wastewater	Water Energy	99,836,072	86,616,598	combined kWh	-13,219,474	-13.24%
Process &Fugitive Emissions		206,148,672	195,349,856	total therms	-10,798,816	-5.24%

INTERPRETATION

Comparison with 2014 Inventory

Energy

The overall reduction trends for the residential, commercial, and industrial sectors are encouraging. The change in the electricity emission factor points to the cleaner electricity grid while the reduction in energy usages indicates impactful energy efficiency programs, behavior shifts, building/technological upgrades, or other policies. The cleaner grid may have played a greater role than the usage change, but doing a contribution analysis will be able to determine quantitatively the driver of change.

Transportation

GHG emissions from the transportation sector declined by roughly 11%, despite the inclusion of new categories (buses, light rail, and in-boundary flights). However, transportation remained the largest contributor to climate change in San José, growing to 63% of the total GHG emissions.

The on-road sub-sector contributes the bulk of the transportation emissions. The 2017 inventory uses an updated version of the City of San José Travel Forecasting Model that provides a more accurate

estimate of annual VMT than the one used for the 2014 inventory. The change in the modeling tool used to measure VMT explains the majority of the transportation emissions reductions. However, there is also a 9% reduction in overall VMT from 2014 to 2017 that contributes to emission reductions. The American Community Survey provides a useful insight on commuter behavior: In 2017, 75.4% of workers in San José drove alone in their daily commute to work, that percentage represents a 2.1% reduction from 2014. This trend is encouraging and potentially indicates that mode shifts to public transit or carpooling are occurring.

The 2014 Inventory was designed to align with the baseline 2008 Inventory and did not include in-boundary flights, light rail, or public buses in the transportation sector. Since 2008, inventory methodologies have evolved and given that those activities are occurring within the boundary, it is best practice to include them in the community inventory. These new sub-sectors only make up 1.4% of the transportation sector emissions.

A new methodology was used to calculate the heavy rail trains with fuel usage rather than average ridership. The previous methodology came from the first iterations of inventorying and the updated methodology is more reflective of train emissions. This methodology change is likely the main contributor to emissions increases seen in the train sub-sector.

The combined off-road emissions, which includes the marina boating, airport ground support equipment, and other off-road equipment emissions, dropped by 35%. This is likely primarily driven by the change in the off road model by CARB; an older model OFFROAD2007 was used in the 2014 Inventory while a newer updated model OFFROAD2017 was available for the 2017 inventory. The change in those model outputs alone was a 38% reduction. These off-road models tend to be coarse models at the county level however and may not reflect the precise changes in industry or behaviors at the city scale. Overall, the marina boating emissions increased by 1% due to higher population in San José. The airport ground support emissions increased by seven-fold, but this is due to the ground support equipment fuel usage aggregated with all other airport fuel usage (gasoline, diesel, CNG). The actual ground support fuel usage likely did not change significantly, but due to a lack of more disaggregated data, it is not possible to get a more representative number.

Solid Waste

There was a 27% increase in tonnage of solid waste disposal, which included alternative disposal cover (ADC) and transformation, and 15% increase in emissions. At time of writing, it is unclear whether the 2014 Inventory total tonnage included ADC and transformation. However, given that the 2014 total from CalRecycle including all three categories was 679,535 tons, this indicates that the combined total of solid waste disposal, ADC, and transformation did increase in 2017 (Table 7).

In addition to tonnage changes, methane capture from landfill was tracked for 2017. The disposal data was entered into ClearPath by whether the collecting landfill had methane gas collection or not, rather than a blanket assumption that all the landfills had methane collection. It is unclear from the 2014 methodology whether landfill methane collection was assumed or not in the past. However, given that the sector total is within the order of magnitude, the difference is a reasonable one for year-to-year changes regardless.

Potable Water

The electricity used for supply and distribution of potable water decreased, as did the overall water usage city-wide. The water intensities used in this inventory are older ones and may not reflect the true electricity usage on site and upstream. Newer water intensity factors are anticipated in the coming years through efforts with the California Public Utilities Commission (CPUC), which will help with more precise reporting.

Wastewater

In the 2008 Inventory, wastewater lagoons were accidentally included as part of the active treatment system even though the use of the lagoons is only for storage at the San José-Santa Clara Regional Wastewater Facility (SJSC-RWF). This was carried forward in the 2014 inventory as well. This inaccuracy was only discovered in the 2017 inventory update when it was realized that lagoons are no longer a part of the SJSC-RWF active treatment process and emissions associated with the lagoons should not be included. Lagoon emissions, calculated through the influent biochemical oxygen demand (BOD), were excluded from this inventory and the updated 2014 inventory total is shown in Table 6 and Figure 2 for direct comparison.

The past inventories did not include nitrification/denitrification process emissions as they were only accounting for lagoon processes, fugitive digester gases, and discharge of effluent. Since the wastewater treatment facility does have this treatment process, it was necessary to include in the inventory. Furthermore, the 2014 Inventory included emissions from flaring digester gas. This overestimates the wastewater emissions as the digester gas is combusted instead. Overall, the sector saw an increase in emissions when compared to the corrected 2014 number.

Process and Fugitive Emissions

Fugitive emissions were added to the 2014 Inventory shown in this report for apples-to-apples comparison with the 2017 Inventory and GPC compliance. The formally adopted 2014 inventory will not

be amended to show these emissions. The fugitive emissions scale with the overall natural gas usage. Since natural gas usage declined in 2017, the fugitive emissions declined by 5% as well.

Contribution Analysis

ICLEI recommends that a contribution analysis is done for a more thorough comparison between inventory years and understanding of what drives emission changes, be it the increased renewable energy in the grid, weather, or population**.** The contribution analysis will allow for breakdown of each sector by drivers like weather or population. Such an analysis can also account for differences in methodology since multiple consultants have worked on San José's inventories with potentially different methodologies or data sources. It is important to recognize if a decline in emissions is due to policy implementation, external forces like weather/population, or changes in methodology/data sources. Resources for doing the contribution analysis are available publicly on ICLEI USA's website under the Department of Energy's Cities Leading on Energy Analysis Program (CLEAP).

Conclusion

This inventory marks completion of Milestone Five, Monitor and Verify Emissions Reductions, of the Five Milestones for Climate Mitigation. The City of San José's 2014 inventory (Milestone 1) was used to set emissions reduction targets (Milestone2) during development of Climate Smart San José (Milestone 3). Milestone 4, implementation, is now underway focusing on energy efficiency, renewable energy and electrification, vehicle fuel efficiency, alternative transportation, vehicle trip reduction, land use and transit planning. Solid waste reduction and natural working lands will be incorporated into Climate Smart in the coming years. Through these efforts and others, the City of San José can achieve additional benefits beyond reducing emissions, including saving money and improving City of San José's economic vitality and its quality of life. San José intends to complete a GHG inventory annually, as well as a government operations GHG inventory on a regular basis.

Appendix A: Community Inventory Details

Table A-1: PG&E 2017 Energy Data

	ELECTRICITY (kWh)	NATURAL GAS (Therms)
RESIDENTIAL		
(3) COUNTY	69,360	34,701
(4) CITY	93,481	1,306
(5) DISTRICT	116	15
NONGOVENT	1,794,475,879	111,176,888
COMMERICAL		
(3) COUNTY	37,365,217	246,9990
(4) CITY	75,461,858	1,696,429
(5) DISTRICT	83,844,688	2,470,795
NONGOVENT	1,934,183,769	72,831,447
INDUSTRIAL		
(3) COUNTY	14,251,104	380,512
(4) CITY	84,662,013	3,684,047
(5) DISTRICT	28,158,028	603,726
NONGOVENT	596,219,451	IN COMMERCIAL
AGRICULTURAL		
(3) COUNTY	-	-
(4) CITY	-	-
(5) DISTRICT	-	-
NONGOVENT	IN COMMERCIAL	-
DIRECT ACCESS		
(3) COUNTY	-	-
(4) CITY	1,839	-
(5) DISTRICT	8,694,470	-
NONGOVENT	FAIL 15/15 RULE; EXCLUDED	-

Table A-2: Past Direct Access Electricity

Year	Direct Access Electricity (kWh)
2014	1,306,615,167
2015	1,270,578,284
2016	1,234,198,333
Average	1,270,463,928

Includes county, city, district, and non-government usage

Table A-3: On-Road Transportation Data and Emission Factors

Speed Bin	Emission Factor CO2 g/mile	Emission Factor CH4 g/mile	Emission Factor N2O g/mile	Citywide DVMT (miles/day)	Annualization Factor (days/year)	Annual Citywide VMT (miles/year)	Emissions (MT CO2e/yr)
5	1772.3812	0.13002257	0.17746873	116,239	347	40,334,933	73,753
10	1752.8843	0.14126494	0.18216312	404,091	347	140,219,577	253,896
15	1048.4531	0.06097761	0.07849646	1,101,877	347	382,351,319	410,404
20	733.86536	0.07625292	0.05493624	2,114,675	347	733,792,225	551,916
25	480.88704	0.01539967	0.02579484	3,736,445	347	1,296,546,415	633,958
30	351.14484	0.0103032	0.01266186	3,172,018	347	1,100,690,246	390,938
35	358.65625	0.00961798	0.01755909	1,517,751	347	526,659,597	191,772
40	339.27345	0.00846879	0.01571957	955,539	347	331,572,033	114,117
45	321.80778	0.00723228	0.0124594	892,996	347	309,869,612	100,925
50	390.88388	0.00758924	0.02126992	642,645	347	222,997,815	88,622
55	380.84586	0.00724264	0.01990702	800,497	347	277,772,459	107,487
60	377.30713	0.00744519	0.01746956	1,704,337	347	591,404,939	226,330
65	437.29405	0.00804096	0.02795722	1,175,126	347	407,768,722	181,794
Total				18,334,236		6,361,979,892	3,325,912

Emission factors calculated from EMFAC2017 for Santa Clara County by speed bin and weighted by VMT
Daily VMT provided by the City's VMT model

Table A-4: City VMT Model Outputs

Speed Interval	Morning	Midday	Afternoon	Night	Daily VMT	Annualization Factor
0.000 - 5.000	26,576	14,675	68,853	6,135	116,239	347
5.001 - 10.00	134,856	7,248	261,955	32	404,091	347
10.001 - 15.00	469,170	20,325	609,888	2,493	1,101,877	347
15.001 - 20.00	728,044	225,043	1,071,634	89,955	2,114,675	347
20.001 - 25.00	998,678	1,060,524	1,209,683	467,560	3,736,445	347
25.001 - 30.00	828,951	929,949	1,001,698	411,419	3,172,018	347
30.001 - 35.00	409,056	463,669	468,145	176,881	1,517,751	347
35.001 - 40.00	293,428	313,957	289,720	58,435	955,539	347
40.001 - 45.00	228,728	350,695	251,914	61,659	892,996	347
45.001 - 50.00	147,170	346,860	145,079	3,536	642,645	347
50.001 - 55.00	150,077	520,908	120,391	9,122	800,497	347
55.001 - 60.00	196,899	730,774	136,642	640,022	1,704,337	347
60.001 - 65.00	115,927	451,336	101,536	506,326	1,175,126	347
TOTAL	4,727,561	5,435,962	5,737,138	2,433,575	18,334,236	347

Table A-5: ORION2017 Off Road Results

OFFROAD Category	Metric	County Households/Jobs	San José Households/Jobs	San José Proportion	County Daily CO2	San José Daily CO2	San José Annual CO2
Lawn and Garden Equipment	Household	651,905	328,185	0.503425	0	0	0
Construction and Mining Equipment	Jobs	933,565	375,498	0.402219	277	111	40,650
Industrial Equipment	Jobs	933,565	375,498	0.402219	582	234	85,428
Light Commercial Equipment	Jobs	933,565	375,498	0.402219	86	35	12,595
Agricultural	Jobs	933,565	375,498	0.402219	7	3	995
Oil Drilling	Jobs	933,565	375,498	0.402219	0	0	9
Portable Equipment	Jobs	933,565	375,498	0.402219	253	102	37,203
Transportation Refrigeration	Jobs	933,565	375,498	0.402219	13	5	1,842
Locomotive - Line Haul	Jobs	933,565	375,498	0.402219	0	0	0
Total CO2							178,721

Table A-6: SJC Fuel Usage and Emissions in Vehicles, Including Airport Ground Support Equipment

Total Fuel used in Vehicles	Airport Owned Vehicles	Unit
Gasoline	78,304	Litre
Diesel	29,935	Litre
CNG	397,713	Kg
Propane	0	Litre
Total Emissions	1,418	MTCO2e

***Emission factors derived from EMEP-EEA

Table A-7: 2014 Pleasure Boating Attendance and Emissions

Park Name	Within City	# Power Boats	PB Attn.	# Pleasure Watercraft	PWC Attn.	# Non-Power Boats	NPB Attn.	Special Permit Boats	Special Permit Boat Attn.	Total Attn.	Total Launches
Alviso Marina	0%	6,800	23,800			2,342	3,513			27,313	9,142
Anderson Lake	50%	5,054	17,689	639	959	277	416			19,064	5,970
Calero	100%	2,709	9,482	884	1,326	798	1,197			12,005	4,391
Coyote Lake	0%	689	2,412	151	227	162	243			2,882	1,002

Lexington	0%							4,490	35,920	35,920	4,490
Stevens Creek	0%									-	
Vasona	0%	100	350					3,744	7,488	7,838	3,844
Santa Clara County Total		15,352	53,733	1,674	2,512	3,579	5,369	8,234	43,408	105,022	28,839
City of San José Total		5,236	18,327	1,204	1,806	937	1,405	-	-		
City of San José Allocation		34%		72%	26%						
Activity Data											
Boat Type	Santa Clara County	City of San José	Percent	Santa Clara County Total (MT CO2/yr)	Santa Clara County Total (MT CH4/yr)	Santa Clara County Total (MT N2O/yr)	Santa Clara County Total (MT CO2e/yr)		City of San José (MT CO2e/yr)		
Personal Watercraft (PWC)	2,512	1,806	72%	788.08	1.15	0.17	868.65	624.34			
Non-Power Boat (NPB)	5,369	1,405	26%	6.9	0.01	0	7.5	1.96			
Power Boat (PB)	53,733	18,327	34%	20,471.81	7.23	4.36	21,950.73	7,486.65			
Total	61,614	21,537	35%	21,266.79	8.38	4.53	22,826.88	8,112.95			
2017 to 2014 Population Ratio	1.03722										
2017 Adjusted Total Emissions	8,414.91										

Table A-8: Regional Trains 2017 Fuel Usage

Agency	Transit Name	Transit Line	Daily Activity	Train Miles in City	Total System track	San José Mileage Proportion	System Diesel Usage	San José Diesel Proportion
			Passby Trips	Miles	Miles	%	Gallons	Gallons
Caltrain	Diridon	North	92	2.4	51	4.71%	4,921,335	231,592.241
	Tamien	North	40	4.13	51	8.10%	4,921,335	398,531.649
	Tamien	South	6	15.87	51	31.12%	4,921,335	1,531,403.7
ACE	Diridon		8	3.27	85	3.85%	462,433	17,790.0695
Capitol	Diridon		14	3.27	170	1.92%	2067338	39,765.8545

Corridor		
	Total	2,219,083.51

Fuel and mileage data provided by Caltrain, ACE, Amtrak

Table A-9: Bus and Light Rail 2017 Fuel Usage

Fuel and VMT	Santa Clara Valley Transportation Authority service population	City of San José population proportion	Santa Clara Valley Transportation Authority	City of San José
Diesel Fuel (gallons)	1,938,180	53.42%	3,818,874	2,039,926.721
Electric Propulsion (kWh)	1,938,180	53.42%	23,638,596	12,627,021.38
Gasoline (gallons)	1,938,180	53.42%	271,959	145,272.2534
Liquified Petroleum Gas	1,938,180	53.42%	61,716	32,966.81628
Light Rail (VMT)	1,938,180	53.42%	3,349,372	1,789,132.986
Bus Mileage (VMT)	1,938,180	53.42%	15,902,113	8,494,426.691

Table A-10: ATADS Airport Operations for Reid-Hillview and Mineta San José Airports

Category	Sector	Reid-Hillview	Mineta San José
Itinerant	Air Carrier	7	120,650
	Air Taxi	323	23,211
	General Aviation	72,199	30,072
	Military	48	216
Total Itinerant		72,577	174,149
Local	Civil	90,071	4,442
	Military	0	4
Total Local		90,071	4,446
Total Operations		162,648	178,595
Local Flight Proportion		55.38%	2.49%

Table A-11: Airport Local Flight Data 2017

San José Airport			Reid-Hillview County Airport		
Total Local Flights	4,446		**Total Local Flights**	90,071	
Total Flights	178,595		**Total Flights**	162,648	
Local Flight Proportion	2.49%		**Local Flight Proportion**	55.38%	
Fuels	**Airport Total**	**Local Flights Only**	**Fuels**	**Airport Total**	**Local Flights Only**
Retail AV Gas (gallons)	64,383	1,603	100LL (gallons)	272,978	151,169.4
Retail Jet	11,817,158	294,180	Jet-A (gallons)	44,389	24,581.68
Contract Jet (gallons)	100,547,632	2,503,064			

Table A-12: CalRecycle Disposal Report 2017 for City of San José

Destination Facility	SWISNo	Instate Ton	Transform Ton	Total ADC	Methane Capture?
Billy Wright Disposal Site	24-AA-0002	66,327		180	N
Zanker Material Processing Facility	43-AN-0001	2,268		1,849	N
Zanker Road Class III Landfill	43-AN-0007				N
Yolo County Central Landfill	57-AA-0001	3		0	Y
Altamont Landfill & Resource Recovery	01-AA-0009	2,104		424	Y
Azusa Land Reclamation Co. Landfill	19-AA-0013	71			Y
Corinda Los Trancos Landfill (Ox Mtn)	41-AA-0002	688		89	Y
Fink Road Landfill	50-AA-0001	722		29	Y
Foothill Sanitary Landfill	39-AA-0004	80			Y
Forward Landfill, Inc.	39-AA-0015	11			Y
John Smith Road Landfill	35-AA-0001	72,114			Y
Keller Canyon Landfill	07-AA-0032	552		55	Y
L and D Landfill	34-AA-0020	5		8	Y
Monterey Peninsula Landfill	27-AA-0010	160,539		7	Y
Redwood Landfill	21-AA-0001	28		3	Y
Vasco Road Sanitary Landfill	01-AA-0010	478		10,468	Y
Covanta Stanislaus, Inc.	50-AA-0009		389		
Guadalupe Sanitary Landfill	43-AN-0015	67,535		41,972	

Kettleman Hills - B18 Nonhaz Codisposal	16-AA-0023	7		
Kirby Canyon Recycl.& Disp. Facility	43-AN-0008	13,161		1,295
McKittrick Waste Treatment Site	15-AA-0105	90		
Newby Island Sanitary Landfill	43-AN-0003	315,644		70,714
North County Landfill & Recycling Center	39-AA-0022	2		
Potrero Hills Landfill	48-AA-0075	12,812		3
Recology Hay Road	48-AA-0002	1,423		
Sacramento County Landfill (Kiefer)	34-AA-0001	2		
West Central Landfill	45-AA-0043	0		
Yearly Totals:		716,666	389	127,097

Table A-13: Water Source Breakdown from Urban Water Management Plans 2015

Company	Groundwater	Surface Water + Recycled*
San José Water Company	38%	62%
Great Water Company	100%	0
MWS	7%	93%

*MWS had 18% recycled water and 75% surface water; San José Water Company had 62% surface water. However, the US Community Protocol does not indicate how to treat recycled water. For purposes of this energy analysis, recycled water is combined with surface water since it does not require energy use associated with groundwater pumping.

Table A-14: Water Energy Intensity Factors for San José Water Company

Segment	ICLEI Equation Term	Avg Summer (kWh/MG)	Avg Winter (kWh/MG)	Annual Average (kWh/MG)
Groundwater	Extraction	1,548	3,421	2,485
Booster Pumps	Distribution/Conveyance	1,340	533	937
Raw Water Pump	Distribution/Conveyance	3		2
Water Treatment	Treatment	39	26	33
Pressure System Pumps	Distribution/Conveyance	48	9	29
TOTAL		2 ,978	3,989	3,484

Source: Embedded Energy in Water Studies, Study 2: Water Agency and Function Component Study and Embedded Energy-Water Load Profiles, Appendix B

Note: Per ICLEI Community Protocol guidance, the above energy intensity information was collected from a study of California water providers. Of the City's three water providers, only the San José Water Company (SJWC) was profiled in the study. This analysis assumes that the energy intensities provided for SJWC are representative of the other two water providers. Further, the study provides information on five segments of the water process (shown in the above table in the Segment column). The ICLEI equation references four segments: extraction, conveyance, treatment, and distribution. For purposes of this analysis, the "Groundwater" segment was applied to the extraction phase; the "Water Treatment" segment was applied to the treatment phase; and the "Booster Pump", "Raw Water Pump", and "Pressure System Pumps" were applied to the distribution/conveyance phase. Also, the study did not provide annual averages for energy intensity by water process phase, but rather provided summer and winter information as High Water Demand Day, Low Water Demand Day, and Average Water Demand Day, as well as

Summer Peak Energy Demand Day. For purposes of this analysis, the summer and winter Average Water Demand Day information was averaged to create an annual Average Water Demand Day.

Table A-15: 2017 Water Energy and Emissions Data

Source	Volume (MG)	Water Intensity Estimated Electricity (kWh)	Natural Gas (therms)	Emissions (MTCO2e)
Municipal Water	5,496.161	6,382,381	788	1538.2
San José Water Company	35,546.92	68,703,657	n/a	16513
Great Water Company	3,339.29	11,530,559	n/a	2771.4

Table A-16: Wastewater Facility Emissions

Protocol Equation	Category	Activity	Total
WW.7 US Community Protocol	Nitrification/Denitrification N2O emissions	Service population	1,400,000
		Industrial multiplier	1.25
		Total N2O emissions	12.25
		Total CO2e emissions	3,650.5
WW.1.b (CH4), WW.2.b (N2O), WW.3 (CO2) US Community Protocol	Combustion of Anaerobic Digester Gas	Total CO2e emissions	1,456,584
		Heat content (btu/scf)	610
		Service population	1,400,000
		Energy recovered from site	Yes
		Total CO2e emissions	86.890
WW. 12 US Community Protocol	Fugitive N2O Emissions from Effluent Discharge	Daily N load (kg N/day)	5,472
		Service population	1,400,000
		Total N2O emissions	15.689
		Total CO2e emissions	4,675.4

Appendix B

GHG Emissions Reduction Target Options Memorandum

This memorandum (memo) presents options and considerations for establishing a GHG target in the City's Greenhouse Gas Reduction Strategy (GGRS) update. The options are informed by State guidance on the topic, science-based guidance, the City's aspirations and priorities, and targets adopted by other local governments in the area.

Establishing local greenhouse gas (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 own 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.[1]

We have prepared this memo so that portions of the first section can be included in the GGRS document (with minor narrative revisions), and the second, more technical section can be potentially included as a Target-Setting Considerations Appendix to the GGRS in support of the environmental review analysis.

Section 1 – GHG Target Considerations and Options

A. Introduction

In 2019, the City of San José began updating its Greenhouse Gas Reduction Strategy (GGRS), which aims to reduce communitywide GHG emissions. As a first step, the City conducted a new communitywide GHG inventory to identify its baseline emissions footprint and is developing emissions forecasts based on anticipated growth in population, employment, and other factors in the community. In the next phases of the project, the City will establish a GHG reduction target and define local actions to achieve that target.

While there can be fiscal, economic, and public health benefits, one of the GGRS's primary purposes is to reduce GHG emissions. GHG targets serve as aspirational metrics to help focus local actions to achieve that end. Establishing clear and attainable targets can also motivate community members and City staff, help guide long-term strategies, and increase transparency and accountability regarding the GGRS's objectives.

There are several questions to consider when defining local GHG targets.

- **What type of targets can be used?**

  Targets can be set based on absolute emissions reductions or to reflect emissions intensity improvements in the community.

- **What guidance is available to direct local governments in setting GHG targets?**

  California has established several statewide GHG targets through legislative action that can help to inform local GHG target selection. State agencies, including the California Air Resources Board (ARB) and the Governor's Office of Planning and Research (OPR), have also issued guidance to local governments on this topic. The California Environmental Quality Act (CEQA) Guidelines also provide guidance on target selection for cities that would use their GHG reduction strategy to streamline environmental review for future development projects.

[1] *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.*

- **What does the climate science say?**

  According to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), targets adopted to reduce GHG emissions are “science-based” if they are consistent with the magnitude of emission reductions required to limit the increase of global temperatures to 2°C above pre-industrial temperatures.

- **What is the City’s emissions profile?**

  The City’s 2017 emissions inventory totals 5.7 million metric tons of carbon dioxide equivalent (MMT CO_2e) with the majority coming from transportation (63%) and energy use (32%). A communitywide GHG reduction target should consider the sources of emissions and a city’s ability to influence its emission sources.

- **What timeframe should the targets address?**

  Cities typically consider a range of target horizon year options, with near- or mid-term targets selected to help set the city on a pathway toward more aggressive longer-term targets, depending on the city’s unique needs and aspirations. The specific target years can be chosen based on California’s GHG targets, local planning priorities (such as the City’s General Plan), or other considerations.

- **What kind of targets are other local governments in the area using?**

  San José is not acting alone in its efforts to reduce GHG emissions, and the targets of other local governments can also help to inform the City’s own target selection process.

B. Target Types

GHG targets can be expressed as either ***mass emissions*** targets or ***emissions intensity*** targets.

Mass Emissions Targets

Mass emissions targets establish an absolute emissions level to be achieved by a target year, such as 100,000 metric tons of carbon dioxide equivalent per year (MT CO_2e/yr) by 2020. Typically, mass emissions targets are expressed as a percent below the emissions level of some base year, such as 80% below 1990 emissions by 2050. Mass emissions targets are often used in the context of deep GHG reductions or carbon neutrality, described in detail below.

Deep GHG Reduction Targets

This term refers to the common long-term GHG reduction target set by cities, aiming to reduce emissions to approximately 80% below baseline levels by 2050 to limit the global temperature increase to less than 2°C compared to pre-industrial temperatures. Many cities leading the effort on GHG mitigation set this long-term target at the start of their climate planning processes (and since that time, some of these same cities have revised their long-term targets to aim for carbon neutrality, as described below). Sometimes, this type of target is also referred to as a ***climate***-neutral target, as it is intended to neutralize the adverse impacts of climate change. The distinction between a climate-neutral target and a zero carbon or a net zero carbon target is noteworthy. While the term “climate-neutral” may be useful for marketing and communication purposes, and while the actions necessary to achieve this target certainly need to be ambitious, this term should not be confused with a zero carbon or net zero carbon target, which requires bold and systemic changes to core city transportation, buildings, and waste systems at a level beyond deep carbon reductions.

Carbon Neutrality Targets

In describing community GHG emissions, the term 'carbon neutrality' is often used interchangeably with 'zero carbon emissions' and 'net zero carbon emissions'. It is important to clarify and define each of these terms.

Zero Carbon Emissions: In its strictest sense, this term refers to a scenario under which a city eliminates all sources of direct GHG emissions associated with its activities. While theoretically possible, this type of target is very challenging to achieve because some sources of GHG emissions are near impossible to eliminate. Even if a community were to power its built environment and transportation sectors with 100% renewable energy, some GHG emissions from wastewater treatment, solid waste management, refrigeration, or fire suppression are not currently feasible to eliminate. It is worth noting that, based on our review of best practices, no city has yet endeavored to establish a goal to achieve zero carbon emissions in the strictest sense of the definition.

Net Zero Carbon Emissions: This term means that the ***net*** GHG emissions associated with a city are zero. Under this scenario, some residual emissions may be produced by a community each year, but they can be fully balanced by investing in offsetting activities, such as generating additional renewable energy and providing it to consumers outside the community, biological carbon sequestration, green procurement strategies, or the purchase of verifiable carbon credits.

Emissions Intensity–Based Targets

Emissions intensity thresholds set a target level of emissions per population or per service population (i.e., local residents plus local jobs), such as 2.25 MT CO_2e per service population per year (MT CO_2e/SP/yr) by 2035. Emissions intensity thresholds demonstrate a community's ability to grow population and employment, while emissions shrink on a per-unit basis; in effect, a community could be growing more efficiently from an emissions standpoint. In this case, total emissions within a community may increase while still achieving an emissions intensity target, if service population is growing faster than emissions.

Mass emissions and emissions intensity-based targets are both useful to consider when evaluating appropriate emissions reduction targets, and OPR and ARB suggest that local governments consider both types in their climate action plans.

Mass or Emissions Intensity-based Activity-Specific Targets

While the types of targets described above focus on GHG emissions as a metric for measurement of progress, leading cities are also adopting goals that focus specifically on the activities causing GHG emissions, such as energy consumption in the building and transportation sectors or solid waste generation. These activity-specific targets can be helpful in communicating the City's GHG goals more clearly and tracking progress within individual activities or sectors. However, they should not be used as a replacement for an overarching communitywide GHG target that covers all sectors and emissions activities because it can be difficult to understand how a specific activity target relates to total communitywide emissions. This can be especially problematic when using a climate action plan (CAP) or similar greenhouse gas reduction strategy to support CEQA streamlining for future projects where it is difficult to demonstrate how achievement of an activity target results in a less than cumulatively considerable impact related to GHG emissions.

Mass Targets Related to Net-Zero Fossil Fuel Consumption or 100% Renewable Energy Use: This type of target focuses on the activity that generates the majority of overall GHG emissions at the community level – fossil fuel combustion for energy generation used in buildings, vehicles, and equipment. Some cities use this target because they believe it is easier to understand than a GHG reduction target and is therefore more inspirational than a GHG reduction target. Some cities have applied this target strictly to electricity generation or related to a specific sector (like transportation), while others intend it to be used for all fuel sources.

Emissions Intensity-based Activity Targets or Budgets: Using the concept of emissions intensity-based targets, many cities have applied these targets to key consumption activities in daily urban life to create a "budget", such as reducing per-capita electricity consumption or driving by a certain percent by a

future year. These forms of targets can make it easier to communicate the role of individual community members in reducing GHG emissions and achieving targets.

C. Guidance on Local Government Target Setting

Guidance on local government target setting in California is primarily based on three sources: the State's own GHG targets, ARB's Climate Change Scoping Plan (Scoping Plan), and OPR's General Plan Guidelines. Together, these sources help to frame the context for local GHG targets. For climate action plans that are designed to provide CEQA streamlining for future projects, precedent case law is another source of guidance for reduction targets, although this guidance is primarily based on the State's legislative GHG reduction targets.

State GHG Targets

California's statewide GHG targets are defined through adopted legislation (2020 and 2030 target years) and Executive Orders (2045 and 2050 target years), as shown in Table 1 below.

Table 1
State of California Greenhouse Gas Targets

Target Year	Target	Corresponding Legislation
2020	Return to 1990 GHG levels by 2020	Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006
2030	40% below 1990 levels by 2030	Senate Bill 32 (SB 32), the Global Warming Solutions Act of 2006
2045	Carbon neutrality by 2045	Executive Order B-55-18 of 2018
2050	80% below 1990 levels by 2050	Executive Order S-3-05 of 2005

Some cities have simply adopted the State's exact targets, and others have calculated variations of them to more accurately reflect local emissions sectors, demographics, and economic conditions. There are four primary considerations when using the State's targets as the basis for local targets:

1. How can 1990 emissions levels be approximated locally?
2. What is the local baseline year?
3. What emissions will be analyzed locally?
4. What degree of influence does the City have over different emissions sources?

Section 2 of this memo provides the supporting calculations to estimate local emissions targets based on the State's GHG targets. Following is a discussion oriented around these four questions related to the direct use of the State's reduction targets.

Approximate 1990 Emissions Levels

The State's GHG targets have been established as mass emissions targets and are often referenced in local government target setting. However, the State's specific targets are each benchmarked to a 1990 GHG inventory, and, for most local governments, it is technically challenging to back-cast an inventory for that year. Guidance in ARB's 2008 Climate Change Scoping Plan identified local governments as "essential partners" in achieving the State's GHG goals and encouraged adoption of local GHG targets "…that parallel the State's commitment to reduce greenhouse gas emissions by approximately 15% from current levels by 2020." Many local governments followed this guidance for their near-term target to

approximate a return to 1990 levels (i.e., the State's GHG target for 2020). This helps to explain why many climate action plans in California have defined a 2020 target as 15% below baseline levels.

Consider the Local Baseline Year

It is worth noting that the original ARB guidance suggesting that a 15% reduction below current GHG levels approximates a return to 1990 levels was based on an earlier version of the State's emissions forecasts. Following release of this original guidance, the 2008 economic recession occurred, resulting in slower emissions growth statewide than previously anticipated. Further, the 15% reduction target value was calculated relative to a 2008 baseline year. For cities with different baseline inventory years, the corresponding 2020 target value would be slightly different. ARB also subsequently revised the statewide 1990 inventory, which altered some of the underlying calculations associated with the 1990 target value.

Table 2 shows the State's current 1990 inventory (and therefore, its 2020 target emissions level) and the statewide inventories for 2008-2016. At the time this memo was developed, ARB had not yet released a 2017 statewide inventory that would directly correspond to the City's 2017 base year inventory. As shown in Table 2, reductions of 13.1% below a 2008 base year inventory would have been required to approximate a return to 1990 emissions levels (compared to the original 15% reduction guidance provided in the 2008 Scoping Plan). Over the years, that reduction amount has decreased as the State has implemented various GHG reduction programs. In 2015, reductions of 2.5% were needed to return to 1990 levels, and by the 2016 inventory year statewide emissions were already below 1990 levels (achieving the goals of AB 32 assuming future statewide inventories remain below 1990 levels).

Table 2
State of California Greenhouse Gas Targets

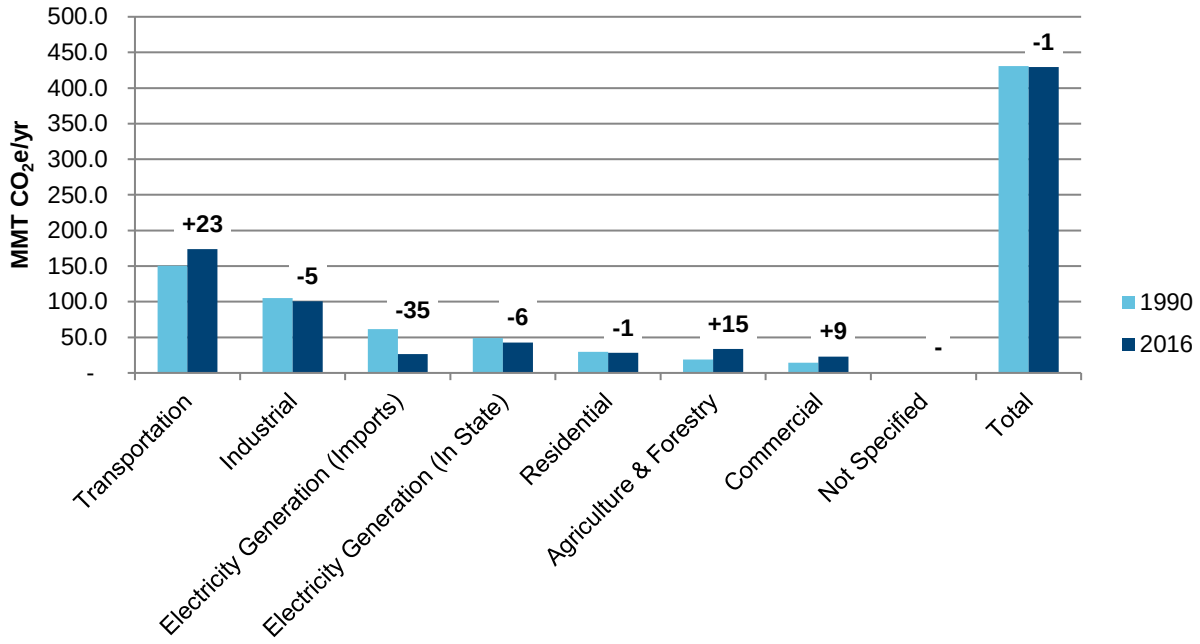
	1990	2008	2009	2010	2011	2012	2013	2014	2015	2016
Million Metric Tons CO_2e (using 4AR GWP values)	431	487.3	457.3	448.1	443.9	450.4	447.6	444.1	441.4	429.4
% reduction to achieve 1990 levels	-	13.1%	6.1%	4.0%	3.0%	4.5%	3.9%	3.0%	2.4%	-0.4%

Source: California Air Resources Board. California Greenhouse Gas Inventory for 2000-2016 - by Category as Defined in the 2008 Scoping Plan. Last Updated Friday June 22, 2018. Available: <https://ww3.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_sum_2000-16.pdf>

The results in this table highlight the need to thoughtfully consider the selection of local GHG reduction targets with respect to now outdated guidance for local governments. For example, a city using a 2016 base year inventory might consider that year to represent a return to 1990 levels and could therefore set its GHG targets as a percent reduction below 2016 levels to mirror the statewide targets (e.g., 40% below 2016 emissions by 2030 would demonstrate consistency with the State's GHG target in SB 32).

Figure 1 on the following page shows how the statewide emissions have changed since 1990. Emissions increases are primarily attributed to the transportation and agriculture & forestry sectors, while substantial emissions reductions occurred in the imported electricity sector during the same period.

Figure 1 – Statewide Emissions Change by Sector[2]



Evaluate Local Emissions Sources

As a final consideration for the State's GHG targets, it is important to understand the sources of emissions included in the statewide inventory and how they differ from the sources typically represented at the community inventory level. Certain emissions sectors are not included or applicable locally but are included statewide based on the prevailing GHG inventory methodologies. For example, industrial process-related emissions occur within California and are included in the statewide inventory, but these same sources do not occur locally in all jurisdictions and so would not be represented in all communitywide inventories. In addition, some emission sources that may have a local presence are outside the control of local lead agencies – for example, some industrial emissions sources are the purview of the air quality management district, and not the municipality. Therefore, the State's GHG targets should also be customized for use locally in a way that considers the presence or absence of certain emissions sectors and relative degree of municipal influence. This can be achieved by analyzing the sub-set of emissions sectors that will be included in the local GHG inventory. Section 2 presents the results of this customization analysis specific to San José, should the City choose to define local targets based on the State's adopted targets.

Tailoring the reduction target to the specific local context also speaks to the direction from the California Supreme Court's 2015 decision in *Center for Biological Diversity v. California Department of Fish and Wildlife*,[3] commonly referenced as "Newhall Ranch." In Newhall Ranch, the Court indicated that the use of a State legislation-based GHG emissions significance threshold could be acceptable, so long as the

[2] *Figure 1 shows the 1990 and 2016 emissions inventory results organized by economic sector categorization. 1990 inventory available: https://www.arb.ca.gov/cc/inventory/1990level/1990data.htm; 2016 inventory available: https://www.arb.ca.gov/cc/inventory/data/data.htm*

[3] *62 Cal. 4th 204.*

administrative record supports how this threshold is appropriate for a specific project at a specific location.[4] Section 2 provides further detail on tailoring State guidance to local conditions.

ARB Climate Change Scoping Plan – 2008 and 2017

The 2008 Scoping Plan was developed to establish the State's pathway toward achievement of the AB 32 GHG target (i.e., return to 1990 levels by 2020). Within that document, ARB's original guidance to local governments was to adopt a GHG target of 15% reduction below current levels by 2020. Since publication of the 2008 Scoping Plan, SB 32 was adopted (2016) and directed a statewide 2030 GHG target (i.e., 40% below 1990 levels by 2030). ARB subsequently finalized a revised Scoping Plan in November 2017 to establish an achievement pathway for this new 2030 target.

The *2017 Climate Change Scoping Plan* provides the following updated guidance on target-setting for local governments:

> *"Recommended Local Plan-Level Greenhouse Gas Emissions Reduction Goals*
>
> CARB recommends statewide targets of no more than six metric tons CO_2e per capita by 2030 and no more than two metric tons CO_2e per capita by 2050. The statewide per capita targets account for all emissions sectors in the State, statewide population forecasts, and the statewide reductions necessary to achieve the 2030 statewide target under SB 32 and the longer-term State emissions reduction goal of 80% below 1990 levels by 2050.[5]
>
> …CARB recommends that local governments evaluate and adopt robust and quantitative locally-appropriate goals that align with the statewide per capita targets and the State's sustainable development objectives and develop plans to achieve the local goals. The statewide per capita goals were developed by applying the percent reductions necessary to reach the 2030 and 2050 climate goals (i.e., 40% and 80%, respectively) to the State's 1990 emissions limit established under AB 32.[6]
>
> …Emissions inventories and reduction goals should be expressed in mass emissions, per capita emissions, and service population emissions. To do this, local governments can start by developing a community-wide GHG emissions target consistent with the accepted protocols as outlined in OPR's General Plan Guidelines Chapter 8: Climate Change. They can then calculate GHG emissions thresholds by applying the percent reductions necessary to reach 2030 and 2050 climate goals (i.e., 40% and 80%, respectively) to their communitywide GHG emissions target. Since the statewide per capita targets are based on the statewide GHG emissions inventory that includes all emissions sectors in the State, it is appropriate for local jurisdictions to derive evidence-based local per capita goals based on local emissions sectors and population projections that are consistent with the framework used to develop the statewide per capita targets. The resulting GHG emissions trajectory should show a downward trend consistent with the statewide objectives."[7]

Based on this guidance, the 2017 Scoping Plan recommends that local governments use emissions intensity metrics to develop GHG targets for 2030 and beyond and refers to OPR's recommendation that local governments define both mass emissions and emissions intensity targets for their GHG reduction analyses. It also states that use of such targets as defined therein is consistent with the State's GHG

---

[4] *Id. at 225-228 (EIR must compare the specific project's expected emissions to the existing physical environment in the project's vicinity – at a specific location - rather than a hypothetical business as usual (BAU) scenario based on statewide assumptions).*

[5] *California Air Resources Board. The 2017 Climate Change Scoping Plan, page 99. Available: <https://ww3.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf>. Accessed May 24, 2019.*

[6] *Ibid*

[7] *Ibid. Pg. 100*

goals, as well as the recently signed Under 2 MOU[8] international agreement and the Paris Agreement.[9] This guidance also suggests that local governments that had been using a 2020 target and planning horizon should update to targets that are focused on the 2030 and 2050 State goals.

Office of Planning and Research (OPR) General Plan Guidelines

OPR recently updated its General Plan Guidelines, including a chapter on climate change that describes target-setting considerations for local governments.[10] The Guidelines suggest that target setting should be context-specific and tailored to a community's unique characteristics, while generally relating to the State's GHG targets. The Guidelines refer readers to ARB's guidance for local action and recommend analyzing a community's mass emissions and emissions intensity to support a fuller understanding of the issue. It is worth noting that OPR's guidance **does not** define required targets for local governments to include in their CAPs.

D. Climate Science-Driven Targets

The Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) stipulates that targets adopted to reduce GHG emissions are "science-based" if they are consistent with the magnitude of emission reductions required to limit the increase of global temperatures to 2°C above pre-industrial temperatures. From a policy perspective, this was interpreted as a need to reduce emissions by at least 80% below 1990 baseline levels by 2050 (this is also California's 2050 statewide GHG target expressed in EO-S-3-05).

In late 2015, advisory bodies to the IPCC reported that limiting the average global temperature increase to 2°C may not be adequate, as a 2°C increase would still result in irreparable damage to ecosystems, food security, and sustainable development in the world's most vulnerable communities, particularly small island nations and low-lying plains. They proposed an aspirational target to limit the average global temperature increase to 1.5°C to avoid the most severe impacts to these geographies. This latest literature suggests the need for a more significant magnitude of GHG reductions by cities in the developed world. To achieve the targets in the Paris Agreement, global "net-zero" emissions much be reached to maintain global temperature rise below 1.5°C. The Paris Agreement (Article 3.1) states that "Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof." As developed nations have a greater capacity to achieve such reductions given access to resources and existing quality of life, there is much incentive for such nations to drive the net-zero emissions reduction model.

---

[8] *The Under 2 Memorandum of Understanding (MOU) is a subnational climate agreement developed by the Under2 Coalition to limit global temperature increases to less than 2°C through agreements from signatories to reduce their GHG emissions to 80-95% below 1990 levels by 2050 or limit to 2 MT CO_2e/capita per year by 2050. Available: <http://under2mou.org/>*

[9] *The Paris Agreement is an international agreement developed through the United Nations Framework Convention on Climate Change to keep global temperature rise below 2°C this century, and pursue efforts to limit temperature increases to 1.5°C. The Paris Agreement is based on nationally determined contributions to achieve its goal, which represent the ratifying parties' best efforts toward addressing climate change. Available: <http://unfccc.int/paris_agreement/items/9485.php>*

[10] *The Governor's Office of Planning and Research. General Plan Guidelines, Chapter 8 Climate Change. Available: <https://www.opr.ca.gov/docs/OPR_C8_final.pdf>*

E. City's Emissions Profile

As shown in Table 3 below, the City's 2017 total emissions were 5.71 million metric tons of CO_2e with the majority coming from transportation (63%) and energy use (32%). The remaining emissions come from solid waste and water & wastewater.

Table 3
City of San José 2015 Greenhouse Gas Inventory

Sector	MT CO_2e/yr	%
Transportation and Mobile Sources	**3,589,159**	**63%**
On-road Transportation	3,325,913	58%
Train/Heavy Rail	22,873	<1%
Public Transit	23,508	<1%
Aviation	28,310	<1%
Off-road Transportation	188,555	3%
Energy	**1,821,411**	**32%**
Residential	763,962	13%
Commercial	627,496	11%
Industrial	399,690	7%
Fugitive Emissions (oil/natural gas)	30,262	1%
Solid Waste	**271,862**	**5%**
Solid Waste	271,862	5%
Water and Wastewater	**29,235**	**1%**
Potable Water	20,822	<1%
Wastewater	8,413	<1%
Total	**5,711,667**	**100%**

The source of emissions should be considered during target setting since the City has more influence over some sources than others. For example, local building codes can be designed to reduce energy emissions from residential and commercial buildings, or incentive programs could be designed to trade in less efficient personal vehicles for high-efficiency or alternative fuel vehicle options. In contrast, a local government might have limited ability to influence technologies or fuels used in the aviation sector or to address fugitive emissions from natural gas distribution pipelines. These considerations are especially important for cities considering a net-zero or carbon neutrality GHG target; emissions sources that cannot be reduced would need to be offset in other ways to demonstrate target achievement.

F. Target Timeframes

Local GHG targets can be set to align with various objectives, such as State GHG goals, local funding cycles, or long-term planning horizons. From an implementation standpoint, most CAPs are designed with near-term (5-10 years), medium-term (10-20 years), and long-term (20+ year) targets to provide

waypoints for progress tracking. With this approach, it is helpful to identify the final target (long-term target) up front, and then set a series of interim targets (near- and medium-term targets) that lead to it. This ensures that near-term targets are aggressive enough to make progress toward the long-term target and supports strategic thinking on early-action items that will provide long-term benefits. In the case of the GGRS update, which will establish one medium-term target (i.e., 2030, 2035, or 2040), consistency with the statewide targets can help to ensure that the City's chosen target would support longer-term target achievement in the future (e.g., a 2050 GHG target).

California's GHG target years are 2020, 2030, and 2045/2050. Given the proximity to the State's 2020 target year, a GGRS target for 2030, 2035, or 2040 is tentatively proposed to allow the City time to establish and achieve the most meaningful GHG reduction targets. The 2030 target approach would link the City's target directly to the State's GHG planning timeframe, while a 2035 target year aligns with the existing San José GGRS long-term target year. Alternatively, the City could select a 2040 target year, which would align with the City's General Plan Update. However, a 2040 target would be a decade beyond the scope of the State's 2017 Scoping Plan that outlines a pathway to achieve the 2030 statewide target. Therefore, the extent of additional statewide action beyond the 2030 target year is unknown and might make it difficult to demonstrate a local target achievement pathway for 2040 (i.e., a 2040 target would be more aggressive than the State's 2030 target and additional statewide policies and programs would likely be required to achieve that more aggressive target, but the specifics of such expanded statewide action is currently unknown).

G. Other Local Government Targets

In addition to the guidance provided by State agencies, it can be helpful to consider the GHG targets of other local governments when defining a target because it reinforces the notion that cities are not acting alone, and therefore, are not putting themselves at a regional economic disadvantage through their climate change response. It is also important to consider the context of other cities' targets, including their baseline year, the types of reduction strategies included in their plans, and how they treat statewide actions, when referencing them as the basis for local target setting.

Table 4 shows different GHG targets from other local governments in the California.

Table 4
Other Local Government Greenhouse Gas Targets

City Name (CAP Year)	Target Type	Target Year				
		2020	2025	2030	2035	2050
City of LA (2017)	Mass emissions	Achieve 1990 levels	45% below 1990 levels	-	60% below 1990 levels	80% below 1990 levels[11]
City of Oakland (2018)	Mass Emissions	-	-	56% below 2005 levels	-	83% below 2005 levels
City of San Francisco (2013)	Mass emissions	-	-	40% below 1990 levels	-	80% below 1990 levels
City of Mountain View (2012)	Emissions intensity	15-20% below 2005 levels	-	30% below 2005 levels	-	-
City of Cupertino (2015)	Mass emissions	15% below 2010 levels	-	-	49% below 2010 levels	83% below 2010 levels

[11] *The City is currently evaluating GHG reduction pathways to achieve carbon neutrality by 2050.*

Table 4 Other Local Government Greenhouse Gas Targets						
City Name (CAP Year)	**Target Type**	**Target Year**				
		2020	**2025**	**2030**	**2035**	**2050**
City of Santa Clara (2013)	Mass emissions	15% below 2008 levels	-	-	55% below 2008 levels	-
County of Santa Clara (2007)	Mass emissions	20% below 2007 levels	30% below 2007 levels	40% below 2007 levels	50% below 2007 levels	80% below 2007 levels
City of Palo Alto (2016)	Mass emissions	-	-	80% below 1990 levels	-	-
City of Sunnyvale (2019)	Mass emissions	-	-	40% below 1990 levels	-	80% below 1990 levels

As shown in the examples above, most of the communities established a mid-term target for 2030 or 2035, and five have set long-term targets that align with the statewide 2050 target. In addition, the City of Los Angeles is considering a carbon neutrality target, though it has not yet formally adopted one. In the table, only the City of Mountain View has established emissions intensity targets so far. This may be because many of the reference CAPs were prepared prior to the 2017 Scoping Plan Update and OPR's General Plan Guidance, which both reference emissions intensity targets as acceptable options for local governments and recommend their use along with mass emissions targets to present a holistic understanding of emissions in the community. This does not suggest that San José could not adopt an emissions intensity target, but that it might be useful to include mass emissions targets for reference, as well to better support comparisons with neighboring communities' commitments.

H. 2030, 2035, and 2040 Target Options for San José

Target selection is an iterative process that is typically informed by local needs and policy guidance, direction from elected officials, and analysis of emissions forecasts and GHG reduction opportunities. Table 5 on the following page presents several target options for the 2030, 2035, and 2040[12] planning years that can be evaluated during the subsequent phases of this project. Target selection considerations are provided for each option to describe whether the potential targets might be appropriate for use at the local level (i.e., Recommended, Maybe, Not Recommended), and what potential challenges the City might face in selecting each target.

We preliminarily recommend the targets shown in Option D for the City's GGRS because they align with the most current guidance from ARB, OPR, and indirectly with the California Supreme Court's Newhall Ranch decision[13]; are tailored to match the emissions sectors included locally in the City's inventory; and provide an easy calculation metric for tracking future target progress.

[12] *Target options A and B include a 2020 target as a reference point upon which the subsequent targets are based.*

[13] *The Newhall Ranch case was not about a communitywide climate action plan, but rather a new development project and that project's GHG threshold. This is an important distinction because communitywide CAPs consider emissions from existing and future development, whereas a project's CEQA analysis only considers emissions from new development associated with the project. However, the guidance provided in the Newhall Ranch case decision is still interpreted as a good analog for CAP target setting because it affirms the connection between State's GHG legislative framework, local agency determination, and CEQA determination.*

Target Options A, B, and F represent more aggressive reduction levels than Option D and could be considered further following the emissions forecasting and GHG reduction analysis to better understand the City's capacity for greater GHG reductions.

We do not recommend Options C or E for further consideration at this time. They were included in this memo because they fall within the realm of potential target options but given the City's existing emissions context and the other target options available neither represents the best available option.

Table 5
2030, 2035, and 2040 Greenhouse Gas Target Options

Option	Target	Target Selection Considerations
Target Option A – Statewide Inventory Mass Emissions Target – EO-S-3-05		
2020	0% below 2017 levels (5,711,667 MT CO_2e/yr)	**Maybe:** The State established mass emissions targets that could be applied locally. However, these targets are aggressive and may not be achievable locally. **Method**: The State's 2017 inventory is not yet available; however, the 2016 inventory results are approximately equal to a return to 1990 emissions levels statewide. Assuming the State's 2017 inventory would show no change from 2016 levels or a slight decrease in keeping with the long-term trajectory of statewide emissions, the City could interpret its 2017 inventory as a return to 1990 levels and then directly apply the State's GHG targets to that baseline level to demonstrate consistency. Assumes linear interpolation of the State's 2030 target and Executive Order S-3-05 target of 80% below 1990 levels by 2050.
2030	40% below 2017 levels (3,426,999 MT CO_2e/yr)	
2035	50% below 2017 levels (2,855,833 MT CO_2e/yr)	
2040	60% below 2017 levels (2,284,666 MT CO_2e/yr)	
Target Option B – Statewide Inventory Mass Emissions Target – EO-B-55-18		
2020	0% below 2017 levels (5,711,667 MT CO_2e/yr)	**Maybe:** The State established mass emissions targets that could be applied locally. However, these targets are aggressive and may not be achievable locally. **Method**: Same approach as Option A, except that it assumes linear interpolation of the State's 2030 target and Executive Order B-55-18 carbon neutrality target by 2045
2030	40% below 2017 levels (3,426,999 MT CO_2e/yr)	
2035	60% below 2017 levels (2,284,666 MT CO_2e/yr)	
2040	80% below 2017 levels (1,142,333 MT CO_2e/yr)	
Target Option C – 2017 Scoping Plan Emissions Intensity Targets		
2030	6.0 MT CO_2e/capita (7,164,066 MT CO_2e/yr)	**Not Recommended:** Not an appropriate use of ARB guidance in Scoping Plan Update because targets assume all statewide inventory sectors are included in local inventory; City's inventory only includes a sub-set of statewide sectors. The City's baseline per capita emissions are already lower than the 2030 target shown here, which could make selection of this target challenging from a public messaging perspective (i.e., it would allow local emissions to increase through 2030 before declining). **Method**: Direct application of per capita targets included in 2017 Scoping Plan.
2035	5.0 MT CO_2e/capita (6,269,555 MT CO_2e/yr)	
2040	4.0 MT CO_2e/capita (5,255,244 MT CO_2e/yr)	

Table 5 2030, 2035, and 2040 Greenhouse Gas Target Options		
Option	**Target**	**Target Selection Considerations**
Target Option D – Local Emissions Source-Based Intensity Targets		
2030	4.29 MT CO_2e/capita (5,123,954 MT CO_2e/yr); 2.94 MT CO_2e/SP (5,280,218 MT CO_2e/yr)	**Recommended:** These emissions intensity targets are consistent with guidance from ARB and OPR to establish emissions intensity targets based on the local emissions context **Method**: Calculates per capita and per service population emissions targets based on a sub-set of statewide emissions sectors that are also included in City's inventory. See Section 2 of this memo for a detailed description of this methodology.
2035	3.46 MT CO_2e/capita (4,335,912 MT CO_2e/yr); 2.37 MT CO_2e/SP (4,575,656 MT CO_2e/yr)	
2040	2.69 MT CO_2e/capita (3,528,445 MT CO_2e/yr); 1.84 MT CO_2e/SP (3,803,055 MT CO_2e/yr)	
Target Option E – Local Emissions (without Passenger Vehicles) Intensity Targets		
2030	2.81 MT CO_2e/capita (3,355,734 MT CO_2e/yr); 1.93 MT CO_2e/SP (3,458,072 MT CO_2e/yr)	**Not Recommended**: This option has not been applied in any other known cities to date; its results are very similar to Option A, which could be a more defensible target since it is a clearer application of the State's own adopted targets. **Method**: Same as Option D, except this approach also excludes emissions from passenger cars and light duty trucks, which will be addressed at the regional level through SB 375 legislation.[14] *Note: This option proposes removing only the passenger vehicle emissions from consideration and not mobile emissions from other types of vehicles. This would remove only GHG emissions that are specifically addressed through the SB 375 process.*
2035	2.26 MT CO_2e/capita (2,839,742 MT CO_2e/yr); 1.55 MT CO_2e/SP (2,996,759 MT CO_2e/yr)	
2040	1.76 MT CO_2e/capita (2,311,033 MT CO_2e/yr); 1.21 MT CO_2e/SP (2,490,895 MT CO_2e/yr)	

[14] *The Sustainable Communities and Climate Protection Act of 2008 (SB 375) directs the California Air Resources Board to set regional targets for GHG reductions from passenger vehicles. The targets are designed to align with the State's GHG reduction targets and are implemented through a Regional Transportation Plan/Sustainable Communities Strategy prepared by California's metropolitan planning organizations, including the Association of Bay Area Governments of which San José is a member.*

Table 5 2030, 2035, and 2040 Greenhouse Gas Target Options		
Option	**Target**	**Target Selection Considerations**
Target Option F – Net Carbon Neutrality Target – Emissions Intensity Trajectories		
2030	2.95 MT CO_2e/capita (3,518,792 MT CO_2e/yr); 2.12 MT CO_2e/SP (3,806,384 MT CO_2e/yr)	**Maybe**: The 2030 option here may be achievable with known statewide actions and some aggressive local action; the 2035 and 2040 targets are likely too ambitious to demonstrate a target achievement pathway at this time without including some very aggressive action implementation assumptions. Achieving full carbon neutrality would require GHG reductions in emissions sub-sectors over which the City does not exercise direct control (e.g., aviation, rail transport) and would be contingent upon partnerships with external agencies/organizations or investment in carbon offset programs. **Method**: Assumes net-zero emissions achieved by 2045, with interim targets defined based on a linear trajectory from the City's 2017 baseline emissions intensity levels (i.e., per capita, per service population) to net zero emissions in 2045.
2035	1.96 MT CO_2e/capita (2,463,546 MT CO_2e/yr); 1.41 MT CO_2e/SP (2,729,016 MT CO_2e/yr)	
2040	0.98 MT CO_2e/capita (1,290,615 MT CO_2e/yr); 0.71 MT CO_2e/SP (1,460,221 MT CO_2e/yr)	

I. Target Option Summary

Figure 2 on the following page illustrates each of the target options presented above in terms of mass emissions. For example, the per capita targets were multiplied by the City's population forecast in each target year to calculate the total emissions allowance for each year (e.g., 6.0 MT CO_2e/capita * 1,194,011 residents = 7,164,066 MT CO_2e). Population and employment forecasts were taken from the City's General Plan Update Land Use Element. The result is that each target option, excluding Option C, would result in mass emissions reductions below the 2017 base year levels; Option C is not recommended for the reasons described in Table 5.

Option D would result in gradual emissions reductions and aligns with the guidance for local governments in the 2017 Scoping Plan to consider a per capita emissions target. Options A, B, E, and F are more aggressive than Option D and would therefore require greater local reductions to achieve.

Options A and B have the same 2030 target, which is the State's adopted 2030 target; Option A then follows a more gradual trajectory to the State's 2050 target of 80% below 1990 levels, while Option B follows a more aggressive trajectory to the State's 2045 carbon neutrality target. Option E follows a similar trajectory as Option A, while Option F follows a similar carbon neutrality trajectory as Option B.

Figure 2 – Target Options in Mass Emissions

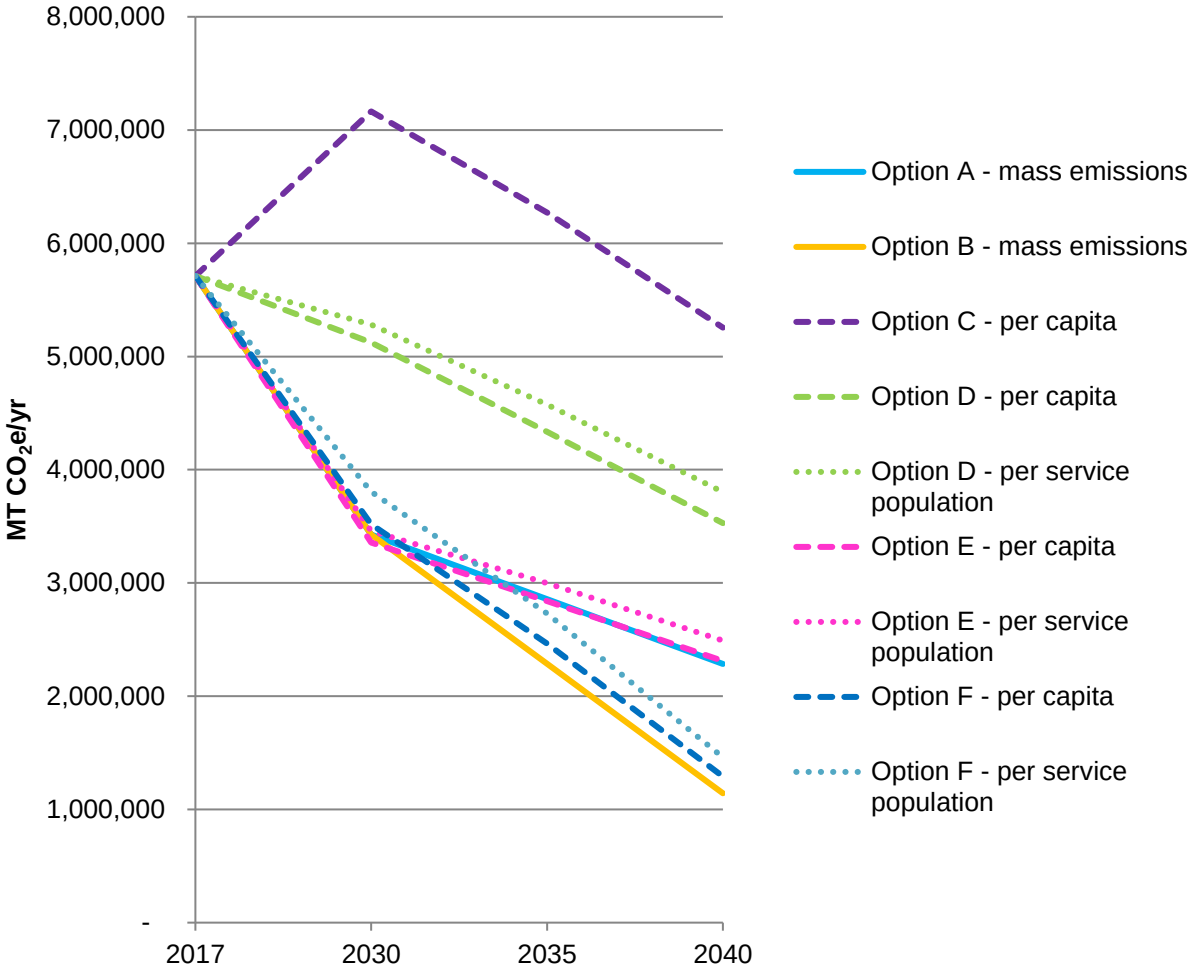


Figure 3 represents the options as per capita targets. As mentioned above, Option C would allow per capita emissions to increase in 2030 from existing base year levels and is not recommended as a viable target option. All other options would result in per capita emissions improvements. Option D reflects gradual improvement in emissions intensity over time, while Options A, B, E, and F would each require more aggressive action in the near-term (i.e., 2030).

Figure 3 – Target Options – Per Capita

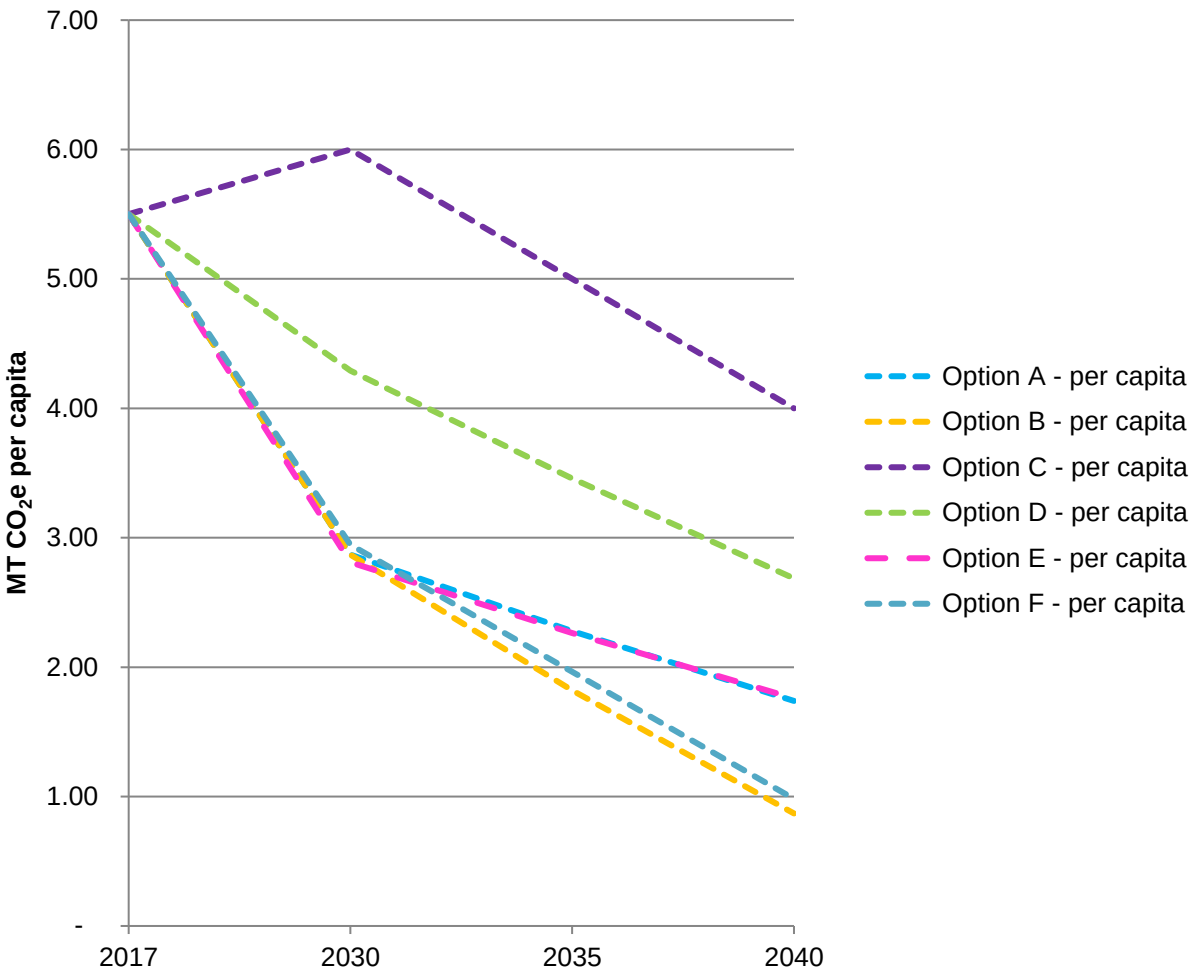
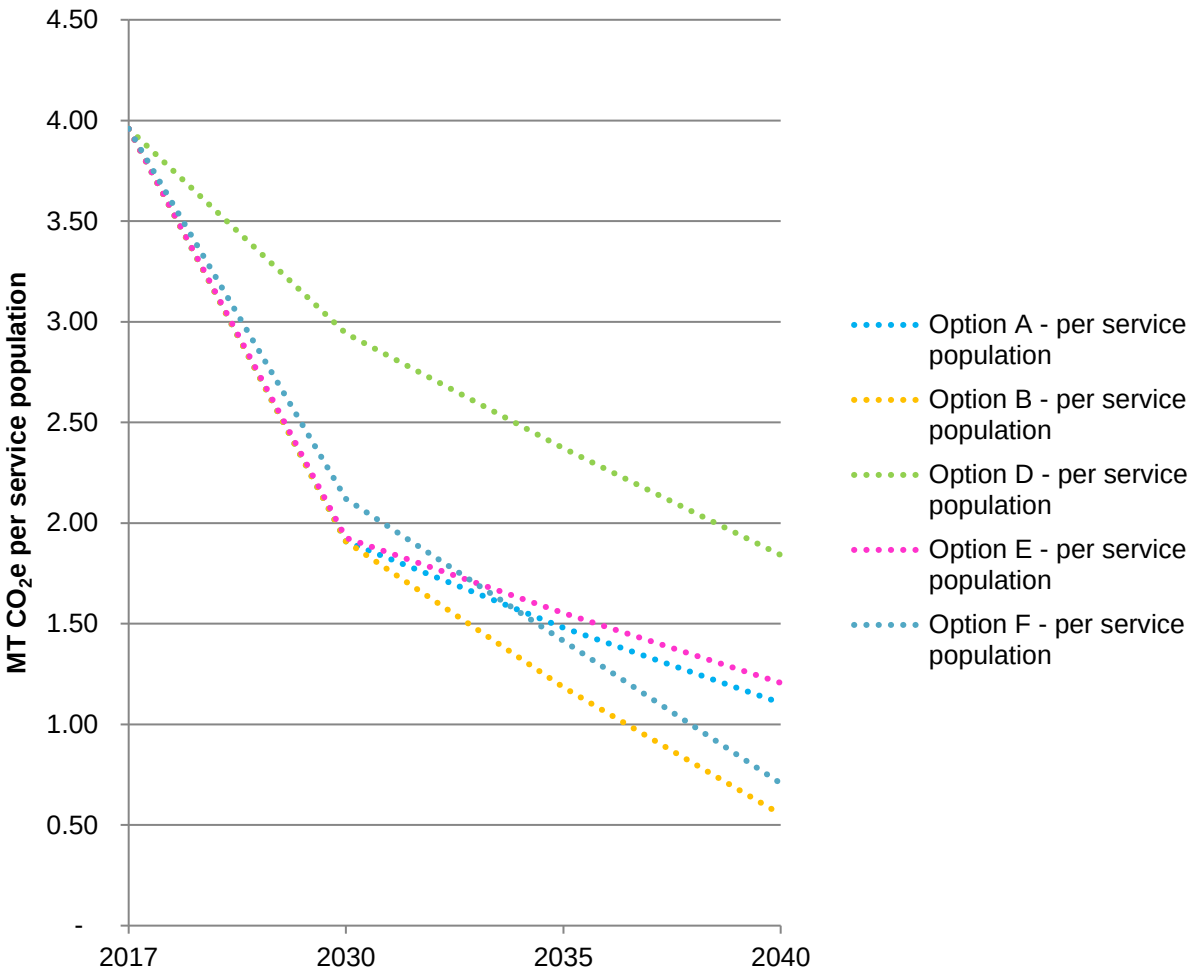


Figure 4 illustrate the options as per service population targets. Note there is no per service population version of Target Option C, which is described in the 2017 Scoping Plan explicitly as per capita targets. Each of the target options would result in reduced emissions intensity on a per service population basis. Option D represents a more gradual improvement over time, while Options A, B, E, and F are more aggressive in the near-term (i.e., 2030), with trajectories that become less aggressive in subsequent years.

Figure 4 – Target Options – Per Service Population



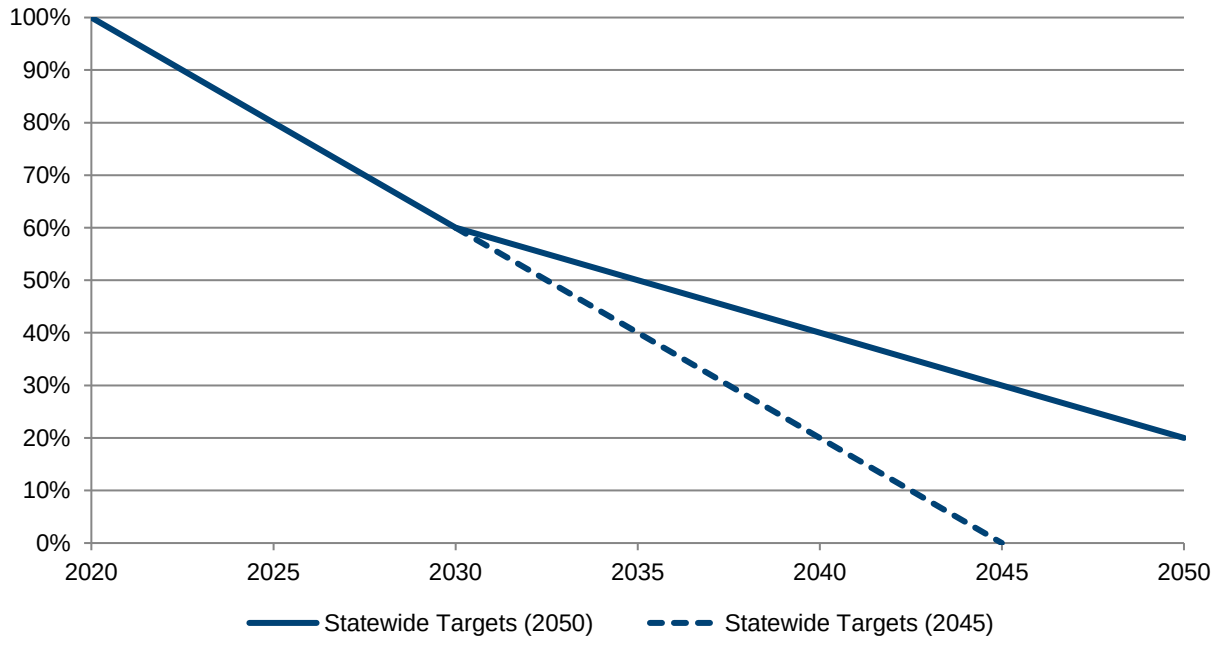
Section 2 – Target Calculation Methodology

A. Statewide Targets

In 2006, California took steps to develop a long-term response to the challenges of climate change through adoption of Assembly Bill 32 (AB 32). As the first-of-its-kind legislation in the country, AB 32 established a statewide GHG emissions reduction target to return to 1990 emissions levels by the year 2020. In addition to the near-term 2020 target codified in AB 32, Executive Order (EO) S-3-05 was signed by then-Governor Schwarzenegger in 2005 to establish a long-term emissions target of 80% below 1990 levels by 2050. Then, SB 32 was signed in 2016 to establish an interim target between the State's 2020 and 2050 targets, calling for reductions of 40% below 1990 levels by 2030. In 2018, then-Governor Brown signed EO B-55-18 to establish a 2045 carbon neutrality target for the state. Figure 5 illustrates the trajectory of the State's targets from 2020 through 2050 as a solid line, and from 2020 through 2045 as a dashed line to illustrate both long-term Executive Order GHG targets.

For purposes of the target setting calculation methodology described in this section, the State's 2050 GHG targets expressed in EO S-3-05 are referenced and used to calculate the 2040 interim target options. This is to align the target options with the local government guidance provided in the 2017 Scoping Plan, which also references the State's 2050 climate goals.

Figure 5 – Statewide Emissions Target Trajectory



Statewide Emissions Inventory

AB 32 (2006) required that the Air Resources Board (ARB) to determine the statewide greenhouse gas emissions level in 1990, from which progress toward achievement of the emissions targets shown in Figure 1 can be measured. AB 32 also required ARB to approve a statewide greenhouse gas emissions

limit, equal to the 1990 level, as a limit to be achieved by 2020. In 2014, ARB adopted a revised 2020 emissions limit of 431 MMT CO_2e. This new emissions limit replaced the original 1990 limit approved in 2007. The currently approved 1990 limit (i.e., 431 MMT CO_2e) includes emissions from all sectors within the state. Table 6 shows the State's 2020, 2030 and 2050 emissions targets based on the approved 1990 limit. 2035 and 2040 target year values were interpolated between the 2030 and 2050 targets to correspond with the original San José GGRS mid-term target year (i.e., 2035) and the San José General Plan horizon year (i.e., 2040).

Table 6
Statewide Emissions Inventory and Reduction Targets

	1990	2020	2030	2035	2040	2050
Statewide Emissions Targets (MMT CO_2e)	431.0 [1]	431.0 [1]	258.6 [2]	n/a	n/a	86.2 [4]
Interpolated Mid-term Reduction Target	n/a	n/a	n/a	215.5 [2]	172.4 [3]	n/a
Amount below 1990 Levels	0%	0%	40%	50%	60%	80%

Source: AECOM 2019
Note: MMT CO_2e = million metric tons of carbon dioxide equivalent
[1] California 1990 Greenhouse Gas Emissions Level and 2020 Limit, ARB: <http://www.arb.ca.gov/cc/inventory/1990level/1990level.htm>
[2] 40% below 1990 levels per SB 32
[3] Interpolated between 2030 and 2050 targets
[4] 80% below 1990 levels per EO-S-3-05

Local Application of Statewide Emissions Targets

Local governments in California often select the same emissions targets as the State when preparing GHG analyses. However, community GHG inventories often do not include all of the same emissions sectors as the statewide inventory. For example, community inventories may not include agricultural or forestry emissions. Therefore, a scaled version of the full statewide emissions inventory was developed as part of the City's GGRS analysis, which is based on the emissions inventory sectors occurring in San José. The revised inventory is more appropriate for use in community GGRS target-setting because it draws a clearer correlation between the City's GHG target and its relationship to the State's own targets.

Table 7 on the following page presents a revised version of the 1990 statewide emissions shown in Table 6 and includes only the sectors and sub sectors included in the San José communitywide inventory.

Table 7 Adjusted Statewide Emissions Inventory – Local Emissions Sources			
Main Sector / Sub Sector Level 1	**Total Emissions (MMT CO_2e/yr) [1]**	**Adjusted Emissions – Local Sources (MMT CO_2e/yr)**	**Notes/Adjustments**
Agriculture & Forestry	18.9	0.0	*Excluded*
Commercial	14.4	13.9	Excludes National Security emissions from Sub Sector Level 1
Electricity Generation (Imports)	61.5	61.5	Includes all emissions
Electricity Generation (In State)	49.0	45.0	Excludes CHP emissions from Sub Sector Level 1 for non-natural gas fuel types
Industrial	105.3	13.6	Industrial emissions included, except as described in sub sectors below:
CHP: Industrial	*9.7*	*0.0*	*Excluded*
Flaring	*0.2*	*0.0*	*Excluded*
Landfills	*7.4*	*7.4*	
Manufacturing	*32.1*	*0.7*	*Includes only Construction emissions from Sub Sector Level 3*
Mining	*0.03*	*0.0*	*Excluded*
Not Specified	*2.7*	*0.0*	*Excluded*
Oil & Gas Extraction	*14.8*	*0.0*	*Excluded*
Petroleum Marketing	*0.02*	*0.0*	*Excluded*
Petroleum Refining	*32.8*	*0.0*	*Excluded*
Pipelines	*1.9*	*1.9*	
Waste Water Treatment	*3.6*	*3.6*	
Not Specified	1.3	0.0	*Excluded*
Residential	29.7	29.7	Includes all emissions
Transportation	150.6	150.6	Includes all emissions
Total	**430.7**	**314.3**	

Notes: Sectors/sub-sectors may not sum exactly due to rounding

[1] California 1990 Greenhouse Gas Emissions Level and 2020 Limit by Sector, ARB: <http://www.arb.ca.gov/cc/inventory/1990level/1990level.htm>

Table 8 on the following page presents the adjusted statewide emissions based on the local emissions sources occurring in the San José community inventory, with the corresponding statewide emissions targets for the 2020, 2030, 2035, 2040, and 2050 target years.

Table 8
Adjusted Statewide Emissions Inventory, Forecasts, and Reduction Targets – Local Emissions Sources

	1990	2020	2030	2035	2040	2050
Statewide Emissions Targets (MMT CO_2e)	314.3 [1]	314.3 [1]	188.6 [2]	157.1 [3]	125.7 [3]	62.9 [4]
Amount below 1990 Levels	0%	0%	40%	50%	60%	80%

Source: AECOM 2019
Note: MMT CO_2e = million metric tons of carbon dioxide equivalent
[1] See Table 7 for statewide inventory source and local emissions source adjustments.
[2] 40% below 1990 levels (i.e., 2020 target levels) per SB 32
[3] Interpolated between 2030 and 2050 targets
[4] 80% below 1990 levels (i.e., 2020 target levels) per EO-S-3-05

B. Emissions Intensity Targets

Statewide emissions reduction targets can be normalized and expressed on a per-capita or per-service population basis to represent the rate of emissions needed statewide to achieve the AB 32 and SB 32 targets. This approach is often called an “emissions intensity” target. For example, to create an emissions intensity target that represents SB 32, one would divide the statewide emissions target for 2030 (shown in Table 7) by the statewide population forecasts for 2030. This would yield an emissions “budget” for each California resident and demonstrate that emissions levels in a community are the same as what would be required statewide to achieve the SB 32 GHG reduction target. As noted previously, ARB’s Proposed Scoping Plan recommends an emissions intensity target approach for local governments for 2030 and 2050 target years. Table 9 presents statewide population and employment forecasts through 2040. The year 2026 is presented in this table because updated employment forecasts are available from the State Employment Development Department for this year.

Table 9
Statewide Demographic Projections

	2017	2026	2030	2035	2040
Population	39,613,019 [1]	42,655,695 [1]	43,939,250 [1]	45,440,735 [1]	46,804,202 [1]
Employment	18,282,910 [2]	20,022,700 [3]	20,625,204 [4]	21,330,005 [4]	21,970,0215 [4]
Service Population (population + employment)	57,895,929	62,678,395	64,564,454	66,770,740	68,774,223

Source: AECOM 2019
[1] DOF Table P-1 Total Estimated and Projected Population for California and Counties: July 1, 2010 to July 1, 2060 in 1-year increments. January 2018. Available online at: <http://www.dof.ca.gov/Forecasting/Demographics/projections/>
[2] Interpolated from Employee Development Department (EDD) Employment Projections for 2016 (18,089,600) and 2026 (20,022,700). See Note 3 for employment estimation source.
[3] Employee Development Department (EDD) Employment Projections. Published August 2018. Available online at: <http://www.labormarketinfo.edd.ca.gov/data/employment-projections.html>
[4] EDD does not provide employment estimates to 2040, so the ratio of employment to population estimated in 2026 (i.e., 46.9%) was applied to the DOF population estimates for 2030, 2035, and 2040.

Emissions Intensity Targets – Total Statewide Inventory

Using the demographic forecasts from Table 9 and the statewide GHG targets from Table 6, statewide emissions intensity targets can be developed for the 2030, 2035, and 2040 target years, which are presented in Table 10.

Table 10
Statewide Emissions Intensity Baseline and Targets

	2030	2035	2040
Emissions Targets (MT CO_2e/yr) [1]	258,600,000	215,500,000	172,400,000
Population [2]	43,939,250	45,440,735	46,804,202
Service Population (SP) [2] (population + employment)	64,564,454	66,770,740	68,774,223
Per Capita Emissions Intensity Targets (MT CO_2e/capita/yr)	**5.89**	**4.74**	**3.68**
Per Service Population Emissions Intensity Targets (MT CO_2e/SP/yr)	**4.01**	**3.23**	**2.51**

Source: AECOM 2019
Note: MT CO_2e = metric tons of carbon dioxide equivalent; Service Population (SP) = population + employment
[1] See Table 6 for sources.
[2] See Table 9 for sources.

Emissions Intensity Targets – Local Emissions Sources

Local emissions intensity targets can be based upon the adjusted statewide emissions inventory to reflect local emissions sources. The calculation of local emissions intensity targets needs to incorporate the employment projections associated with the emissions activities for which emissions are being considered. Table 11 presents the revised statewide demographic projections reflecting only those employment sectors included in the local emissions sources from Table 7.

Table 11
Statewide Demographic Projections – Local Emissions Sources Employment

	2026	2030	2035	2040
Population	42,655,695 [1]	43,939,250 [1]	45,440,735 [1]	46,804,202 [1]
Employment	19,561,700 [2]	20,150,332 [3]	20,838,906 [3]	21,464,186 [3]
Service Population (population + employment)	62,217,395	64,089,582	66,279,641	68,268,388

Source: AECOM 2019
[1] DOF Table P-1 Total Estimated and Projected Population for California and Counties: July 1, 2010 to July 1, 2060 in 1-year increments. January 2018. Available online at: <http://www.dof.ca.gov/Forecasting/Demographics/projections/>
[2] Employee Development Department (EDD) Employment Projections. Published August 2018. Available online at: <http://www.labormarketinfo.edd.ca.gov/data/employment-projections.html>. Sorted to remove jobs from: 11000000 – Total Farm and 10000000 – Mining and Logging.
[3] EDD provides 2- and 10-year employment estimates that currently extend to 2026, so the ratio of employment to population estimated in 2026 (i.e., 45.9%) was applied to the DOF population estimates for 2030, 2035, and 2040 to estimate employment in those years.

Based on the adjusted statewide demographic projections shown above, Table 12 shows the emissions intensity targets most applicable for use in San José's GGRS given the emissions sources included in its communitywide inventory.

Table 12
Local Emissions Intensity Targets

	2030	2035	2040
Emissions Targets (MT CO_2e/yr) [1]	188,560,000	157,130,000	125,700,000
Percent Mass Emissions Reduction	40% below 1990	50% below 1990	60% below 1990
Population [2]	43,939,250	45,440,735	46,804,202
Service Population (SP) [2]	64,089,582	66,279,641	68,268,388
Per Capita Emissions Intensity Targets (MT CO_2e/capita/yr)	**4.29**	**3.46**	**2.69**
Per Service Population Emissions Intensity Targets (MT CO_2e/SP/yr)	**2.94**	**2.37**	**1.84**

Source: AECOM 2019
Note: MT CO_2e = metric tons of carbon dioxide equivalent; Service Population (SP) = population + employment
[1] See Table 8 for sources
[2] See Table 11 for sources.

Appendix C

Greenhouse Gas Emissions Reductions Strategies Memorandum

This memorandum (memo) presents the City of San José's greenhouse gas (GHG) emissions context with a brief summary of the 2017 communitywide GHG inventory, an introduction to the emissions forecasts based on that inventory, and a comparison of forecasted emissions levels to the City's draft 2030 GHG target to establish the total amount of GHG reductions needed. It then presents draft GHG reduction actions proposed for inclusion in the 2030 Greenhouse Gas Reduction Strategy (GHGRS) to show how the City can achieve its 2030 GHG target. Action selection was based on a review of the City's recent Climate Smart San José (CSSJ) plan, the current version of the GHGRS, the City's previous Green Vision, and the Envision San José 2040 General Plan.

2017 GHG Inventory

The City's 2017 GHG inventory totals 5,711,667 MT CO_2e. This represents approximately 5.50 MT CO_2e per capita and 3.96 MT CO_2e per service population (i.e., population plus local employment). Figure 1 shows the 2017 inventory organized by emissions sector. Transportation emissions represent 63% of the total inventory, energy emissions contribute 32%, and waste emissions provide the remaining 5%.

Figure 1 – 2017 GHG Inventory by Sector

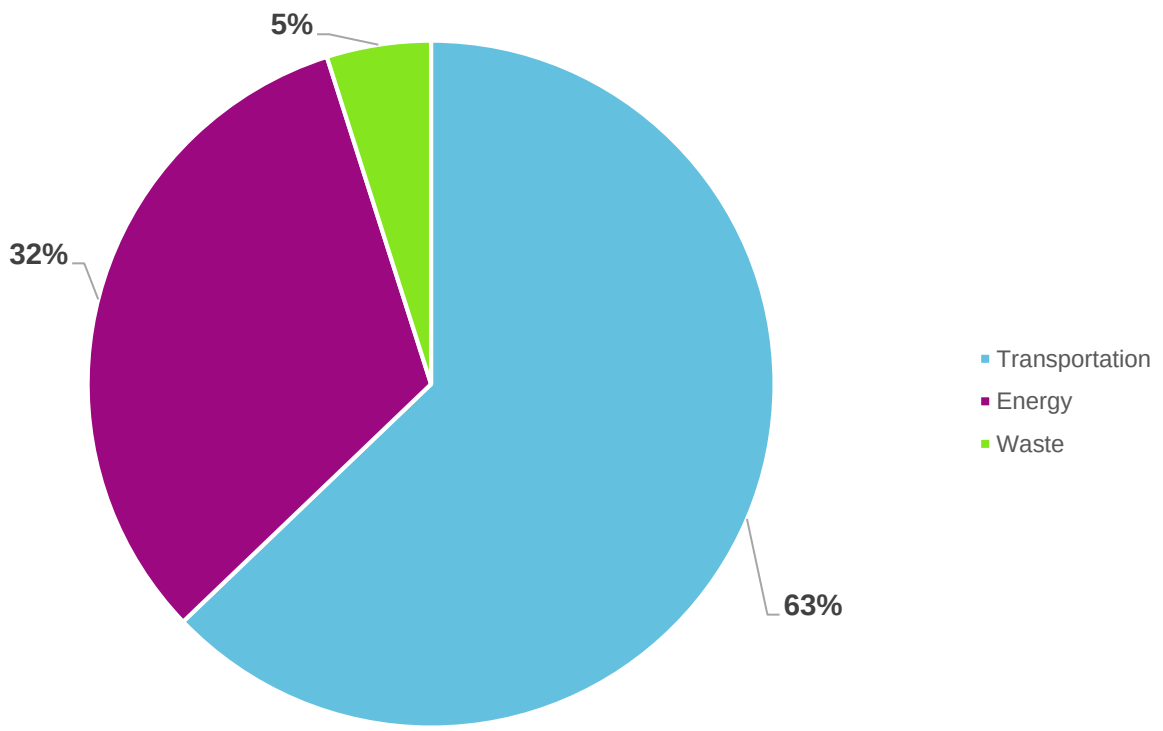
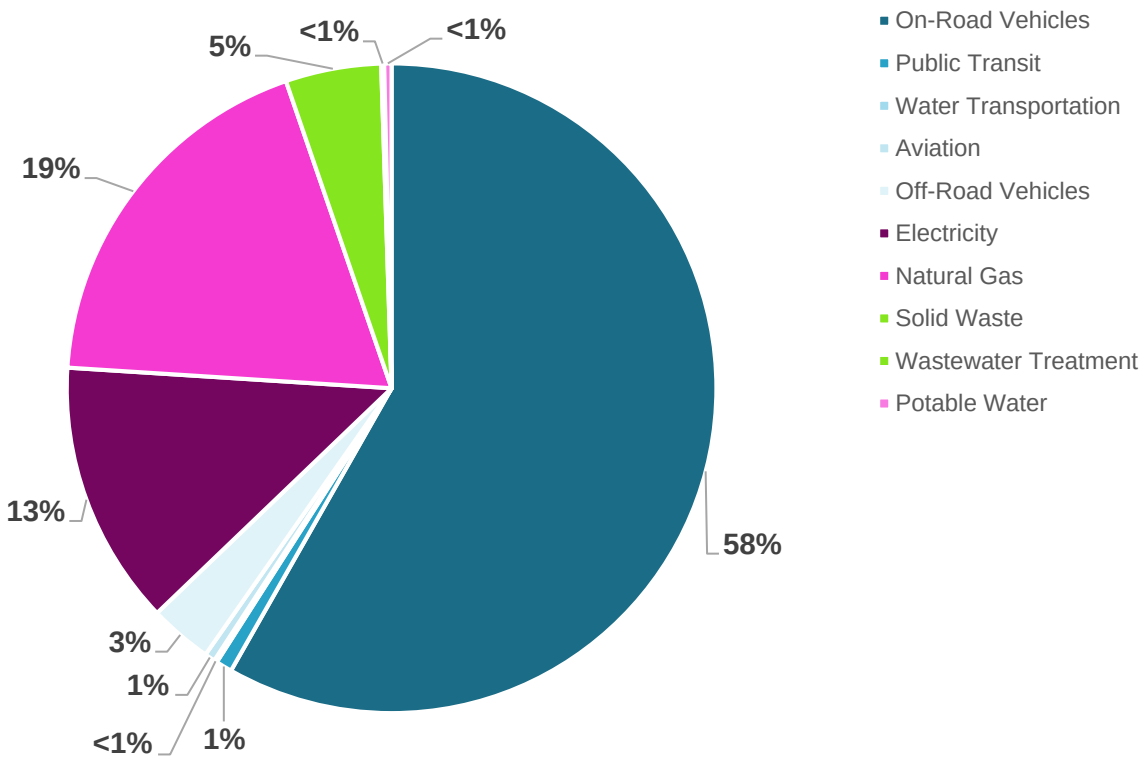


Figure 2 on the following page shows the 2017 inventory by emissions subsector to provide deeper understanding of the community's emissions sources. On-road vehicle emissions are the most significant source, contributing 58% of the total emissions. Natural gas and electricity are the second and third largest sources, providing 19% and 13% of total emissions, respectively. Solid waste management emissions contribute 5% and off-road vehicle and equipment use is responsible for another 3%. The remaining 2% of emissions come from public transit, water transportation, in-boundary aviation, and wastewater treatment.

Figure 2 – 2017 GHG Inventory by Subsector



Emissions Forecasts from 2017 Inventory

The 2017 GHG inventory results were used to develop emissions forecasts through a 2040 horizon year that aligns with the Envision San José 2040 General Plan; forecasts were developed for the years 2030 and 2040, even though the focus of this 2030 GHGRS is on a 2030 target year. The forecasts estimate how emissions in the community could grow if no additional GHG reduction actions are taken at the statewide or local levels.[1] The one exception to this approach is with 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.[2] 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 reflected in the emissions forecasts. The remaining emissions subsectors are primarily forecasted using demographic growth indicators from the 2040 General Plan, including population and local employment growth estimates, as well as subsector-specific planning forecasts, like Caltrain ridership forecasts and future wastewater treatment plant influent estimates. Table 1 on the following page summarizes the emissions forecast growth indicators that were applied to the 2017 inventory results for each subsector.

It should be noted that the State's Renewables Portfolio Standard (RPS), which requires California's electric utility companies to procure increasing amounts of renewable electricity for their energy portfolios, was purposefully excluded from the emissions forecast analysis. As shown later in the draft actions

[1] *This was historically referred to as a business-as-usual forecast, though use of the term has become less common in recent years.*

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

discussion, a primary source of future GHG reductions will come from implementation of the San José Clean Energy (SJCE) program. This program overlaps significantly with the RPS, and for purposes of this analysis, clean electricity reduction estimates have been attributed to SJCE.

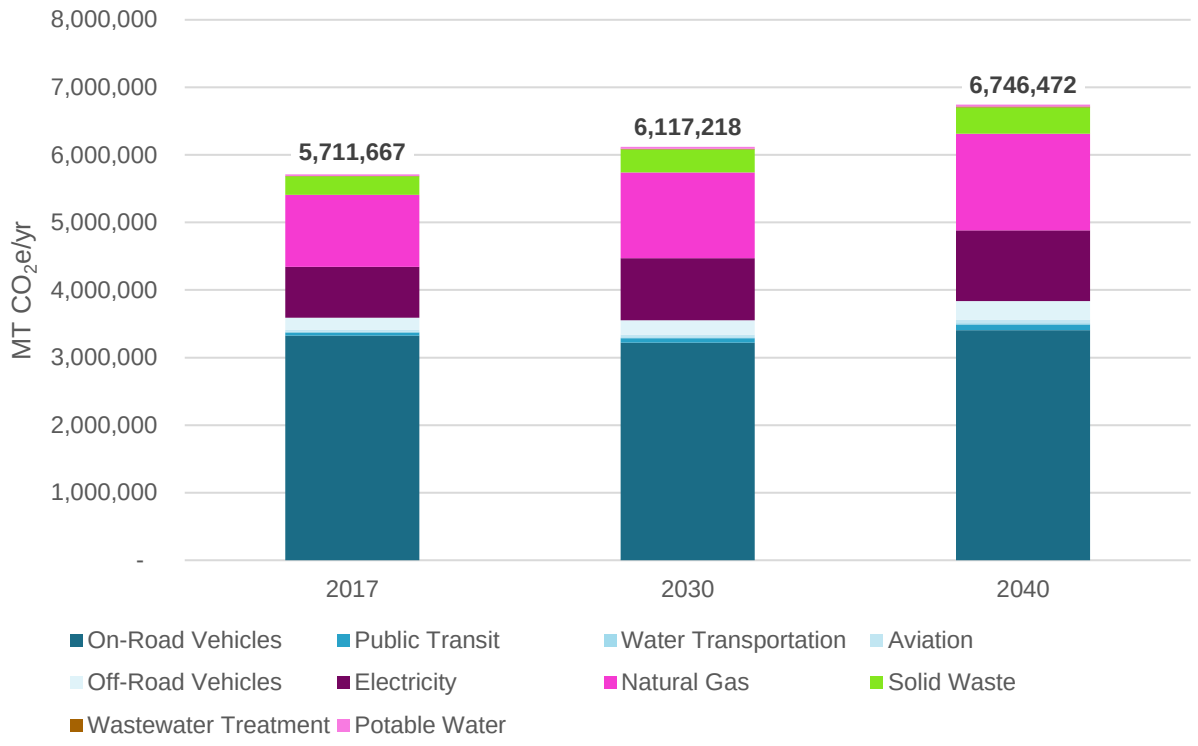
These forecasts represent an estimate of how future emissions might change based on numerous assumptions and currently available information. Consistent emissions monitoring, through inventory updates or activity data tracking, is important to ensure that emissions reductions are occurring as planned considering how emissions actually change in the future.

Table 1 – GHG Forecast Growth Indicators

Emissions Subsector	Emissions Growth Indicator
On-Road Vehicles	General Plan VMT forecast; EMFAC2017 vehicle emissions factors
Public Transit	Ridership forecasts from Caltrain, Altamont Corridor Express (ACE), Amtrak and community service population growth
Water Transportation	OFFROAD emissions model
Aviation	Enplaned passenger forecasts for SJC
Off-Road Vehicles	OFFROAD emissions model and community 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

Based on these growth assumptions, Figure 3 illustrates the community's emissions forecasts for 2030 and 2040 (see following page). Emissions are estimated to increase by 7% from 2017-2030 and by 18% from 2017-2040. Per-capita emissions intensity is forecast to decrease by 7% below 2017 levels by 2030 and hold constant through 2040, decreasing from 5.5 MT CO_2e/capita in 2017 to 5.1 MT CO_2e/capita in 2030 and 2040. Per-service population emissions intensity is forecast to decrease by 14% below 2017 levels by 2030 and by 17% by 2040, decreasing from 4.0 MT CO_2e/service population in 2017 to 3.4 and 3.3 MT CO_2e/service population in 2030 and 2040, respectively.

Figure 3 – Emissions Forecast 2017-2040



Draft GHG Target

As described in the Draft GHG Emissions Reduction Target Options Memo (Target Options Memo) developed for this project, GHG targets can be defined 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. The California Office of Planning and Research (OPR) through its General Plan Guidelines and the California Air Resources Board (ARB) through the *2017 Climate Change Scoping Plan* recommend that local governments analyze a community's mass emissions and emissions intensity to support a fuller understanding of the issue.

The 2030 GHGRS draft action analysis was performed based on the Target Option D 2030 per service population target, which was preliminarily recommended in the Target Options Memo. Target Option D was selected because it aligns with the most current guidance from ARB, OPR, and indirectly with the California Supreme Court's Newhall Ranch decision[3]; is tailored to match the emissions sectors included locally in the City's inventory; and provides an easy calculation metric for tracking future target progress.

[3] *The Newhall Ranch case was not about a communitywide climate action plan, but rather a new development project and that project's GHG threshold. This is an important distinction because communitywide CAPs consider emissions from existing and future development, whereas a project's CEQA analysis only considers emissions from new development associated with the project. However, the guidance provided in the Newhall Ranch case decision is still interpreted as a good analog for CAP target setting because it affirms the connection between State's GHG legislative framework, local agency determination, and CEQA determination.*

Target Option D reflects the following emissions intensity targets for 2030 and 2040[4]:

Target Metrics	2030	2040
MT CO_2e/service population	2.94	1.84
MT CO_2e/yr	5,280,218	3,803,055

Figure 4 shows how these targets compare to the GHG forecasts and is expressed as MT CO_2e/service population; Figure 5 shows the same information expressed as MT CO_2e/yr. As illustrated, the targets would result in improved emissions intensity levels and mass emissions reductions below 2017 levels.

Figure 4 – GHG Forecasts and Target – Emissions Intensity per-Service Population

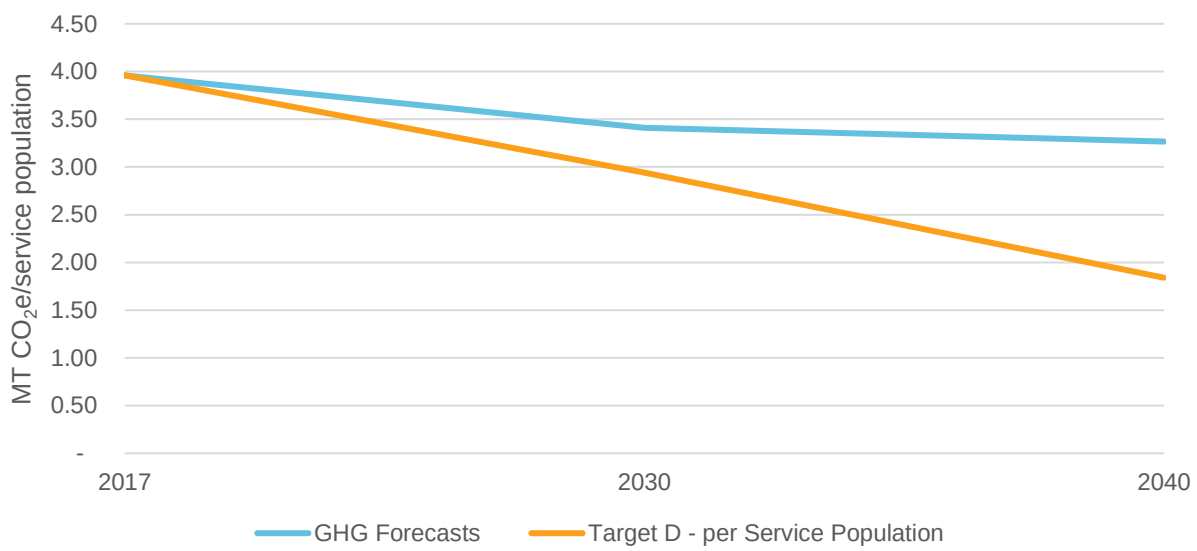
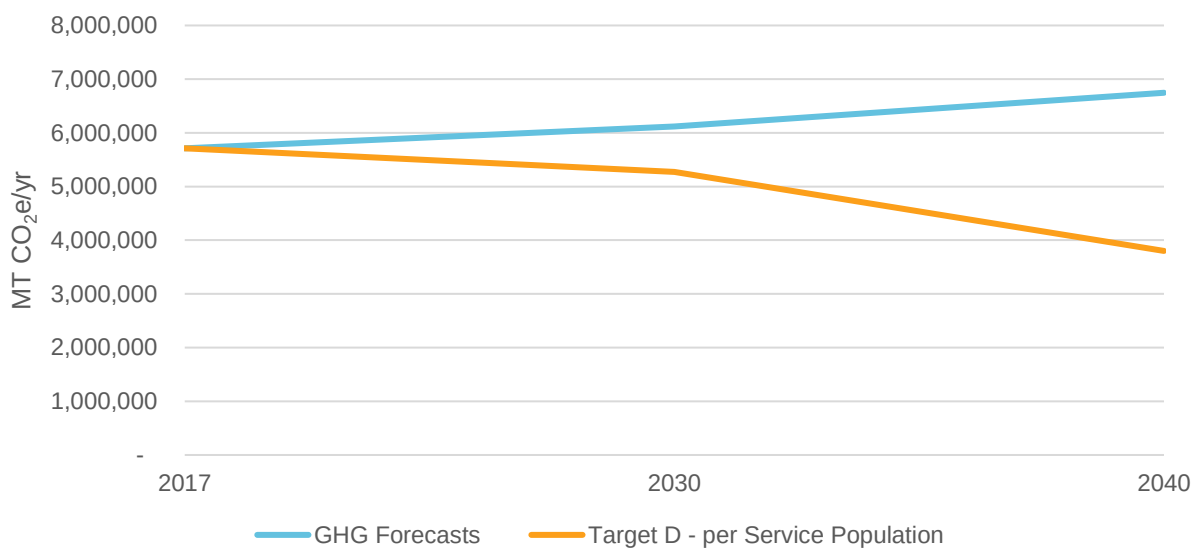


Figure 5 – GHG Forecasts and Target – Mass Emissions



[4] *See the Draft GHG Emissions Reduction Target Options Memo for a detailed description of how these targets were developed.*

GHG Reductions for Target Achievement

In Figures 4 and 5, the gap between the top emissions forecast line and the bottom GHG target line represents the amount of emissions reductions needed from implementation of statewide and local actions. Table 2 summarizes the emissions reduction values associated with the mass emissions shown in Figure 5. To achieve the proposed target in 2030, implementation of the 2030 GHGRS will need to support reductions totaling approximately 845,000 MT CO_2e/yr. Achievement of the 2040 target would require reductions of 2.9 million MT CO_2e/yr, although a 2040 target achievement pathway is beyond the scope of the 2030 GHGRS.[5]

Table 2 – GHG Forecasts and Reduction Targets

	2017 (MT CO_2e/yr)	2030 (MT CO_2e/yr)	2040 (MT CO_2e/yr)
GHG Forecasts	5,711,667	6,117,218	6,746,472
Target D - per Service Population	5,711,667	5,272,268	3,800,448
Reductions Needed	-	844,950	2,946,024

Draft GHGRS Actions

The draft GHGRS actions were selected based on a review of the City's recent Climate Smart San José plan, the current version of the GHGRS, the City's previous Green Vision, and the Envision San José 2040 General Plan. Actions were selected to represent a feasible pathway to 2030 target achievement by leveraging the City's existing planning efforts and supporting policy and program frameworks. However, this is not an exhaustive list of all possible GHG reduction strategies. It is assumed that the City will continue to protect and enhance the local environment through implementation of its various plans, policies, and programs, some of which will also result in local GHG reductions. Actions that provide GHG reductions, but are not represented in this draft list, can still contribute to GHG target achievement and their emissions impact would be reflected in future GHG inventory updates.

GHGRS Relationship to Climate Smart San José

CSSJ is the City's long-term, Paris-treaty consistent plan. It outlines an ambitious pathway to achieve future deep carbon reductions, including several transformative actions that will need to be widely implemented. As in similar deep carbon reduction plans, CSSJ outlines a potential pathway for achieving the City's long-term GHG target, but the pathway is contingent upon aggressive implementation assumptions.

The 2030 GHGRS should be consistent with CSSJ in terms of the types of actions the City will take, since the two planning approaches are complementary. However, the 2030 GHGRS has a shorter time horizon (i.e., 2030) and different purpose (i.e., serve as a Plan for the Reduction of Greenhouse Gases as defined in California's CEQA Guidelines Section 15183.5). Therefore, the 2030 GHGRS should be grounded in assumptions that have a higher degree of certainty, as well as include an implementation monitoring and adjustment plan to ensure the anticipated reductions occur by 2030.

[5] *In the future, it is assumed the State will codify additional GHG targets beyond its current 2030 target (i.e. Senate Bill 32 Global Warming Solutions Act). As with the adopted 2020 and 2030 targets, ARB will likely update the Scoping Plan to outline the State's new target achievement pathway. This in turn will help local governments to understand more clearly their role and opportunities in providing additional local GHG reductions to achieve longer-term targets. The City may then decide to update the GHGRS following adoption of new State GHG targets and the supporting Scoping Plan analysis.*

Proposed Actions for Inclusion in 2030 GHGRS

Table 3 presents the draft list of actions proposed for inclusion in the 2030 GHGRS to demonstrate how the City will achieve its 2030 GHG target. The table shows the estimated GHG reductions for each action in 2030 and compares the total estimated reductions to the 2030 target on a mass emissions and per-service population emissions intensity basis. The table also identifies sources of origin for the actions to demonstrate how the proposed list overlaps with state regulations or policies, and the City's policy framework of sustainability-related actions. As shown, the proposed list of actions would achieve the 2030 GHG target of 2.94 MT CO_2e/service population. Figure 6 on the following page shows the GHGRS reductions in the context of the emissions forecasts and GHG target trajectory through 2040. Reductions were calculated through the 2030 target year and are shown as a dashed dark blue line that overlaps with the GHG target line.

Table 3 – Proposed GHGRS Actions and Reduction Estimates

Proposed Action	2030 Reductions MT CO_2e/yr	Action Origins
San José Clean Energy	655,104	Green Vision Goal 3 Climate Smart San José (CSSJ) Strategy 1.1
Zero Net Energy Residential Construction	43,678	California Energy Efficiency Strategic Plan CSSJ Strategy 2.2 General Plan Goal MS-14
Renewable Energy Development	63,697	Green Vision Goal 3 CSSJ Strategy 1.1 General Plan Goal MS-2
Existing Building Retrofits – Natural Gas	208,986	Senate Bill 350 CSSJ Strategy 2.2 General Plan Goal MS-2
Zero Waste Goal	207,956	Green Vision Goal 5 General Plan Goal MS-5 Council Resolution 74077
Caltrain Modernization Project	12,547	CSSJ Strategy 2.4
Water Conservation	3,106	CSSJ Strategy 1.2 General Plan Goal MS-3
Total	**1,195,074**	-
GHG Target Impact	**MT CO_2e/yr**	**MT CO_2e/service population**
2030 Target	5,272,268	2.94
2030 Mitigated Emissions	4,922,144	2.74
Target Achieved	**YES**	**YES**

Figure 6 – 2030 GHGRS Scenario GHG Reductions

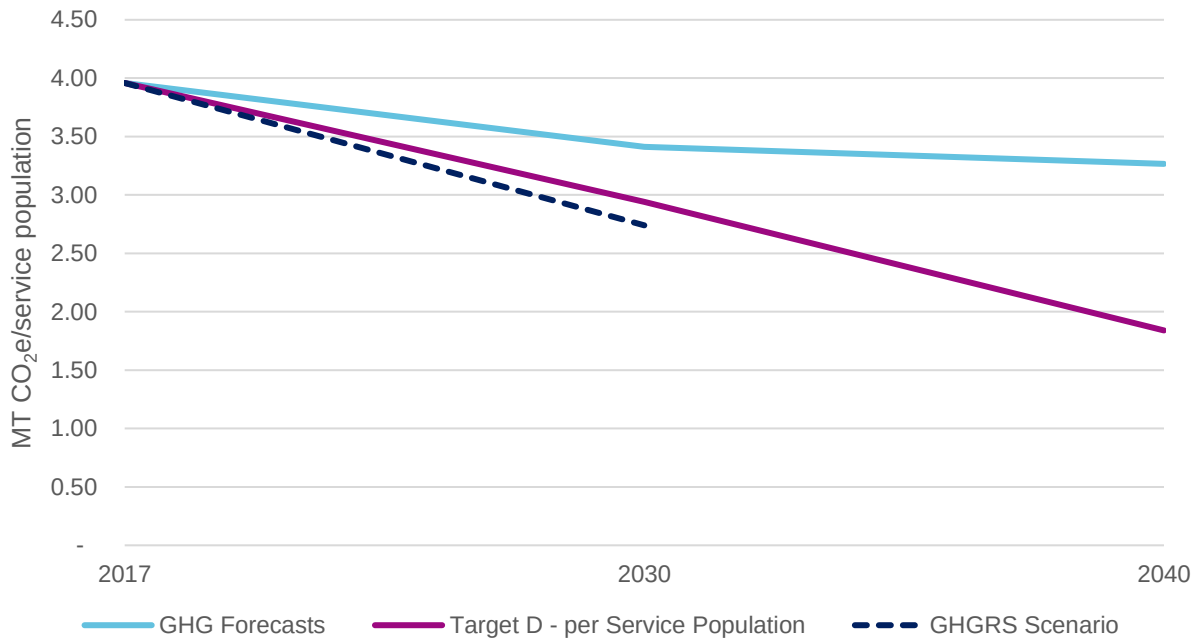


Table 4 presents the primary assumptions for each action that support the GHG reduction estimates. Where relevant, action implementation assumptions from CSSJ or Green Vision are referenced to provide additional context.

Table 4 – Primary Action Assumptions

Proposed Action	Primary Assumptions
San José Clean Energy (SJCE)	**98% participation in SJCE (excluding direct-access customers) in 2030;** **100% renewable or GHG-free energy sources in 2030** <u>Participation Rates</u> Residential and non-residential electricity demand is met through 98% SJCE and 2% PG&E, and direct access customers remain with their current suppliers, per *SJCE Community Choice Aggregation Implementation Plan and Statement of Intent, August 17, 2017.* <u>Electricity Emissions Factors</u> PG&E's 2030 energy portfolio was modeled to show compliance with RPS requirements for 60% renewable energy sources (per SB 100); the remaining sources include large hydro, nuclear, natural gas, and unspecified sources; the relative contributions of these remaining sources to the total energy portfolio in 2030 were scaled down from the 2017 PG&E Power Content Label such that as RPS sources increase, non-RPS sources decrease evenly; the result is a PG&E 2030 portfolio that is 88.2% renewable or GHG-free. Per *SJCE Community Choice Aggregation Implementation Plan and Statement of Intent, August 17, 2017,* SJCE will exceed PG&E's <u>renewable and GHG-free</u> generation by 10%, which would mean providing 98.2% renewable and GHG-free generation based on the PG&E assumptions above. The CSSJ Detailed Modelling Assumptions assumed that SJCE would exceed PG&E's RPS requirements by 10% and that all non-renewable electricity would come from zero-emissions sources, resulting in 100% emissions-free electricity. Further, it is the City's

	goal to provide 100% emissions-free electricity as the standard offering through SJCE by 2021 – 9 years in advance of the GHGRS 2030 target year. This analysis assumed the City will achieve its goal of providing 100% emissions-free electricity sources by 2030 at the latest. If that goal is not achieved before the 2030 target year, the City will revisit other GHG reduction options, as needed, to close any remaining emissions reduction gap. <u>Electricity Demand Affected</u> Electricity reductions from the Zero Net Energy Residential Construction and Renewable Energy Development (i.e., avoided grid electricity) actions were subtracted from the 2030 electricity demand forecast to calculate remaining electricity demand to which this action applies.
Zero Net Energy – Residential Construction	**50% of new residential construction from 2020-2030 achieves zero-net energy use** <u>Participation Rates</u> California's Energy Efficiency Strategic Plan sets goals for the development of zero net energy (ZNE) buildings for new construction and retrofits, including a goal for 100% of new residential construction to be ZNE by 2020, 100% of new commercial construction to be ZNE by 2030, and 50% of commercial buildings retrofitted to ZNE by 2030. Recent changes to the State's Green Building Standards Code will support the residential ZNE goals by requiring solar panels to be installed on all new residential construction of three stories or less (with some exceptions based on site conditions) starting in 2020. CSSJ Strategy 2.2 assumes 100% of new residential development in San José will achieve ZNE goals in 2020. CSSJ Strategy 3.2 assumes 100% of new commercial development in San José will achieve ZNE goals in 2025 (5 years earlier than anticipated State requirements). This analysis conservatively assumes that 50% of new residential construction from 2020-2030 would achieve the ZNE goals. The calculations assume that 100% of electricity and natural gas demand from 50% of new residential construction during this period can be offset through a combination of increased building energy efficiency, integration of electric appliances/building systems, and renewable energy development. This analysis assumes that commercial ZNE construction will not begin until required to do so in 2030.
Renewable Energy Development	**472.1 net new MW of solar PV installed 2017-2030** <u>Participation Rates</u> San José had an installed solar capacity of 195.9 MW (DC) in 2017, per Shining Cities 2018 report data. Per CSSJ Strategy 1.1, the installed local renewable energy target is 668 MW by 2030. This represents average annual growth in PV capacity of 10.5% per year through 2030; capacity increased 13% per year on average from 2015-2018, per Shining Cities report data. <u>Calculation</u> The electricity generation capacity of a 4 kW DC solar systems in San José was calculated using the National Renewable Energy Laboratory (NREL) PVWatts Calculator and converted to a kWh/MW installed metric. This energy generation metric was multiplied by the total net new MW capacity goal (472.1) to calculate total kWh of solar PV generation in 2030. The amount of electricity assumed to be avoided through the Zero Net Energy Residential Construction action was subtracted from this total new solar energy generation value to calculate the net new solar energy resulting from this action.
Building Retrofits – Natural Gas	**4% reduction in natural gas use below 2017 levels**

	Green Vision Goal 2 was defined to reduce per-capita energy use by 50% below 2008 levels by 2022. The General Plan also includes this goal in IP-17.1, which directs the City to implement the Green Vision. Natural gas use in the 2008 inventory totaled 20.87 mmbtu/capita; a 50% reduction would set a target to achieve natural gas use of 10.43 mmbtu/capita. The 2030 natural gas forecasts, after accounting for ZNE building energy reductions, assume remaining natural gas consumption of 18.95 mmbtu/capita. To achieve the Green Vision Goal's 50% per capita reductions, 2030 natural gas forecast use will need to be 36% below 2017 inventory levels. At the state level, SB 350 requires the California Energy Commission to define energy efficiency targets that would result in a doubling of energy efficiency savings from electricity and natural gas end uses by 2030. Per the *2018 California Gas Report*, prepared by the State's gas and electric utilities, the state's natural gas demand is expected to decrease 0.5% per year from 2018-2035. This natural gas use reduction applied locally would result in 2030 consumption that is 6.3% below 2017 levels. <u>Participation</u> This action conservatively assumes natural gas reductions of 4.4% below 2017 inventory levels, which corresponds to a 25% per capita reduction below 2008 levels.
Zero Waste Goal	**90% of waste diverted from landfills in 2030** General Plan Goal MS-5 Waste Diversion is to "Divert 100% of waste from landfills by 2022 and maintain 100% diversion through 2040." Per the Status Report on Zero Waste Strategic Plan 2022 memorandum to the City's Transportation and Environment Committee, "zero waste" is defined as landfilling no more than 10% waste. <u>Diversion Rates</u> San José's 2017 diversion rate was conservatively assumed to be 74% based on an EPA Zero Waste Case Study. This rate was combined with the 2017 inventory activity data on waste tons sent to landfill to calculate a total waste generation value for 2017.The 2030 forecast activity data for waste sent to landfills was used to estimate a total 2030 waste generation value assuming no change in diversion rate from 2017 (i.e., 74%). This 2030 total waste generation value was then combined with an assumed 90% waste diversion rate consistent with the City's Zero Waste goal to calculate the remaining amount of waste to be landfilled in 2030. <u>Emissions Factor</u> Assumes no change in the emissions per ton of landfilled waste from 2017 to 2030. The 2017 GHG inventory modeled the City's landfill waste profile based on the CalRecycle *2014 Disposal-Facility-Based Characterization of Solid Waste in California*. As the City continues to implement aspects of its Zero Waste Strategic Plan, including organic waste diversion to the ZWED facility, the composition of landfilled waste will change; likely in a way that decreases the amount of degradable organic content present in the waste stream that could decompose anaerobically in a landfill to produce methane emissions.
Caltrain Modernization Project	**75% of diesel trains converted to electric powered by PG&E grid;** **Approximately 33,000 daily VMT reductions in San José from increased Caltrain daily ridership** <u>Electrification</u> Caltrain is currently implementing an electrification project through its Caltrain Modernization (CalMod) Program that would convert 75% of its diesel engine trains to electric propulsion models. The electrification project would cover the route from the 4th/King St. station in San Francisco to Tamien station in San José.

	Participation Rates Caltrain diesel consumption within the City's boundary by train route is provided in the 2017 inventory. Diesel use associated with the Tamien southbound route was omitted from this calculation; Caltrain will continue to operate diesel engines along this route to Gilroy since the track cannot be electrified through the CalMod Program. 75% of the diesel consumed for the Tamien northbound and Diridon northbound routes was converted to electricity (the remaining 25% was maintained as diesel use). VMT Reductions The CalMod Program estimates 619,000 VMT are reduced per day by 2040 as a result of program implementation. These reductions were interpolated for 2030 assuming 0 VMT reductions in 2017, for a 2030 daily VMT reduction estimate of 350,000. San José's pro rata share of these daily VMT reductions were estimated based on 2018 Caltrain Annual Passenger Count data that shows 9.5% of total average midweek ridership in the Caltrain system occurs at San José's stations (Diridon and Tamien). The daily VMT reduction estimate was converted to a yearly value using the same annualization factor as in the 2017 inventory on-road calculations (i.e., 347), and then compared to total 2030 VMT estimates in the GHG forecasts (collected from the 2040 General Plan) to calculate the percentage of 2030 on-road emissions that the VMT reductions represent.
Water Conservation	**107 MGD water consumption in 2030** (12% reduction in total water use below 2017 level; 23% reduction in gallons per capita per day 2017 level) Implementation Rate Per CSSJ Strategy 1.2, San Jose reduces water consumption to 107 million gallons per day (MGD) in 2030. This compares to 122 MGD consumption stated in the 2017 inventory. Based on population growth estimates, this would require a 23% reduction in gallons per capita per day below 2017 levels. Energy Savings The ratio of kWh/MG of water consumption from the 2017 inventory were held constant through 2030 to estimate the energy reductions associated with the water conservation. The energy savings were multiplied by the eGRID electricity emissions factor used to calculate the 2017 potable water inventory emissions.