



APPENDICES

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APPENDIX A:
**Santa Cruz Climate
Action Plan 2030
Initial Study –
Negative Declaration
+ CEQA Checklist**



Santa Cruz Climate Action Plan (CAP) 2030

Draft Initial Study – Negative Declaration

prepared for

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Acronyms and Abbreviations

CCCE	Central Coast Community Energy
AB	Assembly Bill
ABAU	adjusted business-as-usual
AMBAG	Association of Monterey Bay Area Governments
ATP	Active Transportation Plan
BAU	business-as-usual
BMPs	Best Management Practices
CAA	Clean Air Act
CalEPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CalGREEN	California's Green Building Standards Code
CAP	Climate Action Plan
CARB	California Air Resources Board
CAT	Climate Action Team
CBC	California Building Code
CCA	Community Choice Aggregation
CCRWQCB	Central Coast Regional Control Board
CEC	California Energy Commission
CFGF	California Fish and Game Code
CGS	California Geological Survey
CH ₄	Methane
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
dB	decibels
dBA	A-weighted sound pressure level
DOC	California Department of Conservation
DOF	Department of Finance
EIR	Environmental Impact Report
EO	Executive Order
EV	Electric Vehicle

FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GHG	Greenhouse Gas
GWh	gigawatt-hours
HFC	hydrofluorocarbon
Ldn	day/night average sound level
LHMP	Local Hazard Mitigation Plan
MBARD	Monterey Bay Air Resources District
MBTA	Migratory Bird Treaty Act
MPO	Metropolitan Planning Organizations
MT	metric tons
MTP	Metropolitan Transportation Plan
N ² O	nitrous oxide
NCCAB	North Central Coast Air Basin
NPDES	National Pollutant Discharge Elimination System
PCE	Peninsula Clean Energy
PFC	perfluorinated compound
PGE	Pacific Gas & Electric
PPV	peak particle velocity
RMS	Root Mean Square
ROG	reactive organic gases
RTP	Regional Transportation Plan
SB	Senate Bill
SCMC	Santa Cruz Municipal Code
SCS	Sustainable Communities Strategies
SF6	sulfur hexafluoride
SIP	State Implementation Plan
SR	State Route
SWPPP	Stormwater Pollution Prevention Plan
UCSC	University of California at Santa Cruz
U.S. EPA	United States Environmental Protection Agency
USIEA	United States Energy Information Administration

UWMP	Urban Water Management Plan
VdB	vibration decibels
VMТ	vehicle miles traveled
ZNE	zero net energy

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Initial Study

Proposed Plan Title

Santa Cruz Climate Action Plan (CAP) 2030

Lead Agency/Plan Sponsor and Contact

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Plan Location and Physical Setting

The City of Santa Cruz Climate Action Plan (CAP) 2030 applies to all areas, plans, and projects within the City of Santa Cruz limits. Figure 1 shows the City's regional location, and Figure 2 shows the plan location. The plan location includes all of Santa Cruz's incorporated lands including the City's landfill and the Hill Water Treatment Plant, both of which fall within the City's incorporated lands but are surrounded by unincorporated Santa Cruz County.

Regional Location and Setting

The City of Santa Cruz is approximately 13 square miles and is located on the north shore of the Monterey Bay in the central portion of Santa Cruz County of California's central coast. The City is almost entirely surrounded by the Santa Cruz Mountains and protected open spaces (City of Santa Cruz 2012). Specifically, the City is bordered by the Santa Cruz Harbor, the Arana Gulch, and Anna Jean Cummings County Park to the east, Henry Cowell Redwoods State Park to the north, Wilder Ranch State Park to the west, and the Pacific Ocean to the south. The nearest major cities are Watsonville, San Jose, Fremont, and San Francisco, which are located approximately 16 miles to the southeast, 25 miles to the north, 35 miles to the north, and 55 miles to the northwest, respectively.

Vehicular access to Santa Cruz is primarily provided by Highway 1 (Cabrillo Highway), State Route (SR)-17 (Santa Cruz Highway), and SR-9 (River Street). The City's downtown core is located just south of the junction of north-south SR-17, which leads north to San José, the cities of Silicon Valley, and the San Francisco Bay Area beyond, and SR- 1, which follows the coast north to the San Francisco Bay Area. SR-9 is a winding two-lane road that traverses the Santa Cruz Mountains, passing through the communities of Felton, Ben Lomond, Brookdale, and Boulder Creek.

Figure 1 Regional Location



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 City of Santa Cruz

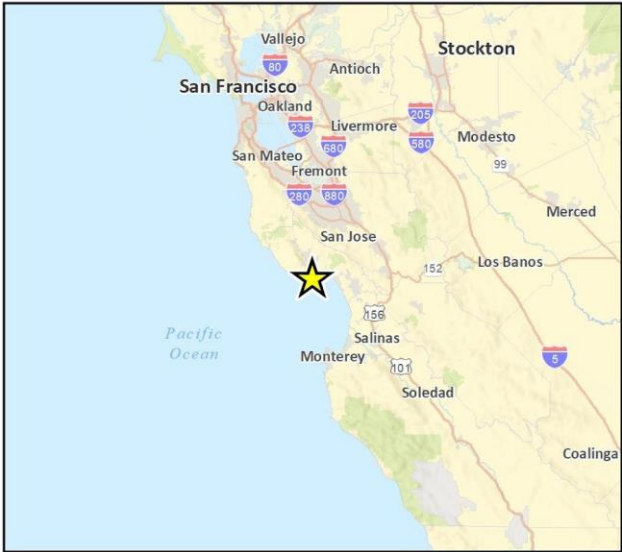


Fig. 1 Regional Location

Figure 2 Plan Location



The City is served by several public transit providers, including the Santa Cruz Metro, , Amtrak passenger rail, and Greyhound Lines, Inc. motorcoach services. The City's Metro Center Transit Station is located on Pacific Avenue. The City also provides an electric trolley service, the Santa Cruz Trolley, as a means to travel between the beach and the City's downtown areas (Santa Cruz County Chamber of Commerce 2022). The nearest airport to Santa Cruz is the Norman Y. Mineta San Jose International Airport, located approximately 30 miles northeast of the City.

Local Setting

Santa Cruz is the most populous city in Santa Cruz County, with an estimated total population of 65,041 in 2019 (California Department of Finance [DOF] 2021). According to the City of Santa Cruz 2030 General Plan, the City contains a mix of small-scale residential neighborhoods; widely-visited beaches; a river, many creeks, and riparian corridors; a more intensely developed downtown area with distinctive buildings; and automobile-oriented commercial corridors. The City is also home to the University of California Santa Cruz (UCSC). Residential uses comprise the largest portion of existing land uses within Santa Cruz with community commercial development along major transportation corridors. Other major land uses include park space, natural areas, and lands associated with UCSC (City of Santa Cruz 2012). The City supports a diverse range of industries. In 2021, there were over 3,500 businesses within the City limits providing approximately 39,000 jobs. The top sectors for employment in the City are Education, Retail Trade, Accommodation and Food Services, and Health Care Services, which represent 57 percent of Santa Cruz Employment (City of Santa Cruz 2021a).

The City of Santa Cruz maintains a clearly defined urban boundary due to the natural features and green space that border the City on all sides. The San Lorenzo River is a defining feature of the City, as it flows through its center and serves as the dividing line between the City's eastern and western areas. The City also features four miles of coastline along the Monterey Bay on its southern border. The City's beaches and coastal bicycle, pedestrian, and automobile routes are extremely popular destinations for both residents and visitors. Santa Cruz is shaped by a various topography that creates a variety of public views throughout the community, including views of Monterey Bay and the City as a whole. The City's arroyos and steep coastal cliffs provide the greatest variation in topography, along with pronounced hills, such as the coastal terraces of the UCSC campus, Pogonip, and the Carbonera area; smaller hills, such as Beach Hill and Mission Hill, which act as community landmarks; and shallow slopes toward the Monterey Bay. Other significant topographical features of note include the ridgelines along Escalona Drive and Grandview Street.

The City can be characterized by its warm, temperate, Mediterranean climate with dry summers and rainier winters. The warmest months of the year in Santa Cruz are typically August and September, and the coldest months of the year are typically December and January. The average temperature in the month of September is 61.6 degrees Fahrenheit while the average temperature in the month of January is 51.0 degrees Fahrenheit. The driest month of the year is typically July with an average of 0.0 inches of rainfall, and the wettest month of the year is typically January with an average of 5.9 inches of rainfall (Climate Data 2022).

Existing Sustainability Setting

City of Santa Cruz Sustainability and GHG Reduction Efforts

The City has implemented a variety of environmental policies and programs since 2011 contributing to Greenhouse Gas (GHG) reductions. The following is a list of the City's primary sustainable and climate protection policies and programs:

- Community Climate Action Task Force established (2008)
- Climate Change Vulnerability Assessment adopted (2011)
- 2012-2020 Climate Action Plan adopted (2012)
- Polystyrene Ban Ordinance adopted (2012)
- Santa Cruz City Schools Complete Streets Master Plan adopted (2015)
- Water Efficient Landscape Ordinance adopted (2016)
- Climate Action Milestones revised (2016)
- Global Covenant of Mayors for Climate and Energy Resolution adopted (2016)
- 2015-2023 Housing Element of General Plan adopted (2016)
- Active Transportation Plan (2017)
- Resolution in Support of Paris Agreement adopted (2017)
- Local Hazard Mitigation Plan Five Year Update adopted (2018)
- Climate Emergency Resolution adopted (2018)
- 2018-2023 Climate Adaptation Plan Update adopted (2018)
- Health In All Policies Ordinance and City Council Policy adopted (2019)
- Green New Deal Resolution adopted (2019)
- Wastewater Treatment Plant upgrades (2018)
- Emergency Operations Plan adopted (2018)
- 2030 General Plan adopted (2012, as amended 2019)
- Beach Vulnerability and Adaptation Strategy completed (2021)
- Parks Master Plan 2030 adopted (2020)
- Re-Envision Santa Cruz Interim Recovery Plan adopted (2020)
- 2020 Urban Water Management Plan adopted (2020)
- Local Coastal Program updated (currently underway)

Regional Sustainability and GHG Reduction Efforts

In coordination with Santa Cruz County (hereinafter "County"), the State of California (hereinafter "State"), and the federal government, the City of Santa Cruz has committed to implementing regional and State policies related to GHG emissions reduction. The following is a summary of regional GHG emissions reduction efforts, which the City of Santa Cruz CAP is intended to be consistent with or exceed.

Monterey Bay Air Resources District CEQA Guidelines

The Monterey Bay Air Resources District ('MBARD') published the *Guidelines for Implementing CEQA* in February 2016, which provides guidelines for the assessment of air quality and GHG emissions impacts for projects subject to CEQA review. The *Guidelines for Implementing CEQA* notes that MBARD's GHG threshold is defined in terms of carbon dioxide equivalent (CO₂e), a metric that accounts for the emissions from various GHGs based on their global warming potential. If annual emissions of GHGs exceed these threshold levels, the proposed project would result in a cumulatively considerable contribution of GHG emissions and must implement mitigation measures. A proposed stationary source project would not have a significant GHG impact, if operation of the project would (MBARD 2014):

- Emit less than the significance level of 10,000 metric tons per year (MT/yr) CO₂e, or
- In accordance with the State CEQA Guidelines Section 15064.4(b)(3), the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions [such as, sources subject to the Cap-and-Trade requirements pursuant to Title 17, Article 5 (California Cap on Greenhouse Gas Emissions and Market-based Compliance Mechanisms)].

This approach is consistent with State CEQA Guidelines, Section 15183.5, which states that:

"Lead agencies may analyze and mitigate the significant impacts of greenhouse gas emissions at a programmatic level, such as...a plan to reduce greenhouse gas emissions. Later project-specific environmental documents may tier from and/or incorporate by reference that existing programmatic review. Project-specific environmental documents may rely on an [Environmental Impact Report] containing a programmatic analysis of greenhouse gas emissions."

Association of Monterey Bay Area Governments' Metropolitan Transportation Plan/Sustainable Communities Strategy

The Association of Monterey Bay Area Governments (AMBAG) adopted the 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) in June 2018. The MTP/SCS outlines policies, projects, and programs required to improve the County's transportation system over the next 20 years and demonstrates how the region will integrate transportation and land use planning to meet the greenhouse gas reduction targets established by Senate Bill (SB) 375 and air quality requirements established by the State Implementation Plan. The 2040 MTP/SCS describes 6 goals and policy objectives related to access and mobility, economic vitality, environment, healthy communities, social equity, and system preservation and safety (AMBAG 2018a).

AMBAG is currently developing the 2045 MTP/SCS, which is scheduled for adoption in June 2022.

2045 Santa Cruz County Regional Transportation Plan

The Santa Cruz County Regional Transportation Commission adopted the 2045 Regional Transportation Plan (RTP) in March 2022. The 2045 RTP acts as a comprehensive planning document that provides guidance for transportation policy and projects through the year 2045 and is incorporated into the AMBAG 2040 MTP/SCS. The RTP incorporates sustainability principles in all of its elements. Each of the goals, policies, performance measures and targets included within the 2045 RTP were developed with extensive public and partner input to form the foundation for a sustainable transportation plan. The three major goals for the 2045 RTP are as follows (Santa Cruz County Regional Transportation Commission 2022):

- Establish livable communities that improve people’s access to jobs, schools, recreation, healthy lifestyles, and other regular needs in ways that improve health, reduce pollution, and retain money in the local economy.
- Reduce transportation related fatalities and injuries for all transportation modes
- Deliver access and safety improvements cost effectively, within available revenues, equitably and responsive to the needs of all users of the transportation system and beneficially for the natural environment.

Central Coast Community Energy

Central Coast Community Energy (CCCE) is a joint powers authority based in Monterey and governed by a Board of local elected officials, city managers and city administrators from each of the participating jurisdictions. Launched in 2018 in Monterey, San Benito and Santa Cruz Counties, the cities of San Luis Obispo and Morro Bay elected to join CCCE in 2020 With San Luis Obispo and Santa Barbara counties soon following suit. CCCE aims to expand consumer choice, reduce utility costs, and invest in California’s renewable energy projects. CCCE is committed to reducing greenhouse gas emissions through local control of utility scale renewable electricity generation provided at competitive rates. Renewable energy is energy that comes from resources that are naturally replenished, create limited carbon emissions, and include small hydroelectric, solar, wind, biomass, biowaste, and geothermal sources. CCCE also focuses on the implementation of innovative energy programs that facilitate the electrification of the transportation and built environments (CCCE 2022).

State Sustainability and GHG Reduction Efforts

The following summarizes the State GHG emissions reduction efforts, which the City of Santa Cruz CAP is intended to be consistent with or exceed.

Assembly Bill 1493, the Pavley Bill

In 2002, the California State Legislature enacted AB 1493 (aka “the Pavley Bill”), which directs the California Air Resources Board (CARB) to adopt standards that will achieve "the maximum feasible and cost-effective reduction of greenhouse gas emissions from motor vehicles," taking into account environmental, social, technological, and economic factors. In September 2009, the ARB adopted amendments to the “Pavley” regulations to reduce GHG emissions in new passenger vehicles from 2009 through 2016. The Pavley Bill is considered to be the national model for vehicle emissions standards. In January of 2012, the ARB approved a new emissions control program for vehicle model years 2017 through 2025. The program combines the control of smog, soot, and greenhouse gases and the requirement for greater numbers of zero emission vehicles into a single package of standards called Advanced Clean Cars.

Assembly Bill 117, Community Choice Aggregation

AB 117 establishes the creation of Community Choice Aggregation (CCA) that fosters clean and renewable energy markets. CCA allows cities and counties to aggregate the buying power of individual jurisdictions. The California CCA markets were created as an answer to the brownouts and energy shortages of the early 2000’s. AB 117 was passed in 2002 as an answer to California’s increased energy independency by incorporating more alternative and renewable energy sources into its energy portfolio. With AB 117, municipalities can provide alternative energy choices to their local carrier (e.g., the Pacific Gas and Electric Company [PG&E]). Marin Clean Energy was the first

CCA in the State of California to go online with a 50 percent to 100 percent clean energy portfolio in 2010. Peninsula Clean Energy (PCE) was created in February 2016 when all 20 towns/cities in San Mateo County, plus the County of San Mateo, voted unanimously to form a Joint Powers Authority to administer the program. PCE is a public, locally controlled electricity provider that gives PG&E customers in San Mateo County the choice of having 50 percent to 100 percent of their electricity supplied from clean, renewable sources at competitive rates. CCAs are governed by the CPUC. SB 790 further ensures fair and transparent competition by creating a code of conduct and guiding principles for entrants into the CCA field.

California Executive Order S-3-05

In 2005, the California governor issued Executive Order (EO) S-3-05, which identifies Statewide GHG emissions reduction targets to achieve long-term climate stabilization as follows:

- Reduce GHG emissions to 1990 levels by 2020
- Reduce GHG emissions to 80 percent below 1990 levels by 2050

In response to EO S-3-05, California Environmental Protection Agency (CalEPA) created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the “2006 CAT Report”). The *2006 CAT Report* identified a recommended list of strategies that the State could pursue to reduce GHG emissions. These are strategies that could be implemented by various State agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the State agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture, among others.

California Assembly Bill 32

In 2006, the California legislature signed Assembly Bill (AB) 32 – the Global Warming Solutions Act – into law, requiring a reduction in Statewide GHG emissions to 1990 levels by 2020 and CARB preparation of a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 required CARB to adopt regulations to require reporting and verification of Statewide GHG emissions. Based on this guidance, CARB approved a 1990 Statewide GHG level and 2020 limit of 427 MT of CO₂e.

California Senate Bill 375

In 2008, SB 375 enhanced the State’s ability to reach AB 32 targets by directing CARB to develop regional GHG emissions reduction targets to be achieved from passenger vehicles for 2020 and 2035. In addition, SB 375 directs each of the State’s 18 major Metropolitan Planning Organizations (MPO) to prepare a SCS that contains a growth strategy to meet such regional GHG emissions reduction targets for inclusion in the respective RTP.

On March 22, 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. AMBAG was assigned targets of a three percent reduction in per capita GHG emissions from passenger vehicles by 2020 and a six percent reduction in per capita GHG

emissions from passenger vehicles by 2035. In March 2022, AMBAG formally adopted the 2045 RTP, which meets the requirements of SB 375. California Energy Efficiency Strategic Plan of 2008

In September 2008, the California Public Utilities Commission (CPUC) adopted California's first Long Term Energy Efficiency Strategic Plan, presenting a single roadmap to achieve maximum energy savings across all major groups and sectors in California. The Strategic Plan was subsequently updated in January 2011 to include a lighting chapter. The Strategic Plan sets goals of all new residential construction and all new commercial construction in California to be zero net energy (ZNE) by 2020 and 2030, respectively. In 2018, the California Energy Commission (CEC) voted to adopt a policy requiring all new homes in California to incorporate rooftop solar. This change will go into effect in January 2020 with the adoption of the 2019 Title 24 Code, described below, and is a step towards the State achieving its goal of all residential new construction being ZNE by 2020. Additionally, the Strategic Plan sets goals of 50 percent of existing commercial building to be retrofit to ZNE by 2030 and all new State buildings and major renovations to be ZNE by 2025.

California Climate Change Scoping Plan

In 2008, CARB approved the original California Climate Change Scoping Plan, which included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted and implemented since approval of the Scoping Plan.

Senate Bill 97, CEQA Guidelines for Addressing GHG Emissions

CEQA requires public agencies to review the environmental impacts of proposed projects, including General Plans, Specific Plans, and specific kinds of development projects. In February 2010, the California Office of Administrative Law approved the recommended amendments to the State CEQA Guidelines for addressing GHG emissions. The amendments were developed to provide guidance to public agencies regarding the analysis, mitigation, and effects of GHG emissions in draft CEQA documents.

California Climate Change Scoping Plan Update (2013)

In 2013, CARB approved the first update to the California Climate Change Scoping Plan. The 2013 Scoping Plan Update defined CARB climate change priorities for the next five years and set the groundwork to reach post-2020 Statewide GHG emissions reduction goals. The 2013 Scoping Plan Update highlighted California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluated how to align the State's longer-term GHG reduction strategies with other State policy priorities, including those for water, waste, natural resources, clean energy, transportation, and land use.

Senate Bill 1275, Charge Ahead Initiative

In September 2014, SB 1275 was signed into law, establishing a State goal of one million zero-emissions and near-zero-emissions vehicles in service by 2020 and directing CARB to develop a long-term funding plan to meet this goal. SB 1275 also established the Charge Ahead California Initiative requiring planning and reporting on vehicle incentive programs and increasing access to and benefits from zero-emissions vehicles for disadvantaged, low-income, and moderate-income communities and consumers.

California Executive Order B-30-15

In 2015, the California governor issued EO B-30-15, which established a Statewide mid-term GHG reduction target of 40 percent below 1990 levels by 2030.

Senate Bill 350, Clean Energy and Pollution Reduction Act of 2015

In October 2015, SB 350 was signed into law, establishing new clean energy, clean air, and GHG reduction goals for 2030 and beyond. SB 350 codifies Governor Jerry Brown's aggressive clean energy goals and establishes California's 2030 GHG reduction target of 40 percent below 1990 levels. To achieve this goal, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 (legislation originally enacted in 2002) to 50 percent by 2030. Renewable resources include wind, solar, geothermal, wave, and small hydroelectric power. In addition, SB 350 requires the State to double State-wide energy efficiency savings in electricity and natural gas end uses by 2030 from a base year of 2015.

California Senate Bill 32

In 2016, the California legislature signed SB 32 into law, extending AB 32 by requiring further reduction in Statewide GHG emissions to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently adopted policies and policies, such as SB 350 and SB 1383 (see below).

Assembly Bill 197, State Air Resources Board Greenhouse Gases Regulations

In 2016, the California legislature approved AB 197, a bill linked to SB 32, which increases legislature oversight over CARB and directs CARB to prioritize disadvantaged communities in its climate change regulations, and to evaluate the cost-effectiveness of measures it considers. AB 197 requires the ARB to "protect the State's most impacted and disadvantaged communities [and] consider the social costs of the emissions of greenhouse gases" when developing climate change programs. The bill also adds two new legislatively appointed non-voting members to the ARB, increasing the Legislature's role in the ARB's decisions.

California Climate Change Scoping Plan Update (2017)

In 2017, CARB approved the second update to the California Climate Change Scoping Plan. The 2017 Scoping Plan put an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan Update, the 2017 Scoping Plan Update does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally-appropriate quantitative thresholds consistent with Statewide per-capita goals of six MT of CO₂e by 2030 and two MT of CO₂e by 2050. As stated in the 2017 Scoping Plan Update, these goals may be appropriate for plan-level analyses (city, county, subregional, or regional level), but not for specific individual projects, because they include all GHG emissions sectors in the State (CARB 2017a).

California Executive Order B-55-18

In 2018, the California governor issued EO B-55-18, which established a new Statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter. This goal is in addition to the existing Statewide GHG reduction targets established by SB 32.

For more information on the Senate and Assembly Bills, Executive Orders, and Scoping Plans discussed above, and to view reports and research referenced above, please refer to the following websites: www.climatechange.ca.gov and www.arb.ca.gov/cc/cc.htm.

Senate Bill 100, The 100 Percent Clean Energy Act of 2018

In September 2018, Governor Brown signed SB 100, requiring that the State's load serving entities (including energy utilities and community choice energy programs) must procure energy generated 100 percent from Renewables Portfolio Standard for eligible renewable resources by 2045.

California Code of Regulations Title 24 (California Building Code)

Updated every three years through a rigorous stakeholder process, Title 24 of the CCR requires California homes and businesses to meet strong energy efficiency measures, thereby lowering their energy use. Title 24 contains numerous subparts, including Part 1 (Administrative Code), Part 2 (Building Code), Part 3 (Electrical Code), Part 4 (Mechanical Code), Part 5 (Plumbing Code), Part 6 (Energy Code), Part 8 (Historical Building Code), Part 9 (Fire Code), Part 10 (Existing Building Code), Part 11 (Green Building Standards Code), Part 12 (Referenced Standards Code). The California Building Code (CBC) is applicable to all development in California. (Health and Safety Code §§ 17950 and 18938(b).)

The regulations receive input from members of industry, as well as the public, with the goal of "[r]educing of wasteful, uneconomic, inefficient, or unnecessary consumption of energy." (Pub. Res. Code § 25402.) These regulations are carefully scrutinized and analyzed for technological and economic feasibility (Pub. Res. Code § 25402(d)) and cost effectiveness (Pub. Res. Code § 25402(b)(2) and (b)(3)).

PART 6 – BUILDING ENERGY EFFICIENCY STANDARDS

CCR Title 24 Part 6 is the Building Energy Efficiency Standards. This code, originally enacted in 1978, establishes energy-efficiency standards for residential and non-residential buildings in order to reduce California's energy demand. The Building Energy Efficiency Standards is updated periodically to incorporate and consider new energy-efficiency technologies and methodologies as they become available. New construction and major renovations must demonstrate compliance with the current Building Energy Efficiency Standards through submission and approval of a Title 24 Compliance Report to the local building permit review authority and the CEC. Under the 2019 standards, nonresidential buildings will be 30 percent more energy efficient compared to the 2016 standards, and residential homes will be 7 percent more energy efficient. When accounting for the electricity generated by the solar photovoltaic system, residences would use 53 percent less energy compared to homes built to the 2016 standards. The 2019 Building Energy Efficiency Standards, adopted on May 9, 2018, became effective on January 1, 2020. The 2019 Standards move toward cutting energy use in new homes by more than 50 percent and require installation of solar photovoltaic systems for single-family homes and multi-family buildings of three stories and less. The 2019 Standards focus on four key areas: 1) smart residential photovoltaic systems; 2) updated thermal envelope standards (preventing heat transfer from the interior to exterior and vice versa); 3) residential and

nonresidential ventilation requirements; 4) and nonresidential lighting requirements. Under the 2019 Standards, nonresidential buildings will be 30 percent more energy-efficient compared to the 2016 Standards, and single-family homes will be seven percent more energy-efficient. When accounting for the electricity generated by the solar photovoltaic system, single-family homes would use 53 percent less energy compared to homes built to the 2016 standards.

PART 11 – CALIFORNIA GREEN BUILDING STANDARDS

The California Green Building Standards Code, referred to as CALGreen, was added to CCR Title 24 as Part 11 first in 2009 as a voluntary code, which then became mandatory effective January 1, 2011 (as part of the 2010 CBC). The 2016 CALGreen institutes mandatory minimum environmental performance standards for all ground-up new construction of non-residential and residential structures. It also includes voluntary tiers (I and II) with stricter environmental performance standards for these same categories of residential and non-residential buildings. Local jurisdictions must enforce the minimum mandatory Green Building Standards and may adopt additional amendments for stricter requirements.

The mandatory standards require:

- 20 percent reduction in indoor water use relative to specified baseline levels;
- 50 percent construction/demolition waste diverted from landfills;
- Inspections of energy systems to ensure optimal working efficiency;
- Low-pollutant emitting exterior and interior finish materials such as paints, carpets, vinyl flooring, and particleboards;
- Dedicated circuitry to facilitate installation of EV charging stations in newly constructed attached garages for single-family and duplex dwellings; and
- Installation of EV charging stations at least three percent of the parking spaces for all new multi-family developments with 17 or more units.

Similar to the compliance reporting procedure for demonstrating Building Energy Efficiency Standards compliance in new buildings and major renovations, compliance with the CALGreen water-reduction requirements must be demonstrated through completion of water use reporting forms for new low-rise residential and non-residential buildings. Buildings must demonstrate a 20 percent reduction in indoor water use by either showing a 20 percent reduction in the overall baseline water use as identified in CALGreen or a reduced per-plumbing-fixture water use rate.

General Plan Designation and Zoning

The CAP would be implemented throughout the City of Santa Cruz and would occur in all Santa Cruz 2030 General Plan designations and zoning designations. The plan would not alter any existing General Plan land use or zoning designations at this time. Any changes in zoning designations that would occur as a result of this CAP would be subject to CEQA.

Description of the CAP

The Santa Cruz CAP incorporates the many climate protection programs noted above that the City of Santa Cruz has in place, in addition to a variety of measures and actions that focus on a continued effort to reduce GHG emissions. The City has developed the CAP to achieve a number of objectives,

including equitable climate outcomes, a safer future and enhanced quality of life for the community, new economic opportunities through green jobs, enhanced social equity and citizen engagement on the issue of climate change, increased use and accessibility of active and public transportation, and reduced obstacles for building decarbonization. The CAP provides a foundation for future development efforts in the City of Santa Cruz. It is anticipated that environmental documents for future development projects will identify and incorporate applicable GHG reduction measures from the CAP.

In 2022, Santa Cruz is actively engaged in addressing climate change, sustainability, and reductions in GHG emissions. The CAP addresses communitywide GHG emissions and includes an aspirational target to reduce community-wide GHG emissions output to carbon neutrality by 2035. It also includes an interim target to reduce communitywide GHG emissions to 2.51 MT of CO₂e per person (or 181,018 MT of CO₂e in total emissions) by 2030. This corresponds to an approximately 40 percent reduction in per capita and associated total mass emissions below 1990 levels by 2030, meeting the California Senate Bill 32 target for 2030 to reduce total GHG emissions 40 percent below 1990 levels. The Santa Cruz CAP assessed herein is based on community-level inventories developed in 2005 and 2019 and formulates a list of measures and associated actions to achieve the City's sustainability goals.

The 2005 GHG emissions inventory provides an important foundation for the CAP, providing the basis for an emissions back-cast to 1990 to serve as the reference year from which the City's target to reduce per capita emissions 40 percent below 1990 levels by 2030 has been developed. Approximately 5.53 MT of CO₂e per person (355,669 MT of CO₂e total) were emitted in Santa Cruz in 2005. The 2019 inventory also provided the basis for the GHG emissions forecast, against which progress toward the City's 2030 target can be measured. Approximately 4.22 MT of CO₂e per person (274,584 MT of CO₂e total) were emitted in Santa Cruz in 2019. GHG emissions in the 2005 and 2019 inventories were from the residential and commercial energy, transportation, solid waste, and wastewater sectors. The residential and commercial energy sector represents emissions that result from electricity and natural gas used in both private and public sector buildings and facilities. The transportation sector includes emissions from on-road and off-road transportation, gasoline and diesel sales within the City, and natural gas used for transportation purposes. The transportation sector was the largest contributor to Santa Cruz's GHG emissions in 2019, followed by residential and commercial energy.

Table 1 provides the Santa Cruz community GHG emissions in 2019 by sector as well as each sector's percentage of communitywide emissions.

Table 1 City of Santa Cruz 2019 Communitywide GHG Emissions by Sector

Sector	GHG Emissions (MT of CO₂e)	Percentage of GHG Emissions
Residential	42,718	15.55%
Electricity	341	0.12%
Natural Gas	42,377	15.43%
Commercial	23,206	8.45%
Electricity	950	0.34%
Natural Gas	22,256	8.11%
Transportation	189,162	68.89%
On-Road Transportation	179,979	65.55%
Diesel	4,071	1.35%
Gasoline	3,962	1.50%
Natural Gas	1,150	0.42%
Solid Waste	18,976	6.91%
Wastewater	754	0.27%
Total	274,584	100%
Population	65,041	N/A
Per Capita Emissions (MT of CO ₂ e/person)	4.22	N/A
MT of CO ₂ e = metric tons of carbon dioxide equivalent		

As shown in Table 1, the largest sector of GHG emissions is related to transportation (specifically on-road transportation). As part of the CAP and as described above, Santa Cruz is committed to a per capita emissions reduction target of approximately 40 percent below 1990 levels by 2030 and an aspirational target of carbon neutrality (net zero emissions) by 2035. This 2030 GHG emissions goal is selected to be consistent with SB 32 State emissions targets and AMBAG regional passenger vehicle emissions targets. This 2030 GHG emissions goal is also consistent with CEQA Guidelines¹ for a qualified GHG emissions reduction strategy, and to be achievable by City-supported measures and actions identified in the CAP. The CAP includes a business-as-usual (BAU) forecast of GHG emissions through 20xx and an adjusted BAU (ABAU), based on the 2019 inventory, that will enable the City of Santa Cruz to estimate the amount of emissions reductions needed to meet its per capita reduction targets.

The CAP includes measures and actions to make residential, commercial, and municipal buildings more energy efficient and to bolster resiliency through the use of locally produced solar. It recommends implementation of active and public transportation programs to emphasize a transition away from single-passenger occupancy vehicles while advocating for the increased adoption of commercial and passenger electric vehicles. It also offers solutions to reducing organic and inorganic waste and includes actions for collaborating with other communities to support reducing or capturing wastewater process emissions. In addition, the CAP includes measures to increase tree planting for carbon sequestration and increase green stormwater infrastructure on City facilities. Table 2 includes a comprehensive list of the CAP measures and descriptions of respective supporting actions as well as anticipated annual GHG reductions by 2030 and 2035.

¹ [CEQA Guidelines 15183.5\(b\) Plans for Reduction of Greenhouse Gas Emissions](#)

Table 2 City of Santa Cruz CAP Measures and Actions

Measure BE-1	Enforce the City's new construction natural gas prohibition ordinance (SCMC 6.100) and inform the community regarding the available technology and benefits of electrification.	2030: 0.085 2035: 0.100
Action BE-1-1	Enforce the new construction natural gas prohibition ordinance through the development of a comprehensive permitting compliance program that includes routine training for City staff, dedicating staff time for building inspections, charging fees for noncompliance, providing easy-to-understand compliance checklists online and with permit applications and facilitating permitting online.	2030: 0.085 2035: 0.100
Measure BE-2	Electrify 31% of existing residential buildings by 2030 and 53% by 2035.	2030: 0.180 2035: 0.298
Action BE-2-1	Develop, implement, and enforce phased and equitable electrification ordinance(s) for existing residential buildings by the start of 2023. Maximize permit compliance through streamlining the compliance process, improving third-party enforcement, and advanced training for enforcement staff. Steps to be completed to adopt the ordinance(s) are as follows: Step 1: Work with stakeholders in developing an idea for a reach code electrification ordinance(s) Step 2: Complete a cost effectiveness study Step 3: Develop and draft the ordinance(s) and go through the public process, incorporating revisions as necessary Step 4: Go through the formal adoption process Step 5: Apply for approval by the California Energy Commission.	2030: 0.180 2035: 0.298
Action BE-2-2	Identify and partner with local community-based organizations with connections to frontline communities to assist in development of the existing building electrification strategy.	Supportive
Action BE-2-3	By 2024, establish a plan to electrify and improve health and safety of the City's existing affordable housing stock at a neighborhood level by 2035. Provide detailed information on the City website including descriptions of the health and environmental benefits of electrification, links to CCCE and PG&E resources on electrification, up-to-date lists of local contractors that perform electric retrofits, and information about the most cost-competitive residential electrification technologies currently available.	Supportive
Action BE-2-4	Work with PG&E and CCCE to identify opportunities to remove obsolete natural gas infrastructure, to redirect PG&E funding allocated for pipeline maintenance to electrification retrofit projects instead. Work with PG&E to identify funding, as needed, for the removal of the infrastructure. Consider a pilot to remove obsolete natural gas infrastructure from municipal buildings.	Supportive
Action BE-2-5	Work with PG&E and CCCE to deploy community solar and electrify existing buildings in residential neighborhoods. Incentivize all-electric retrofits through rebates, on-bill financing, and other mechanisms.	Supportive
Measure BE-3	Electrify 26% of existing commercial buildings by 2030 and 45% by 2035.	2030: 0.079 2035: 0.133
Action BE-3-1	Adopt, implement, and enforce an electrification ordinance for existing commercial buildings by the beginning of 2024.	2030: 0.079 2035: 0.133

Action BE-3-2	Work with partners to mitigate potential equity impacts of existing commercial building electrification ordinance. Facilitate equitable and inclusive funding opportunities for commercial building electrification.	Supportive
Action BE-3-3	Support commercial battery storage installations and business district scale microgrid opportunities.	Supportive
Action BE-3-4	Establish a building emissions performance standard for commercial buildings over 20,000 square feet.	Supportive
Measure BE-4	Maintain Central Coast Community Energy (CCCE) opt-out rates at or below 4% for residential and 2% for commercial.	Supportive
Action BE-4-1	Support annual analysis of CCCE opt-out rates in the City and encourage opting up to CCCE prime 100% renewable energy option.	Supportive
Action BE-4-2	Increase uptake of 100% renewable energy option from CCCE, incentivizing households in affordable housing units.	Supportive
Action BE-4-3	Promote benefits of opting in to CCCE service, particularly those in frontline neighborhoods and small businesses and vet, woman and minority owned businesses.	Supportive
Measure BE-5	Increase resiliency through equitable energy efficiency and local solar programs.	Supportive
Action BE-5-1	Partner to deliver weatherization, healthy home retrofits, energy efficiency and solar system installs to low income homeowners and rental units.	Supportive
Action BE-5-2	Advocate to reform community solar policies and rates, enabling residential and commercial renters to participate in benefits of local solar.	Supportive
Action BE-5-3	Establish rental building energy performance standards to increase adoption of rebated energy efficiency and electrification measures.	Supportive
Measure BE-6	Provide inclusive engagement, equitable process, and regional coordination to maximize building electrification and other co-benefits.	Supportive
Action BE-6-1	Define equity metrics for new and existing building electrification ordinances' implementation and enforcement based on feedback from frontline communities and successful examples from other jurisdictions, and structure ordinances and permitting compliance program to meet these metrics. Equity metrics should be designed to prevent displacement and lead to end-user costs for low-income populations will not be greater after electrification than before.	Supportive
Action BE-6-2	Partner to develop all-electric rates by income-level and incentivize equitable all-electric retrofits.	Supportive
Action BE-6-3	Advance new and existing building electrification as a priority at all scales.	Supportive
Action BE-6-4	Advocate for state and federal regulatory changes to enable neighborhood level electrification, community solar, natural gas pruning, and rates stabilization policies.	Supportive
Action BE-6-5	Conduct a study to evaluate the need to increase fees to provide outreach, trainings, additional staff for building electrification compliance.	Supportive

Action BE-6-6	Facilitate equitable access to accurate and current information about electrification programs, incentives, and opportunities. Develop induction cooktop loaner programs.	Supportive
Action BE-6-7	Participate in regional workforce development opportunities for building electrification.	Supportive
Action BE-6-8	Work with partners to establish a Regional Energy Network for energy efficiency and electrification building resources, expand education on subsidized rate programs, code compliance training and apprenticeship program.	Supportive
Measure T-1	Implement programs for active transportation (walking and biking) that achieve 23% of bicycle mode share by 2030 and 30% by 2035.	2030: 0.051 2035: 0.069
Action T-1-1	Fund, staff and implement the Active Transportation Plan Update, Vision Zero, Safe Routes to School and the 2030 General Plan update.	2030: 0.051 2035: 0.069
Action T-1-2	Complete all portions of Rail Trail and work with partners to plan active and public transportation to Rail line.	
Action T-1-3	Require secure bike parking near transit and in major activity centers. Require bike parking installation in new commercial developments and existing commercial renovations.	Supportive
Action T-1-4	Re-establish citywide e-bike share with explicit consideration of how to make accessible to frontline groups.	Supportive
Action T-1-5	Build new infrastructure to ensure there is equitable access to safe bicycle and pedestrian infrastructure throughout the city, prioritizing frontline neighborhoods.	Supportive
Action T-1-6	Pilot Neighborhood Greenways to slow traffic and improve walking and biking and evaluate piloting time based closures to vehicles primarily in business districts.	Supportive
Action T-1-7	Accelerate housing development and support commercial and industrial development in city limits, concentrating the most intensive growth in transit corridors and central areas of the city to promote walking and biking to nearby jobs, entertainment, goods, services, and public transportation, through the General Plan Housing Element Update to be approved in 2023. Prioritize expansion of affordable housing stock. Partner to incentivize 15- minute neighborhoods, particularly within frontline neighborhood communities, supported by dense housing and buildings, provision of locally sited essential services and amenities, and connected by a network of bike, pedestrian, and transit services.	Supportive
Measure T-2	Implement programs for public transportation that achieve 8% of public transit mode share by 2030 and 12% by 2040.	2030: 0.002 2040: 0.032
Action T-2-1	Support countywide coordination to fund and implement Bus Rapid Transit. Advocate for enhanced and increased public transportation service with improved customer serving amenities (e.g., all door boarding, on demand, online ticketing, Wi-Fi).	2030: 0.002 2035: 0.032
Action T-2-2	Support public transportation prioritizing serving major corridors, destinations, and frontline neighborhoods.	

Action T-2-3	Require more employers to develop education and financial incentives for employees to bike, walk, carpool, or take the bus to work. Require large employers to subsidize alternative modes.	
Action T-2-4	Advocate for METRO to fund and implement a free public transit pilot program for students, foster youth, and unhoused youth in the City.	Supportive
Action T-2-5	Support funding for public transportation fleet electrification.	Supportive
Action T-2-6	Equitably market and publicize public transportation improvements and incentive programs as they are planned and implemented.	Supportive
Action T-2-7	Partner with Santa Cruz County Regional Transportation Commission, Santa Cruz County, and Regional Agencies to expand citywide transportation communications and marketing programs to residents commuting outside of the City for work.	Supportive
Measure T-3	Develop programs and policies to discourage driving single passenger occupancy vehicles.	Supportive
Action T-3-1	Partner with community groups to develop programs, and policies that discourage single-passenger vehicles while addressing equity concerns and tracking through equity metrics.	Supportive
Action T-3-2	Explore implementing a local gasoline and diesel car registration tax with exemption for low-income people.	Supportive
Action T-3-3	Discourage single passenger vehicles in high traffic zones considering a congestion charge program, limiting parking options, bans in high traffic zones or public/multimodal transportation routes, and rideshare user taxes.	Supportive
Action T-3-4	Reduce off-street parking requirements for new housing developments close to frequent transit service, with sensitivity to low-income neighborhoods whose parking is already constrained.	Supportive
Action T-3-5	Consider limiting parking options for single-passenger vehicles in downtown and other commercial areas of the city balanced with needs of sustaining downtown employees, businesses, and tourists.	Supportive
Action T-3-6	Adjust parking rates dependent on demand and supply in all downtown parking locations and evaluate whether revenue may be used to fund active transportation or public transportation projects.	Supportive
Action T-3-7	After implementing ActionT-3-4, eliminate parking minimums citywide and develop parking maximums, while pricing all public parking spaces based on available transportation options, travel demand, and land use.	Supportive
Action T-3-8	Support the City's tourism economy by exploring and implementing neighborhood or zone based parking solutions and use of electric trolleys in high traffic and walkable areas.	Supportive
Action T-3-9	Remove parking to accommodate multimodal improvements, including protected bike lanes and transit improvements, taking into account business impacts.	Supportive
Measure T-4	Increase passenger electric vehicle (EV) adoption to 35% by 2030 and 40% by 2035.	2030: 0.439 2040: 0.449
Action T-4-1	Install at least 1,247 new public EV charging stations prioritizing frontline neighborhood and high usage areas by 2030.	2030: 0.439 2035: 0.449

Action T-4-2	Require new residential multifamily housing and large commercial building owners to install chargers in 20% of parking spaces and ensure electric service capacity is sufficient so that >20% of parking spaces are EV ready.	
Action T-4-3	Advocate for programs and incentives for income tiered residential EV charger installations and EV purchases.	
Action T-4-4	Pursue affordable EV car share to serve affordable housing and multifamily developments in frontline neighborhoods, while also promoting EV car share citywide, for example by requiring car share for certain new projects.	Supportive
Action T-4-5	Partner with CCCE, PG&E, and community groups to increase adoption rates of EVs in frontline neighborhoods by stacking incentives and leveraging on-bill financing for EV chargers.	Supportive
Action T-4-6	Partner to conduct EV and public transportation education events in frontline neighborhoods.	Supportive
Action T-4-7	Engage compensated frontline communities in regional and local vehicle electrification strategy development.	Supportive
Measure T-5	Increase commercial EV adoption to 25% by 2030 and 35% by 2035.	2030: 0.077 2040: 0.050
Action T-5-1	Engage with local employers and business fleet owners in the City to identify opportunities for accelerated fleet electrification, prioritizing small businesses, and veteran, woman or minority-owned businesses. Provide information on the requirements of California's Advanced Clean Truck regulation and available funding sources for fleet replacements (e.g., Low Carbon Fuel Standard).	2030: 0.077 2035: 0.050
Action T-5-2	Conduct a study of business vehicle fleets in the City and identify employers and businesses subject to the Advanced Clean Truck regulation as well as those to target for accelerating zero-emission vehicle adoption. With stakeholder support, use the results from the study to develop and implement a plan for City-supported accelerated fleet electrification in business and municipal fleets.	
Action T-5-3	Prioritize commercial EVs for loading zone access and use other curbside management practices.	
Measure T-6	Electrify or otherwise decarbonize 50% of off-road equipment by 2030 and 75% by 2035.	2030: 0.076 2035: 0.116
Action T-6-1	Explore ways to mitigate equity impacts of electrifying and upgrading off-road equipment and harbor vessels.	Supportive
Action T-6-2	Engage with small business, women, vet or minority owners of off-road equipment fleets and others with highest decarbonization potential to promote equitable fleet electrification through outreach and pursuing grants or other funding.	Supportive
Action T-6-3	Access funding to decarbonize off-road equipment, including investigating state funding to decarbonize off-road equipment as a result of Executive Order N-79-20 and State Climate Funding Package.	Supportive

Action T-6-4	Support transition of local employers to zero-emissions off-road equipment. Provide online resources and a test demonstration site for landscaping industry.	Supportive
Action T-6-5	Develop an ordinance to phase out gas and diesel-powered off-road equipment starting in 2024, partnering to provide income tiered incentives for small businesses. Ordinance language to include allowance for biofuels for equipment for which zero emission alternatives are not available.	2030: 0.076 2035: 0.116
Measure T-7	Advocate for remote work policy & infrastructure.	Supportive
Action T-7-1	Work with the County, the Santa Cruz County Regional Transportation Commission, AMBAG, and the City's larger employers to support remote work programs, while seeking to address remote work equity issues such as internet access.	Supportive
Action T-7-2	Participate in regional advocacy for development of a statewide remote work policy.	Supportive
Measure W-1	Maintain gallons per capita water use for the residential sector at a level that is at least 10% below the state goal of 55 gallons per person per day.	Supportive
Action W-1-1	Continue to provide free water conservation devices and rebates for water conservation and continue targeted outreach to frontline communities.	Supportive
Action W-1-2	Continue to provide rebates or other funding for installing laundry to landscape, rainwater catchment systems, targeting outreach to low and medium incomes homes.	Supportive
Action W-1-3	Expand watershed stewardship school program to include water conversation.	Supportive
Measure W-2	Reduce organic waste by 75% by 2030 and 90% by 2035; and reduce inorganic waste by 35% by 2030 and 40% by 2035.	2030: 0.065 2035: 0.078
Action W-2-1	Partner to develop a regional compost trading program to meet State organic procurement target.	2030: 0.065 2035: 0.078
Action W-2-2	Expand enforcement and implement fee for incorrectly sorted materials with sensitivity to shared collection.	
Action W-2-3	Pursue funding to conduct detailed planning of food waste to energy infrastructure and process to meet State food waste diversion targets.	Supportive
Action W-2-4	Continue to participate in Countywide Solid Waste Task Force consortium to plan and pursue funding for infrastructure beyond State 2025 organic waste diversion targets.	Supportive
Action W-2-5	Conduct waste characterization studies annually to understand the waste stream and plan to increase waste diversion and reduce contamination.	Supportive
Action W-2-6	Provide training resources to businesses and large institutions on organic waste diversion.	Supportive
Action W-2-7	Continue multi-lingual engagement with multi-family property owners/managers and developing waste handling signage for their properties.	Supportive

Action W-2-8	Continue to conduct targeted, multi-lingual, culturally appropriate, and geographically diverse waste diversion educational and technical assistance campaigns.	Supportive
Action W-2-9	Expand the City's Recycling Boot Camp and Master Recycler's Programs.	Supportive
Action W-2-10	Pilot and evaluate emerging technologies to reduce organic waste by restaurants and other major food waste producers.	Supportive
Measure W-3	Set a long-term target to reduce waste generation growth.	Supportive
Action W-3-1	Continue free training and education program accessible to all residents and employees to learn about waste prevention and diversion strategies and effects of overconsumption.	Supportive
Action W-3-2	Work collaboratively and leverage grants to prevent food waste and rescue edible food.	Supportive
Action W-3-3	Enforce implementation of a fee at point of use for single-use food ware by food service providers.	Supportive
Action W-3-4	Conduct a consumption-based emissions inventory and promote a closed-loop circular economy.	Supportive
Action W-3-5	Leverage community activation platform and community partners to encourage lifestyle choices that reduce consumption-based emissions including plant based diets, travel alternatives and local purchasing. Explore policy options to increase adoption plant-based, and plant strong diets.	Supportive
Action W-3-6	Expand edible food recovery program to all restaurants and food generating businesses and incentivize small businesses who otherwise could not participate.	Supportive
Action W-3-7	Evaluate and implement a program for reusables for restaurant to-go containers.	Supportive
Action W-3-8	Explore opportunities to promote a "circular economy" among local manufacturers and industry.	Supportive
Measure W-4	Reduce or capture GHG emissions from wastewater treatment emissions.	Supportive
Action W-4-1	Explore opportunities related to methane capture and conversion to biofuel through the state's Low Carbon Fuel Standard (LCFS) program.	Supportive
Action W-4-2	Collaborate with surrounding cities and the County to advocate and support emissions reduction at wastewater facilities.	Supportive
Measure CS-1	Develop an Urban Forest Master Plan and plant 3,000 new trees by 2030.	Supportive
Action CS-1-1	Prioritize planting trees in and with low income or frontline neighborhoods and other neighborhood groups as per the Street Tree Master Plan.	Supportive
Action CS-1-2	Ensure that the City has the resources and staff to effectively plant and maintain street trees and landscape.	Supportive
Action CS-1-3	Pursue funding to expand forest management to promote carbon sequestration and reduce threat of intense fires.	Supportive

Action CS-1-4	Implement the City's Street Tree Master Plan 2021 and address barriers to implementation.	Supportive
Action CS-1-5	Increase urban forest restoration outreach opportunities with frontline and other neighborhood groups.	Supportive
Measure CS-2	Explore new carbon sequestration and carbon capture opportunities.	Supportive
Action CS-2-1	Partner to conduct carbon sequestration and carbon capture and storage opportunities in the City and regionally.	Supportive
Action CS-2-2	Pilot and promote carbon sequestering construction materials like low-carbon concrete and mass timber.	Supportive
Action CS-2-3	Work with local building professionals to expand knowledge and adoption of carbon sequestering building materials and techniques and support reduction of embodied carbon.	Supportive
Action CS-2-4	Partner with local lumber companies to promote sustainable and locally harvested lumber for timber construction to reduce emissions from materials transportation and reduce the price premium of emerging timber construction.	Supportive
Measure CS-3	Increase carbon sequestration by applying compost throughout the community.	Supportive
Action CS-3-1	Explore making compost available at no or low cost to community gardeners. Continue to operate the City compost bin rebate program.	Supportive
Action CS-3-2	Engage with community gardeners, agriculture industry, master gardeners and Homeless Garden Project to plan and set goals around compost development and application.	Supportive
Action CS-3-3	Explore collaborating with UCSC to pilot opportunities for regenerative agriculture and permaculture.	Supportive
Action CS-3-4	Adopt regenerative landscaping policies and promote trainings to support commercial and residential land owners to better maintain native and carbon sequestering landscapes.	Supportive
Action CS-3-5	Reforest or afforest areas of the City that are currently mowed in line with other City parks and open space plans.	Supportive
Action CS-3-6	Evaluate policies to strengthen current open space habitat preservation.	Supportive
Measure CE-1	Prioritize opportunities for greatest climate benefit and economic inclusion especially for minority, veteran and women owned businesses in climate related sectors.	Supportive
Action CE-1-1	Address pressing issues regarding local purchasing, local hire, supply chain, and unequal conditions in the labor market.	Supportive
Action CE-1-2	Encourage lifestyle choices that reduce consumption-based emissions including plant-based diets, travel alternatives and local purchasing by leveraging community activation platform and community partners.	Supportive
Measure CE-2	Support equitable access to high-quality training and workforce development programs in climate related sectors.	Supportive
Action CE-2-1	Equitably support entrepreneurship, and increase in quality of jobs and access to local jobs and business development.	Supportive

Action CE-2-2	Support regional collaboration regarding jobs, housing and economic development.	Supportive
Measure M-1	Decarbonize municipally owned buildings by 2030 and remaining municipal facilities by 2045.	Supportive
Action M-1-1	Develop a plan to decarbonize, electrify, and improve indoor air quality in all municipal buildings by 2030 and electrify any remaining facilities by 2045.	Supportive
Action M-1-2	Evaluate the feasibility and cost of phasing out diesel and natural gas generators and put policy in place to decommission and replace diesel generators with solar and battery storage by 2030 as feasible.	Supportive
Action M-1-3	Adopt and implement a municipal building electrification plan for retrofitting all remaining streetlights, facility lighting, and traffic signals to LEDs by 2040.	Supportive
Action M-1-4	Adopt and implement a plan for retrofitting all remaining streetlights, facility lighting, and traffic signals to LEDs by 2040.	Supportive
Action M-1-5	Implement an “electric first” commitment for building projects and other major retrofits of municipal buildings unless otherwise infeasible.	Supportive
Action M-1-6	Fund and hire an energy manager and dedicate staff time for obtaining grant funding for municipal electrification.	Supportive
Measure M-2	Procure carbon free or 100% renewable electricity for municipal operations by 2030.	Supportive
Action M-2-1	Consider opting up to CCCE Prime for 100% renewable energy now.	Supportive
Action M-2-2	Continue to purchase CCCE’s electricity for all municipal accounts.	Supportive
Measure M-3	Increase municipally-owned renewable energy.	Supportive
Action M-3-1	Redevelop Pacific Station as a net zero energy producing transit center with mixed use and affordable housing.	Supportive
Action M-3-2	Conduct a feasibility study to understand opportunities for installing additional solar and battery storage, or other renewable energy generation infrastructure at municipally owned facilities (e.g., generators and renewable energy at critical facilities).	Supportive
Action M-3-3	Identify and implement near term microgrid opportunities that align with resiliency objectives and conduct a microgrid pilot program (e.g., at City Hall for critical loads).	Supportive
Measure M-4	Develop and implement a Municipal Transportation Demand Management (TDM) Plan by the end of 2023.	Supportive
Action M-4-1	Continue to conduct a detailed survey of City staff commute data annually and report findings to employees.	Supportive
Action M-4-2	Investigate and implement opportunities for installing secure bike parking, fix-it stations, and showers at municipal work sites that do not currently have these facilities.	Supportive
Action M-4-3	Expand provision of free public transit passes to all municipal employees as demand necessitates.	Supportive

Action M-4-4	Develop a remote work program plan with milestones that educates and enables eligible municipal employees to work from home for part of their work schedule including alternative work schedules in order to further sustainability and employee retention goals.	Supportive
Action M-4-5	Include alternative modes or incentives for employees to bike, walk, and carpool to work.	Supportive
Action M-4-6	Consider flex-work/co-working satellite offices or access at libraries and in nearby communities like the San Lorenzo Valley or South County to reduce commute times.	Supportive
Action M-4-7	Promote opportunities for housing in affordable housing developments to employees to live close to their City work sites.	Supportive
Measure M-5	Electrify or otherwise decarbonize the municipal fleet by 2035.	Supportive
Action M-5-1	Adopt and implement the City's Fleet Electrification Plan to convert fossil fuel municipal fleet vehicles to electric or otherwise decarbonize the fleet by 2035, evaluating phasing and the potential for regional bulk procurement.	Supportive
Action M-5-2	Plan for and install EV ready infrastructure and additional EV chargers in municipal parking lots for fleet, employee and public use, and pilot curbside installations.	Supportive
Action M-5-3	Procure 100% renewable diesel as a transition fuel until complete fleet electrification in 2035.	Supportive
Action M-5-4	Adopt an electric vehicle first policy, unless infeasible for the use case, for all municipal vehicles by end of 2023.	Supportive
Measure M-6	Electrify or otherwise decarbonize all municipal off-road equipment (landscaping equipment, construction equipment, marine diesel engines) by 2040.	Supportive
Action M-6-1	Complete an inventory of all municipal off-road equipment, specifying which equipment types are possible to electrify based on existing technologies, experience and cost, and adopt an implementation plan to decarbonize by 2040.	Supportive
Action M-6-2	Adopt an emissions-free equipment preference purchasing policy for offroad equipment for all City departments.	Supportive
Action M-6-3	Evaluate and procure biofuels (renewable diesel and biogas) to operate municipally owned off-road equipment as feasible for use cases that cannot be electrified. Re-evaluate decarbonization opportunities regularly to ensure biofuels are not being used for equipment that could otherwise be electrified.	Supportive
Action M-6-4	Dedicate staff time to obtain grant funding for decarbonization of off-road equipment.	Supportive
Measure M-7	Increase municipal procurement of recovered organics waste products.	Supportive
Action M-7-1	Require City agencies to procure and apply compost to the exterior of suitable facilities in accordance with landscape management needs and plans.	Supportive
Action M-7-2	Investigate opportunities for generating and procuring recovered organic waste products.	Supportive

Action M-7-3	Update food waste to energy feasibility studies and design and construct facilities to accommodate food waste.	Supportive
Measure M-8	Promote efficient municipal water consumption.	Supportive
Action M-8-1	Evaluate replacement of existing municipal watering/irrigation infrastructure and schedules as water reduction strategies.	Supportive
Action M-8-2	Continue to implement landscaping that utilizes drought-tolerant landscaping techniques for parks, medians, and fields.	Supportive
Action M-8-3	Evaluate and increase green stormwater infrastructure on City facilities.	Supportive
Action M-8-4	Identify funding to dedicate staff time to obtain grant funding for implementing efficient municipal water consumption.	Supportive
Measure M-9	Support climate action planning.	Supportive
Action M-9-1	Update the Climate Action Plan every 5 years, report annually and integrate climate action into budget decision making process.	Supportive
Action M-9-2	Explore adding life cycle emissions into the decision-making process as data becomes available.	Supportive
Action M-9-3	Implement a fossil fuel divestment policy and provide update to City Council on status of divestment from fossil fuel banking.	Supportive
Action M-9-4	Evaluate plant-strong and plant-based diets strategies, procurement and policies.	Supportive
Action M-9-5	Explore inclusion of plant-strong and plant-based diets and menu choices as a measure in the City's Green Business Program.	Supportive
Action M-9-6	Consider staffing, structure and integration of Climate Action Program throughout organization, including consideration of public advisory formats, and modify as needed to meet increasing demands on integration, coordination, reporting and engagement.	Supportive
Action M-9-7	Develop a green event checklist/guide and consider conditions of use for special event permits that support climate action.	Supportive
Action M-9-8	Integrate the Climate Action Plan into the City's upcoming Master Investment Strategy/Financial Plan Development, Master Fee Evaluation and Cost Evaluation Plan and its change management process.	Supportive
Action M-9-9	Update and enforce the City's environmentally preferable purchasing policy to include electric first vehicles and building commitments, as well as plant based/strong diet recommendations.	Supportive
Action M-9-10	Monitor supply chain and end of life handling of renewable energy and other climate supportive products and technologies to avoid slave labor, environmental degradation from extraction and/or disposal in frontline communities, and advocate for the elimination of these processes globally.	Supportive
Note: MT of CO ₂ e = metric tons of carbon dioxide equivalent		
Source: Compiled by Rincon based on information contained in the Santa Cruz Draft CAP.		

The measures included in the CAP (shown above in Table 2), combined with Statewide legislation, will enable Santa Cruz to meet its per capita GHG emissions reduction target of 40 percent below 1990 levels by 2030.

Table 3 shows the contribution of the Statewide initiatives in conjunction with the CAP measures to reduce Santa Cruz projected total emissions in 2030. Table 4 shows the 2030 and 2035 GHG emissions and targets for Santa Cruz, including the expected emissions once the measures and actions listed in Table 2 are implemented.

Table 3 City of Santa Cruz 2030 GHG Reductions from 2030 BAU levels

State Initiative	Sector	2030 Reduction in per Capita Emissions (MT of CO ₂ e/person)	2030 Reduction in Total Emissions (MT of CO ₂ e)
Pavley Regulation and Advanced Clean Cars Program	On-road Transportation	0.61	43,799
Renewable Portfolio Standard	All electricity	0	2.61
Title 24	Residential Energy	0	2.43
A. Total State Initiative Emissions Reductions		0.61	43,804
B. Total CAP Emissions Reductions		1.06	76,152
C. Total Emissions with Reductions (BAU - [A+B])		2.49	180,563
D. Santa Cruz Emissions Reduction Target		2.74	181,391
E. Meets/exceeds State Goals? (C < D)		Yes	Yes

MT of CO₂e = metric tons of carbon dioxide equivalent

Table 4 City of Santa Cruz GHG Emissions Projections and Targets

Description	Emissions (MT of CO ₂ e/person)	Emissions (MT of CO ₂ e Total)
1990 Emissions	6.08	256,715
2030 Adjusted Emissions	3.55	300,519
2030 Target Emissions	2.74	181,391
2030 Expected Emissions with Implementation of CAP Measures and Actions	2.49	180,563
2035 BAU Emissions	4.12	309,929
2035 Target Emissions	Carbon Neutral	Carbon Neutral
2035 Expected Emissions with Implementation of CAP Measures and Actions	1.99	150,151

MT of CO₂e = metric tons of carbon dioxide equivalent

Implementation of the CAP measures and actions listed in Table 2 could result in physical changes to the environment that could potentially have an impact on the environment. However, the analysis provided within this document ultimately deems such potential impacts to be less than significant. While individual projects resulting from the measures described above have not been identified for the purposes of this document, the types of actions that could result from realization of the CAP measures are taken into account in considering potential environmental impacts that could occur through implementation of the CAP. For example, projects or actions requiring ministerial approval, such as installation of electric vehicle charging stations and supporting infrastructure, as well as new bicycle or pedestrian facilities, would introduce physical changes related to the temporary presence and operation of construction vehicles and equipment during installation of required facilities and the long-term presence of new facilities such as bike and pedestrian facilities, solar arrays, and

electric vehicle charging stations, which could alter pedestrian and vehicular traffic patterns. Future plans or projects requiring discretionary approval would be subject to environmental review under CEQA, and individual impact analyses will identify required plan- or project-specific mitigation measures where applicable.

Cumulative Projects Scenario

For purposes of CEQA cumulative impacts analysis of the Santa Cruz CAP, the cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030. AMBAG's 2018 Regional Growth Forecast projects Santa Cruz would have 75,571 residents, 46,153 jobs, and 28,634 housing units in the year 2030 (AMBAG 2018b). These projections are slightly higher than those provided in the Santa Cruz 2030 General Plan and the Santa Cruz CAP for 2030, but are utilized to provide a conservative analysis.

Required Approvals

City of Santa Cruz

Required approvals include:

- Adoption of the CAP by City Council, and
- Certification of the CAP Initial Study-Negative Declaration

Although individual plans or projects may be implemented later under the umbrella of the CAP, each individual plan or project would be subject to separate environmental review under CEQA.

Other Public Agencies

The City of Santa Cruz has sole approval authority over the CAP. There are no other public agencies whose approval is required.

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Environmental Factors Potentially Affected

This CAP would potentially affect the environmental factors checked below, involving at least one impact that is “Potentially Significant” or “Less than Significant with Mitigation Incorporated” 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

Determination

Based on 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 to 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 “less than significant with mitigation incorporated” 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 potential 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.

Lead Agency Representative Signature	Date
Lead Agency Representative Printed Name	Title

Environmental Checklist

1 Aesthetics				
	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b. Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	☐	☐	☒	☐
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d. Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	☐	☐	☒	☐

- a. *Would the project have a substantial adverse effect on a scenic vista?*
- b. *Would the project substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?*

The Santa Cruz General Plan and the General Plan Environmental Impact Report (EIR) generally identify scenic resources within and nearby Santa Cruz as those that are oriented toward Monterey Bay and the Pacific Ocean to the south and west; the City's Greenbelt, which includes roughly 1,500 acres of woodlands and coastal prairie to the west, north, and east; and the Santa Cruz Mountains that form the City's northern boundary. Important natural features that provide scenic views in the City include Pogonip, DeLaveaga Park, Arana Gulch, Neary Lagoon, Younger Lagoon, Antonelli Pond, Arroyo Seco Canyon, the Moore Creek Preserve, and the Jessie Street Marsh (City of Santa Cruz 2012). Scenic vistas are often available from publicly accessible roadways including Highway 1, which runs east-west through the northern and central portion of the City before following the coast north to San Francisco, and SR-9, which follows the San Lorenzo River from Highway 1 north through the Santa Cruz Mountains to Boulder Creek and San Jose. Both routes are eligible for

designation as a State scenic highway. SR-17, which runs parallel to SR-9 just outside of the Santa Cruz City boundary, is also eligible for designation as a State scenic highway (Caltrans 2022). Although eligible, these roadways have not been officially designated by Caltrans as a State scenic highway.

As a policy document, the CAP would not result in impacts related to scenic vistas and scenic highways. However, implementation of some CAP strategies may promote infrastructure development and other physical changes through policies and programs. CAP Action BE-2-4 promotes the removal of obsolete natural gas infrastructure, while CAP Action BE-2-5 promotes the deployment of community solar and electrification of existing buildings in residential neighborhoods. CAP Action BE-3-3 supports commercial battery storage installations and business district scale microgrid opportunities. CAP Action-BE 5-1 vows to deliver weatherization, healthy home retrofits, and solar system installs to low-income homeowners and rental units. Additionally, CAP Action T-1-1 will fund, staff, and implement the Active Transportation Plan Update, Vision Zero, Safe Routes to School and the 2030 General Plan update, while Actions T-1-2, T-1-3, and T-1-5 describe completing all portions of Rail Trail, planning active and public transportation to the Rail line, ensuring secure bike parking near transit and in major activity centers, requiring bike parking installation in new commercial developments and existing commercial renovations, and building new infrastructure to ensure there is equitable access to safe bicycle and pedestrian infrastructure. Action T-4-1 also promotes the installation of at least 1,247 new public EV charging stations. CAP projects would generally be limited to the existing developed areas of the City and would be small-scale in nature. Implementing the Active Transportation Plan Update and completing all portions of Rail Trail could have a positive effect on scenic vistas by adding new vantage points within existing natural landscapes. Furthermore, CAP Measure CS-1 would result in the planting of additional trees within the City's landscape, which would also have a positive effect on scenic vistas.

The CAP would promote infrastructure development and redevelopment that is complimentary to existing development and land uses. Though the implementation of the CAP may result in future development, CAP-related projects and actions, including those identified above, would already be required to adhere to City development zoning regulations and policies, including Santa Cruz Municipal Code (SCMC), Santa Cruz 2030 General Plan and Local Coastal Program, and other neighborhood area plans. Chapter 24.08 of the SCMC, Land Use Permits and Findings, enforces the requirement for a majority of development within the City to obtain a design permit, which is meant to ensure that new development includes high-quality architecture and aesthetic conformity; Chapter 24.12 of the SCMC, Community Design, sets for the general requirements applicable to development of all lands within the City and outlines regulations that enforce the protection of aesthetic amenities (City of Santa Cruz 2021b). General Plan Community Development Policy 1.2 ensures that the scale, bulk, and setbacks of new development preserve important public scenic views and vistas (City of Santa Cruz 2012). Local Coastal Program Policy 1.4 enforces the utilization of the environmental review process and maintenance of the Zoning Ordinance to ensure protection of scenic views, while Policy 2.1 requires design review to regulate visual quality along coastal resources (City of Santa Cruz 1992). Additionally, the City maintains multiple individual area plans that provide design guidelines for development within specific parts of Santa Cruz. Compliance with the SCMC, Santa Cruz 2030 General Plan, Local Coastal Program, and individual area plans would ensure that potential future infrastructure development and redevelopment related to the CAP would be carefully integrated with the existing character of the Santa Cruz community, minimizing potential aesthetic impacts. As such, the CAP would not result in adverse impacts related to scenic vistas or State scenic highways within the City. Therefore, the CAP would result in ***less-than-significant impacts*** related to scenic vistas and scenic highways.

- c. *Would the project, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?*

The City of Santa Cruz is an urbanized area. The following applicable visual character/quality policies and actions are outlined in the City's General Plan:

- **Policy HA4.1:** Visually reflect the city's culture, history, identity, and the creativity of its residents, in the built environment.
- **Policy CD1.1:** Preserve natural features that visually define areas within the city.
- **Policy CD1.4:** Ensure that development adjacent to open space lands maintains visual and physical connections to that open space.
 - **Action CD1.4.2:** Consider visual access to nearby natural areas as part of developmental review
- **Policy CD3.1:** Develop and maintain physical and visual linkages between key areas in the City.
- **Policy CD3.5:** Require superior quality design for buildings at visually significant locations throughout the city, such as gateways to Santa Cruz and intersections of major corridors.
 - **Action CD4.1.5:** Require superior quality design for buildings at visually significant locations throughout the city, such as gateways to Santa Cruz and intersections of major corridors.
- **Policy CD4.2:** Ensure that new development and right-of-way improvements enhance the visual quality of streetscapes.
 - **Action ED1.8.2:** Improve the visual appearance of visitor routes and entrances to the city.
 - **Action ED1.9.1:** Promote and develop clean, visually inviting, and safe shopping environments.

The CAP would not involve land use or zoning changes but would instead promote sustainable infrastructure development and redevelopment through policies and programs. Implementation of some CAP measures related to transportation, renewable energy, and GHG sequestration may result in physical changes that could impact scenic resources. For example, CAP Action BE-2-4 promotes the removal of obsolete natural gas infrastructure, while CAP Action BE-2-5 promotes the deployment of community solar and electrification of existing buildings in residential neighborhoods. CAP Action BE-3-3 supports commercial battery storage installations and business district scale microgrid opportunities. CAP Action BE-5-1 vows to deliver weatherization, healthy home retrofits, and solar system installs to low-income homeowners and rental units. Additionally, CAP Action T-1-1 will fund staff and implement the Active Transportation Plan Update, Vision Zero, Safe Routes to School and the 2030 General Plan update while Actions T-1-2, T-1-3, and T-1-5 describe completing all portions of Rail Trail, planning active and public transportation to the Rail line, ensuring secure bike parking near transit and in major activity centers, requiring bike parking installation in new commercial developments and existing commercial renovations, and building new infrastructure to ensure there is equitable access to safe bicycle and pedestrian infrastructure. Action T-4-1 also promotes the installation of at least 1,247 new public EV charging stations.

Implementation of solar panels, battery storage, and EV charging stations and introduction of active transportation and public transit infrastructure may slightly change the scenic character of the City.

However, future CAP-related projects would be designed and located to be complimentary to existing land uses and would be required to adhere to City zoning and development regulations that aim to preserve the character of the City and minimize environmental impacts. In addition, CAP projects and actions would be reviewed for consistency with the General Plan policies described above and other applicable regulatory land use actions prior to approval. Therefore, the CAP would not conflict with applicable zoning and other regulations governing scenic quality and would result in a ***less than significant impact***.

- d. *Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?*

The CAP would not involve land use or zoning changes. Rather, the CAP would promote sustainable infrastructure development and redevelopment that is complimentary to existing development and land uses. As a policy document, the CAP would not directly result in impacts related to light and glare. However, implementation of CAP actions BE-2-4, BE-3-3, BE-5-1, T-1-1, T-1-2, T-1-3, T-1-5, and T-1-7 may promote new active transportation and public transit infrastructure, solar panels, and EV charging stations throughout the City, as discussed in *criterion a, b, and c*, above. Solar panels have the potential to result in new sources of glare within the City if not thoughtfully designed and located. The design and location of proposed solar infrastructure would be complimentary to existing development in the City, such as the addition of small-scale rooftop solar panels, in order to reduce potential glare impacts. Furthermore, CAP projects and actions would be reviewed for consistency with the SCMC Chapter 24.08, which establishes exterior lighting standards (City of Santa Cruz 2021b). In addition, CAP projects or actions would be reviewed for consistency with the General Plan, Local Coastal Plan, and other applicable regulatory land use actions prior to approval. Compliance with the described regulations would minimize environmental impacts related to light and glare by limiting the use of highly reflective materials and requiring the shielding of exterior lighting. Thus, the CAP would result in a ***less-than-significant impact*** related to light and glare.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). Cumulative impacts related to scenic resources, visual character, and increased light and glare would generally be site-specific, and cumulative projects are not anticipated to contribute to cumulative aesthetic impacts with adherence to Santa Cruz General Plan and Local Coastal Program policies and the Municipal Code. Because of the developed nature of Santa Cruz, future infrastructure projects under the CAP, in combination with other cumulative projects anticipated in Santa Cruz through 2030, would not adversely impact the visual character of the Santa Cruz community. In addition, future development in the City would be required to obtain a Design Permit, as applicable, in accordance with Chapter 24.08 of the SCMC and would be reviewed against applicable Santa Cruz General Plan policies and the City's design standards for design quality and compatibility with adjacent land uses. Therefore, implementation of the CAP would result in a ***less-than-significant cumulative impact*** related to aesthetics.

2 Agriculture and Forestry Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b. Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒
c. 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))?	☐	☐	☐	☒
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e. 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?	☐	☐	☐	☒

- a. *Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*
- b. *Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?*
- e1. *Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?*

The City of Santa Cruz is characterized primarily by urban and suburban development along with parks and natural areas; however, the City does contain some areas of exclusive agricultural use. The largest agricultural land use within the City is associated with Moore Creek Upland Open Space, which is located on the western edge of the City. An additional agricultural parcel is located in the southwestern area of the City and is associated with UCSC (City of Santa Cruz 2012).

According to the Farmland Mapping and Monitoring Program, City is almost entirely classified as urban and built-up land, with one area mapped as grazing land on the eastern edge of the City. There are four areas mapped as Farmland of Statewide Importance and seven areas mapped as Prime Farmland located west of the City (California Department of Conservation [DOC] 2016). There are no Williamson Act contracts within the City (DOC 2017).

The majority of CAP measures focus on electrifying buildings, improving active transportation, developing zero emission vehicle and public transit infrastructure, reducing waste generation, and reducing wastewater process emissions. These measures would not involve projects or policies that would result in impacts related to conversion or loss of farmland. Therefore, the CAP would result in **no impact** related to degradation of agricultural resources or conversion of agricultural land to non-agriculture uses, nor would there be a conflict with existing zoning or general plan land use designations.

- c. *Would the project 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))?*
- d. *Would the project result in the loss of forest land or conversion of forest land to non-forest use?*
- e2. *Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of forest land to non-forest use?*

Santa Cruz contains several parks and natural areas. Specifically, the City's Greenbelt contains approximately 1,500 acres of woodlands and coastal prairie that border the City to the west, north, and east (City of Santa Cruz 2012). Santa Cruz does not contain areas designated for forest land or Timberland Production. SCMC Chapter 13.30, Trees, establishes policies, regulations, and standards to ensure tree protection within the City (City of Santa Cruz 2021b). In addition, the Santa Cruz 2030 General Plan contains a number of goals, policies, and actions, such as Policy NRC5.1, protect and manage tree resources in the urban environment, with emphasis on significant and heritage trees, that illustrate the City's commitment to managing and preserving Santa Cruz's urban forest.

The CAP does not include actions that would result in the loss of forest land or the conversion of forest land to non-forest use, nor would it conflict with or cause the rezoning of forest, timber land, or Timberland Production areas. Rather, CAP Measure CS-1 would result in the planting of 3,000 new trees within the City by 2030, and CAP Action CS-3-5 would potentially result in the reforestation or afforestation of areas that are currently mowed. Potential future infrastructure development and redevelopment related to the CAP would comply with the regulations and policies of the SCMC and the Santa Cruz 2030 General Plan, ensuring the City's urban forest would be protected. Therefore, the CAP would result in **no impact** related to degradation of forestry resources or conversion of forest land to non-forest uses, nor would there be a conflict with existing zoning or Santa Cruz 2030 General Plan land use designations.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). As discussed above, the CAP would not include any measures or actions that would significantly impact agricultural or forest resources. In addition, the CAP would not involve land use or zoning changes that could result in cumulative impacts

related to conversion or loss of farmland or forest land. Therefore, implementation of the CAP would result in ***no cumulative impact*** related to agricultural and forestry resources.

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3 Air Quality				
	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
f. 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?	☐	☐	☒	☐
g. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
h. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☒
a. <i>Would the project conflict with or obstruct implementation of the applicable air quality plan?</i> The federal Clean Air Act (CAA) governs air quality in the United States and is administered by the United States Environmental Protection Agency (U.S. EPA) at the federal level. Air quality in California is also governed by regulations under the California CAA, which is administered by CARB at the State level. At the regional and local levels, local air districts typically administer the federal and California CAA. As part of implementing the federal and California CAA, the U.S. EPA and CARB have established ambient air quality standards for major pollutants at thresholds intended to protect public health. Santa Cruz is located within the North Central Coast Air Basin (NCCAB), which is comprised of Monterey, Santa Cruz, and San Benito Counties. The NCCAB is under the jurisdiction of the Monterey Bay Air Resources District (MBARD). As the local air quality management agency, MBARD is required to monitor air pollutant levels to ensure that State and federal air quality standards are met and, if they are not met, to develop strategies to meet the standards. Depending on whether or not the standards are met or exceeded, the NCCAB is classified as being in "attainment" or "nonattainment." Under State law, air districts are required to prepare a plan for air quality improvement for pollutants for which the district is in non-attainment. MBARD is in attainment for all Federal standards; however, MBARD is in non-attainment for State ozone and PM_{2.5} (particulate matter up to 2.5 microns in size) standards (MBARD 2017). The sources, health effects, and typical controls associated with criteria pollutants are described in Appendix A. The Federal CAA Amendments mandate that states submit and implement a State Implementation Plan (SIP) for areas not meeting air quality standards. The SIP includes pollution control measures to demonstrate how the standards will be met through those measures. The SIP is established by incorporating measures established during the preparation of AQMPs and adopted rules and regulations by each local Air Pollution Control District and Air Quality Management District, which are submitted for approval to CARB and the U.S. EPA (CARB 2017b). The goal of an AQMP is to				

reduce pollutant concentrations below the NAAQS through the implementation of air pollutant emissions controls.

The Monterey Bay Air Resources District Air Quality Management Plan (AQMP) was adopted by the District Board of Directors in March 2017 and provides a plan to improve North Central Coast air quality and to protect public health as well as the climate. The legal impetus for the 2017 AQMP is to update the 2012 AQMP, in compliance with State air quality planning requirements as codified in the California Health and Safety Code §40910 et seq. Although steady progress has been made toward meeting State ozone standards in the North Central Coast and the District in attainment for the one-hour standard, the region continues to be designated as non-attainment for the eight-hour State ozone standards, as noted previously (MBARD 2017).

The CAP would not involve land use or zoning changes but would rather promote sustainable infrastructure development and redevelopment. CAP measures and actions focus on decarbonization, implementation of local renewable energy infrastructure, improvement to active transportation, implementation of zero emission vehicle and public transit infrastructure, and reduction of waste and wastewater emissions. Implementation of CAP actions, such as those aimed at reducing vehicle miles traveled (VMT), electrifying vehicles, and reducing natural gas use through building electrification, would have co-benefits to air quality within the NCCAB, would help MBARD meet applicable air quality goals, and would generally reduce sensitive receptor exposure to pollutant concentrations. Although the purpose and intended effect of the CAP is to reduce GHG emissions generated in Santa Cruz to help reduce the effects of climate change, many of its actions would also reduce criteria pollutant (i.e., air quality) emissions. For example, CAP actions BE-1-1, BE-2-1, BE-2-4, BE-3-1, BE-6-2, and BE-6-3 involve electrification and support a reduction in natural gas usage, while CAP actions BE-3-3, BE-5-1, and BE-5-2 focus on implementation, accessibility, and storage of local solar infrastructure. In addition, CAP Measures T-1 and T-2 seek to reduce VMT in the City by improving active transportation and public transit facilities, while Measures T-4, T-5, and T-6 would encourage the adoption of EVs and low-emissions off-road vehicles and equipment by enhancing EV infrastructure, replacing the municipal fleet of off-road equipment with low- or zero-emissions equipment, and supporting the transition of local employers to zero-emissions off-road equipment. These energy- and transportation-related strategies would reduce air quality emissions as well as GHG emissions. Therefore, the CAP is consistent with the State Implementation Plan and the 2017 AQMP. The CAP would have **no impact** related to a conflict with or obstruction of the applicable air quality plan.

- b. Would the project 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 (including releasing emissions that exceed quantitative thresholds for ozone precursors)?*

The CAP would not involve land use or zoning changes but would instead promote sustainable infrastructure development and redevelopment. As a policy document, the CAP would not result in impacts related to criteria pollutants. However, implementation of the following CAP measures may promote construction activities that would temporarily generate criteria pollutants during the construction phase.

CAP Action BE-2-4 promotes the removal of obsolete natural gas infrastructure, while CAP Action BE-2-5 promotes the deployment of community solar and electrification of existing buildings in residential neighborhoods. CAP Action BE-3-3 supports commercial battery storage installations and business district scale microgrid opportunities. CAP Action-BE 5-1 vows to deliver weatherization,

healthy home retrofits, and solar system installs to low-income homeowners and rental units. Additionally, CAP Action T-1-1 will fund, staff, and implement the Active Transportation Plan Update, Vision Zero, Safe Routes to School and the 2030 General Plan update, while Actions T-1-2, T-1-3, and T-1-5 describe completing all portions of Rail Trail, planning active and public transportation to the Rail line, ensuring secure bike parking near transit and in major activity centers, requiring bike parking installation in new commercial developments and existing commercial renovations, and building new infrastructure to ensure there is equitable access to safe bicycle and pedestrian infrastructure. Action T-4-1 also promotes the installation of at least 1,247 new public EV charging stations.

Construction-related air quality impacts are generally associated with fugitive dust (PM₁₀ and PM_{2.5}) and exhaust emissions from heavy construction vehicles and soil hauling trucks, in addition to reactive organic gases (ROG) that would be released during the drying phase upon application of architectural coatings. However, implementation of proposed measures would not include large-scale construction within Santa Cruz and would involve temporary and short-term criteria pollutant emissions. As such, project construction under implementation of the CAP would be expected to result in low-level criteria pollutant emissions and negligible impacts to air quality. CAP projects or actions would also be reviewed for consistency with MBARD air quality regulations and other applicable local, State, and federal regulations once project details and locations are known. Thus, the construction required for implementation of the CAP would result in a **less-than-significant impact** related to net increase of criteria pollutants.

With respect to operational emissions, many CAP measures and actions would have the secondary benefit of reducing criteria pollutant emissions, such as CAP measures aiming to increase building energy efficiency, promote electric vehicles, reduce on-road gasoline fuel use, and reduce VMT. Implementation of CAP measures would be beneficial by helping Santa Cruz meet applicable air quality plan goals. In addition, future CAP projects would be required to comply with local, regional, and State air quality regulations. Therefore, the CAP would result in a **less-than-significant impact** related to criteria pollutant emissions.

c. Would the project expose sensitive receptors to substantial pollutant concentrations?

Implementation of the CAP measures and actions described in *criterion b.*, above, promote infrastructure development and redevelopment that may result in temporary construction activities. Construction-related air quality impacts are generally associated with fugitive dust (PM₁₀ and PM_{2.5}) and exhaust emissions from heavy construction vehicles and soil hauling trucks, in addition to ROG that would be released during the drying phase upon application of architectural coatings. However, implementation of proposed CAP measures would not include large-scale construction, and construction-related emissions would be temporary. As such, implementation of the CAP would result in low-level toxic air contaminant emissions associated with construction.

While the CAP could result in construction-related impacts related to toxic air contaminants and exposure to sensitive receptors, CAP projects or actions would be reviewed for consistency with MBARD air quality regulations and other applicable local, State, and federal regulations once project details and locations are known to ensure compliance with such regulations. Thus, the construction associated with implementation of the CAP would not result in substantial emissions of toxic air contaminants and exposure to sensitive receptors. No operational toxic air contaminant emissions are anticipated with implementation of the CAP measures and actions. Therefore, the CAP would have a **less-than-significant impact** related to exposure of sensitive receptors to toxic air contaminants.

- d. *Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?*

The CARB 2005 *Air Quality Land Use Handbook: A Community Health Perspective* identifies land uses associated with odor complaints which include: sewage treatment plants, landfills, recycling facilities, waste transfer stations, petroleum refineries, biomass operations, auto body shops, coating operations, fiberglass manufacturing, foundries, rendering plants, and livestock operations. CAP Measure W-2 promotes the reduction of organic waste by 85% by 2030 and CAP Measure W-3 sets a long-term target to reduce the overall growth of waste generation. As such, the CAP would result in reduced odors related to waste processing. Therefore, the CAP would not facilitate development that could create adverse odors, and there would be **no impact** related to odors exposure.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). Construction of projects associated with implementation of the CAP, in combination with other cumulative projects anticipated under General Plan buildout, could exceed applicable MBARD thresholds or be inconsistent with the 2017 AQMP. However, implementation of the CAP would have a less-than-significant contribution related to potential cumulative air quality impacts within the air basin and on sensitive receptors within the City of Santa Cruz, given that the operation of projects implemented under the CAP would result in Citywide reduction of GHG emissions, energy use, single-occupancy vehicle travel, and waste generation. As such, implementation of the CAP would not result in adverse impacts related to contribution of criteria pollutants to the air basin and exposure of sensitive receptors to toxic air contaminants. Therefore, implementation of the CAP would result in a less-than-significant cumulative impact related to air quality.

4 Biological Resources				
	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. 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 or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
c. 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?	☐	☐	☒	☐
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?	☐	☐	☐	☒

- a. *Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as candidate, sensitive, or special status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?*

Santa Cruz is a primarily urbanized community with neighborhood parks, community parks, and recreational and open spaces incorporated throughout the City. The City also features a “Greenbelt,” which includes roughly 1,500 acres of woodlands and coastal prairie. SCMC Title 13, SCMC Chapter 24.14, the Santa Cruz 2030 General Plan, and the Local Coastal Plan incorporate regulations, goals, and policies to protect biological resources, such as plants, trees, wildlife habitats, vegetation communities, wetlands and rivers, coastal resources, and rare and endangered species in the City (City of Santa Cruz 1992; City of Santa Cruz 2012; City of Santa Cruz 2021b). The western portions of Santa Cruz, in undeveloped areas associated with Moore Creek Preserve, Wilder Ranch State Park, and Natural Bridges State Marine Reserve, contain critical habitat for the California red-legged frog (*Rana draytonii*); northern portions of Santa Cruz, within Pogonip and near Carbonera Creek, contain critical habitat for robust spineflower (*Chorizanthe robusta* var. *robusta*); other portions of Santa Cruz, including areas within DeLaveaga Park, Schwann Lake Park, and Woods Lagoon, contain critical habitat for Santa Cruz tarplant (*Holocarpha macradenia*) (USFWS 2022).

The CAP would not involve land use or zoning changes and would instead promote sustainable infrastructure development and redevelopment. The CAP strategies and actions would not conflict with the SCMC or objectives and policies of the Santa Cruz General Plan or Local Coastal Program related to wildlife and vegetative communities, but would rather be consistent with and promote those policies. CAP measures and actions would generally apply to the urbanized areas of the City, with little application to parks, open spaces area, or the undeveloped portions of the City where sensitive habitat and related species may be present. As such, the CAP would not have a substantial adverse effect on candidate, threatened, or endangered wildlife species either directly through individual take or indirectly through species habitat modification.

As a policy document, the CAP would not directly result in impacts related to wildlife species of special status. However, implementation of some CAP actions may promote infrastructure development within the urbanized portions of the City and could result in impacts to species through construction activities. CAP Action BE-2-4 promotes the removal of obsolete natural gas infrastructure, while CAP Action BE-2-5 promotes the deployment of community solar and electrification of existing buildings in residential neighborhoods. CAP Action BE-3-3 supports commercial battery storage installations and business district scale microgrid opportunities. CAP Action-BE 5-1 vows to deliver weatherization, healthy home retrofits, and solar system installs to low-income homeowners and rental units. Additionally, CAP Action T-1-1 will fund, staff, and implement the Active Transportation Plan Update, Vision Zero, Safe Routes to School and the 2030 General Plan update, while Actions T-1-2, T-1-3, and T-1-5 describe completing all portions of Rail Trail, planning active and light transportation to the Rail line, ensuring secure bike parking near transit and in major activity centers, requiring bike parking installation in new commercial developments and existing commercial renovations, and building new infrastructure to ensure there is equitable access to safe bicycle and pedestrian infrastructure. Action T-4-1 also promotes the installation of at least 1,247 new public EV charging stations. These actions have the potential to disturb nesting habitat for birds and raptors protected under Sections 3503, 3503.5, and 3513 of the California Fish and Game Code (CFGF) and under the Migratory Bird Treaty Act (MBTA). However, construction activities for future CAP projects would be required to comply with the provisions of

the MBTA and CFGC Sections 3503, 3503.5, and 3513 in order to avoid impacts to protected birds and would be reviewed for consistency with City, State, and federal policies related to protected species. In addition, CAP Measure CS-1 would result in the planting of 3,000 new trees within the City by 2030, while CAP Action CS-3-5 would result in the reforestation or afforestation of areas that are currently mowed. As such, the CAP would not have a substantial adverse effect on special-status wildlife species. Rather, the planting of trees and reforestation of mowed areas could provide additional habitat for special-status wildlife species within the City. Therefore, the CAP would result in a **less-than-significant impact** related to special-status wildlife species.

- b. Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*
- c. 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?*

The CAP would not involve land use or zoning changes but would instead promote sustainable infrastructure development and redevelopment within urbanized areas of the City. According to the Santa Cruz 2030 General Plan, there are a number of riparian corridors associated with the San Lorenzo River, Branciforte Creek, Carbonera Creek, Arana Gulch Creek, Pasatiempo Creek, and Moore Creek, among others. Other special habitat resources in Santa Cruz include wetlands and lagoons such as Neary Lagoon, Schwan Lagoon, and Woods Lagoon. The Santa Cruz 2030 General Plan contains Goal NRC1, protected, enhanced, and sustainably managed creek systems, riparian environments, and wetlands, and Goal NRC3, conservation and stewardship of resources (City of Santa Cruz 2012).

The CAP measures and actions would generally apply to the urbanized areas of the City, with little application to parks, open spaces area, or other locations where riparian and wetland habitat is located. Future CAP-related projects would be required to adhere to City development regulations and Santa Cruz 2030 General Plan policies, including Chapter 24.12, Environmental Resource Management, and Chapter 13.30, Trees of the SCMC. In addition, the location and details of future CAP projects would be reviewed for consistency with applicable local, regional, and State regulations related to sensitive habitat prior to approval. As such, the CAP would not have a substantial adverse effect on riparian habitat or sensitive natural community, such as wetlands. Therefore, the CAP would have a **less-than-significant impact** related to riparian habitat, federally protected wetlands, or other sensitive natural communities.

- d. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

The CAP would not involve land use or zoning changes but would instead promote sustainable infrastructure development and redevelopment within urbanized portions of the City. As a policy document, the CAP would not result in direct impacts related to interference with species movement or use of wildlife nursery sites. However, implementation of CAP Action T-1-1 and T-1-2, which promotes the implementation of the Active Transportation Plan Update and the completion of all portions of the Rail Trail, could potentially result in temporary disturbance to habitat areas. Future CAP projects would be required to adhere to City development regulations and Santa Cruz 2030 General Plan policies, including Chapter 24.12, Environmental Resource Management, and

Chapter 13.30, Trees of the SCMC, and would be reviewed for consistency with applicable local, regional, and State regulations to retain urban forestry and open space and minimize environmental impacts. Furthermore, the CAP measures and actions would generally apply to the urbanized areas of Santa Cruz with little application to parks, open spaces area, or other locations where wildlife corridors or native wildlife nursery sites may be present. Therefore, the CAP would result in a **less-than-significant impact** related to interference with species movement or wildlife nursery use.

- e. *Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

Santa Cruz is a primarily urbanized community with neighborhood parks, community parks, and recreational spaces throughout the City. The City also features a “Greenbelt,” which includes roughly 1,500 acres of woodlands and coastal prairie. SCMC Title 13, SCMC Chapter 24.14, the Santa Cruz 2030 General Plan, and the Local Coastal Plan incorporate regulations, goals, and policies to protect biological resources, such as plants, trees, wildlife habitats, vegetation communities, wetlands and rivers, coastal resources, and rare and endangered species in the City (City of Santa Cruz 1992; City of Santa Cruz 2012; City of Santa Cruz 2021b).

The CAP would not involve land use or zoning changes but would promote sustainable infrastructure development and redevelopment within the urbanized portion of the City. The purpose and intended effect of the CAP is to reduce GHG emissions generated in the City to help reduce the effects of climate change. Implementation of proposed CAP measures and actions would be beneficial by helping Santa Cruz meet applicable local policies and ordinances. In addition, CAP Measure CS-1 would result in the planting of 3,000 new trees within the City by 2030, while CAP Action CS-3-5 would result in the reforestation or afforestation of areas that are currently mowed. As such, the CAP would not conflict with or obstruct implementation of the applicable policies for preserving biological resources and would not affect the City’s ability to attain goals and policies that protect biological resources. Therefore, the CAP would result in **no impact** related to consistency with local biological resources protection policies.

- f. *Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?*

The City of Santa Cruz has developed two existing Habitat Conservation Plans: City of Santa Cruz Operations and Maintenance Habitat Conservation Plan and Graham Hill Water Treatment Plant Low-Effect Habitat Conservation Plan. The Operations and Maintenance Habitat Conservation Plan was developed for improvements or projects within the City that have the potential to take federally listed species and other non-listed special-status species. Graham Hill Water Treatment Plant Low-Effect Habitat Conservation Plan was developed for the operations, maintenance, and construction activities associated with the GHWTP (City of Santa Cruz 2022).

The SCMC Title 13, SCMC Chapter 24.14, the Santa Cruz 2030 General Plan, and the Local Coastal Plan incorporate regulations, goals, and policies aimed to protect biological resources, such as plants, trees, wildlife habitats, vegetation communities, wetlands and rivers, coastal resources, and rare and endangered species in the City (City of Santa Cruz 1992; City of Santa Cruz 2012; City of Santa Cruz 2021b). The CAP would not facilitate specific development projects, nor would it add or enable new development that would conflict with the City of Santa Cruz Operations and Maintenance Habitat Conservation Plan, SCMC, Santa Cruz 2030 General Plan, or Local Coastal Program. Rather, the CAP prioritizes the preservation of greenspace and trees and improvements to

buildings and the transportation system in order to reduce GHG emissions and related impacts to the environment. In addition, CAP Measure CS-1 would result in the planting of 3,000 new trees within the City by 2030, while CAP Action CS-3-5 would result in the reforestation or afforestation of areas that are currently mowed. Therefore, the CAP would have **no impact** related to consistency with an adopted habitat or natural community conservation plan.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). Implementation of CAP projects, in combination with other cumulative projects anticipated under General Plan buildout, could result in impacts to biological resources during infrastructure and building construction. However, as described in *criterion a* through *f*, above, infrastructure development or redevelopment resulting from implementation of the CAP would be required to comply with applicable Santa Cruz 2030 General Plan and Local Coastal Program goals and policies as well as State and federal regulatory requirements regarding avoidance of special wildlife species and habitat. In addition, the CAP would not result in new building construction that replaces habitat but rather would result in the planting of trees and reforestation of currently mowed areas. Therefore, implementation of the CAP would result in a ***less-than-significant cumulative impact*** related to biological resources.

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5 Cultural Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☒	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☒	☐
c. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

- a. *Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?*

The Santa Cruz General Plan EIR identifies two designated local historic districts (Mission Hill and Downtown Neighborhood) and one National Register district (Cowell Limes Work District) along with 15 properties listed on the National Register of Historic Places and one additional structure listed on the California Register of Historic Places (City of Santa Cruz 2011). The CAP would not involve land use or zoning changes but would promote infrastructure development and redevelopment that would be complimentary to existing development. Projects resulting from implementation of the CAP would be required to comply with Santa Cruz 2030 General Plan goals, policies, and programs related to the preservation of historic resources, including Goal HA1, which strives to protect and preserve cultural resources. CAP-related projects would be reviewed for compliance with applicable local, regional, and State regulations regarding cultural resources and in addition to compliance with the Santa Cruz 2030 General Plan to avoid adverse impacts related to historic resources. Therefore, the CAP would result in a **less-than-significant impact** related to historical resources.

- b. *Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?*

According to the Santa Cruz 2030 General Plan, the attractive climate, natural resources, and topography of the Santa Cruz area provided an attractive environment for the prehistoric people who lived here, and for the Mission and pueblo. As a result, Santa Cruz has many archaeological and prehistoric archaeological sites. The Santa Cruz 2030 General Plan, Figure 2 ("Areas of Historical Archaeological Sensitivity"), identifies areas with archaeological sensitivity. A few highly sensitive areas are scattered throughout the central portion of the City, but the majority of highly sensitive archaeological areas are concentrated in the northern portion of the City within Pogonip. There is a possibility for archaeological sites not previously recorded to be present in areas where CAP projects could occur. In particular, CAP Actions BE-3-3, T-1-1, T-1-2, T-1-3, T-1-5, and T-4-1 would result in

small-scale construction that may expose previously undiscovered archaeological resources during ground disturbing activities. In addition, CAP Measure CS-1 would result in the planting of 3,000 new trees within the City by 2030 while CAP Action CS-3-5 would result in the reforestation or afforestation of areas that are currently mowed, both of which would result in ground disturbing activities. The CAP projects and tree planting would be located and designed strategically to reduce ground disturbance to the maximum extent possible. In addition, CAP-related projects would be reviewed for consistency with applicable local, regional, and State archeological regulations prior to final siting and construction, and would be required to implement Best Management Practices (BMPs) in accordance with the Santa Cruz 2030 General Plan and its associated policies and programs. These policies include a standard requirement that preparation of archaeological investigation be undertaken on sites proposed for development within areas identified as “Highly Sensitive” or “Sensitive” on the “Areas of Historical Archaeological Sensitivity” map, as well as the requirement to notify applicants within paleontologically sensitive areas of the potential for encountering archaeological resources during construction. In the event of encountering paleontological resources during construction, construction would be halted and resources examined. If the find is significant, the City requires the treatment of the find in accordance with the recommendations of the evaluating paleontologist. Treatment may include, but is not limited to, specimen recovery and curation or thorough documentation (City of Santa Cruz 2012). As such, archeological resources would be protected prior to and/or upon discovery and, thus, impacts would be reduced to a minimal level. Therefore, the CAP would result in a ***less-than-significant impact*** related to archaeological resources.

c. Would the project disturb any human remains, including those interred outside of formal cemeteries?

There is a possibility of encountering unknown buried human remains throughout the City where CAP-related projects could occur. In particular, CAP Actions BE-3-3, T-1-1, T-1-2, T-1-3, T-1-5, and T-4-1 would result in small-scale construction that may expose unknown human burial sites ground disturbing activities. In addition, CAP Measure CS-1 would result in the planting of 3,000 new trees within the City by 2030 while CAP Action CS-3-5 would result in the reforestation or afforestation of areas that are currently mowed, both of which would result in ground disturbing activities. CAP projects and actions would be reviewed for compliance with applicable local, regional, and State regulations regarding cultural resources and human remains to avoid impacts related to unknown human interments. In addition, CAP projects would be required to comply with State coroner requirements related to burial findings, including assessment and mitigation incorporation once project details and locations are known. Therefore, the CAP would result in a ***less-than-significant impact*** related to human remains.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). Implementation of CAP-related projects, in combination with other cumulative projects anticipated under Santa Cruz 2030 General Plan buildout, would include infrastructure that could have an impact on cultural resources during construction. Impacts to historic and archaeological resources are generally site-specific. Additionally, there is a possibility of encountering buried archaeological deposits and human remains throughout the City. Accordingly, potential impacts associated with cumulative developments would be addressed on a case-by-case basis. In addition, future projects in the City,

including those associated with implementation of the CAP, would be required to comply with the Santa Cruz 2030 General Plan policies and programs that require the identification and protection of sites and structures of architectural, historical, archaeological, and cultural significance in order to avoid impacts related to cultural resources. Therefore, implementation of the CAP would result in a ***less-than-significant cumulative impact*** related to cultural resources.

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6 Energy				
	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☐	☒
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

- a. *Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?*

California is one of the lowest per-capita energy users in the United States, ranked 50th in the nation only behind Rhode Island, due to its energy efficiency programs and mild climate (United States Energy Information Administration [USEIA] 2022a). California consumed 279,510 gigawatt-hours (GWh) of electricity and 2,074,302 million cubic feet of natural gas in 2020 (CEC 2020a; USEIA 2022b). The single largest end-use sector for energy consumption in California is transportation (39.3 percent), followed by industry (23.2 percent), commercial (18.8 percent), and residential (18.7 percent) (USEIA 2022a). Adopted in 2018, SB 100 accelerated the State's Renewable Portfolio Standards Program, codified in the Public Utilities Act, by requiring electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

The City of Santa Cruz has demonstrated its commitment to energy efficiency and renewable energy through many efforts, as described in the Existing Sustainability Setting section. The City has adopted the California Green Building Standards Code, per SCMC Chapter 18.04, that requires efficiency measures to reduce energy use, and provide energy reduction benefits (City of Santa Cruz 2021b). The City has also completed a communitywide GHG emissions inventory for 2019, which is summarized in Table 1.

As shown in Table 1, on-road transportation was responsible for the highest emissions of GHGs within the Santa Cruz community in 2019. According to the CEC, Santa Cruz County consumed approximately 1,180 GWh of electricity and 51.9 million therms of natural gas in 2020 (CEEC 2020a; CEC2020b).

The CAP is a policy document containing climate action measures to reduce Citywide GHG emissions. The CAP would encourage energy efficiency in existing residential, commercial, and municipal building stock through new policies and educational campaigns as well as new requirements for proposed new buildings. The CAP incentivizes increased renewable energy production within the City. The CAP also attempts to reduce transportation-related energy

consumption by increasing active transportation and public transit use and reducing VMT. CAP Measures BE-1, BE-2, and BE-3 seek to decrease natural gas consumption in new and existing buildings by enforcing an electrification ordinance for new development and electrifying existing commercial and residential buildings, while CAP Measure BE-5 encourages equitable energy efficiency and investment in local solar programs. CAP Measures T-1 through T-5 would provide improvements to the active transportation, public transit and EV infrastructure of the City while discouraging single-passenger occupancy vehicles and decarbonizing off-road equipment. CAP Measure W-1 relates to maintaining low per capita water usage while Measure W-2 related to reducing organic and inorganic waste production. Finally, CAP Measure W-4 aims to reduce or capture emissions from wastewater processes.

Removal of existing natural gas infrastructure and implementation of both solar and transportation infrastructure would require small-scale construction. However, energy use for the construction of such projects would be temporary in nature, and construction equipment used would be typical of similar-sized construction projects in the region. In addition, construction contractors would be required to comply with the provisions of California Code of Regulations Title 13 Sections 2449 and 2485, which would minimize unnecessary fuel consumption. Construction equipment would be subject to the United States Environmental Protection Agency (USEPA) Construction Equipment Fuel Efficiency Standard, which would also minimize inefficient, wasteful, or unnecessary fuel consumption. Furthermore, per applicable regulatory requirements such as 2019 California's Green Building Standards Code (CALGreen; California Code of Regulations, Title 24, Part 11), future infrastructure projects would comply with construction waste management practices to divert a minimum of 65 percent of construction and demolition debris. These practices would result in efficient use of energy necessary to construct CAP-related projects. Upon completion of construction for any CAP-related infrastructure development and redevelopment, non-renewable energy use would be reduced by increasing renewable energy production and storage and reducing VMT within the City.

The purpose and intended effect of the CAP is to reduce GHG emissions generated in the City to minimize the effects of climate change, including those emissions generated by energy demand and supply. The CAP would not result in the use of non-renewable resources in a wasteful or inefficient manner; rather, it would assist in reducing use of non-renewable energy resources and increasing the production of local renewable energy. Therefore, the CAP would result in ***no impact*** related to the wasteful, inefficient, or unnecessary consumption of energy.

b. Would the project conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

Relevant plans and policies that aim to increase energy efficiency and the production of renewable energy include SB 100, the 2019 California Green Building Standards Code (CALGreen or Title 24 Part 11), and the 2019 California Building Energy Efficiency Standards (Title 24 Part 6). SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the State's Renewables Portfolio Standard Program and requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045. CALGreen (Title 24 Part 11) institutes mandatory minimum environmental performance standards for all ground-up new construction of non-residential and residential structures. In addition, the California Building Energy Efficiency Standards (Title 24 Part 6) establishes energy-efficiency standards for residential and non-residential buildings in order to reduce California's energy demand. CCR Title 24 (Parts 6 and 11) is updated periodically to incorporate and consider new energy-efficiency technologies and methodologies as they become

available. New construction and major renovations must demonstrate their compliance with the current Building Energy Efficiency Standards through submission and approval of a Title 24 Compliance Report to the local building permit review authority and the CEC.

Santa Cruz is part of the Central Coast Community Energy (CCCE) community choice aggregate, which provides electricity primarily from clean, renewable sources. Santa Cruz would continue to reduce its use of nonrenewable energy resources as the electricity generated by renewable resources provided by CCCE continues to increase to comply with State requirements through SB 100, which requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045. The CAP includes strategies and actions to reduce electricity use and increase production of renewable energy and would therefore align with the overall intent of SB 100.

In addition, the City of Santa Cruz has adopted CALGreen (Title 24 Part 11) and the California Building Energy Efficiency Standards (Title 24 Part 6) pursuant to SCMC Chapter 18.04 and Chapter 24.15 (City of Santa Cruz 2021b). Therefore, construction and operation associated with infrastructure projects stemming from the CAP would be designed to comply with the energy source standards of the CALGreen and the California Building Energy Efficiency Standards. Future projects resulting from implementation of the CAP would be required to demonstrate compliance with the CALGreen and the California Building Energy Efficiency Standards by implementing sustainability and energy efficiency measures such as high-efficiency lighting and HVAC systems, low-flow water fixtures, dual-paned windows, and water efficient landscaping and irrigation systems. Compliance with these regulations would minimize potential conflicts with adopted energy conservation plans.

As discussed under *criterion a*, above, CAP Measures BE-1, BE-2, and BE-3 seek to decrease natural gas consumption in new and existing buildings by enforcing an electrification ordinance for new development and electrifying existing commercial and residential buildings, while CAP Measure BE-5 encourages equitable energy efficiency and investment in local solar programs. These measures are consistent with the goals and policies established by SB 100, CALGreen, and the California Building Energy Efficiency Standards. Thus, the CAP would not conflict with adopted renewable energy or energy conservation plans and there would be ***no impact***.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). Implementation of the CAP would result in reducing use of non-renewable energy resources across the community, in particular with remodeled buildings, new construction, and municipal buildings. Implementation of the CAP would also increase the production of renewable energy within the City. Additionally, the CAP includes measures to increase the use of active transportation and public transit and reduce VMT within the City, which would reduce transportation fuel use. As the City's population grows and development intensifies in the future, as anticipated under 2030 General Plan buildout, measures contained within the CAP would ensure that new development is constructed in accordance with strict energy efficiency standards and that the City sources its energy from renewable sources. As the CAP would result in decreased non-renewable energy use within the City and would align with existing plans and policies related to renewable energy and energy efficiency, implementation of the CAP would result in ***no cumulative impact*** related to energy.

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7 Geology and Soils				
	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Expose people or structures to potentially substantial adverse effects, including the risk of loss, injury, or death involving:				
1. 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?	☐	☐	☐	☒
2. Strong seismic ground shaking?	☐	☐	☐	☒
3. Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
4. Landslides?	☐	☐	☐	☒
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d. Be located on expansive soil, as defined in Table 1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e. 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?	☐	☐	☐	☒
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

- a. *Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:*
1. *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?*
 2. *Strong seismic ground shaking?*
 3. *Seismic-related ground failure, including liquefaction?*
 4. *Landslides?*

According to the Santa Cruz 2030 General Plan, the City is located in an area of high seismic risk due to the close proximity of at least six major seismic faults and fault systems, including the San Andreas, Zayante, Ben Lomond, San Gregorio, Butano, and the Monterey Bay Fault Zones. The closest Alquist-Priolo Earthquake Fault is the San Andreas Fault, located approximately 12 miles east of the City (California Geologic Survey [CGS] 2018). However, there are no formally recognized faults in Santa Cruz. In addition, the City has low potential for landslides, except for the slopes near Moore Creek (City of Santa Cruz 2012).

In 2018, the City of Santa Cruz City Council adopted a Local Hazard Mitigation Plan (LHMP) Five Year Update (2018-2023) to identify and assess hazards and reduce risks prior to a disaster event. According to the LHMP, past experience has identified the City as being vulnerable to earthquake. The most active earthquake threat to the City is the San Andreas Fault zone, which is capable of a maximum credible earthquake equal to a magnitude of 8.3. Additionally, the nearby Hayward, Calaveras and San Gregorio faults are all capable of generating earthquakes greater than a magnitude of 7.4 (City of Santa Cruz 2018). As identified in the LHMP, the U.S. Geological Survey has determined that there is a 62 percent probability of at least one magnitude 6.7 or greater earthquake, capable of causing widespread damage, striking the San Francisco Bay region, including Santa Cruz, before 2032. During a previous earthquake event (the Loma Prieta earthquake of 1989), extensive liquefaction occurred along the shoreline of the Monterey Bay. Most of the City of Santa Cruz downtown area along the San Lorenzo River is in a liquefaction area (City of Santa Cruz 2018).

The CAP is a policy document containing climate actions and supporting measures to reduce GHG emissions, and is consistent with the Santa Cruz 2030 General Plan, Local Coastal Program, SCMC, LHMP, and other regional regulations. CAP Measures BE-3 may result in new or expanded facilities for the purposes of battery energy storage. However, the CAP does not propose habitable development that could result in exposure of people to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure including liquefaction, or landslides. Therefore, the CAP would result in **no impact** related to seismic- and landslide-related hazards.

- b. *Would the project result in substantial soil erosion or the loss of topsoil?*

The CAP would not involve land use or zoning changes but would promote sustainable infrastructure development and redevelopment. As a policy document, the CAP would not directly require ground-disturbing activities. However, implementation of several CAP measures may result in construction activities that could cause soil erosion or the loss of topsoil during construction. For example, CAP Action BE-2-4 promotes the removal of obsolete natural gas infrastructure, while CAP Action BE-2-5 promotes the deployment of community solar and electrification of existing buildings in residential neighborhoods. CAP Action BE-3-3 supports commercial battery storage installations and business district scale microgrid opportunities. CAP Action-BE 5-1 vows to deliver

weatherization, healthy home retrofits, and solar system installs to low-income homeowners and rental units. Additionally, CAP Action T-1-1 will fund, staff, and implement the Active Transportation Plan Update, Vision Zero, Safe Routes to School and the 2030 General Plan update, while Actions T-1-2, T-1-3, and T-1-5 describe completing all portions of Rail Trail, planning active and public transportation to the Rail line, ensuring secure bike parking near transit and in major activity centers, requiring bike parking installation in new commercial developments and existing commercial renovations, and building new infrastructure to ensure there is equitable access to safe bicycle and pedestrian infrastructure. Action T-4-1 also promotes the installation of at least 1,247 new public EV charging stations.

The CAP could result in construction-related soil erosion and topsoil loss impacts associated with implementation of CAP Measures and Actions. However, CAP projects and actions would be reviewed for consistency with Santa Cruz General Plan policies and other local and State geology and soils regulations prior to final siting and construction. Soil erosion caused by strong wind and/or earth-moving operations during construction would be minimized through compliance with MBARD Rule 400, Visible Emissions, which prohibits visible particulate matter from crossing property lines. Standard practices to control fugitive dust emissions include watering of active grading sites, covering soil stockpiles with plastic sheeting, and covering soils in haul trucks with secured tarps. In addition, CAP Measure CS-1 would result in the planting of 3,000 new trees within the City by 2030 while CAP Action CS-3-5 would result in the reforestation or afforestation of areas that are currently mowed, both of which would reduce erosion of topsoil.

The potential for CAP-related project construction activities involving soil disturbance to result in increased erosion and sediment transport by stormwater to surface waters would be minimized because future projects would be required to comply with SCMC Chapter 18.45, Excavation and Grading Regulation, and/or a National Pollutant Discharge Elimination System (NPDES) Construction General Permit, issued by the Central Coast Regional Control Board (CCRWQB), for projects disturbing more than one acre (City of Santa Cruz 2021b). These regulations require best management practices (BMPs) to reduce erosion and topsoil loss from stormwater runoff. Compliance with the SCMC and/or a Construction General Permit would ensure that BMPs are implemented during construction and minimize substantial soil erosion or the loss of topsoil. Therefore, the CAP would result in a ***less-than-significant impact*** related to soil erosion and loss of topsoil.

- c. *Would the project be located on a geologic unit or soil that is unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?*
- d. *Would the project be located on expansive soil, as defined in Table 1-B of the Uniform Building Code, creating substantial risks to life or property?*

According to the City of Santa Cruz LHMP, the City's downtown area along the San Lorenzo River is in a liquefaction area. Most of Santa Cruz is characterized by low to no potential for landslides, other than the slopes near Moore Creek. Additionally, the City does not experience risks related to expansive soils, and the risk of subsidence is generally low throughout the City (City of Santa Cruz 2018). The Santa Cruz 2030 General Plan, SCMC, and CBC contain regulations for structural design and soil hazards in order to mitigate potential impacts related to unstable soils.

The CAP is a policy document containing programs that are consistent with the Santa Cruz 2030 General Plan. Some of the proposed policies in the CAP would support small-scale construction projects, such as battery storage installation and EV charging stations. However, CAP projects and

actions would be reviewed for consistency with local and State geotechnical regulations prior to final siting and construction. New structures would be required to comply with SCMC Chapter 18.04, Building Code, which adopts the latest CBC, including measures to address unstable soil conditions (City of Santa Cruz 2012). Therefore, the CAP would result in a ***less-than-significant impact*** related to risks associated with location on unstable geologic unit or soil or on expansive soils.

- e. *Would the project 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?*

The CAP would not involve the development of habitable structures and, thus, no use of septic tanks or alternative wastewater disposal systems. Therefore, ***no impact*** would occur related to soil capability support of alternative wastewater disposal systems.

- f. *Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

The CAP would not involve land use or zoning changes that would encourage new development but would instead promote infrastructure development and redevelopment. As a policy document, the CAP would not directly result in impacts related to paleontological resources or unique geologic features. CAP actions that would involve construction activities, such as the policies related to building energy-efficiency, renewable energy retrofits, active transportation and public transit infrastructure, and EV charging infrastructure, would primarily involve work within previously developed and disturbed areas where the likelihood of encountering intact and previously undiscovered paleontological resources would be minimal. Nonetheless, there is a possibility that these small-scale construction projects may expose paleontological resources during ground disturbing activities, including tree planting. To reduce such risks, CAP-related projects would be reviewed for consistency with State geotechnical and paleontological regulations prior to final siting and construction. CAP projects would also be subject to the policies of the Santa Cruz 2030 General Plan, such as HA1.2, which conditions project approvals such that work be halted and resources examined in the event of encountering paleontological resources during construction (City of Santa Cruz 2012). In addition, CAP-related projects would be located and designed strategically to reduce ground disturbance to the maximum extent possible. Therefore, the CAP would result in a ***less-than-significant impact*** related to paleontological resources and unique geologic features.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). CAP-related projects, in combination with other cumulative projects anticipated under 2030 General Plan buildout, could expose additional people and property to the seismic and geologic hazards that are present in the region. The magnitude of geologic hazards for individual projects, including those associated with implementation of the CAP, would depend upon the location, type, and size of development and the specific hazards associated with individual sites. Specific geologic hazards associated with individual project sites would be limited to those sites without affecting other areas. Similarly, potential impacts to paleontological resources associated with each individual site would be limited to that site without affecting other areas, and impacts related to these resources would be minimized on a case-by-case basis. Compliance with existing regulations, including SCMC and CBC requirements, City-issued permit requirements, the Santa Cruz General Plan, and construction general permit requirements, would

minimize potential cumulative seismic and geologic impacts. Seismic and geologic hazards would be addressed on a case-by-case basis and would not result in cumulative impacts. Therefore, implementation of the CAP would result in a ***less-than-significant cumulative impact*** related to geology and soils.

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8 Greenhouse Gas Emissions

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
g. Conflict with any applicable plan, policy, or regulation adopted to reduce the emissions of greenhouse gases?	☐	☐	☒	☐

- a. *Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?*

The greenhouse effect is a natural occurrence that helps regulate the temperature of the Earth. The majority of radiation from the Sun hits Earth's surface and warms it. The surface in turn radiates heat back towards the atmosphere, known as infrared radiation. Gases and clouds in the atmosphere trap and prevent some of this heat from escaping into space and re-radiate it in all directions. This process is essential to support life on Earth, because it warms the planet by approximately 60°F. Emissions from human activities since the beginning of the industrial revolution (approximately 270 years ago) have been adding to the natural greenhouse effect by resulting in increased gases in the atmosphere that trap heat and contribute to an average increase in Earth's temperature. Global warming is the observed increase in the average temperature of the Earth's surface, and climate change is the resultant change in wind patterns, precipitation, and storms over an extended period.

GHGs produced by human activities include CO₂, methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorinated compound (PFC), and sulfur hexafluoride (SF₆) (see Appendix B for more details related to these GHG gases).² Combustion of fossil fuels (gasoline, natural gas, and coal), deforestation, and decomposition of waste release carbon into the atmosphere that has been locked underground and stored in oil, gas, and other hydrocarbon deposits or in the biomass of surface vegetation. Since 1750, estimated concentrations of CO₂, CH₄, and N₂O in the atmosphere have increased by over 36 percent, 148 percent, and 18 percent respectively, primarily due to human activity. Emissions of GHGs affect the atmosphere directly by changing its chemical composition.

Changes to the land surface also indirectly affect the atmosphere by changing the way in which Earth absorbs gases from the atmosphere. Potential impacts in California due to climate change include sea level rise, more extreme-heat days and high-ozone days, larger and more frequent

² The proposed CAP only considers emissions of CO₂, CH₄, and N₂O, because these are the GHGs most relevant to local government policymaking. These gases comprise a large majority of GHG emissions at the community level. The remaining gases (HFCs, PFC, and SF₆) are emitted primarily in private sector manufacturing and electricity transmission and are the subject of regulation at the State level. Therefore, these gases were omitted from the proposed CAP.

forest fires, and more drought years.³ Although GHG emissions do not typically cause direct health impacts at a local level, GHG emissions can result in indirect health impacts by contributing to climate change, which can have public health implications. The primary public health impacts of climate change include the following:

- Increased incidences of hospitalization and deaths due to increased incidences of extreme heat events;
- Increased incidences of health impacts related to ground-level ozone pollution due to increased average temperatures that facilitate ozone formation;
- Increased incidences of respiratory illnesses from wildfire smoke due to increased incidences of wildfires;
- Increased vector-borne diseases due to the growing extent of warm climates; and
- Increased stress and mental trauma due to extreme events and disasters, economic disruptions, and residential displacement.⁴

The City of Santa Cruz has completed a communitywide GHG emissions inventory for 2019, which is summarized in Table 1. The transportation sector was the largest contributor to Santa Cruz's GHG emissions. Table 4 summarizes the communitywide GHG emissions forecast under three scenarios for the year 2030 and year 2035: 1) business-as-usual projections, 2) target emissions, and 3) expected emissions with implementation of Statewide Initiatives and CAP Measures and Actions. As shown therein, under the business-as-usual scenario, communitywide GHG emissions are forecasted to increase to approximately 301,102 MT of CO₂e (4.17 MT of CO₂e per capita) by the year 2030, based on anticipated economic and population growth. However, with implementation of State laws and programs, communitywide GHG emissions would decline to approximately 256,715 MT of CO₂e (3.55 MT of CO₂e per capita) by 2030. Furthermore, implementation of the CAP alongside State laws and programs would reduce communitywide GHG emissions to approximately 170,002 MT of CO₂e (2.35 MT of CO₂e per capita) by 2030.

The measures included in the CAP combined with State-wide legislation and initiatives and Countywide transportation programs will enable the City of Santa Cruz to meet its per capita emissions and associated total mass emissions reduction target of 40 percent below 1990 levels by 2030. Because SB 32 is considered an interim target toward meeting the 2045 State goal of carbon neutrality, implementation of the CAP would be considered substantial progress toward meeting the State's long-term 2045 goal. Avoiding interference with and making substantial progress toward these long-term State targets are important, because these targets have been set at levels that achieve California's fair share of international emissions reduction targets that will stabilize global climate change effects and help avoid the associated adverse environmental consequences.

The CAP includes a list of 31 measures, each with individual actions, intended to reduce communitywide GHG emissions. Implementation of the CAP would result in the reduction of communitywide operational GHG emissions, while only generating temporary GHG emissions during construction of infrastructure such as electric vehicle charging stations, bicycle paths, and public transit facilities. Additionally, the CAP would serve as a pathway to reduce GHG emissions and

³ California Air Resources Board (CARB) and California Environmental Protection Agency (CalEPA). 2009. Environmental Health and Equity Impacts from Climate Change and Mitigation Policies in California: A Review of the Literature. Available: <<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.386.4605&rep=rep1&type=pdf>>. Accessed May 18, 2021.

⁴ California Natural Resources Energy. 2018. California's Fourth Climate Change Assessment Statewide Summary Report. Available: <<http://www.climateassessment.ca.gov/state/>>. Accessed July 24, 2020.

introduce other beneficial environmental and sustainability effects. These benefits include reduction in building energy consumption, reduction vehicle miles traveled (and thus air pollution), reduction solid waste generation, and increase in carbon sequestration due to tree planting and reforestation. Therefore, the CAP would result in a ***less-than-significant impact*** related to generation of GHG emissions.

b. Would the project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The CARB 2017 Climate Change Scoping Plan outlines a pathway to achieving the 2030 reduction targets set under SB 32, which are considered interim targets toward meeting the long-term 2045 carbon neutrality goal established by EO B-55-18. The CAP is a policy-level document that sets strategies to reduce GHG emissions within the City in an effort to also comply with State regulations. As discussed under *criterion a*, above, the CAP includes measures to assist in reducing City GHG emissions from forecasted business-as-usual levels to approximately 170,002 MT of CO₂e (2.35 MT of CO₂e per capita) by 2030. The purpose of the CAP is to meet Santa Cruz's proportionate fair share of the Statewide GHG emissions reduction target set by SB 32 and work toward the State's longer-term target of carbon neutrality identified in Executive Order B-55-18. The CAP would not conflict with any applicable GHG reduction plans, including the CARB 2017 Climate Change Scoping Plan. The CAP identifies how the City would achieve consistency with the Statewide GHG emissions limit.

The CAP would serve as a pathway to reduce GHG emissions and introduce other beneficial environmental and sustainability effects. These benefits include reduction in building energy consumption, vehicle miles traveled (and thus air pollution), and solid waste generation. Therefore, the CAP would result in a ***less-than-significant impact*** related to consistency with applicable GHG emissions reduction plans, policies, and regulations.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). Analyses of GHG emissions and climate change are cumulative in nature, as they affect the accumulation of GHG emissions in the atmosphere. Cumulative projects anticipated under 2030 General Plan buildout that exceed the thresholds discussed above would have a significant impact related to GHG emissions and climate change, both individually and cumulatively. The CAP creates a GHG emissions reduction strategy (consistent with Section 15183.5 of the CEQA Guidelines) for the City of Santa Cruz. The CAP also includes a series of measures and actions that are intended to reduce GHG emissions by approximately 40 percent below 1990 levels by 2030, which provides substantial progress toward the City meeting State goals. As such, the CAP would result in the reduction of GHG emissions rather than generating GHG emissions. Some GHG emissions would occur during construction of CAP-specific infrastructure projects; however, these emissions would be temporary and minor in nature. Therefore, implementation of the CAP would result in a ***less-than-significant cumulative impact*** related to GHG emissions.

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9 Hazards and Hazardous Materials				
	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b. 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?	☐	☐	☒	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	☐	☐	☒	☐
d. Be located on a site that is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e. For a project located in 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 result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☐	☒
a. <i>Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?</i>				

- b. Would the project 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?*

The CAP is a policy document containing strategies and actions to reduce GHG emissions. The CAP does not involve identified site-specific development and, for the most part, it would not facilitate new development that would involve the routine use of hazardous materials. Implementation of some CAP actions, such as energy efficiency retrofits, installation of EV charging stations, and implementation of active transportation projects, would require construction activities. Construction would involve the temporary use of hazardous materials such as vehicle fuels and fluids that could be released should an accidental leak or spill occur. However, these types of materials are not considered acutely hazardous, and storage, handling, and disposal of these materials as related to CAP actions, shall comply with any applicable regulations from the California Department of Toxic Substances Control, U.S. EPA, and Occupational Safety & Health Administration. In addition, standard construction BMPs for the use and handling of such materials would avoid or reduce the potential for such conditions to occur. Any use of potentially hazardous materials during construction of projects would comply with all local, State, and federal regulations regarding the handling of potentially hazardous materials, including Title 49 of the Code of Federal Regulations and Title 22, Division 4.5 of the CCR. Risk of spills would cease after construction is completed. Therefore, construction activities related to CAP actions would not be anticipated to create upset and accident conditions involving the release of hazardous materials, and operation of the majority of CAP actions would not involve the routine transport, use, or disposal of hazardous materials during operation.

However, CAP Actions BE-2-4, BE-2-5, BE-3-3, and BE-5-1 emphasize increasing local renewable energy production and battery energy storage within the City by encouraging the deployment of local solar and construction of commercial battery storage. Hazardous materials used in battery energy storage systems would generally consist of the lithium-ion batteries. Lithium-ion technology is a common battery storage medium and is considered one of the safest and most efficient methods of energy storage on the market. During normal operation, lithium-ion batteries do not represent a risk to off-site receptors, and safety standards applicable to energy storage facilities and safety certification tests established by independent bodies, such as Underwriters Laboratories, National Fire Protection Association, and International Electrotechnical Commission would prevent any reasonable possibility of a substantial adverse effect on the environment related to the lithium-ion batteries. However, in the unlikely event of a fire, there is a risk of the accidental release of hazardous materials associated with battery energy storage systems. Any future proposed battery energy storage facilities would, therefore, be carefully reviewed for appropriate locations, safety measures, and consistency with the Santa Cruz 2030 General Plan, SCMC, and applicable local, State, and federal regulations. Therefore, the CAP would result in a ***less-than-significant impact*** related to creating a significant hazard through the routine transport, use, or disposal of hazardous materials and reasonably foreseeable upset and accident conditions involving the release of hazardous materials.

- c. *Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?*

The CAP is a policy document containing strategies to reduce GHG emissions. The CAP does not include site-specific proposals and development, nor would it emit or handle hazardous materials. Implementing some CAP actions may require future development or improvements, such as active transportation infrastructure, EV charging stations, and building improvements related to energy efficiency. However, CAP-related projects would be reviewed to ensure the appropriate location of projects in relation to existing development in the City and would be reviewed for consistency with the Santa Cruz General Plan, SCMC, and applicable local, State, and federal regulations. Therefore, the CAP would result in a **less-than-significant impact** related to handling of hazardous materials in proximity to schools.

- d. *Would the project be located on a site included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

The CAP is a policy document containing measures and supporting actions to reduce GHG emissions. The proposed CAP does not include site-specific proposals and development, but CAP actions could result in projects that could be located on listed hazardous materials sites. However, CAP-related projects would be reviewed for consistency with the Santa Cruz 2030 General Plan, SCMC, and would be required to comply with applicable local, State, and federal regulations related to hazardous materials sites. Therefore, the CAP would result in a **less-than-significant impact** related to location on a listed hazardous materials site.

- e. *For a project located in 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 result in a safety hazard or excessive noise for people residing or working in the project area?*

The City of Santa Cruz does not contain any airports. The nearest airport to Santa Cruz is the Watsonville Municipal Airport, which is located approximately 12 miles southeast of the City. Furthermore, the CAP is a policy document that would not increase airport activity or result in additional habitable development or commercial development that could increase potential exposure of residents and employees to aircraft-related hazards. Therefore, the CAP would result in **no impact** related to risks associated with location proximate to a public airport.

- f. *Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

The CAP is a policy document intended to reduce GHG emissions. The CAP does not involve site-specific development, nor would it facilitate new development that would interfere with adopted emergency plans. Implementation of some CAP actions, such as CAP Action T-1-1 which would implement the Active Transportation Plan Update, Vision Zero, Safe Routes to School and the 2030 General Plan update, could involve construction within the local right-of-way. Construction activities have the potential to require lane closures and may impact traffic and vehicle speeds on the affected roadways; however, these impacts would be temporary and access to roadways would be maintained throughout project construction. Furthermore, future projects involving work in the public right-of-way would be required to coordinate with the City to ensure appropriate construction staging and adequate vehicular and pedestrian access on adjacent roadways, pursuant to SCMC Chapter 15.34, Encroachment Permit (City of Santa Cruz 2012). Therefore, the CAP would

result in a ***less-than-significant impact*** related to impairment or interference with implementation of an emergency response or evacuation plan.

- g. *Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?*

According to the LHMP and Santa Cruz 2030 General Plan, wildfire poses a very high risk to the outer portions of Santa Cruz due to the thousands of acres of undeveloped hillsides surrounding the City to the west, north, and east (City of Santa Cruz 2012). The central, urbanized portions of the City are at lower risk of wildfire (City of Santa Cruz 2018). The CAP does not propose specific development, nor does it propose new residential or commercial land uses that could be subject to wildland fire. Furthermore, CAP Action CS-1-3 would require the City to pursue funding to expand forest management that would reduce threat of intense fires. Therefore, the CAP would result in ***no impact*** related to risks associated with exposure to wildland fires.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). Hazards and hazardous materials impacts are typically site-specific in nature. CAP-related projects, in combination with other cumulative projects anticipated under Santa Cruz 2030 General Plan buildout, are not anticipated to contribute to cumulative hazards and hazardous materials impacts with adherence to applicable Santa Cruz General Plan policies and applicable State and federal regulatory requirements. Therefore, implementation of the CAP would result in a ***less-than-significant cumulative impact*** related to hazards and hazardous materials.

10 Hydrology and Water Quality				
	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	☒	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c. 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:	☐	☐	☒	☐
(i) Result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
(ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☒	☐
(iii) 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	☐	☐	☒	☐
(iv) Impede or redirect flood flows?	☐	☐	☒	☐
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

- a. *Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?*

The CAP is a policy document containing measures and actions intended to reduce GHG emissions in the City. CAP Action BE-2-4 promotes the removal of obsolete natural gas infrastructure, while CAP Action BE-2-5 promotes the deployment of community solar and electrification of existing buildings in residential neighborhoods. CAP Action BE-3-3 supports commercial battery storage installations and business district scale microgrid opportunities. CAP Action-BE 5-1 vows to deliver weatherization, healthy home retrofits, and solar system installs to low-income homeowners and rental units. Additionally, CAP Action T-1-1 will fund, staff, and implement the Active Transportation Plan Update, Vision Zero, Safe Routes to School and the 2030 General Plan update, while Actions T-1-2, T-1-3, and T-1-5 describe completing all portions of Rail Trail, planning active and public transportation on the Rail Trail, ensuring secure bike parking near transit and in major activity centers, requiring bike parking installation in new commercial developments and existing commercial renovations, and building new infrastructure to ensure there is equitable access to safe bicycle and pedestrian infrastructure. Action T-4-1 also promotes the installation of at least 1,247 new public EV charging stations. These actions may result in small scale construction activities in the future that could result in water quality impacts due to soil erosion and ground disturbance, as discussed under Section 7, *Geology and Soils*, and *criterion c*, below. In addition, CAP Measure CS-1 would result in the planting of 3,000 new trees within the City by 2030 while CAP Action CS-3-5 would result in the reforestation or afforestation of areas that are currently mowed, both of which would result in ground disturbing activities.

However, CAP-related projects would be reviewed for consistency with local and State regulations, including the National Pollutant Discharge Elimination System (NPDES) permitting program which requires implementation of Stormwater Pollution Prevention Plans (SWPPPs) and SCMC Chapter 18.45, Excavation and Grading Regulation (City of Santa Cruz 2021b). These regulations require BMPs to reduce water quality impacts from construction activities. Compliance with the SCMC and/or the NPDES permitting program would ensure that BMPs are implemented during construction to minimize potential impacts to surface and groundwater quality. As such, the CAP's related infrastructure projects would not result in new or different wastewater discharge that would violate water quality standards, waste discharge requirements, or otherwise degrade surface or groundwater quality. Therefore, the CAP would result in ***less-than-significant impacts*** related to surface or groundwater water quality in Santa Cruz.

- b. *Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?*

The CAP is a policy document containing programs that are consistent with the Santa Cruz 2030 General Plan. Implementation of the CAP actions related to infrastructure development and redevelopment, such as electrifying existing buildings, improving active transportation and public transit facilities, and implementing EV charging stations within the City, would not decrease groundwater supplies or substantially interfere with groundwater recharge. Therefore, the CAP would result in ***no impact*** related to impedance of sustainable groundwater management.

- c. *Would the project 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:*
- (i) *Result in substantial erosion or siltation on- or off-site?*
 - (ii) *Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?*
 - (iii) *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?*
 - (iv) *Impede or redirect flood flows?*

Implementation of several CAP measures and action may promote infrastructure development and small-scale construction activities within the City. For example, CAP Action BE-2-4 promotes the removal of obsolete natural gas infrastructure, while CAP Action BE-2-5 promotes the deployment of community solar and electrification of existing buildings in residential neighborhoods. CAP Action BE-3-3 supports commercial battery storage installations and business district scale microgrid opportunities. CAP Action-BE 5-1 vows to deliver weatherization, healthy home retrofits, and solar system installs to low-income homeowners and rental units. Additionally, CAP Action T-1-1 will fund, staff, and implement the Active Transportation Plan Update, Vision Zero, Safe Routes to School and the 2030 General Plan update, while Actions T-1-2, T-1-3, and T-1-5 describe completing all portions of Rail Trail, planning active and public transportation to the Rail line, ensuring secure bike parking near transit and in major activity centers, requiring bike parking installation in new commercial developments and existing commercial renovations, and building new infrastructure to ensure there is equitable access to safe bicycle and pedestrian infrastructure. Action T-4-1 also promotes the installation of at least 1,247 new public EV charging stations.

Providing new active and public transportation infrastructure and battery storage facilities may slightly change the City's existing drainage pattern and amount of impervious surface. Construction of CAP-related projects could also result in erosion, as discussed in Section 7, *Geology and Soils*. However, impacts to drainage and water quality during construction would be minimized through the implementation of BMPs as required by the SCMC and NPDES Construction General Permit program. CAP projects would be implemented in accordance with the Santa Cruz 2030 General Plan, which includes goals and policies for the protection and preservation of creeks, streams, and groundwater within the City. (City of Santa Cruz 2012). In addition, CAP Measure CS-1 would result in the planting of 3,000 new trees within the City by 2030 while CAP Action CS-3-5 would result in the reforestation or afforestation of areas that are currently mowed, both of which would reduce the potential for erosion. Therefore, the CAP would result in a ***less-than-significant impact*** related to the alteration of existing drainage patterns.

- d. *Would the project result in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?*

The City is not located within a designated seiche zone. However, portions of the City, such as the downtown and the beach areas including the core commercial centers, are within a designated tsunami zone (City of Santa Cruz 2018). Additionally, portions of the City are within the 100- and 500-year flood zones as defined by Federal Emergency Management Agency (FEMA) (FEMA 2021). However, an existing flood control levee on the San Lorenzo River is designed to hold a 100-year storm. The City is also downstream of the Newell Creek Dam; however, risk of dam failure is unlikely, as it is monitored monthly for seepage, saturation, and visual inspections in accordance

with California Division of Safety of Dams requirements (City of Santa Cruz 2012). Additionally, the dam is continuously monitored for earthquakes and annually monitored for settling. Overall, some areas of the City are at risk of inundation. As described in *criterion c*, above, CAP projects would not impede or redirect flood flows, and as discussed in Section 9, *Hazards and Hazardous Materials*, CAP projects would generally not involve the regular use or storage of hazardous materials with the exception of battery energy storage facilities that include the storage of lithium ion batteries. Future CAP-related projects, such as battery storage facilities, would be reviewed for compliance with the applicable local and State regulations related to flooding and hazardous materials use. Furthermore, any projects associated with implementation of the CAP located in flood-prone areas must comply with SCMC Chapter 24.12, Environmental Management, Part 4, Floodplain Management, which provides standards and requirements for construction within floodplain areas (City of Santa Cruz 2021b). Therefore, the CAP would result in a ***less-than-significant impact*** related to flooding and inundation resulting in release of pollutants.

- e. *Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*

The CAP measures and actions would not include activities that would result in the direct extraction of groundwater. The CAP would not interfere with or obstruct implementation of water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality. Therefore, the CAP would result in ***no impact*** related to consistency with a water quality control plan or sustainable groundwater management plan.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). Projects related to implementation of the CAP, in combination with other cumulative projects anticipated under Santa Cruz 2030 General Plan buildout, are not anticipated to contribute to cumulative hydrology and water quality impacts with adherence to applicable General Plan policies, SCMC requirements and applicable local, State, and federal regulations. Implementation of the CAP would not contribute to an increase in growth and development in Santa Cruz but could result in infrastructure development projects, including renewable energy facilities and alternative transportation thoroughfares. As such, implementation of the CAP and other cumulative projects could have incremental impacts related to hydrology and water quality, with potential minor alterations to existing drainage patterns in the City. Overall, implementation of the CAP would result in a ***less-than-significant cumulative impact*** related to hydrology and water quality.

11 Land Use and Planning

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Physically divide an established community?	☐	☐	☐	☒
b. 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?	☐	☐	☐	☒

a. Would the project physically divide an established community?

The CAP is a policy document containing measures that are consistent with the Santa Cruz 2030 General Plan and does not include actions or specific development projects that would divide an established community. CAP Measure T-1 would implement programs for active transportation by funding and staffing the Active Transportation Plan Update, Vision Zero, Safe Routes to School and the 2030 General Plan update, by completing all portions of Rail Trail, and by ensuring secure bike parking near transit and in major activity centers. Such actions would help to increase connectivity within the Santa Cruz community. Therefore, the CAP would result in **no impact** related to division of an established community.

b. Would the project 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?

The CAP is a policy document containing measures that are consistent with the Santa Cruz 2030 General Plan and that are designed to reduce adverse environmental impacts associated with climate change. Nonetheless, implementing the CAP would require some modification of existing policies, including developing and implementing new programs, and projects, or modifying existing ones. For example, CAP Measures BE-1, BE-2 and BE-3 include adoption and enforcement of building ordinances to require building electrification for new and existing developments, while Measure BE-5 would implement local solar programs to reform community solar policies and consider rental building energy performance standards. CAP Measure T-1 would implement programs for active transportation, CAP Measure T-2 would implement programs for public transportation, and CAP Measure T-3 would develop programs and policies to discourage driving single passenger occupancy vehicles. In addition, CAP Action W-1-6 would consider an ordinance for installation of greywater for irrigation at new residential construction while CAP Action W-2-1 would explore and potentially develop a regional compost trading program. In order to implement these measures, the City Municipal Code, General Plan, and other applicable documents may need to be amended to reflect new or modified requirements. However, where modifications of existing policies are needed, such as updates to policies related to energy, solid waste, transit, and active transportation, the CAP measures would result in greater avoidance or reduction of environmental

effects. Therefore, the CAP would result in ***no impact*** related to consistency with current land use plans or policies.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). The CAP is a policy document containing strategies that are consistent with the Santa Cruz 2030 General Plan. Nonetheless, implementing the CAP-related projects, in combination with other cumulative projects anticipated under Santa Cruz 2030 General Plan buildout, would require some modification of existing land use policies, including developing and implementing new programs, and projects, or modifying existing ones. The proposed changes are consistent with the intent of the goals and policies established within the Santa Cruz 2030 General Plan, Local Coastal Program, and Municipal Code and would not cumulatively contribute to population growth or the loss of housing. Cumulative projects, including the CAP-related projects, would be required to adhere to City development regulations and existing Santa Cruz 2030 General Plan policies to retain land use character and minimize environmental impacts. Future projects implemented as a result of the CAP would be reviewed for consistency with the Santa Cruz 2030 General Plan and other applicable regulatory land use actions prior to approval. Therefore, implementation of the CAP would result in a ***less-than-significant cumulative impact*** related to land use.

12 Mineral Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b. 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?	☐	☐	☐	☒

- a. *Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*
- b. *Would the project 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?*

The Santa Cruz 2030 General Plan EIR does not identify any mineral resources or mineral resource recovery sites within the City. However, the EIR does identify a designated aggregate location, an approximately 360-acre sand quarry adjacent to and surrounded by Wilder Ranch State Park west of the City within the General Plan's planning area (City of Santa Cruz 2011). The Santa Cruz 2030 General Plan includes Policy NRC3.4 that requires the conservation of agricultural and known mineral resources in the General Plan's planning area (City of Santa Cruz 2012). The CAP would not conflict with this policy or otherwise impact operations in the quarry area. Furthermore, the CAP would not facilitate additional urban growth or infrastructure development projects within the City that could result in the loss of availability of known mineral resources. Therefore, the CAP would result in **no impact** related to mineral resource.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). Identified mineral resources within the General Plan planning area are limited to the sand quarry located in the west of the City. The CAP would not conflict with or alter this land use. CAP-related projects, in combination with other cumulative projects anticipated under Santa Cruz 2030 General Plan buildout, are not anticipated to contribute to cumulative impacts to mineral resources with adherence to the Santa Cruz 2030 General Plan policies related to conservation of such resources. Therefore, implementation of the CAP would result in **no cumulative impact** related to mineral resources.

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13 Noise				
	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project result in:				
a. 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?	☐	☐	☒	☐
b. Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c. 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?	☐	☐	☐	☒

- a. *Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

Noise is unwanted sound that disturbs human activity. Environmental noise levels typically fluctuate over time, and different types of noise descriptors are used to account for this variability. Noise level measurements include intensity, frequency, and duration, as well as time of occurrence. Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). Because of the way the human ear works, a sound must be about 10 dBA greater than the reference sound to be judged as twice as loud. In general, a 3 dBA change in community noise levels is noticeable, while 1-2 dBA changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40-50 dBA, while arterial streets are in the 50-60+ dBA range. Normal conversational levels are in the 60-65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations.

Noise levels typically attenuate (or drop off) at a rate of 6 dBA per doubling of distance from point sources (such as construction equipment). Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dBA per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dBA per doubling of distance, while noise from a point source typically attenuates at about 6 dBA per doubling of distance. Noise levels may also be reduced by the introduction of intervening structures. For example, a single row of buildings between the receptor

and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm that breaks the line-of-sight reduces noise levels by 5 to 10 dBA.

The Santa Cruz 2030 General Plan EIR identifies roadway traffic as the dominant source of noise within the City. In addition, railroad operations, industrial operations, and the Boardwalk also contribute to the noise environment of the City, but in a more localized and limited manner related to locations and times of the day or year (City of Santa Cruz 2011). The Santa Cruz 2030 General Plan aims to ensure appropriate noise levels considered compatible for community noise environments (City of Santa Cruz 2012). The City's General Plan includes goals, policies, and actions that establish an interior noise level of 45 dBA for all residential uses, consistent with State noise insulation standards (CCR Title 24 Part 11). The General Plan policies also target an exterior noise level target of 65 dBA for activity areas associated with new multi-family development. However, the General Plan does not disclose its own standards for normally acceptable community noise exposure for various land uses. Instead, the General Plan references standards as recommended by the State of California (City of Santa Cruz 2011). Such standards are shown in Table 5. In addition, SCMC Chapter 9.36, Noise, establishes noise regulations including curfews, unreasonably disturbing noises, public health and safety, and enforcement (City of Santa Cruz 2021b).

Table 5 State of California Recommended Normally Acceptable Noise Levels

Land Use	Exterior Noise Exposure (L_{dn} , dBA)
Residential (Low Density, Single Family, Duplex, Mobile Homes)	60
Residential (Multi-Family)	65
Transient Lodging (Hotels and Motels)	65
Schools, Libraries, Churches, Hospitals, Nursing Homes	70
Auditoriums, Concert Halls, Amphitheaters	70
Sports Arenas, Outdoor Spectator Sports	75
Playgrounds, Neighborhood Parks	70
Golf Courses, Riding Stables, Water Recreation, Cemeteries	75
Office Buildings, Business, Commercial, and Professional	70
Industrial, Manufacturing, Utilities, Agriculture	75

dBA = A-weighted decibels; L_{dn} = day/night average sound level; n/a = not applicable
Source: City of Santa Cruz 2012

The CAP is a policy document containing programs that are consistent with the Santa Cruz 2030 General Plan. Some of the CAP actions would support small scale construction projects that could result in temporary noise. These include CAP Action BE-2-4 promotes the removal of obsolete natural gas infrastructure, while CAP Action BE-2-5 promotes the deployment of community solar and electrification of existing buildings in residential neighborhoods; CAP Action BE-3-3, which supports commercial battery storage installations and business district scale microgrid opportunities; CAP Action-BE 5-1, which vows to deliver weatherization, healthy home retrofits, and solar system installs to low-income homeowners and rental units; CAP Action T-1-1, which will fund, staff, and implement the Active Transportation Plan Update, Vision Zero, Safe Routes to School and the 2030 General Plan update; CAP Actions T-1-2, T-1-3, and T-1-5, which describe completing all portions of Rail Trail, planning active and public transportation to the Rail line, ensuring secure bike parking near transit and in major activity centers, requiring bike parking installation in new commercial developments and existing commercial renovations, and building new infrastructure to

ensure there is equitable access to safe bicycle and pedestrian infrastructure; and CAP Action T-4-1, which promotes the installation of at least 1,247 new public EV charging stations. However, CAP-related projects would be reviewed for consistency with the Santa Cruz 2030 General Plan and SCMC, and construction activities would be required to comply with the provisions of the SCMC Chapter 9.36. Therefore, the CAP would not result in significant construction noise related impacts.

The CAP does not include future projects that would result in substantial operational noise. Rather, the CAP encompasses a suite of GHG-reduction opportunities that affect the transportation sector and its associated noise. For example, CAP Measures T-1, T-2, T-3, T-4, and T-5 would discourage driving single passenger occupancy vehicles and would promote the adoption of EVs, which are quieter than gas-powered alternatives, and facilitate improvements to bicycle and public transit circulation to increase active transportation and transit ridership and decrease VMT. These measures would reduce VMT and traffic-related noise in Santa Cruz. Therefore, the CAP would not generate excessive operational noise levels and would result in a ***less-than-significant impact*** related to noise exposure.

b. Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

While people have varying sensitivities to vibrations at different frequencies, in general they are most sensitive to low-frequency vibration. Vibration in buildings, such as from nearby construction activities, may cause windows, items on shelves, and pictures on walls to rattle. Vibration of building components can also take the form of an audible low-frequency rumbling noise, referred to as groundborne noise (Caltrans 2020). Although groundborne vibration is sometimes noticeable in outdoor environments, it is almost never annoying to people who are outdoors. The primary concern from vibration is that it can be intrusive and annoying to building occupants and vibration-sensitive land uses.

Vibration amplitudes are usually expressed in peak particle velocity (PPV) or Root Mean Square (RMS) vibration velocity. The PPV and RMS velocity are normally described in inches per second (in/sec). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used in monitoring of blasting vibration because it is related to the stresses that are experienced by buildings. Vibration significance ranges from approximately 50 vibration decibels (VdB), which is the typical background vibration-velocity level, to 100 VdB, the general threshold where minor damage can occur in fragile buildings. The general human response to different levels of groundborne vibration velocity levels is described in Table 6.

Table 6 Human Response to Different Levels of Groundborne Vibration

Vibration Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception for many people
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day
VdB = vibration decibels	
Source: Federal Transit Administration (FTA) 2018	

The CAP is a policy document containing programs that are consistent with the Santa Cruz 2030 General Plan. Some of the CAP actions would support small-scale construction projects, such as EV charging station construction and building energy efficiency retrofits that may result in a temporary, minor increase in groundborne vibration. However, CAP-related projects would be reviewed for consistency with the Santa Cruz 2030 General Plan and SCMC, and construction activities would be required to comply with applicable local, State, and federal regulations to ensure that temporary construction impacts related to groundborne vibration would not occur. Furthermore, CAP-related projects would not include operational sources of groundborne vibration. Therefore, the CAP would result in a ***less-than-significant impact*** related to groundborne vibration.

- c. *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?*

Santa Cruz does not contain any airports. The nearest airport to Santa Cruz is the Watsonville Municipal Airport, which is located approximately 12 miles southeast of the City. The City is not within the airport land use plan for the Watsonville Municipal Airport (Watsonville Municipal Airport 2003). Furthermore, the CAP is a policy document that would not increase airport activity or result in additional habitable development or commercial development that could increase potential exposure of residents and employees to aircraft-related noise. Therefore, the CAP would result in ***no impact*** related to aviation-related noise exposure.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). The CAP is a policy document containing programs that are consistent with the Santa Cruz 2030 General Plan, including Chapter 8, Hazards, Safety, and Noise (City of Santa Cruz 2012). Nonetheless, CAP-related projects, in combination with other cumulative projects anticipated under Santa Cruz 2030 General Plan buildout, would support construction projects, such as EV charging station construction that may result in a temporary increase in groundborne vibration or noise levels. However, cumulative projects, including CAP-related projects, would be subject to review by the City for compliance with the Santa Cruz 2030 General Plan and SCMC and would be required to comply with applicable State and federal regulations governing construction noise and vibration. Additionally, the CAP encompasses a suite of GHG-reduction opportunities that would decrease traffic and traffic-related noise. As such, implementation of the CAP would not generate permanent, excessive groundborne vibration or noise levels. Therefore, the CAP would result in a ***less-than-significant cumulative impact*** related to noise.

14 Population and Housing

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. 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)?	☐	☐	☐	☒
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

- a. *Would the project 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)?*
- b. *Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?*

The CAP does not include measures, policies, or programs that would result in new housing or jobs or that would displace existing residents or housing. In addition, the CAP does not propose new infrastructure, such as roadways or utilities, which could indirectly lead to new population growth or development. Therefore, the CAP would not directly increase the population, indirectly induce additional unplanned population growth, or displace people or housing. Therefore, the CAP would result in **no impact** related to population and housing.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). CAP-related projects, in combination with other cumulative projects anticipated under Santa Cruz 2030 General Plan buildout, are not anticipated to displace people or housing nor induce substantial unplanned population growth within Santa Cruz. Specifically, the CAP would not contribute to person or housing displacement in Santa Cruz nor result in population growth beyond that already assumed and planned for in the Santa Cruz 2030 General Plan and in accordance with Santa Cruz 2030 population projections. Therefore, the CAP would result in **no cumulative impact** related to population and housing.

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15 Public Services

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or 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?	☐	☐	☐	☒

a. *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or 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?

The CAP is a policy document containing programs that are consistent with the Santa Cruz 2030 General Plan. Implementation of the CAP and its proposed strategies and actions would not result in increases in population and new employment opportunities would target existing residents and not induce population growth, as discussed in Section 14, *Population and Housing*. As such, the CAP would not require the construction of new or physically altered governmental facilities to serve additional population, the construction of which could cause significant environmental impacts. Rather, CAP measures and actions would help to increase community resiliency and reduce vulnerability to the impacts of climate change within Santa Cruz, thereby reducing the burden on local public services related to such climate impacts and disasters. Furthermore, future projects resulting from implementation of the CAP would be reviewed for consistency with the Santa Cruz 2030 General Plan and other applicable local and State regulations related to public services. Therefore, the CAP would result in **no impact** related to public services in terms of need for the construction of new or altered governmental facilities.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). Implementation of CAP-related projects, in combination with other cumulative projects anticipated under Santa Cruz 2030 General Plan buildout, would not result in increases in population or induce additional population growth beyond that assumed under the Santa Cruz 2030 General Plan and in accordance with Santa Cruz's 2030 population projections. As such, implementation of the CAP would not result in substantial cumulative need to expand public services facilities. Therefore, the CAP would result in a ***no significant cumulative impact*** related to public services.

16 Recreation

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

- a. *Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*
- b. *Would the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?*

The City of Santa Cruz is a primarily urbanized community with a variety of recreational facilities. According to the City of Santa Cruz Parks Master Plan 2030, there are six community parks (181 acres), one regional park (151 acres), seven open spaces (1,315 acres), four primary beaches (33 acres), and a large trail system comprised of approximately 35 total miles of trails within the City, as shown in the Existing Park Coverage Map on Page 20 of the Parks Master Plan (City of Santa Cruz 2020). The Parks Master Plan incorporates four general goals outlined in the City of Santa Cruz General Plan 2030, including Goal PR1, provide ample, accessible, safe, and well-maintained parks, open space, and active recreational facilities; Goal PR2, maintain high-quality, affordable recreational programs, activities, events, and services for all; Goal PR3, provide well managed, clean, and convenient public access to open space lands and coastline; and Goal PR4, develop an integrated system of citywide and regional trails. In addition, the City's standard for community parks is 2.5 acres per 1,000 people, with a service radius of 1.5 miles (City of Santa Cruz 2020).

The CAP is a policy document containing programs that are consistent with the Santa Cruz 2030 General Plan, including the recreation and open space policies described above. Additionally, as described in Section 14, *Population and Housing*, the CAP would not result in substantial population growth or direct land use changes. As such, implementation of the CAP would not result in a substantial physical deterioration of parks or other recreational facilities or result in the need to expand recreational facilities. Therefore, the CAP would result in **no impact** related to the need for construction of new or altered recreational facilities.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). Implementation of CAP projects, in combination with other cumulative projects anticipated under Santa Cruz 2030 General Plan buildout, would not result in increases in population or induce additional population growth beyond that assumed under the Santa Cruz 2030 General Plan and in accordance with Santa Cruz 2030 population projections. Therefore, implementation of the CAP would not result in increased demand for parks or substantial cumulative physical deterioration of parks or other recreational facilities or result in the cumulative need to expand recreational facilities. Therefore, implementation of the CAP would result in ***no cumulative impact*** related to recreation.

17 Transportation

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☐	☒
b. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☐	☒
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)?	☐	☐	☒	☐
d. Result in inadequate emergency access?	☐	☐	☒	☐

- a. *Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?*
- b. *Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?*

The Santa Cruz 2030 General Plan Circulation Element includes the following goals (City of Santa Cruz 2012):

- **Goal M1:** Implement land use patterns, street design, parking, and access solutions that facilitate multiple transportation alternatives.
- **Goal M2:** Develop a safe, sustainable, efficient, adaptive, and accessible transportation system.
- **Goal M3:** Develop a safe, efficient, and adaptive road system.
- **Goal M4:** Develop a citywide interconnected system of safe, inviting, and accessible pedestrian ways and bikeways.

Additionally, the City adopted the City of Santa Cruz Active Transportation Plan (ATP) in 2017 to identify an integrated network of walkways and bikeways that connect the City of Santa Cruz neighborhoods and communities to employment, education, commercial, recreational and tourist destinations. The ATP was developed through the City's Planning and Public Works Departments and in coordination with other City Departments. Preparation of the ATP included a review of pertinent planning documents and policies, including the Santa Cruz 2030 General Plan (City of Santa Cruz 2017).

The CAP is a policy document containing strategies and policies that are consistent with the Santa Cruz 2030 General Plan and the Santa Cruz ATP. CAP Action T-1-1 would facilitate the funding, staffing, and overall implementation of the ATP. CAP Action T-1-2 would result in the completion of all portions of Rail Trail, while CAP Action T-1-3 would ensure secure bike parking near transit and in major activity centers and require bike parking installations in commercial developments and redevelopments. CAP Action T-1-5 would build new infrastructure to ensure there is equitable access to safe bicycle and pedestrian infrastructure throughout the City, while CAP Action T-1-6 would pilot designating streets specifically for bikes only. Additionally, CAP Actions designed to support CAP Measure T-2 would implement programs for public transportation. These CAP actions would advance active transportation and public transit within Santa Cruz and decrease VMT and associated air pollutants and GHG emissions.

The CAP Measures and Actions would be consistent with the Santa Cruz 2030 General Plan and ATP goals related to facilitating multiple transportation alternatives, developing an accessible transportation system, and developing an interconnected system of pedestrian ways and bikeways. Furthermore, the CAP would seek to reduce VMT within the City through CAP Measure M-4, which would implement a municipal Transportation Demand Management Plan by 2023 and result in consistency with CEQA Guidelines section 15064.3, subdivision (b). Therefore, the CAP would result in **no impact** related to consistency with plans addressing the transportation circulation system and CEQA Guidelines section 15064.3, subdivision (b).

- c. *Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)?*
- d. *Would the project result in inadequate emergency access?*

The CAP is a policy document containing strategies that are consistent with the Santa Cruz 2030 General Plan and would not facilitate development beyond that allowed under the General Plan. Implementation of some CAP actions, such as CAP Action T-1-1 which would implement the Active Transportation Plan Update, Vision Zero, Safe Routes to School and the 2030 General Plan update, could involve construction within the local right-of-way. Construction activities have the potential to require lane closures and may impact traffic and vehicle speeds on the affected roadways; however, these impacts would be temporary and access to roadways would generally be maintained throughout project construction. Furthermore, future projects involving work in the public right-of-way would be required to obtain an encroachment permit to ensure public safety, public convenience, and adequate traffic control pursuant to SCMC Chapter 15.34, Encroachment Permits (City of Santa Cruz 2021b). Compliance with the SCMC would ensure that significant impacts to the circulation system design, including safety impacts and emergency access, would not occur. As such, construction of CAP projects would not create transportation design hazards or result in inadequate emergency access. Furthermore, the CAP would facilitate increased active transportation and public transit use and decreased VMT within Santa Cruz, which in turn would reduce potential transportation hazards and congestion conditions that can hinder emergency response. Therefore, the CAP would result in a **less-than-significant impact** related to transportation hazards and emergency access.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). Implementation of CAP-related projects, in

combination with other cumulative projects anticipated under Santa Cruz 2030 General Plan buildout, could result in increases in VMT or changes affecting traffic design safety and emergency access. However, the CAP is a policy document containing programs that are consistent with the Santa Cruz 2030 General Plan and does not propose new development that would require the provisioning of new roadways. The CAP measures and actions would promote alternative modes of transportation and reduction of VMT throughout the Santa Cruz community, consistent with goals contained in the Santa Cruz 2030 General Plan and Santa Cruz ATP (City of Santa Cruz 2012; City of Santa Cruz 2017). Therefore, the CAP would result in a ***less-than-significant cumulative impact*** related to transportation.

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18 Tribal Cultural Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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:				
a. 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), or	☐	☐	☒	☐
b. 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 2024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significant of the resource to a California Native American tribe?	☐	☐	☒	☐

- a. *Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in a 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 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 § 5020.1 (k)?*
- b. *Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in a 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 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 2024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significant of the resource to a California Native American tribe?*

On April 27, 2022, the following Native American Heritage Commission (NAHC)-identified local Native American tribal groups were formally notified that the City initiated environmental review of the CAP 2.0 and were invited to provide consultation:

1. Amah Mutsun Tribal Band of Mission San Juan Bautista

Under AB 52, Native American tribes have 30 days to respond and request further project information and formal consultation. Formal consultation was requested by the tribe and is expected to take place in June 2022. Results of formal consultation will be addressed in this document prior to finalization of this IS-ND.

The CAP would not involve land use or zoning changes that would increase development within the City but would instead promote sustainable infrastructure development within the urbanized area of the City. As a policy document, the CAP would also not directly entail ground disturbing activities. Implementation of the CAP actions related to electrification of buildings, commercial battery storage installation, EV charging infrastructure, and active transportation and public transit infrastructure may include minor construction activities.

Electrification retrofits associated with CAP Measures BE-1, BE-2, and BE-3 may change the physical environment through the need for upgraded service and electrical panels, branch circuit upgrades, and installation of condensate drains to facilitate the installation of electric heat pumps for water and space heating. The physical changes these upgrades would entail are dependent on the year of building construction and location of electrical and service panels and plumbing connection of condensate drains, which sometimes may include modifications to the interior and/or exterior of buildings for wiring and panel replacement and minor excavation for connection of drainage to sewer systems.

Installation of active transportation infrastructure, public transit infrastructure, and EV chargers associated with CAP Measures T-1, T-2, T-3, and T-4 would primarily impact previously disturbed areas within existing parking lots and developments. However, the physical changes these installations and enhancements would entail are dependent on the location of construction, which in some cases may include minor temporary excavation. In addition, implementation of CAP Action T-1-1 and T-1-2, which would implement the Active Transportation Plan Update, Vision Zero, Safe Routes to School and the 2030 General Plan update and complete all portions of Rail Trail, could impact some previously undisturbed areas of the City. Furthermore, CAP Measure CS-1 would result in the planting of 3,000 new trees within the City by 2030, which could result in ground disturbing activities in previously undisturbed areas.

Implementation of these CAP actions could impact unknown tribal cultural resources during construction that involves below-grade activities in previously undisturbed soils. However, CAP-related projects would be located and designed strategically to reduce ground disturbance to the maximum extent possible. In addition, CAP-related projects would be reviewed for consistency with applicable local, regional, and State tribal cultural and archaeological regulations prior to final siting and construction and would be required to implement BMPs in accordance with the Santa Cruz 2030 General Plan goals and policies and the SCMC. As such, tribal cultural resources would be protected prior to and/or upon discovery and, thus, impacts would be reduced to a minimal level. Therefore, the CAP would result in a ***less-than-significant impact*** related to tribal cultural resources.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). CAP projects, in combination with other cumulative projects anticipated under Santa Cruz 2030 General Plan buildout, could increase the potential for adverse effects to unknown tribal cultural resources in Santa Cruz. However, impacts

to tribal cultural resources are site-specific; accordingly, as required under applicable laws and regulations, potential impacts associated with cumulative developments would be addressed on a case-by-case basis as cumulative project details and locations become known. CAP projects and other cumulative projects would be required to comply with the Santa Cruz 2030 General Plan and SCMC. Therefore, the CAP would result in a ***less-than-significant cumulative impact*** related to tribal cultural resources.

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19 Utilities and Service Systems

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d. 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?	☐	☐	☐	☒
e. Comply with federal, State, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

- a. *Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?*

The CAP is a policy document that, amongst other objectives, aims to reduce solid waste production, reduce energy consumption, and maintain existing water usage, thereby reducing related GHG emissions throughout Santa Cruz. The CAP does not include site-specific infrastructure designs or project proposals. Implementing the CAP would not result in an increase in population and housing nor would it facilitate growth beyond that anticipated by the Santa Cruz 2030 General

Plan. As such, implementing the CAP would not create new demand related to water, wastewater, stormwater drainage, electric power, natural gas power, or telecommunications utilities.

However, projects resulting from implementation of the CAP could include the development, redevelopment and/or restructuring of infrastructure throughout Santa Cruz. For example, CAP Measures BE-1, BE-2, and BE-3 promote the electrification of new and existing commercial and residential buildings while CAP Action BE-3-3 supports commercial battery storage installations. CAP Action BE-5-1 would deliver weatherization, healthy home retrofits, energy efficiency, and solar system installs to low-income homeowners and rental units. CAP Measure T-1 would implement programs for active transportation by implementing the Active Transportation Plan Update, completing all portions of Rail Trail, ensuring secure bike parking near transit and in major activity centers, and building new infrastructure to ensure there is equitable access to safe bicycle and pedestrian infrastructure throughout the City. Additionally, CAP Action T-4-1 would install at least 1,247 new public EV charging stations. Potential impacts related to these measures and actions are discussed further below.

Water Supply Facilities/Infrastructure

The City of Santa Cruz Water Department is the retail water supplier for development within the City limits. Santa Cruz obtains 100 percent of its municipal water supply from local water sources. According to the City of Santa Cruz Urban Water Management Plan (UWMP), 95 percent of the City's water is supplied by North Coast surface water sources (Liddell Spring and Laguna, Majors, and Reggiardo Creeks), the San Lorenzo River (Felton Diversion, Tait Diversion, and Tait Wells), and the Loch Lomond Reservoir. The remaining water supply is extracted through the Beltz well system from the Santa Cruz Mid-County Groundwater Basin (City of Santa Cruz 2021c). The City Water Department's distribution system consists of three water treatment plants, including the Graham Hill Water Treatment Plant and two groundwater treatment plants related to the Beltz well system; four raw water pump stations; ten treated water pump stations; 15 distribution tanks with a total maximum capacity of 21.2 million gallons of treated water storage; seven surface water diversions; seven production wells; and approximately 300 miles of treated and raw water pipelines interconnecting the entire system (City of Santa Cruz 2021c).

The City addresses issues of water supply in the Santa Cruz UWMP, which is a long-range planning document used to assess current and projected water usage, water supply planning, and conservation and recycling efforts. According to the UWMP, the City has analyzed three different hydrological conditions to determine the reliability of water supplies: average/normal water year, single dry water year, and multiple dry water year periods. The UWMP indicates that water supplies under the average/normal year and single dry water year hydrological conditions will be sufficient to meet demand through 2045. In an extreme multiple dry water year hydrological condition, the UWMP indicates that the estimated water supply available to the City in the near term (2025) during the fourth year would meet over 99 percent of projected demand, but during the fifth year only 73 percent of projected demand would be met. However, with implementation of planned water infrastructure projects by 2030, along with proposed water rights modifications, the City's projected water supply would meet projected water demand during all years except for small projected shortages during the fifth year of the extended drought in the 2040 – 2045 timeframe. During this period in the fifth year of the extended drought, supply is projected to be able to meet 98 percent of demand (City of Santa Cruz 2021c). The also UWMP includes a Water Shortage Contingency Plan.

Construction of projects resulting from implementation of the CAP may require minimal water usage for dust suppression purposes. As described above, the City's projected water supply is expected to meet the projected water demand during all years except for small shortages during the fifth year of an extended drought scenario in the 2040 – 2045 timeframe. However, the CAP would not result in new land uses, such as increased residential or commercial development, that would contribute to an increase in water use compared to existing conditions or that would require relocation or construction of new water infrastructure. Therefore, the CAP would have **no impact** related to the need for construction or expansion of water supply facilities and infrastructure.

Wastewater Treatment Facilities/Infrastructure

According to the Santa Cruz 2030 General Plan, Santa Cruz maintains a system of wastewater collection, conveyance, and treatment infrastructure for wastewater within the City. The City's sewer system consists of approximately 160 miles of sewer and 17 pump stations that convey wastewater to the Santa Cruz Wastewater Treatment Facility. The Santa Cruz Wastewater Treatment Plant is a regional facility, owned and operated by the City, located along Bay Street within the City limits. Conservatively, the City's wastewater treatment facility has the capacity to treat up to 17 million gallons of wastewater per day, with an average daily flow of less than ten million gallons per day. The City disposes of its treated effluent into the Pacific Ocean (City of Santa Cruz 2012).

The CAP would not result in new land uses that would generate sanitary wastewater or otherwise contribute to an increase in wastewater treatment requirements. Furthermore, the CAP would not require relocation or construction of new wastewater treatment infrastructure. Therefore, **no impact** related to need for construction or expansion of wastewater treatment facilities and infrastructure would occur.

Stormwater Drainage Facilities/Infrastructure

The City of Santa Cruz maintains a system of storm drains that collect stormwater runoff from City streets along gutters and through underground pipes to discharge into waterways and ocean. The system is designed for the control of flooding and does not provide any treatment to the storm water runoff. As discussed in Section 10, *Hydrology and Water Quality*, implementation of CAP Actions related to building electrification and energy efficiency upgrades, renewable energy production and storage, and transportation may promote infrastructure development that would involve small-scale construction. Construction of projects implemented in accordance with the CAP could result in erosion and potential changes to drainage patterns. However, as described in Section 7, *Geology and Soils*, and Section 10, *Hydrology and Water Quality*, CAP-related projects would be required to comply with local, State, and federal requirements during construction that would control stormwater runoff, erosion, and potential impacts to the stormwater drainage system. Therefore, **no impact** related to need for construction or expansion of stormwater drainage facilities and infrastructure would occur.

Electric Power Facilities/Infrastructure

Electric power service in the City is provided by Pacific Gas & Electric (PG&E). Santa Cruz is also part of the CCCE community choice aggregate, which provides electricity from those who opt in within the City primarily from clean, renewable sources. Implementation of CAP Measures BE-1, BE-2, and BE-3 promote the electrification of new and existing buildings, while CAP Action BE-5-1 aims to deliver weatherization, healthy home retrofits, energy efficiency and solar system installs to low-

income homeowners and rental units. In addition, CAP Measure T-4 would increase the adoption of EVs through implementation of new EV infrastructure and charging stations throughout the City. These CAP measures and actions may slightly alter electricity demand within Santa Cruz. In addition, implementation of the CAP could slightly increase electricity demand within the City during temporary construction activities associated with CAP Measures and Actions. However, the CAP would serve as a pathway to reduce GHG emissions, including emissions related to energy consumption, and other beneficial environmental and sustainability effects. These benefits include a reduction in energy consumption. Therefore, the CAP would result in a ***less than significant impact*** related to construction, expansion, or relocation of electric power facilities and infrastructure.

Natural Gas Power Facilities/Infrastructure

PG&E provides natural gas services to the City of Santa Cruz. The CAP would not involve new land uses that require new or additional natural gas service which could result in the construction of new or expanded natural gas facilities. CAP Measures BE-1, BE-2, and BE-3 promote the electrification of new and existing buildings to reduce natural gas consumption within the City. Implementation of these actions could involve minor alterations to existing natural gas infrastructure as natural gas use is reduced. In addition, implementation of the CAP could slightly increase natural gas demand within the City during temporary construction activities associated with CAP Measures and Actions. However, the CAP would serve as a pathway to reduce GHG emissions, including emissions related to energy consumption, and other beneficial environmental and sustainability effects. These benefits include a reduction in natural gas consumption. Therefore, the CAP would result in a ***less than significant impact*** related to construction, expansion, or relocation of natural gas facilities and infrastructure.

Telecommunications Facilities/Infrastructure

The City is served by a variety of existing telecommunications companies, such as AT&T and Comcast. The CAP would not alter existing telecommunications facilities and infrastructure and would not involve new land uses or development that would require new telecommunications infrastructure. Therefore, the CAP result in ***no impact*** related to need for construction or expansion of telecommunication facilities and infrastructure.

- b. *Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?*
- c. *Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?*

The CAP is a policy-level document that does not include site-specific infrastructure designs or project proposals, nor does it grant entitlements for development that would have the potential to increase demand for water supply or wastewater treatment. Rather the CAP contains strategies and actions to maintain reduced water use, such as CAP Measure W-1 that aims to maintain gallons per capita water use for the residential sector at a level that is at least ten percent below the State goal of 55 gallons per person per day. Thus, the CAP would result in ***no impact*** related to water supply and wastewater treatment.

- d. *Would the project 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?*
- e. *Would the project comply with federal, State, and local management and reduction statutes and regulations related to solid waste?*

Santa Cruz Municipal Utilities provides solid waste services for residential and commercial uses within Santa Cruz. The City owns and operates a Class III Sanitary Landfill, a recycling drop-off facility, and a recycling processing center at the Dimeo Lane Resource Recovery Facility, located approximately three miles west of the City on Highway 1 (City of Santa Cruz 2012). The Resource Recovery Facility landfill has a maximum permitted throughput of 535 tons of solid waste per day and has a remaining capacity 4,806,477 cubic yards (CalRecycle 2019).

The CAP focuses on sustainable infrastructure development and does not include land use or other policy changes that would result in increased residential, commercial, or other development that would increase solid waste generation within the City. CAP Measure W-2 aims to reduce organic waste by 85 percent by 2030 and reduce inorganic waste by 90 percent by 2035, while CAP Measure W-3 aims to set a long-term target to reduce waste generation growth. These CAP measures align with federal, State, and local regulations aimed at reducing solid waste disposal, such as Senate Bill 1383. Additionally, because the CAP is a policy document that would not facilitate growth beyond that anticipated by the Santa Cruz 2030 General Plan, it would not generate solid waste in excess of State or local standards. Therefore, the CAP would result in **no impact** related to solid waste.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). Other cumulative projects anticipated under Santa Cruz 2030 General Plan buildout within the City could result in increases in population and additional use of or need for utilities and service systems. However, implementation of the CAP and related infrastructure projects would not contribute to increases in population or induce additional population growth that would require additional use of existing City utilities or service systems. Rather, implementation of the CAP would reduce solid waste production, reduce energy consumption, and maintain existing water usage. Therefore, implementation of the CAP would result in a **less-than-significant cumulative impact** related to utilities and service systems.

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20	Wildfire				
		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a.	Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	■
b.	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?	☐	☐	☐	■
c.	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?	☐	☐	☐	■
d.	Expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	■
a.	<i>If located in or near State responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?</i>				
b.	<i>If located in or near State responsibility areas or lands classified as very high fire hazard severity zones, would the project 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?</i>				
c.	<i>If located in or near State responsibility areas or lands classified as very high fire hazard severity zones, would the project 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?</i>				

- d. *If located in or near State responsibility areas or lands classified as very high fire hazard severity zones, would the project expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?*

According to the California Department of Forestry and Fire Protection (CAL FIRE), the majority of the City of Santa Cruz is not located in designated California Fire Hazard Severity Zones; however, the City contains and is adjacent to areas classified as moderate and high fire hazard severity zones of Local Responsibility at the wildland fringes located at the northern and western borders of the City (CAL FIRE 2007). Local Responsibility Areas are incorporated cities and other areas where the local government is responsible for wildfire protection, typically provided by city fire departments, fire protection districts, counties, or by CAL FIRE under contract.

Santa Cruz is a compact city surrounded by greenbelt. According to the LHMP, wildfire poses a threat to portions of the City in several canyons and in the wildland/urban interface. The area's most vulnerable to wildfires within the City are Pogonip, DeLaveaga, Moore Creek Preserve, Arana Gulch, Arroyo Seco Canyon, and on UCSC land (City of Santa Cruz 2018). The central, urbanized portions of the City are less subject to wildfire risk.

Though there are areas within and surrounding Santa Cruz that are at risk of wildfires, the CAP is a policy-level document that does not propose new residential, commercial, or institutional development that could be at risk from wildfire, nor does it grant entitlements for development that would have the potential to directly cause wildfire. Therefore, the CAP would result in ***no impact*** related to wildfire.

Cumulative Impacts

The cumulative projects scenario is buildout of the Santa Cruz 2030 General Plan in addition to the projected population, employment, and housing for the City of Santa Cruz through 2030 (75,571 residents, 46,153 jobs, and 28,634 housing units). The CAP does not include new habitable development that could be at risk from wildfire, nor does it grant entitlements for development that would have the potential to cause wildfire. Therefore, the CAP would result in ***no cumulative impact*** related to wildfire.

21 Mandatory Findings of Significance

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Does the project:				
a. Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐
b. Have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c. Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

- a. *Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?*

The intent of the CAP is to reduce GHG emissions from the Santa Cruz community and municipal operations through implementation of measures and actions related to energy use, water consumption, transportation, solid waste, and community coordination, education, and outreach. The CAP measures and actions are consistent with the Santa Cruz 2030 General Plan and encourage residents, businesses, and the municipal facilities to reduce energy and water use, fuel use, VMT, and solid waste generation and the associated GHG emissions. The CAP would not facilitate development that would eliminate or threaten wildlife habitats or eliminate important examples of the major periods of California history or prehistory. Therefore, as discussed in more detail in Section 4, *Biological Resources*, Section 5, *Cultural Resources*, and Section 18, *Tribal Cultural*

Resources, the CAP would result in a ***less-than-significant impact*** related to biological and cultural resources.

- b. *Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?*

Implementation of the CAP would result in a cumulatively beneficial reduction of GHG and air pollutant emissions across the City of Santa Cruz. In addition, as discussed throughout the respective cumulative impacts discussions within this document, the CAP would not result in significant cumulative impacts. Rather, implementation of the CAP would be consistent with Santa Cruz 2030 General Plan policies aimed at reducing emissions of GHGs and air pollutants, reducing VMT, reducing energy and water supply demands on utilities, and decreasing solid waste generation. Therefore, the CAP would result in an overall ***less-than-significant cumulative impact*** related to all CEQA topics addressed within this document.

- c. *Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?*

In general, impacts to human beings are associated with air quality, GHG emissions and climate change, hazards and hazardous materials, noise, and transportation impacts. As detailed in the preceding sections, the CAP would not result, either directly or indirectly, in substantial adverse effects related to air quality, GHG emissions, hazards, and noise. As discussed in more detail in Section 3, *Air Quality*, Section 13, *Noise*, and Section 17, *Transportation*, the CAP could cause temporary construction impacts related to transportation, air quality, and noise that could, in turn, affect human beings but would not result in substantial adverse effects. However, as discussed throughout this document, the CAP would serve as a pathway to reduce operational GHG emissions and would result in other positive environmental and sustainability effects. These benefits include reduction in building energy and water consumption, VMT, and solid waste generation and improved air quality. Therefore, the CAP would result in a ***less-than-significant impact*** related to potential for adverse effects on human beings.

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Rincon prepared this CAP Initial Study-Negative Declaration under contract to the City of Santa Cruz. Persons involved in data gathering, environmental impact analysis, quality review, graphics preparation, and document formatting include the following.

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Appendix A

Sources, Health Effects, and Typical Controls Associated with Criteria Pollutants

Sources, Health Effects, and Typical Controls Associated with Criteria Pollutants

Pollutant	Sources	Health Effects	Typical Controls
Ozone (O ₃)	Formed when reactive organic gases (ROG) and nitrogen oxides react in the presence of sunlight. ROG sources include any source that burns fuels (e.g., gasoline, natural gas, wood, oil); solvents; petroleum processing and storage.	Breathing difficulties, lung tissue damage, vegetation damage, damage to rubber and some plastics.	Reduce motor vehicle reactive organic gas (ROG) and nitrogen oxide (NO _x) emissions through emission standards, reformulated fuels, inspections programs, and reduced vehicle use. Limit ROG emissions from commercial operations, gasoline refueling facilities, and consumer products. Limit ROG and NO _x emissions from industrial sources such as power plants and manufacturing facilities.
Carbon monoxide (CO)	Any source that burns fuel such as automobiles, trucks, heavy construction and farming equipment, residential heating.	Chest pain in heart patients, headaches, reduced mental alertness.	Control motor vehicle and industrial emissions. Use oxygenated gasoline during winter months. Conserve energy.
Nitrogen dioxide (NO ₂)	See Carbon Monoxide.	Lung irritation and damage. Reacts in the atmosphere to form ozone and acid rain.	Control motor vehicle and industrial combustion emissions. Conserve energy.
Sulfur dioxide (SO ₂)	Coal or oil burning power plants and industries, refineries, diesel engines.	Increases lung disease and breathing problems for asthmatics. Reacts in the atmosphere to form acid rain.	Reduce use of high sulfur fuels (e.g., use low sulfur reformulated diesel or natural gas). Conserve energy.
Respirable particulate matter (PM ₁₀)	Road dust, windblown dust, agriculture and construction, fireplaces. Also formed from other pollutants (NO _x , SO _x , organics).	Increased respiratory disease, lung damage, cancer, premature death, reduced visibility, surface soiling.	Control dust sources, industrial particulate emissions, woodburning stoves and fireplaces. Reduce secondary pollutants which react to form PM ₁₀ . Conserve energy.
Fine particulate matter (PM _{2.5})	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning. Also formed from reaction of other pollutants (NO _x , SO _x , organics, and NH ₃).	Increases respiratory disease, lung damage, cancer, and premature death, reduced visibility, surface soiling. Particles can aggravate heart diseases such as congestive heart failure and coronary artery disease.	Reduce combustion emissions from motor vehicles, equipment, industries, and agricultural and residential burning. Precursor controls, like those for ozone, reduce fine particle formation in the atmosphere.
Lead	Metal smelters, resource recovery, leaded gasoline, deterioration of lead paint.	Learning disabilities, brain and kidney damage. Control metal smelters.	No lead in gasoline or paint.
Sulfur Dioxide (SO ₂)	Coal or oil burning power plants and industries, refineries, diesel engines.	Increases lung disease and breathing problems for asthmatics. Reacts in the atmosphere to form acid rain.	Reduce use of high sulfur fuels (e.g., use low sulfur reformulated diesel or natural gas). Conserve energy.
Sulfates	Produced by reaction in the air of SO ₂ , (see SO ₂ sources), a component of acid rain.	Breathing difficulties, aggravates asthma, reduced visibility.	See SO ₂

Pollutant	Sources	Health Effects	Typical Controls
Hydrogen Sulfide	Geothermal power plants, petroleum production and refining, sewer gas.	Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations).	Control emissions from geothermal power plants, petroleum production and refining, sewers, and sewage treatment plants.
Visibility Reducing Particulates	See PM _{2.5}	Reduced visibility (e.g., obscures mountains and other scenery), reduced airport safety.	See PM _{2.5}
Vinyl Chloride	Exhaust gases from factories that manufacture or process vinyl chloride (construction, packaging, and transportation industries).	Central nervous system effects (e.g., dizziness, drowsiness, headaches), kidney irritation, liver damage, liver cancer.	Control emissions from plants that manufacture or process vinyl chloride, installation of monitoring systems.
Toxic Air Contaminant (TAC)	Combustion engines (stationary and mobile), diesel combustion, storage and use of TAC-containing substances (i.e., gasoline, lead smelting, etc.)	Depends on TAC, but may include cancer, mutagenic and/or teratogenic effects, other acute or chronic health effects.	Toxic Best Available Control Technologies (T-BACT), limit emissions from known sources.
Source: Compiled by Rincon Consultants, Inc. in October 2021			

Appendix B

Description of Greenhouse Gases of California Concern

Description of Greenhouse Gases of California Concern

Greenhouse Gas	Physical Description and Properties	Global Warming Potential (100 years)	Atmospheric Residence Lifetime (years)	Sources
Carbon dioxide (CO ₂)	Odorless, colorless, natural gas.	1	50–200	Burning coal, oil, natural gas, and wood; decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; oceanic evaporation; volcanic outgassing; cement production; land use changes
Methane (CH ₄)	Flammable gas and is the main component of natural gas.	28 ⁹⁵	12	Geological deposits (natural gas fields) extraction; landfills; fermentation of manure; and decay of organic matter
Nitrous oxide (N ₂ O)	Nitrous oxide (laughing gas) is a colorless GHG.	298	114	Microbial processes in soil and water; fuel combustion; industrial processes
Chloro-fluoro-carbons (CFCs)	Nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (level of air at the Earth's surface); formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms.	3,800–8,100	45–640	Refrigerants aerosol propellants; cleaning solvents
Hydro-fluoro-carbons (HFCs)	Synthetic human-made chemicals used as a substitute for CFCs and contain carbon, chlorine, and at least one hydrogen atom.	140 to 11,700	1–50,000	Automobile air conditioners; refrigerants
Per-fluoro-carbons (PFCs)	Stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface.	6,500 to 9,200	10,000–50,000	Primary aluminum production; semiconductor manufacturing
Sulfur hexafluoride (SF ₆)	Human-made, inorganic, odorless, colorless, and nontoxic, nonflammable gas.	22,800	3,200	Electrical power transmission equipment insulation; magnesium industry, semiconductor manufacturing; a tracer gas

⁹⁵ The City of Chico used a 20-year Global Warming Potential for methane.

Greenhouse Gas	Physical Description and Properties	Global Warming Potential (100 years)	Atmospheric Residence Lifetime (years)	Sources
Nitrogen trifluoride (NF ₃)	Inorganic, is used as a replacement for PFCs, and is a powerful oxidizing agent.	17,200	740	Electronics manufacture for semiconductors and liquid crystal displays

Source: Compiled by Rincon Consultants, Inc. in May 2021

APPENDIX B:
**AMBAG Community and
Municipal Greenhouse
Gas Inventory Review
and VMT Updates**



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Project No: 20-10678

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**Subject: Santa Cruz Climate and Energy Action Plan,
Final Progress Report on Climate Action Plan 2020**

Purpose

California considers greenhouse gas (GHG) emissions and the impacts of climate change to be a serious threat to the public health, environment, economic well-being, and natural resources of the state, and has taken an aggressive stance to mitigate the impact on climate change at the state-level through the adoption of legislation and policies. Many cities have developed local climate action plans and aligned goals to correspond with state emissions reduction goals. The two major state GHG-related goals are established by Assembly Bill (AB) 32 and Senate Bill (SB) 32. AB 32 required state agencies to reduce state GHG emissions to 1990 levels by 2020 whereas SB 32 requires a 40 percent reduction below 1990 levels by 2030. The goals set by AB 32 were achieved by the state in 2016¹ and many jurisdictions are completing GHG inventories to quantify progress toward their own 2020 goals as well as develop targets to align with the requirements of SB 32. A long-term goal of carbon neutrality by 2045 for the state was established, but not codified, through Executive Order (EO) B-55-18. While it is not required for jurisdictions to meet this target, many are establishing or exceeding this goal to show alignment with the aggressive decarbonization goals of the state.

As the City of Santa Cruz closes its 2012-2020 Climate Action Plan and develops its 2022-2030 Climate Action Plan, this memorandum provides:

- A consistency review of the City's community and municipal GHG inventories
- The City's 2020 progress on milestones, indicators, and actions
- Information regarding lifecycle/consumption based GHG inventories
- Recommendations for the City's community and municipal GHG inventories going forward

Estimating GHG emissions enables local governments to establish an emissions baseline, track emissions trends, identify the greatest sources of GHG emissions within their jurisdictions, and set targets for future reductions. Emissions contained within this memorandum include activities under the jurisdictional control or significant influence of the City of Santa Cruz, as recommended by the

¹ California Air Resources Board. California Greenhouse Gas Emissions Inventory. Accessed at: <https://ww3.arb.ca.gov/cc/inventory/inventory.htm>. Accessed on July 2019



Association of Environmental Professionals (AEP) in preparing Community Protocol and CEQA-compliant inventories². The municipal operations inventory is a subset of the community-wide inventory, meaning the municipal emissions are included within the community-wide inventory.

GHG Emissions Goals (AB 32)

California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the "California Global Warming Solutions Act of 2006," which was signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 and requires California Air Resources Board (CARB) to prepare a Scoping Plan that outlines the main state strategies for reducing GHG emissions to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions.

Based on this guidance, CARB approved a 1990 statewide GHG baseline and 2020 emissions limit of 427 million metric tons of CO₂ equivalent (MMT CO₂e). The Scoping Plan was approved by CARB on December 11, 2008 and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards³, and Cap-and-Trade) have been adopted since approval of the Scoping Plan.

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

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

The 2012 Climate Action Plan identified targets to reduce community-wide greenhouse gas emissions 30% by 2020 and 80% by 2050, compared to 1990 levels.⁴ The 2020 target is 172,508 metric tons of carbon dioxide equivalent (MT CO₂e) and the 2050 is 49,288 MT CO₂e. These targets are tracked using GHG inventories, which are reviewed below. Overall community GHG emissions have declined steadily since 2005, and the City achieved its 2020 target between 2015 and 2018.

² Association of Environmental Professionals. 2013. The California Supplement to the United States Community-Wide Greenhouse Gas (GHG) Protocol.

³ On September 19, 2019 the National Highway Traffic Safety Agency (NHTSA) and the US Environmental Protection Agency (EPA) issued a final action entitled the One National Program on Federal Preemption of State Fuel Economy Standards Rule. This action finalizes Part I of the Safer, Affordable, Fuel-Efficient (SAFE) Vehicles Rule. This rule states that federal law preempts State and local tailpipe greenhouse gas (GHG) emissions standards as well as zero emission vehicle (ZEV) mandates. The SAFE Rule withdraws the Clean Air Act waiver it granted to California in January 2013 as it relates to California's GHG and zero emission vehicle programs. The Biden Administration's Infrastructure Bill includes a focus on alternative fuels and technology for zero emission vehicles and supporting infrastructure, which could result in increased opportunities for Low Carbon Fuel Standard and zero emission vehicle infrastructure projects.

⁴ 1990 levels were estimated using state guidance of assuming 1% annual emissions growth between 1990 and 2005.



The Climate Action Plan 2030 update will determine the most equitable pathway to carbon neutrality and will set a target year and goal that meets or exceeds the targets set out by AB 32 and SB 32 as well as EO B-55-18. The update will also fulfill the requirements of the California Environmental Quality Act (CEQA) Guidelines § 15183.5(b).

GHG Emissions Inventory Consistency Review

Rincon Consultants, Inc. (Rincon) reviewed the City of Santa Cruz's existing community and municipal inventories as part of the Climate and Energy Action Plan 2030 development process to assess and verify the consistent application of appropriate methodologies defined by the by the Local Governments for Sustainability USA (ICLEI) U.S. Community Protocol as well as the correct emissions factors and inclusion of all appropriate emission sources.⁵ This included a review of the activity data used and emissions calculated in the 2005, 2010, 2015, 2018 and 2019 Community Wide Greenhouse Gas (GHG) Emissions Inventories and 2005, 2010, and 2015 Municipal GHG Emissions Inventories.

The City's community inventories follow the ICLEI U.S. Community Protocol. The Community Protocol requires a minimum set of five Basic Emissions Generating Activities that must be included in all Protocol-compliant GHG inventory reports:

1. Use of Electricity by the Community
2. Use of Fuel in Residential and Commercial Stationary Combustion Equipment
3. On-Road Passenger and Freight Motor Vehicle Travel
4. Use of Energy in Potable Water and Wastewater Treatment and Distribution
5. Generation of Solid Waste by the Community.

The City's community inventories include all required sectors listed above. The community inventories are divided into seven sectors, or sources of emissions: residential energy, commercial energy, industrial energy, transportation and mobile sources, solid waste, and water and wastewater. Each of the seven sectors is further categorized into sub-sectors (electricity and natural gas) to provide a more detailed understanding of emissions sources in the City of Santa Cruz.

The Municipal GHG inventories follow the ICLEI Local Government Operations Protocol which categorizes direct and indirect emissions into scopes as follows:

- Scope 1: All direct GHG emissions (with the exception of direct carbon dioxide emissions from biogenic sources)
- Scope 2: Indirect GHG emissions associated with the consumption of purchased or acquired electricity, steam, heating, or cooling
- Scope 3: All other indirect emissions not covered in Scope 2, such as emissions resulting from the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity (e.g., employee commuting and business travel), outsourced activities, waste disposal, etc.

The Local Government Operations Protocol requires that, at minimum, Scope 1 and Scope 2 emissions be quantified. Quantification of Scope 3 emissions is optional. The City's municipal inventories quantify both Scope 1 and 2 emissions. All of the City's municipal inventories include emissions from buildings

⁵ Local Governments for Sustainability (ICLEI). 2019. U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions. Available: <<https://iclei.usa.org/us-community-protocol/>>. Accessed May 20, 2021.



and facilities and streetlights and traffic signals, with most recent inventories including emissions from vehicle fleet and transit fleet.

Although detailed calculations were not available for each sector, changes in methodology between some inventory years were inferred based on the activity and emissions data provided. Activity data, calculated emissions, and emissions factors were checked for inconsistencies. The sections below provide a summary of the findings from the consistency review of the community and municipal GHG emissions inventories, including a review of activity data and calculated emissions for each sector, emissions factors, and recommended next steps. All emissions values are provided in MT CO₂e.

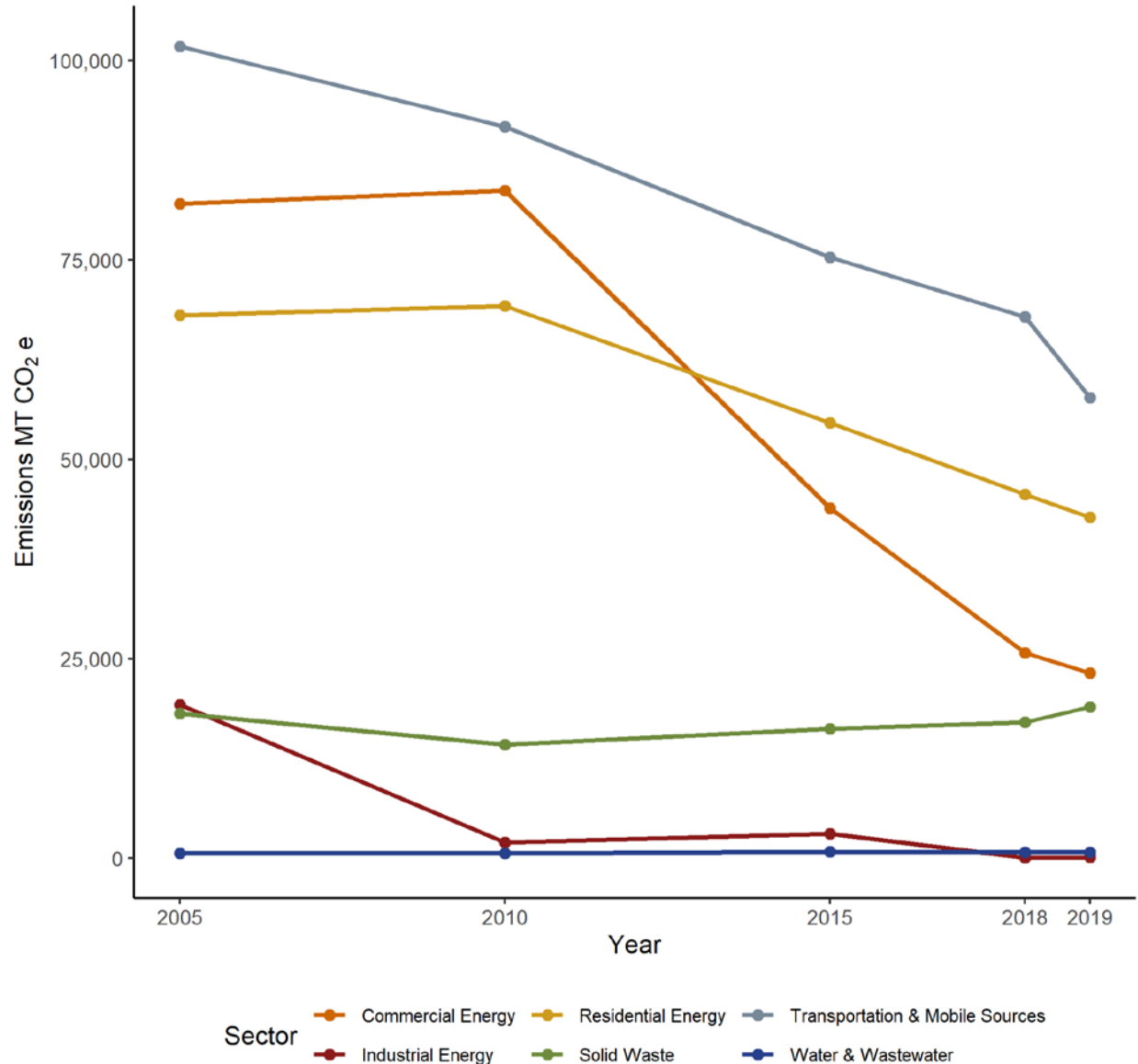
Rincon's review found that the inventories appear to be generally appropriate for the sectors evaluated. Rincon finds that the emissions were appropriately calculated using the principles and methods outlined in the Community Protocol and Local Government Operations Protocol. However, the comments and recommendations provided in the following sections are intended to provide an opportunity to improve transparency of the calculations and emissions factors being used and to confirm large changes in emissions between the inventory years.

Community GHG Inventory

Rincon has reviewed the City of Santa Cruz 2005, 2010, 2015, 2018, and 2019 community inventories, activity data, and calculated emissions on ClearPath (ICLEI's online carbon accounting tool), to evaluate the consistency and accuracy of the data and the application of appropriate methodologies defined by the ICLEI U.S. Community Protocol. Rincon also calculated emissions factors based on the activity data and emissions provided to check that reasonable emissions factors are used, and confirmed the inclusion of all appropriate emissions sources. Figure 1, Figure 2, and Figure 3 detail the city's community GHG emissions by sector, sub-sector, and total emissions for each of the inventory years.

These figures show a steady decrease in total community emissions over time. However, some sectors and sub-sectors show more drastic increases (e.g., commercial energy from 2018 to 2019) and decreases (e.g., transportation and mobile sources from 2018 to 2019). Given that significant changes would not be expected without some notable source, regulation, or infrastructure change, this analysis focuses on evaluating the sectors with substantial increases or decreases between inventory years.

Table 1 highlights these increases and decreases, and identifies potential inconsistencies in methodology found in the community inventories by sector and sub-sector. The table also provides the magnitude of changes found from one year to the next and identifies potential rationale for these changes. ICLEI will be conducting an emissions contribution analysis between 2005 and 2019 to identify the causes for emissions changes and the contribution from each factor. This analysis will be integrated into future deliverables for the Climate Action Plan 2030 project.

Figure 1 City of Santa Cruz Community GHG Emissions by Sector (2005-2019)

As shown in Figure 1 above, transportation accounts for the largest share of community emissions for each inventory year, followed by commercial and residential energy. Between the 2010 and 2015 inventories, both commercial and residential energy emissions appear to have decreased substantially, with commercial energy dropping lower than residential energy. Commercial energy shows an increase from 2018 to 2019. Industrial energy shows a stark decrease from 2005 to 2010 due to the inclusion of UC Santa Cruz emissions in 2005 and exclusion of these emissions in future inventory years. Solid waste and water and wastewater remain relatively constant, increasing slightly with time. Figure 2 below details sub-sector emissions for each of the community inventory years.

Figure 2 City of Santa Cruz Community GHG Emissions by Sub-sector (2005-2019)

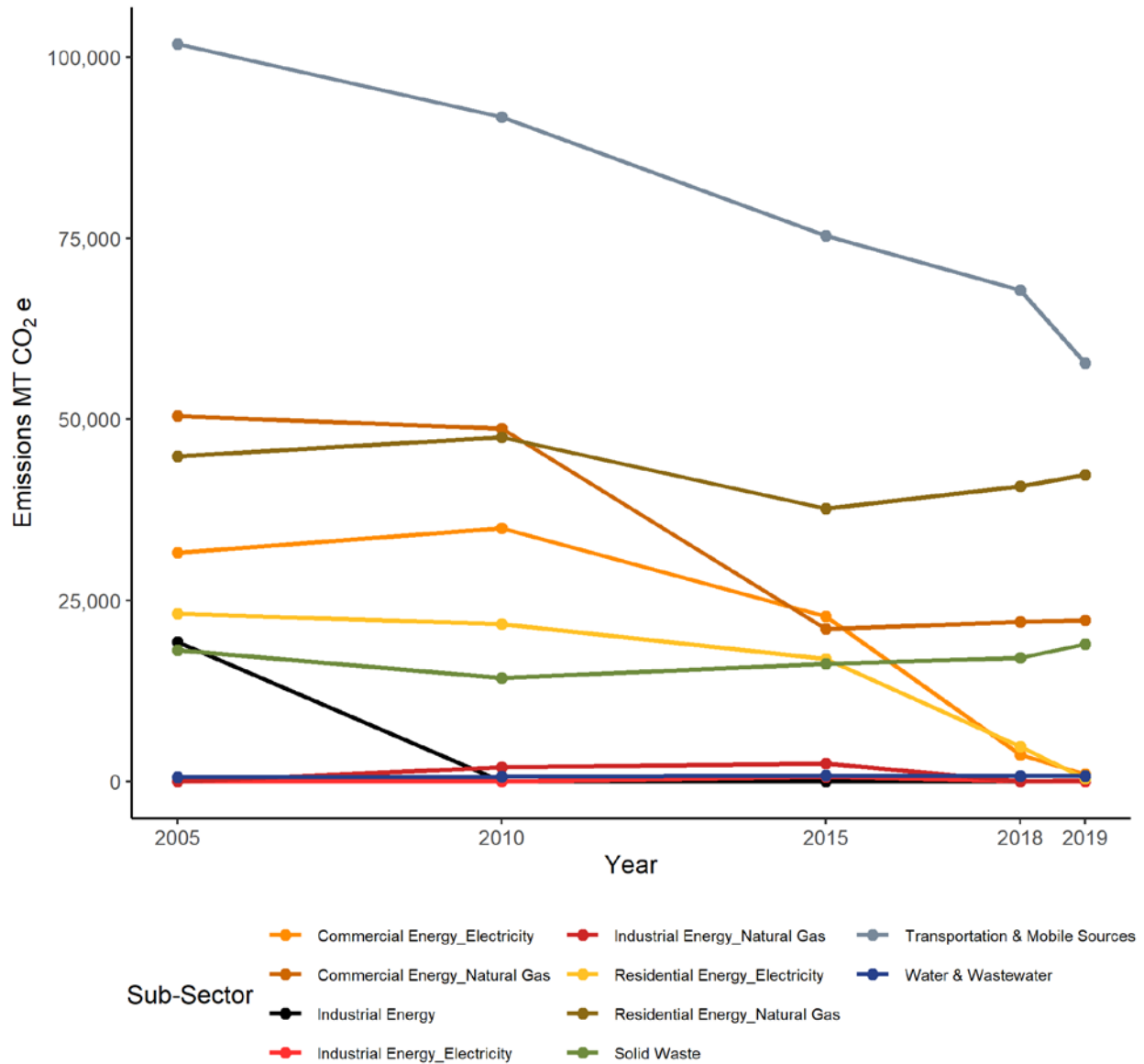
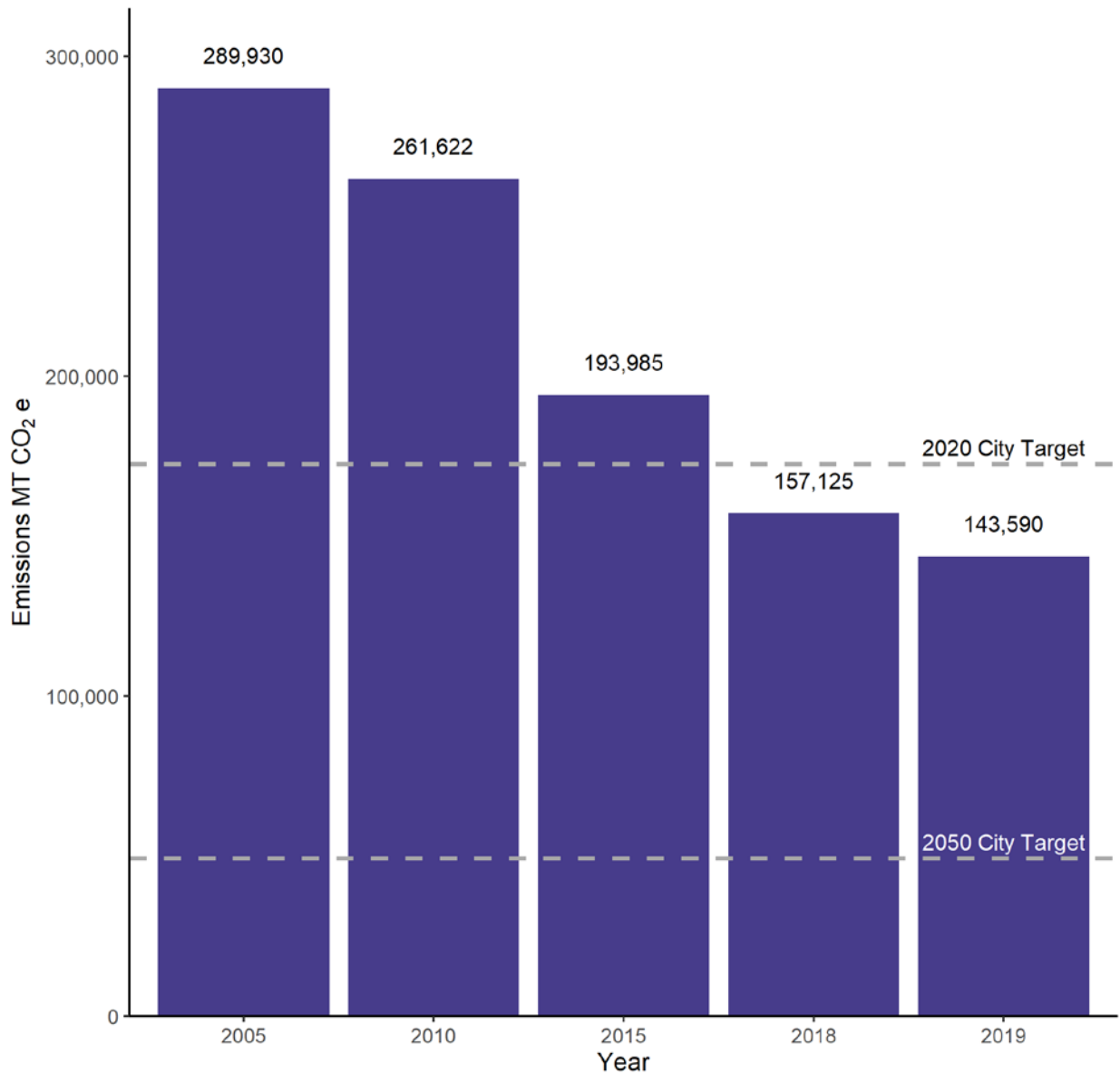


Figure 2 shows the energy sectors (commercial, residential, and industrial) separated into electricity and natural gas emissions sources.⁶ Commercial natural gas emissions decrease substantially from 2010 to 2015, and increase slightly post 2015 while commercial electricity emissions decrease substantially post 2010. Similarly, residential natural gas emissions decrease from 2010 to 2015 and increase post 2015 while residential electricity emissions decrease over time. Industrial natural gas emissions show a slight increase from 2005 to 2015, and later decrease while industrial electricity emissions remain low throughout the years. These changes in emissions over the years are analyzed in Table 1 below.

⁶ The industrial energy (black) line represents UC Santa Cruz, which was reported in 2005 alone. No activity data was provided; therefore it is unclear whether this is natural gas, electricity, or both.

Figure 3 City of Santa Cruz Total Community GHG Emissions by Year (2005-2019)



Based on the City's completed community GHG inventories, total community emissions appear to have decreased over time. The City's emissions dropped approximately 10% from 2005 to 2010, 26% from 2010 to 2015, 19% from 2015 to 2018, and 9% from 2018 to 2019. The City exceeded its 2020 target (245,925 MT CO₂e) in 2015. To reach its 2050 target of 70,264 MT CO₂e, the City must reduce 2019 emissions by approximately 50%. Changes in emissions over the inventory years are analyzed in Table 1 below, which describes changes in emissions at the sector and sub-sector level and details inconsistencies, magnitude, and potential rationale for these changes.

Table 1 Community GHG Inventory Consistency Review

Sector	Sub-sector	Sector Change	Inconsistencies	Rationale/Notes
Commercial Energy	Commercial Natural Gas	57% emissions reduction from 2010 to 2015	- No “Non-Government Climate Smart Natural Gas Reduction” for 2015. 24% emissions reduction in City Natural Gas from 2010 to 2015. 35% emissions reduction in District Natural Gas from 2010 to 2015. 59% emissions reduction in Non-Government Natural Gas from 2010 to 2015.	This reduction in natural gas GHG emissions is greater than would be anticipated to occur from efficiency measures and state legislation. This could be caused by a large company/companies leaving Santa Cruz or ceasing operation in the city, missing data, or a large company/companies being left out of the inventory due to the EDRP 15/20 rule.¹ It is recommended that the City double check PG&E data to ensure no missing data. “Non-Government Climate Smart Natural Gas Reduction” refers to a PG&E program related to reducing natural gas use that only occurred in 2010.
Residential Energy	Residential Electricity	93% emissions decrease from 2018 to 2019	Residential electricity emissions are broken out into emissions from Central Coast Community Energy emissions and Pacific Gas & Electric emissions since these providers have different emissions factors. 164% emissions increase in Residential Electricity provided by Central Coast Community Energy – 3CE from 2018 to 2019. - Unable to verify the 3CE emissions factor (unclear what the opt-out rate is and if that is included). 95% emissions decrease in Non-Government Electricity provided by PG&E electricity from 2018 to 2019.	Noted large shift from PG&E to 3CE from 2018 to 2019. Need confirmation that the substantial increase in 3CE electricity is based on a large switch of residential accounts to 3CE, the local CCA, from 2018 to 2019. Calculated PG&E 2018 and 2019 emissions factor appear reasonable compared to published data (.000943 MT CO₂e/kWh in the inventory vs 206 lbs CO₂/MWh or .000934 MT CO₂e/kWh published).²¹ Unable to verify 3CE emissions factors because they are not published. The data does not indicate the opt-out rate or if the opt-out emissions are included in the reported activity data.



Sector	Sub-sector	Sector Change	Inconsistencies	Rationale/Notes
Commercial Energy	Commercial Electricity	74% emissions decrease from 2018 to 2019	Commercial electricity emissions are broken out into emissions from Central Coast Community Energy emissions and Pacific Gas & Electric emissions since these sources have different emissions factors. 27% emissions increase in Commercial Electricity provided by 3CE from 2018 to 2019. - Unable to verify the 3CE emissions factor (unclear what the opt-out rate is and if that is included). 99.98% decrease in Commercial Electricity provided by PG&E electricity use (kWh) and emissions from 2018 to 2019.	Noted large shift from PG&E to 3CE from 2018 to 2019. Need confirmation that the substantial decrease in emissions is based on a reduced emission factor resulting from the switch of commercial accounts to 3CE from 2018 to 2019. Calculated PG&E 2018 and 2019 emissions factor look reasonable compared to published data (.000943 MT CO₂e/kWh in the inventory vs 206 lbs CO₂/MWh or .000934 MT CO₂e/kWh published).² Unable to verify 3CE emissions factors because they are not published. The data does not indicate the opt-out rate or if the opt-out emissions are included in the reported activity data.
Industrial Energy	Industrial Energy	90% emissions decrease from 2005 to 2010	N/A	Only UC Santa Cruz was included in 2005 and no activity data are provided, just emissions data. UC Santa Cruz is not included in 2010. This accounts for the full 90% reduction in emissions and is an inconsistency between 2005 and 2010.
		56% emissions increase from 2010 to 2015	N/A	UC Santa Cruz industrial data not included in 2010 or 2015 because it failed the 15/15 rule which requires that any aggregated information provided by utilities be made up of at least 15 customers, and a customer's load must be less than 15% of an assigned category. For all other industrial data reported, in 2010, only natural gas data provided, and in 2015, both natural gas and electricity data provided. This is an inconsistency in data between 2010 and 2015.



Sector	Sub-sector	Sector Change	Inconsistencies	Rationale/Notes
Industrial Energy	Industrial Energy	97% emissions decrease from 2015 to 2018	N/A	UC Santa Cruz not included in 2015, 2018, or 2019. For all other industrial data reported, in 2018, only electricity data are provided and in 2019, only natural gas data are provided. This is an inconsistency in data between 2015 and 2018.
Transportation & Mobile Sources	Transportation & Mobile Sources	15% emissions decrease from 2018 to 2019	EMFAC ³ data shows increasing population and VMT in the County, however, the City's 2019 Community Inventory shows a decrease in transportation emissions. Rincon is unable to confirm the VMT calculations with data provided in ClearPath.	Unable to determine the cause without more detailed calculations data. However, the decrease appears to be greater than the expected decrease from emissions factor reductions alone. Calculation workbooks needed to confirm methodology.
Water and Wastewater	Water and Wastewater	No change in emissions from 2018 to 2019	N/A	The wastewater treatment facility only produces an internal inventory every two years. They produced one for 2018, did not do one for 2019, and will do one for 2020. The 2020 inventory will be started July 2021. 2018 values are used as placeholders for 2019. This presents a consistency issue and is likely to underestimate emissions. It is recommended that the City scale up these emissions for 2019 based on population growth.
Solid Waste	-	-	None	No inconsistencies found.

Note: MT CO₂e = metric tons of carbon dioxide equivalent; kWh = kilowatt hours; lbs = pounds; MWh = megawatt hours; CCA = community choice aggregation

¹ California Public Utilities Commissions (CPUC) aggregation rules are intended to protect customer confidentiality by reducing the possibility of identifying customers through the release of consumption information. Residential, Commercial Consumption Data 15/20 Rule: Aggregated over a group consisting of 15 customers in a single customer class. No single customer accounts for more than 20 percent of the total energy consumption in an individual month.

² Pacific Gas & Electric (PG&E). 2020. Corporate Responsibility and Sustainability Report 2020. Available: https://www.pgecorp.com/corp_responsibility/reports/2020/assets/PGE_CRSR_2020.pdf. Accessed May 20, 2021.

³ The community inventories use VMT data from the California Air Resources Board EMFAC model, which is based on the vehicle class, model years, speed, and fuel type.



As part of the GHG emissions inventory consistency review, emissions factors were calculated by dividing the provided emissions by the activity data. Back calculating the emissions factors helps to reveal potential errors in emissions factors used and any inconsistencies over the years. The average emissions factor used in each sector for each inventory year is provided in Table 2.

Table 2 Community GHG Inventory Emissions Factors (2005-2019)

Sector	2005	2010	2015	2018	2019
Commercial Energy – Electricity	0.0002236	0.0002034	0.0001844	0.0000499	0.0000040
Commercial Energy– Natural Gas	0.0053186	0.0053186	0.0053187	0.0053187	0.0053187
Industrial Energy– Electricity ¹	N/A	N/A	0.0001844	0.0000944	N/A
Industrial Energy– Natural Gas ²	N/A	0.0053075	0.0053074	N/A	0.0053074
Residential Energy– Electricity	0.0002236	0.0002034	0.0001844	0.0000647	0.0000038
Residential Energy– Natural Gas	0.0053186	0.0053186	0.0053186	0.0053187	0.0053187
Solid Waste	0.3105317	0.2775465	0.2743429	0.2861037	0.2861037
Transportation & Mobile Sources	0.0008259	0.0008146	0.0004625	0.0004167	0.0004049
Water & Wastewater	0.3804373	0.2536434	0.2536407	0.2536426	0.2536426

Notes:

¹ Industrial electricity is not reported for 2005, 2010, or 2019.

² Industrial natural gas is not reported for 2005 or 2018.

All electricity emissions factors decrease substantially from 2018 onward as a result of CCA enrollment in the community, while natural gas emissions factors stay constant across the years, as expected. Solid waste average emissions factors decrease and then increase again through 2018 and 2019. It is unclear what the data sources are and how these emissions factors were calculated at this time and although the change is relatively small, it is unclear why this change occurred. Rincon recommends taking a deeper look at the methodology behind these calculations. The average transportation emissions factor decreased approximately 46% from 2010 to 2015, which can be attributed to the change in methodology used to calculate these emissions between the two years. Prior to 2015, transportation emissions were calculated using the EMFAC2001 model. After 2015, these emissions were calculated using the EMFAC2014 and EMFAC2017 model updates. Lastly, water and wastewater average emissions factors decreased approximately 33% from 2005 to 2010, and remained constant post 2010. This is likely due to electricity emissions factor decreasing even as process emissions increased due to population growth.

Recommended Next Steps

Rincon's review found that the community inventories appear to be generally appropriate for the sectors evaluated. Rincon finds that the emissions were appropriately calculated using the principles and methods outlined in the Community Protocol. However, the following comments and recommendations are intended to provide an opportunity to improve transparency of the calculations and emissions factors being used and to confirm large changes in emissions between the inventory years. Based on the Community GHG Inventory Consistency Review above, Rincon recommends the following:

- Commercial Energy
 - Review data from Pacific Gas & Electric (PG&E) to confirm there is no missing data that could be causing the 57% reduction in emissions from the commercial natural gas sub-sector between 2010 and 2015.
 - Confirm large shift from PG&E to Central Coast Community Energy (3CE)-provided commercial electricity from 2018 to 2019.
 - Request emissions factors and opt-out rates from 3CE to verify electricity inventory results.
- Residential Energy
 - Confirm large shift from PG&E to Central Coast Community Energy (3CE)-provided residential electricity from 2018 to 2019.
 - Request emissions factors and opt-out rates from 3CE to verify electricity inventory results.
- Industrial Energy
 - The California Air Resource Board (CARB) regulates the GHG emissions associated with industrial stationary combustion through the California Cap-and-Trade Program; therefore, it is recommended that all industrial emission sources be excluded from the community GHG inventories. If the City chooses to keep industrial in the inventories, it is recommended that UC Santa Cruz emissions be either included or excluded for all years, for consistency.
- Water and Wastewater
 - Rather than using 2018 as a proxy for 2019 wastewater treatment emissions, it is recommended that the City scale up these emissions for 2019 based on population growth by calculating the average emissions per person in previous years and applying it to the 2019 population.
- Solid Waste
 - Review methodology for calculating solid waste emissions factors to determine why emissions factors decrease and then increase again through 2018 and 2019.

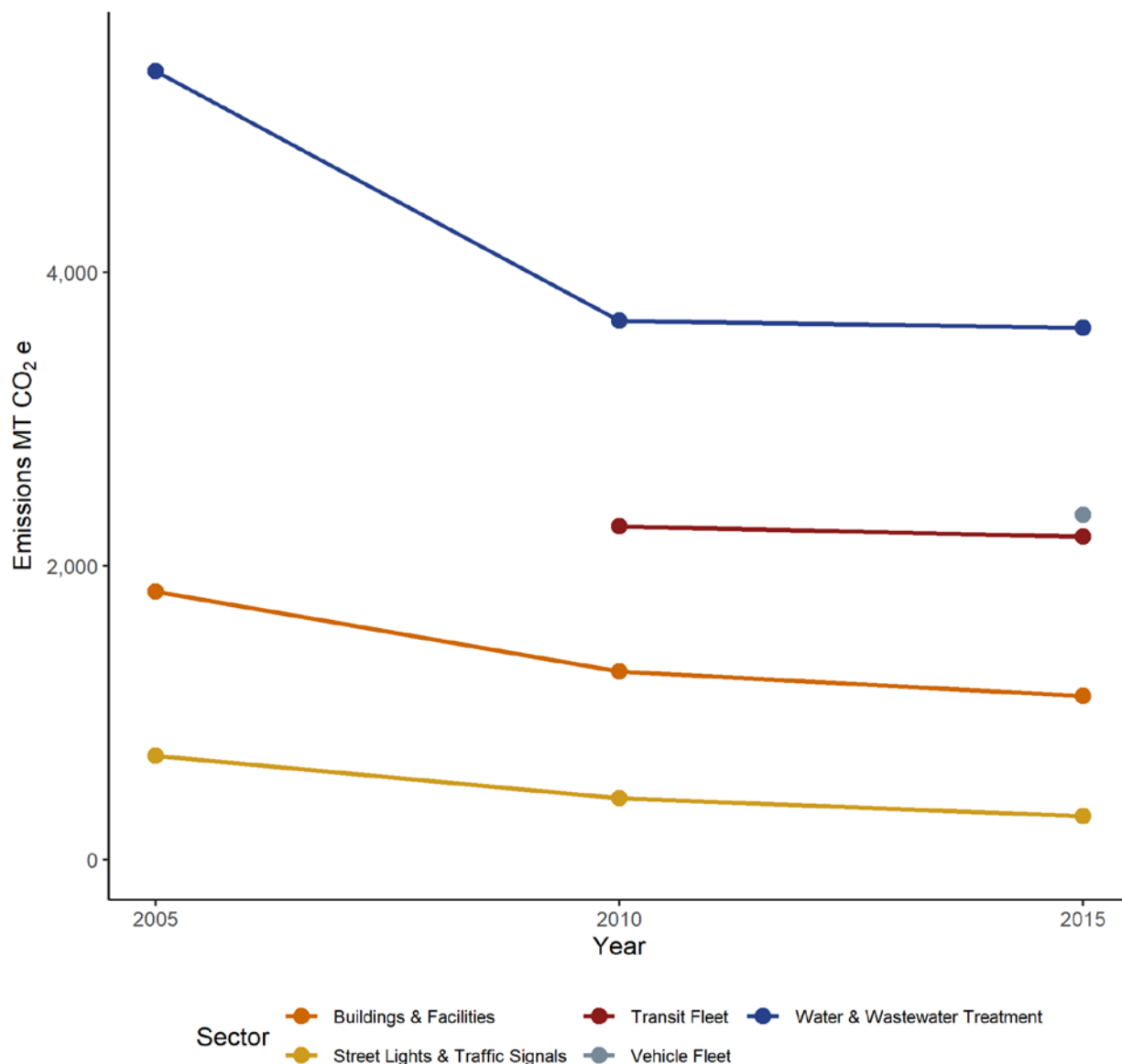
Municipal GHG Inventory

The City of Santa Cruz has completed three municipal inventories: 2005, 2010, and 2015. All of the City's municipal inventories include emissions from buildings and facilities and streetlights and traffic signals, with the 2010 inventory including emissions from transit fleet and the 2015 inventory including emissions from vehicle fleet and transit fleet. Similar to the community inventories, the municipal inventories also detail sources within the main sectors, separating energy into natural gas and electricity. Rincon conducted a review of the available activity data and calculated emissions to confirm the consistent application of appropriate methodologies defined by the ICLEI Local Government Operations Protocol.⁷ In addition, emissions factors were back calculated using the provided activity data and estimated emissions. This analysis identifies potential methodological changes between years that can be further investigated. Figure 4 and Figure 5 detail the City's municipal GHG emissions by sector and sub-sector. Figure 6, includes total emissions for each of the inventory years, showing that GHG emissions steadily increase from 2005 to 2015. The largest contributing factor to the increase is the omission of the Transit Fleet or Vehicle Fleet emissions from the 2005 inventory and the omission of Vehicle Fleet emissions from the 2010 inventory. The 2015 municipal GHG inventory includes all sectors

⁷ Local Governments for Sustainability (ICLEI). 2010. Local Government Operations Protocol. Available: <https://s3.amazonaws.com/iclei-usa-resources/lgo_protocol_v1_1_2010-05-03.pdf>. Accessed May 20, 2021.

provided in the previous inventories, including Transit Fleet and Vehicle Fleet emissions. When Transit Fleet and Vehicle Fleet emissions are omitted from all years, municipal emissions decrease over time, as shown in Figure 7. Table 3 highlights large changes in emissions between the inventory years and inconsistencies by sector and sub-sector. The table provides the magnitude of changes found from one year to the next and provides potential rationale for these changes.

Figure 4 City of Santa Cruz Municipal GHG Emissions by Sector (2005-2015)



As shown in Figure 4 above, water and wastewater treatment accounts for the largest share of municipal emissions for each inventory year, followed by vehicle and transit fleet. All sectors with data for multiple inventory years showed a decrease in emissions over time. Figure 5 details sub-sector emissions for each of the municipal inventory years.

Figure 5 City of Santa Cruz Municipal GHG Emissions by Sub-sector (2005-2015)

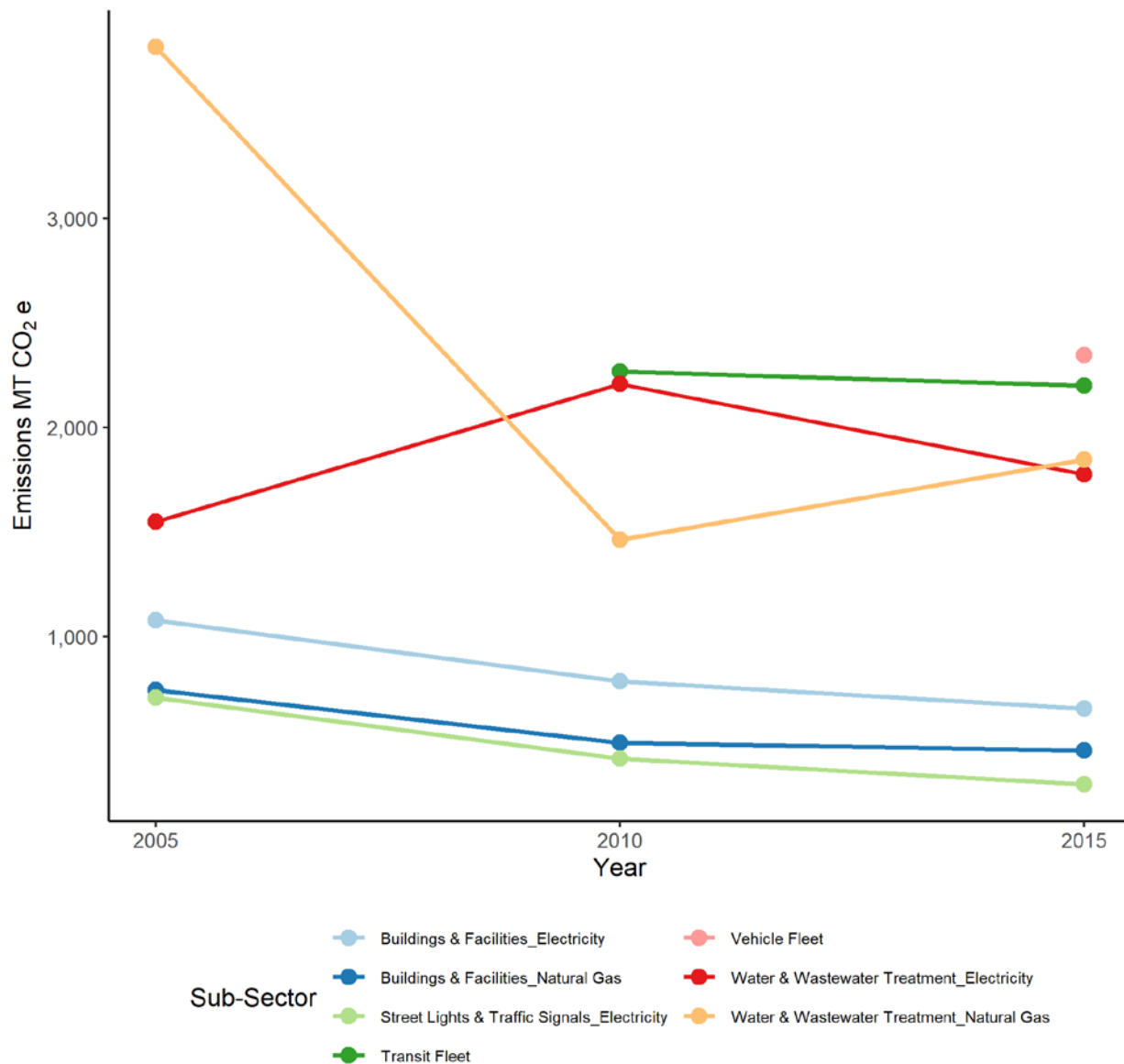


Figure 5 shows the energy-related sectors (buildings & facilities and water & wastewater treatment) separated into electricity and natural gas emissions sources. Water and wastewater treatment natural gas emissions decreased dramatically from 2005 to 2010 and increased from 2010 to 2015, while water and wastewater treatment electricity emissions increased from 2005 to 2010 and decreased from 2010 to 2015. These changes in municipal emissions are analyzed in Table 1 below.

Figure 6 City of Santa Cruz Total Municipal GHG Emissions by Year

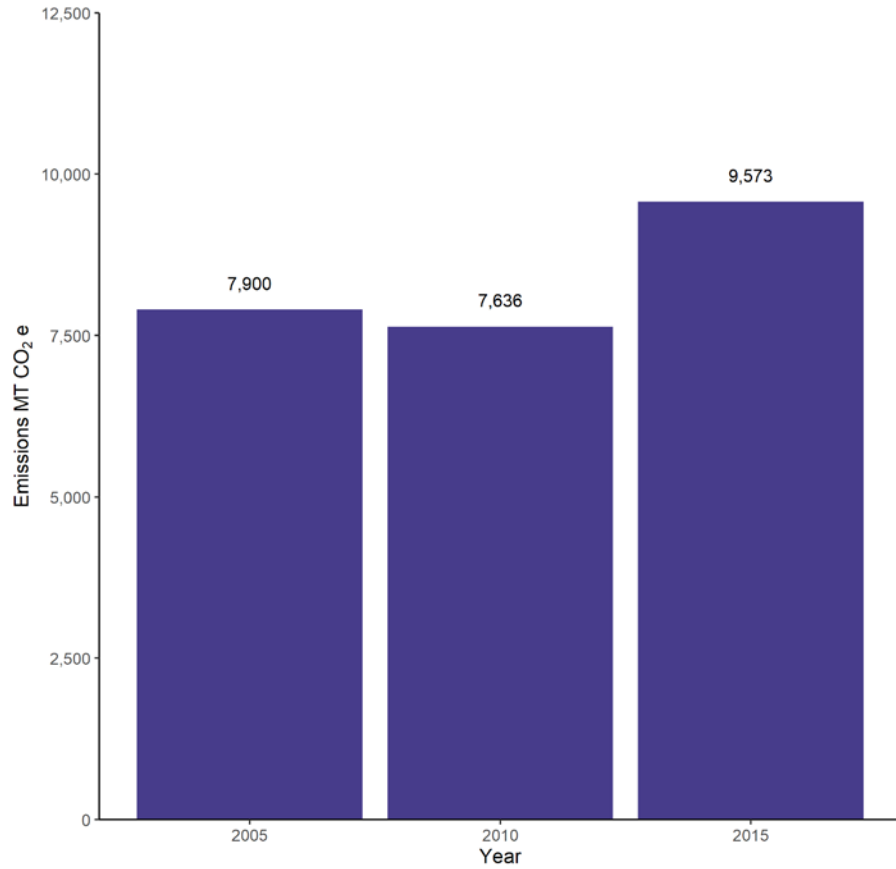
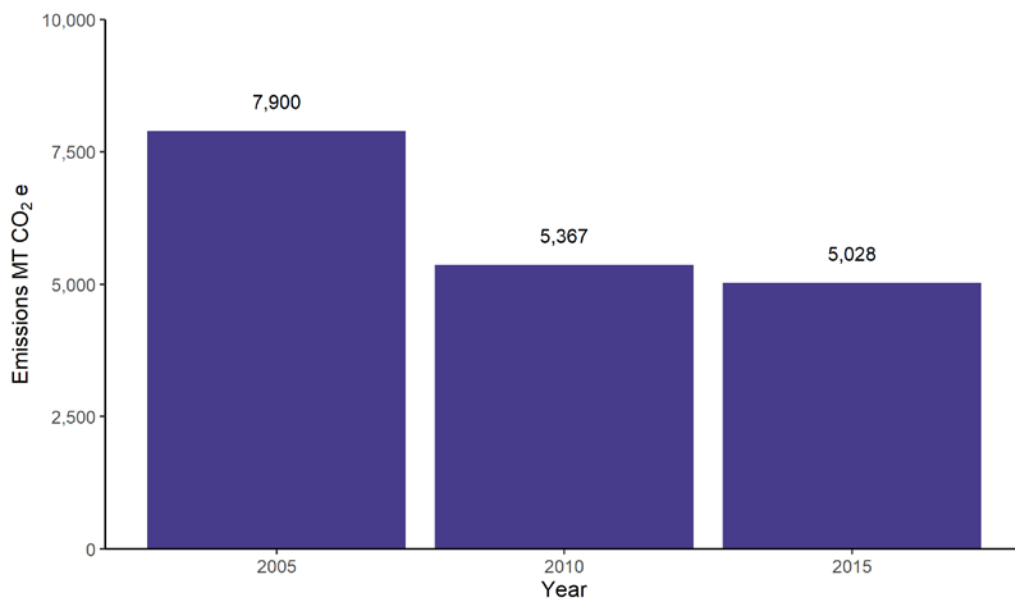


Figure 7 City of Santa Cruz Total Municipal GHG Emissions by Year (Excluding Fleet and Transit)



Based on the City's completed municipal GHG inventories, total municipal emissions show a 21% increase from 2005 to 2015 (Figure 6). This increase is due to the inconsistencies in emissions reported. Vehicle fleet emissions were omitted from the 2005 or 2010 inventories and transit fleet emissions were omitted in the 2005 inventory. When vehicle and transit fleet emissions are removed from the 2010 and 2015 inventories, the data show a 36% decrease in municipal emissions from 2005 to 2015 (Figure 7). Changes in emissions over the inventory years are analyzed in Table 1 below. The table describes changes in emissions at the sector and sub-sector level, when applicable, and details inconsistencies and potential rationale for these changes.

Table 3 Municipal GHG Inventory Consistency Review

Sector	Sub-sector	Sector Change	Inconsistencies/Rationale
Vehicle Fleet	N/A	Not included in 2005 or 2010 inventories.	May be able to back-cast to 2005 based on staffing or some other record for a more consistent inventory.
Transit Fleet	N/A	Not included in 2005 inventories.	May be able to back cast to 2005 for a more consistent inventory.
Water & Wastewater Treatment	Water & Wastewater Treatment	32% emissions decrease from 2005 to 2010.	62% emissions decrease in natural gas associated with water and wastewater treatment between 2005 and 2010. This decrease is greater than anticipated from efficiency measures alone and should be checked with the Water Department and other relevant City Departments, to determine the source of the decrease. - Natural Gas emissions from Water Delivery Pumps- are not included in the 2010 inventory; however, this is only a relatively small portion of total emissions from the sector amounting to about 1 to 5 MT CO₂e. 42% emissions increase in electricity associated with water and wastewater treatment between 2005 and 2010. This increase should be checked with the Water Department and other relevant City Departments, to determine what caused this increase in electricity emissions between 2005 and 2010. 64% emissions decrease in natural gas from Wastewater DGS Natural Gas from 2005 to 2010. This decrease is greater than anticipated from efficiency measures alone and should be checked with the Public Works Department, to determine the source of the decrease.
	Water & Wastewater Treatment – Electricity	32% emissions decrease from 2005 to 2010.	Associated with electricity emission factors and cleaning up of grid.



As previously described, emissions factors were back calculated by dividing the provided emissions by the activity data. Back calculating the emissions factors helps to reveal potential errors in emissions factors used and any inconsistencies over the years. The average emissions factor used in each sector for each municipal inventory year is provided in Table 4.

Table 4 Municipal GHG Inventory Emissions Factors

Sector	2005	2010	2015
Buildings & Facilities – Electricity	0.0002237	0.0002035	0.0001954
Buildings & Facilities – Natural Gas	0.0096647	0.0053156	0.0053175
Streetlights & Traffic Signals – Electricity	0.0002237	0.0002035	0.0001954
Transit Fleet	N/A	0.0047475	0.0049560
Vehicle Fleet	N/A	N/A	0.0089415
Water & Wastewater Treatment – Electricity	0.0002237	0.0002035	0.0001954
Water & Wastewater Treatment – Natural Gas	0.0053156	0.0053156	0.0053175
Notes:			
¹ Transit Fleet is not reported for 2005.			
² Vehicle Fleet is not reported for 2005 or 2010.			

As expected, all electricity emissions factors decrease slightly over time, likely as a result of the Renewable Portfolio Standard (RPS) Program, established in 2002 by Senate Bill 1078, which mandated that 20% of electricity retail sales must be served by renewable resources by 2017.⁸ In 2015, California’s energy mix was approximately 22% renewable.⁹ Increasing renewable energy statewide decreases electricity emissions factors. All natural gas emissions factors stay constant across the years, with exception of Buildings & Facilities – Natural Gas. Upon further investigation, it seems the activity data for Inventory Record “Fire-Natural Gas” was incorrectly reported for 2005 in ClearPath as MMBtu rather than therms.

Recommended Next Steps

Rincon’s review found that the municipal inventories appear to be generally appropriate for the sectors evaluated. Rincon finds that the emissions were appropriately calculated using the principles and methods outlined in the Local Government Operations Protocol. However, the following comments and recommendations are intended to provide an opportunity to improve transparency of the calculations being used and to confirm large changes in emissions between the inventory years. Based on the Municipal GHG Inventory Consistency Review above, Rincon recommends the following:

- Buildings – Natural Gas
 - Confirm and update the activity data in 2005 for Inventory Record: “Fire-Natural Gas” from MMBtu to therms.

⁸ In 2018, Senate Bill 100 increased the RPS to 60% by 2030 and requires all the state’s electricity to come from carbon-free resources by 2045.

⁹ California Energy Commission. N.d. 2015 Total System Electric Generation. Available: <<https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2019-total-system-electric-generation/2015>>. Accessed June 14, 2021.



- Vehicle and Transit Fleet
 - Consider back casting emissions to 2005 for a more consistent inventory.
- Water and Wastewater
 - Coordinate with the Water Department and other relevant City Departments, to determine what changed between 2005 and 2010 to cause a large decrease in emissions.

Emissions Contribution Analysis

ICLEI will be producing an emission contribution analysis to further evaluate the causes of the observed trends in greenhouse gas emissions.

Progress on the 2012 Climate Action Plan

Milestone Indicators + Actions

The City's 2012 Climate Action Plan set out 12 milestones measured by 13 indicators, each with targets to achieve by 2020 from a baseline year of 2008. Data were not available for all years for all indicators, and, in some cases, data sources changed between years. Moreover, due the lag in or unavailability of 2020 data for some indicators as well as the fact that 2020 represents an anomaly year in terms of emission output, 2019 data were utilized in most cases (and as noted). The City did not track progress on sub-milestones contained in the Plan. Below is a summary of the level of achievement for each milestone and major efforts or conditions that likely contributed toward or impeded progress.

The Climate Action Plan also contains an Appendix of Actions, which includes 256 actions to be completed by 2020 to help achieve each milestone. As of April 2021, out of the 256 actions, 103 actions have been completed and 84 are either ongoing or in progress. Attachment 1 provides a tabular 2021 status summary of each action.

Milestone 1 - Reduce Energy Use in Municipal Buildings by 40% by 2020.

Indicator 1.1 - Municipal energy use in buildings and facilities only - includes buildings, facilities (including wastewater but not water transport or streetlights).

2020 Target – 46,532 MMBtu of Energy Use

2020 Value - 49,406 MMBtu of Energy Use

Progress toward Target– Reduced energy use in municipal buildings by 36.3% between 2008 to 2020 (91% achievement of target) but saw an increase of 6.5% between 2008 and 2019. 2019 was a more typical year for energy use than 2020 due to the covid-19 pandemic, however. Major efforts contributing to progress include the hire of an energy coordinator, several rounds of no to low cost state funding to implement major energy efficiency projects at City facilities, and bringing online methane cogeneration to electricity at the Wastewater Treatment Facility and approximately 1.6 MW of solar PV at municipal facilities.

Milestone 2 - Expand energy efficiency programs to 30% of homes and businesses by 2020.

Indicator 2.1 – Number of household and business buildings participating in the Green Building Program and received service from Central Coast Energy Services, an energy efficiency provider to low income households.



2020 Target – 8,912 Households and Business Buildings

2020 Value – 2,234 Households and Business Buildings

Progress toward Target – Expanded energy efficiency programs to 7.5% of homes and businesses between 2008 and 2020 (25% achievement of target). Major efforts contributing to progress include implementation and revision of requirements of the Green Building program and the growth of Central Coast Energy Services and the funding it manages to provide weatherization services to households in Santa Cruz. While data are unavailable for this indicator metric, it is widely acknowledged that roll out of the State Energy Upgrade California program targeted to residential households did not meet expectations and had very little uptake in Santa Cruz due primarily to program design. There are likely other energy efficiency programs that were implemented during the CAP 2020 performance period but were not tracked (e.g., Green Business Program upgrades, Ecology Action’s former Right Lights program).

Milestone 3 – Increase solar to 5,000 residents, 500 businesses and supply municipal buildings with 33% solar energy by 2020.

Indicator 3.1 – Number of household solar photovoltaics

2020 Target – 5,000 household solar photovoltaics

2020 Value – 3,567 household solar photovoltaics

Progress toward Target– Increased solar to 3,567 residents (71% achievement of target). Drivers of progress included state of California rebates, advantageous utility rates, and the federal Investment Tax Credit available throughout the majority of the CAP 2020 performance period. The City provided streamlined solar PV permitting. In 2019, the state required PV on all new homes. Progress may have been impeded by pricing and availability of PV components in recent years as well as anticipated changes to advantageous utility rates for solar PV.

Indicator 3.2 – Number of commercial business solar photovoltaics

2020 Target – 500 commercial business solar photovoltaics

2020 Value – 116 commercial solar photovoltaics

Progress toward Target– Increased solar to 116 commercial businesses (23% achievement of target). Drivers of progress included state of California rebates, advantageous utility rates, and the federal Investment Tax Credit available throughout the majority of the CAP 2020 performance period. The City provided streamlined solar PV permitting and a one-time technical assistance project for 3 commercial property owners. Progress may have been impeded by commercial property owners’ lack of expertise and capacity to evaluate solar PV, pricing and availability of PV components in recent years as well as anticipated changes to advantageous utility rates for solar PV.

Indicator 3.3 – Renewable energy generation compared with overall electricity consumption by municipal buildings

2020 Target – 33% renewable energy generation

2020 Value – 37% renewable energy generation

Progress toward Target– Increased renewable energy generation by 37% (112% achievement of target). Drivers of progress included funding Power Purchase Agreements and ownership models to install 1.6 MW of solar PV at City facilities and optimizing use of cogeneration at the Wastewater Treatment Facility. Hire of an energy coordinator and, more recently, the services of an Energy Services Company, enabled rapid evaluation and packaging of many systems installed.

Milestone 4 - Partner with UCSC on 25 sustainability and alternative energy research projects by 2020.

Indicator 4.1 – Number of projects and completed

2020 Target – 25 projects

2020 Value – 32 projects

Progress toward Target – Partnered with UCSC on 25 sustainability and alternative energy research projects between 2011 and 2020, by conservative estimate (120% achievement of target). Many of these projects are ongoing or multiple year initiatives. The Climate Action Program likely tracks only a portion of UCSC X City sustainability collaborations. However, strong ties on climate and climate related topics exist that enabled achievement of this target. Some projects implemented during the CAP 2020 performance period include:

- GreenWharf renewable energy testbed
- Bike route quality index
- Kudela Lab LED monitor display at Wharf HQ
- Kudela Lab SCOOP research
- GreenWharf EV charging station
- GreenWharf EcoTour - self guided app/ docent guided
- GreenWharf Green Business Challenge
- Residential solar workshop for students and employees
- IDEASS Bike counter technology study
- IDEASS Bike commute workshops for businesses (including City)
- IDEASS parking space availability survey along Rail Trail
- GreenWharf renewable energy testbed wildlifestudy
- GreenWharf lighting retrofit
- GreenWharf Sanctuary Celebration Event
- Commercial solar PV technical assistance
- GreenWharf solar streetlamp pilot
- UCSC Stakeholder meetings for Wharf Master Plan
- Kudela Lab/Exploratorium Water Quality Exhibit at GreenWharf
- IDEASS/City grant and design of stormwater infrastructure improvements at Bayview School
- GreenWharf renewable energy testbed dashboard
- CISR/City tree canopy study
- UC Natural Reserves Tree Planting
- ENVIS interns / Doris Duke Conservation Scholar Interns
- Climate Action Task Force participation
- Grid Alternatives Low Income Solar PV
- Volkswagen EV investment coordination
- UC Natural Reserves Tree Planting
- Climate Adaptation Coastal Science and Policy annual collaborations
- Panelist at UC Climate Conference
- Co-instructor of UCSC Staff Sustainability Certificate Courses
- Move out waste reduction program
- On campus resource recovery education

Milestone 5 - Ensure the rail corridor supports bike and pedestrian use by 2020 and support establishment of future rail service.

Indicator 5.1 – Percentage of bike path constructed and/or being funded for construction in City limits



2020 Target – 100% of bike path constructed and/or funded for construction

2020 Value – 35% of bike path completed and 89% of remaining bike path funded

Progress toward Target – Completed 35% of the City’s bike path and secured funding for 89% of bike path. Substantial progress with this milestone is attributable to regional alignment and coordination on this initiative, hiring a transportation planner and aggressive pursuit of funding opportunities by the Transportation Division of the Public Works Department.

Milestone 6 - Maximize water conservation efforts to achieve the goals recommended by the Water Supply Advisory Committee and accepted by the Council and to meet state mandates.

There is no target related to this indicator

Progress toward Target– Reduced residential per capita water use by 22% between 2013 and 2020. The City’s Water Conservation Master Plan adopted in January 2017 describes the historical water conservation programs contributing to progress on this milestone. The Urban Water Management Plan update will be complete by end of year that will summarize water conservation activities since 2017. There is no target related to this indicator.

Milestone 7 - Achieve 75% total waste diversion and maximize organic waste diversion by 2020.

Indicator 7.1 – Total waste diversion rate

2020 Target – 75% waste diversion rate

2020 Value – 63% waste diversion rate

Progress toward Target – Increased to 63% total waste diversion (83.4% of target) between 2008 and 2020 (with a high of approximately 69.9% in 2013). Progress on this milestone was driven by state mandates, local policy, and increased outreach and education. Progress was impeded by the China National Sword policy, the limitations in expanding infrastructure and conducting sufficient outreach, and increased waste generation from illegal encampments and online ordering. Major projects include the installation of food waste processing systems at the landfill, launch of residential and commercial food scrap collection pilots, and expanded education such as the launch of a “What Goes Where App.”

Milestone 8 - Increase bike ridership to 12% of local commutes by 2020 (stretch goal after initial achievement of original goal of 10%).

Indicator 8.1 – Bike mode split

2020 Target – 12% bike mode split

2020 Value– 7.6% bike mode split (high of 10.2% in 2018)

Progress toward Target – Decreased bike ridership by 1.7%. Staff noted that there are questions about the validity of the 2019 data and the City should revisit this value when the 2020 data become available. Progress on this milestone included hiring a transportation planner, aggressive pursuit of funding, integrated design of bike lanes and other bike friendly infrastructure, launch of a bike share, construction of several segments of the Rail Trail, Street Smarts - a successful bilingual multi-media outreach campaign - along with other education and encouragement activities, and the GO Santa Cruz transportation initiative to promote transit, active transportation and carpooling. Departure of the bike share during the covid-19 pandemic and the challenge of improving bike infrastructure within the right of way made progress challenging.

Milestone 9 - Switch 20% of cars to low-carbon fuels by 2020.

Indicator 9.1 –DMV registered low-carbon fuel cars

2020 Target – 12,675 low carbon cars



2020 Value – 6,826 low carbon cars

Progress toward Target Indicator 9.1 – Switched 11% of cars to low-carbon fuels between 2013 and 2020 (achievement of 54% of target). While progress may appear low in this milestone, Santa Cruz is second only to San Jose in the number of new vehicle purchases that are electric. Federal, state and local incentives (Monterey Bay Air Resources District, CAL VIP, and Central Coast Community Energy) were leveraged to both procure electric vehicles (EVs), upgrade electrical infrastructure, and install EV chargers in fleet and public spaces. Other drivers of progress include the strong environmental ethic and relative affluence of Santa Cruz residents and growth of EV charging as a private business model. Higher costs and range anxiety continue to be impediments to accelerated adoption.

Milestone 10 - Retain 200 certified Santa Cruz Green Businesses within the City through 2020.

Indicator 10.1 – Number of certified green businesses

2020 Target – 200 certified green businesses

2020 Value – 197 certified green businesses

Progress toward Target – Retained 197 certified green businesses between 2012 and 2020 (achievement of 99% of target). Accelerators of progress included strong environmental ethic of businesses, relationship building and partnership with Ecology Action, business recognition by City Council and mayor, targeted business district campaigns, green business transition grants provided by City's carbon fund, technical support and the coordination provided by the California Green Business Network on initiatives like the Shop Green App and the Green Business Database. Progress was impeded by the covid-19 pandemic, employee turnover, strengthened measure requirements and insufficient technical assistance for businesses.

Milestone 11 - Maintain and increase the City's urban tree canopy by 10%.

Indicator 11.1 – Acreage of the urban tree canopy

2020 Target – 10% increase in urban tree canopy (from 38.2% tree canopy to 42%)

2020 Achieved – 2% increase in urban tree canopy

Progress toward Target – Increased tree canopy by 2% between 2009 and 2016 (50% achievement of target), the only year data are available. Several efforts were identified as drivers of progress on this milestone including close collaboration between departments, community groups and utilities to craft policy, secure grants and identify volunteer resources. Progress on this milestone was impeded by limited available space and conditions in urban paved areas for trees and capacity. Major projects contributing to progress include recent CalFIRE grant funded planting of 500 trees, adoption of a Street Trees Plan, ongoing annual planting of about 200 trees including many with community groups and one typically tied into Arbor Day. The Urban Forester continues to provide education and outreach through tree walking tours and other community events.

Milestone 12 - Reduce single occupancy vehicle commutes 10% by 2020.

Indicator 12.1 – Drive alone mode split

2020 Target – 55.6% drive alone mode split

2020 Value – 58.7% drive alone mode split (low of 56.5% in 2016)

Progress toward Target – Reduced single occupancy vehicle commutes by 5% between 2009 and 2020 (50% achievement of the target). Progress on this milestone was driven by an approach of “meeting people where they are with many options,” launching the Rail Trail segments, Go Santa Cruz and My511 commute platform. Changes in remote and flexible work policy due to covid-19 pandemic also played a major role in progress.

Activity-Based vs. Consumption-Based Inventories

Talk about why the City is investigating different inventory types (accuracy but recognition of resource limitations). After the passage of Assembly Bill 32, which established a mandated state target for reduction of GHG emissions, many cities and counties across the state started inventorying their GHG emissions at the community scale. Developing GHG inventories helps cities and counties to identify opportunities to reduce emissions, and track emissions reductions over time. Generally, there are four main methodologies used for developing community GHG inventories, each of which tracks and assigns responsibility for emissions in different ways:

- **Production Based Emissions Inventory (PBEI)** accounts for emissions that are generated within the subject jurisdiction and includes emissions for products or services produced locally that will be consumed outside of the community. PBEI approaches assign responsibility for emissions to the producer. PBEIs are generally completed on the national level.
- **Activity-Based Emissions Inventory (ABEI)** blends production-based emissions estimates with partial consumption-based approaches for specific sectors for which emissions commonly occur outside of the subject community, such as electricity generation or wastewater treatment. The City of Santa Cruz uses the ABEI method.
- **Consumption-Based Emissions Inventory (CBEI)** assigns full responsibility to the end consumer for all lifecycle emissions for goods or services consumed. In consumption-based approaches, household consumption is the primary driver of emissions. The other emissions sources considered for a community-wide consumption inventory are government consumption and business investments in capital and net inventory increase. Consumption-based inventories provide a more global approach to emissions accounting by including lifecycle emissions of consumed goods and services.
- **Lifecycle Emissions Inventory** includes all upstream emissions of production including embedded emissions in inputs, manufacturing emissions, transport emissions for moving goods to market, use emissions, and final disposal emissions. This is most commonly used for single consumer products, rather than on the city or county scale. Lifecycle inventories help to identify hot spots along the life cycle of a product, material, or service where emissions are large.

Most municipalities in California, including the City of Santa Cruz, currently use the ABEI method for completing their community GHG inventories, however, CBEIs are emerging as an additional tool to use in climate action planning because they can provide a more complete analysis of how a region contributes to global climate change. The key differences between the ABEI and CBEI approaches are summarized in Table 6.

Table 6 Key Differences Between ABEI and CBEI Approaches

Subject	ABEI	CBEI
Emissions Covered	Emissions produced in jurisdiction and next upstream or downstream emissions for certain sectors	Life-cycle emissions associated with generation, transport, and consumption
Allocation	Producer and consumer	Consumer
Mitigation Focus	Jurisdictional activities	Jurisdiction consumption
Comparability	Consistent with state inventory approach	Not consistent with state inventory approach
Complexity	Low-Moderate	High
Transparency	High	Low
Uncertainty	Low	High
Current Coverage	Most current community and municipal inventories follow this approach	Not in common use and in few U.S. cities to date

Source: Association of Environmental Professionals, California Chapter, Climate Change Committee. 2017. Production, Consumption and Lifecycle Greenhouse Gas Inventories: Implications for CEQA and Climate Action Plans. Available at: <https://califaep.org/docs/Draft_AEP_White_Paper_Lifecycle_CEQA_CAPs_082017.pdf>. Accessed June 3, 2021.

The following subsections describe the community GHG emissions inventory trends in climate practice and advantages and disadvantages associated with activity-based and consumption-based emissions inventories.

Trend in Climate Practice

Climate action plans originally used the PBEI approach, consistent with those developed by the Intergovernmental Panel on Climate Change (IPCC) for national greenhouse gas accounting. However, over time municipalities in California have supplemented their community GHG inventory approach by including activity-based emissions (i.e., electricity use, transportation, waste disposal, and water and wastewater processing) rather than solely production-based. These ABEIs are currently the most commonly used approach at the local and state level in California. Although these inventories do not capture lifecycle emissions of products, the data they require are readily available, and they focus on emissions that municipalities have the most control over.

The CBEI approach was developed over the last decade. This method assigns responsibility to the final consumer for all lifecycle GHG emissions associated with consumed goods and services. Unlike ABEIs, this method accounts for the emissions produced around the world due to local consumption of energy, goods, and services. CBEI has gained some support since its development, for capturing embedded emissions in consumer goods and services, and some CBEIs have been prepared in the United States including in San Francisco, Oakland, Portland/Multnomah, and Seattle. Regulating consumption offers a wider range of opportunities for reducing GHG emissions and can provide a new way of engaging residents in climate action.

Advantages and Disadvantages

There are benefits and costs associated with each GHG inventory method. The advantages and disadvantages of the ABEI and CBEI methods are analyzed below.

Reliability of Data

ABEs use local data including energy use in residential and commercial buildings, solid waste generated, on-road vehicle travel, and energy use in potable water and wastewater treatment and distribution. These data are readily available, for example, through utility providers and local transportation planning efforts. CBEIs require local consumption data that can be difficult to obtain. In addition, there is great complexity in the number of goods and services consumed in a community. To produce a CBEI, a combination of data types is typically used, including regional economic consumption data, as well as state, national and sometimes international life cycle emissions factors. Local data are less commonly used to develop CBEIs compared to ABEI approaches, which may lead to less accurate emissions estimates at the local level.

Establishing Community Emissions Goals and Reduction Measures

In California, State GHG reduction targets set by Assembly Bill (AB) 32 (2006) and Senate Bill (SB) 32 (2016), are tied to production-based emissions inventories. Local climate action plans (CAPs) are required to demonstrate consistency with the State's targets, and the ABEI approach allows local CAPs to track progress towards, and compliance with, AB 32 and SB 32 reductions targets. ABEI is a well-established methodology with accepted protocols outlined in the 2019 Community Protocol Version 1.2 and related sector-specific appendices. For each sector, PBEI or ABEI are the recommended approaches. Section 1.5 "GHG Accounting and Reporting Principles", of the 2019 Community Protocol details that the developed methodologies enable meaningful analysis of trends within a community over time, and comparison between communities, and rely on consistent, readily available, and quality data. Continuing use of ABEI approaches maintains this consistency and comparability required to measure relative emissions and progress towards State emissions reduction targets. Because the State does not currently have a CBEI, it is not possible to accurately track progress towards and demonstrate consistency with State targets solely using a CBEI.

CBEIs, which focus on the embodied emissions of goods and services, are less likely to be useful for establishing emissions reductions measures at the local level than ABEIs. Corporations and individuals have direct control over purchasing decisions and state and federal governments traditionally regulate product and material standards, not local governments. Due to these factors, municipal governments may have limited ability to influence many consumption-related emissions and goals through emissions reduction measures. ABEIs typically include trans-boundary partial consumption emissions data for activities that produce emissions, such as electricity generation, over which local governments have the authority to influence emissions. Due to the inclusion of select upstream emissions, ABEIs can capture the related GHG reductions from local policy.

Accuracy, Cost, and Effort

ABEs do not capture the full range of emissions that are driven by local consumption patterns and rather cover emissions produced in the jurisdiction and next upstream or downstream emissions for certain sectors (i.e., energy, solid waste, etc.). Unlike ABEIs, CBEIs can capture the global emissions embodied in the multitude of goods and services that contribute to a community's carbon footprint by calculating lifecycle emissions associated with consumption. Accuracy, cost, and effort of the inventories depends on the data and approaches used. Historically, the Association of Monterey Bay Area Governments (AMBAG) has produced the City of Santa Cruz's ABEIs with funding from 3CE, however, it is unclear whether they will continue to provide these inventories. Appendix I of the Community



Protocol outlines the current methodologies available for developing a CBEI. Current CBEI methods include using UC Berkeley’s CoolClimate Calculator with supplementary local data when available, IMPLAN-based economic modeling, and utilizing household surveys. The methods vary in their cost, accuracy, and ease of use. New methodologies may also be under development, including local government planning tools using consumption-based emissions from the UC Berkeley group that produced the CoolClimate Calculator. The cheapest and lowest-resolution CBEI accounting method utilizes the CoolClimate Calculator to produce an instantaneous estimate of average household consumption emissions. The existing methods for generating CBEIs are summarized in Table 5. Even without the support of AMBAG and 3CE, ABEIs are considered to be more cost-effective than CBEIs because they rely on more readily available data.

Table 5 Existing CBEI Methods

Name	Description	Cost	Effort	Accuracy
UC Berkeley CoolClimate Calculator	Provides an instantaneous estimate of average household carbon footprints for cities in the US.	Free	Minimal. For a community wide consumption-based estimate, simply multiply the average household footprint against the number of households in the community.	Too general to use as-is. Cities should supplement with local data where possible. The calculator data are based on averages and is from 2013. Limited to household estimates.
UC Berkeley CoolClimate Calculator with Local Data	The CoolClimate Calculator estimate can be updated with local data.	Use of CoolClimate Calculator is free	Low effort, quick estimation. Some calculations to subtract generalized data and replace with local data required.	More accurate than the calculator estimates without local data supplemented. Data based on averages were not supplemented with local data. Calculator data based on 2013. Limited to household estimates.
IMPLAN-based approach	Develop a customized model using macroeconomic data from a source such as the IMPLAN economic modeling software.	Significant	Very high, significant expertise and effort required to develop, may be economically out of reach for many communities.	Model based estimates, accuracy or usefulness may be diminished if model parameters are not updated regularly. More accurate than either CoolClimate Calculator estimates provided in the options above because it uses a larger number of categories of goods and services. Can be easily extended to include government and business capital emissions that will allow for a full consumption-based community emissions inventory when summed with household emissions.
Household Survey Data	Cities collect survey data from residents in the community to estimate annual household purchases of food, goods and services and then apply appropriate emission factors to each type of purchase.	Extremely costly	High level of effort (and expertise) required to plan, develop, and carry out survey, process data, etc.	Most accurate estimate based on local consumption patterns. Limited to household estimates.

For reasons outlined above, most notably to maintain consistency with State methods and the ICLEI Community Protocol and allow for effective development of emissions reduction measures, it is recommended that the City continue to use the ABEI approach for future community GHG inventories. However, CBEIs can be useful in CAPs as an educational resource and complement to the more established emissions inventory approaches, such as ABEIs. Including CBEI estimates can help to provide a more complete picture of community GHG emissions, which can promote greater public trust.

Recommendations

Rincon's review found that the inventories appear to be generally appropriate for the sectors evaluated. Rincon finds that the emissions were appropriately calculated using the principles and methods outlined in the Community Protocol and Local Government Operations Protocol. However, the following comments and recommendations are intended to provide an opportunity to improve transparency of the calculations and emissions factors being used and to confirm large changes in emissions between the inventory years. Confirm and update completed inventories based on the Community GHG Inventory and Municipal GHG Inventory – Recommended Next Steps subsections of this report and listed below:

Community GHG Inventory Next Steps

- Commercial Energy
 - Review data from Pacific Gas & Electric (PG&E) to confirm there is no missing data that could be causing the 57% reduction in emissions from the commercial natural gas sub-sector between 2010 and 2015.
 - Confirm large shift from PG&E to Central Coast Community Energy (3CE) in commercial electricity from 2018 to 2019.
 - Request emissions factors and opt-out rates from 3CE to verify electricity inventory results.
- Residential Energy
 - Confirm large shift from PG&E to Central Coast Community Energy (3CE) in residential electricity from 2018 to 2019.
 - Request emissions factors and opt-out rates from 3CE to verify electricity inventory results.
- Industrial Energy
 - The California Air Resource Board (CARB) regulates the GHG emissions associated with industrial stationary combustion through the California Cap-and-Trade Program; therefore, it is recommended that all industrial emission sources be excluded from the community GHG inventories. If the City chooses to keep industrial in the inventories, it is recommended that UC Santa Cruz emissions be either included or excluded for all years, for consistency.
- Water and Wastewater
 - Rather than using 2018 as a proxy for 2019 wastewater treatment emissions, it is recommended that the City scale up these emissions for 2019 based on population growth by calculating the average emissions per person in previous years and applying it to the 2019 population.
- Solid Waste
 - Review methodology for calculating solid waste emissions factors to determine why emissions factors decrease and then increase again through 2018 and 2019.



Municipal GHG Inventory Next Steps

- Buildings – Natural Gas
 - Confirm and update the activity data for Inventory Record: “Fire-Natural Gas” from MMBtu to therms.
- Vehicle and Transit Fleet
 - Consider back casting emissions to 2005 for a more consistent inventory.
- Water and Wastewater
 - Coordinate with the Water Department and other relevant City Departments, to determine what changed between 2005 and 2010 to cause a large decrease in emissions.

General Recommendations

- Complete community and municipal inventories in conjunction with each other, at minimum, every five years, starting in 2025, and during the target years (2030 and 2045). This allows the City to measure progress over time and update emissions reduction measures as needed to meet targets.
- Continue to follow the ICLEI Community Protocol and the ICLEI Local Government Operations Protocol for completing activity-based community and municipal emissions inventories.
- Import historical inventories and add future inventories into a public-facing dashboard, such as CAPDash, to allow for greater transparency and community engagement.
- Explore pilot project on utilizing CBEI methods with student groups.



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July 23, 2021

Project No: 20-10678

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Via email: TWise-West@cityofsantacruz.com

**Subject: Santa Cruz Climate and Energy Action Plan,
Updated Community and Municipal Greenhouse Gas Inventory Results**

Purpose

This memorandum provides updated community and municipal inventory results for the City of Santa Cruz. These updates are based on recommendations provided in the first memorandum titled Final Progress Report on Climate Action Plan 2020.¹ Rincon's review found that the inventories appeared to be generally appropriate for the sectors evaluated. Rincon found that the emissions were appropriately calculated using the principles and methods outlined in the Community Protocol and Local Government Operations Protocol. However, the comments and recommendations provided were intended to provide an opportunity to improve transparency of the calculations and emissions factors being used and to confirm large changes in emissions between the inventory years. The tables below provide an overview of which recommendations were addressed and how, and the figures show the updated inventory results based on updates described in the tables.

Community GHG Inventories

Rincon Consultants, Inc. (Rincon) reviewed the City of Santa Cruz's existing community inventories as part of the Climate and Energy Action Plan 2030 development process to assess and verify the consistent application of appropriate methodologies defined by the by the Local Governments for Sustainability USA (ICLEI) U.S. Community Protocol as well as the correct emissions factors and inclusion of all appropriate emission sources.² This included a review of the activity data used and emissions calculated in the 2005, 2010, 2015, 2018 and 2019 Community Wide Greenhouse Gas (GHG) Emissions Inventories and 2005, 2010, and 2015 Municipal GHG Emissions Inventories. Table 1 provides the recommended updates to the community inventories and describes if and how each was addressed.

¹ First memorandum, titled Final Progress Report on Climate Action Plan 2020, provided by Rincon to the City in June 2021.

² Local Governments for Sustainability (ICLEI). 2019. U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions. Available: <<https://iclei.usa.org/us-community-protocol/>>. Accessed May 20, 2021.

Table 1 Community Inventory Updates

Sector	Recommendation	Updates/Notes
Commercial Energy	Review data from Pacific Gas & Electric (PG&E) to confirm there is no missing data that could be causing the 57% reduction in emissions from the commercial natural gas sub-sector between 2010 and 2015.	Amaury Berteaud, Special Projects Manager at the Association of Monterey Bay Area Governments (AMBAG) and the City (Tiffany Wise-West) were unable to explain the 57% reduction in natural gas use between 2010 to 2015, which is likely due to a data issue. Furthermore, the PG&E source data was not consistent with the historic inventories. To address this issue, Rincon re-calculated commercial natural gas use from the source PG&E data. From 2005-2009, industrial natural gas was included in the commercial natural gas use due to the 15/15 rule. After 2010, industrial gas was fully removed. To allow for consistent comparison between years, Rincon calculated the ratio of residential to commercial natural gas use for years in which industrial natural gas was excluded (2010-2019). The average ratio was then applied to the 2005 residential gas use to estimate commercial gas use for 2005. The data and calculations are provided in Attachment 1 - PG&E Natural Gas Calculations.
	Confirm large shift from PG&E to Central Coast Community Energy (3CE)-provided commercial electricity from 2018 to 2019.	No update necessary. Large shift confirmed by the City and AMBAG. ¹ In 2018, 3CE service started in March for non-residential accounts and July for residential accounts. The large decrease in electricity emissions from 2018 to 2019 is due to 3CE enrolment as well as the PG&E emissions factor decreasing from 206 lbs CO ₂ /mWh to 2.68 lbs CO ₂ /mWh.
	Request emissions factors and opt-out rates from 3CE to verify electricity inventory results.	No update necessary. 3CE provided AMBAG with the total residential load for the city and emissions factors. AMBAG used the data provided by PG&E to breakout the 3CE electricity being reported in the direct access category between residential 3CE usage and nonresidential 3CE usage. AMBAG also has opt-out rate data at the county level as a percentage of load by sector. AMBAG and City confirmed large reduction in commercial electricity emissions.
Residential Energy	Confirm large shift from PG&E to Central Coast Community Energy (3CE)-provided residential electricity from 2018 to 2019.	No update necessary. Large shift confirmed by the City and AMBAG. In 2018, 3CE service started in March for non-residential accounts and July for residential accounts. The large decrease in electricity emissions from 2018 to 2019 is due to 3CE enrolment as well as the PG&E emissions factor decreasing from 206 lbs CO ₂ /mWh to 2.68 lbs CO ₂ /mWh.
	Request emissions factors and opt-out rates from 3CE to verify electricity inventory results.	No update necessary. 3CE provided AMBAG with the total residential load for the city and emissions factors. AMBAG used the data provided by PG&E to breakout the 3CE electricity being reported in the direct access category between residential 3CE usage and nonresidential 3CE usage. AMBAG also has opt-out rate data at the county level as a percentage of load by sector. AMBAG and City confirmed large reduction in residential electricity emissions.



Sector	Recommendation	Updates/Notes
Industrial Energy	The California Air Resource Board (CARB) regulates the GHG emissions associated with industrial stationary combustion through the California Cap-and-Trade Program; therefore, it is recommended that all industrial emission sources be excluded from the community GHG inventories. If the City chooses to keep industrial in the inventories, it is recommended that UC Santa Cruz emissions be either included or excluded for all years, for consistency.	Recommendation addressed. UC Santa Cruz was removed from the analysis.
Transportation	EMFAC data shows increasing population and VMT in the County, however, the City's 2019 Community Inventory shows a decrease in transportation emissions. Need information explaining why this might be the case.	The inventory VMT data is from HMPS and accounts for travel on Santa Cruz's local roads only, this is therefore an in-boundary methodology as opposed to an origin destination methodology. AMBAG received a public records act request from Land Watch relating to Monterey County GHG inventories as well as pushback on the idea of cities not using an origin destination methodology as part of their climate action plan. Following discussions with the City and AMBAG, it is clear that the City is unable to update the VMT methodology to origin destination for the Climate Action Plan 2030 update. AMBAG is currently updating the VMT model for Santa Cruz County, and they are currently unable to run the model at the city scale. Additionally, they are unable to back-cast VMT at this time. The current VMT data is the best available data at this point and likely a good proxy for overall VMT. The City should plan to update the VMT methodology in the next update of the Climate Action Plan.
Water and Wastewater	Rather than using 2018 as a proxy for 2019 wastewater treatment emissions, it is recommended that the City scale up these emissions for 2019 based on population growth by calculating the average emissions per person in previous years and applying it to the 2019 population.	This recommendation was not addressed because the Water and Wastewater sector is such a small contributor to overall community emissions. In addition, since population decreased from 2018 to 2019, the current methodology is more conservative.
Solid Waste	Review methodology for calculating solid waste emissions factors to determine why emissions factors decrease and then increase again through 2018 and 2019.	This recommendation was reviewed with Amaury Berteaud, Special Projects Manager at AMBAG. Solid waste tonnage data is from CalRecycle, which shows more waste was sent to landfills in 2018 and 2019 than previous years. This may be due to a number of factors, including a lower diversion rate.

Notes: lbs = pounds; mWh = mega-watt hours

¹ AMBAG has completed all of the City's community GHG inventories.



Rincon updated the community inventories as described in Table 1, above. Table 2 provides the updated natural gas activity data and Figure 1, Figure 2, and Figure 3 detail the city's updated community GHG emissions by sector, sub-sector, and total emissions for each of the inventory years.

Table 2 Updated Natural Gas Activity Data

Year	Residential Use (Therms)	Commercial Use (Therms)
2005	8,446,353	4,455,221
2006	8,983,659	4,738,635
2007	8,820,559	4,652,604
2008	8,824,744	4,654,812
2009	8,680,459	4,578,705
2010	8,923,599	4,421,545
2011	9,271,338	4,670,040
2012	8,866,649	4,642,667
2013	8,713,714	4,440,295
2014	6,902,137	3,894,696
2015	7,123,162	3,912,387
2016	7,460,188	4,006,270
2017	7,652,780	4,083,026
2018	7,671,109	4,148,237
2019	7,967,583	4,184,482

As shown in Figure 1, transportation accounts for the largest share of community emissions for each inventory year, followed by residential and commercial energy. Figure 2 below details sub-sector emissions for each of the community inventory years.

Figure 1 City of Santa Cruz Community GHG Emissions by Sector (2005-2019)

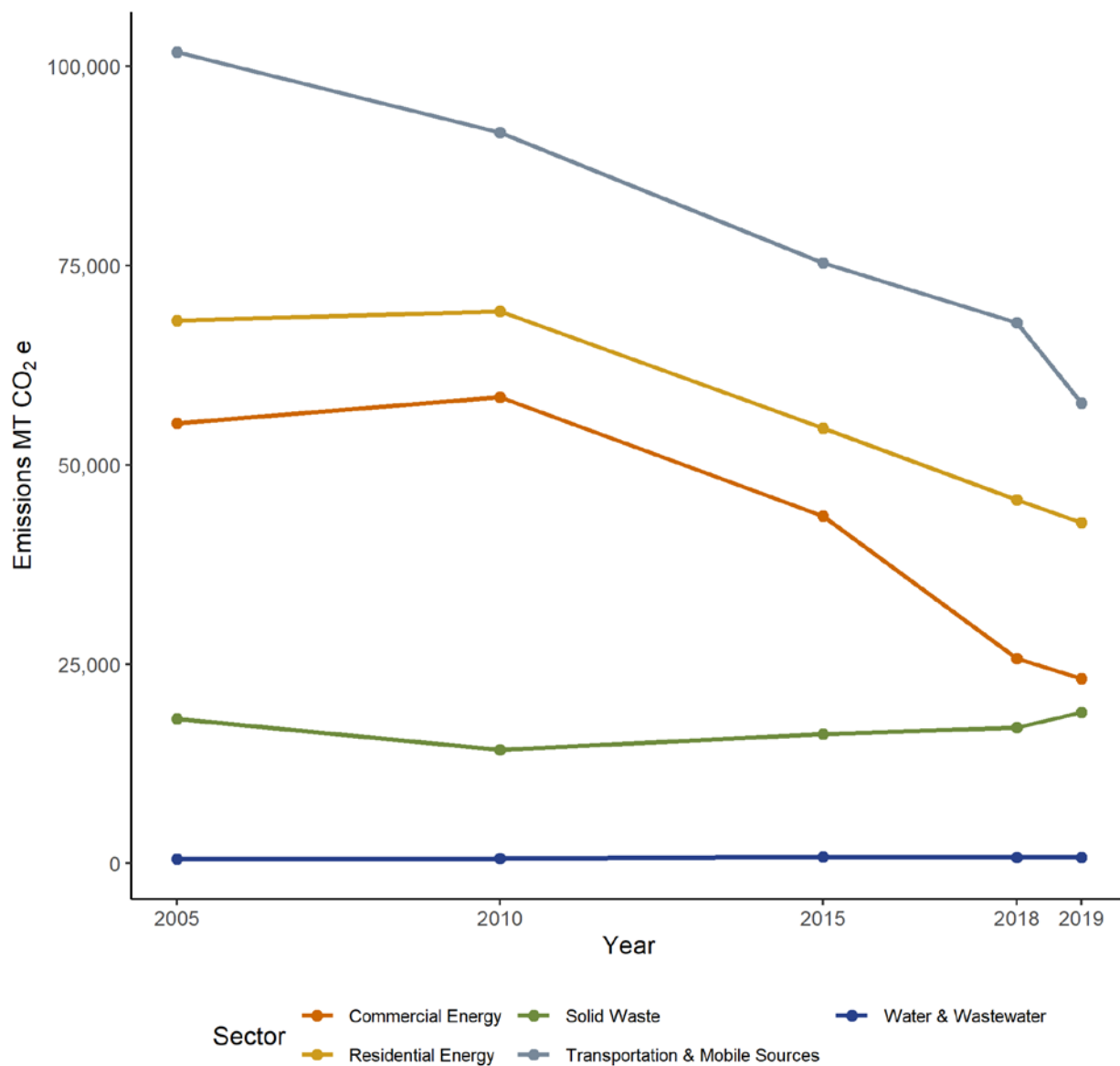


Figure 2 shows the energy sectors (commercial and residential) separated into electricity and natural gas emissions sources. Commercial and residential natural gas emissions remain relatively constant from 2005 to 2019, as expected.

Figure 2 City of Santa Cruz Community GHG Emissions by Sub-sector (2005-2019)

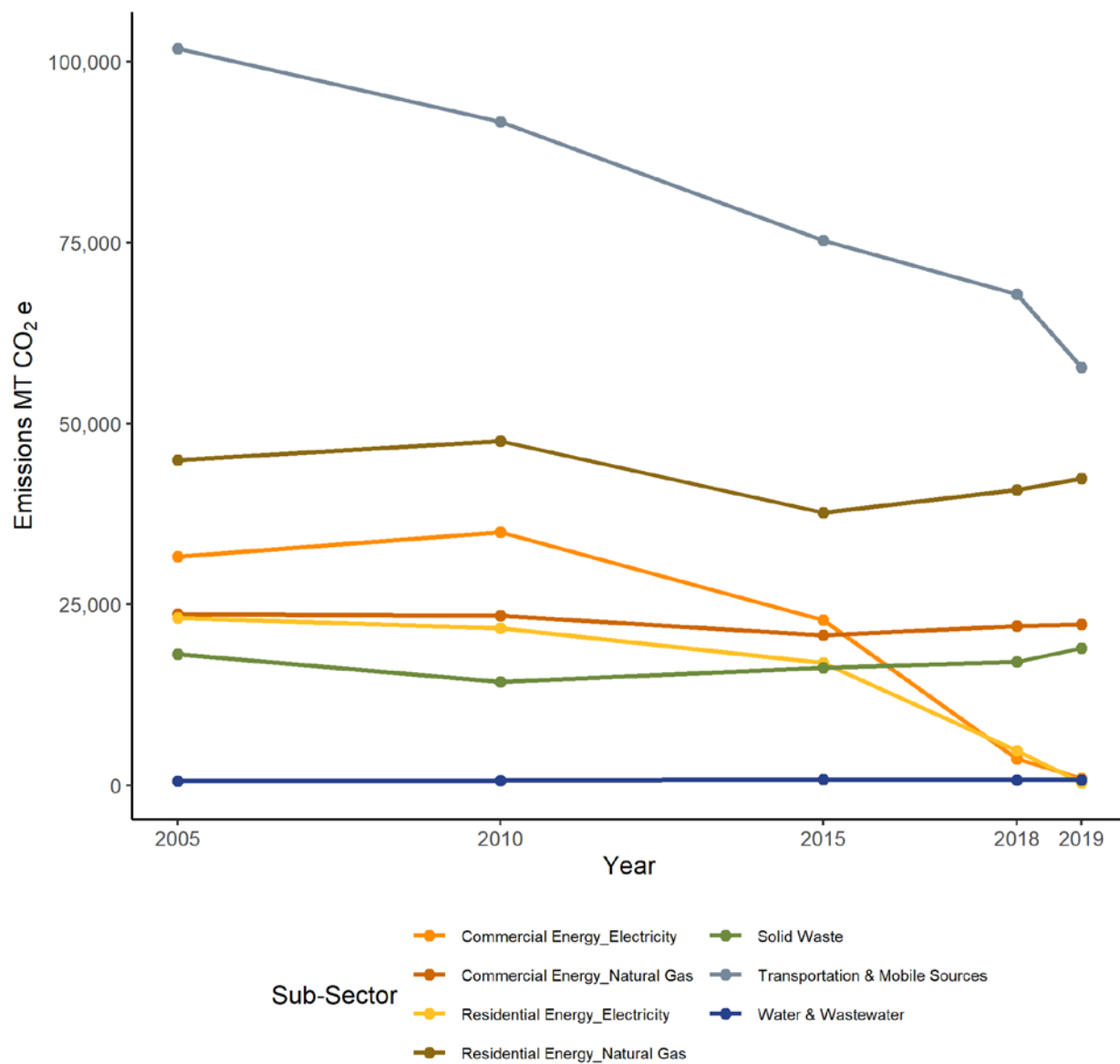
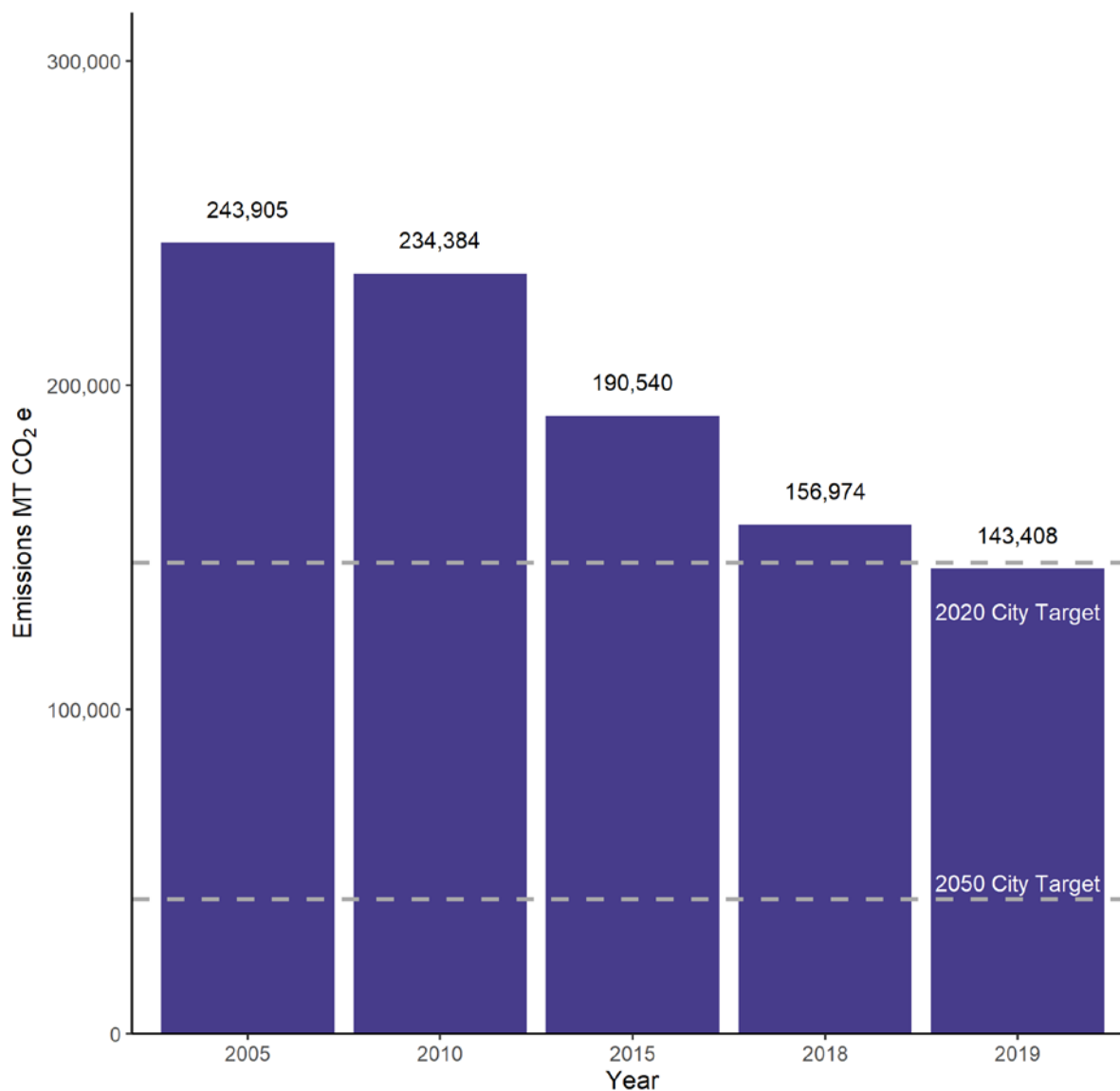


Figure 3 shows the City's updated community emissions for all inventory years. Based on the City's updated community GHG inventories, total community emissions have decreased over time. The City's emissions dropped approximately 4% from 2005 to 2010, 19% from 2010 to 2015, 18% from 2015 to 2018, and 9% from 2018 to 2019. The 2012 Climate Action Plan identified targets to reduce community-wide greenhouse gas emissions 30% by 2020 and 80% by 2050, compared to 1990 levels.³ Based on the updated community inventory data, the 2020 target is 145,123 metric tons of carbon dioxide equivalent (MT CO₂e) and the 2050 is 41,464 MT CO₂e. These targets are tracked using GHG inventories, which are reviewed below. Overall community GHG emissions have declined steadily since 2005, and the City achieved its 2020 target in 2019.

Figure 3 City of Santa Cruz Total Community GHG Emissions by Year (2005-2019)



³ 1990 levels were estimated using state guidance of assuming 1% annual emissions growth between 1990 and 2005.



The updated average emissions factors used in each sector for each inventory year are provided in Table 3. All electricity emissions factors decrease substantially from 2018 onward as a result of CCA enrollment in the community, while natural gas emissions factors stay constant across the years, as expected. Solid waste average emissions factors decrease and then increase again through 2018 and 2019. It is unclear what the data sources are and how these emissions factors were calculated at this time and the change is relatively small. The average transportation emissions factor decreased approximately 46% from 2010 to 2015, which can be attributed to the change in methodology used to calculate these emissions between the two years. Prior to 2015, transportation emissions were calculated using the EMFAC2001 model. After 2015, these emissions were calculated using the EMFAC2014 and EMFAC2017 model updates. It is recommended that future inventories use the origin destination methodology. Lastly, water and wastewater average emissions factors decreased approximately 33% from 2005 to 2010, and remained constant post 2010. This is likely due to electricity emissions factor decreasing even as process emissions increased due to population growth.

Table 3 Community GHG Inventory Emissions Factors (2005-2019)

Sector	2005	2010	2015	2018	2019
Commercial Energy – Electricity	0.0002236	0.0002034	0.0001844	0.0000499	0.0000040
Commercial Energy– Natural Gas	0.0053070	0.0053070	0.0053070	0.0053070	0.0053070
Residential Energy– Electricity	0.0002236	0.0002034	0.0001844	0.0000647	0.0000038
Residential Energy– Natural Gas	0.0053186	0.0053186	0.0053186	0.0053187	0.0053187
Solid Waste	0.3105317	0.2775465	0.2743429	0.2861037	0.2861037
Transportation & Mobile Sources	0.0008259	0.0008146	0.0004625	0.0004167	0.0004049
Water & Wastewater	0.3804373	0.2536434	0.2536407	0.2536426	0.2536426

Notes:

¹ Industrial electricity is not reported for 2005, 2010, or 2019.

² Industrial natural gas is not reported for 2005 or 2018.

Municipal GHG Inventories

Rincon reviewed the City of Santa Cruz’s existing municipal inventories as part of the Climate and Energy Action Plan 2030 development process to assess and verify the consistent application of appropriate methodologies defined by the by the Local Governments for Sustainability USA (ICLEI) U.S. Local Government Operations Protocol as well as the correct emissions factors and inclusion of all appropriate emission sources. The City of Santa Cruz has completed three municipal inventories: 2005, 2010, and 2015. All of the City’s municipal inventories include emissions from buildings and facilities and streetlights and traffic signals. Table 4 provides the recommended updates to the municipal inventories and describes if and how each was addressed.

Table 4 Municipal Inventory Updates

Sector	Recommendation	Updates/Notes
Buildings and Facilities	Confirm and update the activity data for 2005 Inventory Record: “Fire-Natural Gas” from MMBtu to therms.	Rincon updated the ClearPath record for “Fire-Natural Gas” from MMBtu to therms. The cloned inventory with updated record is labeled 2005 Santa Cruz LGOP GHG Inventory – REV 2021.
Vehicle Fleet and Transit Fleet	Consider back casting emissions to 2005 for a more consistent inventory.	Back-casting was deemed unnecessary for this analysis. Instead, Vehicle Fleet and Transit Fleet are removed from this analysis for all years. The updated inventories are labeled: 2010 Municipal Inventory completed by City staff – REV 2021 and 2015 Municipal Inventory completed by City staff – REV 2021.
Water and Wastewater	Coordinate with the Water Department and other relevant City Departments, to determine what changed between 2005 and 2010 to cause a large decrease in emissions.	For the purposes of this memorandum, no updates were made to the Water and Wastewater sector. City will investigate the large decrease in emissions.

As shown in Figure 4, water and wastewater treatment accounts for the largest share of municipal emissions for each inventory year, followed by buildings and facilities. Each sector shows a decrease in emissions over time. Figure 5 details sub-sector emissions for each of the municipal inventory years.

Figure 4 City of Santa Cruz Municipal GHG Emissions by Sector (2005-2015)

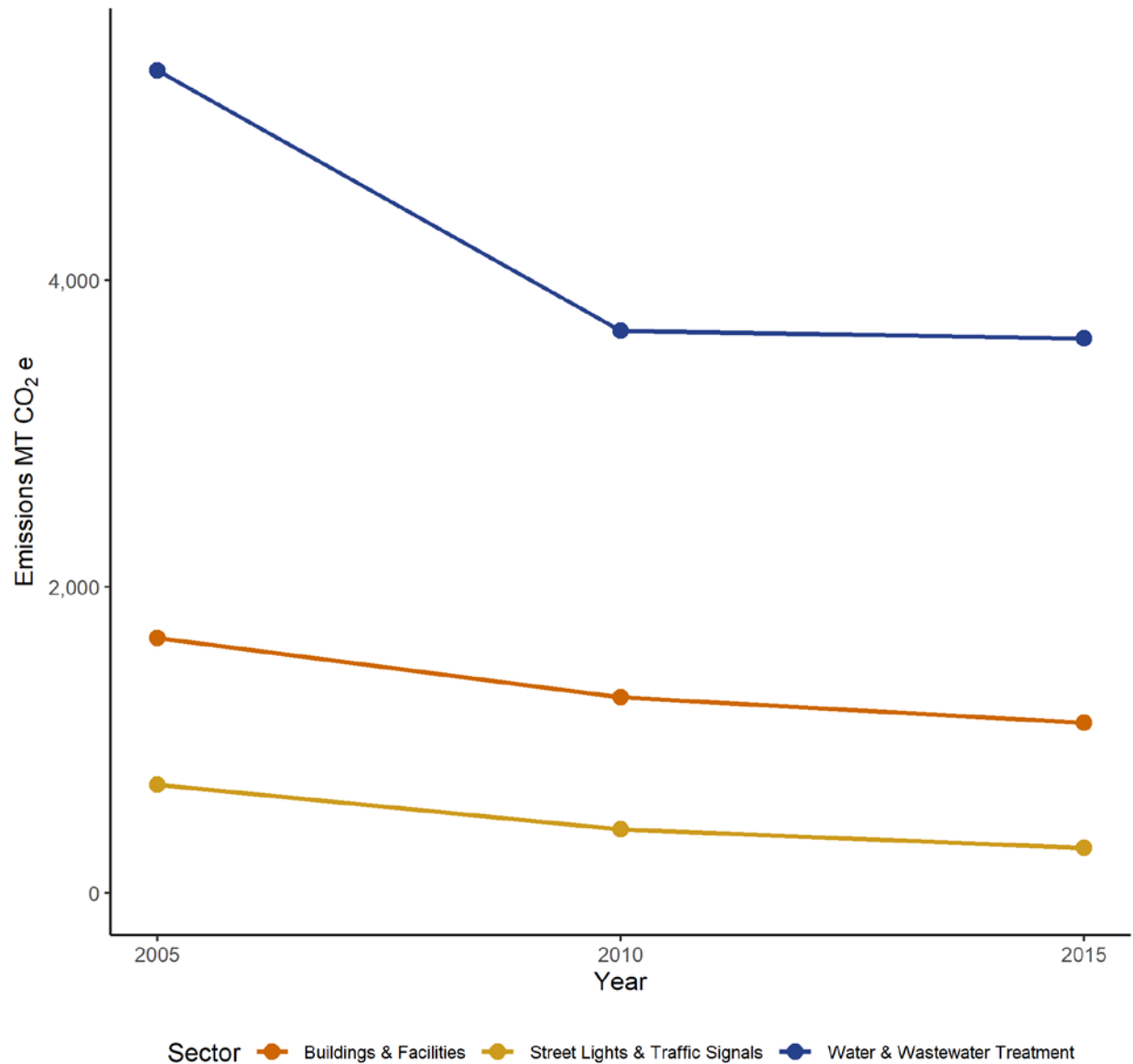


Figure 5 shows the energy-related sectors (buildings & facilities and water & wastewater treatment) separated into electricity and natural gas emissions sources. Water and wastewater treatment natural gas emissions decreased from 2005 to 2010 and increased from 2010 to 2015, while water and wastewater treatment electricity emissions increased from 2005 to 2010 and decreased from 2010 to 2015. This City is investigating the cause of these changes.

Figure 5 City of Santa Cruz Municipal GHG Emissions by Sub-sector (2005-2015)

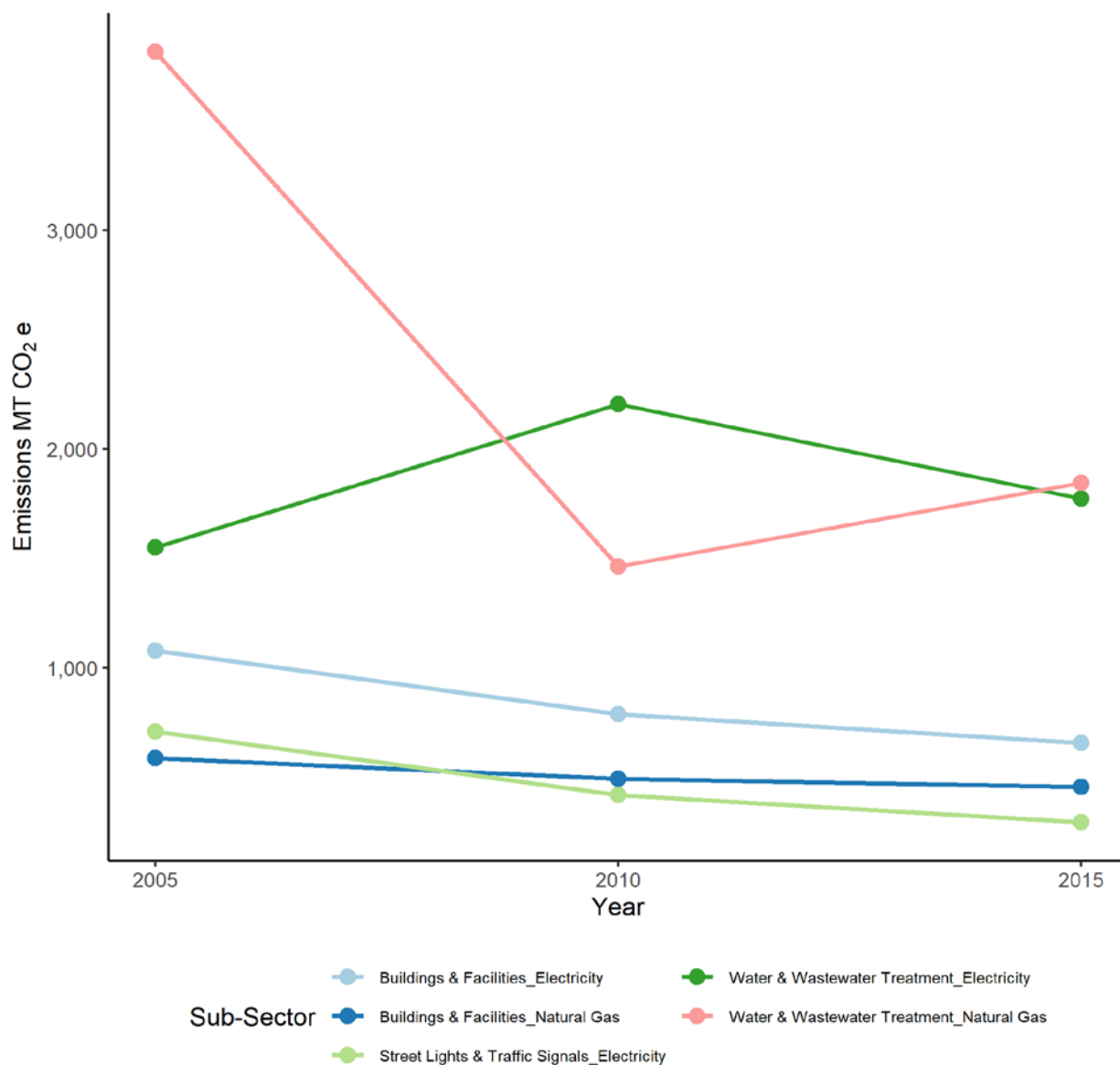
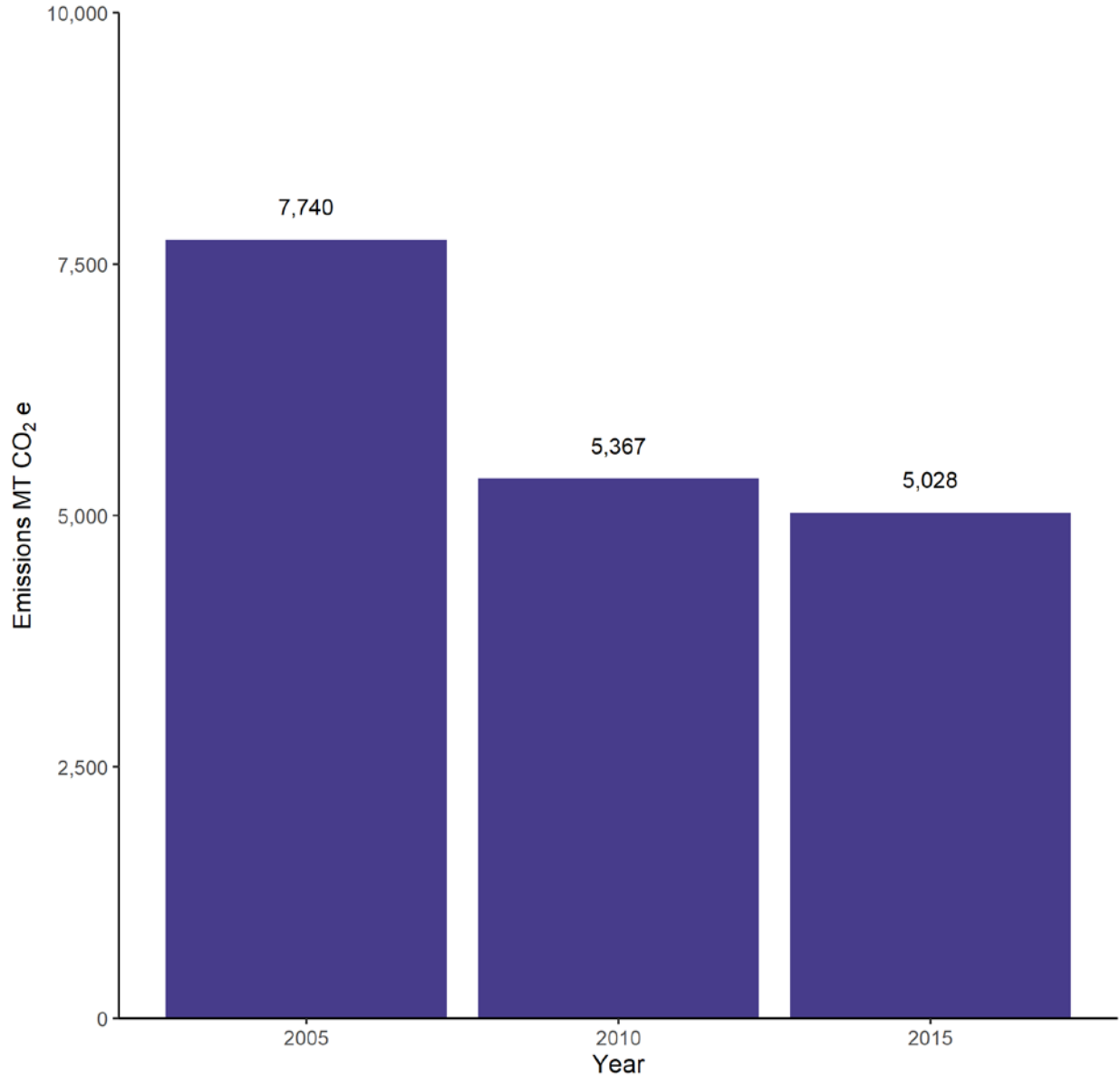


Figure 6 below shows municipal emissions excluding vehicle and transit fleet emissions. The data show a 35% decrease in municipal emissions from 2005 to 2015.

Figure 6 City of Santa Cruz Total Municipal GHG Emissions by Year





The updated average emissions factors used in each sector for each municipal inventory year are provided in Table 5. As expected, all electricity emissions factors decrease slightly over time, likely as a result of the Renewable Portfolio Standard (RPS) Program, established in 2002 by Senate Bill 1078, which mandated that 20% of electricity retail sales must be served by renewable resources by 2017.⁴ In 2015, California's energy mix was approximately 22% renewable.⁵ Increasing renewable energy statewide decreases electricity emissions factors. All natural gas emissions factors stay constant across the years, as expected.

Table 5 Municipal GHG Inventory Emissions Factors

Sector	2005	2010	2015
Buildings & Facilities – Electricity	0.0002237	0.0002035	0.0001954
Buildings & Facilities – Natural Gas	0.0053156	0.0053156	0.0053175
Streetlights & Traffic Signals – Electricity	0.0002237	0.0002035	0.0001954
Water & Wastewater Treatment – Electricity	0.0002237	0.0002035	0.0001954
Water & Wastewater Treatment – Natural Gas	0.0053156	0.0053156	0.0053175

Conclusion

The updated inventories are appropriate for the sectors evaluated. Rincon finds that the emissions were appropriately calculated using the principles and methods outlined in the Community Protocol and Local Government Operations Protocol. Updates to be considered in the next Climate Action Plan update include:

- Change VMT methodology to origin destination
- Include employee commuting and vehicle/transit fleet in future municipal inventories
- Investigate and document the cause of the large decrease in municipal water and wastewater emissions between 2005 and 2010.

⁴ In 2018, Senate Bill 100 increased the RPS to 60% by 2030 and requires all the state's electricity to come from carbon-free resources by 2045.

⁵ California Energy Commission. N.d. 2015 Total System Electric Generation. Available: < <https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2019-total-system-electric-generation/2015>>. Accessed June 14, 2021.

Memorandum

To: Tiffany Wise-West, P.E., PhD
City of Santa Cruz Sustainability & Climate Action Manager

From: Chris Gregerson, P.E., T.E., PTOE, PTP
Mike Schmitt, ACIP CTP, PTP, RSP₁

Re: **Vehicle Miles Traveled (VMT) Summary**
Climate Action Plan, City of Santa Cruz

Date: October 27, 2021

This memorandum documents the process undertaken to summarize the Vehicle Miles Traveled (VMT) for the City of Santa Cruz using the Santa Cruz County Travel Demand Model (SCC TDM) for the purposes of inclusion in the City's Climate Action Plan (CAP).

Methodology

The SCC TDM was most recently updated to contain a base year of 2019 and future year of 2040. These updates were based on data provided by the County and the incorporated Cities within the County. The data provided included building permits, pending and approved projects (land use and infrastructure), and the County's previous General Plan. The land use updates were incorporated into the model by updating the information at the Traffic Analysis Zone (TAZ) level. There are 696 TAZs within the County, including 171 TAZs within the City of Santa Cruz boundary. In consultation with the SCCRTC and Santa Cruz County, the transportation analysis zone (TAZ) geography for the SCC Model is based on the AMBAG TAZ geography with revisions for Santa Cruz County. The land use updates included updating the households and population information in each TAZ, as well as the employment by category, and number of students in both K-12 schools and university students.

From the SCC TDM, the daily trip table, which summarizes the number of trips between each TAZ pair for a 24-hour period, and the peak skim table, which estimates the distance between each TAZ during the commute periods (except for those trips that have one endpoint outside of the County as discussed below), were used to estimate the three types of VMT for 2019 and 2040. The three types of VMT include internal-internal (trips that both start and end within the City of Santa Cruz), internal-external (trips that begin within the City, but end outside of the City), and external-internal (trips that begin outside of the City but end within the City). External-external trips, trips that both start and end outside of the City, were not included as a part of this analysis. The number of trips between each TAZ pair were multiplied by the distance estimated between each pair using either the skim table or the estimated external trip distance, to determine the VMT for that pair. Note that the internal-external and external-internal VMT was divided by two so that only 50-percent of the VMT will be attributable to the City of Santa Cruz.

External (Outside of Santa Cruz County) Trip Distances

To determine the VMT for those trips that have one endpoint of the trip outside of Santa Cruz County, and thus outside of the area covered by the SCC TDM, the external distance was estimated. The distance was determined using Teralytics, a Big Data aggregator of vehicle trips. Teralytics uses anonymized cell phone data to determine the origin and destination of trips at the Census tract level. The trip distances were determined for each Census tract within Santa Cruz County by taking weighted average of distance of all trips that originate from, or are destined to, locations outside of Santa Cruz County. This distance is then calibrated by using Teralytics to estimate trips that occur within Santa Cruz County and comparing

them to the trip distance estimated by the SCC TDM. Once a distance is calibrated and the final distance is determined for each tract, all TAZs within Santa Cruz County are then overlayed onto the tracts to obtain the external trip distance for that TAZ. This trip distance is then used to determine the VMT for all trips that have one endpoint outside of the County.

Analysis

The VMT for each of the three types and for the 2019 and 2040 scenarios are summarized in **Table 1** below. As shown in **Table 1**, the daily VMT for the City of Santa Cruz increases from approximately 1.2 million in 2019 to approximately 1.4 million in 2040. In addition to 2019 and 2040, VMT for intermediate years 2025, 2030, and 2035, as well as future year 2045, were also estimated. As the SCC TDM does not contain land use or roadway network information for any analysis year other than 2019 and 2040, the VMT was interpolated or extrapolated as appropriate for the four additional analysis scenarios.

Table 1 – City of Santa Cruz Vehicle Miles Traveled (VMT) Summary

VMT Type	Analysis Year					
	2019	2040	2025*	2030*	2035*	2045*
Internal-Internal	178,787	205,631	186,457	192,848	199,240	212,023
Internal-External*	499,968	590,367	525,796	547,319	568,843	611,890
External-Internal*	494,115	584,074	519,818	541,237	562,656	605,493
Total	1,172,870	1,380,072	1,232,071	1,281,405	1,330,738	1,429,406

Note: Only 50% of I-E and E-I VMT is included in this summary table

* Value was interpolated or extrapolated using 2019 and 2040 values from the SCC TDM

APPENDIX C:
**GHG Emissions
Reduction Technical
Evidence**



Climate Action Plan

GHG Emissions Reductions Technical Evidence

City of Santa Cruz

City Manager's Office
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1 Introduction

This appendix presents the technical quantification and evidence supporting the greenhouse gas (GHG) emissions reduction potential of the City of Santa Cruz Climate Action Plan (CAP) Update. Section 15183.5(b)(1) of the California Environmental Quality Act (CEQA) guidelines establishes several criteria which a CAP must meet in order to be considered a “qualified GHG reduction plan” and allow for programmatic CEQA streamlining of project GHG emissions. This document provides the evidence to support the GHG emissions reductions associated with the CAP measures pursuant to Subsection (D) which states, “...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.” Based on the substantial evidence contained in this technical appendix, the GHG emissions reductions associated with the measures in the CAP are sufficient to exceed the City’s fair share of GHG emissions consistent with the reduction target established by Senate Bill (SB) 32 and make substantial progress towards carbon neutrality consistent with California’s goal established by executive order (EO) B-55-18.

The quantification in this technical appendix is specifically intended to illustrate a viable path to achieving the City of Santa Cruz 2030 climate action targets. As required in CEQA Guidelines Section 15183.5(b)(e), mechanisms to monitor the CAP’s progress toward achieving the GHG emission reductions provided in this technical appendix have been established through the CAP development process. If the CAP monitoring program indicates that the City is not on track to reach its 2030 GHG reduction goals, the CAP will be amended to include altered or additional implementation measures and actions that can achieve the City’s climate action targets.

1.1 Climate Action Targets

The City of Santa Cruz’s proposed climate action targets are intended to be attainable. The City’s targets are more aggressive than California’s goals to reduce GHG emissions to 40% below 1990 levels by 2030 (SB 32) and to attain carbon neutrality¹ by 2045 (EO B-55-18). The City of Santa Cruz’s targets are:

- Reduce the community’s per capita GHG emissions to 2.5 metric tons of carbon dioxide equivalent (MT CO₂e) per person, or based on projected population growth through 2030, this is equivalent to reducing the City’s mass emissions to 181,018 MT CO₂e by 2030, or 40.1% below the City’s 1990 GHG emissions.
- Carbon neutrality by 2035 and maintain through at least 2045.²

¹ Carbon neutrality refers to a state of net-zero GHG emissions (in units of carbon dioxide equivalent, or CO₂e), where a community’s GHG emissions have been reduced as much as possible, and any remaining GHG emissions arising from community-level activities are offset by GHG emissions sequestration activities and technologies, such as tree planting, compost application, or industrial practices that take GHG emissions out of the atmosphere and sequester them in solid or liquid form.

² Cities may choose to set a more ambitious target to meet carbon neutrality before 2045. Setting an aspirational target of carbon neutrality by 2035 aligns with Governor Newsom’s recent direction to the California Air Resources Board (CARB) to explore carbon neutrality by 2035. Accessed: <https://www.gov.ca.gov/2021/07/09/governor-newsom-holds-virtual-discussion-with-leading-climate-scientists-on-states-progress-toward-carbon-neutrality/>

The use of per capita emission targets is recommended in the California Air Resources Board's (CARB) 2017 Scoping Plan Update.³ Avoiding interference with and making substantial progress toward the state's 2030 and long-term 2045 goals is important as they have been set at levels that achieve California's fair share of international emissions reductions. California's fair share of international emissions reductions were established by the Paris Agreement and the International Panel on Climate Change (IPCC) and are consistent with an emissions level expected to stabilize global climate change effects and avoid adverse environmental consequences.⁴ The IPCC Sixth Assessment report indicates that to avoid the most significant effects of climate change, greenhouse gas emissions must be halved before 2030, achieve net-zero emissions before 2050, and maintain global temperature rise at or below 1.5 degrees Celsius (2.7 degrees Fahrenheit).⁵

1.2 Measures and Actions Organization

As part of the CAP update process, the City of Santa Cruz has developed a comprehensive set of measures reducing community wide GHG emissions in all sectors to achieve the City's climate action targets. Each measure is supported by a set of actions that provide measurable GHG emissions reduction that is supported by substantial evidence. The City has also developed a set of measures and actions for carbon sequestration. Carbon sequestration measures and actions are not included in the City's GHG emissions reductions calculations or GHG targets because those are aimed toward achieving Climate Restoration goals and not GHG emission targets. Therefore, they are not included in this technical appendix. Measures and actions are organized according to the following hierarchy:

1. **Sectors** define the GHG emissions category in which the GHG reductions will take place and include Building Energy, Transportation, Waste, Water and Wastewater.⁶
2. **Measures** identify specific goals (i.e., activity data targets by 2030 and 2035) to address GHG emissions in each sector. A single measure generally addresses a subsector; for example, three measures may be established under the Transportation sector to address active transportation, shared/public transportation, and single-passenger vehicles subsectors.
3. **Actions** identify the programs, policies, funding pathways, and other specific commitments that the City of Santa Cruz plans to implement to accomplish the measures in each sector. Each measure contains a suite of actions, which together have been designed to accomplish the measure. Additional details regarding how the City will accomplish each of the actions is described in the CAP Implementation Plan.
 - a. **Action Criteria.** The actions supporting each measure have been designed around a set of criteria. Each criterion plays an essential role in the implementation of the measures. Because community-focused climate action often requires community-level behavioral changes and buy-in to be successfully implemented, the City must design a suite of actions

³ California Air Resources Board. November 2017. California's 2017 Climate Change Scoping Plan. Accessed at: https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf

⁴ As described under EO B-55-18 Section 3.1.3, Potential Effects of Climate Change. See also the IPCC's report, accessed at: <https://www.ipcc.ch/report/ar6/wg1/>

⁵ Net zero emissions refers to achieving an overall balance between greenhouse gases emitted and greenhouse gas emissions taken out of the atmosphere, for example through carbon sequestration in vegetation and soils or through carbon capture and storage technologies.

⁶ Note that the City's municipal measures as established in the CAP are not discussed in this document. While the City's municipal measures are important for reducing to reduce City operations GHG emissions and demonstrate climate action leadership, they contribute make a minor contribution to community-level GHG emissions reductions and are a subset of the community GHG emissions. For this reason, the GHG emissions reductions expected from municipal measures were conservatively excluded from the analysis in this document and were not quantified as part of the CAP preparation process.

that support these changes by emphasizing specific needs of the community. The action criteria are Equity, Structural Change, Funding and Financing, Education and Engagement, and Partnerships. In general, the actions under a single measure should collectively address all the action criteria.⁷ Identification of the action criteria and their inclusion into the CAP helps plan for implementation.

- b. **Equity Screening Process.** To ensure the City's CAP is equitable in achieving a just transition for the community from a consumptive-based, extractive economy to a regenerative economy. Special consideration was given to address past harm to frontline communities. An equity screening process was developed through small group conversations between the City's Climate Action Task Force, its equity advisors, and the City's frontline communities. All actions were screened to ensure that the CAP addresses equity considerations and does not negatively impact frontline communities. The equity screening process criteria are:
- Affordability
 - Accessibility
 - Accountability
 - Green Jobs
 - Community Health and Safety
 - Cultural Vibrancy

Frontline communities are those that experience continuing injustice, including people of color, immigrants, people with lower incomes, people experiencing homelessness or houselessness, differently-abled persons, seniors, and indigenous people. The communities face a legacy of systemic, largely racialized, inequity that influences their living and working places, and quality of their air and water, and their economic opportunities. The equity screening process allowed the City to intentionally prioritize equity and understand the direct and indirect impacts of climate actions in order to avoid exacerbating harm through unintended consequences.

Measures and actions can be either quantitative or supportive, which are defined as follows:

- **Quantitative** measures and actions result in quantifiable GHG emissions reductions when implemented. GHG emissions reductions from these measures and actions are supported by case studies, scientific articles, calculations, or other third-party substantial evidence. Quantitative measures/actions can be summed to quantify how the City of Santa Cruz will meet its 2030 climate action target and demonstrate progress towards the 2035 target. GHG emissions reductions were calculated using published evidence provided through adequately controlled investigations, studies, and articles carried out by qualified experts that establish the effectiveness for the reduction measures and actions. The estimates and underlying calculations provided in this technical appendix include the substantial evidence and a transparent approach to achieving the City's GHG emissions reduction targets.
- **Supportive** measures and actions may also be quantifiable and have substantial evidence to support their overall contribution to GHG reduction. However, due to one of several factors – including a low GHG reduction benefit, indirect GHG reduction benefit, or potential for double-counting – they have not been quantified and do not contribute directly to the expected GHG reduction target and consistency with the state goals. Despite not being quantified, supportive

⁷ The exception is for measures and actions in the municipal sector because the City has much more leverage to enact changes at a municipal level and may not need to consider each pillar to ensure success during implementation.

measures/actions are nevertheless critical to the overall success of the CAP and provide support so that the quantitative measures and actions will be successfully implemented.

1.3 GHG Emissions Reductions

The GHG emissions reductions associated with the City of Santa Cruz CAP's measures and actions have been calculated and presented in this technical appendix in terms of per capita emissions (in units of MT CO₂e/person). The population projection used to develop the City's GHG emissions forecast (Appendix A) was also used to calculate per capita GHG emissions reductions. Population projections, shown in Table 1, were obtained from the Association of Bay Area Governments (AMBAG) Plan Bay Area 2040 forecasts, consistent with the projections used in the City's historical GHG inventories.⁸

Table 1 Population Projections for the City of Santa Cruz

	2019	2030	2035	2045
Population	65,041	72,218	75,257	79,534

A breakdown of the GHG emissions reductions calculated for each measure is included in Table 2 and Figure 1.

Table 2 Estimated GHG Emissions Reductions by Measure

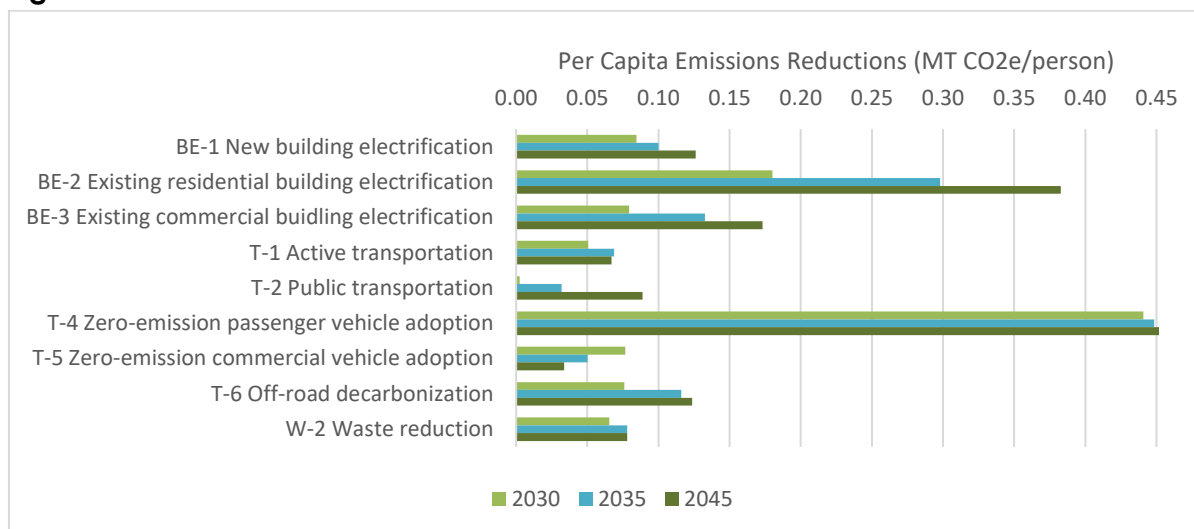
Measure Number	Measure	2030 Anticipated Reduction/ Sequestration (MT CO ₂ e/person)	2035 Anticipated Reduction/ Sequestration (MT CO ₂ e/person)	2045 Anticipated Reduction/ Sequestration (MT CO ₂ e/person)
GHG Emissions Reduction Measures				
BE-1	Enforce the City's new construction natural gas prohibition ordinance (SCMC 6.100) and inform the community regarding the available technology and benefits of electrification	0.085	0.100	0.126
BE-2	Electrify 31% of existing residential buildings by 2030 and 53% by 2035	0.180	0.298	0.383
BE-3	Electrify 26% of existing commercial buildings by 2030 and 45% by 2035	0.079	0.133	0.173
BE-4	Maintain Central Coast Community Energy (CCCE opt-out rates at or below 4% for commercial and 2% for residential	Supportive	Supportive	Supportive
BE-5	Increase resiliency through equitable energy efficiency and local solar programs	Supportive	Supportive	Supportive

⁸ Population projections were obtained from the Association of Bay Area Governments (ABAG) Plan Bay Area 2040 website; accessed at: <http://2040.planbayarea.org/forecasting-the-future>

Measure Number	Measure	2030 Anticipated Reduction/ Sequestration (MT CO ₂ e/person)	2035 Anticipated Reduction/ Sequestration (MT CO ₂ e/person)	2045 Anticipated Reduction/ Sequestration (MT CO ₂ e/person)
BE-6	Provide inclusive engagement, equitable process and regional coordination to maximize building electrification carbon reduction outcomes and other co-benefits	Supportive	Supportive	Supportive
T-1	Implement programs for active transportation (walking and biking) that achieve 23% of bicycle mode share by 2030 and 30% by 2035	0.051	0.069	0.067
T-2	Implement programs for public transportation that achieve 8% of public transportation mode share by 2030 and 12% by 2035	0.002	0.032	0.089
T-3	Implement programs and policies to discourage driving single-occupancy passenger vehicles	Supportive	Supportive	Supportive
T-4	Increase passenger electric vehicle (EV) adoption to 35% by 2030 and 40% by 2035	0.441	0.449	0.663
T-5	Increase commercial EV adoption to 25% by 2030 and 35% by 2035	0.077	0.050	0.034
T-6	Electrify or otherwise decarbonize 50% of off-road equipment by 2030 and 75% by 2035	0.076	0.116	0.124
T-7	Advocate for remote work policy and infrastructure.	Supportive	Supportive	Supportive
W-1	Maintain gallons per capita water use for the residential sector at a level that is at least 10% below the state goal of 55 gallons per person per day	Supportive	Supportive	Supportive
W-2	Reduce organic waste by 75% by 2030 and 90% by 2035; and reduce inorganic waste by 35% by 2030 and 40% by 2035	0.065	0.078	0.078
W-3	Establish a long-term target to reduce waste generation growth	Supportive	Supportive	Supportive
W-4	Reduce or capture GHG emissions from wastewater treatment	Supportive	Supportive	Supportive
Total Anticipated Reductions		1.06	1.33	1.74
Reduction Targets		0.82	3.32*	3.15*

* Would require carbon sequestration, capture, and/or storage measures to achieve since 100% of emissions will not be eliminated.

Figure 1 Estimated GHG Emissions Reduction Associated with CAP⁹



Together, the measures and actions in the CAP provide the City of Santa Cruz with the GHG reductions necessary to achieve the City of Santa Cruz’s 2030 target, however the 2035 GHG emissions reductions quantified in this report are not yet enough to meet the City’s long term target of carbon neutrality by 2035 (Table 3). Achieving carbon neutrality will require significant changes to the technology and systems currently in place. The CAP aims to establish substantial progress towards carbon neutrality by the establishing new systems that are resilient and equitable. This includes electrification of building and transportation systems, an increased shift to active and public/shared transportation, continued usage of carbon neutral electricity, increased water use efficiency, waste reduction and diversion, new carbon capture technology, and carbon sequestration.¹⁰ As these measures and actions are implemented, the City will gain more information, new technologies will emerge, and current pilot projects will scale to the size needed to reach carbon neutrality. Furthermore, the state is expected to update state-level regulations and provide additional support to meet carbon neutrality in the future. Future CAP updates past 2030 will outline new measures and actions that the City can implement to achieve carbon neutrality.¹¹

⁹ Measures shown in the graph are only for those with calculated GHG emissions reductions.

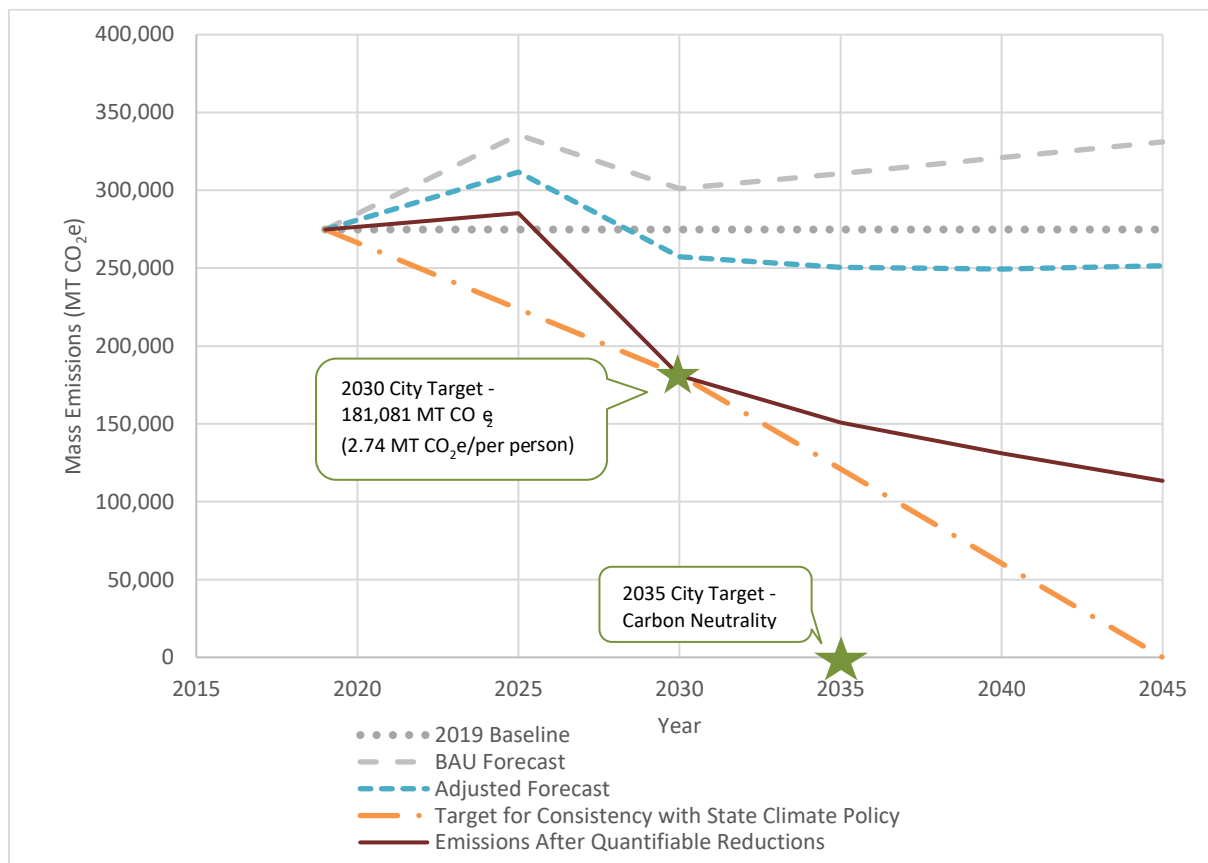
¹⁰ The Climate Action Plan also includes information about behavior choices (plant-based diets and shopping local) in the community that are outside of the City’s control. These behavior choices support climate action but are not quantified in the City’s GHG emissions inventories as they are not under the jurisdictional control or significant influence of the City of Santa Cruz.

¹¹ Association of Environmental Professionals (AEP). 2016. Final Which Paper, Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California. Accessed at: https://califaep.org/docs/AEP-2016_Final_White_Paper.pdf

Table 3 Targets Versus GHG Emissions Reductions

Target/Forecast	2030 GHG Emissions (MT CO ₂ e/person)	2035 GHG Emissions (MT CO ₂ e/person)	2045 GHG Emissions (MT CO ₂ e/person)
Business-as-usual Forecast	4.16	4.12	4.15
Adjusted Forecast	3.55	3.32	3.15
Target for Consistency with State Climate Policy	2.74	1.82	0.00
GHG Emissions with Full Implementation of Measures	2.49	1.99	1.41

Figure 2 shows the climate action targets in relation to the City's GHG emissions after measure implementation. Figure 2 shows GHG emissions in terms of mass emissions (e.g., per capita emissions times the population projection) for better comparison to the 2019 inventory, and forecasts. A complete description of each quantified community measure and its contributing actions is included in the remainder of the technical appendix as substantial evidence to support the City's qualified greenhouse gas reduction strategy.¹²

Figure 2 GHG Baseline-Forecast-Legislative Reduction-Targets-Quantified Measure Reduction

¹² CEQA Guidelines Section 15183.5(b), Plans for the Reduction of Greenhouse Gas Emissions.

2 Building Energy Measures

The City of Santa Cruz building energy measures are primarily focused on leveraging the renewable energy portfolio provided to the community by Central Coast Community Energy (CCCE) through maintenance of low CCCE opt-out rates and electrification¹³ of the City's building stock. All-electric buildings are powered 100% by electricity and when coupled with renewable electricity generation, their operational energy footprint becomes GHG emissions-free. Based on this strategy, the CAP's energy measures consist of the following:

- BE-1: Enforce the City's new construction natural gas prohibition ordinance (SCMC 6.100) and inform the community regarding the available technology and benefits of electrification
- BE-2: Electrify 31% of existing residential buildings by 2030 and 53% by 2035
- BE-3: Electrify 26% of existing commercial buildings by 2030 and 45% by 2035
- BE-4: Maintain Central Coast Community Energy (CCCE) opt-out rates at or below 4% for commercial and 2% for residential
- BE-5: Increase resiliency through equitable energy efficiency and local solar programs
- BE-6: Provide inclusive engagement, equitable process and regional coordination to maximize building electrification carbon reduction outcomes and other co-benefits

CCCE procures low-carbon renewable energy for the community. Using electricity from CCCE instead of natural gas, propane, or other electricity sources to power buildings reduces the GHG emissions associated with building operations to zero or near-zero. The City of Santa Cruz's building stock currently relies heavily on natural gas. The City has already adopted an electrification ordinance for new construction (included in the CAP as Measure BE-1) which mandates development of all-electric buildings with no natural gas infrastructure.¹⁴ GHG emissions from existing buildings must also be reduced to achieve the City's climate action targets. Measures BE-2 and BE-3 provide frameworks of updated regulations, programs, funding mechanisms, education, and partnerships to drive electrification of existing residential and commercial buildings. Measure BE-4 directs the City to work with CCCE to maintain the already low residential and commercial opt-out rates. Measure BE-5 supports building resilience through equitable energy efficiency and local solar programs. Measure BE-6 provides guidance for inclusive engagement, equitable processes, and regional coordination to maximize building electrification carbon reduction outcomes and other co-benefits.

¹³ Building electrification consists of converting building appliances, such as space heaters, boilers, stoves, clothes dryers, and hot water heaters, that currently run on natural gas or propane to electricity as the primary energy source. This most often consists of retrofitting a building to support more electric capacity and replacing natural gas or propane appliances with electric-powered alternatives.

¹⁴ City of Santa Cruz. 2020. Prohibition of Natural Gas Infrastructure in New Buildings. Accessed at: <https://www.codepublishing.com/CA/SantaCruz/#!/SantaCruz06/SantaCruz06100.html#6.100.040>

Measure BE-1 Enforce the City’s new construction natural gas prohibition ordinance (SCMC 6.100) and inform the community regarding the available technology and benefits of electrification

Table 4a Measure BE-1 Reductions

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
1	Enforce the new construction natural gas prohibition ordinance through the development of a comprehensive permitting compliance program that includes routine training for City staff, dedicating staff time for building inspections, charging fees for noncompliance, providing easy-to-understand compliance checklists online and with permit applications and facilitating permitting online.	0.085	0.100	0.126

Measure BE-1 Action 1 New Construction Natural Gas Prohibition Ordinance

BE-1 Action 1 requires all new buildings in the city to be constructed as all electric and exclude natural gas connections. The ordinance was adopted by the City in 2020 and is included in the CAP to allow the City to take credit for the GHG emissions reductions associated with adopting and implementing the ordinance. Exemptions include existing buildings undergoing alterations, additions, or tenant improvements, restaurants, facilities employing industrial process heat, and accessory dwelling units (ADUs) less than or equal to 750 square feet. These reductions were not captured in the 2019 inventory or the adjusted forecast. The methods and assumptions used to calculate the GHG emissions reductions associated with this action are shown in Table 4b. The actions under Measure BE-6 (Ensure Provide Inclusive Engagement, Equitable Process and Regional Coordination to Maximize Building Electrification Carbon Reduction Outcomes and Other Co-benefits) provide additional support to address equity, outreach, and funding and financing.

Table 4b GHG Emissions Reductions from Measure BE-1 Action 1

Inputs and Assumptions				
Implementation year for residential development (Code: Prohibition of Natural Gas Infrastructure in New Buildings, Chapter 6.100)			2020	
Implementation year for commercial development (Code: Prohibition of Natural Gas Infrastructure in New Buildings, Chapter 6.100)			2020	
Natural gas emission factor (MT CO ₂ e/therm) ¹			0.00532	
Convert kWh to therms (kWh/therm)			29.3001	
Average increased efficiency of electric appliances over natural gas appliances (%) ²			300	
Residential natural gas usage in ordinance implementation year - 2020 (therms)			7,967,583	
Commercial natural gas usage in ordinance implementation year - 2020 (therms)			4,184,482	
Calculations				
Year	2030	2035	2045	
Residential Reductions				
Projected Residential natural gas usage excluding measure BE-1(therms) ³	8,577,312	8,707,726	8,889,186	
Natural gas saved (therms)	609,729	740,143	921,603	
Emissions reduced from natural gas saved (MT CO ₂ e)	3,243	3,937	4,902	
Electricity usage from converting to electric (kWh)	5,955,040	7,228,754	9,001,017	
Electricity emissions factor (MT CO ₂ e/kWh)	0.0000029	0.0000000	0.0000000	
Emissions added from converted electricity usage (MT CO ₂ e)	18	0	0	
Total residential emission reductions (MT CO ₂ e)	3,225	3,937	4,902	
Commercial Reductions				
Commercial natural gas usage excluding measure BE-1 (therms)	4,729,113	4,860,737	5,148,359	
Natural gas saved (therms)	544,631	676,255	963,877	
Emissions reduced from natural gas saved (MT CO ₂ e)	2,897	3,597	5,127	
Electricity usage from converting to electric (kWh)	5,319,249	6,604,776	9,413,893	
Electricity emissions factor (MT CO ₂ e/kWh)	0.0000029	0.0000000	0.0000000	
Emissions added from converted electricity usage (MT CO ₂ e)	16	0	0	
Total commercial emission reductions (MT CO ₂ e)	2,881	3,597	5,127	
Totals				
Total Reductions (MT CO ₂ e)	6,107	7,533	10,028	
Population	72,218	75,257	79,534	
Per Capita Reductions (MT CO ₂ e)	0.085	0.100	0.126	

¹ Appendix A.

² Pacific Gas & Electric. 2021. Electrification for your home or building. Accessed at: https://www.pge.com/en_US/residential/customer-service/home-services/renovating-and-building/benefits-of-electric-homes-and-buildings/benefits-of-electric-homes-and-buildings.page?

³ Appendix A.

Measure BE-2 Electrify 31% of Existing Residential Buildings by 2030 and 53% by 2035

Table 5a Measure BE-2 Reductions

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
1	Develop, implement and enforce phased and equitable electrification ordinance(s) for existing residential buildings by the start of 2023. Maximize permit compliance through streamlining the compliance process, improving third-party enforcement, and advanced training for enforcement staff. Steps to be completed to adopt the ordinance(s) are as follows: Step 1: Work with stakeholders in developing an idea for a reach code electrification ordinance(s) Step 2: Complete a cost effectiveness study Step 3: Develop and draft the ordinance(s) and go through the public process, incorporating revisions as necessary Step 4: Go through the formal adoption process Step 5: Apply for approval by the California Energy Commission.	0.180	0.298	0.383
2	Identify and partner with local community based organizations with connections to frontline communities to assist in development of the equitable existing building electrification strategy.	Supportive	Supportive	Supportive
3	By 2024, establish a plan to electrify and improve health and safety of the City's existing affordable housing stock at a neighborhood level by 2035. Provide detailed information on the City website including descriptions of the health and environmental benefits of electrification, links to CCCE and PG&E resources on electrification, up-to-date lists of local contractors that perform electric retrofits, and information about the most cost-competitive residential electrification technologies currently available.	Supportive	Supportive	Supportive
4	Work with PG&E and CCCE to identify opportunities to remove obsolete natural gas infrastructure, to redirect PG&E funding allocated for pipeline maintenance to electrification retrofit projects instead. Work with PG&E to identify funding, as needed, for the removal of the infrastructure. Consider a pilot to remove obsolete natural gas infrastructure from municipal buildings.	Supportive	Supportive	Supportive
5	Work with PG&E and CCCE to deploy community solar and electrify existing buildings in residential neighborhoods. Work with partners to incentivize all-electric retrofits through rebates, on-bill financing, and other mechanisms.	Supportive	Supportive	Supportive

Measure BE-2 Action 1 Existing Residential Building Electrification Ordinance

BE-2 Action 1 commits the City to adopt an electrification ordinance for existing residential buildings by 2023, to be enforced through a comprehensive and equitable permitting compliance program. In 2019, natural gas usage from residential buildings accounted for about 15% of GHG emissions in the City of Santa Cruz. To reduce these GHG emissions, the electrification ordinance bans natural gas line expansion and installation of natural gas heating, ventilation, and air conditioning (HVAC) systems and hot water heaters, and other appliances starting at the beginning of 2023. HVAC system and hot water heaters are targeted in the ordinance due to their large contribution to residential natural gas end-uses and the cost-effectiveness associated with their replacement using energy efficient electric alternatives.¹⁵

The City recognizes that successful ordinance implementation will require effective permit compliance. Permits are required for many energy efficiency improvements, including hot water heaters, insulation, HVAC systems, duct replacement, and others. However, permit evasion remains an issue in many jurisdictions, with permitted HVAC systems only accounting for 8-29% of total installations.^{16, 17} Strategies that have proven effective at improving permit compliance in various states and local jurisdictions include streamlining the compliance process, improving third-party enforcement, and advanced training for enforcement staff.¹⁸

The methods and assumptions used to calculate the GHG emissions reductions associated with these actions are shown in Table 5b. Emissions reductions were calculated based on the percentage of natural gas attributed to water heaters, and HVAC systems, the average lifespan of each natural gas consuming devices, and the assumption that about 94% appliances would be replaced on burnout.¹⁹

¹⁵ Energy and Environmental Economics (E3). April 2019. Residential Building Electrification in California: Consumer economics, greenhouse gases and grid impacts. Accessed at: https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf

¹⁶ Emily Alvarez and Bruce Mast. BayREN Codes & Standards Program. October 2021. Local Government Policy Calculator for Existing Single-Family Buildings – User Guide. Accessed at: https://www.bayrencodes.org/wp-content/uploads/2021/11/BayREN-Policy-Calculator-User-Guide_10.29.2021.pdf

¹⁷ California Public Utilities Commission (CPUC). September 2017. Final Report: 2014-16 HVAC Permit and Code Compliance Market Assessment (Work Order 6) Volume I – Report. Accessed at: http://www.calmac.org/publications/HVAC_WO6_FINAL_REPORT_VolumeI_22Sept2017.pdf

¹⁸ Ryan Meres et al. American Council for an Energy-Efficient Economy (ACEEE). 2012. Successful Strategies for Improving Compliance with Building Energy Codes. Accessed at: <https://www.aceee.org/files/proceedings/2012/data/papers/0193-000112.pdf>

¹⁹ 8 to 29% of HVAC projects have historically been permitted, while 100% of energy efficiency requirements are met regardless of permitting status. It was therefore assumed that a permit enforcement program will push the average closer to 100%. Permitted electric HVAC installation in coastal regions is estimated to be 94% according to CPUC's Final Report: 2014-16 HVAC Permit and Code Compliance Market Assessment (Work Order 6) Volume I – Report, accessed at: http://www.calmac.org/publications/HVAC_WO6_FINAL_REPORT_VolumeI_22Sept2017.pdf

Table 5b GHG Emissions Reductions from Measure BE-2 Action 1

Inputs and Assumptions			
Ordinance implementation year	2023		
Natural gas emissions factor (MT CO ₂ e/therm) ¹	0.005319		
Convert kWh to therms (kWh/therm)	29.3001		
Average increased efficiency of electric appliances over natural gas appliances (%) ²	300		
Average natural gas water heater lifespan in years ³	13		
Average natural gas HVAC lifespan in years ⁴	21.5		
Natural gas usage from water heater (%) ⁵	38		
Natural gas usage from heating/cooling (%) ⁶	39		
Assumed noncompliance (%) ⁷	6		
Residential natural gas usage after new building electrification ordinance is implemented (therms)	7,967,583		
GHG Emissions Reductions Calculations			
Year	2030	2035	2045
Percentage of homes with replaced water heaters, assuming 2023 ordinance implementation year, 6% non-compliance, and replacement on burnout (%)	51	87	94
Natural gas reduction from water heater replacement (%)	19	32	35
Percentage of homes with replaced HVAC, assuming non-compliance and replacement on burnout (%)	31	52	94
Natural gas reduction from HVAC replacement (%)	12	20	37
Total natural gas saved (therms)	2,460,458	4,217,928	5,724,003
Emissions reduced from total natural gas saved (MT CO ₂ e)	13,086	22,434	30,444
Electricity usage from converting to electric (kWh)	24,030,557	41,195,241	55,904,619
Electricity emissions factor (MT CO ₂ e/kWh)	0.0000029	0.0000000	0.0000000
Emissions added from converted electricity usage (MT CO ₂ e)	71	1	0
Totals			
Total Reductions (MT CO ₂ e)	13,016	22,433	30,444
Population	72,218	75,257	79,534
Per Capita Reductions (MT CO ₂ e/person)	0.180	0.298	0.383

¹ Appendix A.² Pacific Gas & Electric. 2021. Electrification for your home or building. Accessed at: https://www.pge.com/en_US/residential/customer-service/home-services/renovating-and-building/benefits-of-electric-homes-and-buildings/benefits-of-electric-homes-and-buildings.page?³ EIA. 2018. Updated Buildings Sector Appliance and Equipment Cost and Efficiencies. Appendix C. Accessed at: <https://www.eia.gov/analysis/studies/buildings/equipcosts/pdf/full.pdf>⁴ Ibid.⁵ Synapse Energy Economics, Inc. 2018. Decarbonization of Heating Energy Use in California Buildings. Accessed at: <https://www.synapse-energy.com/sites/default/files/Decarbonization-Heating-CA-Buildings-17-092-1.pdf>⁶ Ibid.⁷ 8 to 29% of HVAC projects have historically been permitted, while 100% of energy efficiency requirements are met regardless of permitting status. It was therefore assumed that a permit enforcement program will push the average closer to 100%. Permitted electric HVAC installation in coastal regions is estimated to be 94% according to CPUC's Final Report: 2014-16 HVAC Permit and Code Compliance Market Assessment (Work Order 6) Volume I – Report, accessed at: http://www.calmac.org/publications/HVAC_WO6_FINAL_REPORT_VolumeI_22Sept2017.pdf

Measure BE-2 Actions 2-3 Electrification Strategy

BE-2 Action 2 commits the City to develop and implement an equitable existing building electrification strategy (EEBES) in partnership with local community based organizations with connections to frontline communities. Existing building electrification is relatively untested at a city scale, suggesting that a City of Santa Cruz-specific strategy that investigates the opportunities, barriers, and solutions associated with residential building electrification is key to successful implementation of an ordinance. The EEBES should build off of the best practices used by the City's Water Department staff to successfully implement water efficiency upgrades at the city scale. This can be done by leveraging staff experience in launching successful education and engagement campaigns, providing rebates, and landscape ordinance enforcement, to promote existing building electrification citywide. Because of the generally high cost of building electrification, developing solutions for potential equity impacts of residential building electrification is key to successful implementation.²⁰ The EEBES is designed to give special consideration to the potential equity impacts of an electrification ordinance by investigating up-front and on-bill costs of electrification to residents, potential impacts to renters, potential impacts to electrical grid resiliency, and by specifically targeting equity groups for feedback on EEBES development.

BE-2 Action 3 commits the City to establish a plan to electrify and improve health and safety of the existing affordable housing stock at a neighborhood level. The City recognizes that outreach to equity groups during policy development processes is often challenging, and therefore, plans to engage local community-based organizations with connections to these groups in an effort to engage more intentionally and transparently.

Measure BE-2 Action 4 Neighborhood Electrification

Neighborhood scale electrification consists of electrifying entire neighborhoods rather than individual appliances in individual homes and includes elimination (or pruning) of natural gas infrastructure within buildings and beneath the streets. A neighborhood-scale approach to electrification can be more cost-effective overall. For example, in a neighborhood in which half of the buildings have been electrified while the other half still rely on natural gas, those left on natural gas are left paying for the infrastructure for the entire neighborhood.²¹

BE-2 Action 4 commits the City to exploring natural gas pruning opportunities. Natural gas pruning would require regulatory changes at the CPUC to allow PG&E the flexibility needed to reallocate funding from natural gas infrastructure projects to electrification projects. In the interest of supporting these changes, the City plans to collaborate regionally on advocating for natural gas pruning. Action 4 also promotes deploying community solar in residential neighborhoods.

Measure BE-2 Action 5 Funding and Financing

In general, electrification has been found to reduce costs for homeowners over the lifetime of appliances when compared to propane or natural gas-fueled equipment, especially when retrofits are bundled and completed when appliances are already planned for replacement, or when coupled with rooftop solar installation. However, the City anticipates that the residential building electrification ordinance will result in up-front retrofit costs for residents that may be difficult for the community, particularly low-income residents, to bear. The largest barrier to existing building

²⁰ Greenlining Institute. 2019. Equitable Building Electrification: A Framework for Powering Resilient Communities. Accessed at: https://greenlining.org/wp-content/uploads/2019/10/Greenlining_EquitableElectrification_Report_2019_WEB.pdf

²¹ City of Berkeley. April 2021. Existing Building Electrification Strategy Administrative Draft.

electrification is higher up-front capital costs compared to natural gas. Up-front capital costs of electrification are higher for existing homes currently heated with natural gas because it requires home retrofits to electric space and water heating.²² On-bill or financed incentives to offset these costs for the end-user are therefore among the most promising opportunities for electrification.

BE-2 Action 5 commits the City to establishing funding pathways to make existing building electrification possible, particularly for low-income residents of the City. Once up-front costs are financed, long term savings can be used to achieve cash flow positive retrofits and/or acceptable return on investments (ROI's). Demonstrating cost effective pathways for existing building electrification will be a key step before mandatory requirements can be set.

Measure BE-3 Electrify 26% of Existing Commercial Buildings by 2030 and 45% by 2035

Table 6a Measure BE-3 Reductions

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
1	Adopt, implement and enforce an electrification ordinance for existing commercial buildings by the beginning of 2024.	0.079	0.133	0.173
2	Work with partners to mitigate potential equity impacts of existing commercial building electrification ordinance. Facilitate equitable and inclusive funding opportunities for commercial building electrification.	Supportive	Supportive	Supportive
3	Support commercial battery storage installations and business district scale microgrid opportunities.	Supportive	Supportive	Supportive
4	Establish a building emissions performance standard for commercial buildings over 20,000 square feet.	Supportive	Supportive	Supportive

Measure BE-3 Action 1 Existing Commercial Building Electrification Ordinance

BE-3 Action 1 commits the City to adopting an electrification ordinance for existing commercial buildings by 2024, to be enforced through the same comprehensive and equitable permitting compliance program described under Measure BE-2 Action 1. Natural gas usage from commercial buildings accounted for about 8% of GHG emissions in the City of Santa Cruz in 2019. To address these GHG emissions, the electrification ordinance bans natural gas line expansion and requires installation of all-electric appliance, such as heat pumps, variable refrigerant flow systems, and hot water heaters at time of major renovation and time of replacement as technologically feasible. The ordinance recognizes that current technology may limit the extent to which commercial natural gas

²² Rocky Mountain Institute (RMI). 2018. The Economics of Electrifying Buildings. Accessed at: https://rmi.org/wp-content/uploads/2018/06/RMI_Economics_of_Electrifying_Buildings_2018.pdf

end uses in the City of Santa Cruz can be electrified.²³ For this reason, some limited exemptions may be included in the commercial electrification ordinance. The methods and assumptions used to calculate the GHG emissions reductions associated with these actions are shown in the Table 6b below.

Table 6b GHG Emissions Reductions from Measure BE-3 Action 1

Inputs and Assumptions			
Ordinance implementation year	2024		
Natural gas emissions factor (MT CO ₂ e/therm) ¹	0.005319		
Convert kWh to therms (kWh/therm)	29.3001		
Average increased efficiency of electric appliances over natural gas appliances (%) ²	300		
Average natural gas water heater lifespan in years ³	10		
Average natural gas HVAC lifespan in years ⁴	23		
Natural gas usage from water heater (%) ⁵	28		
Natural gas usage from heating/cooling (%) ⁶	42		
Assumed noncompliance (%) ⁷	6		
Commercial natural gas usage after new building electrification ordinance is implemented (therms)	4,184,482		
GHG Emissions Reductions Calculations			
Year	2030	2035	2045
Percentage of buildings with replaced water heaters, assuming non-compliance and replacement on burnout (%)	56	94	94
Natural gas reduction from water heater replacement (%)	16	26	26
Percentage of commercial buildings with replaced HVAC, assuming non-compliance and replacement on burnout (%)	25	45	86
Natural gas reduction from HVAC replacement (%)	10	19	36
Total natural gas saved (therms)	1,083,114	1,876,447	2,589,022
Emissions reduced from total NG saved (MT CO ₂ e)	5,761	9,980	13,770
Electricity usage from converting to electric (kWh)	10,578,447	18,326,696	25,286,200
Electricity emissions factor (MT CO ₂ e/kWh) ⁸	0.0000029	0.0000000	0.0000000
Emissions added from converted electricity usage (MT CO ₂ e)	31	1	0
Totals			
Total Reductions (MT CO ₂ e)	5,730	9,980	13,770
Population	72,218	75,257	79,534
Per Capita Reductions (MT CO ₂ e/person)	0.079	0.133	0.173

¹ Appendix A

² Pacific Gas & Electric. 2021. Electrification for your home or building. Accessed at: https://www.pge.com/en_US/residential/customer-service/home-services/renovating-and-building/benefits-of-electric-homes-and-buildings/benefits-of-electric-homes-and-buildings.page?

³ EIA. 2018. Updated Buildings Sector Appliance and Equipment Cost and Efficiencies. Appendix C. Accessed at: <https://www.eia.gov/analysis/studies/buildings/equipcosts/pdf/full.pdf>

⁴ Ibid.

⁵ Synapse Energy Economics, Inc. 2018. Decarbonization of Heating Energy Use in California Buildings. Accessed at: <https://www.synapse-energy.com/sites/default/files/Decarbonization-Heating-CA-Buildings-17-092-1.pdf>

⁶ Ibid.

⁷ Assumed roughly equivalent to residential non-compliance due to lack of sufficient data or studies.

⁸ Appendix A – residential weighted average (PG&E and CCCE)

²³ kW Engineering. March 2021. Important Considerations for Electrification of Commercial Buildings. Accessed at: <https://www.kw-engineering.com/electrification-commercial-buildings-important-considerations/>

Measure BE-3 Action 2 Mitigate Potential Equity Impacts

Existing building electrification in the commercial sector is less well researched than in the residential sector. While some commercial natural gas end uses may be ripe for electrification – about 27% of commercial floor space heated with fossil fuel systems can be electrified today with a simple payback period of less than 10 years – other end uses may not.²⁴ To close the knowledge gap about commercial building electrification and mitigate potential equity impacts in the City of Santa Cruz, BE-3 Action 2 commits the City to engaging with the commercial sector and business community to understand barriers, equity/cost impacts, and opportunities associated with electrification of commercial natural gas end uses. Technologies that currently exist for electrifying HVAC systems and water heaters in the commercial sector range from cost-effective to prohibitively expensive, usually depending on the complexity of the system.²⁵ Additionally, while all-electric HVAC systems and water heaters can be cost-effective over their lifetimes, up-front costs may be substantially higher with payback periods longer than 10 years.²⁶ Financial incentives are needed to make conversion of about 73% of commercial floor space cost effective, not to mention other end uses that are less well studied.²⁷ To meet this need, Action 2 commits the City to both research and facilitating equitable and inclusive funding opportunities for the commercial sector.

Measure BE-3 Action 3 Battery Storage

While building electrification is not expected to result in additional strain on the electrical grid,²⁸ commercial-scale battery storage projects present an opportunity to improve the resilience of the electrical grid, city and community facilities, and provide cost savings over the lifetime of the equipment.²⁹ BE-3 Action 3 commits the City to exploring opportunities to support commercial battery storage installations.

Measure BE-3 Actions 4 Building Performance Standards

Building performance standards (BPS) require building owners to meet emission performance targets by actively improving their buildings over time.³⁰ This type of standard is particularly useful for existing commercial and multifamily buildings. The standards are designed to improve performance for a variety of building aspects, including energy use, water use, and emissions, and send market signals to encourage investments in energy efficiency and other clean energy technologies and strategies such as increased use of renewable energy, energy storage, and electrification.³¹ Potential GHG emissions reduction from mandatory building performance

²⁴ Steven Nadel and Chris Perry. American Council for an Energy-Efficient Economy (ACEEE). October 2020. Electrifying Space Heating in Existing Commercial Buildings: Opportunities and Challenges. Accessed at: <https://www.aceee.org/press-release/2020/10/report-electrifying-heating-existing-commercial-buildings-could-cut-their>

²⁵ Ibid.

²⁶ Ibid.

²⁷ Ibid.

²⁸ Reem Rayef. National Resources Defense Council. April 2020. California's Grid is Ready for All-Electric Buildings. Accessed at: <https://www.nrdc.org/experts/merrian-borgeson/californias-grid-ready-all-electric-buildings>

²⁹ National Renewable Energy Laboratory (NREL). June 2021. Battery Storage for Resilience. Accessed at: <https://www.nrel.gov/docs/fy21osti/79850.pdf>

³⁰ State and Local Energy and Environment Program. 2021. Building Performance Standards: Overview for State and Local Decision Makers. Accessed at: https://www.epa.gov/sites/default/files/2021-02/documents/benchmarking_building_performance_standards_section2.pdf

³¹ Ibid.

standards for commercial buildings are estimated to be, on average, 30%.³² The City will establish a BPS for commercial buildings over 20,000 square feet. To establish a BPS, City will

- set the BPS goal(s) using GHG emissions data from the City’s community inventory
- select appropriate energy and GHG metrics on which to base compliance
- work with stakeholders, particularly potentially affected building owners and tenants, throughout the process to inform the approaches
- identify subject properties and exemptions
- determine compliance approaches and enforcement mechanisms for noncompliance
- provide technical and funding support to subject property owners
- develop reporting program mechanisms.

Measure BE-4 Maintain CCCE Opt-out Rates at or Below 4% for Residential Buildings and 2% for Commercial Buildings

Table 7 Measure BE-4 Reductions

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
1	Support annual analysis of CCCE opt-out rates in the City and encourage opting up to CCCE prime 100% renewable energy option.	Supportive	Supportive	Supportive
2	Increase uptake of 100% renewable energy option from CCCE, incentivizing households in affordable housing units.	Supportive	Supportive	Supportive
3	Promote benefits of opting in to CCCE service, particularly those in frontline neighborhoods, small businesses and veteran, woman and minority owned businesses.	Supportive	Supportive	Supportive

Measure BE-4 Actions 1-3 CCCE Opt-in Rates

Electricity in the City is predominantly supplied by Central Coast Community Energy (CCCE), a Community Choice Aggregation (CCA). CCAs are public, non-profit agencies that procure electricity for a region or community in place of the incumbent utility provider, in this case Pacific Gas & Electric (PG&E). While CCCE determines how electricity will be procured to meet customer demand, PG&E is still responsible for delivering that electricity to CCCE customers via the existing electrical grid. CCCE offers one 100% renewable electricity option with lower GHG emissions rates than PG&E: 3Cprime, made up of 100% renewable electricity from solar and wind.³³ Customers in the City of

³² Steven Nadel and Adam Hinge. 2020. Mandatory Building Performance Standards: A Key Policy for Achieving Climate Goals. Available <https://www.aceee.org/sites/default/files/pdfs/buildings_standards_6.22.2020_0.pdf>. Accessed April 13, 2022.

³³ Central Coast Community Energy (CCCE). 2019. Energizing Economic and Environmental Progress for the Central Coast. Accessed at: <https://3cenergy.org/wp-content/uploads/2020/11/3CE2020-PCL-Postcard-Web-ADA-v7.pdf>

Santa Cruz are automatically enrolled in CCCE 3Cchoice,³⁴ but have the option to opt-up to 3Cprime, or to opt-out to receive electricity directly from PG&E. In 2019, CCCE opt-out rates (non-CCCE usage rates) in the City of Santa Cruz was approximately 4% for residential customers and 2% for commercial customers.

Typical California CCA opt-out rates are 0% for municipal accounts, 5% for residential accounts, and 15% for commercial and industrial accounts.³⁵ Non-CCCE usage rates in the City of Santa Cruz are comparatively low, however, switching customers, to 100% renewable energy option from CCCE reduces electricity emissions in the short term and increases the GHG reduction impact of Measures BE-2 and BE-3, when natural gas end-uses are converted to electricity. Measure BE-4 and its actions aim to maintain non-CCCE usage rates at or below 4% for residential and 2% for commercial customers.

The City will support annual analysis of CCCE opt-out rates (BE-4 Action 1) and encourage opting up to 100% renewable energy option from CCCE (BE-4 Action 2). In general, the City understands that cost is often the deciding factor for residents and businesses when making energy provider choices.³⁶ For this reason, BE-4 Actions 2 and 3 commit the City to focusing outreach and incentives for opting in to CCCE in frontline communities. While the impacts associated with promotional and educational outreach around CCAs have not been well documented, some research has been conducted on the effects of promotion and education on energy. One study in New York showed that out of the 8,991 people who participated in informational programs, 69% implemented the recommended practices.³⁷ Another research meta-analysis reviewed dozens of papers covering various energy efficiency, water efficiency, and waste outreach and found that education-only campaigns could produce between 10-12% energy savings.³⁸ The City is committed to tracking the opt-out rate on an annual basis and develop additional actions if the opt-out rate increases.³⁹

³⁴ In 2019, 3Cchoice had slightly higher eligible renewable content (30.9%) than PG&E (28.5%). Renewable electricity for 3Cchoice comes from a mix of Biomass & Biowaste, Geothermal, Eligible Hydroelectric, Solar, and Wind. Central Coast Community Energy (CCCE). 2019. Energizing Economic and Environmental Progress for the Central Coast. Accessed at: <https://3cenergy.org/wp-content/uploads/2020/11/3CE2020-PCL-Postcard-Web-ADA-v7.pdf>

³⁵ County of Butte. July 2018. Community Choice Aggregation Initial Feasibility Study. Page 18. Accessed at: http://buttecounty.granicus.com/MetaViewer.php?view_id=2&clip_id=512&meta_id=87147

³⁶ Sara Appel. Civic Business Journal. June 2018. The City of Rancho Mirage Launches Community Choice Aggregation Program with Low Opt-Out Rate. Accessed at: <https://www.civicbusinessjournal.com/city-rancho-mirage-launches-community-choice-aggregation-program-low-opt-rate/>

³⁷ Joseph Laquatra. Journal of Extension. December 2009. The Consumer Education Program for Residential Energy Efficiency. Accessed at: <https://archives.joe.org/joe/2009december/a6.php>

³⁸ John Green and Lisa A. Skumatz. Skumatz Economic Research Associates, Inc. 2000. Evaluating the Impacts of Education/Outreach Programs: Lessons on Impacts, Methods, and Optimal Education. Accessed at: https://aceee.org/files/proceedings/2000/data/papers/SS00_Panel8_Paper10.pdf

³⁹ Emissions factors used in this document were generated based on current and projected CCCE emissions factor (see Appendix A).

Measure BE-5 Increase Resiliency through Equitable Energy Efficiency and Local Solar Programs

Table 8 Measure BE-5 Reductions

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
1	Partner to deliver weatherization, healthy home retrofits, energy efficiency and solar system installs to low income homeowners and rental units.	Supportive	Supportive	Supportive
2	Advocate to reform community solar policies and rates, enabling residential and commercial renters to participate in benefits of local solar.	Supportive	Supportive	Supportive
3	Establish rental building energy performance standards to increase adoption of rebated energy efficiency and electrification measures.	Supportive	Supportive	Supportive

Measure BE-5 Actions 1-3 Energy Efficiency and Local Solar Programs

BE-5 Actions 1 through 3 improve sustainability and resilience in the City (with a focus on frontline communities) by delivering weatherization, healthy home retrofits, energy efficiencies and solar system installs to low income homeowners and rental units (BE-5 Action 1); advocating to reform community solar policies and rates, enabling residential and commercial renters to participate in benefits of local solar (BE-5 Action 2); and establishing rental building emissions performance standards (BPS) to increase adoption of rebated energy efficiency and electrification measures (BE-5 Action 3). These actions support energy efficiency in the community and Measure BE-2, which is to electrify 31% of existing residential buildings by 2030 and 53% by 2035.

Measure BE-6 Provide Inclusive Engagement, Equitable Process and Regional Coordination to Maximize Building Electrification Carbon Reduction Outcomes and Other Co-benefits

Table 9 Measure BE-6 Reductions

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
1	Define equity metrics for new and existing building electrification ordinances' implementation and enforcement based on feedback from frontline communities, successful examples from other jurisdictions, and structure ordinances and permitting compliance program to meet these metrics. Equity metrics should be designed to prevent displacement and	Supportive	Supportive	Supportive

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
	lead to end-user energy costs for low-income populations that are lower after electrification than before.			
2	Partner with CCCE to develop all-electric rates by income-level and incentivize equitable all-electric retrofits.	Supportive	Supportive	Supportive
3	Advance new and existing building electrification as a priority at all scales.	Supportive	Supportive	Supportive
4	Advocate for state and federal regulatory changes to enable neighborhood level electrification, community solar, natural gas pruning, and rate stabilization policies.	Supportive	Supportive	Supportive
5	Conduct a study to evaluate the need to increase fees to provide outreach, trainings, and additional staff for building electrification compliance.	Supportive	Supportive	Supportive
6	Facilitate equitable access to accurate and current information about electrification programs, incentives and opportunities. Develop induction cooktop loaner programs.	Supportive	Supportive	Supportive
7	Participate in regional workforce development opportunities for building electrification.	Supportive	Supportive	Supportive
8	Work with partners to establish a Regional Energy Network for energy efficiency and electrification building resources, expand education on subsidized rate programs, code compliance training and apprenticeship program.	Supportive	Supportive	Supportive

Measure BE-6 Actions 1-8 Inclusive and Equitable Process and Engagement to Maximize Building Electrification Carbon Reduction Outcomes and Other Co-benefits

BE-6 Actions 1 through 8 provide a suite of equity-centered activities that will support the City's building energy measures. These actions include defining equity metrics based on feedback from frontline communities; leveraging local and regional partnerships to incentivize equitable all-electric retrofits; advocating for state and federal regulator changes to enable neighborhood level electrification, community solar, and more; facilitating equitable access to accurate and current information about electrification programs, incentives, and opportunities; and working with

partners to establish a Regional Energy Network for energy efficiency and building electrification resources.

3 Transportation Measures

Reducing transportation emissions and becoming a carbon neutral city means reducing the number of miles driven by fossil fuel-powered vehicles, which account for 69% of GHG emissions in the City of Santa Cruz. The City's transportation strategy consists of a multi-pronged approach for incentivizing alternatives to fossil fuel-powered vehicle trips, including shifting transportation mode share to active transportation and public transportation options; electrifying passenger and commercial vehicle trips, decarbonizing off-road equipment, and promoting efficient use of urban land resources, for example through infill development. This CAP prioritizes reducing vehicle miles travelled (VMT) first, by improving active and public transportation mode share, then shifting remaining VMT to electric vehicles. While in theory, 100% electrification of all vehicles in the City of Santa Cruz could achieve zero-emissions in the transportation sector without reducing VMT, the City recognizes that cars and roadways carry huge amounts of embodied emissions⁴⁰ not accounted for in the inventory, over which the City has little control.⁴¹ Reducing VMT carries additional benefits outside of GHG emissions reductions as well, including reduced congestion, reduced space needed for roadways and parking, local economic revitalization, and lifestyle improvements.⁴² Based on this strategy, the CAP's transportation measures consist of the following:

- T-1: Implement programs for active transportation (walking and biking) that achieve 23% bicycle mode share by 2030 and 30% by 2035
- T-2: Implement programs for public transportation that achieve 8% public transportation mode share by 2030 and 12% public transportation mode share by 2035
- T-3: Develop programs and policies to discourage driving single-occupancy passenger vehicles
- T-4: Increase passenger electric vehicle (EV) adoption to 35% mode share by 2030 and 40% by 2035
- T-5: Increase commercial EV adoption to 25% by 2030 and 35% by 2035
- T-6: Electrify or otherwise decarbonize 50% of off-road equipment by 2030 and 75% by 2035
- T-7: Advocate for remote work policy and infrastructure

To achieve 23% mode shift to active transportation (Measure T-1), the City plans to provide low stress and convenient infrastructure and prioritize mobility via active transportation. Infrastructure needs include bikeways, sidewalk improvements, and expansions of both kinds of infrastructure to all areas of the City. Once the infrastructure is available and stress/comfort is not an issue, comparison with other cities around the world suggest more people will choose active transportation.

To achieve 8% mode shift to public transportation (Measure T-2), the City plans to improve public and shared programs and infrastructure. This measure prioritizes shared and public transportation in the City, makes public transportation more convenient, and reduces the time it takes to reach a

⁴⁰ Embodied emissions are associated with energy used in the extraction, processing, and transportation of materials.

⁴¹ Mark Mills. August 2021. The tough calculus of emissions and the future of EVs. Accessed at: <https://techcrunch.com/2021/08/22/the-tough-calculus-of-emissions-and-the-future-of-evs/>

⁴² Richard Campbell and Margaret Wittgens. March 2004. The Business Case for Active Transportation. Accessed at: http://thirdwavecycling.com/pdfs/at_business_case.pdf

destination via public transportation – important determining factors for shared and public transportation mode share.

Measure T-3 provides the supportive framework for the actions in Measures T-1 and T-2, and TR-3 by creating behavior disincentives for owning a fossil fuel-powered passenger vehicle, such as limited parking options, local taxes to support transit, and congestion charges.

While the City cannot require its residents or businesses to buy electric vehicles, Measure T-4 and T-5 will ensure the infrastructure and incentives are present in the City to begin to remove present barriers to passenger and commercial electric vehicle adoption. Measure T-6 establishes a goal of decarbonizing 50% of off-road equipment by 2030, supported by a new City ordinance to ban gas powered small off road engines, and incentives. Finally, Measure T-7 supports remote work policies and infrastructure through regional collaboration and advocacy.

Measure T-1 Implement Programs for Active Transportation (Walking and Biking) that Achieve 23% Bicycle Mode Share by 2030 and 30% by 2035

Table 10a Measure T-1 Reductions

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
1	Fund, staff and implement the Active Transportation Plan Update, Vision Zero, Safe Routes to School and the 2030 General Plan update.	0.051	0.069	0.067
2	Complete all portions of Rail Trail and work with partners to plan active and public transportation to Rail line.			
3	Require secure bike parking near public transportation and in major activity centers. Require bike parking installation in new commercial developments and existing commercial renovations.	Supportive	Supportive	Supportive
4	Re-establish citywide e-bike share with explicit consideration of how to make accessible to frontline groups.	Supportive	Supportive	Supportive
5	Build new infrastructure that provides equitable access to safe bicycle and pedestrian pathways throughout the city, prioritizing frontline neighborhoods.	Supportive	Supportive	Supportive
6	Pilot Neighborhood Greenways to slow traffic and improve walking and biking and evaluate piloting time based closures to vehicles primarily in business districts.	Supportive	Supportive	Supportive

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
7	Accelerate housing development and support commercial and industrial development in city limits, concentrating the most intensive growth in transit corridors and central areas of the city to promote walking and biking to nearby jobs, entertainment, goods, services, and public transportation, through the General Plan Housing Element Update to be approved in 2023. Prioritize expansion of affordable housing stock. Partner to incentivize 15-minute neighborhoods, particularly within frontline neighborhoods communities, supported by dense housing and buildings, provision of locally sited essential services and amenities, and connected by a network of bike, pedestrian, and transit services.	Supportive	Supportive	Supportive

Measure T-1 Actions 1-2 Pedestrian and Bicycle Network and Infrastructure

In 2019, bicycle mode share in the City of Santa Cruz was 8%, but has been up as high as 12% until recently, see Appendix A: GHG Emissions Forecast of the Climate Action Plan. Studies show that investments in active transportation infrastructure have demonstrated improvements in active transportation mode shifts and GHG emissions reductions.⁴³

The City of Santa Cruz adopted a number of active transportation efforts, including the:

- Active Transportation Plan - which identifies programs and projects to improve pedestrian and bicycle infrastructure in the City of Santa Cruz.⁴⁴
- Vision Zero policy - with a goal of zero fatalities or serious injuries, while increasing safe, healthy, equitable mobility for all,⁴⁵
- Safe Routes to School - which fund safety improvements around schools and bike and pedestrian education programs in the City,⁴⁶ and

⁴³ Andrew Glazener and Haneen Khreis. January 2019. Transforming our Cities: Best Practices Towards Clean Air and Active Transportation. Accessed at: <https://link.springer.com/article/10.1007/s40572-019-0228-1>

⁴⁴ City of Santa Cruz. February 2017. City of Santa Cruz Active Transportation Plan. Accessed at: <https://www.cityofsantacruz.com/home/showpublisheddocument/60966/636353003776970000>

⁴⁵ City of Santa Cruz. 2021. Santa Cruz 2018 and 2019 Traffic safety Reports Offer Guide to Engineering and Enforcement Efforts. Accessed at: <https://www.cityofsantacruz.com/Home/Components/News/News/9256/36>

⁴⁶ City of Santa Cruz. N.d. Safe Routes to School. Accessed: <https://www.cityofsantacruz.com/government/city-departments/public-works/traffic-engineering/bicycle-pedestrian-facilities-and-programs/safe-routes-to-school#:~:text=Safe%20Routes%20to%20School%20Grant,within%20Santa%20Cruz%20city%20limits.>

- 2030 General Plan update - which includes policies and programs for enhanced public transportation, bicycle, and pedestrian networks throughout the community.⁴⁷
- GO Santa Cruz – a City program that offers incentives to help downtown employees choose options other than driving to get to work.⁴⁸

T-1 Action 1 commits the City to expanding efforts already in place through funding, staffing, and implementing the Active Transportation Plan, Vision Zero, Safe Routes to School, and the 2030 General Plan update.

Walking, bikes, e-bikes, and other active transportation modes can have a strong impact on cities' GHG emissions, with the potential to cut urban transportation emissions up to 11% in cities that make a strong commitment to promoting bicycle travel.⁴⁹ Nationally in 2017, 16.4% of vehicle trips were one mile or less, a distance easily travelled by foot or bicycle.⁵⁰

T-1 Action 2 commits the City to improving all portions of the Rail Trail and work with partners to plan active and public transportation to Rail line. The City's existing Active Transportation Plan identify a number of programs and projects, such as providing a complete bicycle and pedestrian network among residential areas, downtown and major activity centers, sidewalk buildouts, intersection improvements, Safe Routes to School program expansion, and education programs, that will make the active transportation network in the City of Santa Cruz more connected, accessible, and safe.

In order to estimate the mode shift potential associated with T-1 Actions 1 and 2, other cities with similar buildouts (bike network mileage versus road network mileage) were compared. Results from significant investment in bicycle infrastructure in California suggest that bicycle mode share can be increased on par with leading bicycle cities in the state. The City of Davis leads the state with 23.2% bicycle mode share in 2019 followed by the City of Berkeley with 9.7% bicycle mode share in 2019 (see Table 10b). Given that the City of Santa Cruz currently has bicycle mode share similar to that of Berkeley, the second highest leading City in bicycle mode share in the state, a history of reaching bike ridership goals, and a bike network buildout ratio similar to Davis, GHG emissions quantification in 2030 for these actions estimates 23%. The methods and assumptions used to calculate the GHG emissions reductions associated with these actions are shown in Table 10c.

⁴⁷ City of Santa Cruz. 2030. General Plan. Accessed at : <https://www.cityofsantacruz.com/home/showpublisheddocument/71130/637453677885300000>

⁴⁸ City of Santa Cruz. 2022. GO Santa Cruz. Accessed at: <https://www.cityofsantacruz.com/how-do-i/go-santa-cruz>

⁴⁹ Jacob Mason et al. Institute for Transportation & Development Policy and the University of California, Davis. November 2015. A Global High Shift Cycling Scenario. Accessed at: https://itdpdotorg.wpengine.com/wp-content/uploads/2015/11/A-Global-High-Shift-Cycling-Scenario_Nov-2015.pdf

⁵⁰ National Household Travel Survey. December 2021. Population Vehicle Trips Statistics. Accessed at: <https://nhts.ornl.gov/vehicle-trips>

Table 10b Bicycle Network Buildout versus Mode Share

City	Bike Network Length (miles)	Roadway Length (miles)	Bike Buildout Ratio	Bicycle Mode Share (%)
City of Davis, California (2019)	123 ¹	169 ²	0.72	23 ³
City of Berkeley, California (2019)	51 ⁴	221 ⁵	0.23	9.7 ⁶
City of Santa Cruz, California (2019)	71.3 ⁷	136 ⁸	0.52	8 ⁹
City of Santa Cruz, California (2030)	98	136	0.72	23 ¹⁰

¹ City of Davis. 2020. Form 1878 (League of American Bicyclists Bicycle Friendly America Application Form). Accessed at: <https://bikeleague.org/content/about-bfc-application-process>

² Ibid.

³ Wikipedia. November 2021. List of U.S. Cities with Most Bicycle Commuters. Accessed at: https://en.wikipedia.org/wiki/List_of_U.S._cities_with_most_bicycle_commuters

⁴ City of Berkeley. May 2017. City of Berkeley Bicycle Plan. Accessed at: https://www.cityofberkeley.info/uploadedFiles/Public_Works/Level_3_-_Transportation/Berkeley-Bicycle-Plan-2017-Executive%20Summary.pdf

⁵ City of Berkeley. 2003. General Plan Transportation Element Introduction. Accessed at: https://www.cityofberkeley.info/Planning_and_Development/Home/General_Plan_-_Transportation_Element.aspx

⁶ Wikipedia. November 2021. List of U.S. Cities with Most Bicycle Commuters. Accessed at: https://en.wikipedia.org/wiki/List_of_U.S._cities_with_most_bicycle_commuters

^{7, 8, 9} Tiffany Wise-West. May 11, 2022. Personal Communication.

Appendix A

⁹ Estimated just below the City of Davis mode share in 2019 since the buildout ratio for City of Santa Cruz in 2030 will be equal to Davis' in 2019.

Table 10c GHG Emissions Reductions from Measure T-1 Actions 1-2

Inputs and Assumptions			
Existing bicycle mode share (%) (2019) ¹	8		
Average bike trip length (miles) ²	1.5		
GHG Emissions Reductions Calculations			
Year	2030	2035	2045
Bicycle mode share target (%)	23	30	30
Passenger trips/mile ³	0.1291	0.1300	0.1324
Mode share increase from 2019 (%)	15	22	22
Passenger VMT ⁴	415,687,575	432,587,184	463,733,351
Passenger trips	53,654,512	56,245,962	61,395,552
New bike trips substituted for vehicle trips (miles)	8,262,795	12,599,095	13,752,603
Passenger VMT reduced with bike trips (Miles)	12,394,192	18,898,643	20,628,906
Passenger emissions factor (MT CO ₂ e/VMT) ⁵	0.00029541	0.00027453	0.00025806
Totals			
Total Reductions (MT CO ₂ e)	3,661	5,188	5,323
Population	72,218	75,257	79,534
Per Capita Reductions (MT CO ₂ e/person)	0.051	0.069	0.067

¹ Appendix A

² California Air Resources Board (CARB). April 2019. Quantifying Reductions in Vehicle Miles Traveled from New Bike Paths, Lanes, and Cycle Tracks. Accessed at: http://ww2.arb.ca.gov/sites/default/files/auction-proceeds/bicycle_facilities_technical_041519.pdf

³ Calculated from data for the County of Santa Cruz from California Air Resources Board's (CARB) EMFAC2021 model, accessed at: <https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9>

⁴ Appendix A

⁵ Calculated from data for the County of Santa Cruz from California Air Resources Board's (CARB) EMFAC2021 model, accessed at: <https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9>

Measure T-1 Action 3 Bicycle Parking Infrastructure

A bicycle network isn't complete without secure and convenient bike parking at the end of a trip. Bicycle parking in the City of Santa Cruz is available at many shopping centers, schools, and parks. Most bicycle parking is short-term bicycle racks. The City of Santa Cruz must continue to increase the amount of high-quality bicycle parking to improve its Bicycle Friendly Communities designation per the League of American Bicyclists. Improved bicycle parking would increase bicycling by making residents confident that they will have a safe place to leave their bike when they arrive at their destination.⁵¹ T-1 Action 3 commits the City to ensuring bike parking near public transportation and in major activity centers.

Measure T-1 Action 4 Bike Share

T-1 Action 4 commits the City to re-establish citywide bike share with special considerations for making it accessible to frontline communities. There is good evidence to suggest that bike share programs like e-bike share can reduce VMT and associated GHG emissions. A 2014 study from Utrecht University suggests that the car substitution rate of shared rideables is dependent on what proportion of trips are already taken by car in a city.⁵² In the study, Minneapolis and Melbourne had between 70% and 76% vehicle mode share in 2014 and showed high rates of car mode substitution (19% to 21%) after shared rideables were introduced. On the other hand, London and Washington DC had between 36% and 46% vehicle mode share in 2014 and showed much lower rates of car mode substitution where shared rideables were introduced (2% to 7%). Success of shared rideables in replacing vehicle use is not known in Santa Cruz, but a 2019 report from the City of Santa Monica found that 49% of shared rideable trips replaced vehicle trips based on answers to survey questions.⁵³ Santa Cruz and Santa Monica both had high vehicle mode share (73%⁵⁴ and 72% respectively) before shared rideables were introduced, suggesting that the City of Santa Cruz would see a similar if not higher car substitution rate of shared rideables as Santa Monica. Both studies previously mentioned suggest that average trip duration of shared rideable trips is about 2 miles (this is seen consistently across the six diverse cities mentioned above) and appears to be largely independent of other city metrics.

An e-bike ride share program has the potential to be even more successful, as e-bike riders can go longer distances and are more accessible to non-riders. A study in Portland, Oregon found that a 15% e-bike mode share could result in a 12% reduction in transportation-related emissions.⁵⁵

⁵¹ City of Santa Cruz. February 2017. City of Santa Cruz Active Transportation Plan. Accessed at: <https://www.cityofsantacruz.com/home/showpublisheddocument/60966/636353003776970000>

⁵² Elliot Fishman et al. 2014. Bike share's impact on car use: Evidence from the United States, Great Britain, and Australia. Accessed at: <http://mobility-workspace.eu/wp-content/uploads/Bike-shares-impact-on-car-use-3.pdf>

⁵³ City of Santa Monica. 2019. Shared Mobility Pilot Program Summary Report. Accessed at: https://www.smgov.net/uploadedFiles/Departments/PCD/Transportation/SantaMonicaSharedMobilityEvaluation_Final_110419.pdf

⁵⁴ United States Census Bureau. 2019. American Community Survey 1-year Estimates. Accessed at: <https://data.census.gov/cedsci/table?q=2019%20ACS%20transportation%20City%20of%20Santa%20Cruz&tid=ACSDT1Y2019.B08141>

⁵⁵ Michael McQueen. October 2020. The E-Bike Potential: Estimating regional e-bike impacts on greenhouse gas emissions. Accessed at: <https://www.sciencedirect.com/science/article/pii/S1361920920306696>

Measure T-1 Actions 5-6 Equitable Access

T-1 Actions 5 and 6 integrate equity considerations into project prioritization, based on the understanding that the distribution of pedestrian and bicycle infrastructure is often inequitable. Equity must be considered as part of the active transportation infrastructure planning process.⁵⁶ T-1 Actions 5 and 6 commit the City to focusing active transportation infrastructure improvements in frontline communities, increasing the safety of active transportation in those areas. T-1 Action 6 pilots designated streets for bicycles in frontline communities, which helps to prioritize bicycle and pedestrian movement in the City and increase the safety of active transportation in those areas.

Measure T-1 Action 7 and 8? Efficient and Equitable Land Use Planning

Efficient land use planning can encourage more walking and biking, thereby reducing GHG emissions from vehicle miles traveled. The City's Housing Element of the General Plan includes major directives related to land use and transportation that promote efficient land use planning including:

- Encourage a mix of commercial and residential uses along transit corridors and in the central core.
- Support the proposed higher density along major transit corridors and in the downtown core.
- Encourage the development of housing affordable to people with special housing needs such as seniors, people with disabilities, single parent families, college students, and people who are homeless.
- Promote affordable housing through ordinances and current inclusionary programs that don't require significant public subsidy.
- Continue the City's density bonus program, in tandem with the affordable housing ordinance, to allow developers to build additional housing units which help subsidize the inclusion of affordable units in the project.

Action 7 commits the City to continuing efficient and equitable land use planning through the General Plan Housing Element update.

Measure T-2 Implement Programs for Public Transportation that Achieve 8% Public Transportation Mode Share by 2030 and 12% Public Transportation Mode Share by 2035

Table 11a Measure T-2 Reductions

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
1	Support countywide coordination to fund and implement Bus Rapid Transit.	0.002	0.032	0.089

⁵⁶ Richard J Lee. September 2016. Understanding the role of equity in active transportation planning in the United States. Accessed at: <https://www.tandfonline.com/doi/abs/10.1080/01441647.2016.1239660>

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
2	Support public transportation prioritizing serving major corridors, destinations, and frontline neighborhoods. Advocate for enhanced and increased public transportation service with improved customer serving amenities (e.g., all door boarding, on demand, online ticketing, Wi-Fi).			
3	Require more employers to develop education and financial incentives for employees to bike, walk, carpool, or take the bus to work. Require large employers to subsidize alternative modes.			
4	Advocate for METRO to fund and implement a free public transportation pilot program for students, foster youth, and unhoused youth in the City.	Supportive	Supportive	Supportive
5	Support funding for public transportation fleet electrification.	Supportive	Supportive	Supportive
6	Equitably market and publicize public transportation improvements and incentive programs as they are planned and implemented.	Supportive	Supportive	Supportive
7	Partner with Santa Cruz County Regional Transportation Commission, Santa Cruz County, and Regional Agencies to expand citywide transportation communications and marketing programs to residents commuting outside of the City for work.	Supportive	Supportive	Supportive

Measure T-2 Actions 1-3 Public Transportation Improvements

In general, improvements to public transportation systems reduce VMT and a city's dependence on fossil fuels. The best ways to improve a public transportation system and reduce driving is to expand its geographic reach and increase the frequency and reliability of public transportation service. Each new car-owner convinced to get on a bus is one less car on the road, reducing personal VMT. Approximately 1% increase in public transportation frequency saves 0.5% in VMT.⁵⁷ Further, improving public transportation access has the potential to shift trips from cars to transit, which may reduce vehicle trips, VMT, and GHG emissions, with time spent getting to a public transportation stop being the key indicator of public transportation access.⁵⁸

Effective implementation of the key actions under Measure T-2 – including designated lanes for public transportation – requires planning and funding. T-2 Action 1 commits the City to support countywide coordination to fund and implement Bus Rapid Transit, which helps to prioritize bus

⁵⁷ Todd Litman. Victoria Transport Policy Institute. August 2021. Evaluating Public Transit Benefits and Costs Best Practices Guidebook. Accessed at: <https://www.vtpi.org/tranben.pdf>

⁵⁸ California Air Resources Board (CARB). August 2017. Methods to Assess Co-Benefits of California Climate Investments: Vehicle Miles Travelled. Accessed at: http://ww2.arb.ca.gov/sites/default/files/auction-proceeds/carb_vehicle_miles_traveled.pdf

movement in the City. This action addressed the need for increased frequency and reliability of public transportation service.

T-2 Action 2 supports public transportation prioritizing serving major destinations and frontline neighborhoods, where those who need public transportation are most likely to work and reside. T-2 Action 3 requires employers to develop education and financial incentives for employees to bike, walk, carpool, or take the bus to work and requires large employers to subsidize alternative modes. In order to estimate the mode shift potential associated with T-1 Actions 1 through 3, other cities with similar levels and types of public transportation investment were compared. Success in other cities suggests that significant investment in public transportation can increase public transportation mode share on par with those cities. The City of San Francisco leads the state with 26% public transportation mode share in 2017 (pre-COVID).^{59, 60} The City of Seattle has documented significant increases in public transportation mode share to 48% in 2017 (pre-COVID).⁶¹ Key strategies employed by these cities include significant expansions of public transportation service lines, designated streets or lanes for bus lines to decrease headways, implementation of taxes to support transit, and reduced parking availability. The City of Santa Cruz is following the lead of San Francisco and Seattle by implementing the actions under Measure T-2 and Measure T-3, which include supporting prioritization of service in frontline communities and to major destinations (T-1, Action 1), supporting Bus Rapid Transit on corridors (T-2, Action 2), and reducing parking availability in the City (T-3, actions 3-7). Quantification conservatively estimates 8% public transportation mode share is achievable in 2030, given the barriers to public transportation that the City of Santa Cruz currently faces. The methods and assumptions used to calculate the GHG emissions reductions associated with these actions are shown in Table 11b.

⁵⁹ San Francisco Municipal Transportation Agency (SFMTA). December 2021. Sustainable Transportation Mode Share. Accessed at: <https://www.sfmta.com/reports/sustainable-transportation-mode-share>

⁶⁰ Pre-COVID numbers are referenced here with the understanding that public transportation usage during the COVID pandemic were lower than normal and are likely to increase again assuming a return to pre-COVID conditions.

⁶¹ Commute Seattle. December 2021. 2019 Mode Split Study Report. Accessed at: <https://www.commuteseattle.com/resource/2019-mode-split-study/>

Table 11b GHG Emissions Reductions from Measure T-2 Actions 1-3

Inputs and Assumptions			
Existing public transportation mode share (2019) ¹	7.7%		
Average public transportation trip length (miles) ²	3.8		
GHG Emissions Reductions Calculations			
Year	2030	2035	2045
Public transportation mode share target (%) ³	8	12	20
Passenger trips/mile ⁴	0.1291	0.1300	0.1324
Mode share increase from 2019 (%)	0.3	4.0	12.0
Passenger VMT (miles) ⁵	401,683,748	413,688,541	443,104,445
Passenger trips	51,846,980	53,788,718	58,664,407
New public transportation trips substituted for vehicle trips	155,541	2,312,915	7,215,722
VMT reduced with public transportation (miles)	591,056	8,789,076	27,419,744
Passenger emissions factor (MT CO ₂ e/VMT) ⁵	0.00029541	0.00027453	0.00025806
Totals			
Total Reductions (MT CO ₂ e)	174	2,412	7,076
Population	72,218	75,257	79,534
Per Capita Reductions (MT CO ₂ e/person)	0.002	0.032	0.089

¹ United States Census Bureau. 2019. American Community Survey S0801 Commuting Characteristics by Sex. Accessed at: <https://data.census.gov/cedsci/table?g=1600000US0669112&tid=ACSST1Y2019.S0801&hidePreview=true>

² See Table 1; average of trip lengths for bus and light rail used.

American Public Transportation Association. December 2018. 2018 Public Transportation Fact Book. Accessed at: <https://www.apta.com/wp-content/uploads/Resources/resources/statistics/Documents/FactBook/2018-APTA-Fact-Book.pdf>

³ Commute Seattle. December 2021. 2019 Mode Split Study Report. Accessed at: <https://www.commuteseattle.com/resource/2019-mode-split-study/>

⁴ Calculated from data for the County of Santa Cruz from California Air Resources Board’s (CARB) EMFAC2021 model, accessed at: <https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9>

⁵ Forecasted VMT from adjusted forecast (Appendix A) minus VMT reduced from Measure T-1.

⁵ Calculated from data for the County of Santa Cruz from California Air Resources Board’s (CARB) EMFAC2021 model, accessed at: <https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9>

Measure T-2 Actions 4-7 Funding and Outreach

The City of Santa Cruz understands that reducing VMT through improved public transportation will require a large behavior shift in the City and in California as a whole. Current public transportation mode share in the City of Santa Cruz is 7.7% (see Table 9 and sources above). Currently, the City of Santa Cruz is expanding the GO Santa Cruz campaign to incentivize downtown employees to choose options other than driving to get to work. In an effort to incentivize more behavior shift, T-2 Action 4 commits the City to advocate for METRO to fund and implement a free public transportation pilot program for students, foster youth, and unhoused youth in the County of Santa Cruz. This action was based on the successful implementation of a similar program in Sacramento, California.⁶² The City of Sacramento has seen demonstrated success with their program, including increased public

⁶² City of Sacramento. July 2021. Student Fare-Free Transit Pass Program. Accessed at: <https://www.sacrt.com/apps/free-sacramento-student-fares/>

transportation ridership, better school access for children, and improved after school transportation. Specifically, the share of students reporting using Sacramento Regional Transit post implementation of a free youth public transportation pass program implemented in 2019 increased from 10% to 15% based on survey results.⁶³

METRO has been actively working to make bus routes in the City of Santa Cruz greener. In 2021, METRO announced adding four electric buses to its fleet and has plans to continue to add electric buses in the future. Electrification of public transportation systems would further reduce community GHG emissions. T-2 Action 5 commits the City to support funding for public transportation fleet electrification. Lastly, T-2 Actions 6 and 7 focus on expanding public transportation marketing and incentives to frontline communities and residents commuting outside of the City for work.

Measure T-3 Develop Programs and Policies to Discourage Driving Single-occupancy Passenger Vehicles

Table 12 Measure T-3 Reductions

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
1	Partner with community groups to develop programs, and policies that discourage single-passenger vehicles while addressing equity concerns and tracking through equity metrics.	Supportive	Supportive	Supportive
2	Explore implementing a local gasoline and diesel car registration tax with exemption for low income people.	Supportive	Supportive	Supportive
3	Discourage single passenger vehicles in high traffic zones considering a congestion charge program, limiting parking options, bans in high traffic zones or public/multimodal transportation routes, and rideshare user taxes.	Supportive	Supportive	Supportive
4	Reduce off-street parking requirements for new housing developments close to frequent public transportation service, with sensitivity to low income neighborhoods whose parking is already constrained.	Supportive	Supportive	Supportive

⁶³ Alex Karner. University of Texas at Austin. January 2021. RydeFreeRT Evaluation Study: User Demographics, Attitudes, and Impacts on Travel Behavior. Accessed at: [https://www.sacrt.com/rydefreert/docs/RydeFreeRT_Evaluation_\(FINAL\).pdf](https://www.sacrt.com/rydefreert/docs/RydeFreeRT_Evaluation_(FINAL).pdf)

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
5	Consider limiting parking options for single-passenger vehicles in downtown and other commercial areas of the city balanced with needs of sustaining downtown employees, businesses and tourists.	Supportive	Supportive	Supportive
6	Adjust parking rates dependent on demand and supply in all downtown parking locations and evaluate whether revenue may be used to fund active transportation or public transportation projects.	Supportive	Supportive	Supportive
7	After implementing action 4, eliminate parking minimums citywide and develop parking maximums, while pricing all public parking spaces based on available transportation options, travel demand, and land use.	Supportive	Supportive	Supportive
8	Support the City's tourism economy by exploring and implementing neighborhood or zone based parking solutions and use of electric trolleys in high traffic and walkable areas.	Supportive	Supportive	Supportive
9	Remove parking to accommodate multimodal improvements, including protected bike lanes and transit improvements, taking into account business impacts.	Supportive	Supportive	Supportive

Measure T-3 Action 1 Partnerships and Planning

While incentive-based policies and infrastructure improvements, such as those identified in Measures T-1 and T-2 can be effective in changing community choices around transportation, the impacts of incentive-based policies increase when coupled with disincentives for less favorable choices, such as making it less convenient to drive a gasoline-fueled single passenger vehicle.⁶⁴ However, disincentive-based policies can be unpopular and place a burden on the community if not implemented carefully. T-3 Action 1 commits the City to partnering with community groups to develop programs and policies that discourage single-passenger vehicles while addressing equity concerns and tracking through equity metrics. Developing equity metrics for the implementation of disincentives ensures potential impacts to equity groups are mitigated.

Measure T-3 Actions 2-3 Local Taxes

Institution of local taxes has had demonstrated success in the City of Seattle, which observed an 89% increase in light rail ridership and a decrease in traffic and VMT since 2006 despite a substantial

⁶⁴ Gabriel Ayobami Ogunkunbi et al. August 2021. Evidence-Based Market Overview of Incentives and Disincentives in Electric Mobility as a Key to the Sustainable Future. Accessed at: <https://www.mdpi.com/2673-7590/1/2/17/pdf>

population increase.⁶⁵ Public transportation infrastructure improvements in the City of Seattle are paid for by a local sales tax, property tax, and car registration tax. T-3 Action 2 commits the City of Santa Cruz to explore implementation of a local gasoline and diesel car registration tax with exemptions for low-income residents.⁶⁶ T-3 Action 3 commits the City to consider a variety of tactics for discouraging single passenger vehicles in high traffic zones such as a congestion charge program, limited parking options, bans in high traffic zones and/or public transportation routes, and a rideshare user taxes. The City of San Francisco was given a special variance by the state of California to implement a Traffic Congestion Mitigation tax on private transportation service vehicles. The City of San Francisco now imposes a tax of 1.5% to 3.25% on fares for rides originating in San Francisco that are facilitated by commercial ride-share companies or provided by an autonomous vehicle or private transit services vehicle.⁶⁷ The tax is filed and paid monthly. The revenues of this tax go to offsetting the emissions from these services through the funding of public transportation and VMT reducing projects.⁶⁸

Measure T-3 Actions 4-7 Parking Restrictions

Reduced parking supply, when combined with other VMT reduction measures such as efficient public transit, land use policies, and urban parking pricing can reduce VMT.⁶⁹ Reduced parking supply makes driving single-passenger vehicles less attractive and can shift traveler choice to other options. Parking supply can be reduced by decreasing parking requirements for new development (e.g., T-3 Action 4), limiting parking options for single passenger vehicles in downtown and other commercial areas (e.g., T-3 Action 5), adjusting parking rates (e.g., T-3 Action 6) and implementing parking maximums (e.g., T-3 Action 7). T-3 Actions 4 through 6 commit the City to exploring options for implementing these types of parking restrictions in the City of Santa Cruz.

Measure T-3 Action 8 Support Tourism Economy

Santa Cruz experiences high volumes of summer traffic and congestion associated with tourism. The City owns and contracts to operate two electric trolleys to transport tourists between downtown, parking and the Main Beach and Boardwalk area. This increased volume requires special consideration to improve the visitor experience, minimize impacts to residents and support local businesses while reducing VMTs. Tourism related traffic and VMTs can be reduced by increasing the use of electric trolleys and exploring and implementing neighborhood or zone based parking solutions in high traffic and walkable areas.

⁶⁵ Erick Trickey. May 2019. Has Seattle Found the Solution to Driving Alone to Work? Accessed at: <https://www.politico.com/magazine/story/2019/05/23/seattle-car-free-transportation-what-works-226935/>

⁶⁶ The City has a ½ cent sales tax in perpetuity for METRO and a dedicated portion of Measure D going specifically to transit.

⁶⁷ City and County of San Francisco Treasurer & Tax Collector. 2020. Traffic Congestion Mitigation Tax (TCM). Accessed at: <https://sftreasurer.org/business/taxes-fees/traffic-congestion-mitigation-tax-tcm>

⁶⁸ City and County of San Francisco Treasurer and Tax Collector. December 2021. Traffic Congestion Mitigation Tax. Accessed at: <https://sftreasurer.org/business/taxes-fees/traffic-congestion-mitigation-tax-tcm#:~:text=The%20City%20imposes%20a%20Traffic,or%20private%20transit%20services%20vehicle.>

⁶⁹ Lee Provost. Caltrans Division of Research, Innovation and System Information. March 2018. Pricing and Parking Management to Reduce Vehicle Miles Travelled (VMT). Accessed at: <https://dot.ca.gov/-/media/dot-media/programs/research-innovation-system-information/documents/preliminary-investigations/final-pricing-parking-management-to-reduce-vehicles-miles-traveled-pi-a11y.pdf>

Measure T-4 Increase Passenger Electric Vehicle (EV) Adoption to 35% Mode Share by 2030 and 40% by 2035

Table 13a Measure T-4 Reductions

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
1	Install at least 1,247 new public EV charging stations prioritizing frontline neighborhood and high usage areas by 2030.			
2	Update municipal code to require new residential multifamily housing and large commercial building owners to install chargers in 20% of parking spaces and secure sufficient electric service capacity so that >20% of parking spaces are EV ready.	0.439	0.449	0.663
3	Advocate for programs and incentives for income tiered residential EV charger installations and EV purchases.			
4	Pursue partnership with affordable EV car share to serve affordable housing and multifamily developments in frontline neighborhoods, while also promoting EV car share citywide, for example by requiring car share for certain new projects.	Supportive	Supportive	Supportive
5	Partner with CCCE, PG&E, and community groups to increase adoption rates of EVs in frontline neighborhoods by stacking incentives and leveraging on-bill financing for EV chargers.	Supportive	Supportive	Supportive
6	Partner to conduct EV and public transportation education events in frontline neighborhoods.	Supportive	Supportive	Supportive
7	Engage compensated frontline communities in regional and local vehicle electrification strategy development.	Supportive	Supportive	Supportive

Measure T-4 Actions 1-3 Electric Vehicle Chargers

Adding and supporting the addition of electric vehicle chargers within the City of Santa Cruz will be the main mechanism through which the City will encourage electric vehicle (EV) adoption within the community. The state has established a goal of putting 5 million EVs on the road by 2030. However, the recent passing of executive order N-79-20 calls for 100% of passenger vehicle sales to be all-electric by 2035. This new executive order puts the total number of EVs on the road by 2035 at

approximately 15 million.⁷⁰ Based on the current number of vehicles registered in California, 15 million EV's would account for 35% of total passenger vehicles in 2035. The City has established its own goal in line with this and aims to reach 35% EV adoption by 2030, 5 years ahead of the state, and 40% by 2035. As of 2020, 3% of passenger vehicles in the City of Santa Cruz were EVs.⁷¹

While the City cannot require residents to buy and use EVs rather than gasoline or diesel-powered vehicles, the City will take actions to incentivize this behavior change and support this level of EV adoption. The City's primary target to achieve this measure is to provide one public electric vehicle charger for every 22 electric vehicles (addressed by T-4 Action 1), as well as ensure as many privately owned chargers are installed in existing buildings and new development as practicable, in line with the leading EV cities in California, such as San Francisco, Los Angeles, and San Jose.

T-4 Action 1 commits the City to installing more than 1,247 new EV chargers, prioritizing frontline neighborhoods and high usage areas. The City of Santa Cruz currently (as of December 2021) hosts 96 publicly accessible electric vehicle chargers, putting the City's EV-to-public charger ratio around 22.⁷² 1,247 new chargers were calculated to be the minimum number of new publicly accessible chargers that would be needed to support the City's 2030 goal to achieve 35% passenger EV adoption, based on the City of Santa Cruz's current ratio of 22 EVs to publicly accessible chargers. This ratio is also in line with leading electric vehicle cities in the state, including Sacramento and San Francisco. T-4 Action 2 and 3 commit the City to facilitating EV adoption through EV infrastructure for residential and commercial buildings. T-4 Action 2 requires new residential multifamily housing and large commercial building owners to install chargers in 20% of parking spaces and ensure electric service capacity is sufficient so that than 20% of parking spaces are EV ready. T-4 Action 3 commits the City to advocating for programs and incentives for income tiered residential EV charger installations and EV purchases.

The methods and assumptions used to calculate the number of chargers needed by 2030 and 2035, as well as the GHG emissions reductions associated with these actions are shown in Table 13b.

⁷⁰ Susan Carpenter. Spectrum News 1. October 2020. What it will take to get 100% EV sales in California. Accessed at: <https://spectrumnews1.com/ca/la-west/transportation/2020/10/05/what-it-will-take-to-sell-100--evs-in-california>

⁷¹ California Department of Motor Vehicles (DMV). January 2020. Fuel Type by County as of 11/2020. Accessed at: https://www.dmv.ca.gov/portal/uploads/2020/09/MotorVehicleFuelTypes_City_01012020.pdf

⁷² PlugShare. December 2021. Best EV Charging Stations in Santa Cruz. Accessed at: <https://www.plugshare.com/directory/us/california/santa-cruz>

Table 13b GHG Emissions Reductions from Measure T-4 Action 1-3

Inputs and Assumptions				
Total registered vehicles in the City of Santa Cruz (2020) ¹	74,722			
Registered EVs in the City of Santa Cruz (2020) ²	2,095			
EV chargers in the City of Santa Cruz (2021) ³	96			
2020 population ⁴	64,424			
2020 Cars per capita	1.16			
Cars needed per public EV charger	22			
GHG Emissions Reductions Calculations				
Year	2030	2035	2045	
Passenger EV adoption goal (%)	35	40	60	
Business-as-usual passenger EV adoption (%) ⁵	8.14	9.63	10.81	
EV adoption beyond business-as-usual (%)	26.9	30.4	49.2	
Passenger VMT after mode shift to active and shared transportation (miles) ⁶	401,092,692	404,899,464	415,684,701	
Passenger VMT emissions factor (MT CO ₂ e/VMT) ⁷	0.00029541	0.00027453	0.00025806	
Emission Reduction from increased EV (MT CO ₂ e)	31,823	33,758	52,770	
EV electricity usage (kWh/mile) ⁸	0.369748561	0.369666775	0.369662516	
EV electricity usage from increased EV adoption (kWh)	39,831,068	45,455,318	75,591,669	
Electricity emissions factor (MT CO ₂ e/kWh)	0.000002940	0.000000030	0.000000000	
Emissions from electricity usage for added EVs (MT CO ₂ e)	117	1	0	
Totals				
Total Reductions (MT CO ₂ e)	31,706	33,756	52,770	
Population	72,218	75,257	79,534	
Per Capita Reductions (MT CO ₂ e/person)	0.439	0.449	0.663	
Electric Vehicle Charger Count Calculations				
Population ⁹	72,218	75,257	79,534	
Total registered vehicles	83,762	87,287	92,247	
Registered EVs goal	29,317	34,915	55,348	
Additional public EV chargers needed to support EV goal	1,247	1,504	2,440	

¹ California Department of Motor Vehicles (DMV). January 2020. Fuel Type by County as of 11/2020. Accessed at: https://www.dmv.ca.gov/portal/uploads/2020/09/MotorVehicleFuelTypes_City_01012020.pdf

² Ibid.

³ PlugShare. December 2021. Best EV Charging Stations in Santa Cruz. Accessed at: <https://www.plugshare.com/directory/us/california/santa-cruz>

⁴ Appendix A

⁵ Calculated from data for the County of Santa Cruz from California Air Resources Board's (CARB) EMFAC2021 model, accessed at: <https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9>

⁶ Forecasted VMT from adjusted forecast (Appendix A) minus VMT reduced from Measures T-1 and T-2.

⁷ Calculated from data for the County of Santa Cruz from California Air Resources Board's (CARB) EMFAC2021 model, accessed at: <https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9>

⁸ Ibid.

⁹ Appendix A

Measure T-4 Action 4 EV Car Share

A 2016 study from the Transportation Sustainability Research Center at the University of California, Berkeley shows that car share programs lower vehicle ownership and overall VMT.⁷³ While a majority of car share members use the program to add or replace vehicle trips (leading generally to small VMT increases), a minority of members (2-5%) use car share as a replacement for vehicle ownership (leading generally to larger VMT reductions). The net effect is an overall decrease in vehicle ownership, VMT, and GHG emissions. Based on San Diego results from the 2016 car share study approximately one car share vehicle replaces seven to eleven cars and VMT is reduced, on average, between 6% to 16% per car share household assuming one-way usage. People in San Diego reported decreasing their driving due to the car share and the study suggests that car share is having an impact on vehicles owned by members, as well as overall driving.

T-4 Action 4 commits the City to pursuing affordable EV car share to serve affordable housing and multifamily developments in frontline neighborhoods, as a way to bridge the equity gap between low-income residents and renters and EV ownership. The action also commits the City to simultaneously promoting EV car share citywide.

Measure T-4 Actions 5-7 Frontline Community and Stakeholder Engagement

Frontline community and stakeholder engagement around EV adoption will be critical in helping the City understand existing barriers to EV adoption, and in helping the community share in the benefits of EV adoption. T-4 Actions 5 through 7 commit the City to partnering with community-based organizations to increase adoption rates of EVs in frontline neighborhoods, conduct EV and public transportation education events in frontline neighborhoods, and engage compensated frontline communities in regional and local vehicle electrification strategy development.

⁷³ Elliot Martin and Susan Shaheen. Transportation Sustainability Research Center at University of California, Berkeley. July 2016. Impacts of Car2Go on Vehicle Ownership, Modal Shift, Vehicle Miles Travelled, and Greenhouse Gas Emissions: An Analysis of Five North American Cities. Accessed at: http://innovativemobility.org/wp-content/uploads/2016/07/Impactsofcar2go_FiveCities_2016.pdf

Measure T-5 Increase Commercial EV Adoption to 25% by 2030 and 35% by 2035

Table 14a Measure T-5 Reductions

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
1	Engage with local employers and business fleet owners in the City to identify opportunities for accelerated fleet electrification, prioritizing small businesses, and veteran, woman or minority-owned businesses. Provide information on the requirements of the Advanced Clean Truck regulation and available funding sources for fleet replacements (e.g., Low Carbon Fuel Standard).			
2	Conduct a study of business vehicle fleets in the City and identify employers and businesses subject to the Advanced Clean Truck regulation as well as those to target for accelerating zero-emission vehicle adoption. With stakeholder support, use the results from the study to develop and implement a plan for City-supported accelerated fleet electrification in business and municipal fleets.	0.077	0.050	0.034
3	Prioritize commercial EVs for loading zone access and use other curbside management practices.			

Measure T-5 Actions 1-3 Private/Commercial Vehicle Fleets

Commercial electric vehicle adoption is projected to occur at a slower rate than passenger vehicle adoption, with the greatest electrification success projected in light-duty commercial vehicles.⁷⁴ However, commercial electric vehicle adoption is increasingly being recognized as a promising pathway to reduce GHG emissions and pollutants. This is evident through California's Advanced Clean Trucks regulation, which proposes a zero emission vehicle sales requirement for heavy-duty trucks, as well as zero-emission commercial vehicle zones implemented in the Netherlands and other countries.^{75,76} To accelerate commercial electric vehicle adoption in the City of Santa Cruz and achieve 25% EV adoption in 2030 and 35% in 2035, the City plans to actively identify and engage businesses/employers with vehicle fleets to accelerate EV adoption and promote state incentives

⁷⁴ Erica Schueller. FleetOwner. July 2021. What it will take to accelerate electric truck adoption. Accessed at: <https://www.fleetowner.com/drivers-seat/article/21167635/what-it-will-take-to-accelerate-electric-truck-adoption>

⁷⁵ IEA. 2021. Policies to promote electric vehicle deployment. Accessed at: <https://www.iea.org/reports/global-ev-outlook-2021/policies-to-promote-electric-vehicle-deployment>

⁷⁶ California Air Resources Board (CARB). 2021. Advanced Clean Trucks Fact Sheet. Accessed at: <https://www.iea.org/reports/global-ev-outlook-2021/policies-to-promote-electric-vehicle-deployment>

for transitioning to electric commercial vehicle fleets. T-5 Action 1 commits the City to engaging with local employers and business fleet owners in the City to identify opportunities for accelerated fleet electrification, prioritizing small businesses, and veteran, woman or minority-owned businesses. The action also includes providing information to businesses about the Advanced Clean Fleets rule and available funding sources. T-5 Action 2 commits the City to prioritizing commercial EVs for loading zone access and use other curbside management practices. These actions directly contribute to the City's goal of 25% commercial EV adoption by 2030 and 35% by 2035. The expanded charger network the City has committed to under Measure T-4, Actions 1 through 3 will also help the City achieve this goal. The methods and assumptions used to calculate the GHG emissions reductions associated with these actions are shown in Table 14b.

Table 14bGHG Emissions Reductions from Measure T-5 Actions 1-2

GHG Emissions Reductions Calculations			
Year	2030	2035	2045
Commercial EV adoption goal (%)	25	35	55
Business-as-usual commercial EV adoption (%) ¹	6.48	20.13	41.68
EV adoption beyond business-as-usual (%)	18.5	14.9	13.3
Commercial VMT (miles) ²	28,959,960	29,178,902	32,270,531
Commercial VMT emissions factor (MT CO ₂ e/VMT) ³	0.00103560	0.00086841	0.00062539
Emission Reduction from increased EV adoption (MT CO ₂ e)	5,555	3,769	2,687
EV electricity usage (kWh/mile) ⁴	1.002	1.046	1.063
EV electricity usage from increased EV adoption (kWh)	5,375,249	4,538,442	4,565,596
Electricity emissions factor (MT CO ₂ e/kWh)	0.000002940	0.000000030	0.000000000
Emissions from electricity usage for EV	16	0	0
Totals			
Total Reductions (MT CO ₂ e)	5,539	3,769	2,687
Population ⁵	72,218	75,257	79,534
Per Capita Reductions (MT CO ₂ e/person)	0.077	0.050	0.034

¹ Calculated from data for the County of Santa Cruz from California Air Resources Board's (CARB) EMFAC2021 model, accessed at: <https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9>

² Forecasted VMT from adjusted forecast (Appendix A) minus VMT reduced from Measures T-1 and T-2.

³ Calculated from data for the County of Santa Cruz from California Air Resources Board's (CARB) EMFAC2021 model, accessed at: <https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9>

⁴ Ibid.

⁵ Appendix A

Measure T-6 Electrify or Otherwise Decarbonize 50% of Off-road Equipment by 2030 and 75% by 2035

Table 15a Measure T-6 Reductions

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)
1	Explore ways to mitigate equity impacts of electrifying and upgrading off-road equipment and harbor vessels.	Supportive	Supportive	Supportive
2	Engage with small business, women, vet or minority owners of off-road equipment fleets and others with highest decarbonization potential to promote equitable fleet electrification through outreach and pursuing grants or other funding.	Supportive	Supportive	Supportive
3	Access funding to decarbonize off-road equipment, including investigating state funding to decarbonize off-road equipment as a result of Executive Order N-79-20 and State Climate Funding Package.	Supportive	Supportive	Supportive
4	Support transition of local employers to zero-emissions off-road equipment. Provide online resources and a test demonstration site for landscaping industry.	Supportive	Supportive	Supportive
5	Develop an ordinance to phase out gas and diesel-powered off-road equipment starting in 2024, partnering to provide income tiered incentives for small businesses. Ordinance language to include allowance for biofuels for equipment for which zero emission alternatives are not available.	0.076	0.116	0.124

Measure T-6 Actions 1-2Equitable Off-Road Electrification

Decarbonization of off-road transportation and equipment is much farther behind than that of on-road transportation. The off-road sector contributes to GHG emissions and other forms of pollution, such as fine particulate matter (PM), however, the current higher costs of zero-emissions equipment can make it cost prohibitive for businesses to employ these technologies.⁷⁷ Given these barriers to adopting electric equipment, the City is committing to exploring and mitigating equity impacts of electrifying and upgrading off-road equipment and harbor vessels (T-6 Action 1) and

⁷⁷ Cleantech Group. 2022. Decarbonizing off-road vehicles: An emerging challenge and opportunity to reach net-zero emissions. Accessed at: <https://www.cleantech.com/decarbonizing-off-road-vehicles-an-emerging-challenge-and-opportunity-to-reach-net-zero-emissions/>

engaging with small business, women, vet, or minority owners of off-road equipment fleets to promote equitable fleet electrification (T-6 Action 2).

Measure T-6 Actions 3-4 Funding and Education

Off-road equipment in the City of Santa Cruz accounts for 3% of the City's GHG emissions. While only a small part of GHG emissions in the City, getting to carbon neutrality will involve decarbonizing the majority of off-road equipment, which currently runs on gasoline, diesel, and natural gas. To support a gasoline and diesel phase-out ordinance for off-road equipment, T-6 Action 3 commits the City to investigating funding for decarbonization of off-road fleets in the City of Santa Cruz. T-6 Action 5 commits the City to supporting the transition of local employers to zero-emissions off-road equipment through online resources and a test demonstration site for the landscaping industry.

Measure T-6 Action 5 Off-road Decarbonization Ordinance

T-6 Action 5 commits the City to developing an ordinance to phase out gas and diesel-powered off-road equipment starting in 2024, partnering to providing income tiered incentives for small businesses, for example through promoting and facilitating state commercial and residential rebate programs.⁷⁸ While some off-road equipment does not have market-ready zero-emissions alternatives, lawn and garden equipment, light-duty off-road equipment, and portable off-road equipment can generally be electrified or use biodiesel today. It was assumed that implementation of T-6 Action 5 would begin to eliminate gas and diesel usage for off-road equipment in 2025, with potential for greater emissions reduction in the future, as more low- and no-emissions alternative equipment becomes available. Cities across California have started implementing ordinances to ban gas powered small off-road engines. For example, the City of Ojai has started actively looking for people violating their regulation prohibiting the use of gas-powered blowers. Violators of the regulation in Ojai can be fined as much as \$200.⁷⁹ Assembly Bill 1346 requires the California Air Resources Board to set emissions requirements for small off-road engines to zero by 2024 or whenever the California Air Resources Board determines is feasible. The methods and assumptions used to calculate GHG emissions reductions associated with T-6 Action 5 are shown in Table 15b.

⁷⁸ California Air Resources Board. 2022. Zero-emission Landscaping Equipment Incentive Programs. Accessed at: <https://ww2.arb.ca.gov/our-work/programs/zero-emission-landscaping-equipment/zero-emission-landscaping-equipment-incentive>

⁷⁹ VC Star. 2017. Ojai cracking down on gas-powered leaf blowers. Accessed at: <https://www.vcstar.com/story/news/local/communities/ojai/2017/07/22/ojai-cracking-down-gas-powered-leaf-blowers/474374001/>

Table 15b GHG Emissions Reductions from Measure T-6 Action 6

Inputs and Assumptions			
Implementation year	2024		
Diesel emissions factor (MT CO ₂ e/gallon) ¹	0.01048		
Gasoline emissions factor (MT CO ₂ e/gallon) ²	0.00929		
Calculations			
Year	2030	2035	2045
Off-road diesel fuel usage (gallons) ³	479,978	512,358	607,001
Off-road gasoline fuel usage (gallons) ⁴	514,498	540,538	590,307
Off-road liquified petroleum gas usage (gallons) ⁵	207,852	210,232	213,175
Totals			
Total Reductions (MT CO ₂ e)	5,495	8,736	9,840
Population	72,218	75,257	79,534
Per Capita Reductions (MT CO ₂ e/person)	0.076	0.116	0.124

¹ Calculated from Tables 2 and 5 of the Environmental Protection Agency’s (EPA) Emission Factors for Greenhouse Gas Inventories (March 2020). Accessed at: <https://www.epa.gov/sites/default/files/2020-04/documents/ghg-emission-factors-hub.pdf>

² Ibid.

³ Calculated from data for the County of Santa Cruz from California Air Resources Board’s (CARB) Offroad Emissions model, accessed at: <https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9>

⁴ Ibid.

⁵ Ibid.

Measure T-7 Advocate for Remote Work Policy and Infrastructure

Table 16 Measure T-7 Reductions

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
1	Work with the County, the Santa Cruz County Regional Transportation Commission, AMBAG, and the City's larger employers to support remote work programs, while seeking to address remote work equity issues such as internet access.	Supportive	Supportive	Supportive
2	Participate in regional advocacy for development of a statewide remote work policy.	Supportive	Supportive	Supportive

Measure T-7 Actions 1-2 Advocate for Remote Work Policy and Infrastructure

Remote work programs can reduce commute and business trips, leading to decreased GHG emissions and improved air quality.⁸⁰ The City is committed to working with the County of Santa Cruz, AMBAG, and the City's larger employers to support remote work programs, while seeking to

⁸⁰ Irwin, Fran. 2004. Gaining the Air Quality and Climate Benefit from Telework. Accessed at: <http://pdf.wri.org/teleworkguide.pdf>

address remote work equity issues such as internet access. The City will also participate in regional advocacy for development of a statewide remote work policy.

4 Water, Waste and Wastewater Measures

GHG emissions from water were not accounted for separately in the City's inventory but are 100% attributable to the use of electricity to pump, distribute, and treat water, and are therefore captured in the community's electricity usage in 2019. While only a small part of the City's GHG emissions, process efficiency optimization, green construction methods, renewable energy deployment, and water conservation are important aspects of the community's overall sustainability and resilience. The CAP includes the following water measure:

- Measure W-1: Maintain gallons per capita water use for the residential sector at a level that is at least 10% below the state goal of 55 gallons per person per day

The City of Santa Cruz's waste measures focus on reducing solid waste generation and increasing diversion from the landfill. Particular emphasis is placed on reduction of organic waste sent to landfills, as landfilled organic waste is the major source of waste-related greenhouse gas emissions. The measures in this section also support the City's overall goal of working toward zero waste of resources, though actions that address inorganic waste have minimal impact toward meeting the city's communitywide greenhouse gas emissions reduction goals.

The CAP's waste measures consist of the following:

- Measure W-2: Reduce organic waste by 75% by 2030 and 90% by 2035; and reduce inorganic waste by 35% by 2030 and 40% by 2035
- Measure W-3: Set a long-term target to reduce waste generation growth

Working toward zero waste of resources requires the City address two factors: 1) waste diversion to recycle waste that is generated; and 2) waste reduction, reducing the amount of waste generated regardless of its destination (e.g., landfilling, recycling, composting); Measure W-2 focuses on waste diversion and Measure W-3 focuses on waste reduction.

Actions to reduce organic waste are supported by state law through SB-1383 requirements, which lays out specific programs, policies, and objectives for the City to support the state's goal to achieve a 75% reduction in organics waste by 2025. While not explicitly modeled, many of these actions support achievement of SB-1383 goals. Actions that address inorganic waste are not quantified in this analysis due to their minimal impact on communitywide GHG emissions reductions.

Wastewater emissions account for a small portion of a community's GHG emissions, less than 1% of the community's GHG emissions in 2019. While only a small part of the City's GHG emissions, decarbonized wastewater treatment through process efficiency optimization, green construction methods, renewable energy expansion (methane to electricity and solar PV) water conservation, greywater reuse, and water recycling; are important aspects of a community's overall sustainability and resilience. The CAP includes the following wastewater measure:

- Measure W-4: Reduce or capture GHG emissions from wastewater treatment

Measure W-1 Maintain indoor Gallons per Capita Water Use for the Residential Sector at a Level that is at least 10% below the State Goal.

Table 17 Measure W-1 Reductions

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
1	Continue to provide free water conservation devices and rebates for water conservation and continue targeted outreach to frontline communities.	Supportive	Supportive	Supportive
2	Continue to promote available City rebates and educate residents on the benefits of water conservation and its connection to climate change benefits.	Supportive	Supportive	Supportive
3	Expand watershed stewardship school program to include water conversation.	Supportive	Supportive	Supportive

Measure W-1 Actions 1-5 Public Engagement, Rebates, and Water Conservation

W-1 Actions 1-4 commit the City to continuing public engagement and conservation programs, focusing on frontline communities. The City will continue to provide free water conservation devices and rebates for water conservation, developing targeted outreach to frontline communities (W-1 Action 1); to provide rebates or other funding for installing laundry to landscape, rainwater catchment systems, and targeted outreach to low and medium income homes (W-1 Action 2); public engagement campaign to promote available City rebates and educate residents on the benefits of water conservation and its connection to climate change benefits (W-1 Action 3); and expand watershed stewardship school program to include water conservation (W-1 Action 4). The actions provide funding for integrating more water conservation practices into the City's households, providing more opportunity for lower-income residents to adopt these technologies.

W-1 Action 5 commits the City to evaluating the greenhouse gas emissions impact of expanding non potable water usage to City trees, landscape and bioswales for groundwater recharge and other opportunities as identified in the 2018 Recycle Water Study.

Measure W-2 Reduce Organic Waste by 75% by 2030 and 90% by 2035; and Reduce Inorganic Waste by 35% by 2030 and 40% by 2035

Table 18a Measure W-2 Reductions

Action Number	Action	Anticipated 2030 Reduction (MT CO ₂ e/person)	Anticipated 2035 Reduction (MT CO ₂ e/person)	Anticipated 2045 Reduction (MT CO ₂ e/person)
1	Partner to develop a regional compost trading program to meet state organic procurement target.	0.065	0.078	0.078
2	Expand enforcement and implement fee for incorrectly sorted materials with sensitivity to shared collection.			
3	Pursue funding to conduct detailed planning of food waste to energy infrastructure and process to meet state food waste diversion targets.	Supportive	Supportive	Supportive
4	Continue to participate in Countywide Solid Waste Task Force consortium to plan and pursue funding for infrastructure beyond state 2025 organic waste diversion targets.	Supportive	Supportive	Supportive
5	Conduct waste characterization studies annually to understand the waste stream and plan to increase waste diversion and reduce contamination.	Supportive	Supportive	Supportive
6	Provide training resources to businesses and large institutions on organic waste diversion.	Supportive	Supportive	Supportive
7	Continue multi-lingual engagement with multi-family property owners/managers and developing waste handling signage for their properties.	Supportive	Supportive	Supportive
8	Continue to conduct targeted, multi-lingual, culturally appropriate, and geographically diverse waste diversion educational and technical assistance campaigns.	Supportive	Supportive	Supportive
9	Expand the Recycling Boot Camp and Master Recycler's Programs.	Supportive	Supportive	Supportive
10	Pilot and evaluate emerging technologies to reduce organic waste by restaurants and other major food waste producers.	Supportive	Supportive	Supportive

Measure W-2 Actions 1-2 Organic procurement (Senate Bill 1383 Compliance)

Emission reductions in the waste sector will be driven by the City of Santa Cruz's compliance with SB 1383, which sets statewide targets to reduce organic waste disposal by 75 percent relative to 2014 levels. SB 1383 programs also require recovery of 20 percent of edible food by 2025. CalRecycle has provided a suite of activities that jurisdictions are required to complete to achieve these targets, including the following:

- Provide organic waste collection services for all residents and businesses and monitor contamination
- Implement an edible food recovery program for commercial edible food generators, with compliance beginning between 2022 and 2024.
- Procure organic waste (e.g., yard trimmings and food scraps) to meet organic waste product procurement targets, as notified by CalRecycle by 2022⁸¹
- Conduct education and outreach to businesses, residents, and commercial edible food generators by 2022 and annually thereafter
- Ensure there is adequate capacity and collection services to comply with SB 1383 requirements
- Adopt enforceable ordinances prior to 2022 encompassing requirements for organics and edible food generators in the city
- Monitor compliance beginning in 2022, conduct enforcement beginning in 2024, and maintain records of implementation

Completing these activities is expected to provide the level of composting and food donation that will reduce The City of Santa Cruz's organic waste disposal by 75 percent by 2025, aligning with SB 1383 state targets.⁸² The City of Santa Cruz is expanding the Commercial Food Scrap Collection program and will begin Curbside Food Waste Collection from single family and multi family residences in late Spring 2022, to meet SB 1383 requirements.⁸³ In 2020, the City's waste diversion was 63% (83.4% of the City's 2020 target of 75% waste diversion). The City of Santa Cruz is projected to send 74,148 metric tons of solid waste to landfill in 2030 and 76,859 metric tons in 2035, 45 percent of which is estimated to be organic. Calculations assumed that emission reductions would come from diverting that waste to compost or hunger relief, decreasing the methane generation potential of this waste to zero (Table 18b). Actions that address inorganic waste are not quantified in this analysis due to their minimal impact on communitywide greenhouse gas emissions reduction goals.

Table 18b GHG Emissions Reductions from Measure W-2 Actions 1-2

Inputs and Assumptions	
Santa Cruz City 2014 waste (tons)	46,787

⁸¹ Annual procurement target for the City of Santa Cruz is 4,492 tons of organic waste. Jurisdictions can fulfill their target by procuring any combination of the following recovered organic waste products: compost, mulch, renewable energy (transportation fuel, heat, and electricity) from anaerobic digestion and electricity from biomass conversion. Accessed at: <https://calrecycle.ca.gov/organics/slcp/procurement/#:~:text=Beginning%20January%201%2C%202022%2C%20SB,green%2C%20self%2D sustaining%20economy.>

⁸² CalRecycle. SB 1383 Education and Outreach Resources. Accessed at: <https://calrecycle.ca.gov/organics/slcp/education/#:~:text=The%20SB%201383%20draft%20regulations,and%20other%20food%20recovery%20organizations.>

⁸³ City of Santa Cruz. N.d. Food Waste. Accessed at: <https://www.cityofsantacruz.com/government/city-departments/public-works/resource-recovery-garbage-recycling-sweeping/recycling-and-waste-reduction/food-waste>

California 2014 portion of waste that is organic (%) ¹	45		
SB 1383 2030 diversion goal (tons organic)	15,685		
Calculations			
Year	2030	2035	2045
Tons of waste forecasted to landfill ²	74,148	76,859	81,297
Organics reduction from SB-1383 related programs (%) ³	75	90	90
Diverted food waste (metric tons) ⁴	29,752	37,008	39,144
Totals			
Total Reductions (MT CO ₂ e)	4,724	5,876	6,216
Population	72,218	75,257	79,534
Per Capita Reductions (MT CO ₂ e/person)	0.065	0.078	0.078

¹ Appendix A. Based on CalRecycle's 2014 Disposal-Facility-Based Characterization of Solid Waste in California

² Appendix A.

³ SB 1383 requires 75% reduction in organic waste from 2014 levels by 2025.

⁴ Appendix A. Based on CalRecycle's 2014 Disposal-Facility-Based Characterization of Solid Waste in California

Measure W-2 Actions 3-5 Planning and Funding

The City will pursue funding opportunities to conduct detailed planning of food waste to energy infrastructure and process to meet state food waste diversion targets. The City will also continue to participate in the Countywide Solid Waste Task Force consortium to plan and pursue funding for regional infrastructure projects beyond the state's 2025 organic waste diversion targets. Lastly, the City will conduct waste characterization studies annually to understand the waste stream and plan to further increase waste diversion.

Measure W-2 Actions 6-9 Education and Engagement

While these actions will not lead to direct GHG emission reductions, they are an important component of the strategy behind SB 1383 implementation. For example, education around composting and food waste reduction can provide the information needed by residents to start a home compost pile and/or reduce their overall waste. Providing these materials in multiple languages in a culturally appropriate manner will further the impacts of this action.

Measure W-2 Action 10 Pilot Emerging Technologies

Action 10 is to pilot and evaluate emerging technologies like at-source organic waste digestion to reduce organic waste by restaurants and other major food waste producers in the City. This action will contribute to the City's goal to reduce overall waste generation.

Measure W-3 Set a Long-term Target to Reduce Waste Generation Growth

Table 19 Measure W-3 Reductions

Action Number	Action	Anticipated 2030 Sequestration (MT CO ₂ e/person)	Anticipated 2035 Sequestration (MT CO ₂ e/person)	Anticipated 2045 Sequestration (MT CO ₂ e/person)
1	Continue free training and education program accessible to all residents and employees to learn about waste prevention and diversion strategies and effects of overconsumption.	Supportive	Supportive	Supportive
2	Work collaboratively and leverage grants to prevent food waste and rescue edible food.	Supportive	Supportive	Supportive
3	Enforce implementation of a fee at point of use for single-use food ware by food service providers.	Supportive	Supportive	Supportive
4	Conduct a consumption-based emissions inventory and promote a closed-loop circular economy.	Supportive	Supportive	Supportive
5	Leverage community activation platform and community partners to encourage lifestyle choices that reduce consumption based emissions including plant based diets, travel alternatives and local purchasing. Explore policy options to increase adoption of plant-based and plant-strong diets.	Supportive	Supportive	Supportive
6	Expand edible food recovery program to all restaurants and food generating businesses and incentivize small businesses who otherwise could not participate.	Supportive	Supportive	Supportive
7	Evaluate and implement a program for reusables for restaurant to-go containers.	Supportive	Supportive	Supportive
8	Explore opportunities to promote a "circular economy" among local manufacturers and industry.	Supportive	Supportive	Supportive

Measure W-3 Actions 1-8 Reduce Waste Generation

W-3 Actions 1 through 8 leverage the City's ability to provide funding and education for reduced waste generation growth, secure grant funding, enforce implementation of fees for single-use food ware, partner with businesses, and conduct studies to explore new, cutting-edge topics, including promoting a closed-loop circular economy. Although these actions do not provide any direct GHG reductions, they are important tools for increasing sustainability and resilience in the community.

Measure W-4 Reduce or Capture GHG Emissions from Wastewater Treatment

Table 20 Measure W-4 Reductions

Action Number	Action	Anticipated 2030 Sequestration (MT CO ₂ e/person)	Anticipated 2035 Sequestration (MT CO ₂ e/person)	Anticipated 2045 Sequestration (MT CO ₂ e/person)
1	Explore opportunities related to methane capture and conversion to biofuel through the state's Low Carbon Fuel Standard (LCFS) program.	Supportive	Supportive	Supportive
2	Collaborate with surrounding cities and the County to advocate and support emissions reduction at wastewater facilities.	Supportive	Supportive	Supportive

Measure W-4 Actions 1-2 Reduce or Capture GHG Emissions from Wastewater Treatment

Through W-4 Actions 1 and 2, the City plans to explore opportunities to capture and convert methane to biofuel through the state's Low Carbon Fuel Standard (LCFS) program. The City will also collaborate with surrounding cities and the County to advocate and support emissions reduction at wastewater facilities.

APPENDIX D:
Engagement Summary

Community Engagement Process

The Resilient Together Santa Cruz Initiative unfolded over 2021-2022. The team created a Community Education, Engagement, and Activation Guide for the plan that resulted in over 2,884

touchpoints with community members at over 25 in-person community events, online engagement forums and workshops. Engagement events focused on garnering online participation in light of the COVID-19 pandemic, however some in-person events were held as well that focused on reaching the Beach Flats community. Promotion for each major engagement event included promotion through an online newsletter with 366 contacts, along with text updates, Facebook and Instagram posts, flyers at public locations and events, and partnering with local community groups to share information through their networks. Materials were provided in English and Spanish. This entire process was guided by the City's Climate Action Task Force (CATF), and the Plan goals and action development was also guided by an Equity Advisory Group consisting of members of frontline communities. All materials for outreach activities were provided in English and Spanish. Further, the team developed an equity screening tool with the community and CATF as an overlay for the Climate Action Plan (CAP).

Outreach was based on the following goals from the Guide:

- Ensure that the community feels authentically engaged in the development of the CAP by **understanding and responding to their unique needs and availability** to participate in different ways, times, and places.
- Design all engagement and outreach activities with an **equity lens, focusing on building relationships and trust** to enable **inclusive access** with frontline, priority communities.
- Ensure that the outreach and engagement activities provide a variety of venues (virtual or physical) and methods to **enable participation for all audiences**, including frontline communities, visitors, businesses, and people of all ages.
- **Adopt clear processes** to inform how the city will listen, hear, and record the interests and needs of the community into the CAP. Continually evaluate outreach efforts by providing space for community partners to give feedback.
- Utilize science-based information that is graphically compelling, uses storytelling, and conveys complex concepts in a clear, simple, and concise manner that is **accessible to all**, and easily translatable into Spanish.
- **Develop and foster lasting relationships** throughout the city, communities, and stakeholders to lay the foundation for community activation and involvement once the plan is complete.
- Coordinate outreach efforts with other city departments and community partners to leverage multiple opportunities for **engagement while reducing duplication and outreach fatigue**.



Santa Cruz Community Engagement Summary

Climate Action Task Force

The Climate Action Task Force (CATF) has been involved in the development of the CAP since its inception, even before the project RFP was issued. Prior to CAP development, the CATF cultivated a vision as to how Santa Cruz will address climate change with frontline voices of the Santa Cruz community at the forefront of the vision, and what must be included in the CAP project description. The CATF determined that the City's engagement plan should pay particular attention to a just transition for those most economically impacted, as well as leadership from those who have been historically overlooked or disproportionately harmed. Public engagement should seek to work through root causes of inequity and commit to uncomfortable conversations when needed. Additionally, the following core principles of the CATF were created to act as an internal guide during the CAP planning process.

Core Principles

1. Careful Planning and Preparation

Parties to the process will ensure that design, organization, and process serve a clearly defined purpose and the needs of all participants.

2. Inclusion and Demographic Diversity

Parties will incorporate diverse people, voices, ideas, and information to lay the groundwork for equitable decision making, equitable outcomes, and democratic legitimacy.

3. Collaboration and Shared Purpose

Parties commit to support and encourage individual participants, government, community institutions, and others to work together for the common good.

4. Transparency, Trust, Openness and Learning

All parties to the planning process should be both clear and open. The City and its Contractors should provide a timely public record of (1) participants, including individual members of the public, City or other organizers, and sponsors; and (2) outcomes, specific ideas, and information or facts that are offered, whether by the public or the City; and how specific ideas, information or facts have been included, modified, or made use of by the City in its final plan, with substantive explanations for these decisions. Parties will listen to one another, explore new ideas, and learn and apply information in ways that generate new options.

5. Sustained Engagement and Participatory Culture

Parties will promote a culture of participation with ongoing programs and institutions that support quality public engagement beyond the CAEP planning year.



Santa Cruz Community Engagement Summary

6. Accurately and Concretely Communicate the Risks of Climate Change

Parties will convey to the public the full scope and impact of climate change. Accurately and concretely explain the known effects of climate change, including: increasing temperature; more-frequent drought; longer wildfire seasons; shorter, more intense winters; more intense wind storms; more intense rain and flooding; more frequent power outages; more intense storm surges; increasing rate of sea level rise; more frequent disasters; the need for planned retreat, as well as attendant impacts on human health.

7. Accurately and Concretely Communicate the Range of Solutions

Parties communicate the full range of solutions and the pros and cons of different combinations of solutions. Promote an understanding of solutions sufficient to (1) rapidly motivate the many communities, talents, and resources of Santa Cruz and (2) help the public focus on fruitful targets.

8. Impact and Action

Contractor ensures that each event or program educates, engages, and empowers all members of the public, likewise seeking to elicit public solutions, initiative and commitment. Contractor clearly and concretely communicates to the public how public input will be used—whether in determining the completed Climate Action and Energy Plan or in motivating ongoing and widespread community action where needed, even beyond the plan itself. City and contractors commit to rigorously evaluate public engagement activities for effectiveness.

9. Comprehensive and Coherent Vision

Seek a shared community vision that is widely arrived at and fully understood and embraced by those essential to or affected by the fulfillment of that vision.

10. Clear Plan of Action

Spell out in advance the specific plan for creating a Climate and Energy Plan. Seek expertise and engagement around the operations and actions necessary to fulfill the vision. Specify responsibilities, timelines, and resource requirements; limitations, risks and contingencies; and outcomes to be measured, by what means and to what level of achievement.

11. Good Faith and Feasibility

Work closely with officials, staff, experts, contractors, volunteers and all others relying on the outcomes of the engagement and planning process to manage expectations and fulfill commitments. Assure that commitments made are (a) understood and accepted by those who will be responsible for carrying them out and (b) are within their resources and authority to carry out (or that they have available to them agreement and access to expansions of resources, alternatives or fall back options as may be required).

12. Action for Climate Empowerment



Santa Cruz Community Engagement Summary

Where consistent with the principles laid out above and where applicable to Santa Cruz, the public engagement envisioned herein should conform to the purposes, principles, and processes of the proposed UN Action for Climate Empowerment [ACE] Framework for the United States.

Outcomes and Accountability Metrics

The CATF created a set of outcomes and accountability and tracking metrics to measure meaningful engagement, whenever possible:

1. Number of people reached
2. Number and kinds of people in attendance, with data disaggregated by race, age, gender identification, education, occupation, neighborhood, and affiliations
3. Number of people recruited for ambassador, docent or other engagement or climate action roles
4. Number of new ideas or facts, solutions, resources, or programs introduced by the public at each event. Four points for each useful new idea or solution, and one point for each fact (or assertion), not previously considered by the City or its consultants. Six points for each proposed solution that is implemented, whether by the City or other entities
5. These new facts, ideas, and resources should be gathered into a designated public website and compiled into a document. The community-generated ideas should be incorporated into the Climate and Energy Plan or otherwise used in climate education, engagement, and empowerment, if feasible as determined through previously developed criteria.
6. Number and kinds of processes, solutions, actions, and on-going engagements initiated, expanded, or continued by individuals or organizations across the sectors and constituencies activated or influenced by the CAP process itself and their estimated impacts on defining goals of CAP



Santa Cruz Community Engagement Summary

Summary of Resilient Together local community outreach and engagement events

Event Date	Activity
01/12/21	Community Engagement Preferences Survey via Facebook CAM page (309 participants)
01/28/21	Community engagement Pref Survey - UCSC Coastal Science & Policy Program weekly newsletter
02/08/21	Community Engagement Preferences Survey - Email lists, City Manager newsletter, social media channels, community calendars (328 participants)
02/2021	Democratic Women's Club Talk (46 attendees)
02/2021	Sister Cities Committee Talk (15 attendees)
3/9/21	Santa Cruz Sunrise Rotary presentation on Climate Action (60 attendees)
3/25/21	DSA presentation and discussion (12 attendees)
3/31/21	Central Coast Climate Legislative Action Summit - legislative action summit hosted by MBEP & featuring many other cities (130 attendees)
4/26/2021	UCSC SO Student Environmental Justice Ambassadors
4/13/2021	Santa Cruz Public Libraries Conversations for Change: Climate Solutions (40 attendees)
4/14/2021	Sister Cities Climate Resiliency (74 Attendees)
4/20/2021	Mayor's Green Jobs Roundtable Series with a City Council study session on April 20, 2020 to highlight work, support existing and emerging green sectors (20 attendees)
4/26/2021	Climate Action Task Force - All Meetings (165 touchpoints with community members)
4/29/2021	SC County YEA Solidarity for Change Virtual Summit (30)
5/6/2021	Santa Cruz Works Presentation (9 attendees)
5/14/2021	San Juan Batista City Council town meeting which consisted of discussions related to the development of the climate action plan (8 attendees)

Santa Cruz Community Engagement Summary

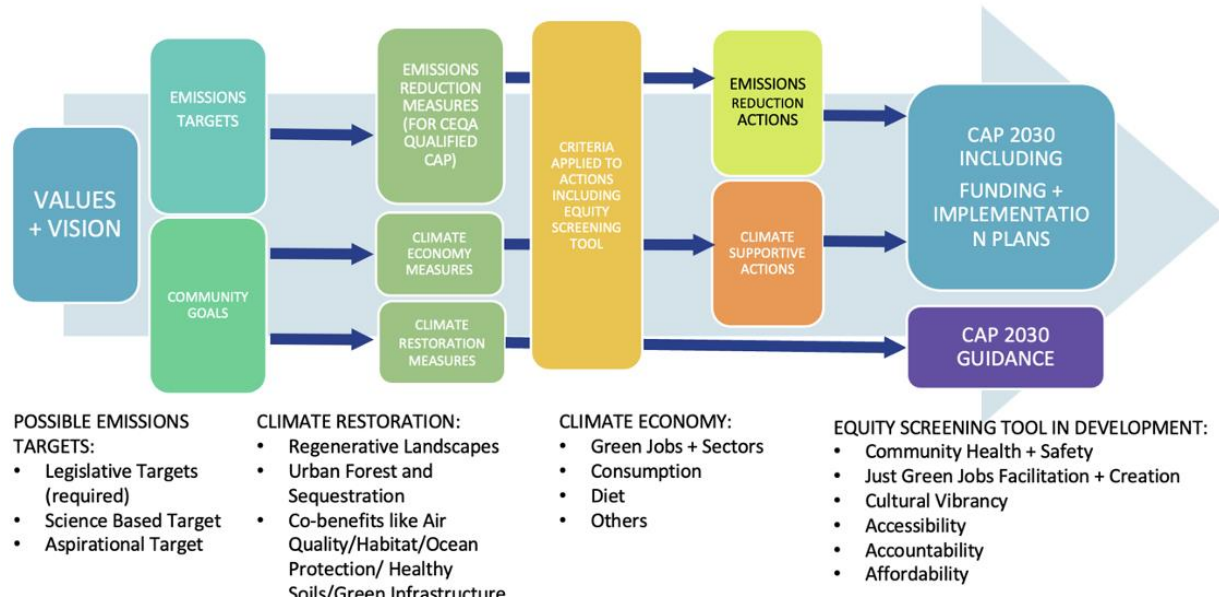
6/17/2021	Santa Cruz County Business Council discussion around general updates, and ideas regarding circulation of a green economy (25 attendees)
6/21/21	Summer 2021 Goals events were discussed at the laundromat, library, and Midtown Fridays (200 attendees)
6/21/21	UCSC Shelter Meal Program discussion (175 attendees)
6/21/21	Project FYI's (updates) inducing handout in Visioning (335 attendees)
6/21/21	Beach Flats discussion (50 attendees)
7/7/2021	Visualization for Climate Action Plan values through online platform, Padlet, which offers direct engagement and input from audience (65 participants)
6/22/21-7/26/21	Email comments; (60 sets of comments)
6/22/21-7/26/21	In person engagement events (128 attendees)
7/27/21	Ecology Action Visioning Discussion (10 attendees)
8/2/21	Sustainability Lunch & Learn discussing Santa Cruz Climate Adaptation (22 attendees)
8/21/2021	Tree planting event (30 attendees)
8/21/2021	Beach Flats storm drain mural project discussion and visualization (12 attendees)
8/25/2021	Green economy roundtable (20 attendees)
9/6/21-10/11/21	Goal setting Survey (328 survey respondents)
09/09/21	KSQD <i>Good News Santa Cruz</i> Interview
10/27/21	Be Safe Be Seen Bike Light Giveaway (50 participants)
10/28/21	Be Safe Be Seen Bike Light Giveaway (50 participants)
10/29/21	Be Safe Be Seen Bike Light Giveaway (50 participants)
11/16/21	Presentation to VWC Board meeting (20 attendees)

11/24/21	Youth Small Group Meeting (2 attendees)
11/29/21	CAP Small Group meeting with UCSC Students (3 attendees)
01/03/22	NAACP Presentation (8 attendees)
Winter 2022	Consider.it online platform for engagement, while allows users to rate their support CAP actions (145 participants)
Winter 2022	Homeless Garden Project Trainee program and discussion (20 attendees)
Winter 2022	Benchlands Estuary Stewardship Program / Benchlands Encampment Stewardship team meeting (6 attendees)
Winter 2022	Talk to UCSC Class CLNI 85: Global Action (15 attendees)
Spring 2022	Bike Focus Group (10 attendees)
Spring 2022	Student Housing Coalition discussion and meeting (6 attendees)
Spring 2022	Cal policy SLO guest lecture (20 attendees)
Spring 2022	Business stakeholders focus group (8 attendees)
Spring 2022	UCSC Staff Sustainability Certificate Program (20 attendees)
Spring 2022	Parking focus group (10 attendees)
Spring 2022	Public transportation focus group discussion (15 attendees)
4/14/2022	Heat pump learning event (28 attendees)
Total	2,884

Connecting Community Engagement, Equity and Climate Data

The community engagement did not occur separately from the plan development, but as a central element that informed and guided the development of the climate measures and actions. The graphic below illustrates how the individual elements of the engagement and the equity screening tool were used to shape the final CAP.

CAP 2030 Process and Components



Visioning

Visioning Engagement Overview

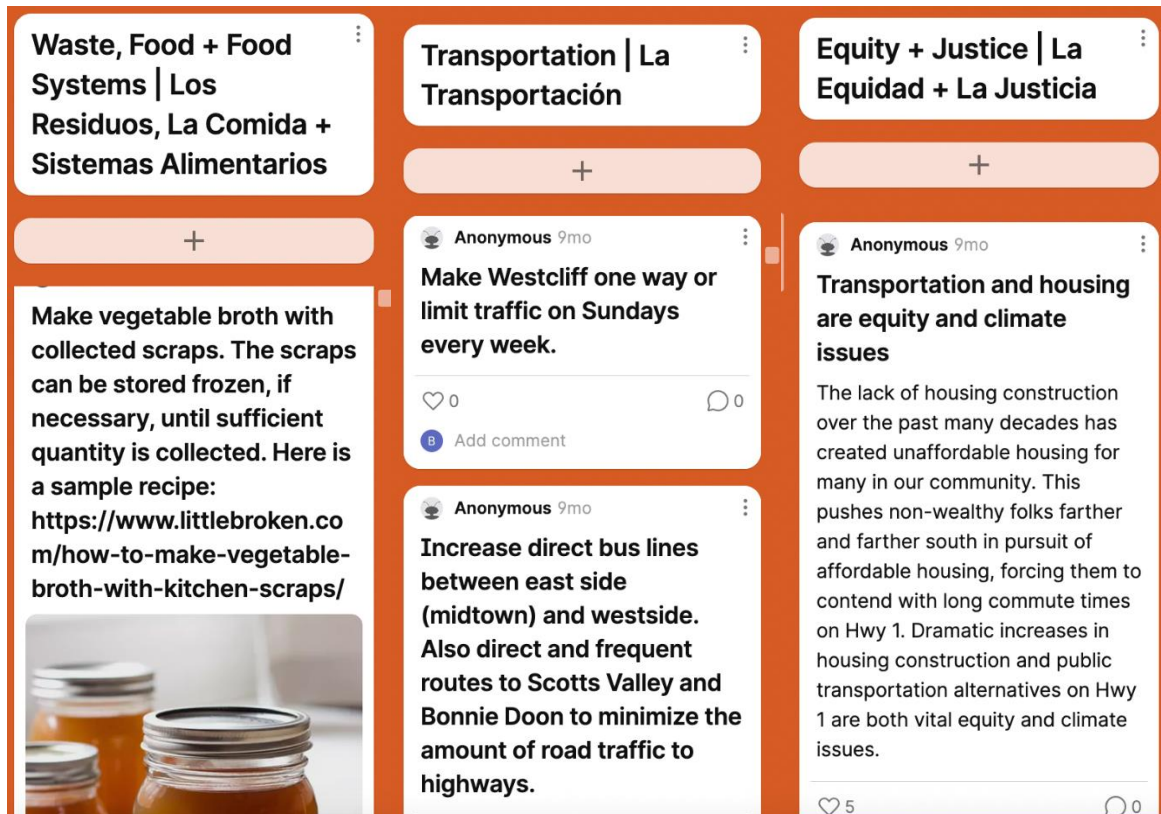
The first phase of engagement focused on gathering community input to craft the Plan vision. To develop this vision, City staff, with support from BluePoint Planning and from Greenlining Institute for equity considerations, led a variety of engagement efforts in the City from June 29-July 29, 2021. This included an online visioning board through the Padlet application – one for the community at large and one for City staff – and 12 in-person visioning sessions, in which community members contributed images and words to posters. In-person visioning sessions were held at a local laundromat (2), the main and midtown branches of the Santa Cruz Library (5), the Beach Flats garden (2), Depot Park (1), a community market event (1), and the Museum of Art and History (1). Overall, an estimated 263 people took part in the in-person visioning activities. Additionally, the Padlet had 221 posts and 169 comments from a total of 134 users. Some community members who were unable to contribute to the in-person poster also submitted comments via email afterward. Those comments are included in this summary as well. The outreach, the Padlet and all materials used in the in-person sessions were offered in English and Spanish. This summary takes into account all comments from in-person visioning sessions, and all Padlet comments dated through the month of July.

Padlet

In summer of 2021, the City of Santa Cruz hosted the online “Padlet” platform, asking the City’s community members how they envisioned Santa Cruz in 2030. Community members were able to include text, images, and videos on the platform.

Participants were given the following prompt: **How do you envision a sustainable and equitable Santa Cruz in 2030?.**

There were several categories for participants to address which organized the areas that require environmental improvement: Equity and Justice, Transportation, Waste, Food and Food Systems, Nature, Oceans and Ocean Spaces, Energy, Public Health and Safety, Housing, Buildings and Infrastructure, Jobs and Economy, Water, and Miscellaneous. Participants addressed those areas with suggestions to facilitate a vision for a sustainable and resilient Santa Cruz. The examples below address waste, transportation, and equity, and demonstrate how users provided their feedback to the City.



Participant Responses: Examples from Padlet

In-person Collage

The city additionally hosted in-person visioning consisting of 12 in-person collage exercises in which community members contributed images and words to posters that reflected their vision of Santa Cruz in 2030. (Example visioning images listed below.) This was done, in part, to reach frontline audiences and audiences who may not be readily able to access the Padlet online. Overall, an estimated 263 people took part in the in-person visioning activities. In-person visioning sessions were held at a local laundromat (2), the main and midtown branches of the Santa Cruz Library (5), the Beach Flats Garden (2), Depot Park (1), a community market event (1), and the Museum of Art and History (1).



Visioning Cards used as part of the in-person visioning exercise



Visioning Collage outside of Santa Cruz laundromat



Visioning poster with Blended Bridges group, outside of Museum of Art and History

Small Frontline Focus Groups

The City also hosted 3 workshops with key frontline groups, which included unsheltered groups, youth, and communities residing in the Beach Flats. These focus groups functioned as visioning sessions and opportunities for these communities to voice their thoughts, which serves to better inform the Santa Cruz 2030 vision.

Summary of Visioning Themes

Below are the categories listed on the Padlet and the number of comments/ ideas received for each category for all forms for visioning outreach. This set of numbers also includes “likes” on Padlet for a specific idea. If there was a single comment that touched on different category areas, each category the comment touched on were attributed to a separate category and assigned a category/ subcategory. A full PDF of all posts from the Padlet and a detailed list of all subcategories and support for each set of ideas is attached.

1. Transportation (368)
2. Housing (156)
3. Energy (148)
4. Open Spaces, Nature, and Ocean (124)
5. Water (86)
6. Public Health and Safety (78)
7. Jobs and Green Economy (70)
8. Waste, Food, and Food Systems (65)
9. Equity and Climate Justice (51)
10. Miscellaneous (104)

Primary Themes

Below are the most salient themes that surfaced through the engagement process. These themes are aggregated concepts built from the broader categories listed above and the community comments. These themes will be the basis for the Climate Action Plan Community Vision and Goals. Detailed comments are provided below.

1. **Create a seamless and safe active transportation network.** This includes creating more protected bike lanes and completing the County-wide rail trail to ensure that cyclists of all abilities feel comfortable biking. It also includes increasing walkability throughout the City and promoting pedestrian safety.
2. **Create a robust, decarbonized, reliable public transportation system.** There is support for reliable, electric buses, as well as an electric rail in the region. This aligns with general support for reducing the number of cars and traffic in Santa Cruz.

3. **Establish more affordable, denser housing.** Many comments indicated support for more, and denser affordable housing. Comments also expressed a sentiment against vacant second homes in the City.
4. **Foster the unique City of Santa Cruz Community Character.** There is support for maintaining the current cohesive building types and density in the City. It is important to ensure that new development considers water supply, traffic, and impact on community character. Comments also indicated the desire for more ADUs to address the need for housing. Safety and resilience are also considered in this theme. This theme needs to be balanced with the Affordable and Denser Housing theme.
5. **Support and maintain beautiful and regenerative landscapes and environment.** There is great support for planting more trees in Santa Cruz, community gardens, and many people also expressed support for keeping heritage trees in the City. Community members also envisioned healthy, organic regenerative landscapes and agriculture in the City in part through composting programs to reduce food waste, as well as accessible beaches and ocean.
6. **Promote clean energy and create resilient energy infrastructure and buildings.** There is support for efficient, all-electric buildings, including increasing solar panels on buildings of all types. Many community members also envisioned a stable energy grid, including microgrids, energy storage, and EV charging.
7. **Ensure sustainable water use in the City.** There is a desire to align the City's development with the capacity of the water system. There is also a desire for conserving and reusing water through greywater systems and other means.
8. **Secure economic, racial, and environmental justice.** Community members expressed a vision of economic and racial equity and environmental justice. This includes dedicating space for and centering BIPOC community groups in climate and economic decision-making. This includes decisions around affordable housing, green jobs and good wages, and public transportation and bike and pedestrian infrastructure, among others.

Detailed Comments by Theme

Below are detailed summary comments organized under the themes and general comment categories. The information is provided with the most common mentioned items down to the least. Some of the comments in the latter part can be considered within the 8 themes and are noted as appropriate.

Transportation (368)

Theme 1. Create a seamless and safe active transportation network throughout the City.

"We hope the city creates more open spaces for people and bikes. We envision a city where there are fewer cars on the road and biking to school and work is fun and safe for everyone."

- More bike lockers
 - More bike lockers on the wharf & at the boardwalk
 - More lockers downtown near major employers to disincentivize bike theft and encourage biking

- Re-establish bike share
 - Support for JUMP bikes
 - More bike share parking advertising in the SC Sentinel, Metro Headways, Goodtimes, and CTV.
- More protected bike lanes
 - Well-marked, protected bike lanes make it safer to get around on bikes and encourage biking
- Countywide rail trail (with UCSC link)
 - Complete the Rail/Trail by 2023
 - More equity & inclusion thought in the rail/trail
- Use parking department income to fund rebates for eBikes, especially for low-income populations
- Prioritize building sidewalks
 - Wider sidewalks
 - Sidewalks away from street so there can be green space between moving vehicles and pedestrians
 - Create a pedestrian mall on Pacific Ave.
- Better and safer pedestrian crossing
 - Install flashing beacons for crosswalks

Theme 2. Create a robust, decarbonized, reliable public transportation system.

- Electric buses
 - Expand and electrify bus fleet
- Greater bus service
 - Greater service on the Westside and along Highway 1
 - Explore bus on shoulder programs
 - Have much earlier and much later bus times for Downtown Go program, including a late-night bus route from Watsonville, SLV, Scotts Valley, Capitola & Santa Cruz.
 - Have an express bus from Watsonville to Scotts Valley.
 - Add an electrical fleet back-up emergency plan to a feasibility study to consider grid stability
 - Establish a light rail
 - Support and establish an electric light rail from Santa Cruz to Watsonville
 - Greater alternative transit
 - Create a park and ride with free shuttle to beach and tourist locations
- Fewer cars
 - Reduce traffic
 - Stop building of parking garage

Housing (156)

Theme 3. Establish more affordable, denser housing.

"Create high-density housing located near transit and job centers to move away from an auto centric Santa Cruz."

- High density housing near transit

- Allow single-family lots to be split
- Create low-income apartments for varying size families
- More homes for locals and less vacant vacation homes
 - Establish vacancy tax

Theme 4. Foster the unique City of Santa Cruz Community Character.

- **Less dense development**
 - Reduced requirements for ADUs
 - No tall buildings over 3-5 stories
 - Maintain city's ambiance
- **Less Development**
 - Stop overdevelopment
 - Cap growth to what City can sustain
 - Concern about sustainability of water use
 - Limit UCSC enrollment
 - No more luxury hotels or apartments

Open Spaces, Nature, and Ocean (124)

Theme 5. Support and maintain beautiful and regenerative landscapes and environment.

- **Tree filled, shady spaces**
 - Save heritage trees, don't build at farmer's market
 - Plant more trees
- **Healthy Landscaping**
 - Encourage lawn removal
 - Regenerative landscaping and agriculture
 - Healthy forestry initiatives
 - Drought tolerant, native planting
 - Stop pesticide use
 - Prohibit gas landscaping equipment
- **Healthy Oceans and Beaches**
 - Accessible for people of all incomes - No parking fees
 - Healthy ocean ecosystems
- **Manage sea level rise**
 - Managed retreat of West Cliff
 - Manage sea level rise

Energy (148)

Theme 7. Promote clean energy and create resilient energy infrastructure and buildings.

- **Greater renewable energy**
 - More solar
 - Put on new infrastructure

- Incentivize solar
 - All-electric buildings
 - Government buildings should be all-electric
- **Stable energy grid**
 - Highly efficient buildings
 - Construct Passive House buildings
 - Reliable energy in blackouts
 - Battery storage
 - Establish municipally controlled microgrids
 - More TOU rates
 - Vehicle-to-grid charging
- **Electric Car Infrastructure**
 - More electric vehicle charging
 - Zero carbon electric vehicle charging at city parking lots and garages, powered by municipally-owned solar
 - Install pay-for-use electric vehicle charging stations on curbs of multifamily buildings
 - Charging at apartment buildings, grocery stores, restaurants
 - More electric vehicles
 - Electrify City fleet
- **Clean Energy Homes**
 - Make old rental units efficient
 - Clean energy homes with solar power
- **Support for zero carbon goal by 2030**
 - Ensure City follows up on action plan and implementation
 - Ban fossil fuel extraction

Water (86)

Theme 6. Ensure sustainable water use in the City.

- **Sustainable Water Use**
 - Stormwater capture
 - For homes
 - Use stormwater to water golf course
 - Gray water systems
 - For City buildings
 - Toilets in residential buildings
 - Gray water system for Waste Management to wash down recyclables
- **Align development with capacity of water system**
 - Concern over water related to planned development
 - Division over what water source should be used for growing population
 - Create a water conservation plan

Equity and Climate Justice (51)

Theme 8. Secure economic, racial, and environmental justice.

- **Economic Equity**
 - More diversity in property ownership
 - Equitable housing conditions
 - Address poverty
 - Better wages
- **Racial Equity**
 - Anti-racism work
 - Center BIPOC and traditional ecological knowledge
 - Symbiotic relationships and collaboration between groups
 - Diversity
 - Remembering the past and healing
- **Environmental and Social Justice**
 - Equitable outdoor spaces
 - BIPOC can reclaim outdoor spaces

Public Health and Safety (78)

- **Safety and Resilience (Connect to Theme 4)**
 - Safety and security
 - Safety in extreme heat
 - Resilience
 - Paid BIPOC leadership to establish resilience hubs
 - Emergency response plan
 - Reduce wildfire risk
 - Covid safety
 - Outdoor dining
 - Walk-up window for stores/ restaurants
- **Good sense of community (Connect to Theme 4)**
 - Community streets
 - Mutual aid
 - Community art and murals
 - Support and expand the Downtown Streets Team
 - Establish a neighborhood liaison team or Equity Department within the City

Waste, Food, and Food Systems (65)

- **Reduce food waste**
 - Compost program
 - Establish compost program for the City

- Make more compost bins available
 - Divert biowaste for fuel
 - Distribute extra food from restaurants
 - Create city waste reduction goal
- **Greater food access (Connect to Theme 5)**
 - More community gardens
 - Support for homeless garden project
 - Create a Santa Cruz Agricultural Park/ demonstration garden
 - Public fruit trees

Jobs and Green Economy (70)

- **Healthy local economy**
 - Living wage jobs (Connect to Theme 8)
 - Reduce parking requirement for businesses to make City more walkable and increase foot traffic (Connect to Theme 1)
- **Create green jobs**
 - More LEED professionals trained in building systems (Connect to theme 7)
 - Green job apprentice program (Connect to Theme 8)
- **Encourage remote work**
 - Incentivize working from home to reduce car use
 - Encourage employers to allow remote work

Miscellaneous (104)

- **Reduce plastic use and waste (Connect to Theme 4)**
 - Ban single-use plastics
 - Ban sale of plastic water bottles
 - Charge \$ 0.25 for plastic bags
 - Greater recycling
 - Increase local recycling
 - Advocate for extended producer responsibility
 - Recycle bottle caps
- Reduce and enforce littering finds

Creating the CAP Vision



Santa Cruz Community Engagement Summary

All input from the Padlet, the in-person collages, and the focus groups was collected and organized by theme, with more specific sub-themes generated and listed in order of the number of pieces of input received. From there, the project team generated five initial value statements, listed below:

- Ensure equity in all policies
- Build people-centric transportation infrastructure
- Promote efficient and low carbon/no carbon energy and water usage
- Protect and enhance natural resources and urban parks
- Eliminate waste and support local food sources

These value statements were part of the following initial vision for the City of Santa Cruz CAP:

These value statements were part of the following initial vision for the City of Santa Cruz CAP to “*Rapidly enact climate solutions that support and enhance an equitable community with robust active and public transportation, plentiful housing that is affordable, sustainable, and resilient, and regenerative landscapes.*”

Goal Setting

Community Survey

The second phase of outreach focused on setting carbon neutrality targets for the Plan and gathering community feedback on CAP priorities. The project team distributed a community survey during fall of 2021 to assess the community’s opinion on various carbon neutrality targets CAP measure priorities. The survey was developed in English and Spanish and sent out via the City newsletter and social media. In-person results were gathered in Beach Flats as well and entered into the online survey.

There were a total of 325 participants, with 271 respondents having participated at the time of survey analysis. Respondents were asked to identify their agreement with the areas that the climate action plan would pursue, and to vote on their priorities and the mitigation approaches they believed had the greatest potential to meet proposed goals. This consisted of city residents (76%), respondents who identified as BIPOC (Black, Indigenous, and people of color) (13%), respondents who were aged 30 or younger (17%), respondents from the Beach Area (2%) and Lower East Side (3%), and 20% of respondents who are city employees.

Respondents from differentiated demographic groups had varied patterns in their responses. In general, frontline stakeholders demonstrated strong agreement with all goal statements, and shared similar priorities compared to the general results of the survey. However, unlike the general survey responses, there was a strong preference amongst the frontline groups for a measured and clear approach to achieve carbon neutrality rather than the bold “moonshot” target. On the contrary, the takeaways from city employees conveyed slightly different priorities than the general respondents; city employees had a greater desire for the City to promote teleworking policies. Furthermore, amongst city employees, there was lower support for City to lead environmental educational efforts (plant-based



Santa Cruz Community Engagement Summary

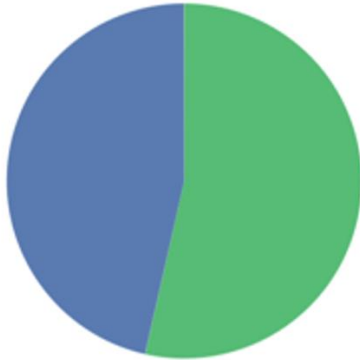
diets, material consumption), lower support for promoting resilient neighborhoods, and for creating and promoting resilience in the business district. Another distinction among city employees' responses was the overwhelming desire for a measured approach to achieve carbon neutrality.

Carbon Neutrality Targets

Results of the survey demonstrated community members' preference to set a more aggressive target of carbon neutrality by 2035 rather than a "measured and achievable" but less aggressive target of carbon neutrality by 2045 (54% and 46% respectively). However, there were clear divides by various demographic factors. Frontline stakeholders consisted of BIPOC, youth, and Beach Flats (including nearby Lower Eastside) groups, who overall preferred the more measured and achievable approach by 2045, with 65%, 62%, and 64% preferring it, respectively. The results demonstrated a stronger preference for a measured and clear approach to achieving carbon neutrality among the frontline stakeholders.

Below are highlighted results of community preferences for carbon neutrality tradeoffs, separated by different frontline communities.

Climate Action Plan Emissions Target



- Nearly even on which approach to the target the City should take
- Slight preference for the bolder approach

	As a community, we need to recognize the urgency of climate change by adopting a bold target for carbon neutrality, a “moonshot” to rally the community around a common goal, although the path to achieving it may not be fully defined. (1)	53.56%	143
	As a community, we need to take a measured approach to becoming carbon neutral, establishing a clear focus and detailed path that may increase both community buy-in and our chance of achieving our carbon neutrality goal. (2)	46.44%	124

Overall community preference on CAP target setting tradeoffs

Breakdown of BIPOC responses

ANSWER CHOICES	RESPONSES
▼ Reduce onroad vehicles, the number of miles they travel, and traffic in Santa Cruz by equitably improving bikability, walkability, and public transportation.	64.86% 24
▼ Provide better wages to enable workers to live where they work.	45.95% 17
▼ Encourage a reduction in the number of daily commutes through expansion of equitable teleworking.	37.84% 14
▼ Build dense, mixed residential and business development that is close to public transit and services, filling in existing neighborhoods, rather than extending development into the wildland urban interface and other undeveloped areas.	37.84% 14
▼ Apply for grants that emphasize sustainable and affordable housing.	37.84% 14

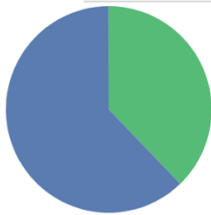


	As a community, we need to recognize the urgency of climate change by adopting a bold target for carbon neutrality, a “moonshot” to rally the community around a common goal, although the path to achieving it may not be fully defined.	35.14%	13
	As a community, we need to take a measured approach to becoming carbon neutral, establishing a clear focus and detailed path that may increase both community buy-in and our chance of achieving our carbon neutrality goal.	64.86%	24

BIPOC preferences for CAP target setting tradeoffs

Breakdown of youth responses (under 30)

ANSWER CHOICES	RESPONSES
▼ Reduce onroad vehicles, the number of miles they travel, and traffic in Santa Cruz by equitably improving bikability, walkability, and public transportation.	71.11% 32
▼ Provide better wages to enable workers to live where they work.	53.33% 24
▼ Build dense, mixed residential and business development that is close to public transit and services, filling in existing neighborhoods, rather than extending development into the wildland urban interface and other undeveloped areas.	51.11% 23
▼ Apply for grants that emphasize sustainable and affordable housing.	35.56% 16
▼ Build resilient, energy and water efficient new and existing buildings and infrastructure.	35.56% 16
▼ Support, maintain and enhance accessible, beautiful, drought tolerant and/or regenerative landscapes and ecosystems that store carbon and support biodiversity.	35.56% 16
▼ Reduce food waste in our community through composting and surplus distribution programs, etc.	35.56% 16

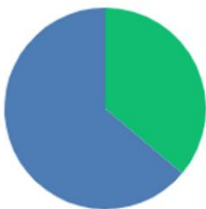


As a community, we need to recognize the urgency of climate change by adopting a bold target for carbon neutrality, a "moonshot" to rally the community around a common goal, although the path to achieving it may not be fully defined.	37.78% 17
As a community, we need to take a measured approach to becoming carbon neutral, establishing a clear focus and detailed path that may increase both community buy-in and our chance of achieving our carbon neutrality goal.	62.22% 28

Youth preferences for CAP target setting tradeoffs

Breakdown of responses from Beach Flats and Lower Eastside/ Eastside Sphere

ANSWER CHOICES	RESPONSES
▼ Provide better wages to enable workers to live where they work.	46.00% 23
▼ Build resilient, energy and water efficient new and existing buildings and infrastructure.	28.00% 14
▼ Reduce emissions by rapidly transitioning to electric vehicles (where electricity in 2030 is emissions free) for any remaining commute trips.	20.00% 10
▼ Build dense, mixed residential and business development that is close to public transit and services, filling in existing neighborhoods, rather than extending development into the wildland urban interface and other undeveloped areas.	20.00% 10
▼ Build the resiliency of neighborhoods, especially those most impacted by climate change (our "frontline" communities).	16.00% 8



As a community, we need to recognize the urgency of climate change by adopting a bold target for carbon neutrality, a "moonshot" to rally the community around a common goal, although the path to achieving it may not be fully defined.	36.11% 26
As a community, we need to take a measured approach to becoming carbon neutral, establishing a clear focus and detailed path that may increase both community buy-in and our chance of achieving our carbon neutrality goal.	63.89% 46

Beach Flats/ Lower Eastside residents preferences for CAP target setting tradeoffs

Measure Priorities

Respondents from the community survey were asked to rank the importance of several strategic measures. Ranking measures allowed the city to gauge the priorities of the Santa Cruz community, to guide development of actions to meet the areas of greatest concern. While the rest of the priorities listed will be integrated within the Climate Action Plan, the survey results allow City staff to develop actions based on magnitude of community priority.

The following three measures were prioritized the most by respondents:

1. Transportation (prioritized by 67.90% of participants): Reduce on road vehicles, the number of miles they travel, and traffic in Santa Cruz by equitably improving bike ability, walkability, and public transportation.
2. Building and Development (prioritized by 50.55% of participants): Build dense, mixed residential and business development that is close to public transit and services, filling in existing neighborhoods, rather than extending development into the wildland urban interface and other undeveloped areas.
3. Green Economy (prioritized by 39.11% of participants): Provide better wages to enable workers to live where they work.

The image below shows a longer list of community priority measures. Participants were asked to select the five statements that were most important for the community to address, and the list below shows the top 11 statements.

Select the 5 statements you feel are most important for the community to address



▼ Reduce onroad vehicles, the number of miles they travel, and traffic in Santa Cruz by equitably improving bikability, walkability, and public transportation.	67.90%	184
▼ Build dense, mixed residential and business development that is close to public transit and services, filling in existing neighborhoods, rather than extending development into the wildland urban interface and other undeveloped areas.	50.55%	137
▼ Provide better wages to enable workers to live where they work.	39.11%	106
▼ Build resilient, energy and water efficient new and existing buildings and infrastructure.	32.10%	87
▼ Support, maintain and enhance accessible, beautiful, drought tolerant and/or regenerative landscapes and ecosystems that store carbon and support biodiversity.	30.63%	83
▼ Reduce emissions by rapidly transitioning to electric vehicles (where electricity in 2030 is emissions free) for any remaining commute trips.	30.26%	82
▼ Apply for grants that emphasize sustainable and affordable housing.	30.26%	82
▼ Reduce food waste in our community through composting and surplus distribution programs, etc.	30.26%	82
▼ Support local organic food production which reduces transportation emissions and toxins from entering the environment.	26.94%	73
▼ Encourage a reduction in the number of daily commutes through expansion of equitable teleworking.	23.99%	65
▼ Implement fire fuel management and reduction activities in parks and open spaces to reduce the potential release of massive emissions due to wildfire.	22.88%	62

Survey results: Community Priorities

Identifying CAP Actions

The Project team and Climate Action Task Force developed a set of measures and actions to use as a starting point to tailor actions to meet Santa Cruz' needs. From these preliminary actions, and using input from the community, measures and actions were strengthened and specified.

Developing an Equity Screening Tool

Concurrently, the project team developed a set of equity criteria through which to evaluate each action in the CAP to ensure an equitable Plan. The equity criteria fall into six categories: health, community vibrancy, affordability, accessibility, accountability, and green jobs. Each category of criteria includes multiple questions to assess whether an action will benefit frontline populations or could potentially harm these groups. Any action that could potentially be detrimental to frontline groups had to be rewritten to ensure the action was equitable. The initial set of equity criteria developed by the team were evaluated and edited based on feedback from the City's Climate Action Task Force (CATF). [The full list of criteria can be found here.](#)

Criteria	Significance
Affordability	Criteria lowers and stabilizes costs related to basic living needs (housing, food, utilities, healthcare, transportation, etc.) for low-income communities, communities of color and other frontline groups.
Accessibility	Criteria increases access to housing, transportation, funding, education, healthy foods, a clean environment, and a clean energy economy for low-income communities, communities of color, people of different mobilities and other frontline groups. Action removes barriers through city infrastructure, policy, programs and investments.
Green Jobs Facilitation and Creation	Criteria ensures economic justice so that low-income communities, communities of color, and other frontline communities are prioritized in the benefits of the action and are protected from any potential negative consequences.
Community Health and Safety	Criteria improves health (physical and mental) outcomes for low-income communities, communities of color, and other frontline groups. The strategy upholds the fundamental human right to clean, healthy and adequate air, water, land, food, education, transportation, safety, and housing.

Cultural Vibrancy	Criteria deliberately and respectfully honors cultural relevance and history to maintain cultural heritage from the past and present for the benefit of all generations.
Accountability	Criteria ensures that low-income communities, communities of color, and frontline communities can hold governments and institutions accountable for equitable implementation.

Gathering Input on CAP Actions

In the third engagement phase, the community provided feedback on potential actions that would meet the goals of the climate action plan through Consider.it, an online visualization platform. The project team developed a set of equity criteria to evaluate each action in the CAP that would come to shape the Equity Screening Tool. The equity criteria fell into six categories: health, community vibrancy, affordability, accessibility, accountability, and green jobs. Each area that addressed the equity criteria included questions assessing whether an action would benefit or harm frontline populations. Potentially detrimental actions were rewritten to ensure that these actions did not harm frontline populations.

Actions incorporated in the Climate Action Plan (policies, programs, infrastructure) will address:

- Energy in Buildings (26% of emissions)
- Transportation (69% of emissions)
- Solid Waste, Water, and Wastewater (8% of emissions)
- Carbon Sequestration

The project team used an online engagement forum, Consider.it, to solicit community input on each action. A total of 126 people participated in the Consider.it engagement forum which lasted from February to March 2022. Community members provided their input using the approval rating and comment features, which shed light on general opinion and thought process for determining support for each action. Overall, the community was supportive of all the proposed actions, with approval ranging from 89% to 57%. Comments and approval ratings facilitate incorporating the community's feedback on aspects of the plan that would have otherwise been excluded. The following example images display two strategies geared towards increasing active transportation programs and sustainable energy infrastructure and illustrate the format of Consider.it and community interactions.

< Implement programs for active transportation (walking and biking) that achieve 25% mode share by 2030. >

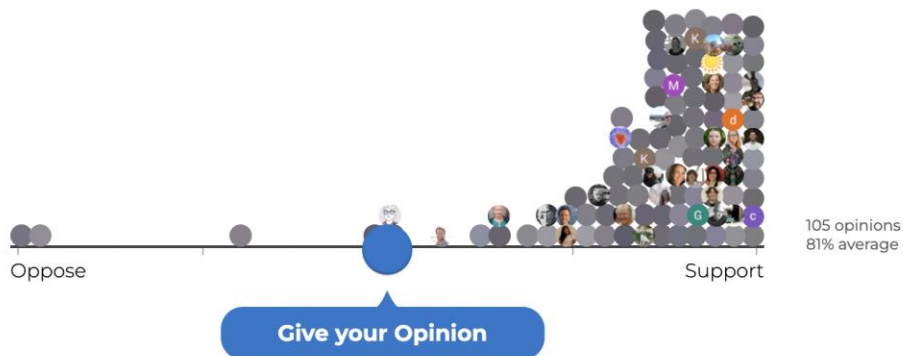
Ensure secure bike parking near transit and in major activity centers. Requiring bike parking installation in new commercial developments and existing commercial renovations



Bianca Hutner
1/32/2022

Opinions about this proposal

All opinions Just you Custom view



Top Cons



Obviously. It seems the city did better at bike parking provision 20 years ago. What happened?

[\(read more\)](#)

2/11/2022, 4 comments



Bike parking and locking should NOT be on sidewalks, whether they are private bicycles or rent a bikes. [\(read more\)](#)

2/29/2022, 0 comments

Top Pros

Being able to lock up a bike is an important part of being able to ride it as transportation. [\(read more\)](#)

2/8/2022, 0 comments

we need to protect the environment anyway we can

2/8/2022, 0 comments

Secure bike parking is vital to the success of active transit programs.

Remove obsolete natural gas infrastructure, deploy community solar, and electrify existing buildings in residential neighborhoods.



Bianca Hutner
2/5/2022

Opinions about this proposal

All opinions

Just you

Custom view



Top Cons



I am all for mostly all electric with one exception, there is no comparison to cooking on a gas range.

2/22/2022, 2 comments

Top Pros



need to set up lots of support - both advice and financial help

2/6/2022, 0 comments



To be equitable, if electricity is the only source of energy it must be affordable and reliable, otherwise people will use unsafe appliances and work-arounds out of necessity

2/12/2022, 0 comments

APPENDIX E:
**GHG Emissions
Inventory Update &
Forecast Memorandum**



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December 10, 2021
Project No: 20-10678

Tiffany Wise-West, Sustainability and Climate Action Manager
City of Santa Cruz, City Manager's Office
809 Center Street, Room 9/10
Santa Cruz, California 95060
Via email: TWise-West@cityofsantacruz.com

**Subject: Santa Cruz Climate Action Plan,
GHG Emissions Forecasts Memorandum**

As part of Task 3 of the Santa Cruz Climate Action Plan (CAP) Update, Rincon Consultants, Inc. (Rincon) has calculated future greenhouse gas (GHG) emissions forecasts for each sector associated with land use in the City of Santa Cruz. The GHG emissions forecasts are based on the 2019 GHG emissions inventory and utilize Santa Cruz specific demographics projections. The forecasts were developed to better understand how population and job growth in Santa Cruz could affect future GHG emissions in the years 2025, 2030, 2035, 2040, and 2045. The GHG emissions forecast presents two scenarios:

- Business-as-Usual Scenario (BAU) that projects GHG emissions levels that scale with population, employment and transportation growth consistent with regional projections, and
- Adjusted Scenario (Adjusted) that accounts for GHG reductions expected to occur in response to local and regional compliance with adopted State legislation.

The presentation of these two forecast scenarios allows for an understanding of how GHG emissions levels may evolve without further action and how compliance with State legislation may contribute to reducing future GHG emissions levels.

GHG Emissions Sectors and Sources

The GHG emissions forecasts presented in this paper are based on the 2019 GHG emissions inventory calculated for Santa Cruz. The transportation sector was updated to include off-road emissions using the California Air Resources Board (CARB) OFFROAD2021 model, which were not calculated in the previous GHG inventories. In addition, on-road transportation data was updated by Kimley-Horn using the Santa Cruz County travel demand model (SCC TDM). The models used are widely accepted and regularly updated; this contributes to consistency and replicability of the data for future forecasts. All historical GHG inventories were also updated to include off-road emissions sources and updated on-road transportation emissions to allow for apples-to-apples comparison of inventories. Updates to previous inventories will be described in further detail in the Santa Cruz 2019 GHG Emissions Inventory section. The GHG emissions sources included in this analysis align with those in the most recent (2017) California Climate Change Scoping Plan, which includes GHG emissions sources related to land use and



transportation in the City of Santa Cruz planning area.¹ The GHG emissions sectors and associated sources included in this analysis are provided in Table 1.

Table 1 Santa Cruz GHG Emissions Sectors and Sources

GHG Emissions Sector	GHG Emissions Source
Transportation	Aggregated On-Road Transportation
	Aggregated On-Road Transportation – EV Adjustment
	Off-Road – Diesel
	Off-Road – Gasoline
	Off-Road - Natural Gas (LPG)
Residential	Residential Electricity Consumption ¹
	Residential Natural Gas Consumption
Commercial	Commercial Electricity Consumption ¹
	Commercial Natural Gas Consumption
Wastewater	Effluent from Treatment and Discharge of Wastewater
Solid Waste	Methane Commitment of Solid Waste Generated by Community
Notes: EV = electric vehicle; LPG = liquefied petroleum gas	
¹ Electricity Consumption includes electricity provided by Pacific Gas and Electric Company and Central Coast Community Energy.	

Santa Cruz 2019 GHG Emissions Inventory

The GHG emissions forecast analysis presented here is based on the emissions levels from each emissions source included in the 2019 GHG emissions inventory. Sources updated for the 2019 GHG Inventory baseline year include both on-road transportation and off-road vehicle emissions.

Off-Road Transportation Sector Updates

All historical GHG emissions inventories (2005, 2010, 2015, 2018, and 2019) were updated to include off-road emissions sources. Off-road activity data, measured in U.S. gallons of fuel consumed by fuel type, was estimated using a combination of outputs from the CARB OFFROAD2021 Model (V1.0.1), per CARB recommendations. The updated inventories aggregate off-road activity by fuel type and allocate these emissions to the transportation sector. A summary of Santa Cruz historical off-road emissions for each inventory year is provided in Table 2.

¹ California Air Resources Board (CARB). 2017. California's 2017 Climate Change Scoping Plan. Available <https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf>. Accessed December 7, 2021.



Table 2 Santa Cruz Historical Off-Road Transportation Emissions Summary

Off-Road GHG Emissions Source	2005	2010	2015	2018	2019
Annual Activity Data (U.S. Gallons of Fuel)	985,725	1,069,503	1,030,882	1,015,670	1,008,050
Off-Road - Diesel	316,027	417,137	396,579	369,444	357,192
Off-Road - Gasoline	449,531	434,952	428,799	446,059	452,948
Off-Road - Natural Gas (LPG)	220,167	217,414	205,503	200,168	197,910
CO₂ Emissions (MT)	8,424	9,313	8,981	8,825	8,748
Diesel	3,227	4,259	4,049	3,772	3,647
Gasoline	3,947	3,819	3,765	3,916	3,977
Natural Gas	1,251	1,235	1,167	1,137	1,124
CH₄ Emissions (MT)	4.34	4.23	4.16	4.30	4.36
Diesel	0.07	0.10	0.10	0.10	0.09
Gasoline	4.09	3.96	3.83	3.92	3.97
Natural Gas	0.16	0.16	0.15	0.15	0.15
N₂O Emissions (MT)	0.28	0.32	0.32	0.31	0.30
Diesel	0.15	0.19	0.18	0.17	0.17
Gasoline	0.06	0.06	0.06	0.06	0.06
Natural Gas	0.09	0.09	0.08	0.08	0.08
Total CO₂e Emissions (MT)	8,624	9,521	9,183	9,028	8,951
Diesel	3,268	4,313	4,101	3,820	3,693
Gasoline	4,077	3,945	3,889	4,046	4,108
Natural Gas	1,279	1,263	1,194	1,163	1,150
Notes: Values in this table may not add up to totals due to rounding. CO ₂ = carbon dioxide; CH ₄ = methane; N ₂ O = nitrous oxide; CO ₂ e = carbon dioxide equivalent					



On-Road Transportation Sector Updates

All historical GHG emissions inventories (2005, 2010, 2015, 2018, and 2019) were updated to include new on-road transportation data that follows the U.S. Community Protocol-recommended origin-destination methodology. Previously, the City's inventories included VMT data from the Highway Performance Monitoring System (HMPS) and accounted for travel on Santa Cruz's local roads only, otherwise known as in-boundary methodology. The Association of Monterey Bay Area Governments (AMBAG) received a public records act request from Land Watch relating to Monterey County GHG inventories as well as pushback on the idea of cities not using an origin destination methodology as part of their climate action plan. To address the concerns raised by Land Watch, Kimley-Horn provided new daily Vehicle Miles Traveled (VMT) data for the years 2019, 2025, 2030, 2035, 2040, and 2045, and associated documentation describing the origin-destination methodology used to obtain the data for the City of Santa Cruz using the Santa Cruz County travel demand model (SCC TDM). Reference Appendix A for the detailed VMT methodology.

A summary of Santa Cruz on-road VMT emissions for each inventory year is provided in Table 3. To update the 2005, 2010, 2015, and 2018 inventories, average VMT per capita was calculated (6,504) and multiplied by the city population for each of the inventory years and daily VMT was converted to annual VMT. On-road transportation emissions were calculated using the updated VMT data and updated emissions factors were derived from the California Air Resources Board (CARB) Emission FACTor (EMFAC) 2021 on-road model. In addition, passenger and commercial electric vehicle (EV) electricity consumption was updated using EMFAC 2021. Passenger and commercial EV emissions from electricity consumption are subtracted from residential and commercial energy emissions respectively and then added to the transportation sector for 2019. In forecast years, emissions from EV charging are attributed to the transportation sector. This emissions reallocation is labeled as an "EV adjustment" in the forecasts.

Table 3 Santa Cruz Historical On-Road Annual VMT and GHG Emissions

On-Road Total Annual VMT	2005	2010	2015	2018	2019
On-Road Total Annual VMT	397,305,791	397,057,721	396,809,806	396,561,890	406,985,890
On-Road Total CO ₂ e Emissions (MT)	204,940	198,684	184,181	177,773	179,967
Notes: Values in this table may not add up to totals due to rounding. CO ₂ = carbon dioxide; CH ₄ = methane; N ₂ O = nitrous oxide; CO ₂ e = carbon dioxide equivalent					

Updated Santa Cruz 2019 GHG Emissions Inventory

A detailed summary of the updated 2019 GHG emissions inventory, incorporating the aforementioned on-road and off-road transportation updates, is provided in Table 4.

Table 4 Santa Cruz 2019 GHG Emissions Inventory Summary

GHG Emissions Sector/Source	CO ₂ (MT)	CH ₄ (MT)	N ₂ O (MT)	CO ₂ e (MT)	Activity Data	Activity Data Units
Transportation						
Aggregated On-Road Transportation	176,445.5	14.1	11.8	179,966.9	406,985,890	VMT
Aggregated On-Road Transportation – EV Adjustment	9.9	0.0	0.0	11.9	2,186,508	kWh
Off-Road - Diesel	3,646.9	0.09	0.17	3,693.3	357,192	U.S. Gallons
Off-Road - Gasoline	3,976.9	4.12	0.06	4,108.1	452,948	U.S. Gallons
Off-Road - Natural Gas (LPG)	1,124.1	0.15	0.08	1,149.8	197,910	U.S. Gallons
Residential						
Residential Electricity - 3CE	288.2	0.95	0.12	345.4	63,591,331	kWh
Non Government Electricity - PG&E	3.0	0.04	0.00	5.2	2,452,316	kWh
Residential Electricity – EV Adjustment	-8.0	-0.03	0.00	-9.6	-1,771,071	kWh
County Natural Gas	0.0	0.00	0.00	0.0	1	Therms
Non Government Natural Gas	42,244.0	3.98	0.08	42,377.0	7,967,582	Therms
Commercial						
County Electricity - 3CE	20.5	0.07	0.01	24.6	4,523,275	kWh
City Electricity - 3CE	49.8	0.16	0.02	59.7	10,985,268	kWh
Non Government Electricity - 3CE	709.9	2.35	0.28	850.9	156,663,619	kWh
District Electricity - 3CE	22.2	0.07	0.01	26.6	4,901,850	kWh
City Electricity - PG&E	0.3	0.00	0.00	0.5	236,870	kWh
District Electricity - PG&E	0.0	0.00	0.00	0.0	8,552	kWh
County Electricity - PG&E	0.0	0.00	0.00	0.0	5,140	kWh
Commercial Electricity – EV Adjustment	-10.4	-0.03	0.00	-12.5	-437,286	kWh
County Natural Gas	791.1	0.07	0.00	793.6	149,201	Therms
City Natural Gas	591.5	0.06	0.00	593.4	111,569	Therms
District Natural Gas	978.7	0.09	0.00	981.7	184,583	Therms
Non Government Natural Gas	19,825.0	1.87	0.04	19,887.0	3,739,129	Therms
Wastewater						
Emissions from the Combustion of Digester Gas	2,633.1	0.16	0.03	13.0	84,002,000	scf/Year
Process N ₂ O Emissions from Wastewater Treatment	N/A	N/A	0.43	114.9	108,393	population in service area
Emissions Associated with Effluents to Ocean	N/A	N/A	2.36	626.5	825	kg N/day

Solid Waste						
Solid Waste Disposed of Outside Jurisdiction	N/A	138.71	N/A	3,883.8	13,575	wet tons of waste
City of Santa Cruz Resource Recovery Facility	N/A	539.01	N/A	15,092.0	52,751	wet tons of waste
Notes: Values in this table may not add up to totals due to rounding. NA = not applicable; CO ₂ = carbon dioxide; CH ₄ = methane; N ₂ O = nitrous oxide; CO ₂ e = carbon dioxide equivalent; PG&E = Pacific Gas and Electric Company; 3CE = Central Coast Community Energy; kWh = kilowatt-hour						

Business-as-Usual GHG Emissions Forecast

A Business as Usual (BAU) GHG emissions forecast uses demographic projections and modeled on-road and off-road transportation emissions to estimate future GHG emissions without also considering the influence that compliance with adopted GHG reduction legislation or policies may have to reduce GHG emissions in the future. The BAU forecast is based on projected growth trends in population, and employment over time, consistent with local and regional projections. The BAU forecast does not account for GHG emissions reductions associated with local GHG reduction measures or legislative actions. BAU forecasts were estimated for 2025, 2030, 2035, 2040 and 2045. The BAU GHG emissions projections were calculated based on the guidance of the Association of Environmental Professionals 2012 whitepaper Forecasting Communitywide GHG Emissions and Setting Reduction Targets.² To develop a GHG emissions forecast, the appropriate “growth metrics” (e.g., population, housing, and employment projections) are multiplied by BAU “growth indicators,” (e.g., kilowatt hours of electricity used in households in 2019 divided by the number of households in 2019). This allows for projections of activity data that can be converted into GHG emissions estimates using specific GHG emissions factors, which is assumed to be the same in the future as in the 2019 GHG emissions inventory for most sectors. The result is a BAU forecast in which GHG emissions change with time in relation to demographics, with the assumption that per capita activity data will continue in the future as it was in 2019, the year of the most recent GHG emissions inventory. This methodology is used for most GHG emissions sectors and sources included in the 2019 GHG emissions inventory. Exceptions include:

- 3CE emissions factors, which are projected to increase through 2025 before decreasing again due to 3CE’s published procurement strategy – more detail provided in the Emissions Factors section below.
- On-road transportation emissions, which are projected using the EMFAC Model, which models a business-as-usual scenario.
- Off-road transportation emissions, which are forecasted using the OFFROAD 2021 model, which models a business-as-usual scenario.

The following provides an overview of the growth metrics, growth indicators, and GHG emissions factors used to project GHG emissions for the BAU forecast calculations.

Growth Metrics

In this BAU GHG emissions forecast, GHG emissions are assumed to be largely driven by consumption of fuel and energy, and generation of solid waste and wastewater by residents, households, and

² Association of Environmental Professionals (AEP). Forecasting Community-Wide Greenhouse Gas Emissions and Setting Reduction Targets. Available: <https://califaep.org/docs/Forecasting_and_Target_Setting.pdf>. Accessed December 8, 2021.



employees in a jurisdiction.³ As such, this forecast assumes that as population and employment grow over time, it is expected that without changes to behaviors, policies, or technologies, GHG emissions will also grow. In a BAU forecast, this growth is assumed to be the primary metric for determining changes in future GHG emissions. For the Santa Cruz planning area, the growth and demographic projections used as the growth metrics for the BAU GHG emissions forecast were drawn from the Association of Monterey Bay Area Governments (AMBAG) 2022 Regional Growth Forecast. AMBAG updates its regional forecast for population, housing, and employment to support planning efforts. A yearly increase in housing stock commensurate with the Regional Housing Needs Assessment (RHNA) allocations for 2015-2023 is attributed yearly from 2015 to 2045. Santa Cruz growth metrics for the BAU forecast are provided in Table 5.

Table 5 Growth Metrics for Santa Cruz BAU GHG Emissions Forecast

Growth Metric	2019	2025	2030	2035	2040	2045
Population ¹	65,041	68,845	72,218	75,257	78,828	79,534
Housing ²	24,193	25,465	26,045	26,441	26,762	26,992
Employment ³	40,343	44,317	45,594	46,863	48,203	49,636
Service Population ⁴	105,384	113,162	117,812	122,120	127,031	129,170
Notes: Service Population = Population + Employment						
¹⁻⁴ : The compound growth rate for 2015-2020 period was used to estimate 2019 values.						
Source:						
Association of Monterey Bay Area Governments (AMBAG). 2020. Final 2022 Regional Growth Forecast. Available: < https://www.ambag.org/sites/default/files/2020-12/Final%20Draft%202022%20Regional%20Growth%20Forecast_PDF_A.pdf >. Accessed August 24, 2021						

³ All GHG emissions and forecasts are in the context of a CEQA-qualified Climate Action Plan and follow guidance from California's 2017 Climate Change Scoping Plan, which excludes sources largely outside of jurisdictional control, such as consumption-related emissions.

Growth Indicators

Growth indicators were developed from the baseline 2019 GHG emissions inventories by dividing the activity data for each emissions source by the appropriate growth metric for the year 2020. The appropriate growth metric used for each growth indicator is developed based on the relevance of the GHG emissions source. For example, residential energy consumption would be expected to grow with the number of new households, commercial energy consumption would be expected to grow with the number of new jobs, and total solid waste generation would be expected to grow with both residents and employment (service population). Table 6 provides the growth metrics that were associated with each GHG emissions sector to develop growth indicators and project GHG emissions from each GHG emissions source in the respective sectors. Table 7 provides the growth indicators for Santa Cruz for each GHG emissions source.

Table 6 Growth Metrics and Associated GHG Emissions Sectors

GHG Emissions Sector	GHG Emission Source	Associated Growth Metric	Growth Metric Data Source
Transportation	All GHG Emissions Sources	Service Population	AMBAG 2022 Regional Growth Forecast
Residential	All GHG Emissions Sources except EV Adjustment	Households	AMBAG 2022 Regional Growth Forecast
	Residential Electricity - EV Adjustment	Service Population	AMBAG 2022 Regional Growth Forecast
Commercial	All GHG Emissions Sources except EV Adjustment	Employment	AMBAG 2022 Regional Growth Forecast
	Commercial Electricity – EV Adjustment	Service Population	AMBAG 2022 Regional Growth Forecast
Wastewater	All GHG Emissions Sources	Service Population	AMBAG 2022 Regional Growth Forecast
Solid Waste	All GHG Emissions Sources	Service Population	AMBAG 2022 Regional Growth Forecast

Table 7 Growth Indicators for BAU GHG Emissions Forecast

GHG Emissions Source	Growth Indicator	Units
Residential		
Non Government Electricity - PG&E	98.6	kWh/Household
County Natural Gas	0.0	Therms/Household
Non Government Natural Gas	329.3	Therms/Household
Commercial		
City Electricity - PG&E	5.9	kWh/Employee
District Electricity - PG&E	0.2	kWh/Employee
County Electricity - PG&E	0.1	kWh/Employee
County Natural Gas	3.7	Therms/Employee
City Natural Gas	2.8	Therms/Employee
District Natural Gas	4.6	Therms/Employee
Non Government Natural Gas	92.7	Therms/Employee
Wastewater		
Emissions from the Combustion of Digester Gas	797.1	scf/Year/Person Served
Process N2O Emissions from Wastewater Treatment	1.0	Population in Service Area/Person Served
Emissions Associated with Effluents to Ocean	0.0	kg N/day/Person Served
Solid Waste		
Solid Waste Disposed of Outside Jurisdiction	0.1	Wet Tons of Waste/Person Served
City of Santa Cruz Resource Recovery Facility	0.5	Wet Tons of Waste/Person Served
Notes: PG&E = Pacific Gas and Electric Company; 3CE = Central Coast Community Energy; EV = electric vehicle; kWh = kilowatt-hour; scf = standard cubic foot; kg N = kilograms of nitrogen. On-road transportation and off-road transportation BAU growth indicators not provided because BAU projections were modeled using the EMFAC and OFFROAD2021 models, respectively. 3CE BAU growth indicators not provided because 3CE energy BAU projections were estimated using 3CE published emissions factors based on confirmed changes in procurement strategy. ¹ Person Served includes residents and employees (service population)		

On-Road Activity Data

Activity data for the forecast of on-road transportation was modeled separately from the above growth metrics and growth indicators, using the Santa Cruz County travel demand model. Trip data was allocated based on whether the entirety of a trip took place within the City of Santa Cruz transit area, started or ended within the transit area, or started and ended outside of the transit area. 100 percent of daily trips completely within the jurisdiction, 50 percent of partially-within trips, and 0 percent of outside trips were allocated to the city. Reference Appendix A for the detailed VMT methodology. Daily VMT data was annualized using the annualization factor of 347, described in the EMFAC 2017 documentation for Light Duty Autos and Light Duty Trucks 1 and 2. The results are summarized in Table 8.

Table 8 Santa Cruz BAU GHG Emissions Forecast On-Road Transportation Data

Growth Metric	2019	2025	2030	2035	2040	2045
VMT	406,985,890	427,528,637	444,647,535	461,766,086	478,884,984	496,003,882
Notes: VMT = vehicle miles traveled						

Off-Road Activity Data

Activity data for the off-road GHG emissions forecast was modeled separately from the above growth metrics and growth indicators, using the outputs from the CARB OFFROAD2021 model. The OFFROAD2021 model was run for Santa Cruz County for the forecast years to obtain fuel consumption for gasoline, diesel, and natural gas. The equipment sectors drawn from the OFFROAD2021 model include:

- Construction and Mining Equipment
- Industrial Equipment
- Lawn and Garden Equipment
- Light Commercial Equipment
- Pleasure Craft
- Recreational Equipment
- Portable Equipment
- Transportation Refrigeration Units

The results of the OFFROAD2021 model were summarized for the above equipment sectors in Santa Cruz County. Santa Cruz City was allocated a percentage of county fuel consumption for each sector relative to Santa Cruz City's proportion of jobs or population in the county. The results are summarized in Table 9.

Table 9 Santa Cruz BAU GHG Emissions Forecast Off-Road Fuel Consumption

Off-road Fuel Category	2020	2025	2030	2035	2040	2045
Diesel	361,388	408,104	432,205	459,180	486,713	541,090
Gasoline	459,542	486,615	504,663	521,901	537,927	555,690
Natural Gas	206,367	207,364	207,852	210,232	211,353	213,175

Notes: All values are of the unit U.S. gallons of fuel.
Source: California Air Resources Board. 2021. OFFROAD2021 – ORION. Available: <<https://arb.ca.gov/emfac/emissions-inventory/43c4fb407b5290c4aa6bc403e03c79c39ed6224a/>>. Accessed November 2, 2021.

Emissions Factors

The BAU GHG emissions forecast is representative of a scenario where per capita community activities are generally similar to that of the baseline 2019 GHG emissions inventory and GHG emissions change based on projected population and job growth. As such, BAU activity data is multiplied by the emissions factors used to calculate GHG emissions from the baseline GHG emissions inventory to generate an estimate of future GHG emissions without influence from GHG reduction policies at the State or local level. The BAU GHG emissions factors for the relevant GHG emissions sources and sectors are provided in Table 10, reported in MT CO₂e.

Table 10 BAU GHG Emissions Factors

GHG Emissions Source	GHG Emissions Factor	Units
Transportation		
Aggregated On-Road Transportation	0.0004421945	MT CO ₂ e/VMT
Aggregated On-Road Transportation - EV Adjust	0.0000054266	MT CO ₂ e/kWh
Off-Road - Diesel	0.0103397100	MT CO ₂ e/U.S. Gallons
Off-Road – Gasoline	0.0090696385	MT CO ₂ e/U.S. Gallons
Off-Road - Natural Gas (LPG)	0.0058095100	MT CO ₂ e/U.S. Gallons
Residential		
Residential Electricity - 3CE	0.0000054312	MT CO ₂ e/kWh
Non Government Electricity - PG&E	0.0000021156	MT CO ₂ e/kWh
County Natural Gas	0.0053187000	MT CO ₂ e/Therms
Non Government Natural Gas	0.0053186776	MT CO ₂ e/Therms
Commercial		
County Electricity - 3CE	0.0000054312	MT CO ₂ e/kWh
City Electricity - 3CE	0.0000054314	MT CO ₂ e/kWh
Non Government Electricity - 3CE	0.0000054313	MT CO ₂ e/kWh
District Electricity - 3CE	0.0000054314	MT CO ₂ e/kWh
City Electricity - PG&E	0.0000021155	MT CO ₂ e/kWh
District Electricity - PG&E	0.0000021155	MT CO ₂ e/kWh
County Electricity - PG&E	0.0000021156	MT CO ₂ e/kWh
Commercial Electricity - EV Adjust	0.0053186641	MT CO ₂ e/kWh
County Natural Gas	0.0053186817	MT CO ₂ e/Therms



City Natural Gas	0.0053186371	MT CO2e/Therms
District Natural Gas	0.0053186183	MT CO2e/Therms
Non Government Natural Gas	0.0000054312	MT CO2e/Therms
Wastewater		
Emissions from the Combustion of Digester Gas	0.0000001544	MT CO2e/scf/Year
Process N2O Emissions from Wastewater Treatment	0.0010600316	MT CO2e/population in service area
Emissions Associated with Effluents to Ocean	0.7598059430	MT CO2e/kg N/day
Solid Waste		
Solid Waste Disposed of Outside Jurisdiction	0.2860994475	MT CO2e/wet tons of waste
City of Santa Cruz Resource Recovery Facility	0.2860988417	MT CO2e/wet tons of waste
Notes: MT CO2e = metric ton carbon dioxide equivalent; PG&E = Pacific Gas and Electric Company; 3CE = Central Coast Community Energy; kWh = kilowatt-hour; scf = standard cubic foot; kg N = kilograms of nitrogen		

Electricity BAU GHG Emissions Factors

GHG emissions associated with electricity provided by Central Coast Community Energy (3CE) are expected to change between the baseline 2019 GHG emissions inventory and the 2030 forecast year, and as such are accounted for in the BAU GHG emissions forecast. 3CE has published the expected GHG emissions factor associated with its electricity procurement between 2018 and 2030, with the GHG emissions factors increasing between 2020 and 2025, before decreasing again from 2026 to 2030. These changes to the emissions factor are expected to occur regardless of the effects related to compliance with local policies and state legislation. As such, it would not be appropriate to account for these adjustments in the legislative reductions in the Adjusted forecast, and they are instead accounted for here in the BAU forecast. GHG reductions associated with 3CE electricity and the requirements of SB 100 beyond 2030 are accounted for in the Adjusted Forecast. PG&E emissions factors are applied to all PG&E energy provided, meaning for any customers opting out of 3CE energy.

Table 11 provides the GHG emissions factors used in the BAU forecast for 3CE and PG&E provided electricity for each of the forecast years. The weighted average of the two providers is used to project BAU electricity emissions from electric vehicles.

Table 11 BAU GHG Emissions Factors for Electricity

Electricity Provider	2020	2025	2030	2035	2040	2045
Central Coast Community Energy (3CE)	0.000005431	0.000176000	0.000003725	0.000000000	0.000000000	0.000000000
Pacific Gas and Electric (PG&E)	0.000002116	0.000002116	0.000002116	0.000002116	0.000002116	0.000002116
Weighted Average	0.000005308	0.000169544	0.000003665	0.000000079	0.000000079	0.000000079
Notes: All values are of the unit metric tons of carbon dioxide equivalent per kilowatt-hour. Source: Reference 3CE power content label						

BAU GHG Emissions Forecast Results

The following provides a summary of the results of the BAU GHG emissions forecast for each source in Santa Cruz. The results are reported in MT CO₂e. The BAU forecast projects an increase in GHG emissions above the baseline 2019 GHG emissions inventory from transportation, wastewater, and solid waste. In terms of residential and commercial energy, emissions increase from 2019 to 2025, decrease from 2025 to 2030, and then slowly increase through 2045. An increase in the GHG emissions factor for 3CE electricity leading up to 2025 is expected to create a sharp increase in GHG emissions associated with electricity and the overall GHG emissions for the City of Santa Cruz. The subsequent decrease of the 3CE electricity GHG emissions factor results in a leveling off of GHG emissions levels in 2030, at which point steady growth in GHG emissions continues through 2045. Energy provided by Pacific Gas and Electric Company (PG&E), though only a small proportion of the total energy provided in Santa Cruz, shows an increase over time due to population and job growth. Table 12 and Figure 1 provide a summary of the Santa Cruz BAU GHG emissions forecast.

Table 12 Santa Cruz BAU GHG Emissions Forecast Summary (MT CO₂e)

GHG Emissions Source	2019	2025	2030	2035	2040	2045
Transportation	188,930	199,287	206,883	214,893	222,900	231,203
Aggregated On-Road Transportation	179,967	189,051	196,621	204,190	211,760	219,330
Aggregated On-Road Transportation - EV Adjustment	12	398	9	0	0	0
Off-Road – Diesel	3,693	4,220	4,469	4,748	5,032	5,595
Off-Road – Gasoline	4,108	4,413	4,577	4,733	4,879	5,040
Off-Road - Natural Gas (LPG)	1,150	1,205	1,208	1,221	1,228	1,238
Residential	42,718	56,057	45,826	46,319	46,881	47,284
Residential Electricity - 3CE	336	11,448	200	0	0	0
Non Government Electricity - PG&E	5	5	5	6	6	6
County Natural Gas	0	0	0	0	0	0
Non Government Natural Gas	42,377	44,604	45,620	46,314	46,876	47,279
Commercial	23,216	58,603	25,753	25,853	26,592	27,383
County Electricity - 3CE	25	872	15	0	0	0
City Electricity - 3CE	60	2,119	37	0	0	0
Non Government Electricity - 3CE	849	30,218	531	0	0	0
District Electricity - 3CE	27	945	17	0	0	0
City Electricity - PG&E	0	1	1	1	1	1
District Electricity - PG&E	0	0	0	0	0	0
County Electricity - PG&E	0	0	0	0	0	0
County Natural Gas	794	872	897	922	948	976
City Natural Gas	593	652	671	689	709	730
District Natural Gas	982	1,078	1,110	1,140	1,173	1,208
Non Government Natural Gas	19,887	21,846	22,475	23,101	23,761	24,468

Wastewater	754	810	843	874	909	925
Emissions from the Combustion of Digester Gas	13	14	15	15	16	16
Process N2O Emissions from Wastewater Treatment	115	123	128	133	139	141
Emissions Associated with Effluents to Ocean	626	673	700	726	755	768
Solid Waste	18,976	20,376	21,214	21,989	22,874	23,259
Solid Waste Disposed of Outside Jurisdiction	3,884	4,170	4,342	4,501	4,682	4,760
City of Santa Cruz Resource Recovery Facility	15,092	16,206	16,872	17,489	18,192	18,498
TOTAL	274,594	335,150	300,519	309,929	320,156	330,054

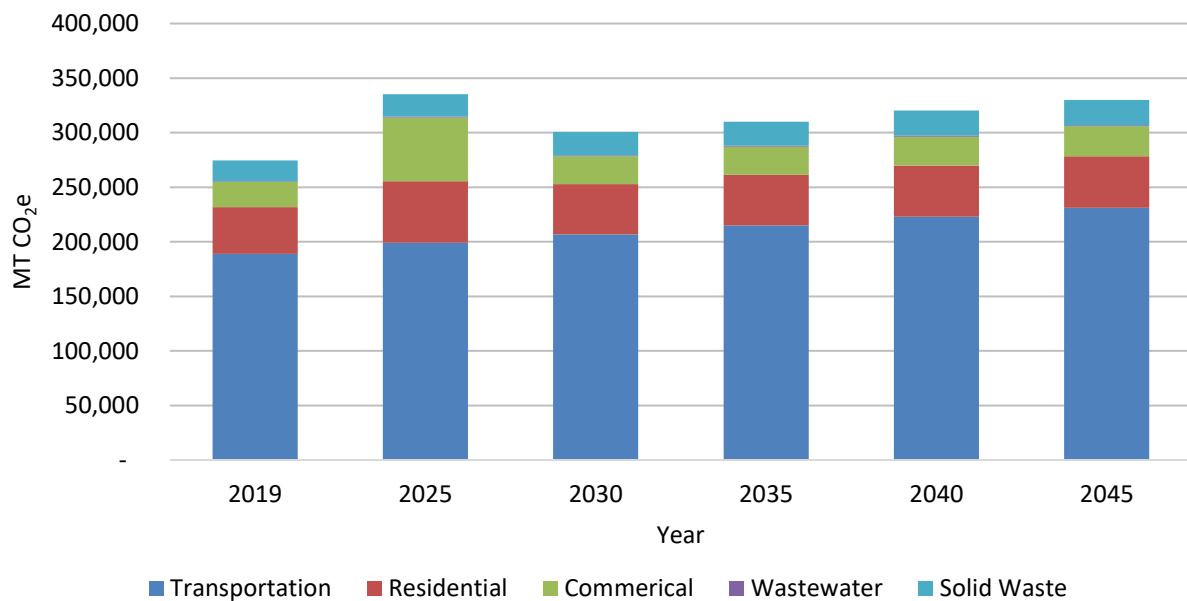
Notes: Values in this table may not add up to totals due to rounding

All values are of the unit metric tons of carbon dioxide equivalent (MT CO₂e)

To avoid double counting EV emissions in 2019 (the inventory year) and to attribute these emissions to the transportation sector, EV emissions were added to the transportation and removed from residential and commercial electricity. Forecast years do not require an adjustment, but rather an addition in emissions based on projected EV adoption, and consequent energy usage, to the transportation sector.

PG&E = Pacific Gas and Electric Company; 3CE = Central Coast Community Energy; N₂O = nitrous oxide; EV = electric vehicle

Figure 1 Santa Cruz BAU GHG Emissions Forecasts (MT CO₂e) through 2045



Adjusted GHG Emissions Forecasts

The Adjusted GHG Emissions Forecast accounts for GHG emissions reductions that can be reasonably expected from local compliance with State legislation and regulations. These forecasted projections were calculated based on the guidance of the Association of Environmental Professionals 2012 whitepaper Forecasting Communitywide GHG Emissions and Setting Reduction Targets.⁴ The following section describes the State legislation and regulations that are expected to reduce Santa Cruz's future GHG emissions.

GHG Reduction Legislation Included in Santa Cruz GHG Emissions Forecasts

The State of California has enacted regulations intended to reduce the state's future GHG emissions. The impact of compliance with these regulations was quantified and incorporated into an Adjusted GHG Emissions Forecast to provide an alternate forecast of future GHG emissions growth based on the City's commitment to achieve a 30% reduction in GHG emissions beyond established State regulations by 2020. The following State legislation were accounted for in the Adjusted Forecasts for Santa Cruz. They represent currently adopted State legislation with clear implementation and enforcement mechanisms at the regional/state scale.

- 2019 Title 24 Building Energy Efficiency Standards
- Senate Bill (SB) 100 - California Renewables Portfolio Standard Program: emissions of greenhouse gases
- SAFE Part One - U.S. EPA and NHTSA Safer Affordable Fuel-Efficient or SAFE Vehicles Rule Part One
- Innovative Clean Transit (ICT) Regulation
- Pavley Regulation
- Advanced Clean Cars Program
- Advanced Clean Trucks (ACT) Regulation

GHG Reduction Legislation Calculations

EMFAC2021 was used to model transportation-related GHG emissions for the Santa Cruz forecasts. In addition, the following methodology was used to calculate energy-related GHG emissions reduction related to Title 24 and SB 100.

- **Title 24:** It is assumed that all growth in the residential sector is from new construction. Accordingly, Title 24 GHG emissions reduction for natural gas and electricity are calculated as a percentage of the projected increase in energy consumption beyond the baseline 2019 GHG emissions inventory, under the BAU forecast, as provided in Table 12. Overall, the energy consumption reduction impact of Title 24 is:
 - 53 percent reduction beyond the 2019 baseline for residential electricity and

⁴ Association of Environmental Professionals (AEP). Forecasting Community-Wide Greenhouse Gas Emissions and Setting Reduction Targets. Available: <https://califaep.org/docs/Forecasting_and_Target_Setting.pdf>. Accessed December 8, 2021.

- 7 percent reduction beyond the 2019 baseline for residential natural gas.⁵
- **SB 100:** Pacific Gas and Electric Company (PG&E) and Central Coast Community Energy (3CE) currently provide electricity in Santa Cruz and are subject to SB 100 requirements. GHG emissions from electricity consumption are largely determined by the emissions factor associated with the supplied electricity. Legislative GHG emissions reductions from compliance with SB 100 are calculated as the difference between GHG emissions under the BAU GHG Emissions Forecast electricity and GHG emissions calculated using a SB 100-adjusted GHG emissions factor for a given forecast year. An adjusted GHG emission factor is calculated by scaling the baseline electricity GHG emissions factor with the Renewable Portfolio Standard (RPS)⁶ percentage for eligible renewable electricity required for compliance with SB 100. Both of the electricity providers for Santa Cruz had different electricity emissions factors due to different RPS percentages in their electricity delivery mix. The RPS percentages and associated GHG emissions factors used to determine the Adjusted GHG Emissions Forecast electricity emissions are provided in Table 13. GHG emissions factors were converted from kilowatt-hour (kWh) to Megawatt-hour (MWh) in the table. Note that while both Title 24 and SB 100 compliance influence GHG emissions reductions in the electricity sector, double counting of these reductions is avoided by accounting for Title 24 compliance reductions first and then accounting for reductions from SB 100 compliance.

Table 13 Electricity Provider Forecasted RPS and Electricity GHG Emissions Factors

Energy Provider	2019 (Baseline)	2025	2030	2035	2040	2045
Pacific Gas and Electric Company (PG&E)						
Renewable Portfolio Standard Percentage	29%	45%	60%	73%	87%	100%
Adjusted Electricity Emission Factor (MT CO ₂ e/MWh)	0.0021156	0.0016537	0.0011919	0.0007946	0.0003973	0.0000000
Central Coast Community Energy (3CE)						
Renewable Portfolio Standard Percentage	33%	60%	100%	100%	100%	100%
Adjusted Electricity Emission Factor (MT CO ₂ e/MWh)	0.005431	0.176000	0.003007	0	0	0
Notes: MT CO ₂ e = metric tons of carbon dioxide equivalent; MWh = Megawatt-hour						

⁵ California Energy Commission. 2018. 2019 Building Energy Efficiency Standards Frequently Asked Questions. Available: <https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf>. Accessed June 21, 2021.

⁶ The RPS is one of California's key programs for advancing renewable energy. The program sets continuously increasing renewable energy procurement requirements for the state's load-serving entities.

Adjusted GHG Emissions Forecast Results

Compliance with state legislation is expected to result in GHG emissions reduction from the BAU GHG Emissions Forecast in the transportation, residential, and commercial sectors. Compliance with both the Pavley regulation, which requires automakers to control GHG emission from new passenger vehicles for the 2009 through 2016 model years, and the Advanced Clean Car Program, which combines the control of smog-causing (criteria) pollutants and GHG emissions into a single package of regulations, are expected to reduce GHG emissions from transportation. Compliance with Title 24 requirements are expected to reduce GHG emissions from reduced electricity and natural gas consumption in new residential housing units. Compliance with SB 100 requirements are expected to further reduce GHG emissions in the residential sector through reduced GHG emissions associated with electricity generation, as well as similar reductions in the commercial sector. The expected legislative reductions from SB 100 and Title 24 are summarized in Table 14.

Table 14 Santa Cruz Adjusted GHG Emissions Reductions

GHG Emissions Source	2025	2030	2035	2040	2045
Transportation Rules Reductions	23,601	43,799	60,091	71,589	79,479
Aggregated On-Road Transportation	24,571	43,830	60,091	71,589	79,479
Aggregated On-Road Transportation – EV Adjust ¹	-970	-30	0.18	0.19	0.21
Title 24 Reductions	304	2	0	0	0
Residential	304	2	0	0	0
Residential Electricity - 3CE	303	2	0	0	0
Residential Electricity - PG&E	0	0	0	0	0
County Natural Gas	0	0	0	0	0
Non Government Natural Gas	0	0	0	0	0
SB 100 Reductions	1	3	4	5	6
Residential	1	2	3	5	6
Residential Electricity - 3CE	0	0	0	0	0
Residential Electricity - PG&E	1	2	3	5	6
Commercial	0	0	0	1	1
County Electricity - 3CE	0	0	0	0	0
City Electricity - 3CE	0	0	0	0	0
Non Government Electricity - 3CE	0	0	0	0	0
District Electricity - 3CE	0	0	0	0	0
City Electricity - PG&E	0	0	0	0	1
District Electricity - PG&E	0	0	0	0	0
County Electricity - PG&E	0	0	0	0	0
TOTAL REDUCTIONS	23,906	43,804	60,095	71,594	79,485
Notes: ¹ Negative emissions reduction indicate an increase in emissions from electric vehicle adoption, and consequently energy usage. This adjustment goes to zero as the electricity emissions factor goes to zero. PG&E = Pacific Gas and Electric; 3CE = Central Coast Community Energy; EV = electric vehicle; SB = Senate Bill					

Figure 2 shows the GHG emissions trends in terms of MT CO₂e for the Adjusted Forecast. Adjusted GHG Emissions Forecast emissions trend downward over time through 2045.

Figure 2 Santa Cruz Adjusted GHG Emissions Forecasts (MT CO₂e) through 2045

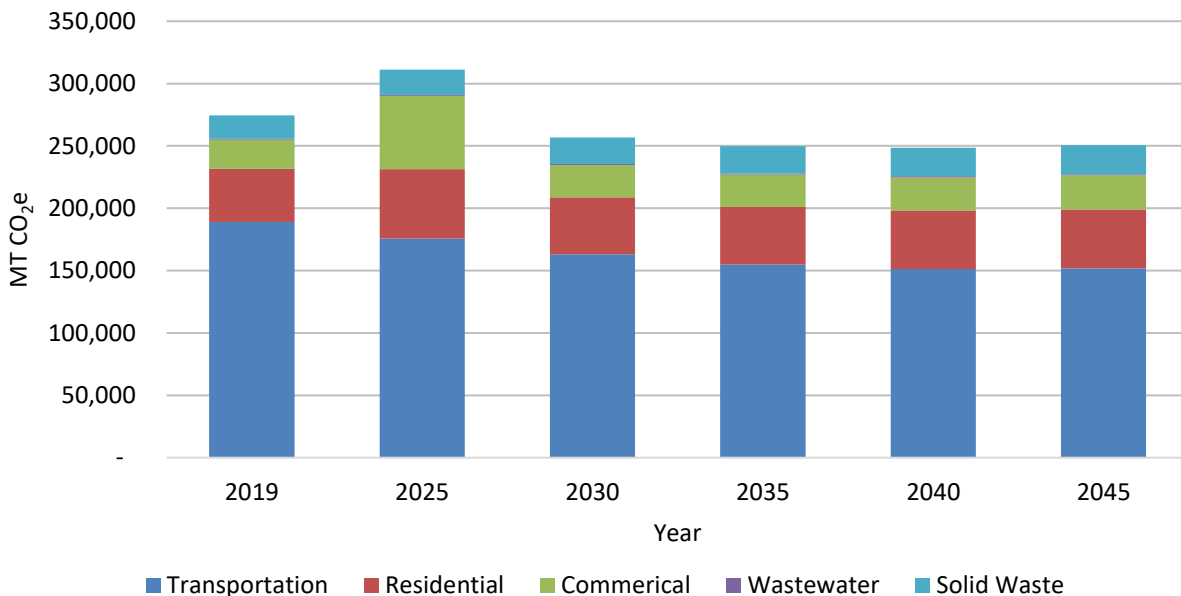


Figure 3 shows the GHG emissions trends in terms of MT CO₂e over the course of the BAU and Adjusted forecasts to illustrate the influence of compliance with state legislation on projected GHG emissions. The BAU GHG Emissions Forecast projects an overall increase of GHG emissions with population, housing, and employment growth. A substantial increase in GHG emissions is expected between 2019 and 2025 due to increased GHG emissions associated with electricity delivered by 3CE caused by a potential increase in GHG-generating electricity sources. However, these emissions are projected to decrease again leading up to 2030 and are expected to remain low compared to 2025 levels for the remainder of the forecast period. Compliance with SB 100 and Title 24 are expected to provide some reductions in GHG emissions resulting from reduced electricity consumption and a reduction in residential natural gas consumption required in association with new construction. However, since GHG emissions associated with electricity consumption are already low, the GHG reduction impact of these programs may be minimal.

Figure 3 Santa Cruz BAU and Adjusted GHG Emissions Forecasts (MT CO₂e) through 2045

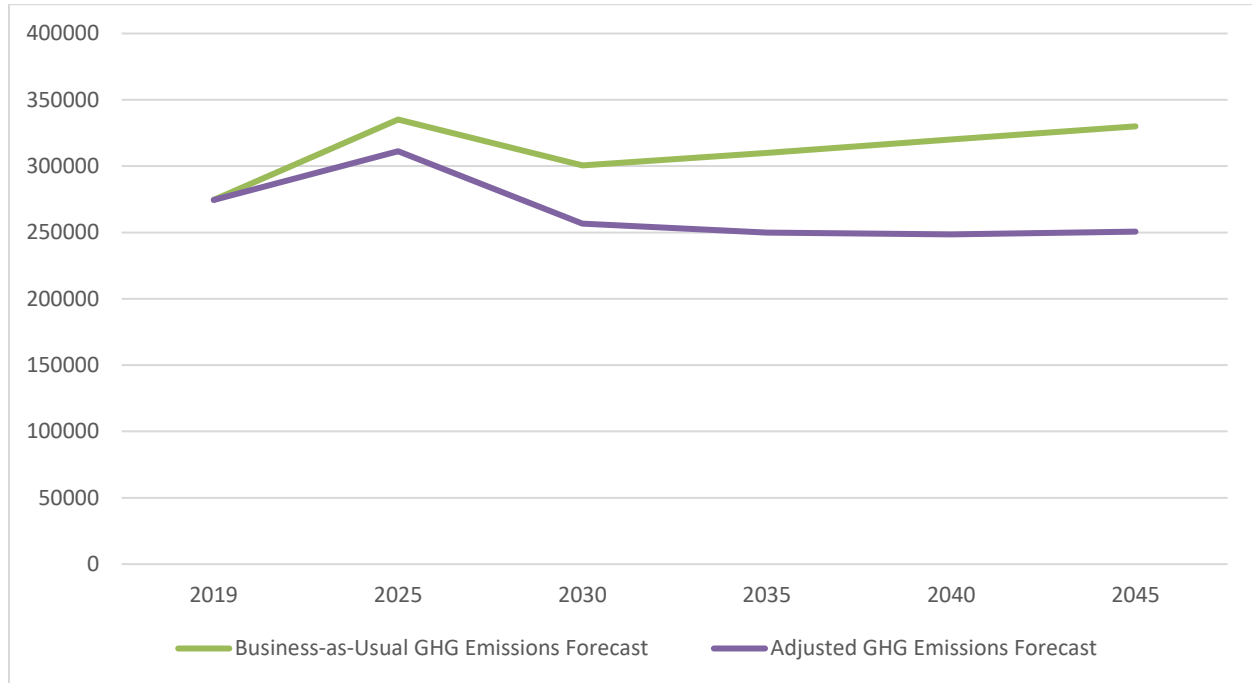


Table 15 provides the results summary of the GHG emissions forecast for Santa Cruz, including the BAU GHG Emissions Forecast, the Adjusted GHG Forecast, and the expected percentage GHG emissions reduction based on compliance with state GHG legislation.

Table 15 Santa Cruz GHG Emissions Forecast Results Summary

	2019	2025	2030	2035	2040	2045
Business-as-Usual Forecast	274,584	335,150	300,519	309,929	320,156	330,054
<i>Transportation Reductions</i>	0	23,601	43,799	60,091	71,589	79,479
<i>Title 24 Reductions</i>	0	304	2	0	0	0
<i>SB 100 Reductions</i>	0	1	3	4	5	6
Legislative Adjusted Forecast	274,584	311,244	256,715	249,834	248,562	250,569
Percent Reduction in GHG Emissions from Legislation	0.0%	7.1%	14.6%	19.4%	22.4%	24.1%
SB = Senate Bill; GHG = greenhouse gas						



Table 16 provides more detail including emissions (in MT CO₂e) by sector for milestone years from 2025 through 2040.

Table 16 Santa Cruz Adjusted GHG Emissions Forecast Detail (MT CO₂e)

GHG Emissions Source	2019	2025	2030	2035	2040
Transportation	188,930	199,287	206,883	214,893	222,900
Aggregated On-Road Transportation	179,967	189,051	196,621	204,190	211,760
Aggregated On-Road Transportation - EV Adjust	12	398	9	0	0
Off-Road - Diesel	3,693	4,220	4,469	4,748	5,032
Off-Road - Gasoline	4,108	4,413	4,577	4,733	4,879
Off-Road - Natural Gas (LPG)	1,150	1,205	1,208	1,221	1,228
Residential	42,718	56,074	45,826	46,319	46,881
Residential Electricity - 3CE	336	11,464	200	0	0
Non Government Electricity - PG&E	5	5	5	6	6
County Natural Gas	0	0	0	0	0
Non Government Natural Gas	42,377	44,604	45,620	46,314	46,876
Commercial	23,216	58,603	25,753	25,853	26,592
County Electricity - 3CE	25	872	15	0	0
City Electricity - 3CE	60	2,119	37	0	0
Non Government Electricity - 3CE	849	30,218	531	0	0
District Electricity - 3CE	27	945	17	0	0
City Electricity - PG&E	0	1	1	1	1
District Electricity - PG&E	0	0	0	0	0
County Electricity - PG&E	0	0	0	0	0
County Natural Gas	794	872	897	922	948
City Natural Gas	593	652	671	689	709
District Natural Gas	982	1,078	1,110	1,140	1,173
Non Government Natural Gas	19,887	21,846	22,475	23,101	23,761
Wastewater	754	810	843	874	909
Emissions from the Combustion of Digester Gas	13	14	15	15	16
Process N ₂ O Emissions from Wastewater Treatment	115	123	128	133	139
Emissions Associated with Effluents to Ocean	626	673	700	726	755
Solid Waste	18,976	20,376	21,214	21,989	22,874
Solid Waste Disposed of Outside Jurisdiction	3,884	4,170	4,342	4,501	4,682
City of Santa Cruz Resource Recovery Facility	15,092	16,206	16,872	17,489	18,192
TOTAL	274,584	335,150	300,519	309,929	320,156
Notes: Values in this table may not add up to totals due to rounding All values are of the unit metric tons of carbon dioxide equivalent (MT CO ₂ e) PG&E = Pacific Gas and Electric; 3CE = Central Coast Community Energy; N ₂ O = nitrous oxide					

APPENDIX F:
Equity Screening Tool

Equity Screening Tool

The equity screening tool consists of a process and criteria to ensure the CAP is equitable in both process and outcomes, achieving an equitable and just transition for all communities. The equity screening tool was used to screen all proposed actions to ensure all actions in the CAP address equity considerations and do not negatively impact - and lift up - frontline communities. Each of the CAP actions were evaluated against all criteria categories and questions and given a score of positive impact, negative impact, neutral or not applicable. No negative scores were accepted. The screening criteria that were selected and used to review the CAP measures and actions are discussed in further detail below.

Screening Criteria

Community Health and Safety

Actions can be intentionally drafted to provide pathways to improve the health impacts that the frontline communities in the City experience resulting from climate change.

- Does the proposed action reduce air pollution and reduce asthma and other respiratory-related hospital visits?
- Does the proposed action extend expected longevity and/or quality of life (including physical and mental health) for populations experiencing health disparities?
- Does the proposed action reduce vulnerability to climate hazards (extreme heat, flooding, wildfire), particularly for low income communities, communities of color, and other frontline groups?
- Does the proposed action help restore or protect ecosystem health (air, land, water, soil), particularly in low income communities, communities of color, and other relevant frontline communities?

Green Job Facilitation and Creation

This criterion serves to ensure that the CAP measures account for local job development and accessibility during the transition to a greener economy, particularly for people experiencing barriers to employment.

- Does the proposed action support or invest in communities of color, other frontline groups and low-income populations through workforce development, contracting opportunities, small business support, or the increased diversity of city staff?
- Does the proposed action increase availability and accessibility of existing green jobs or create new local opportunities for livable wage jobs for low-income communities, other frontline groups and communities of color?

Cultural Vibrancy

This criterion will require stakeholder and community input to understand how the culture of the City can be leveraged and strengthened by this CAP.

- Does the proposed action acknowledge/respect/honor the culture, historic assets, and traditions of low income and communities of color, including traditional ecological knowledge from indigenous communities?
- Does the proposed action improve social cohesion (engagement and connection within/to the community) among low income communities, communities of color, and frontline groups?
- Does the proposed action's decision-making processes go beyond dollars and cents to address shared values and cultural differences in order to support implementation?
- Does the proposed action help to restore or support the culture and historic places or neighborhoods of low income and communities of color?

Accessibility

The proposed CAP actions will consider the accessibility of frontline groups, for example, in the design and deployment of policies, programs, and infrastructure considering age, income, language, and ability. Maximizing the accessibility of the documents, outreach, and resulting CAP measures will increase the reach, and therefore, the success of the CAP.

- Does the proposed action expand access to healthy/clean active transportation systems, such as walking paths, bike routes, shared vehicles, public transit in order to access essential services (hospital, school), amenities, and/or jobs?
- Does the proposed action improve amenities and essential services in traditionally underserved geographies/neighborhoods?
- Does the proposed action increase equitable participation in economic benefit programs (i.e., tax revenues, job creation or incentives) from low income communities, frontline groups and communities of color?
- Does the proposed action remove any barriers that might prevent individuals in low income communities, communities of color, and other frontline groups (consider language, gender, socio-economic status (SES), digital inequality, LGBTQ status, different abilities, employment status, immigration status, education level, home ownership and housing status, geography, environment, religious beliefs, culture, history of incarceration, etc.) from benefiting fully if this strategy were implemented as written?
- Does the proposed action increase equitable access to information/education around climate, i.e. impacts, benefits, and programs?

Accountability

The City aims to ensure that equity is considered from CAP inception and that equity actions are properly implemented, tracked, and reported.

- Does the proposed action have provisions to ensure ongoing collection of data (that can be disaggregated by race/ethnicity/income) and public reporting of data? Can this data be validated qualitatively by community members?
- Does the proposed action have clear markers of short-term and long-term success as well as timelines for meeting markers of success? If so, what are the mechanisms we will utilize to ensure that targets are met (successful implementation and enforcement)?
- Does the proposed action address consequences if targets are not met? Is there a process for those impacted by the policy to express grievances or satisfaction and to ensure that concerns are met?
- Is the proposed action adequately funded to achieve its designed targets?

Affordability

Actions should be designed such that any policy or program will not be implemented until accessible funding and financing mechanisms are in place to prioritize and support frontline community transition.

- Could this action limit the displacement of residents and small businesses when surrounding property values rise?
- Is the proposed action affordable to all community members, and/or does this offer inclusive financing strategies that prioritize the most income-burdened populations?
- Does the proposed action reduce cost burden and the number of families that are cost-burdened by housing (including utilities) and transportation (defined as spending more than 33 percent of income on housing and transportation)?
- Does the proposed action reduce burdens (including financial, health costs), either directly or indirectly, to communities of color, low-income populations, and other frontline communities? If no, how will the Plan mitigate these impacts?



APPENDIX G: **Green Jobs Analysis**

Santa Cruz Green Economy and Jobs Analysis: Part 1

A report for



Context

1

Executive Summary

2

Existing Economic Conditions in the City

3

Existing Labor Force Base and Workforce Dynamics

4

Existing State of the Green Economy in the City

5

National and State-wide Trends: Potential Impacts of Transformative Climate Investments to the City and its Existing Economy

Key Terms and Concepts

Table of Contents

An aerial photograph of a coastal city, likely Santa Cruz, showing a mix of residential and commercial buildings, a large parking lot, and a sandy beach meeting the ocean. The word "Context" is overlaid in large white text on the left side of the image.

Context

Rincon Consultants, Inc. has retained Hatch to conduct a *Green Economy and Jobs Analysis* for the City of Santa Cruz. The analysis aims to provide an understanding of economic outcomes and opportunities presented by the City path to carbon neutrality through proposed measures in its *Climate Action and Energy Plan 2030*.

This two-part analysis will examine the proposed measures—their ensuing policies and transformative climate investments—in the context of the City’s existing economy to comprehend which sectors and industries may experience growth and what new industries may appear. Specifically, this assessment addresses green jobs and equitable opportunities that could result from each proposed measure including an understanding of potential skill and training gaps.

Green Economy and Jobs Analysis Part 1:

This document is the first part of two assessments on the City’s green economy and jobs. It focuses on the City’s existing economic context as well as larger trends in the green economy and their relevance to the City’s *Climate Action and Energy Plan 2030*.



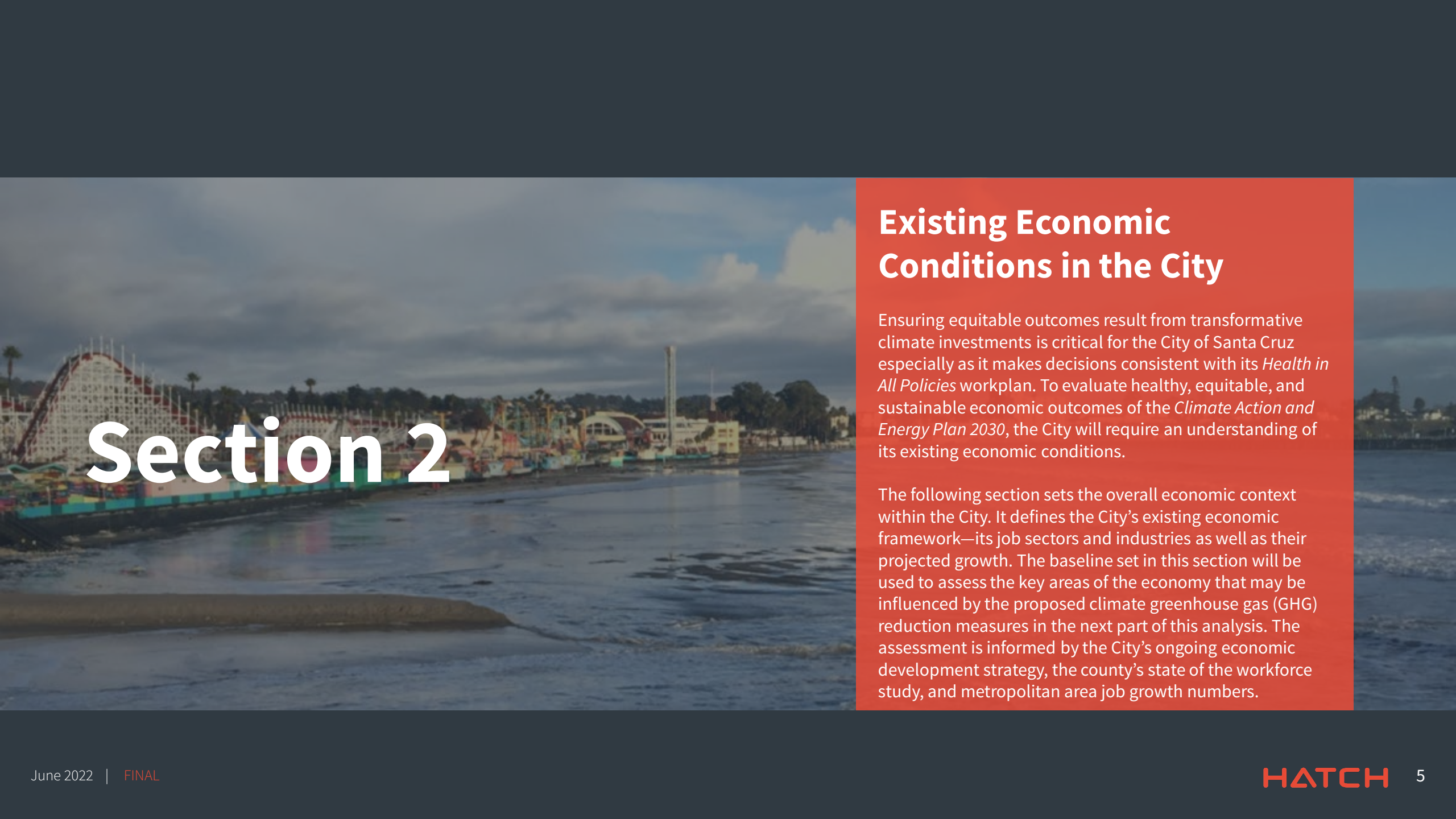
Section 1

Executive Summary

The aim of this study is to examine the potential impacts to jobs resulting from measures from the City's Climate Action Plan (CAP). Increased spending on certain capital projects related to climate actions are expected to increase employment in construction and manufacturing sectors in Santa Cruz and surrounding geographies.

While increased jobs are generally viewed as a positive impact, the City can take measures to ensure equitable outcomes, such as implementing retraining programs and outreach for underrepresented communities.

The following report highlights the current state of green jobs in the state of California, estimates job growth in California from three selected CAP measures, and provides recommendations on how the City can begin to prepare the workforce for these new jobs.

A background image showing a coastal scene. On the left, a large wooden roller coaster with a red and white track is visible. In the foreground, there's a sandy beach and the ocean with gentle waves. The sky is overcast with grey clouds. The text 'Section 2' is overlaid in large white letters on the left side of the image.

Section 2

Existing Economic Conditions in the City

Ensuring equitable outcomes result from transformative climate investments is critical for the City of Santa Cruz especially as it makes decisions consistent with its *Health in All Policies* workplan. To evaluate healthy, equitable, and sustainable economic outcomes of the *Climate Action and Energy Plan 2030*, the City will require an understanding of its existing economic conditions.

The following section sets the overall economic context within the City. It defines the City's existing economic framework—its job sectors and industries as well as their projected growth. The baseline set in this section will be used to assess the key areas of the economy that may be influenced by the proposed climate greenhouse gas (GHG) reduction measures in the next part of this analysis. The assessment is informed by the City's ongoing economic development strategy, the county's state of the workforce study, and metropolitan area job growth numbers.

Employment Overview

City of Santa Cruz

Understanding baseline employment conditions in the City is a critical step for distinguishing impacts of climate investments to future job trends and employment growth. The adjacent figure provides a current employment overview in Santa Cruz.

Businesses and Jobs

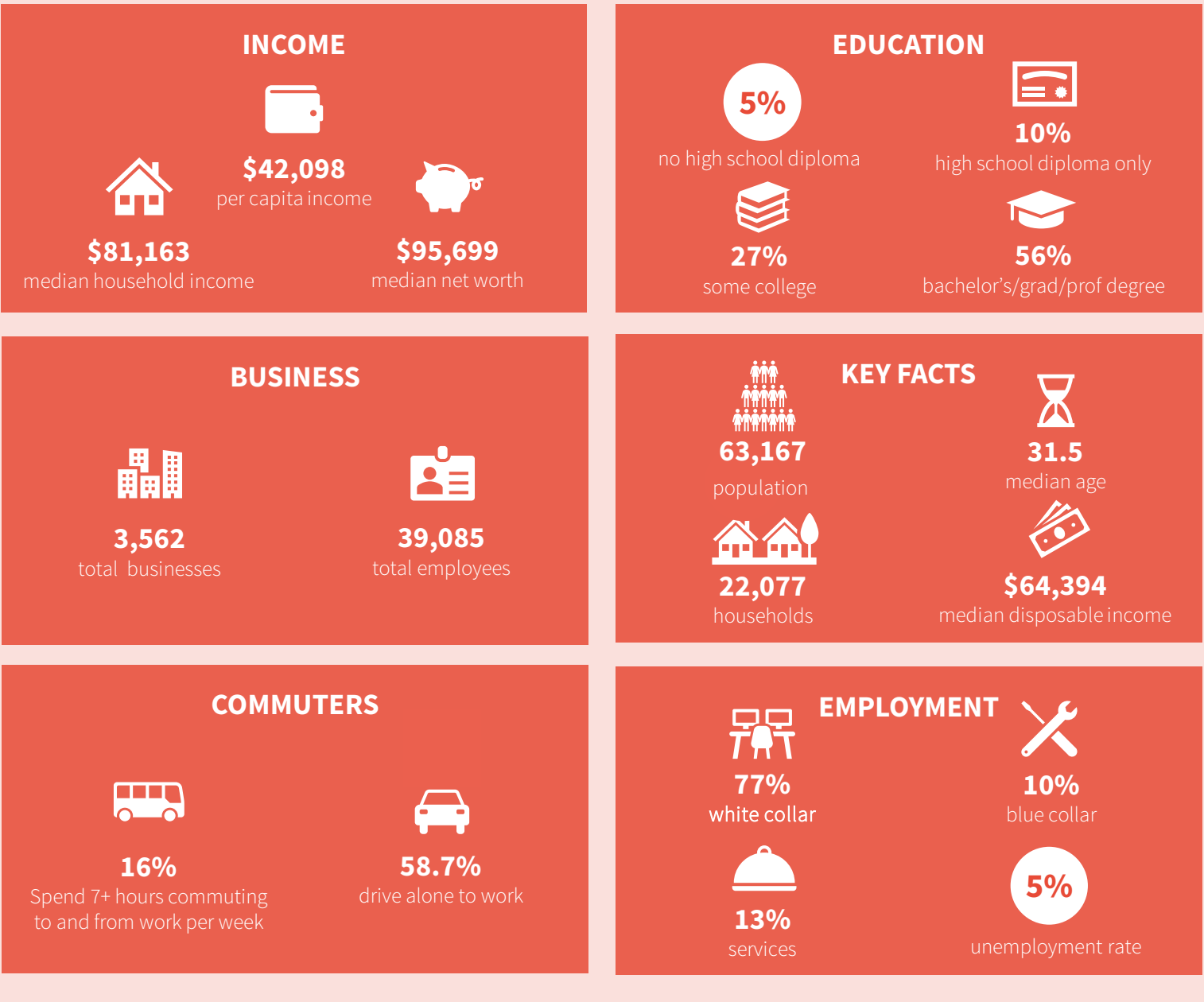
As of 2021, there are over 3,500 businesses within City limits that provide about 39,000 jobs. Those employed in the City are typically highly educated, white-collar workers. When compared to the nation, the share of white-collar workers is 14 percent higher while the share of blue-collar workers in Santa Cruz, at 10 percent, is 11 percent lower than the US average. Service industry workers compose of 13% of total employment.

Education

Compared to the rest of California and nation, the workforce of Santa Cruz is highly educated. Fifty-six percent of the employed have a Bachelor's, Graduate, or Professional Degree and 27 percent with some college experience. Ten percent of those employed have a High School diploma. Comparatively, California and the US have 21% and 27%, respectively, of the workforce employed with High School diplomas.

Income and Wages

The City's median household income is \$81,163, a figure above the national and state median household incomes of \$64,730 and \$80,044 respectively. The annual average wage in the County reached \$60,055 in the year 2020, increasing from \$41,274, or 37%, from 2010.



Employment by Industry

City of Santa Cruz

Largest Employing Industries

The top sectors for employment in Santa Cruz are *Education, Retail Trade, Accommodation & Food Services*, and *Health Care Services*. These sectors alone account for about 19,350 jobs, representing 57 percent of the employment in the City. This corresponds with the large presence of businesses oriented towards tourism and hospitality located in the City.

While these top four industries provide the most employment for residents, the City's *Manufacturing* and *Professional, Scientific & Tech Services* also provide unique opportunities. These two industries employ about 4,600 employees or 14 percent of total jobs. Employers range from those who specialize in biotechnology and life sciences, sports and outdoor recreation, technology and innovation, and artisanal production that require small-scale manufacturing. As discussed in the following page, the City likely has benefitted from regional growth trends in the *Manufacturing* industry.

City Employment and Public Administration

Public Administration employment is excluded in the adjacent table; however, the City currently provides over 750 full-time jobs. While state and local economic development strategies in response to the COVID-19 pandemic include provision of employment opportunities in the public sector, most of the job growth will continue to be sourced from the private sector.



Activities in the new green economy will cover a broad spectrum. The following industries, however, are anticipated to play an active role in the green economy: Professional, Scientific, & Tech Services, Manufacturing, Transportation & Warehousing, Construction, and Utilities.

Employing Industries, Largest to Smallest, Santa Cruz City, 2021

Industry by NAICS Codes	Employment Santa Cruz City	Employment Santa Cruz City % of Total	Businesses Santa Cruz City	Businesses Santa Cruz City % of Total
Educational Services	6,523	19%	117	3%
Retail Trade	4,816	14%	456	13%
Accommodation & Food Services	4,450	13%	315	9%
Health Care & Social Assistance	3,566	11%	268	8%
Professional, Scientific & Technical Services	2,683	8%	443	13%
Manufacturing	1,950	6%	123	4%
Other Services (except Public Administration)	1,882	6%	358	10%
Wholesale Trade	1,255	4%	96	3%
Transportation & Warehousing	1,163	3%	35	1%
Arts, Entertainment & Recreation	1,099	3%	109	3%
Information	1,072	3%	95	3%
Construction	795	2%	164	5%
Finance & Insurance	776	2%	124	4%
Real Estate, Rental & Leasing	750	2%	160	5%
Admin & Support & Waste Management & Remediation Services	447	1%	117	3%
Unclassified Establishments	407	1%	433	13%
Utilities	143	less than 1%	6	less than 1%
Mining	80	less than 1%	6	less than 1%
Agriculture, Forestry, Fishing & Hunting	72	less than 1%	16	less than 1%
Management of Companies & Enterprises	17	less than 1%	7	less than 1%
Mining	6	less than 1%	1	less than 1%

Employment by Industry

City and the Region

Given the reciprocity of economic trends between the City of Santa Cruz and the broader region, a baseline analysis of employment conditions for the Santa Cruz-Watsonville Metropolitan Statistical Area (MSA) provides further understanding of current economic trends in the City. The adjacent table compares the largest employing industries in the metropolitan and the City as of 2021.

Regional and Local Employing Industries

Like the City, the top sectors for employment in the Santa Cruz-Watsonville MSA are *Educational Services*, *Retail Trade*, *Accommodation & Food Services*, and *Health Care & Social Assistance*. These sectors alone account for almost 54,000 jobs in the region, or nearly half of the employment.

Unlike the City, however, the region has a larger share of employment in the *Health Care & Social Assistance*, *Construction*, *Wholesale Trade*, *Administration and Support and Waste Management and Remediation Services*, and *Agriculture* industries. The main employment drivers in the region include large employers such as the following in the table are located and headquartered within the region’s boundaries.

Largest Employers in Santa Cruz County, 2011		
#	Employer	# of Employees
1	University of California, Santa Cruz	7,364
2	County of Santa Cruz	2,319
3	City of Santa Cruz	780
4	Plantronics	505
5	Santa Cruz Beach Boardwalk	347
6	Costco	239
7	Threshold Enterprises	213
8	Community Bridges	212
9	New Teacher Center	211
10	Santa Cruz Biotechnology	204

Employing Industries, Largest to Smallest, Santa Cruz – Watsonville MSA, 2021

Industry by NAICS Codes	Employment MSA	Employment MSA % of Total	Employment Santa Cruz City	Employment Santa Cruz City % of Total
Educational Services	12,421	11%	6,523	19%
Retail Trade	14,760	13%	4,816	14%
Accommodation & Food Services	12,707	11%	4,450	13%
Health Care & Social Assistance	13,991	12%	3,566	11%
Professional, Scientific & Technical Services	7,043	6%	2,683	8%
Manufacturing	6,639	6%	1,950	6%
Other Services (except Public Administration)	6,788	6%	1,882	6%
Wholesale Trade	5,684	5%	1,255	4%
Transportation & Warehousing	2,201	2%	1,163	3%
Arts, Entertainment & Recreation	3,076	3%	1,099	3%
Information	2,411	2%	1,072	3%
Construction	5,477	5%	795	2%
Finance & Insurance	2,623	2%	776	2%
Real Estate, Rental & Leasing	2,783	2%	750	2%
Agriculture, Forestry, Fishing & Hunting	2,206	2%	72	less than 1%
Admin & Support & Waste Management & Remediation Services	2,107	2%	447	1%
Unclassified Establishments	960	1%	407	1%
Utilities	284	less than 1%	143	less than 1%
Mining	80	less than 1%	80	less than 1%
Management of Companies & Enterprises	51	less than 1%	17	less than 1%

Growth by Industry

County of Santa Cruz

Growing Industries in the County

A 2019 State of the Workforce Report for Santa Cruz County shows that occupations in *personal care* and *food preparation and serving* industries in the county are projected to see the highest rate of increase by 2028 from 2018. Based on data from the California Employment Development Department (EDD), the two industries will see a 21 percent and 10 percent of growth respectively or almost 3,000 additional jobs over the five-year period analyzed by the agency. Architecture and Engineering as well as Life, Physical and Social Science occupations are expected to increase close to 20 percent over this period, however, the industry remains a small part of the county's economic ecosystem.

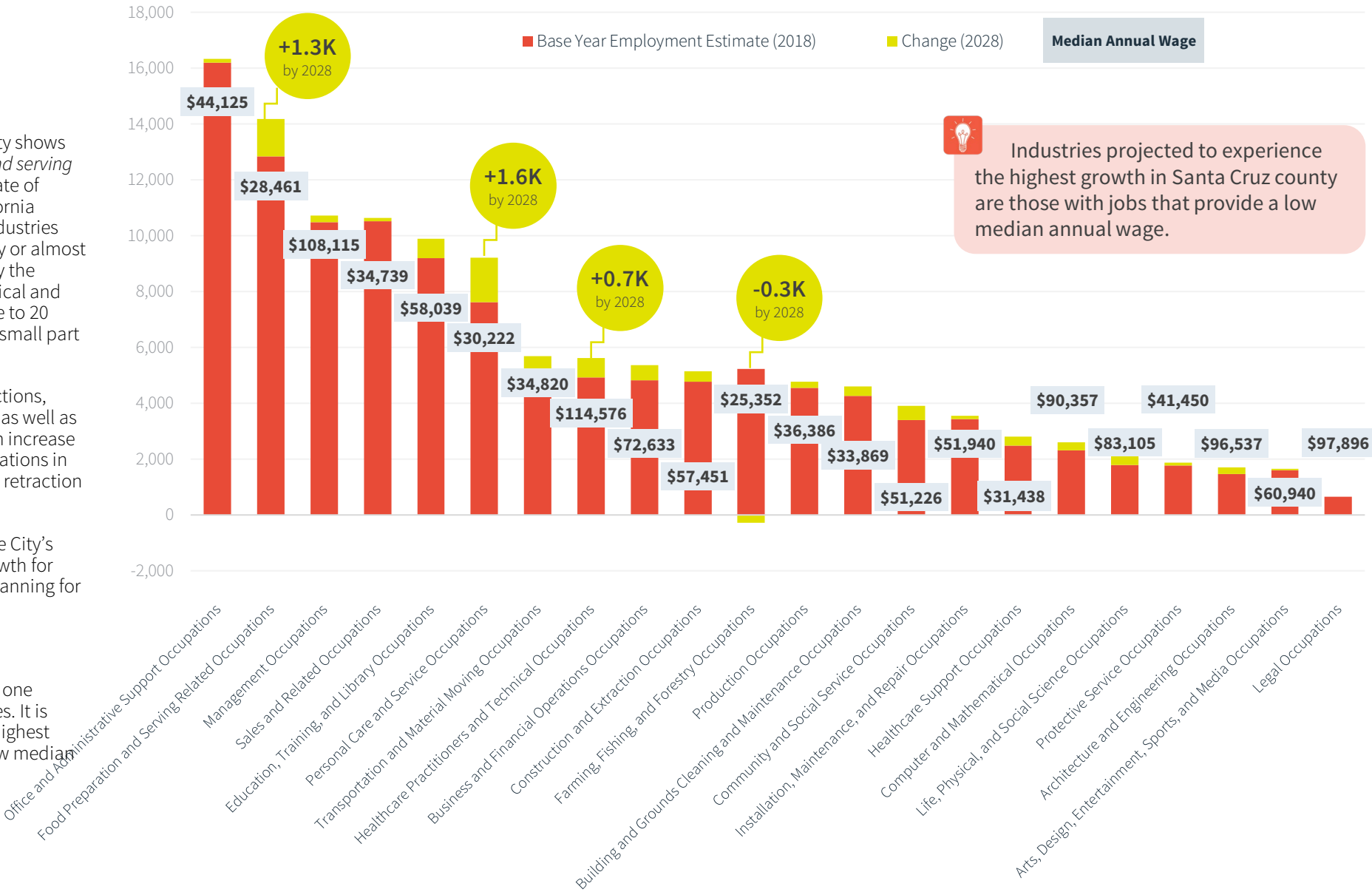
While the ongoing pandemic might influence these projections, occupations in the *Healthcare Practitioners and Technical* as well as the *Healthcare Support* industry is also projected to see an increase of 14 percent in jobs, or just over 1,000. Meanwhile, occupations in the *Farming, Fishing, and Forestry* industry might see a 5% retraction of employees by 2028, or an equivalent of 270 fewer jobs.

Policy change and economic investments borne out of the City's climate action plan should recognize the trajectory of growth for these select industries, and leverage these trends while planning for an equitable, carbon neutral future..

Median Annual Wage

Evaluating job growth through the lens of wages provides one insight to whether investments lead to equitable outcomes. It is worth noting that industries projected to experience the highest growth in the county are those with jobs that provide a low median annual wage. The median annual wage for the *food preparation* and *personal care* industries are below the national median compensation of almost \$35,000, at roughly \$28,500 and \$30,000 respectively.

Change in Metro Area Occupational Employment 2018 to 2028





Section 3

Existing Labor Force Base and Workforce Dynamics

This section describes the current labor force characteristics and workforce development dynamic within the City of Santa Cruz. The discussions in this section will serve as a baseline for understanding how anticipated growth—particularly ones spurred by transformative climate investments—can create employment opportunities that connect with historically under-represented, under-served and under-resourced members of the community.

The section determines the types of occupations within key industries in the City and the typical characteristics of workers in each occupations. The goal is to set the context in which industry and workforce—and vice versa—can support a zero-carbon economy as described by the City's *Climate Action and Energy Plan 2030*.

Types of Occupations: the City’s Civilian Labor Force



Civilian Labor Force: White Collar Occupations

Most jobs in the City of Santa Cruz are white-collar. Occupations in *Education/Training/Library* services and *Management* are the most common *white-collar* jobs held by residents of the City, with about one of four residents employed in these two occupation types.

Occupation	Employed	% of All Employed
Education/Training/Library	3,992	12%
Management	3,888	12%
Sales and Sales Related	3,202	10%
Office/Administrative Support	2,940	9%
Computer/Mathematical	2,048	6%
Healthcare Practitioner	1,843	6%
Business/Financial	1,511	5%
Arts/Design/Entertainment	1,281	4%
Life/Physical/Social Sciences	1,205	4%
Community/Social Service	934	3%
Architecture/Engineering	737	2%
Legal	440	1%
White Collar Total	24,021	75%



Civilian Labor Force: Blue Collar Occupations

Occupations in the *Construction/Extraction* services are the most common blue-collar jobs held by residents of the City of Santa Cruz. This is followed by occupations in the *Transportation/Material Moving* services. Blue-collar jobs are significantly less prevalent than white-collar occupations in the City.

Occupation	Employed	% of All Employed
Construction/Extraction	1,388	4%
Transportation/Material Moving	920	3%
Production	641	2%
Installation/Maintenance/Repair	285	1%
Farming/Fishing/Forestry	109	0%
Blue Collar Total	3,343	10%



Civilian Labor Force: Service Occupations

Service occupations are the second most common group of occupations in the City. Occupations in the *Food Preparation/Serving* services employ almost 2,000 people, which equates to 6 percent of the total jobs in the City. This service sector is expected to experience the highest rate of growth by 2028.

Occupation	Employed	% of All Employed
Food Preparation/Serving	1,983	6%
Protective Service	716	2%
Personal Care/Service	712	2%
Healthcare Support	636	2%
Building Maintenance	626	2%
Services Total	4,673	15%



In the City of Santa Cruz, jobs in the *Construction/Extraction* industry earn median annual wage of \$57,000, nearly half of the compensation for *Healthcare Practitioners* or those in *Management* occupations, which earn \$115,000 and 108,000 annual average wage respectively.

Gender Composition of All Industry Employment

City of Santa Cruz

Overall Composition

In Santa Cruz, women are well-represented across the City’s industries. In total, women make up 46 percent of the full-time, year-round civilian employed population 16 years and over.

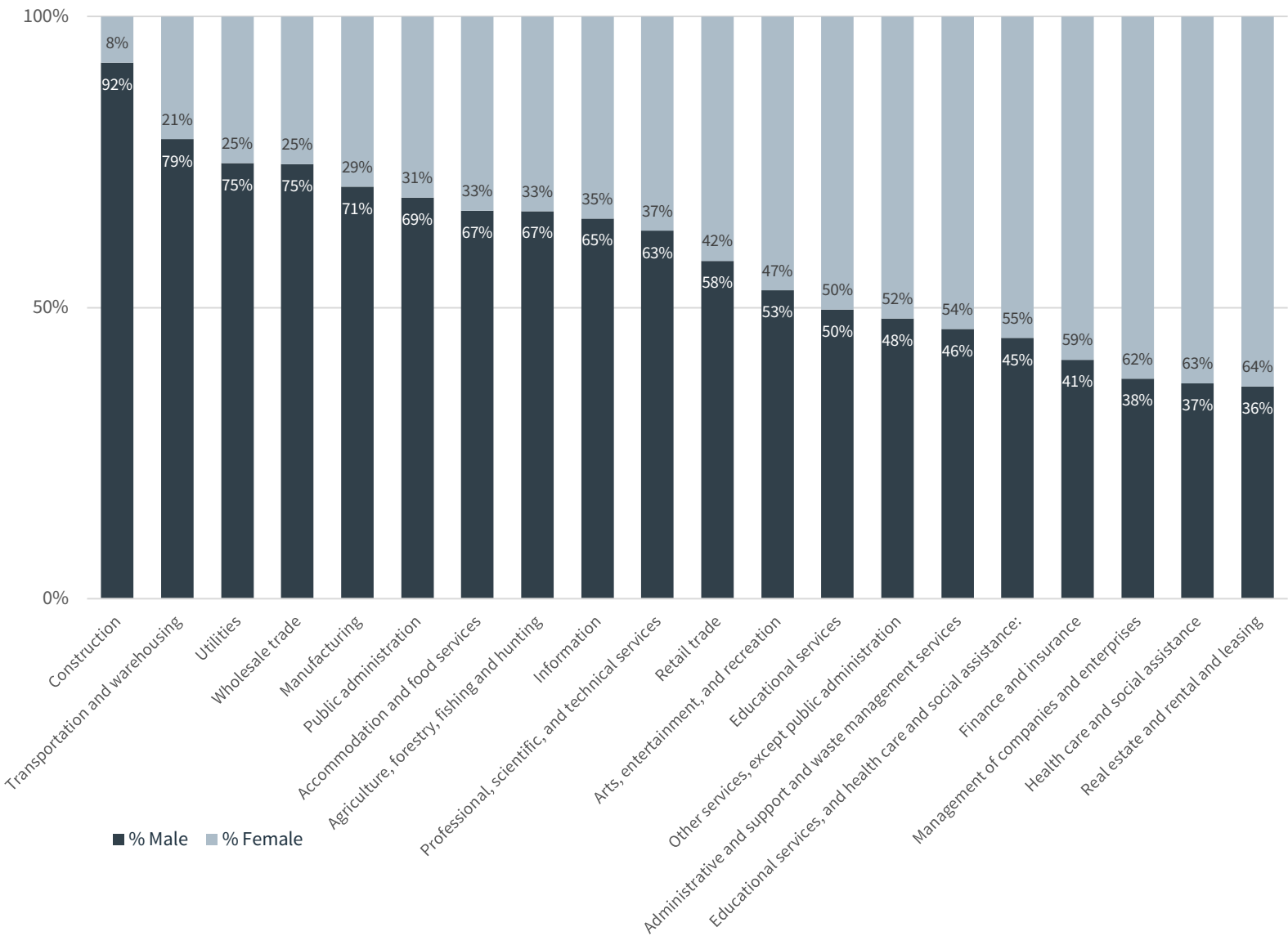
Industries with One Dominant Gender Opportunities

Although women are a large part of the workforce, historically male-dominated industries continue to exist in the City. In the *Construction, Transportation/Warehousing, and Utilities* industries of the City, women compose only eight, 21, and 25 percent of jobs, respectively. These industries have yet to see equal representation as it relates to gender. Meanwhile, female-dominated industries such as *Health Care and Social Assistance*, and *Management* are high-earning occupations, earning 50 percent more than the average annual wage in the City of Santa Cruz.



Overall, educational attainment rates increased for both females and males aged 25- to 29-year-old across all attainment levels. However, the differences between attainment rates for females and males, referred to as gender gap, also increased during the same period. Women attained higher levels of education—Associate’s, Bachelor’s, and Master’s degree or higher—faster than men between 2010 and 2020. Twelve percent of female 25- to 29-year-olds received a Master’s degree or higher degree in 2020, while only 7 percent of their male counterparts did during the same year.

Industry Employment by Gender Composition: City of Santa Cruz, 2021



Workforce Dynamics: Stakeholder Groups and Workforce Development

City of Santa Cruz

Workforce development ensures and expands employability by aligning skills of employees with business needs and labor market trends. Workforce development initiatives take form multiple ways including apprenticeship programs, targeted development programs, and funding incentives.

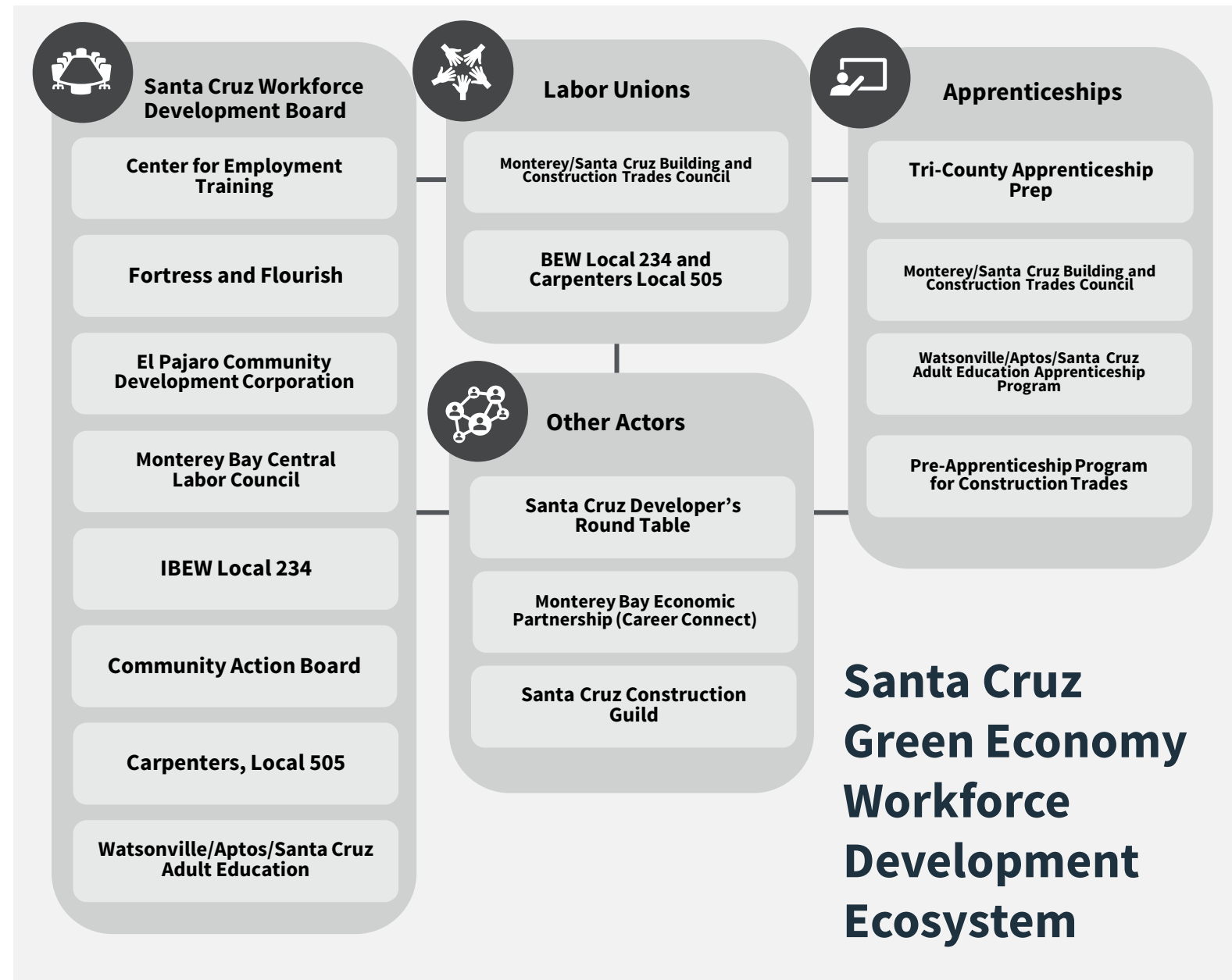
City Workforce Development Goals and Strategies

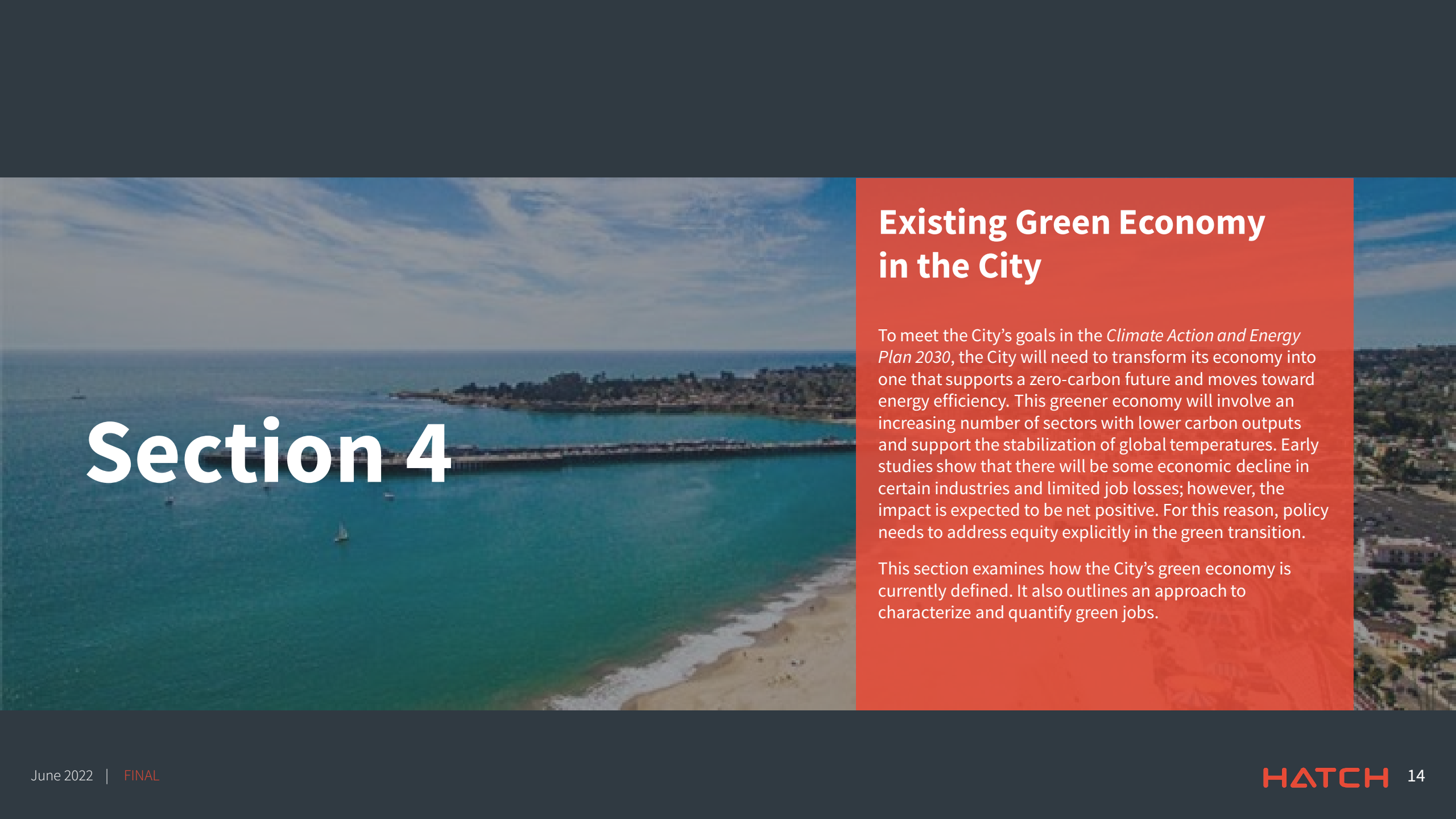
Businesses in the City have had problems attracting and retaining talent due to the region's high costs for housing and exacerbated by the ongoing pandemic. As part of its *February 2021 Economic Development Strategy*, the City set a goal to mitigate this concern and improve workforce development through better coordination of education and business partners. More recently, to close the fiscal gaps exacerbated by COVID-19, the City has doubled-down on workforce development initiatives through its “*Re-Envision Santa Cruz*” recovery plan.

An internal City working team has also begun highlighting opportunities for improving skilled trades and employability in the green economy as part of its Climate and Energy Action Plan. One of the first resulting programs the City is supporting is the Pre-Apprenticeship Program for Construction Trades.

Workforce Development Network

Coordination among business and education communities, labor and trade groups as well as the local and regional governments ensure sound delivery of workforce development initiatives. For the City of Santa Cruz, forging partnerships among the following critical actors in the adjacent graphic will continue to prove vital as the City supports in transformative climate investments through its *Climate Action and Energy Plan 2030*.



An aerial photograph of a coastal city, likely San Francisco, showing a long pier extending into the ocean. The water is a vibrant blue-green, and the sky is filled with wispy white clouds. The city's buildings are visible on the land in the background.

Section 4

Existing Green Economy in the City

To meet the City's goals in the *Climate Action and Energy Plan 2030*, the City will need to transform its economy into one that supports a zero-carbon future and moves toward energy efficiency. This greener economy will involve an increasing number of sectors with lower carbon outputs and support the stabilization of global temperatures. Early studies show that there will be some economic decline in certain industries and limited job losses; however, the impact is expected to be net positive. For this reason, policy needs to address equity explicitly in the green transition.

This section examines how the City's green economy is currently defined. It also outlines an approach to characterize and quantify green jobs.

Green Economy Analysis: Defining the Green Economy

Overview

The United Nations Environment Program defines the green economy as one that is low-carbon, resource efficient, and socially inclusive. This type of economy typically includes sectors that generate clean energy from the renewable energy sector to energy-efficient infrastructure and transportation. Green building and energy recycling or waste-to-energy sectors are also typical sectors of the green economy. However, the definition of the green economy needs to be tailored to the existing economic context to be locally meaningful.

Green Jobs

Green jobs are broadly defined as occupations that include tasks associated with meeting green economic goals and improving the environment. This could be jobs in businesses that produce goods or provide services that conserve natural resources or reduce the environmental impact of production processes. Green goods, services, and production processes typically fall into the following categories of economic activity: renewable energy; energy efficiency; greenhouse gas reduction; pollution reduction and cleanup; recycling and waste reduction; natural resources conservation; and education, compliance, public awareness and training.

It is critical to distinguish between green activities versus green jobs and employment. Difficulties can arise in making this type of distinction; for example, a trucker may deliver solar panels during 30% of their working hours, making other types of deliveries in the remaining time. The flexibility of the economy can create challenges in defining green jobs, as trucking is not necessarily a “green job”, though part of the worker’s time is supporting the green economy.

Green Jobs may include, but are not limited to, the following:

- Clean renewable energy
- Public transportation
- Waste management/recycling
- Eco-tourism
- Sustainable agriculture
- Land conservation/remediation
- Construction/Building remediation



As part of Climate Action Plan 2030 update, the City of Santa Cruz defines the green economy as one that results to low to no carbon use, resource efficiency, and social inclusivity. Through the effort, the City has indicated that jobs related to renewable energy, building and transportation energy, other environmental industries and programs as top green economic priorities.

Green Economy Analysis: Qualifying Increased, Enhanced, and Emerging Green Jobs

Increased, Enhanced, and Emerging Green Jobs

To quantify the number of green jobs in existence in Santa Cruz today, the City must first determine which jobs qualify to readily support the green economy and which are currently lacking. This study utilizes work performed by Occupational Information Network or O*Net to identify existing economic sectors and occupations considered part of the green economy. Specifically, this study refers to three green occupational categories determined by O*Net. The graphic below describes each category, its impact to job requirements, and sample occupations.



Green Increased Jobs

Outlook

With *Green Increased Jobs*, climate investments and the resulting green economic activities and green technologies increase the employment demand for an existing occupation.

The increase in jobs will result in no significant change in the work and job requirements of the existing occupation. Work environments and context may change, but the job description and tasks themselves do not.

Sample Occupations

Electricians,
Zoologists and Wildlife Biologists
First-Line Supervisors of Mechanics, Installers and Repairers,
Production, Planning and Expediting Clerks



Green Enhanced Jobs

Outlook

With *Green Enhanced Jobs*, climate investments and resulting green economic activities and green technologies significantly change the work and job requirements of an existing occupation. This may or may not lead to increase in employment demand for the existing occupation.

The purposes and definition of the occupation remain the same; however, tasks, skills, knowledge, educational and professional requirements need to be altered.

Sample Occupations

Construction Laborers and Construction Managers
Maintenance and Repair Workers, General
Training and Development Specialists
Refuse and Recyclable Material Collectors



Green Emerging + New Jobs

Definition

With *Green Emerging + New Jobs*, climate investments and resulting green economic activities and green technologies create the need for new or unique or specialized work and job, which result in the generation of a new occupation relative to existing job sectors or industries.

The resulting occupations generated could be entirely new or derived from existing occupation

Sample Occupations

Solar Photovoltaic Installers

Green Economy Analysis: Quantifying Green Jobs

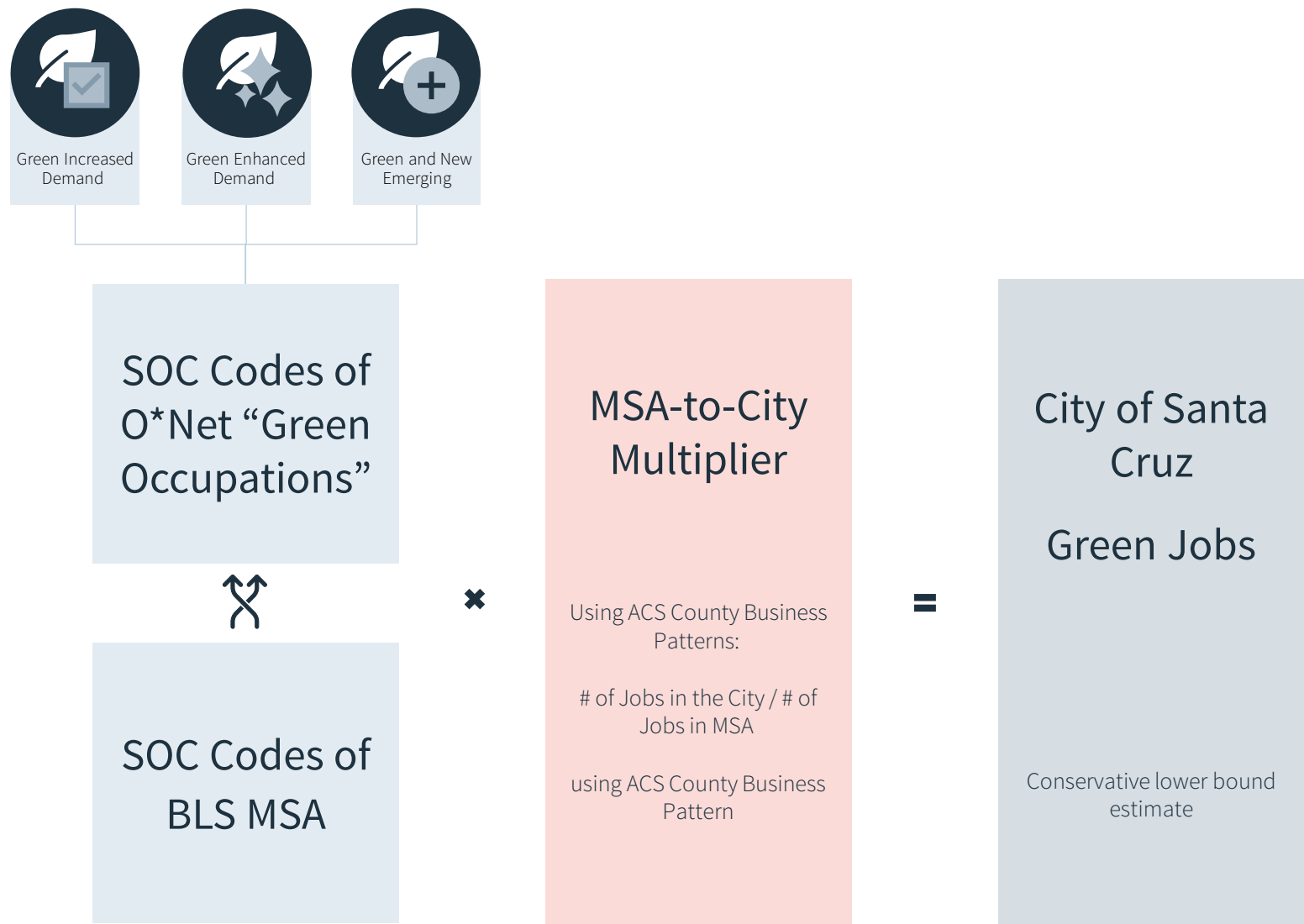
Associating Existing Jobs with Green Jobs

Each of the three green occupational category from O*Net includes a set of standard occupational classification (SOCs). The Bureau of Labor Statistics (BLS) uses the same classification system when they track employment data. To match the number of jobs that are green, the methodology pairs the O*Net's green SOC categories and BLS' employment data for the Santa Cruz-Watsonville MSA. See Appendix C for comprehensive list of green SOCs in the MSA.

From Green MSA Jobs to City Green Jobs

To convert the results from SOC green jobs and jobs in the MSA into the City of Santa Cruz' green jobs, this study first assumes the percentage of green jobs within the City is the same as the Santa Cruz-Watsonville MSA. It then uses a multiplication factor derived from the American Community Survey's County Business Patterns data to estimate the number of green jobs in the City alone. See adjacent diagram and Appendix D on how the multiplier is applied.

Due to the availability of data and the multi-step process required to assign green occupations, the resulting green jobs in the City of Santa Cruz must be observed as a conservative lower bound estimate.



Green Jobs

City of Santa Cruz

Existing Green Jobs

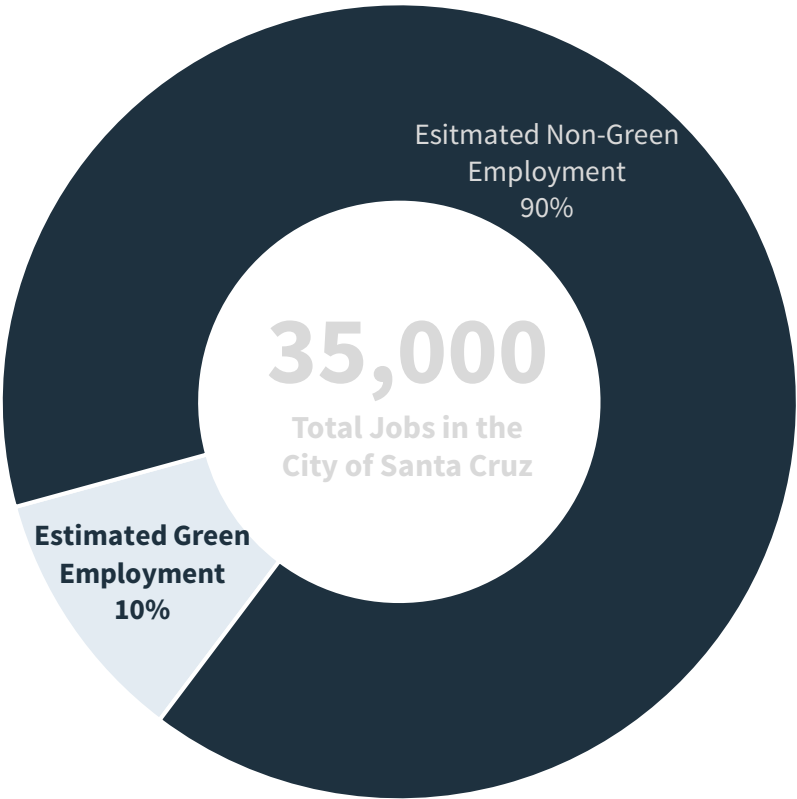
Based on the methodology previously described and available data as of 2019, the total green jobs in the City of Santa Cruz is estimated to be currently 10 percent of the total employment in the City, or an estimated 3,600 jobs.

The largest share of existing green jobs in the City falls under the *Green Enhanced Job* category. As mentioned prior, *Green Enhanced Jobs* are those existing occupations that will experience significant change in work requirements. The purposes and definition of the occupation will remain the same; however, tasks, skills, knowledge, educational and professional requirements need to be altered. The City’s moderate share of technical professions that service the built environment makes up the bulk of this category. This means occupations in the *Professional, Scientific & Technical Services* and the *Construction* sectors—such as Construction Laborers, General Operations Managers, Maintenance & Repair Workers, Inspectors, and Urban & Regional Planners to name a few—might need new skills or expect additional training as the City adopts measures that result to more green economic activities.

Green Increased Jobs represents a third of the City’s existing green jobs. This includes existing occupations—such as Customer Service Representatives, Mechanics, and Electricians amongst others—that have tasks and job requirements that will stay largely the same though in new contexts.



Estimate of Total Jobs in the City of Santa Cruz*



*Based on the methodology previously described.



Section 5

Trends from Climate Investments in the United States and California

This section provides a snapshot of national and state-wide research and trends in climate investment and resulting impact to job creation and economic development. The broad discussion aims to put in context the types and characteristics of emerging occupations that the City of Santa Cruz might expect as it strives for a zero-carbon economy and as the City enacts the proposed climate greenhouse gas (GHG) reduction measures in the next part of this analysis. The discussion of nation- and state-wide initiatives in this section will also inform potential funding sources for regional climate plans and local climate change investments resulting from the City's *Climate Action and Energy Plan 2030*.

National Green Economy and Jobs Overview

The response to climate change will play an increasingly important role in the current economy and will likely expand its influence on job markets of the future.

Green Economy and Green Jobs in the United States

In the United States, the green economy is estimated to employ more than 9.5 million people full-time. This data was compiled from subsections of the broader economy such as electric vehicles, renewable energy, environmental protection, and low carbon goods and services. This green economy, in turn, generates \$1.3 trillion in annual sales revenue in the United States. To put these numbers in context, the 9.5 million jobs represent over 4 percent of the working age population in the United States, while \$1.3 trillion is a little under 7 percent of annual GDP, a rate higher than China or any other country in the G-20.* These estimates underscore the need for choreographed approach to develop energy, environment, and education policies that support the expected economic growth that comes with the scale of the green economy in the United States.

Limitations of Potential Impact

Estimating jobs from the green economy requires, however, further refinement. As mentioned in the previous section, there are broad and varied definitions of what constitutes as a green job or sales. Also, the federal government currently does not track green-specific economic indicators. Estimating methodologies here and employed in the previous section may result to under or double counting of impact. Moreover, nationwide estimates do not yet account for impact from innovation and technology advancements at the forefront of the green economy including advancements in hydrogen technologies with no measurable economic impact yet to-date.



**Employs 9.5 million, over 4%
of the working age
population.**



**\$1.3 trillion in annual sales
revenue in the United States,
about 7% of annual GDP**

Statewide Trends: California Green Investments

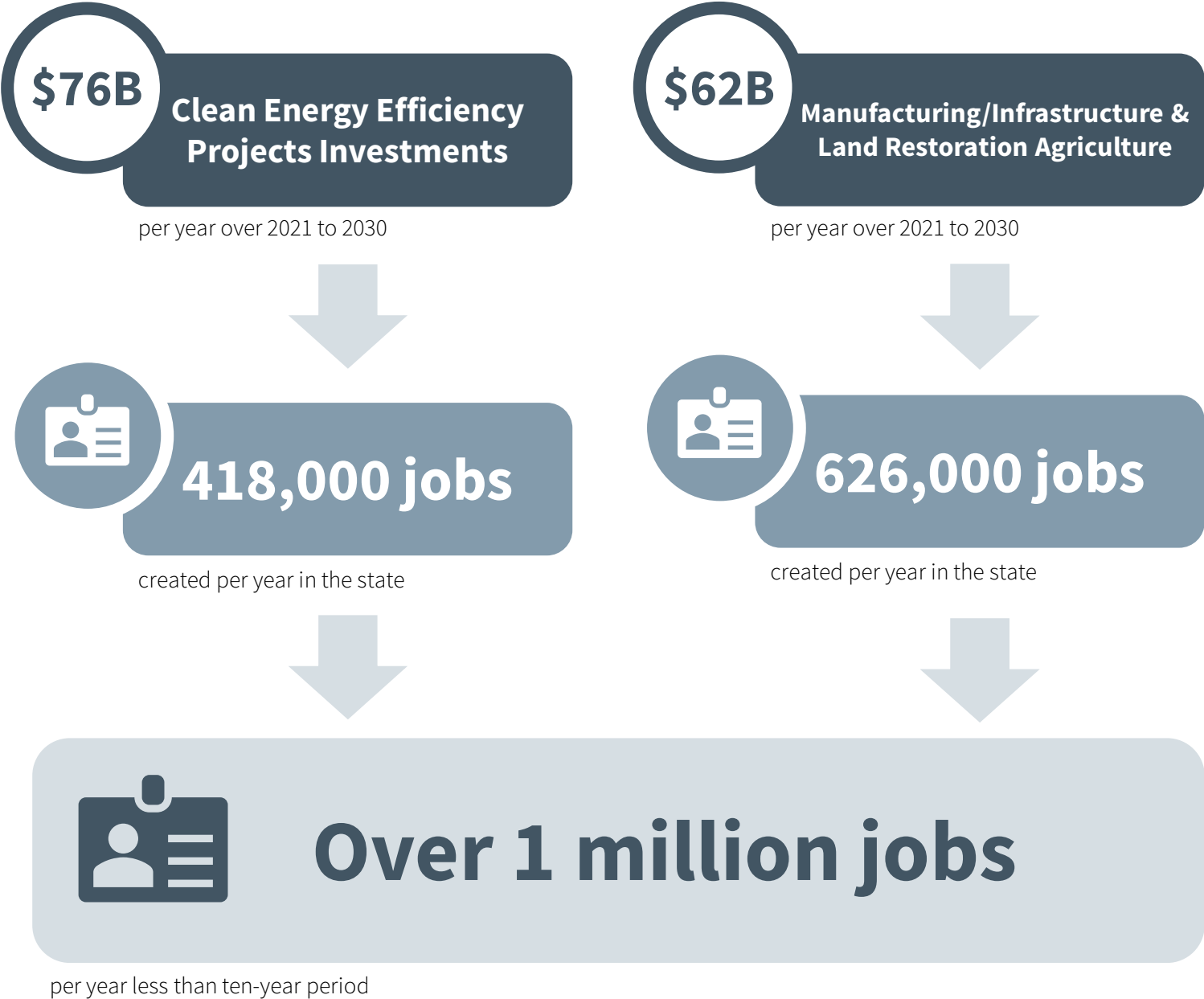
The state of California also provides key context for the potential economic impacts of transformative climate investments to the City. Job creation in California that will likely result from combined climate investment programs through 2030 is illustrated in the adjacent flow chart.

There are two major categories the state is looking to invest in. The first is in *Clean Energy and Efficiency Projects* while the second are those investments that promote transition into green activities in existing *Manufacturing/Infrastructure and Land Restoration/Agriculture* sectors.

Combined, the investments will create one million jobs per year through 2030. This equals 5 percent of California’s labor force in 2019. Examples of jobs resulting from the first category, Clean Energy Efficiency investments, include those occupations involving building retrofits, industrial efficiency, electrical grid upgrades, public transportation expansion and upgrades, efficient automobile fleet, among others. Investment in the first category alone will support the state in achieving 50 percent reduction in the state’s carbon emissions by 2030.

Note. the impact of climate investment is calculated using a multiplier effect via IMPLAN.

 The combined one million jobs created per year equals 5.4% of California’s labor force (2019)



Are Green Jobs Good Jobs?: Indicators of Job Quality in Green Jobs

State of California

Defining Job Quality

Indicators for job quality typically include the average total compensation, percentage of workers receiving health insurance coverage, percentage of workers with employer-provided retirement plans, and percentage of workers that are union workers. A study PERI reported the adjacent indicators for workers currently employed in California’s existing energy efficiency and clean renewable sectors. These numbers only include *direct* jobs.

Trends in California

The range of average annual wages for jobs in the state’s green economy is wide, from \$38,000 in the mass transit sector to \$153,000 for closing orphaned wells. Include all green sectors, the average annual wage is \$80,000.

As PERI found, the range of workers with employer-based health insurance coverage is also wide. When all areas of green employment, 43 percent of all employees are provided with employer-sponsored health insurance.

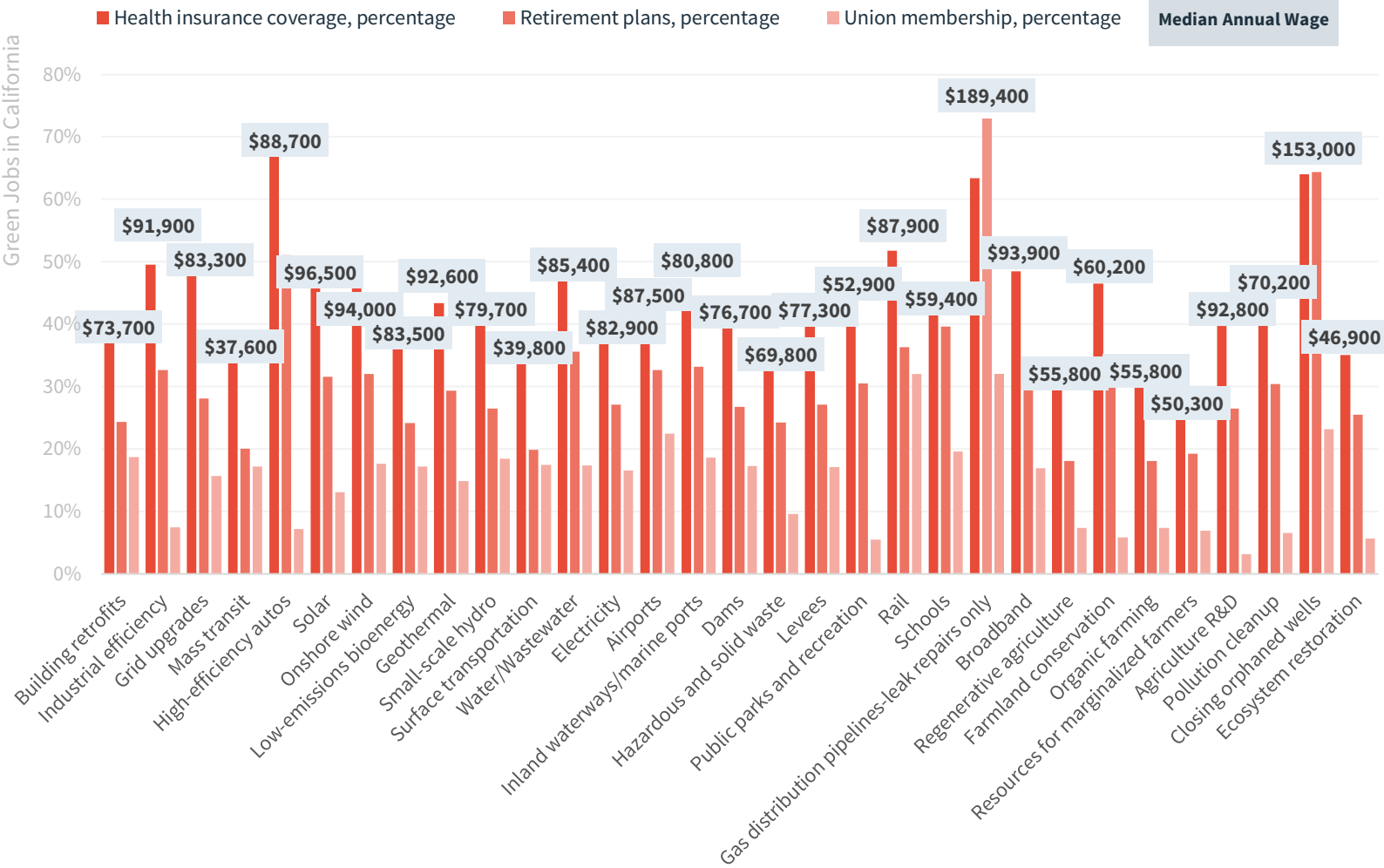
In the meantime, the share of workers with retirement plans is lower than the percentage with employer-based health insurance. Including all green sectors, just over thirty percent of employees have access to private retirement plans. Workers in the green agriculture business such as organic farming and regenerative agriculture have the lowest share of only 18 percent.

Union membership is relatively low when analyzing all sectors of the green economy defined by PERI in California. The rail sector has the highest share of its employees with union membership at 32 percent.



The gas distribution and pipelines-leak repair sector average an annual compensation of \$190,000.

Indicators of Job Quality: California Green Employment



Workforce Needs: Education Credential Composition of Green Jobs

State of California

Defining Educational Credentials

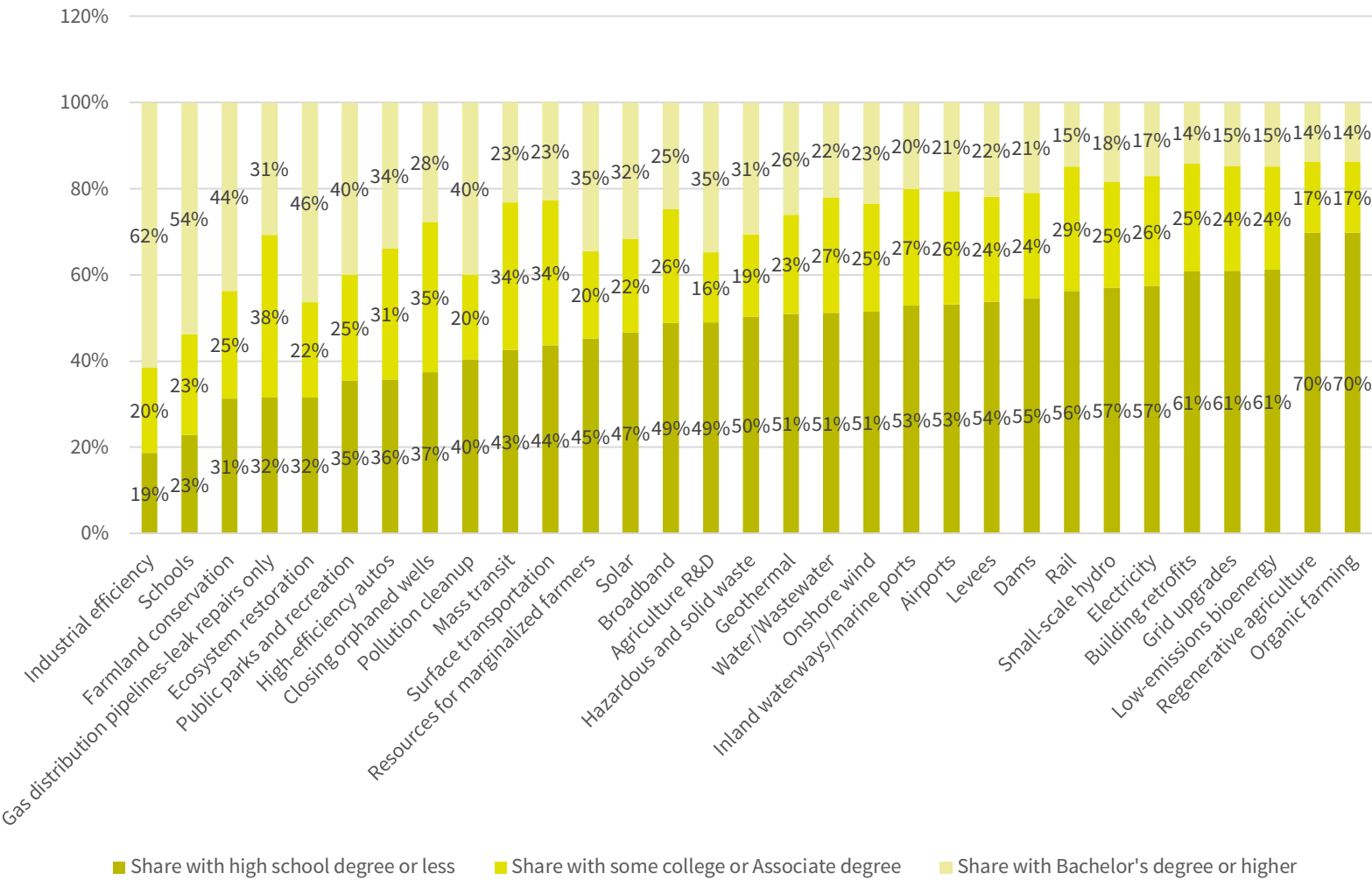
The following analysis of the educational characteristics of green jobs in California is based on a 2021 study. Educational characteristics are broken down into three groups: high school diploma or less, some college or Associate degrees, and Bachelor's degree or higher.

Trends in California

As the adjacent graph shows, the level of education for green employment is generally similar across California's green sectors. More than one third of the workers in the green sectors analyzed have a high school degree or less except for the industrial efficiency sector. Over 60 percent of workers of this sector have a Bachelor's degree or higher.

College degree jobs	Some college jobs	High school or less jobs
Operations managers	Construction managers	Agricultural workers
Human resource managers	Farmers and ranchers	Janitors
Sales managers	First-line supervisors of office workers	Machinery assemblers
Lawyers	First-line supervisors of production workers	Grounds maintenance workers
Accountants	Engineering technicians	Material movers
Architects	Computer support specialists	Cashiers
Civil engineers	Accounting clerks	Customer service representatives
Electrical engineers	Payroll clerks	Retail salespersons
Mechanical engineers	Secretaries	Shipping clerks
Computer programmers	Paralegals	Stock clerks
		Carpenters
		Construction laborers
		Electricians
		Insulation workers
		Roofers
		Machinists
		Sheet metal workers
		Bus drivers
		Industrial truck drivers
		Truck and bus dispatchers

Educational Composition: California Green Employment



Race and Gender Composition of Green Jobs

State of California

Defining Racial and Gender Composition

The adjacent chart depicts the gender and racial composition of green sectors in California studied by PERI. Racial composition is analyzed through the number of jobs held by Black, Indigenous and People of Color (BIPOC).

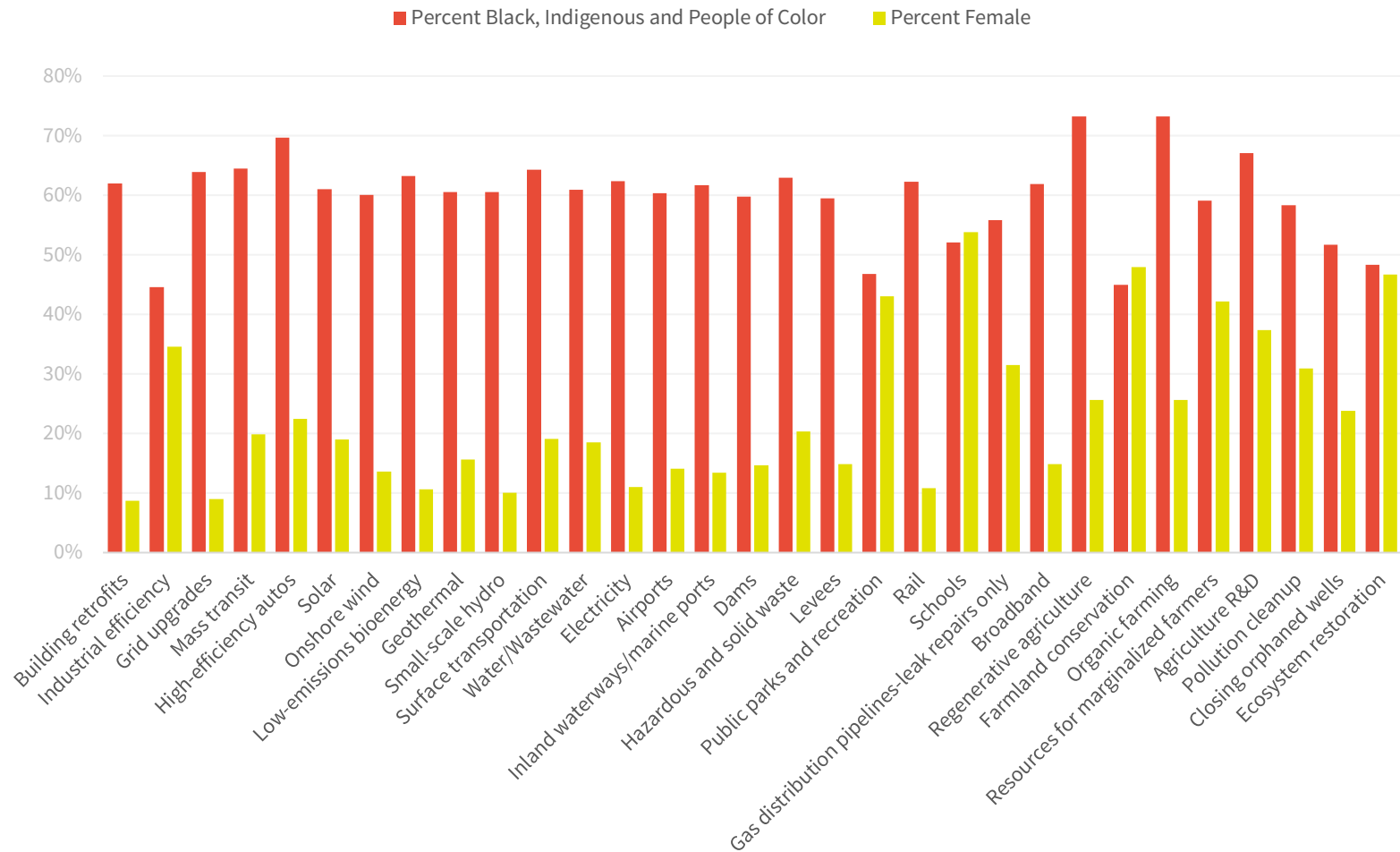
Trends in California

In the State of California, green sectors employ a large share of BIPOC workers. For the green sectors analyzed, the group is well represented with the share of jobs held by BIPOC falling between 60 and 70 percent. This tracks with the 63 percent share of jobs held by BIPOC in any sector throughout the state. One exception to this, however, is the Industrial Efficiency sector where jobs held by BIPOC is 45 percent of the total. Note that this sector is the same sector with the highest share of workers with a Bachelor's degree.

The representation of women in the green sectors of the state's economy, on the other hand, is low. The highest share of jobs held by women is in the Industrial Efficiency sector with 35 percent of total workers in the industry. Overall, the share of female workers in the other green sector industries range between 9 to 22 percent while women make up about 45 percent of the state's total workforce.

To ensure the continued participation of BIPOC workers and encourage increased participation in green jobs by female workers, the City of Santa Cruz should consider implementing apprenticeship programs specifically targeted to the needs of female workers. This consideration is especially relevant in the recovery from COVID-19, which had a disproportionate impact on women in the workforce.

Race and Gender Composition: California Green Employment





Appendix

Appendix A: Key Terms and Concepts

Blue-collar workers

Definition: includes workers in Farming/Fishing/Forestry, Construction/Extraction, Installation/Maintenance/Repair, Production, and Transportation/Material Moving industries

Direct Jobs

Jobs that are fully integrated within the investment activities

Just Transition

Definition: A program to ensure equitable transition of workers from industries expected to contract from specific investment scenarios.

NAICS codes

Definition: The standard classification used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.

SOC codes

Definition: A federal statistical standard used by federal agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data

White-collar workers

Definition: includes workers in Management/Business/Financial, Professional, Sales, and Administrative Support industries

Services workers

Definition: includes workers in Healthcare support, Protective service, Food preparation and serving related occupations, building and grounds cleaning and maintenance, and personal care and service occupations

Appendix B: Employment in Santa Cruz-Watsonville MSA Detail

Change in Industry Employment 2018-2028 & Industry Median Annual Wages



Personal Care and Service Occupations and Life, Physical, and Social Science Occupations are expected to grow at the highest rates in the Santa Cruz-Watsonville MSA.

Occupational Title	Base Year Employment Estimate (2018)	Projected Year Employment Estimate (2028)	Numeric Change	Percentage Change	Median Annual Wage
Management Occupations	10,490	10,720	230	2%	\$108,115
Business and Financial Operations Occupations	4,820	5,360	540	11%	\$72,633
Computer and Mathematical Occupations	2,310	2,600	290	13%	\$90,357
Architecture and Engineering Occupations	1,470	1,710	240	16%	\$96,537
Life, Physical, and Social Science Occupations	1,800	2,150	350	19%	\$83,105
Community and Social Service Occupations	3,410	3,910	500	15%	\$51,226
Legal Occupations	650	650	0	0%	\$97,896
Education, Training, and Library Occupations	9,200	9,890	690	8%	\$58,039
Arts, Design, Entertainment, Sports, and Media Occupations	1,610	1,660	50	3%	\$60,940
Healthcare Practitioners and Technical Occupations	4,920	5,630	710	14%	\$114,576
Healthcare Support Occupations	2,490	2,810	320	13%	\$31,438
Protective Service Occupations	1,780	1,870	90	5%	\$41,450
Food Preparation and Serving Related Occupations	12,840	14,180	1,340	10%	\$28,461
Building and Grounds Cleaning and Maintenance Occupations	4,270	4,600	330	8%	\$33,869
Personal Care and Service Occupations	7,620	9,220	1,600	21%	\$30,222
Sales and Related Occupations	10,520	10,640	120	1%	\$34,739
Office and Administrative Support Occupations	16,190	16,340	150	1%	\$44,125
Farming, Fishing, and Forestry Occupations	5,230	4,960	-270	-5%	\$25,352
Construction and Extraction Occupations	4,770	5,150	380	8%	\$57,451
Installation, Maintenance, and Repair Occupations	3,430	3,550	120	3%	\$51,940
Production Occupations	4,550	4,770	220	5%	\$36,386
Transportation and Material Moving Occupations	5,210	5,690	480	9%	\$34,820

Disclaimer

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Santa Cruz Green Economy and Jobs Analysis: Part 2

A report for



Green Jobs Analysis: Assumptions & Methodology

Overview

Any increase in government and private sector spending related to the Climate Action Plan and associated greenhouse gas reduction measures will generate economic activity, resulting in changes to employment. For the City of Santa Cruz' Climate Action Plan (CAP) 2030, Hatch evaluated the number of jobs that may be created by three CAP measures:

- BE-2 and 3: **Electrify** 31% of existing residential and 26% of commercial buildings by 2030 and 53% and 45% by 2035 for residential and commercial buildings, respectively,
- T-1: Implement programs **for active transportation**, such as walking and biking, that achieve 23% of bicycle mode share by 2030 and 30% by 2035, and
- T-4: Increase **passenger zero-emission vehicle** use and adoption to 35% by 2030 and 40% by 2035.

To estimate the employment impacts that may result from the City of Santa Cruz CAP measures, Hatch has used Type I employment multipliers from the Regional Input-Output Modeling System (RIMS II) for the State of California. Hatch used Type I employment multipliers to account for direct and indirect impacts of City spending to jobs.

Type I employment multipliers include impacts from direct and indirect spending but exclude induced impacts that result from increase household income. More detail on methodology and the input-output framework related to RIMS can be found [here](#).

Assumptions

This type of analysis requires several inputs. Hatch has assumed the following:

- The spending related to these measures would not have occurred without the Climate Action Plan in place.
- Investments made by private entities that would have occurred regardless of CAP measures are excluded from this analysis. This includes the electrification of new construction and the adoption of electric vehicles by private citizens.
- The spending related to these measures does not represent a reduction in spending in other sectors.
- A local spending factor of 95% for construction related activities and 50% for component manufacturing. This is meant to approximate how much of the spending will be within the State of California.



Green Jobs Analysis: Green Economy Goals

Hatch performed this green jobs analysis to support the City in its pursuit to meet the green economy goals identified with stakeholders as part of the CAP 2030 process.

- Support the reduction targets set in CAP 2030 particularly highest mitigating measures and actions
- Seek large-scale investments and partnerships that help achieve economies of scale
- Give attention to pressing issues regarding unequal conditions in the labor market namely on job quality
- Balance climate action plans and climate stabilization programs with complementary economic development strategies
- Implement local hire provisions and related measures when expanding climate/green job opportunities
- Ensure job access by historically under-represented, under-served, and under-resourced members of the community
- Address equitable access to high-quality training and workforce development programs

To ensure an accountable process, the City, in turn, incorporated green economy goals as measures and actions in its CAP update. These measures are listed in the adjacent blue box. Through the City's CAP DASH and measures/actions metrics, the City will be able to track the impact of the CAP to the green economy beyond the estimated jobs resulting from this report.

CAP 2030 Green Economy Measures and Actions



- **Measure CE-1-1:** Prioritize opportunities for greatest climate benefit and economic inclusion especially for minority, veterans, and women-owned businesses in climate related sectors

Actions

- *Accelerate housing development within City limits, concentrating the most intensive growth in central areas of the City to promote walking and biking to nearby jobs, entertainment, goods, services, and public transportation*
- *Prioritize expansion of affordable housing stock*
- *Address pressing issues regarding local purchasing, local hire, supply chain, and unequal conditions in the labor market*
- *Encourage lifestyle choices that reduce consumption-based emissions including plant-based diets, travel alternatives and local purchasing by leveraging community activation platform and community partners*



- **Measure CE-1-2:** Support equitable access to high-quality training and workforce development programs in climate related sectors

Actions

- *Equitably support entrepreneurship and increase in quality of jobs and access to local jobs and business development*
- *Support regional collaboration regarding climate, jobs, housing and economic development*

Green Jobs Analysis:

Building Electrification

Overview

This measure is expected to result in increased spending on building retrofits. Because of this, Hatch has only considered the retrofit of existing buildings, as electrification of new construction is not associated with a significant increase in spending compared to mixed-fuel building. TRC has estimated that the electrification of eligible existing residential buildings will cost an average of \$300 million and commercial building an average of \$10.5 million. Based on TRC assumptions, Hatch has estimated that 70% of this spending will be toward material (\$218 million) and 30% toward labor (\$93 million).

Employment Impacts

This spending will create an estimated 1,600 to 1,850 jobs in total. About 700 to 850 of these jobs will be in the Construction sector, and 900 to 1,000 in electrical equipment manufacturing. Assuming a time period of 20 years for the electrification of eligible existing buildings in Santa Cruz, this translates to a total of 50 to 55 jobs annually, 20 to 25 in construction and 30 in manufacturing. Electrification of new buildings is expected to be cost effective, and will not represent any new additional spending, so it is excluded from this analysis.

Job Quality Impacts

This measure, particularly for existing buildings, is associated with increased capital expenditures during building retrofits and renovations. The job skills, including electric retrofitting, appliance installation, remain relatively constant between a scenario with this measure implemented and a scenario without this measure. In California, direct jobs related to building retrofits have an average annual salary of \$73,700, and about 19% of workers in this field are members of a union. Almost 40% of workers in this field have healthcare coverage and a quarter have a retirement plan. Workers in electricity manufacturing in California earn average salaries of \$82,900 and 16 percent of those workers have union membership. Nearly 42% of these workers have health insurance coverage, and 27% have retirement plans. These indicators show relatively high job quality, with salaries over the state average of \$65,500. Workers in these sectors are diverse, with over 60% being Black, Indigenous and People of Color. However, women make up only 9% of building retrofit employees and 11% of electricity production workers. The City of Santa Cruz may consider workforce development programming to encourage better access for women in these types of jobs.

Building Electrification Capital Spending	Low	High
Labor Capital Expenditures Infrastructure (Net)	\$83.3M	\$102.5M
Construction Jobs Created (Labor Spending)	525	650
All Jobs Created (Labor Spending)	700	850

Material Capital Expenditures Infrastructure (Net)	\$195.6M	\$239.1M
Manufacturing Jobs Created (Material Spending)	600	700
All Jobs Created (Material Spending)	900	1,003

Annual Job Creation	Low	High
Jobs Created Over Year(s) Investments	20	20
Construction Jobs Created Annually	26	32
All Jobs Created Annually (Labor Spending)	35	42
Manufacturing Jobs Created Annually	30	37
All Jobs Created Annually (Material Spending)	41	50

Note: low and high cost estimates are generated by adjusting provided cost estimates by 10%. Job estimates are within the State of California.

Green Jobs Analysis:

Active Transportation

Overview

In the City of Santa Cruz, this measure is associated with approximately \$48.3M in capital spending in the short and long term on various improvements to transit infrastructure within City limits to encourage the adoption of active modes of transportation as well as increasing the use of public transportation systems. Most of these costs are associated with construction projects, such as adding bike lanes, traffic signal modifications, pedestrian safety improvements, and programming to improve the overall safety of transit infrastructure. It is unlikely that this capital spending will result in any decreased spending in other sectors.

Employment Impacts

Most of the City of Santa Cruz new active transportation projects are related to construction activities, so Hatch has used the construction industry multipliers to estimate the employment impacts from this measure. The \$48.3M capital investment by the City of Santa Cruz on active transportation projects is expected to result in approximately 360 to 430 jobs, 270 to 330 of which are construction jobs. The source for cost data references a 2040 regional transportation plan. Provided this, Hatch assumed an annual time period of 20 years for this project, this translates to 20 to 22 jobs annually, 15 to 17 of which are in construction trades.

Job Quality Impacts

In the City of Santa Cruz, laborers in construction and extraction occupations earn a median annual salary of \$55,770, below the state, but above the city median annual salary of \$41,610. In the State of California, surface transportation workers, i.e., laborers that work on surface transportation (road repair, light rail, etc.), earn an average salary of \$39,800, which is well below the statewide average. Roughly a fifth of the workers are members of a union, 34% have health insurance coverage and 19.9% have retirement plans. Nearly 65% of these workers are Black, Indigenous and People of Color, and 19.1% are women.

Active Transportation Capital Spending	Low	High
Capital Expenditures Infrastructure (Net)	\$43.5M	\$53.1M
Construction Jobs Created	270	330
All Jobs Created	360	430
Annual Job Creation	Low	High
Jobs Created Over Year(s) Investments	20	20
Construction Jobs Created Annually	15	17
All Jobs Created Annually (Labor Spending)	20	22

Note: low and high cost estimates are generated by adjusting provided cost estimates by 10%. Job estimates are within the State of California

Green Jobs Analysis:

Electric Vehicle Adoption

Overview

This measure will include increased spending on charging and maintenance infrastructure, potentially increased spending on vehicle service, and decreased spending on vehicle maintenance. Electrifying the City of Santa Cruz’ fleet of eligible vehicles (EVs) is estimated to generate nearly \$1 million in total cost of ownership savings, even when considering the need for charging infrastructure and higher capital cost of electric vehicles compared to internal combustion engine (ICE) vehicles. Models estimate that California will need more than 700,000 shared private and public chargers in 2030 to support 5 million ZEVs, and nearly 1.2 million chargers to support 8 million ZEVs. Santa Cruz has estimated that 1,250 commercial EVSE (electric vehicle supply equipment) will need to be installed citywide, with an estimated cost of \$50,000 per charging station. Hatch has assumed that 50 percent of the costs related to charger installation will be spent in California.

Employment Impacts

For the purposes of this analysis, Hatch used the City’s known investments in electric vehicle infrastructure to estimate job generation. The City of Santa Cruz estimated that it will need to spend roughly \$31.3 million on EV charging infrastructure to meet the charging demands of electric vehicles in the community. This spending will result in the estimated generation of 120 to 150 new jobs, 95 to 115 of which are in the construction sector. Hatch has excluded the procurement of new vehicles from this analysis, as an alternative scenario with the procurement of ICE vehicles would result in a similar level of spending, generating a comparable level of employment impacts.

Job Quality Impacts

In California, workers in the electric vehicle sector or the high-efficiency auto sector earn average salaries of \$88,700, nearly 70% have health insurance coverage, and over half have a retirement plan. Union membership in this sector is 7.2%. Nearly 70% of these workers are Black, Indigenous and People of Color, and 22.4% are women, which is comparatively high to other “green” sectors.



Case Study: CALeVIP

California Electric Vehicle Infrastructure Project (CALeVIP) currently provides incentives for EV charger installations and works with local partners on projects that support regional EV needs for Level 2 and direct current fast charging (DCFC). The program to date has spent \$8 million statewide on Level 2 chargers and \$34 million on DCFC statewide.

Widespread EV adoption is not expected to significantly impact jobs in auto sales or repair, as the demand for service and repairs is likely to remain the same or even increase relative to ICE vehicles. While maintenance costs might be lower for EVs, service costs are anticipated to be higher and require more labor hours. With service costs typically higher for EVs, higher wages may be expected for auto mechanics that can service EVs. The City of Santa Cruz may consider subsidized Certified EV Technician (CEVT) programs to local auto mechanics to aid in reskilling the local workforce for increased adoption of EVs.

Electric Vehicle Adoption	Low	High
Capital Expenditures Infrastructure (Net)	\$28M	\$34M
Construction Jobs Created	95	115
All Jobs Created	120	150

Note: low and high cost estimates are generated by adjusting provided cost estimates by 10%. Job estimates are within the State of California. EV charging infrastructure estimates are based on anticipated commercial EVSE targets of 1,250 and assumes installation of DCFC after rebates.

Green Jobs Analysis: Skills Training and Conclusion

Skills Training

Reskilling workers is a key component in supporting green jobs. As legacy technologies are phased out and replaced with more sustainable or renewable options, workers in industries likely to be phased out need to hone their transferable skills and gain new skills that can be applied to growing industries, in order to limit the impacts of unemployment and job loss that could result from Climate Action Plans or Greenhouse Gas emissions reductions targets. The CAP measures analyzed here do not have a significant negative impact on jobs in Santa Cruz. In fact, the increase in spending associated with these measures is likely to result in expanded jobs as discussed in this report. Regardless, it is important to consider workers that may be left behind in a shift to a green economy and provide them with the tools and programming necessary to ensure their ability to participate in a shifting labor market.

Sample Reskilling Programs

A joint proposal is an excellent mechanism to develop a just transition program while generating buy-in among key stakeholders – workers, community members, advocacy groups, employers, and the government – and securing diverse sources of funding.

The Diablo Canyon Nuclear Power Plant in San Luis Obispo County used a joint proposal to coordinate key stakeholders - Pacific Gas and Electric (PG&E), environmental advocacy organizations (the Natural Resources Defense Council, Environmental California, and the Alliance for Nuclear Responsibility), unions (IBEW Local 1245 and the Coalition of California Utility Employees) – as both units at the plant are set to be decommissioned by 2025. Their joint proposal includes an employee program with a severance package, a retention program (until closure), and a retraining and development program so workers can move to other PG&E locations. Approximately \$222.6 million was approved for this program, allocating about \$150,000 for each employee. This was recovered through funds from taxpayers. Furthermore, PG&E also came to an agreement with labor and environmental groups to create a Community Impacts Mitigation Program, costing \$85 million, to ease local economic impacts that may arise from the plant's closure.

The private realm may also support workforce development programs. Bosch, headquartered in Germany, has planned to spend €2 billion on reskilling workers as car industry shifts to electric, retraining some of its 400,000 staff. Bosch has already spent €1 billion on programs to reskill those working on legacy technologies over the past five years (from 2017 to 2022) and plans to spend a similar sum over the next five years. This equates to roughly €500 spent per employee per year.

Conclusion

Based on the assessments in prior sections, known investments resulting from the adoption of the City's CAP 2030 measures related to building electrification, active transportation, and electric vehicles would represent no negative impact to the City's existing green jobs. These three select measures alone may have the potential to generate over 2,000 jobs during the allocated project timelines.

Any future investments in addition to those referenced in this study have the potential to impact the City's job growth. Working with the City's Economic Development Office, the Finance Department, and the Community Development Department, the Climate Action Program management should consider formalizing the means to identify and track progress of CAP measure-related projects during the citywide Capital Investment Project and annual budget process. The process of tracking should include any increase or decrease of funds for CAP measure-related projects approved in City budgets. The multiplier method to estimate the jobs resulting from tracking CAP measure-related projects can then be applied to adjust any job growth forecast over the lifespan of the CAP.

Further, the City's Economic Development Office should consider updating the Economic Development Strategy, or any related plan and or policy document that guides the City's economic development, to incorporate green economy goals and climate actions' impact to the City's workforce. With the green economy incorporated in the Economic Development Strategy, the City may begin to use job generation and job quality resulting from climate measures as an additional metric to evaluate socioeconomic conditions in the City.

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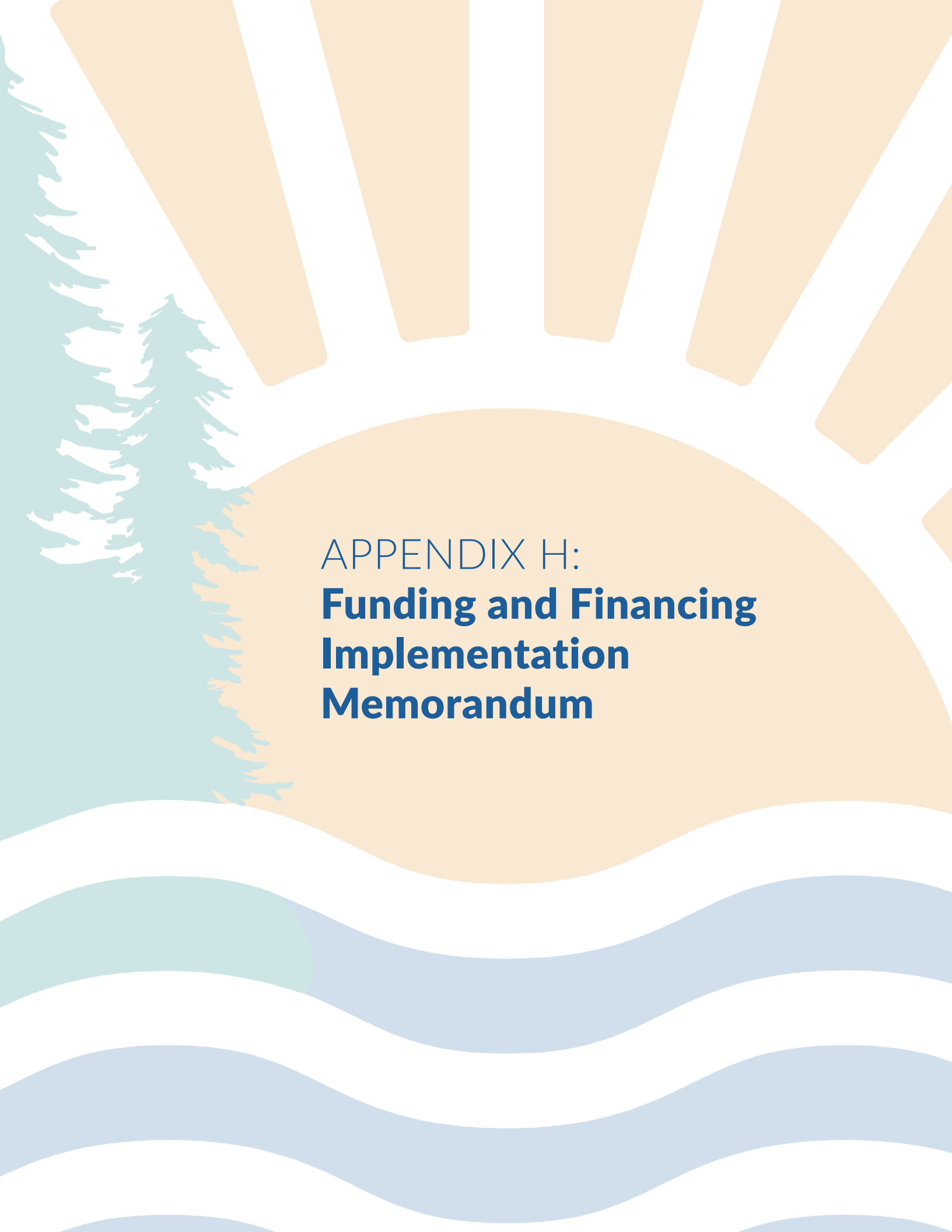
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The background features a stylized landscape. At the top, a large sun is depicted with a semi-circular orange body and several long, tapered orange rays extending upwards. On the left side, there are two green evergreen trees of different sizes. The bottom of the image is composed of several horizontal, wavy bands in shades of light blue and teal, representing water or rolling hills.

APPENDIX H: **Funding and Financing Implementation Memorandum**



Climate Action Plan 2030: Funding and Financing and Implementation Memo

City of Santa Cruz

July 2022

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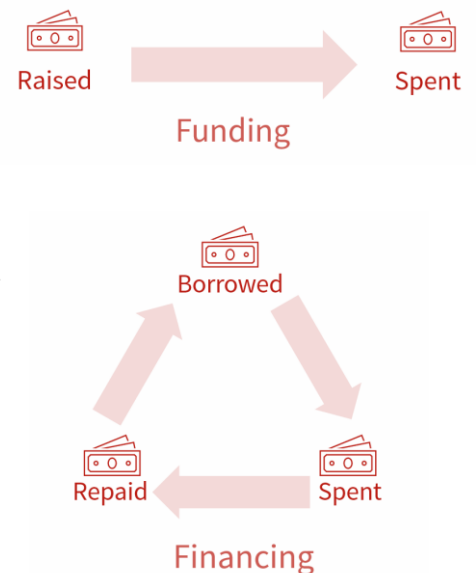
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ACRONYMS AND ABBREVIATIONS

CAP 2030	Climate Action Plan 2030
CDP	Carbon Disclosure Project
CCCE	Central Coast Community Energy
EP3	Environmentally Preferable Purchasing Policy
ESCO	Energy Service Companies
EV	Electric Vehicle
GHG	Greenhouse Gas
LIFT	Low-Income Families and Tenants
MCE	Marin Clean Energy
P3/PPP	Public-Private Partnership
PG&E	Pacific Gas & Electric

KEY TERMS AND CONCEPTS

Although the terms *funding* and *financing* are often used interchangeably in policy contexts, for the purposes of this analysis, *funding* is defined distinctly from financing. Funding refers to the money used for a specific purpose or project, raised at one time or over time through methods like grants or taxes, while *financing* refers to the process of receiving money that must eventually be paid back to the financial institutions lending it, such as banks. As a result of this payback requirement, financing presupposes an underlying revenue source available for repayment over time. This memo focuses on funding sources that will be pursued, received, managed, and/or tracked by the City of Santa Cruz, not by the private realm or individuals, to support CAP 2030 measures.



1.0 Overview

Implementation of the climate action plan is a pivotal step in meeting the established emissions reduction targets set forth as part of the City of Santa Cruz' Community-wide Climate Action Plan 2030 (CAP 2030). For the major measures analyzed, the City of Santa Cruz is facing a \$1 billion community wide gap to implements the plan over the next eight to ten years. This memo identifies select funding tools and financing mechanisms. It also highlights implementation steps that support achievement of the City's CAP 2030 measures, namely investments in buildings, transportation, energy generation and other infrastructure or programs that result in emissions reductions and priority co benefits like jobs generation and resiliency.

Funding and Financing Approaches

Because municipalities around the world already face challenges in meeting their residents' needs for investment in many types of critical infrastructure and programs, this document examines funding and financing approaches that go beyond the use of citywide general or enterprise funds to pay for climate-related programs. Stacking and leveraging funding and financing from beyond municipal sources are central to unlocking investments that generate benefits for a wide group of constituencies, especially historically underrepresented or other marginalized residents in the City and just beyond its borders.

In the case of the City, a California municipality with high tax rates compared to the rest of the state,¹ City officials must supplement traditional municipal fundraising mechanisms, such as taxes and fees, with other sources such as public-private partnerships, grants, or community funds to name a few.

Grants from government agencies and philanthropies historically have been favored in Santa Cruz. Grants have been useful in funding technical assistance and capacity building programs in the City. The accompanying [Funding and Financing Pathways Matrix](#) (*Pathways Matrix*) provides a list of grants supported by varying levels of government and different private organizations. While grants identified are viable options for funding CAP measures, some funds are competitive and, often, funds received do not cover the full costs of larger projects. In general, these types of funds also do not serve as a long-term resource for municipalities since sources have term limits and are sensitive to organizational changes. Grants also require high capacity to apply, manage, and report on funds and funding sources.

Residents and business owners may also privately support the City in achieving goals of the CAP 2030 using individual contributions. These community funds have been shown as a resourceful means to attracting additional capital and financing supported by large organizations and municipalities. This document, for example, mentions novel climate investment tools, such as Climatize, that help streamline crowdsourcing and private investment in climate action projects. While it remains vital that the City identify beneficiaries of investments who may be able to invest in or advocate for public funding for a given project, the City should be wary of how these investments are subject to market conditions and the availability of discretionary income of private participants, factors typically not within the City's control. For example, it can be difficult to estimate the amount of funds that can be raised through micro loans and crowdsourcing if the goals are not met.

¹ Santa Cruz sales tax is 9.25%, and currently already has active business improvement districts in certain areas. In June 2022, Santa Cruz voters rejected Measure F, which would have authorized an additional 0.5% sales tax in the City.

Implementation Commitments

In general, access to sources of financing is not the only challenge for communities seeking to implement CAPs; rather the bigger issue is the shortage of funding that can pay back financing (such as the bonds mentioned below, mainstream, or otherwise) and, more importantly, the staffing capacity required to monitor the lifecycle of the CAP, from pooling resources, building community support, securing partnerships, raising funds, implementing measures, and tracking progress against targets. While it is critical the City overcome key financing challenges and identify innovative funding tools, communities can best meet the challenge of project development by paying close attention to ensuring organizational capacity is available and accountability is built-in as part of the implementation process.

2.0 Funding and Financing Approaches

To hone the City's ability to secure funds and financing for CAP 2030, this memo summarizes three categories of major funding and financing tools: *Federal and State Funding*; *Municipal Funds and Financing*; and *Public-Private Partnerships*. Grouping the tools enables the City to coordinate and prioritize key stakeholders that could be willing to provide monetary, political or other support for implementation more readily.

The accompanying [Funding and Financing Pathways Matrix](#) (*Pathways Matrix*) provides a more detailed list of funds or financing. Hatch identified these funds and financing tools based on their compatibility with the CAP 2030 and their applicability given the City's financial policies. The *Pathways Matrix* includes tools and mechanisms currently in-use by the City as well as those available at the time of this writing.

Table 1: Priority Actions for Funding and Financing

Funding and Financing Group	Description	Time Frame	Examples
Federal and State Funding	These are typically in the form of grants awarded by the state or federal government. These funds are best suited for capital expenditures, as they are usually granted on a one-time basis and cannot be relied upon for ongoing operations expenses.	Short-term to Long-term	Surface Transportation Block Grant (Federal); Building Electrification and Storage Program (State)
Municipal Funds and Financing	This broad category includes bonds to borrow against revenue stream from various municipally charged fees and taxes as well as development impact fees. The commonality is each fee are imposed on individual properties and/or property owners that pays for a service or for use of a City-owned asset. Except for impact fees, municipal bonds and tax rates are typically set against the citywide budget.	Mid-term to Long-term	Developer Impact Fees; Green Bonds; Tax-increment Financing (e.g., Enhanced Infrastructure Finance Districts, Community Revitalization, and Investment Authorities); Carbon Fund (internal surcharges)
Private	An example of a private funding tool is a public-private partnership (P3). A P3 is a contractual relationship between the public owner and one or more private sector entities. P3s can have many different contracting approaches and are typically unique for different scenarios. Other mechanisms to encourage or enforce private investment into the CAP measures are building codes, public incentives, business improvement districts, and community benefit agreements. Private and individual philanthropic involvement is also included in this category.	Short-term to Mid-term	Community Benefit Agreements; Public Private Partnerships (P3s); Energy Efficiency Programs with utilities

2.1 Federal and State Funding

State and Federal grant programs have the potential to provide a significant amount of funds for capital investments related to CAP 2030 measures. This may include building retrofits, active transportation infrastructure, capital projects related to waste reduction, and infrastructure to support EV adoption in the City. Federal and state grants included in the Pathways Matrix range in size from under \$1 million to \$35 million per award. Refer to the [Pathways Matrix](#) for more detail on available grants.

There are opportunities to raise significant funds through grants, but many of them require matching from municipalities, meaning that some grant projects may require additional funding sources. Despite this, grants can help significantly alleviate the pressure on municipal funding sources such as the general fund or reduce the need to levy new taxes or fees.

Some grants are available only on a one-time basis while others have recurring funds for many years. The City should identify which grants are feasible for CAP 2030 measure projects to develop a more specific timeline for funding.

Municipalities also typically see benefits in bundling grant and incentive funding. For example, the Low-Income Families and Tenants (LIFT) Pilot Program from Marin Clean Energy (MCE) has bundled grant and incentive funding from the federal Energy Savings Assistance Program (ESAP), the Green and Healthy Homes Initiative, and other energy efficiency incentives to benefit multifamily properties that are left out of existing low-income programs. The program provides several services, including upgrading gas furnaces to electric heat pumps, weatherization services, and other home rehabilitation service to improve resident's health such as pest management and roof repairs. In addition, bundling building electrification with other capital projects, such as weatherization, roof repairs, road repair, and other utility upgrades may aid in building public support of funding and financing measures that require voter approval.

Key stakeholders for receipt of grants differ based on the grant requirements and measures associated. For building electrifications, as an example, key stakeholders include tenants, property owners, PG&E and its ratepayers, energy developers, and adjacent businesses depending on the approach taken to achieve district-wide building electrification. Tenants, property owners, BWP and ratepayers are all entities who will be involved regardless of scale or funding and financing approach, while energy developers and adjacent businesses may only be involved to the extent that they can participate in retrofits/renewable energy installation or a district-scale approach to electrification, respectively.

2.2 Municipal Funds and Financing

While there are many competing municipal budgetary needs, the City should continue employing municipal funds and financing methods to support future funding needs of projects borne out of the City's CAP 2030.

Bonds

For the purposes of this memo, municipal financing, on the other hand, allows the City to use funds generated over time as a form of repayment of capital investments. Bonds, particularly General Obligation (GO) bonds, are a commonly used financing tool where a municipality borrows from investors who are paid back with interest.

In the City, a two-thirds voter approval is required for the issuance of new GO bonds. The amount is dependent on a municipality's debt capacity. As of today, the City has \$4 million in total debt service from a previously issued GO

bonds and a debt limit that cannot exceed the sum of 15 percent of the total assessed property valuation, a limit that has not been reached. As of 2019, the City of Santa Cruz has a credit rating of AA- from S&P and A+ from Fitch. The City's strong credit ratings allow for favorable borrowing rates.²

Municipalities have also recently issued newer Environmental Impact or Sustainability Bonds which funds projects with environmental goals, including adaptation and resilience. These so-called "green" bonds can be issued as municipal bonds, allowing for low-cost financing. Municipalities can use funds raised to cover capital expenses and would be applicable to all capital-intensive measures and actions that are part of CAP 2030. The City of Santa Cruz Water Department has issued green bonds previously. Green bonds are paid back the same way a traditional bond would be, through taxation and the general fund.

There are investors who seek to align their values and finance in climate-related investments. Disclosure of bond proceeds and performance as well as the assessment of climate needs that come with the issuance of green or sustainability bonds may also strengthen municipalities' bond rating over time.

However, it is important to note that green bonds are not mainstream in the financing market, and as a result, not feasible in the near term. The main reasons for low near-term feasibility of such finance tools include the presence or perception of risk given the lack of a data on performance, and the need for additional data and management requirements that increase administrative burdens and costs.

In the event the City chooses to use bonds, general or special, to pay for capital-intensive CAP 2030 projects, the City's upcoming *Long-Range Financial Plan* project may guide that process and the related rate setting exercise (to define revenue sources that will service the debt, see section below).

For a typical municipality, the municipal staff who is typically involved in the process of green bond issuance is a long-range financial planner typically staffed under a Finance department. This staff typically reviews the City's financial policies, its reserves, and debt service coverage goals against the CAP and related Capital Improvement Projects (CIP) defined by various departments. It is critical to note that bonds may be used only for capital-intensive public programs, not on private property.

For implementation of green bonds, and to avoid "greenwashing," several certification processes have been created to define eligible green projects, but issuers have not adopted a single standardized process to date; the external review and additional reporting requirements can be seen as increasing administrative burden of the issuance. Cities like Vancouver have developed an eligibility framework for their Sustainability Bond to define and track use of proceeds.

Timelines for bond issuance vary and depend on the interest rates since bond terms are inversely correlated with interest rates.

² Based on the Climate Bonds Initiative and the [Green Bond Fact Sheet on the City of Santa Cruz](#)

Fees and Rates

Beyond municipal financing tools, municipal funds are those that are city-imposed tax or fee that fund services or projects or use of public facility. This includes special taxes such as utility tax, franchise tax, among others. The City has precedence on issuance of socially and environmentally-focused special taxes through the City's Clean River, Beaches, and Ocean Tax Ordinance with a purpose, in part, to meet federal and state mandate to protect water resources. This tax ordinance includes a parcel tax in Santa Cruz. A similar ordinance may be contemplated for measures and actions that may be mandated by the State, provided the public support and addressing impact to affordability.



There is precedence in the City to use impact fees for climate-related endeavors. The City's *Planning and Community Development Fee Schedule* includes a charge of 0.25 percent of overall project valuation with a maximum of \$50,000 for its **Green Building Program Management**.

The City of Santa Cruz implemented a Carbon Fund in 2016. The fund's revenue includes an internal, municipal fossil fuel surcharge of five percent that is allocated to the fund annually and an energy efficiency rebate check deposit. The fund receipts are allocated to CAP projects after prioritization by the Sustainability team and approval by the City Manager. recommendation and prioritization by the Sustainability Team. Any fund balance at end of the year gets rolled over to the following year. It is expected that the City will continue the internal Carbon Fund for the implementation of CAP 2030.

The City also uses developer impact fees through licenses and permits to pay for infrastructure and public services expansion related to the development. This mechanism can be used for capital costs and does not require voter approval. However, these funds are tied to new developments and increase the cost of development. The fee cannot exceed the reasonable cost of service or facility provision. As these are fees paid by a developer related to a specific project, the funds are dependent on the market conditions and developable land capacity. In addition, the scale of projects paid for using impact fees will be limited to areas with potential for new development.

The City has an upcoming *Master Fee Evaluation* project slated for FY 23-24, which will include the evaluation of both existing and new fees and how high potential climate-related fees might be included. These fees might include both taxes or impact fees to development, property-related fees such as water, stormwater, and wastewater fees, and non-property related fees, such as gas and electric fees.³

2.3 Private Funding

Public-private partnerships, or P3s, can be a useful tool for municipalities looking to close funding gaps for a variety of capital projects as well as programming. These types of partnerships can assume many forms and typically require negotiation and complex contracts. P3 agreements can range from minimal involvement, such as providing garbage collection services, to significant involvement, such as building and operating a facility or facilitating and performing infrastructure improvements. In a typical public-private partnership between municipalities and private

³ Detail on specific types of fees can be found in the Funding and Financing Pathways Matrix. A summary of department roles by measure can be found in the CAP Google Sheet.

organizations, municipalities are tasked with project management.⁴ Timelines for private-public partnerships vary but usually they are one-off and are completed based available funding from the partner.

City officials can begin the process by identifying projects that private entities may have an interest in, quantifying the amount of funding needed, and reaching out to key contacts. As a first step, the City can identify private stakeholders that may be interested in getting involved, such as Community Choice Aggregation or CCA, such as CCCE, ESCOs, The University of California at Santa Cruz, private businesses, and others. The City can prioritize fostering relationships with organizations that have existing climate-related commitments and align CAP goals where feasible.

Despite a more complex structure, P3s usually allow municipalities to ensure private partners meet performance standards as part of the agreement.

While there can be benefits from the participation of the City's private sector in public infrastructure projects, including access to financing that can support multi-function projects at large scale and more flexibility in raising and deploying funds in support of projects, it is important to acknowledge that private sector participation in any type of investment is heavily influenced by the private sector entity's ability to secure a positive financial return.

There are a growing number of P3s are structured in a manner that can result in undesirable public outcomes, including relinquishing decision-making control of local assets, long-term payment commitments that can lock in government budgets for decades, and a requirement for payment regardless of the future level of public demand for the infrastructure service.

It is critical that all types of P3 agreements in support of CAP infrastructure projects include metrics and processes to evaluate whether the private provision of service is meeting the public partner's goals for service provision. Evaluation metrics and KPIs will vary at the project level.

For example, City of Cupertino in California has tapped private partners to help in meeting their CAP targets.⁵ One of the key measures from Cupertino's CAP include supporting Apple, the City's largest employer, in continuing to procure biofuel for the company's fuel cell located in Cupertino. Cupertino will verify Apple's process for procuring biofuel and Apple's reporting methodologies prior to accounting the biofuel purchase directly in the City's emissions inventory. To reduce GHG emissions, Apple procures biofuel through a book and claim agreement to power their fuel cell. Because the biogas avoids natural gas usage equal to Apple's fuel cell usage within the geographical boundaries of the United States, which is not being claimed by anyone else, natural gas fuel cell combustion emissions are considered zero. This process is verified annually through Apple's regular sustainability reporting. This approach to accounting for biofuels is supported by the California Air Resources Board as part of their Low Carbon Fuel Standard program, a program which the City commits to exploring as part of the Climate Action Plan 2030.⁶ Furthermore, while the U.S. Community Protocol for greenhouse gas emissions accounting "does not provide

⁴ Other private sources of funding, such as grant programs through Medicaid, can be used by Santa Cruz residents to electrify their homes. Santa Cruz may consider providing resources to increase awareness of their residents to these types of programs. This memo focuses on funding and financing mechanisms that will be primarily implemented by city government and not by individuals.

⁵ City of Cupertino CAP Update: GHG Emissions Reductions Technical Evidence

⁶ The LCFS program can be used to help fund development of EV charging infrastructure in Santa Cruz. The LCFS program aims to reduce the carbon intensity of transportation fuels sold in-state by 20 percent by 2030 through annually declining targets. Petroleum fuel importers, refiners, and wholesalers in California are required to reduce carbon intensity across their product lines under the LCFS as a means to reduce the overall GHG emissions generated from the transportation sector at the state level. To ensure that the carbon intensity of its overall fuel pool meets the annual LCFS target, a regulated entity must lower the carbon intensity of its fuel pool (by substituting cleaner fuels) and/or purchase LCFS credits from other regulated entities.

guidance on quantifying or reporting on GHG benefits associated with actions that have been or could be taken to reduce emissions, carbon offset projects, purchased carbon credits, or renewable energy credits” they do state that information on these types of activities is “best presented in the context of climate action plans”.

In another example, the City of Sacramento developed an agreement that would authorize a partnership with EVgo, for EVgo’s development and operation of up to six direct current (DC) fast chargers and ten designated EV parking spaces in the public right-of-way in 2017.

In addition, Californian Investor Owned Utility PG&E’s program was designed to address barriers to EV adoption in Low-Income communities by providing EV financing, education, and development of charging infrastructure. Customers are automatically enrolled in time of use charging, which provides low-cost rates for charging while strengthening the grid through flexible storage and demand shifting. The program encouraged the development of Level 2 chargers in neighborhoods and multifamily homes while supporting DC Fast Chargers in public areas like grocery stores and parking lots.

Locally, CCCE launched a *New Construction Electrification Program* which provide a maximum of \$150,000 for developers looking to construct new, all-electric affordable housing units within the CCCE service area through a first come, first served application process. The program has \$1.5 million in funding and is open until the funds are reserved. CCCE also partnered with TECH Clean California to provide cash incentives to contractors who qualify for heat pump electrification projects within their service area.

These are just a couple examples of how P3s can support Climate Action Plan measures. While P3s have the potential to fund projects partially or even completely, they may require municipal resources to cover transaction costs for negotiation, contract management, project management, and communication of logistics for receipt of funds with residents and private businesses.

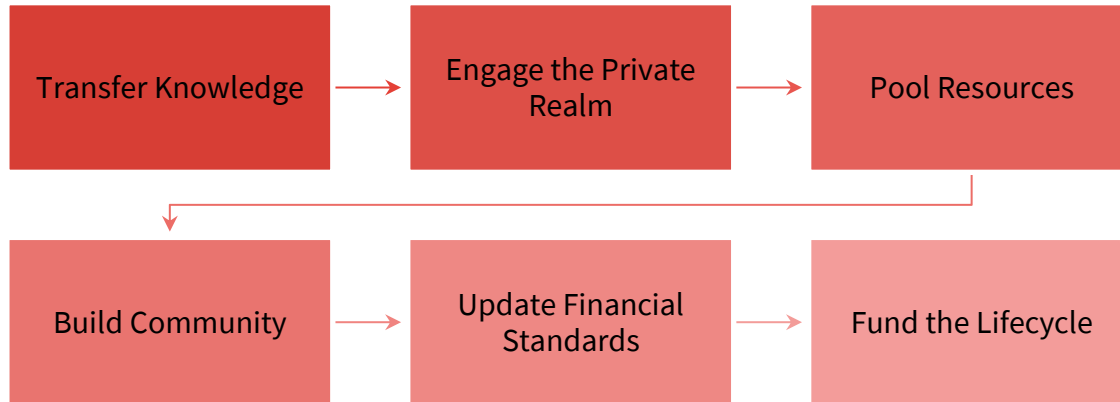
2.4 Overcoming Challenges for Funding and Financing

Funding and financing should be considered as an integrated component of the CAP 2030 and doing so increases the number of paths to paying for these investments. This is a particularly relevant consideration given that fully funding CAP 2030 actions will require multiple sources of funding, and each could draw on numerous financing mechanisms.

However, the challenges to investment in the CAP 2030 are many, as described in the discussion of major funding and financing tools in the previous sections of this memo. These challenges are also interconnected, and failure to address them collectively could stall the implementation of climate action.

This section discusses steps, shown in the flow diagram below, the City can take to more effectively employ funding tools and financing mechanisms given existing resources and constraints at the City. The City may consider the steps illustrated as preparation for availing funds or integrating the CAP into the City’s recurring processes for financial planning including the City’s *Master Investment Strategy/Financial Plan* in fiscal year 2023.

Definitions, example actions, benefits, and drawbacks of each step follow.



Transfer Knowledge Regarding CAP 2030 Update, Internally and Externally

Recommendation(s):

- The City should continue to develop and maintain venues for sharing climate change information, emissions reduction targets, as well as ongoing lessons learned from CAP 2030. These tools educate the community on the resources required for implementation of contemplated CAP measures and could deepen the locality's understanding of critical needs for public funds to enact the CAP, see note below on CAP Dash.
- The City and the City's private sector both have a stake in the CAP 2030. The City should continue to be in dialogue with the business community, especially about how risk management approaches evolve with developing knowledge of climate change and its potential impacts. The City can do so through its existing collaborative networks and working groups, internally and externally.
- To disseminate CAP-related information more effectively to the private realm, the City should update sections on *Small Businesses and Commercial District* and *City Services and Processes* of the City's *Economic Development Strategy* to include CAP 2030 related actions.
- Transferring knowledge on CAP 2030 should also happen internally and across different departments in the City. Section 3.0 describes cross-departments touchpoints that will only City staff learn, support, and advance goals of the CAP 2030 and the Sustainability Team. For example, the CAP Implementation 101 in November 2022 can provide internal training on the goals and actions surrounding the CAP 2030 Update.

Example(s):

- As part of CAP 2030, the City will track performance of measures through key metrics set by the City and tracked through the CAP Dash tool (to be developed in Summer 2022). To the extent possible, outputs of the CAP Dash could be made public to share progress towards targets and accountability among stakeholders including the business community.
- Once launched in September 2022, the City can also reference and provide access to the BrightAction, a Resilient Central Coast community activation platform that provides links to rebate programs and incentives for community members.
- The City can work with not-for-profits to educate the public and property owners in the City of any funding and financing tools available cross-sector or direct from the private sector to individuals. While not entirely related to climate action, groups provide funding and financing toolkits that assemble a list of sustainable resources to specific causes. For example, the Green and Healthy Homes Initiative showcases a [toolkit](#) aimed for lead poisoning prevention using an array of funds from Medicaid to opportunity zones.



As part of its **2021 Economic Development Strategy**, the City has developed strategies for small businesses to get improved access technical and financial City resources and for general business owners to overcome challenges when navigating City services. These existing strategies should apply towards the City's effort to implement the CAP 2030.

Pros/Cons:

- Conscious and comprehensive transfer of knowledge allows those within the City with fewer resources and less capacity to independently access climate-related information when developed accessibly and with cultural sensitivity. It is critical, however, that technical aspects of the CAP 2030 are translated into other languages as to support these communities' understanding of the relative impacts of the CAP 2030 to their day-to-day lives – whether that is monetarily, economically, or otherwise.
- Including CAP 2030 measures in the Economic Development Strategy or other major planning documents will ensure City staff communicate the potential impacts of the climate action plan to the private sectors, particularly the business community and property owners, and the resources the City may be making available in response to those impacts.

Engage the Private Realm*Recommendation(s):*

- Government regulations and policies alone are not sufficient to promote understanding and investments in CAP 2030 at a scale that will meet the needs of the City. The City should follow their previous strategy and communicate with the private realm and/or business community the benefits of actions that address the risks posed by a changing climate as those risks are better understood. See Section 3.0 for suggested private realm touch points.
- More specifically, the City should highlight the CAP 2030 and the associated actions as risk reduction, which can result in cost differentials that can then incentivize private sector investment in projects that respond to climate change.

Example(s):

- As an example, the City of Philadelphia addressed major deferred maintenance issues with its stormwater system by adopting and implementing the *Green City, Clean Waters* program. This initiative couples a green stormwater infrastructure plan with regulations and incentives that encourage private investment in stormwater management and decrease future demand on citywide infrastructure that must function today and in future climate conditions. Under this plan, the City requires large developments to manage rainwater onsite. The program succeeded in communicating to the public and private realm the economic impact of the program including studies that showed estimated property value impact of green stormwater infrastructure investments for private and public projects. While this example relates primarily with resiliency, and not geared towards the implementation of a CAP, it illustrates how private sectors can be engaged through policy.

In 2012, the City of Philadelphia launched a Stormwater Grants Program with the Philadelphia Industrial Corporation with the goal of reducing the price of green infrastructure. Philadelphia has grant programs that encourage private investments in green infrastructure since the City's water utility, Philadelphia Water Department, found it to be cheaper to invest in private property than construct green infrastructure projects on public lands. The grants are funded partly by the City's stormwater management service charges which charge non-residential properties and condominiums a rate based on a property's size and its impervious area.

Pros/Cons:

- Underscoring the risks of climate change to their businesses or properties would allow for the private realm to understand the costs associated to enacting policies and actions from CAP 2030.
- Private sector involvement can support multi-function projects at large scale and provide more flexibility in raising and deploying funds in support of public projects.
- Relinquishing decision-making and control of local assets may occur in public-private partnerships and can lead to undesirable public outcomes if private goals are not aligned property with the public's.

Pool Internal and External Resources

Recommendation(s):

- The City should continue to collaborate with regional partners as well as institutions in neighboring communities to help achieve multiple benefits for CAP 2030 implementation. This includes district-scale systems and funding or financing that can support coordination between geographies, allow for cost sharing, and reduce the need for new project investment.
- The City should continue to pursue partnerships with workforce development groups who may be able to provide the resources to the City for transition training for emerging green jobs borne out of the CAP 2030 implementation, see *Green Jobs Analysis Parts 1 and 2*.
- Internally, the City should plan for varying degrees of coordination between departments that are actively working to incorporate CAP 2030 measures, see Section 3.0 of this memo for details on City department coordination.

Example(s):

- The City has created an internal [CAP 2030 Implementation Matrix](#) that shows the role of different departments and highlights the need for coordination among internal City departments.

- The City should continue its Climate Action Program management and provide resources for program management to support in climate-related capital planning and resilience policies, initiatives, and financial needs.
- The City should continue actively partnering with neighboring jurisdictions such as the City of Watsonville to secure funds for CAP related pilot programs such as the recent partnership proposal to Department of Energy Weatherization Assistance Program (DOE WAP) for low-income green and health electrified pilot program and the Rocky Mountain Institute's equitable existing home electrification programs (supported by equity partners such as the NAACP of Santa Cruz County and Regeneracio of Pajaro Valley).
- The City is in the initial stages of standing up a Regional Climate Project Working Group in the Monterey Bay area including City of Watsonville and the Counties of Santa Cruz, San Benito, and nonprofit partner Ecology Action, to hire a regional grant writer and administrator. The Community Foundation of Santa Cruz County (CFSCC) is the fiscal sponsor. Formalized with a Memorandum of Agreement (MOA) and seeking funds for climate projects ranging from \$10 million in its first year alone. Each jurisdiction in the CFSCC has made three fiscal years of funding commitments that was recently supplemented by a \$100,000 grant from Central Coast Community Energy. The partnership is selecting consultants to work with as of the writing of this plan. The partnership eyes working CFSCC to also launch a philanthropic giving campaign at the end of calendar year 2022.

Pros/Cons:

- The advantages of having a dedicated program management for the Climate Action Program to coordinate cross-department, resilience-related infrastructure activities are many, yet this arrangement may not be suitable and/or feasible for many communities given resources.
- Pooling external resources and working with regional partners have already proved beneficial to the City. As part of the Monterey Bay Regional Climate Project Working Group, the City has been able to seek funds for CAP related activities, such as regional climate and electrification program. \
- Bringing together external resources also mean engaging the broader Santa Cruz community, see next strategy "Build Community Support?".

Engage with Community to Build Community Support

Recommendation(s):

- To complement the strategies, the City should continue to invest in community engagement regarding CAP 2030 as engagement has potential to provide longer-term co-benefits of building local capacity and pursuing more community-based financial resources (that require additional administration), such as philanthropic giving or grants. Section 3.0 describes contemplated public and external touchpoints to transfer knowledge on CAP 2030 and build community support.
- Building community does not need to happen locally nor regionally. The City should consider making its CAP 2030 projects eligible through investment platforms or software applications such as [Climatize](#) to seek project support from individual investors, engaging a larger set of community and casting a wider net to raise funds outside of the City's boundaries.
- The City is in the first of a two-year process to integrate Health in All Policies (HiAP) into its budget process. This process aims to ensure sustainability, public health, and equity in the City's policy making process. The goal for year two is to allow HiAP to prioritize budgetary decisions. This approach should be adopted and applied as part of the CAP prioritization and implementation process.

- Community engagements related to CAP 2030 should involve the City's Public Relations and related communications team to improve coordination, tools, and access across departments. This process also ensures climate considerations are embedded in other forms of engagements being led by other departments within the City.
- The City should engage with the community with equity in mind. For each grant proposal related to CAP 2030 or outreach regarding CAP, especially available funding resources that will help frontline and underrepresented communities, the City should allocate budget for interpretation and culturally appropriate design and promotion of materials as well as improve City staff capacity to do so.

Example(s)

- Through the CAP 2030 process, the City is engaging with Blue Point Planning to utilize the Bright Action Community Activation Platform to continue engage the community on all its climate action initiatives. The platform, CAPDash (to be developed in Summer 2022), may be made publicly available and allow the community to understand the progress the City is making on reducing it's emissions, the scale of actions related to emissions reductions for the CAP 2030 measures and the funding required for associated projects. Also the City will also be providing community well-being indicators on a website dashboard, as part of Health in All Policies (HiAP). Lastly, the City also has a Climate Action Task Force that meets with the City regularly to participate in all sustainability-related initiatives including the development of the CAP 2030.
- The *Fresno Transformative Climate Communities Engagement Process* is perhaps the largest community-based participatory budgeting example in the country. The participatory budgeting process allows the public to provide direct input on which climate action is priority based on the community's context and needs unlike closed-door project prioritization processes undergone by a typical municipality. Neighborhood residents, workers, and businessowners participated in project proposal development and prioritization to identify 25 projects worth \$216 million, of which \$77 million came from the state's Transformative Climate Communities, which is funded by proceeds from California's cap-and-trade auction program.

Pros/Cons:

- A comprehensive approach to community engagement in the City with its partners can help to account for the priorities of frontline communities as it relates to the CAP 2030 measures and can promote equitable outcomes in implementation of actions.
- Effective community engagement can strengthen the relationship between the public and government which can build trust and engender support for future projects.
- While participatory budgeting and funding may provide outsized funds, such as the example from the City of Fresno and Climatize, staffing resources should be made available to identify projects and manage funds in a collaborative and nimble way. To address this issue in Santa Cruz, the City has incorporated an additional Management Analyst role in Fiscal Year 2023 to address CAP program capacity. The City has also issued a Request for Qualifications for grants writers, administrators, and trainers for on-call services across departments.

Update Financial Standards

Recommendation(s):

- The City should continue to incorporate the City's CAP 2030 measures and resulting actions into existing funding and budget processes, encourage CAP actions as priorities for departments that have already securing funding through adoption into general plans, capital plans, and other City-led policies to ensure that all projects and programs account for climate action components in existing and budgeted City projects.
- The City should remain diligent in reviewing the applicability of financing tools such as bonds to climate investments.
- In addition, new or more flexible methods for procurement may be incorporated in the City's fiscal policies to pursue public private partnerships. Developing data that define the benefits and costs of the investments called for by the CAP 2030 actions could help in establishing eligibility criteria, securing grant programs for funding, or in pursuing partnerships with private entities. Resources from FEMA,⁷ particularly the BCA Toolkit, provide guidance and examples on how to structure benefit-cost analysis related to infrastructure investments.
- The City should continue disclosing climate risks through annual reporting to the Carbon Disclosure Project through the Global Covenant of Mayors for Climate and Energy. Adopted by the City by resolution in 2016, the disclosure reporting allows the City to, in return, receive an annual grade on its actions to combat climate change.⁸ This grade is distributed to institutional investors. To further this, the City can adopt a resolution that requires a more expansive climate risks and opportunities disclosure reporting as part of the City's Debt Management Policy, illustrating how climate change factors are incorporated into the City's investment practices.

Example(s):

- The City of Vancouver, Canada uses a "green bond" they call the "Sustainability Bond" and defines a "Sustainability Bond Framework" to align financing and investment activities with long-term environmental and social sustainability goals. To issue the green bonds, Vancouver set within its framework a list of eligibility criteria that identify eligible capital projects. The criteria are guided by green bond principles set by a consortium of banks and local government coalitions. Their Sustainability Bonds may include "Green Bonds" that include projects related to renewable energy, energy efficiency, green buildings, climate change adaptation, etc. as well as "Social Bonds" may include efforts to provide affordable access to infrastructure. These bonds are paid back similarly to any other bond, through taxation and the general fund.



The Sustainability team identifies climate supportive projects annually. The team identified **over \$65 million of new and existing Capital Investment Projects** (direct expenditures only) in the City's FY 2023 budget that support the Climate Action Plan 2030. The City should consider formalizing this identification and quantification process as part of its recurring budgeting process, resources permitting. This process may also be the basis for green bond eligibility framework.

⁷ Benefit-Cost Analysis | FEMA.gov

⁸ In California, some transparency around climate risk is mandated as the state requires insurers to disclose their climate risk through an annual Climate Risk Disclosure Survey.

- The country of France requires institutional investors to report on how climate change factors are incorporated into investment policies.

Pros/Cons:

- Adapting the standards of existing funding and financing tools such as the City's budgetary policies to include clear, measurable, and consistent criteria for evaluating and comparing project risks could help reduce the burden of understanding the impact of measures and actions to reduction of emissions, direct existing resources in support of projects that minimize climate change exposure and limit the need for future costly interventions.
- Tools, including bonds and municipal funding sources, would benefit from the approach above.
- As discussed in the previous section, green bonds are an example of a potentially valuable tool for incorporating CAP measures and resulting actions into the City's financial strategy. It should be noted, however, that green bonds are not a new type of financing tool, but are a restructuring of traditional bonds with specific goals and objectives related to environmental (or social) benefits. The City must ensure incorporation of CAP goals into its financial policies and goals does not negatively impact the City's financial integrity.
- Disclosure of climate risk may help the City and its ratepayers recognize investments and associated benefits of climate action. Tools including P3s, and some municipal funding sources would benefit from the transparency that comes with this approach.

Fund the Lifecycle

Recommendation(s):

- After establishing pathways for incorporating CAP 2030 goals into City's financial policies and processes, the City may contemplate requiring the funding of the full lifecycle costs, i.e. capital costs and ongoing operational costs during the full useful life of a project, of measure and actions that matches local priorities in both the near-and longer term, and the design and selection of projects that are eligible for a wide range of funding sources. Full lifecycle cost analysis also includes evaluation of benefits over time and social co-benefits such as social cost of carbon. As an example, the City estimated citywide emissions resulted in \$25 million in social costs. See Section 3.0 (*Committing to Implementation and Accountability*) of the document for more details for implementation and accountability details.
- The scale of investment required to implement the CAP 2030 will result in a phased implementation approach, though additional implementation capacity from public private partnerships could alleviate the upfront costs of investment. To develop priorities in a phased implementation approach, consideration of changes in costs for technologies like battery storage over the next several years, resilience benefits—particularly for frontline communities, and potential changes in the ability to borrow/cost of borrowing for the City over the implementation timeframe should be used.⁹

Example(s):

- Bringing more transparency to the full life-cycle costs of a measure and action could help to prevent situations where the public sector must scramble to find funding in ways that increase overall costs or that result in unplanned financial burdens for the public.¹⁰

⁹ The timeframe for when certain technologies become feasible is not well documented or well understood.

¹⁰ see [City of Santa Cruz Green Jobs Analysis](#) for some of the overall cost anticipated for key measures including building electrification, electric vehicle adoption, and active transportation.

3.0 Committing to Implementation and Accountability

To accompany financial strategies, additional work to support CAP 2030 measures and associated actions should include enacting policies to support the CAP 2030 actions. For example, introducing guidelines and policies highlighted in this section and other changes to policies that define and enable the use of recent technologies in buildings, transportation, and active transportation.

The following near-term implementation work plan (2023 to 2026) is based on a series of internal City department meetings and external community listening sessions. Each of the following policies, programs, and projects are prioritized by year and departments responsibilities. This effort also concluded with tentative agreements on municipal accountability and implementation structure. For more detail on lead departments and phasing of each CAP measure, see Implementation section of the CAP 2030 Plan.

Work Plan Activities	Department (s)	Funding	Staffing	Timeline			
				FY 2023	FY 2024	FY 2025	FY 2026
		\$ = lowest cost and \$\$\$ highest cost to City	Low, Medium, High need for staffing or staff capacity				
Leverage grant writing resources to fund priority measures	Climate Action Program	\$\$	Medium	☐	☐	☐	☐
Develop and implement fossil fuel divestment policy	Finance	\$	High	☐			
Evaluate feasibility of completing a life cycle inventory at least once in the CAP 2030 implementation period	Climate Action Program, City Manager's Office	\$	Medium				☐
Complete of Active Transportation Plan Update	Public Works	\$\$\$	Medium	☐			
Complete and implement fleet electrification master plan (including landscaping equipment. [funded])	Public Works, Parks & Recreation	\$\$\$	Medium	☐			
Update food waste to energy feasibility and design facilities;	Public Works	\$\$\$	High	☐			
Complete Equitable Existing Building Roadmap with phased approach to electrifying for existing residential and commercial buildings. Provide appropriate training to building department staff	Planning, City Manager's Office, Economic Development	\$\$\$	High	☐	☐		
Adopt Existing Building Electrification Reach Code ordinance	Planning, City Manager's Office	\$	High	☐			

Integrate the Climate Action Plan into the City's upcoming Master Investment Strategy/Financial Plan	Finance, All Departments	\$	Medium	☐	☐		
Evaluate compost application requirement of SB1383 and obtain funding for tree projects	Public Works, Parks & Recreation, All Departments	\$\$	High	☐	☐		
Consider CAP 2030 in Master Fee Evaluation and Cost Evaluation Plan and its change management process	Finance, City Manager's Office	\$\$	High	☐	☐		
Establish a plan to electrify and improve health and safety of the City's existing affordable housing stock at neighborhood level by 2035	Planning, City Manager's Office, Economic Development	\$	Medium	☐	☐	☐	
Complete municipal building electrification master plan	Public Works, City Manager's Office	\$	High		☐		
Fund and hire an Energy Manager (aiming to be a cost neutral position)	Public Works, City Manager's Office, Finance, Human Resources	\$\$	Medium		☐		
Update the EP3 with EV first, electric building first, increasing plant-based food purchasing	Public Works, City Manager's Office, Finance	\$\$\$	High		☐		
Develop and implement a Municipal Transportation Demand Management Plan	Public Works, Human Resources	\$\$	High		☐		
Develop Urban Forest Master Plan and plant ~400 trees per year	Parks and Recreation	\$\$\$	High			☐	
Develop a remote work program plan with milestones over time and evaluate co-working sites	IT, City Manager's Office, Finance, Human Resources	\$	High		☐	☐	☐
Procure and apply compost to the exterior of suitable facilities in accordance with SB 1383 landscape management needs and plans evaluate co-working sites	Public Works, Parks & Recreation	\$\$	High		☐	☐	☐

Complete assessment of Solar, battery storage, microgrid feasibility, genset replacement at municipal facilities	Public Works, All Departments	\$\$\$	High		☐	☐	☐
Complete all bikeway portions of Rail Trail and work with partners to plan light transit to Rail line	Public Works	\$\$\$	High		☐	☐	☐
Pursue green workforce development opportunities	Public Works, City Manager's Office, Economic Development, Water	\$	Medium	☐	☐	☐	☐
Complete community wide greenhouse gas emissions inventory every three years	Climate Action Program, City Manager's Office	\$\$	High	☐			☐

Commitments to Accountability

In addition to near-term municipal and community-wide actions, the City should also consider recurring steps to establish internal and external accountability towards meeting targets set in CAP 2030. The following touchpoints will allow City leadership and staff to review availability of funds and financing thresholds, track progress against metrics set in the CAP 2030 and tracked in CAP Dash, and adjust priorities as necessary to meet targets set in the CAP.

- Continue membership with Green Cities California
- Continue membership with Urban Sustainability Directors Network
- Continue membership with Local Governments for Sustainability (ICLEI)
- Continue and promote staff membership to Central Coast Climate Collaborative
- Staff participation in CAP 2030 implementation/tracking training from November 2022 onwards
- Full department participation in Sustainability Team
- Annual City Council and Commission presentations
- Participation of departments in the annual risk and progress disclosure submission to the Carbon Disclosure Project
- Participation in the Climate Action Task Force and/or other climate advisory body with bimonthly to quarterly meetings
- Participation in HiAP (Health in All Policies) City Council Committee bimonthly meetings
- (New) Participation in the Annual CAP Implementation Partners Roundtable
- (New) Review and provision of content in the Sustainability Dashboard on Website
- (New) Explore launching a future Master City Wellbeing Dashboard with HiAP, Budget, Energy, etc. t)
- (New) Review and provision of content to the internal CAP Dash Implementation /Funding Tracking
- Participation of CAP x Department Heads Bimonthly Meetings

- Regular City Manager Employee Newsletter posts bimonthly or as activities dictate
- Participation in the Santa Cruz City Schools Green Committee, Citywide Workforce development team, Central Coast Climate Collaborative, and other climate networks.

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APPENDIX I:
**Implementation +
Monitoring Plan**

Implementation and Monitoring Plan

The City of Santa Cruz developed the CAP to be a visionary yet feasible roadmap with specific implementable actions that will both decrease GHG emissions within the City as well as improve overall resilience to climate change. This appendix describes the overall implementation approach for the CAP.

The measures and actions included in this CAP provide a framework for how the City plans to reach its GHG emissions reduction targets, as required for a qualified GHG reduction plan by CEQA Guidelines § 15183.5(b) while improving resilience to a changing climate. While substantial evidence suggests that the measures and actions outlined in this CAP will achieve the State-mandated goal of 40 percent below 1990 levels by 2030, consistent with SB 32, uncertainty increases over time. The adoption rates of each measure, cost of technology, legislative environment, and benefits assumed in this report will continue to evolve as new information becomes available. Therefore, this CAP should be viewed as a strategic framework that will be reevaluated over time. This Implementation and Monitoring Plan outlines the roles and responsibilities and funding and financing mechanisms that will allow for active implementation of the CAP. This Implementation and Monitoring Plan also outlines a timeline for CAP updates that will allow the City to respond to changes in legislation and technologies and help ensure the City achieves their GHG reduction targets.

This Implementation and Monitoring Plan includes the following for each action as described in the CAP:

- **ID** The Action ID number unique to each Action
- **Action** The action the City established to reduce GHG emissions
- **Lead Department** City department responsible for implementing the action
- **Potential Funding Tool** Provides the general type of funding tool(s) that can be used to implement the action. N/A (not available) indicates that a specific funding tool has not yet been identified for the action
- **Phase** Timing of when the City plans to initiate and/or complete each action
 - *Phase 1 • 2022 – 2024*
 - *Phase 2 • 2025 – 2027*
 - *Phase 3 • 2028 – 2030*
- **Implementation Notes/Comments** Provides notes on where additional details can be found

As part of this CAP, the City will complete an annual progress report using CAPDash. The annual progress reports will include calculating an annual community-wide GHG emissions inventory in CAPDash, as well as updating the progress of the emissions reduction measures in the tool. Monitoring will be completed by the appointed leaders within each lead department and data will be shared with the City's Manager's Office. Lead departments will have the tools necessary to monitor and track the implementation of the measures that their department is responsible for and will be supported by the City's Manager's Office that guides and oversees the process. This table will be updated in future reports to reflect the current implementation status of each action.

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
Measure BE-1: Enforce the City's new construction natural gas prohibition ordinance (SCMC 6.100) and inform the community regarding the available technology and benefits of electrification.				Metric: Enforcement of SCMC 6.100 and inform public.	
Action BE1.1	Enforce the new construction natural gas prohibition ordinance through the development of a comprehensive permitting compliance program that includes routine training for City staff, dedicating staff time for building inspections, charging fees for noncompliance, providing easy-to-understand compliance checklists online and with permit applications and facilitating permitting online.	Planning	Grants, Grants/Accelerator	1	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Measure BE-2: Electrify 31% of existing residential buildings by 2030 and 53% by 2035.				Metric: Increase percentage of electrified existing residential buildings by 2035.	
Action BE2.1	Develop, implement and enforce phased and equitable electrification ordinance(s) for existing residential buildings by the start of 2023. Maximize permit compliance through streamlining the compliance process, improving third-party enforcement, and advanced training for enforcement staff. Steps to be completed to adopt the ordinance(s) are as follows: Step 1: Work with stakeholders in developing an idea for a reach code electrification ordinance(s) Step 2: Complete a cost effectiveness study Step 3: Develop and draft the ordinance(s) and go through the public process, incorporating revisions as necessary Step 4: Go through the formal adoption process Step 5: Apply for approval by the California Energy Commission.	Planning, City Manager's Office	Taxes, Fees, Private, Grants, Assessment, Grants/Accelerator, Bonds, Utility Fee, State Funds	1-3	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action BE2.2	Identify and partner with local community-based organizations with connections to frontline communities to assist in development of the existing building electrification strategy.	Planning, City Manager's Office	Taxes, Fees, Private, Grants, Assessment, Grants/Accelerator, Bonds, Utility Fee, State Funds	2	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action BE2.3	By 2024, establish a plan to electrify and improve health and safety of the city's existing affordable housing stock at a neighborhood level by 2035. Provide detailed information on the City website including descriptions of the health and environmental benefits of electrification, links to 3CE and PG&E resources on electrification, up-to-date lists of local contractors that perform electric retrofits, and information about the most cost-competitive residential electrification technologies currently available.	Planning, City Manager's Office	Taxes, Fees, Private, Grants, Assessment, Grants/Accelerator, Bonds, Utility Fee, State Funds	2	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
Action BE2.4	Work with PG&E and CCCE to identify opportunities to remove obsolete natural gas infrastructure, to redirect PG&E funding allocated for pipeline maintenance to electrification retrofit projects instead. Work with PG&E to identify funding, as needed, for the removal of the infrastructure. Consider a pilot to remove obsolete natural gas infrastructure from municipal buildings.	City Manager's Office, Econ Dev.	Taxes, Fees, Private, Grants, Assessment, Grants/Accelerator, Bonds, Utility Fee, State Funds	2 - 3	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action BE2.5	Work with PG&E and CCCE to deploy community solar and electrify existing buildings in residential neighborhoods. Incentivize all-electric retrofits through rebates, on-bill financing, and other mechanisms.	City Manager's Office	Taxes, Fees, Private, Grants, Assessment, Grants/Accelerator, Bonds, Utility Fee, State Funds	2 - 3	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Measure BE-3: Electrify 26% of existing commercial buildings by 2030 and 45% by 2035.				Metric: Increase percentage of electrified existing commercial buildings by 2035.	
Action BE3.1	Adopt, implement and enforce an electrification ordinance for existing commercial buildings by the beginning of 2024.	Planning, City Manager's Office	Taxes, Fees, Private, Grants, Assessment, Grants/Accelerator, Bonds, Utility Fee, State Funds	1-3	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action BE3.2	Work with partners to mitigate potential equity impacts of existing commercial building electrification ordinance. Facilitate equitable and inclusive funding opportunities for commercial building electrification.	Planning, City Manager's Office	Taxes, Fees, Private, Grants, Assessment, Grants/Accelerator, Bonds, Utility Fee, State Funds	2	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action BE3.3	Support commercial battery storage installations and business district scale microgrid opportunities.	City Manager's Office	Taxes, Fees, Private, Grants, Assessment, Grants/Accelerator, Bonds, Utility Fee, State Funds	1	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action BE3.4	Establish a building emissions performance standard for commercial buildings over 20,000 square feet.	Planning, City Manager's Office	Taxes, Fees, Private, Grants, Assessment, Grants/Accelerator, Bonds, Utility Fee, State Funds	1	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
Measure BE-4: Maintain Central Coast Community Energy (CCCE) opt-out rates at or below 4% for residential and 2% for commercial.				Metric: Maintain low percentage of 3CE opt-out rates.	
Action BE4.1	Support annual analysis of CCCE opt-out rates in the City and encourage opting up to CCCE prime 100 percent renewable energy option.	City Manager's Office	N/A	1	
Action BE4.2	Increase uptake of 100 percent renewable energy option from CCCE, incentivizing households in affordable housing units.	City Manager's Office	N/A	2-3	
Action BE4.3	Promote benefits of opting in to CCCE service, particularly those in frontline neighborhoods and small businesses and veteran, woman and minority owned businesses.	City Manager's Office	N/A	1	
Measure BE-5: Increase resiliency through equitable energy efficiency and local solar programs.				Metric: Increased resiliency through equitable programs.	
Action BE5.1	Partner to deliver weatherization, healthy home retrofits, energy efficiency and solar system installs to low-income homeowners and rental units.	Planning, City Manager's Office	N/A	1	
Action BE5.2	Advocate to reform community solar policies and rates, enabling residential and commercial renters to participate in benefits of local solar.	City Manager's Office	N/A	1	
Action BE5.3	Establish rental building energy performance standards to increase adoption of rebated energy efficiency and electrification measures.	Planning, City Manager's Office	N/A	1	
Measure BE-6: Provide inclusive engagement, equitable process and regional coordination to maximize building electrification carbon reduction and other co-benefits.				Metric: Improved engagement and processes and increased regional coordination.	
Action BE6.1	Define equity metrics for new and existing building electrification ordinances' implementation and enforcement based on feedback from frontline communities, successful examples from other jurisdictions, and structure ordinances and permitting compliance programs to meet these metrics. Equity metrics should be designed to prevent displacement and lead to end-user costs for low-income populations that are lower after electrification than before.	Planning, City Manager's Office	N/A	1-2	
Action BE6.2	Partner with CCCE to develop all-electric rates by income-level and incentivize equitable all-electric retrofits.	City Manager's Office	N/A	1	
Action BE6.3	Advance new and existing building electrification as a priority at all scales.	City Manager's Office, Econ Dev.	N/A	1-3	

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
Action BE6.4	Advocate for state and federal regulatory changes to enable neighborhood level electrification, community solar, natural gas pruning, and rates stabilization policies.	City Manager's Office, Planning, Econ Dev.	N/A	1	
Action BE6.5	Conduct a study to evaluate the need to increase fees to provide outreach, trainings, and additional staff for building electrification compliance.	City Manager's Office, Planning	N/A	2	
Action BE6.6	Facilitate equitable access to accurate and current information about electrification programs, incentives and opportunities. Develop induction cooktop loaner programs.	City Manager's Office Planning	N/A	1	
Action BE6.7	Participate in regional workforce development opportunities for building electrification.	Public Works, Planning, Econ Dev., City Manager's Office	N/A	1	
Action BE6.8	Work with partners to establish a Regional Energy Network for energy efficiency and electrification building resources, expand education on subsidized rate programs, code compliance training and apprenticeship program.	City Manager's Office	N/A	1	
Measure T-1: Implement programs for active transportation (walking and biking) that achieve 23% bicycle share by 2030 and 30% by 2035.				Metric: Implement active transportation programs.	
Action T1.1	Fund, staff and implement the Active Transportation Plan Update, Vision Zero, Safe Routes to School and the 2030 General Plan update.	Public Works	Taxes, Fees, Private, Assessment, Grants, Grants (Competitive), Grants (Formula), Bonds	3	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T1.2	Complete all portions of Rail Trail and work with partners to plan active and public transportation to Rail line.	Public Works	Taxes, Fees, Private, Assessment, Grants, Grants (Competitive), Grants (Formula), Bonds	2-3	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T1.3	Require secure bike parking near public transportation and in major activity centers. Require bike parking installation in new commercial developments and existing commercial renovations.	Public Works	Taxes, Fees, Private, Assessment, Grants, Grants (Competitive), Grants (Formula), Bonds	3	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T1.4	Re-establish citywide e-bike share with explicit consideration of how to make accessible to frontline groups.	Public Works	Taxes, Fees, Private, Assessment, Grants,	1	See Appendix H, <i>Funding and Financing</i>

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
			Grants (Competitive), Grants (Formula), Bonds		<i>Implementation Memo</i> , for additional detail.
Action T1.5	Build new infrastructure that provides equitable access to safe bicycle and pedestrian pathways throughout the City, prioritizing frontline neighborhoods.	Public Works	Taxes, Fees, Private, Assessment, Grants, Grants (Competitive), Grants (Formula), Bonds	3	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T1.6	Pilot Neighborhood Greenways to slow traffic and improve walking and biking and evaluate piloting time based closures to vehicles primarily in business districts.	Planning, Public Works	Taxes, Fees, Private, Assessment, Grants, Grants (Competitive), Grants (Formula), Bonds	2-3	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T1.7	Accelerate housing development and support commercial and industrial development in city limits, concentrating the most intensive growth in transit corridors and central areas of the city to promote walking and biking to nearby jobs, entertainment, goods, services, and public transportation, through the General Plan Housing Element Update to be approved in 2023. Prioritize expansion of affordable housing stock. Partner to incentivize 15-minute neighborhoods, particularly within frontline neighborhoods communities, supported by dense housing and buildings, provision of locally sited essential services and amenities, and connected by a network of bike, pedestrian, and transit services.	Planning	Taxes, Fees, Private, Assessment, Grants, Grants (Competitive), Grants (Formula), Bonds	2-3	See Appendix G, <i>Jobs Analysis</i> , and Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Measure T-2: Implement programs for public transportation that achieve 8% public transportation mode share by 2030 and 12% public transportation mode share by 2035.				Metric: Implement mode share public transportation programs.	
Action T2.1	Support countywide coordination to fund and implement Bus Rapid Transit.	Public Works	Taxes, Fees, Private, Assessment, Grants, Grants (Competitive), Grants (Formula), Bonds	1	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T2.2	Support public transportation prioritizing serving major corridors, destinations, and frontline neighborhoods. Advocate for enhanced and increased public transportation service with improved customer serving amenities (e.g., all door boarding, on demand, online ticketing, Wi-Fi).	Public Works	Taxes, Fees, Private, Assessment, Grants, Grants (Competitive), Grants (Formula), Bonds	1	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T2.3	Require more employers to develop education and financial incentives for employees to bike, walk, carpool, or take the bus to work. Require large employers to subsidize alternative modes.	City Manager's Office, Public Works	Taxes, Fees, Private, Assessment, Grants, Grants (Competitive), Grants (Formula), Bonds	1	See Appendix G, <i>Jobs Analysis</i> , and Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
Action T2.4	Advocate for METRO to fund and implement a free public transit pilot program for students, foster youth, and unhoused youth in the City.	City Manager's Office, Public Works	Taxes, Fees, Private, Assessment, Grants, Grants (Competitive), Grants (Formula), Bonds	2-3	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T2.5	Support funding for public transportation fleet electrification.	City Manager's Office, Public Works	Taxes, Fees, Private, Assessment, Grants, Grants (Competitive), Grants (Formula), Bonds	1	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T2.6	Equitably market and publicize public transportation improvements and incentive programs as they are planned and implemented.	Public Works	Taxes, Fees, Private, Assessment, Grants, Grants (Competitive), Grants (Formula), Bonds	1	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T2.7	Partner with Santa Cruz County Transportation Commission, Santa Cruz County, and Regional Agencies to expand citywide transportation communications and marketing programs to residents commuting outside of the City for work.	City Manager's Office, Public Works	Taxes, Fees, Private, Assessment, Grants, Grants (Competitive), Grants (Formula), Bonds	1	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Measure T-3: Develop programs and policies to discourage driving single-occupancy passenger vehicles.				Metric: Decrease number of single-occupancy passenger vehicles/increase public transportation use.	
Action T3.1	Partner with community groups to develop programs and policies that discourage single-passenger vehicles while addressing equity concerns and tracking through equity metrics.	Public Works	N/A	1-2	
Action T3.2	Explore implementing a local gasoline and diesel car registration tax with exemption for low-income people.	City Manager's Office, Public Works	N/A	1	
Action T3.3	Discourage single passenger vehicles in high traffic zones considering a congestion charge program, limiting parking options, bans in high traffic zones or public/multimodal transportation routes, and rideshare user taxes.	Planning, City Manager's Office, Public Works	N/A	1	
Action T3.4	Reduce off-street parking requirements for new housing developments close to frequent transit service, with sensitivity to low-income neighborhoods whose parking is already constrained.	Planning, Public Works	N/A	1	
Action T3.5	Consider limiting parking options for single-passenger vehicles in downtown and other commercial areas of the city balanced with needs of sustaining downtown employees, businesses and tourists.	Planning, Public Works	N/A	1	See Appendix G, <i>Jobs Analysis</i> , for additional detail.

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
Action T3.6	Adjust parking rates dependent on demand and supply in all downtown parking locations and evaluate whether revenue may be used to fund active transportation or public transportation projects.	Planning, Public Works	N/A	1	
Action T3.7	After implementing action 4, eliminate parking minimums citywide and develop parking maximums, while pricing all public parking spaces based on available transportation options, travel demand, and land use.	Planning, Public Works	N/A	1	
Action T3.8	Support the City's tourism economy by exploring and implementing neighborhood or zone based parking solutions and use of electric trolleys in high traffic and walkable areas.	Planning, Public Works, Econ Dev.	N/A	1	
Action T3.9	Remove parking to accommodate multimodal improvements, including protected bike lanes and transit improvements, taking into account business impact.	Planning, Public Works, Econ Dev.	N/A	1	
Measure T-4: Increase passenger electric vehicle (EV) adoption to 35% mode share by 2030 and 40% by 2035.				Metric: Increase percentage of passenger electric vehicles by 2035.	
Action T4.1	Install at least 1,247 new public EV charging stations prioritizing frontline neighborhood and high usage areas by 2030.	City Manager's Office, Public Works	Taxes, Fees, Private, Grants, Grants/Accelerator, Bonds, Private	3	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T4.2	Update municipal code to require new residential multifamily housing and large commercial building owners to install chargers in 20 percent of parking spaces and secure electric service capacity is sufficient so that >20 percent of marking spaces are EV ready.	Public Works	Taxes, Fees, Private, Grants, Grants/Accelerator, Bonds, Private	2-3	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T4.3	Advocate for programs and incentives for income tiered residential EV charger installations and EV purchases.	City Manager's Office, Public Works	Taxes, Fees, Private, Grants, Grants/Accelerator, Bonds, Private	1	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T4.4	Pursue partnership with affordable EV car share to serve affordable housing and multifamily developments in frontline neighborhoods, while also promoting EV car share citywide, for example by requiring car share for certain new projects.	Public Works	Taxes, Fees, Private, Grants, Grants/Accelerator, Bonds, Private	2-3	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T4.5	Partner with CCCE, PG&E, and community groups to increase adoption rates of EVs in frontline neighborhoods by stacking incentives and leveraging on-bill financing for EV chargers.	City Manager's Office	Taxes, Fees, Private, Grants, Grants/Accelerator, Bonds, Private	1	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T4.6	Partner to conduct EV and public transportation education events in frontline neighborhoods.	Public Works	Taxes, Fees, Private, Grants,	1	See Appendix H, <i>Funding and Financing</i>

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
			Grants/Accelerator, Bonds, Private		<i>Implementation Memo</i> , for additional detail.
Action T4.7	Engage compensated frontline communities in regional and local vehicle electrification strategy development.	City Manager's Office, Public Works	Taxes, Fees, Private, Grants, Grants/Accelerator, Bonds, Private	2	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Measure T-5: Increase commercial EV adoption to 25% by 2030 and 35% by 2035.				Metric: Increase percentage of commercial electric vehicles by 2035.	
Action T5.1	Engage with local employers and business fleet owners in the City to identify opportunities for accelerated fleet electrification, prioritizing small businesses, and veteran, woman or minority-owned businesses. Provide information on the requirements of the Advanced Clean Truck regulation and available funding sources for fleet replacements (e.g., Low Carbon Fuel Standard).	City Manager's Office, Econ Dev.	Taxes, Fees, Private, Grants, Grants/Accelerator, Bonds	1-2	See Appendix G, <i>Jobs Analysis</i> , and Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T5.2	Conduct a study of business vehicle fleets in the City and identify employers and businesses subject to the Advanced Clean Truck regulation as well as those to target for accelerating zero-emission vehicle adoption. With stakeholder support, use the results from the study to develop and implement a plan for City-supported accelerated fleet electrification in business and municipal fleets.	City Manager's Office, Public Works, Econ Dev.	Taxes, Fees, Private, Grants, Grants/Accelerator, Bonds	2-3	See Appendix G, <i>Jobs Analysis</i> , and Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action T5.3	Prioritize commercial EVs for loading zone access and use other curbside management practices.	City Manager's Office, Planning, Econ Dev., Public Works	Taxes, Fees, Private, Grants, Grants/Accelerator, Bonds	1	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Measure T-6: Electrify or otherwise decarbonize 50% of off-road equipment by 2030 and 75% by 2035.				Metric: Increase percentage of electrified off-road equipment by 2035.	
Action T6.1	Explore ways to mitigate equity impacts of electrifying and upgrading off-road equipment and harbor vessels.	City Manager's Office, Public Works, Parks and Rec., Econ Dev.	N/A	1	
Action T6.2	Engage with small business, women, veteran, or minority owners of off-road equipment fleets and others with highest decarbonization potential to	City Manager's Office, Econ Dev.	N/A	1	

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
	promote equitable fleet electrification through outreach and pursuing grants or other funding.				
Action T6.3	Access funding to decarbonize off-road equipment, including investigating state funding to decarbonize off-road equipment as a result of Executive Order N-79-20 and State Climate Funding Package.	City Manager's Office, Econ Dev.	N/A	2	
Action T6.4	Support transition of local employers to zero-emission off-road equipment. Provide online resources and a test demonstration site for landscaping industry.	City Manager's Office, Econ Dev., Parks and Rec.	N/A	2	See Appendix G, <i>Jobs Analysis</i> , for additional detail.
Action T6.5	Develop an ordinance to phase out gas and diesel-powered off-road equipment starting in 2024, partnering to provide income tiered incentives for small businesses. Ordinance language to include allowance for biofuels for equipment for which zero emission alternatives are not available.	Planning, Parks and Rec., Econ Dev., City Manager's Office	N/A	2-3	
Measure T-7: Advocate for remote work policy & infrastructure.				Metric: Increase number of remote work employees.	
Action T7.1	Work with the County, the Santa Cruz County Regional Transportation Commission, AMBAG, and the City's larger employers to support remote work programs, while seeking to address remote work equity issues such as internet access.	City Manager's Office, Econ Dev.	N/A	1	See Appendix G, <i>Jobs Analysis</i> , for additional detail.
Action T7.2	Participate in regional advocacy for development of a statewide remote work policy.	City Manager's Office, Econ Dev.	N/A	1	See Appendix G, <i>Jobs Analysis</i> , for additional detail.
Measure W-1: Maintain gallons per capita water use for the residential sector at a level that is at least 10% below the state goal.				Metric: Maintain per capita residential water use at 10% lower than the state goal or lower.	
Action W1.1	Continue to provide free water conservation devices and rebates for water conservation and continue targeted outreach to frontline communities.	Water Department	N/A	1	
Action W1.2	Continue to promote available City rebates and educate residents on the benefits of water conservation and its connection to climate change benefits.	Water Department	N/A	1	
Action W1.3	Expand watershed stewardship school program to include water conservation.	Water Department	N/A	3	

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
Measure W-2: Reduce organic waste by 75% by 2030 and 90% by 2035; and reduce inorganic waste by 35% by 2030 and 40% by 2035.				Metric: Reduce organic and inorganic waste by 2035.	
Action W2.1	Partner to develop a regional compost trading program to meet state organic procurement target.	City Manager's Office, Public Works	Taxes, Fees, Private, Bonds, Grants	2-3	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action W2.2	Expand enforcement and implement fee for incorrectly sorted materials with sensitivity to shared collection.	Public Works	Taxes, Fees, Private, Bonds, Grants	1	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action W2.3	Pursue funding to conduct detailed planning of food waste to energy infrastructure and process to meet state food waste diversion targets.	Public Works	Taxes, Fees, Private, Bonds, Grants	2	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action W2.4	Continue to participate in Countywide Solid Waste Task Force consortium to plan and pursue funding for infrastructure beyond state 2025 organic waste diversion targets.	Public Works	Taxes, Fees, Private, Bonds, Grants	1	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action W2.5	Conduct waste characterization studies annually to understand the waste stream and plan to increase waste diversion and reduce contamination.	Public Works	Taxes, Fees, Private, Bonds, Grants	2	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action W2.6	Provide training resources to businesses and large institutions on organic waste diversion.	Public Works	Taxes, Fees, Private, Bonds, Grants	2	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action W2.7	Continue multi-lingual engagement with multi-family property owners/managers and developing waste handling signage for their properties.	Public Works	Taxes, Fees, Private, Bonds, Grants	1	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action W2.8	Continue to conduct targeted, multi-lingual, culturally appropriate, and geographically diverse waste diversion educational and technical assistance campaigns.	Public Works	Taxes, Fees, Private, Bonds, Grants	1	See Appendix H, <i>Funding and Financing Implementation Memo</i> , for additional detail.
Action W2.9	Expand the Recycling Boot Camp and Master Recycler's Programs.	Public Works	Taxes, Fees, Private, Bonds, Grants	2-3	See Appendix H, <i>Funding and Financing</i>

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
					<i>Implementation Memo, for additional detail.</i>
Action W2.10	Pilot and evaluate emerging technologies to reduce organic waste by restaurants and other major food waste producers.	City Manager's Office, Public Works, Econ Dev.	Taxes, Fees, Private, Bonds, Grants	2	See Appendix H, <i>Funding and Financing Implementation Memo, for additional detail.</i>
Measure W-3: Set long-term target to reduce waste generation growth.				Metric: Reduce waste generation growth.	
Action W3.1	Continue free training and education program accessible to all residents and employees to learn about waste prevention and diversion strategies and effects of overconsumption.	Public Works	N/A	1	See Appendix G, <i>Jobs Analysis</i> , for additional detail.
Action W3.2	Work collaboratively and leverage grants to prevent food waste and rescue edible food.	Public Works	N/A	1	
Action W3.3	Enforce implementation of a fee at point of use for single-use food ware by food service providers.	Public Works, Econ Dev.	N/A	3	
Action W3.4	Conduct a consumption-based emissions inventory and promote a closed-loop circular economy.	City Manager's Office	N/A	2	
Action W3.5	Leverage community activation platform and community partners to encourage lifestyle choices that reduce consumption based emissions including plant based diets, travel alternatives and local purchasing. Explore policy options to increase adoption plant-based, and plant-strong diets.	City Manager's Office, Information Technology	N/A	1	
Action W3.6	Expand edible food recovery program to all restaurants and food generating businesses and incentivize small businesses who otherwise could not participate.	Public Works, Econ Dev.	N/A	2	
Action W3.7	Evaluate and implement a program for reusables for restaurant to-go containers.	Public Works, Econ Dev.	N/A	2-3	
Action W3.8	Explore opportunities to promote a "circular economy" among local manufacturers and industry.	Public Works, Econ Dev., City Manager's Office	N/A	1-2	
Measure W-4: Reduce or capture GHG emissions from wastewater treatment emissions.				Metric: Increased capture of wastewater treatment emissions.	
Action W4.1	Explore opportunities related to methane capture and conversion to biofuel through the state's Low Carbon Fuel Standard (LCFS) program.	Public Works	N/A	1-2	

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
Action W4.2	Collaborate with surrounding cities and the County to advocate and support emissions reduction at wastewater facilities.	Public Works	N/A	1	
Measure CS-1: Develop an Urban Forest Master Plan and plant 3,000 new trees by 2030.				Metric: Plant 3,000 new trees by 2030.	
Action CS1.1	Prioritize planting trees in and with low income or frontline neighborhoods and other neighborhood groups as per the Street Tree Master Plan and protect and replace urban trees on public and private property per Ordinance Chapter 9.56.	Parks and Rec., Econ Dev.	N/A	3	
Action CS1.2	Ensure that the city has the resources and staff to effectively plant and maintain street trees and landscape.	Parks and Rec.	N/A	1	
Action CS1.3	Pursue funding to expand forest management to promote carbon sequestration and reduce threat of intense fires.	Parks and Rec., Fire Department	N/A	2	
Action CS1.4	Implement the City's Street Tree Master Plan 2021 and address barriers to implementation.	Parks and Rec.	N/A	3	
Action CS1.5	Increase urban forest restoration outreach opportunities with frontline and other neighborhood groups.	Parks and Rec., City Manager's Office	N/A	3	
Measure CS-2: Explore new carbon sequestration and carbon capture opportunities.				Metric: Develop new carbon capture opportunities.	
Action CS2.1	Partner to conduct carbon sequestration and carbon capture and storage opportunities in the City and regionally.	City Manager's Office, Parks & Recreation, Econ Dev., Public Works	N/A	1	
Action CS2.2	Pilot and promote carbon sequestering construction materials like low-carbon concrete and mass timber.	City Manager's Office, Econ Dev., Planning	N/A	2-3	
Action CS2.3	Work with local building professionals to expand knowledge and adoption of carbon sequestering building materials and techniques and support reduction of embodied carbon.	Planning, City Manager's Office	N/A	2-3	
Action CS2.4	Partner with local lumber companies to promote sustainable and locally harvested lumber for timber construction to reduce emissions from materials transportation and reduce the price premium of emerging timber construction.	City Manager's Office	N/A	2-3	
Measure CS-3: Increase carbon sequestration by applying compost throughout the community.				Metric: Spread compost throughout community.	

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
Action CS3.1	Explore making compost available at no or low cost to community gardeners. Continue to operate the compost bin rebate program.	Public Works, Parks and Rec.	N/A	1	
Action CS3.2	Engage with community gardeners, agriculture industry, master gardeners and Homeless Garden Project to plan and set goals around compost development and application.	Public Works, Parks and Rec.	N/A	1	
Action CS3.3	Explore collaborating with UCSC to pilot opportunities for regenerative agriculture and permaculture.	City Manager's Office, Public Works, Parks and Rec.	N/A	1	
Action CS3.4	Adopt regenerative landscaping policies and promote trainings to support commercial and residential land owners to better maintain native and carbon sequestering landscapes.	City Manager's Office, Planning, Parks and Rec.	N/A	1-2	
Action CS3.5	Reforest or afforest areas of the City that are currently mowed in line with other City parks and open space plans.	Parks and Rec., Fire Department	N/A	3	
Action CS3.6	Evaluate policies to strengthen current open space habitat preservation.	Parks and Rec.	N/A	3	
Measure CE-1: Prioritize opportunities for greatest climate benefit and economic inclusion especially for minority, veteran and women owned businesses in climate related sectors.				Metric: Utilize greatest climate benefit opportunities that center economic inclusion for minority groups in climate related sectors.	
Action CE1.1	Address pressing issues regarding local purchasing, local hire, supply chain, and unequal conditions in the labor market.	Econ Dev., City Manager's Office	N/A	1	
Action CE1.2	Encourage lifestyle choices that reduce consumption-based emissions including plant-based diets, travel alternatives and local purchasing by leveraging community activation platform and community partners.	City Manager's Office	N/A	1	
Measure CE-2: Support equitable access to high-quality training and workforce development programs in climate related sectors.				Metric: Develop and utilize equitable training and workforce development programs.	
Action CE2.1	Equitably support entrepreneurship, workforce diversity, increased quality of jobs and access to local jobs and business development.	Econ Dev.	N/A	1-3	See Appendix G, <i>Jobs Analysis</i> , for additional detail.
Action CE2.2	Support regional collaboration regarding jobs, housing and Econ Dev..	Econ Dev., City Manager's Office	N/A	1	See Appendix G, <i>Jobs Analysis</i> , for additional detail.

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
Measure M-1: Decarbonize municipally owned buildings by 2030 and remaining municipal facilities by 2045.				Metric: Decarbonization of municipally owned buildings by 2030.	
Action M1.1	Develop a plan to decarbonize, electrify, and improve indoor air quality in all municipal buildings by 2030 and electrify any remaining facilities by 2045.	Public Works, City Manager's Office	N/A	2	
Action M1.2	Evaluate the feasibility and cost of phasing out diesel and natural gas generators and put policy in place to decommission and replace diesel generators with solar and battery storage by 2030 as feasible.	Public Works	N/A	2	
Action M1.3	Adopt and implement a municipal building electrification plan to electrify 100% of municipal buildings by 2040.	Public Works, City Manager's Office	N/A	2-3	
Action M1.4	Adopt and implement a plan for retrofitting all remaining streetlights, facility lighting, and traffic signals to LEDs by 2040.	Public Works	N/A	2-3	
Action M1.5	Implement an "electric first" commitment for building projects and other major retrofits of municipal buildings unless otherwise infeasible.	City Manager's Office, Econ Dev., Public Works, Water Department, Parks and Rec., Finance Department	N/A	3	
Action M1.6	Fund and hire an energy manager and dedicate staff time for obtaining grant funding for municipal electrification.	Public Works, City Manager's Office	N/A	2-3	
Measure M-2: Procure carbon free or 100% renewable electricity for municipal operations by 2030.				Metric: Carbon free or 100% renewable for municipal operations by 2030.	
Action M2.1	Consider opting up to CCCE Prime for 100 percent renewable energy now.	City Manager's Office	N/A	1	
Action M2.2	Continue to purchase CCCE's electricity for all municipal accounts.	Public Works	N/A	1	
Measure M-3: Increase municipally owned renewable energy.				Metric: New municipally owned renewable energy infrastructure.	
Action M3.1	With community partners, redevelop Pacific Station as a net zero energy transit center with mixed use and affordable housing.	Econ Dev.	N/A	3	
Action M3.2	Conduct a feasibility study to understand opportunities for installing additional solar and battery storage, or other renewable energy generation	Public Works, City Manager's Office	N/A	2	

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
	infrastructure at municipally owned facilities (e.g., generators and renewable energy at critical facilities).				
Action M3.3	Identify and implement near term microgrid opportunities that align with resiliency objectives and conduct a microgrid pilot program (e.g., at City Hall for critical loads).	Public Works, City Manager's Office	N/A	2-3	
Measure M-4: Develop and implement a Municipal Transportation Demand Management (TDM) Plan by the end of 2023.				Metric: Completion and implementation of TDM Plan by the end of 2023.	
Action M4.1	Continue to conduct a detailed survey of City staff commute data annually and report findings to employees.	City Manager's Office	N/A	1	See Appendix G, <i>Jobs Analysis</i> , for additional detail.
Action M4.2	Investigate and implement opportunities for installing secure bike parking, fix-it stations, and showers at municipal work sites that do not currently have these facilities.	Public Works	N/A	2-3	
Action M4.3	Expand provision of free public transit passes to all municipal employees as demand necessitates.	Public Works	N/A	1	See Appendix G, <i>Jobs Analysis</i> , for additional detail.
Action M4.4	Develop a remote work program plan with milestones that educates and enables eligible municipal employees to work from home for part of their work schedule including alternative work schedules in order to further sustainability and employee retention goals.	Human Resources, City Manager's Office, Information Technology	N/A	1	See Appendix G, <i>Jobs Analysis</i> , for additional detail.
Action M4.5	Include alternative modes or incentives for employees to bike, walk, and carpool to work.	Human Resources, Public Works	N/A	1	See Appendix G, <i>Jobs Analysis</i> , for additional detail.
Action M4.6	Consider flex-work/co-working satellite offices or access at libraries and in nearby communities like the San Lorenzo Valley or South County to reduce commute times.	Human Resources	N/A	1	See Appendix G, <i>Jobs Analysis</i> , for additional detail.
Action M4.7	Promote opportunities for housing in affordable housing developments to employees to live close to their City work sites.	Econ Dev., City Manager's Office	N/A	1	See Appendix G, <i>Jobs Analysis</i> , for additional detail.
Measure M-5: Electrify or otherwise decarbonize the municipal fleet by 2035				Metric: Decarbonization of municipal fleet by 2035.	
Action M5.1	Adopt and implement the City's Fleet Electrification Plan to convert fossil fuel municipal fleet vehicles to electric or otherwise decarbonize the fleet by 2035, evaluating phasing and the potential for regional bulk procurement.	Public Works	N/A	2-3	

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
Action M5.2	Plan for and install EV ready infrastructure and additional EV chargers in municipal parking lots for fleet, employee and public use, and pilot curbside installations.	Public Works, Planning	N/A	1	See Appendix G, <i>Jobs Analysis</i> , for additional detail.
Action M5.3	Procure 100 percent renewable diesel as a transition fuel until complete fleet electrification in 2035.	Public Works	N/A	3	
Action M5.4	Adopt an electric vehicle first policy, unless infeasible for the use case, for all municipal vehicles by end of 2023.	Finance, Public Works, City Manager's Office	N/A	2-3	
Measure M-6: Electrify or otherwise decarbonize all municipal off-road equipment (landscaping equipment, construction equipment, marine diesel engines) by 2040.				Metric: Decarbonization of all municipal off-road vehicles by 2040.	
Action M6.1	Complete an inventory of all municipal off-road equipment, specifying which equipment types are possible to electrify based on existing technologies, experience and cost, and adopt an implementation plan to decarbonize by 2040.	Public Works, Parks and Rec., Water Department, City Manager's Office	N/A	2	
Action M6.2	Adopt an emissions-free equipment preference purchasing policy for offroad equipment for City departments.	Finance, City Manager's Office	N/A	1	
Action M6.3	Evaluate and procure biofuels (renewable diesel and biogas) to operate municipally owned off-road equipment as feasible for use cases that cannot be electrified. Re-evaluate decarbonization opportunities regularly to ensure biofuels are not being used for equipment that could otherwise be electrified.	Public Works, Parks and Rec., Water Department	N/A	2-3	
Action M6.4	Dedicate staff time to obtain grant funding for decarbonization of off-road equipment.	Parks and Rec., Public Works, City Manager's Office	N/A	2	
Measure M-7: Increase municipal procurement of recovered organic waste products.				Metric: Increased percentage of recovered organic waste products.	
Action M7.1	Require City agencies to procure and apply compost to the exterior of suitable facilities in accordance with landscape management needs and plans.	Public Works, Parks and Rec.	N/A	1	
Action M7.2	Investigate opportunities for generating and procuring recovered organic waste products.	Public Works, Parks and Rec.	N/A	2	
Action M7.3	Update food waste to energy feasibility studies and design and construct facilities to accommodate food waste.	Public Works, City Manager's Office	N/A	2-3	
Measure M-8: Promote efficient municipal water consumption.				Metric: Decreased municipal water consumption.	

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
Action M8.1	Evaluate replacement of existing municipal watering/irrigation infrastructure and schedules as water reduction strategies.	Parks and Rec., Water Department	N/A	1	
Action M8.2	Continue to implement landscaping that utilizes drought-tolerant landscaping techniques for parks, medians, and fields.	Parks and Rec.	N/A	1	
Action M8.3	Evaluate and increase green stormwater infrastructure on City facilities.	Public Works, Parks and Rec.	N/A	1	
Action M8.4	Identify funding to dedicate staff time to obtain grant funding for implementing efficient municipal water consumption.	Parks and Rec., Water Department	N/A	2	
Measure M-9: Support climate action planning.				Metric: Continuation of climate action planning and expansion of climate action goals.	
Action M9.1	Update the Climate Action Plan every 5 years, report annually and integrate climate action into the budget decision making process.	City Manager's Office, Finance	N/A	2	
Action M9.2	Explore adding life cycle emissions into the decision-making process as data becomes available.	City Manager's Office	N/A	1-2	
Action M9.3	Implement a fossil fuel divestment policy and provide update to City Council on status of divestment from fossil fuel banking.	Finance	N/A	2-3	
Action M9.4	Evaluate plant-strong and plant-based diets strategies, procurement and policies.	City Manager's Office	N/A	2	
Action M9.5	Explore inclusion of plant-strong and plant-based diets and menu choices as a measure in the City's Green Business Program.	Public Works	N/A	1	
Action M9.6	Consider staffing, structure and integration of Climate Action Program throughout organization, including consideration of public advisory formats, and modify as needed to meet increasing demands on integration, coordination, reporting and engagement.	City Manager's Office	N/A	2-3	
Action M9.7	Develop a green event checklist/guide and consider conditions of use for special event permits that support climate action.	Public Works, Parks and Rec.	N/A	1	
Action M9.8	Integrate the Climate Action Plan into the City's upcoming Master Investment Strategy/Financial Plan Development, Master Fee Evaluation and Cost Evaluation Plan and its change management process.	Finance, City Manager's Office	N/A	2	
Action M9.9	Update and enforce the City's environmentally preferable purchasing policy to include electric first vehicles and building commitments, as well as plant based/strong diet recommendations.	Finance, City Manager's Office	N/A	1	

ID	Action	Lead Dept.	Potential Funding Tool	Phase	Implementation Notes/Comments
Action M9.10	Monitor supply chain and end of life handling of renewable energy and other climate supportive products and technologies to avoid slave labor, environmental degradation from extraction and/or disposal in frontline communities, and advocate for the elimination of these processes globally.	Finance, City Manager's Office	N/A	1-2	

APPENDIX J:
**City's Health in All
Policies Crosswalk**

Community Well-Being Indicator Metrics (adopted Nov 2021) Supported by Climate Action Plan Measure	Measure Sector	Measure Description
	Building Energy	
- Self-reported General Health Assessment: Good or Better - Renters spending 30% or more of household income on rent - Median household income (2014-18) - People living below poverty level (2014-18) - Children living below poverty level (2014-18) - Families living below poverty level (2014-18) - People 65+ living below poverty level (2014-18) - People 65+ living alone (2014-18) - AARP Livability Index (2018) - Annual particle pollution (2016-18) - Residents that installed higher efficiency water fixture inside their homes (2019) - Residents that learned about local wildlife, birds, or fish (2019) - Residents who reduced storm water and irrigation run-off (2019) - Residents who attended a cleanup event, habitat restoration, or active volunteer day (2019) - Greenhouse gas emissions - Renters spending 30% or more of household income on rent	Measure BE-1	Adopt an electrification ordinance for new residential and commercial construction and inform the community regarding the available technology and benefits of electrification.
- People with a usual source of care (2016-18) - Adults needing AND receiving behavioral health care services (2016-17) - Consumer expenditures: Fruits and vegetables (2020) - Self-reported General Health Assessment: Good or Better (2018) - Poor mental health: Average number of days (2017) - Average annual cost of child care for an infant - family child care home (2018) - Average annual cost of child care for an infant - child care center (2018) - Average annual cost of child care for a preschooler - family child care home (2018) - Average annual cost of child care for a preschooler - child care center (2018) - People living below poverty level (2014-18) - Children living below poverty level (2014-18) - Families living below poverty level (2014-18) - People 65+ living below poverty level (2014-18) - Food insecurity (2018) - Households receiving SNAP with children (2014-18) - Renters spending 30% or more of household income on rent (2014-18) - Households with an internet subscription (2014-18) - Households with one or more types of computing devices - Adults needing AND receiving behavioral health care services (2016-17) - People 65+ living alone (2014-18) - AARP Livability Index (2018) - Support person available in times of need (2019) - Concern about litter (2019) - Annual particle pollution (2016-18) - Residents that installed higher efficiency water fixture inside their homes (2019) - Greenhouse gas emissions - Age-adjusted death rate due to motor vehicle traffic collisions per 100,000 population (2016-18) - Bicycle-involved collision rate per 100,000 population (2017) - Number of housing units - Growth in low-income and affordable housing units - Renters spending 30% or more of household income on rent	Measure BE-2	Electrify 31% of existing residential buildings by 2030 and 53% by 2035
- Annual particle pollution (2016-18) - Average annual cost of child care for a preschooler - child care center (2018) - Average annual cost of child care for an infant - child care center (2018) - Self-reported General Health Assessment: Good or Better (2018)	Measure BE-3	Electrify 26% of existing commercial buildings by 2030 and 45% by 2035

Community Well-Being Indicator Metrics (adopted Nov 2021) Supported by Climate Action Plan Measure	Measure Sector	Measure Description
- Self-reported General Health Assessment: Good or Better (2018) - Average annual cost of child care for an infant - family child care home (2018) - Average annual cost of child care for an infant - child care center (2018) - Average annual cost of child care for a preschooler - family child care home (2018) - Average annual cost of child care for a preschooler - child care center (2018) - Quality of educator-learner relationships at school: Caring adult/7th grade (2017) - Quality of educator-learner relationships at school: Caring adult/9th grade (2017) - Quality of educator-learner relationships at school: Caring adult/11th grade (2017) - People living below poverty level (2014-18) - Children living below poverty level (2014-18) - Families living below poverty level (2014-18) - People 65+ living below poverty level (2014-18) - Food insecurity (2018) - Households receiving SNAP with children (2014-18) - Renters spending 30% of more of household income on rent (2014-18) - Households with an internet subscription (2014-18) - Households with one or more types of computing devices (2014-18) - People 65+ living alone (2014-18) - AARP Livability Index (2018) - Annual particle pollution (2016-18) - Residents that installed higher efficiency water fixture inside their homes (2019) - Greenhouse gas emissions - Renters spending 30% or more of household income on rent - Home affordability - Homeownership – occupied by homeowners (2014-18)	Measure BE-5	Increase resiliency through equitable energy efficiency and local solar programs
- Self-reported General Health Assessment: Good or Better (2018) - Average annual cost of child care for an infant - family child care home (2018) - Average annual cost of child care for an infant - child care center (2018) - Average annual cost of child care for a preschooler - family child care home (2018) - Average annual cost of child care for a preschooler - child care center (2018) - Quality of educator-learner relationships at school: Caring adult/7th grade (2017) - Quality of educator-learner relationships at school: Caring adult/9th grade (2017) - Quality of educator-learner relationships at school: Caring adult/11th grade (2017) - People living below poverty level (2014-18) - Children living below poverty level (2014-18) - Families living below poverty level (2014-18) - People 65+ living below poverty level (2014-18) - Food insecurity (2018) - Households receiving SNAP with children (2014-18) - Renters spending 30% of more of household income on rent (2014-18) - Households with an internet subscription (2014-18) - Households with one or more types of computing devices (2014-18) - People 65+ living alone (2014-18) - AARP Livability Index (2018) - Annual particle pollution (2016-18) - Residents that installed higher efficiency water fixture inside their homes (2019) - Greenhouse gas emissions - Renters spending 30% or more of household income on rent - Home affordability - Homeownership – occupied by homeowners (2014-18)	Measure BE-6	Provide inclusive engagement, equitable process and regional coordination to maximize building electrification benefits.

Community Well-Being Indicator Metrics (adopted Nov 2021) Supported by Climate Action Plan Measure	Measure Sector	Measure Description
	Transportation	
	Measure T-1	Implement programs for active transportation (walking and biking) that achieve 23% of bicycle mode share by 2030 and 30% by 2035
1) Self-reported General Health Assessment: Good or Better 2) Access to affordable, quality educational opportunities 3) Affordability of Early Childhood Education (ECE) 4) Chronic absenteeism from school 5) Connected to school, work, and social activities 6) On-time high school graduation 7) Unemployment 8) Median income 9) People living below poverty level 10) Renters spending 30% of more of household income on rent 11) Children who are resilient 12) People 65+ living below poverty level (2014-18) 13) Families living below poverty level; 14) Support person available in times of need 15) Access to culturally responsive and appropriate forms of expression, arts, music, culture 16) Participation in arts, music, and culture 17) Concern for the environment 18) Air quality 19) Environmental stewardship 20) Greenhouse gas emissions 21) Access to exercise opportunities 22) Mean travel time to work (2014-18) 23) Workers commuting by public transportation (2014-18) 24) Equity dimensions: Age, Gender, Race/Ethnicity 25) Workers who drive alone to work (2014-18) 26) Equity dimensions: Age, Gender, Race/Ethnicity 27) Workers who walk to work (2014-18) 28) Equity dimensions: Age, Gender, Race/Ethnicity 29) Age-adjusted death rate due to motor vehicle traffic collisions per 100,000 population (2016-18) 30) Bicycle-involved collision rate per 100,000 population (2017) 31) Appropriate shelter utilization	Measure T-2	Implement programs for public transportation that achieve 8% of public transit mode share by 2030 and 12% by 2035
Self-reported General Health Assessment: Good or Better Access to affordable, quality educational opportunities Affordability of Early Childhood Education (ECE) Chronic absenteeism from school	Measure T-3	Implement programs and policies to discourage driving single-occupancy passenger vehicles
Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Annual particle pollution (2016-18) Greenhouse gas emissions Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Median household income (2014-18) People living below poverty level (2014-18) Annual particle pollution (2016-18) Greenhouse gas emissions	Measure T-4	Increase passenger electric vehicle (EV) adoption to 35% by 2030 and 40% by 2035

Community Well-Being Indicator Metrics (adopted Nov 2021) Supported by Climate Action Plan Measure	Measure Sector	Measure Description
Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Median household income (2014-18) People living below poverty level (2014-18) Annual particle pollution (2016-18) Greenhouse gas emissions Children living below poverty level (2014-18) Families living below poverty level (2014-18) People 65+ living below poverty level (2014-18)	Measure T-5	Increase commercial EV adoption to 25% by 2030 and 35% by 2035
Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Annual particle pollution (2016-18) Greenhouse gas emissions	Measure T-6	Electrify or otherwise decarbonize 50% of off-road equipment by 2030 and 75% by 2035
Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Annual particle pollution (2016-18) Greenhouse gas emissions Greenhouse gas emissions Access to exercise opportunities (2020) Recreation and fitness facilities per 1,000 population (2016) Adults who walk regularly (2015-16) Mean travel time to work (2014-18) Workers who drive alone to work (2014-18) Workers who walk to work (2014-18) Age-adjusted death rate due to motor vehicle traffic collisions per 100,000 population (2016-18) Bicycle-involved collision rate per 100,000 population (2017) AARP Livability Index (2018) Support person available in times of need (2019) Adults who walk regularly (2015-16) Access to exercise opportunities (2020)	Measure T-7	Advocate for telework policy & infrastructure
Solid Waste and Wastewater		
- Greenhouse gas emissions - Residents that installed higher efficiency water fixture inside their homes (2019) Residents that learned about local wildlife, birds, or fish (2019) Residents who reduced storm water and irrigation run-off (2019) Residents who attended a cleanup event, habitat restoration, or active volunteer day (2019) Residents who installed a rainwater harvesting system Concern about water pollution (2019) Concern about litter (2019) Concern about water availability/saltwater intrusion Annual particle pollution (2016-18) Children living below poverty level (2014-18) Families living below poverty level (2014-18) People 65+ living below poverty level (2014-18) Median household income (2014-18) People living below poverty level (2014-18) Self-reported General Health Assessment: Good or Better (2018)	Measure W-1	Maintain gallons per capita water use for the residential sector at a level that is at least 10% below the state goal of 55 gallons per person per day.

Community Well-Being Indicator Metrics (adopted Nov 2021) Supported by Climate Action Plan Measure	Measure Sector	Measure Description
Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Food insecurity (2018) People 65+ living alone (2014-18) AARP Livability Index (2018) Concern about water pollution (2019) Concern about litter (2019) Concern about water availability/saltwater intrusion Annual particle pollution (2016-18) Residents that learned about local wildlife, birds, or fish (2019) Residents who reduced storm water and irrigation run-off (2019) Residents who attended a cleanup event, habitat restoration, or active volunteer day (2019) Residents who installed a rainwater harvesting system Greenhouse gas emissions	Measure W-2	Reduce organic waste by 75% by 2030 and 90% by 2035; and reduce inorganic waste by 35% by 2030 and 40% by 2035
Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Food insecurity (2018) People 65+ living alone (2014-18) AARP Livability Index (2018) Concern about water pollution (2019) Concern about litter (2019) Concern about water availability/saltwater intrusion Annual particle pollution (2016-18) Residents that learned about local wildlife, birds, or fish (2019) Residents who reduced storm water and irrigation run-off (2019) Residents who attended a cleanup event, habitat restoration, or active volunteer day (2019) Residents who installed a rainwater harvesting system Greenhouse gas emissions	Measure W-3	Establish a long-term target to reduce waste generation growth
Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Food insecurity (2018) People 65+ living alone (2014-18) AARP Livability Index (2018) Concern about water pollution (2019) Concern about litter (2019) Concern about water availability/saltwater intrusion Annual particle pollution (2016-18) Residents that learned about local wildlife, birds, or fish (2019) Residents who reduced storm water and irrigation run-off (2019) Residents who attended a cleanup event, habitat restoration, or active volunteer day (2019) Residents who installed a rainwater harvesting system Greenhouse gas emissions	Measure W-4	Reduce or capture wastewater process emissions
Carbon Sequestration		

Community Well-Being Indicator Metrics (adopted Nov 2021) Supported by Climate Action Plan Measure	Measure Sector	Measure Description
Workers who walk to work (2014-18) Age-adjusted death rate due to motor vehicle traffic collisions per 100,000 population (2016-18) Bicycle-involved collision rate per 100,000 population (2017) Concern about crime: Very concerned (2019) Violent crime rate per 100,000 population (2019) Suspected gang membership (2019) Feelings of safety at school Adults who walk regularly (2015-16) Access to exercise opportunities (2020) Children and teens who engage in regular physical activity (2015-16) Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) People 65+ living alone (2014-18) AARP Livability Index (2018) Annual particle pollution (2016-18) Residents that learned about local wildlife, birds, or fish (2019) Residents who reduced storm water and irrigation run-off (2019) Residents who attended a cleanup event, habitat restoration, or active volunteer day (2019) Residents who installed a rainwater harvesting system Coastal bluff erosion Greenhouse gas emissions	Measure CS-1	Develop Urban Forest Master Plan and plant 3,000 new trees by 2030
Workers who walk to work (2014-18) Age-adjusted death rate due to motor vehicle traffic collisions per 100,000 population (2016-18) Bicycle-involved collision rate per 100,000 population (2017) Concern about crime: Very concerned (2019) Violent crime rate per 100,000 population (2019) Suspected gang membership (2019) Feelings of safety at school Adults who walk regularly (2015-16) Access to exercise opportunities (2020) Children and teens who engage in regular physical activity (2015-16) Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) People 65+ living alone (2014-18) AARP Livability Index (2018) Annual particle pollution (2016-18) Residents that learned about local wildlife, birds, or fish (2019) Residents who reduced storm water and irrigation run-off (2019) Residents who attended a cleanup event, habitat restoration, or active volunteer day (2019) Residents who installed a rainwater harvesting system Coastal bluff erosion Greenhouse gas emissions	Measure CS-2	Explore new carbon sequestration and carbon capture opportunities
Greenhouse gas emissions Annual particle pollution (2016-18) Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) People 65+ living alone (2014-18)	Measure CS-3	Increase carbon sequestration by applying compost throughout the community.

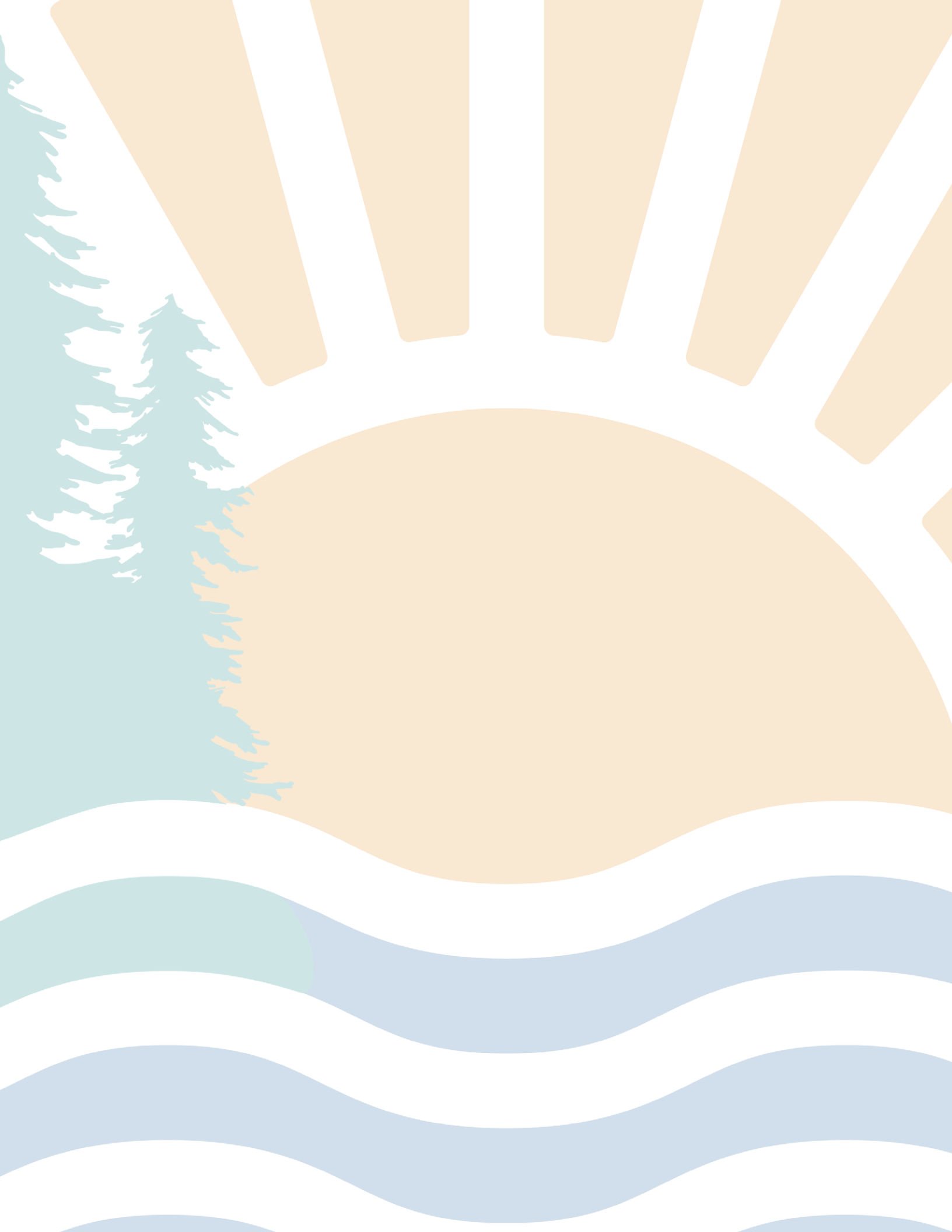
Community Well-Being Indicator Metrics (adopted Nov 2021) Supported by Climate Action Plan Measure	Measure Sector	Measure Description
	Municipal	
Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Annual particle pollution (2016-18) Greenhouse gas emissions	Measure M-1	Decarbonize municipal buildings by 2030 and remaining municipal facilities by 2045
Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Annual particle pollution (2016-18) Greenhouse gas emissions Average annual cost of child care for an infant - child care center (2018) Concern about litter (2019)	Measure M-2	Procure carbon free or 100% renewable electricity for municipal operations by 2030
Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Annual particle pollution (2016-18) Greenhouse gas emissions	Measure M-3	Increase municipally-owned renewable energy

Community Well-Being Indicator Metrics (adopted Nov 2021) Supported by Climate Action Plan Measure	Measure Sector	Measure Description
Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Annual particle pollution (2016-18) Greenhouse gas emissions People with a usual source of care (2016-18) Adults needing AND receiving behavioral health care services (2016-17) Adult fast food consumption (2016) Adults who walk regularly (2015-16) Access to exercise opportunities (2020) Children and teens who engage in regular physical activity (2015-16) Chronic absenteeism from school (2018-19) Youth not in school or working (2014-18) Students prepared for college/career (2019) High school graduation (2018-19) Unemployed workers in civilian labor force (Aug 2020) Median household income (2014-18) People living below poverty level (2014-18) Children living below poverty level (2014-18) Families living below poverty level (2014-18) People 65+ living below poverty level (2014-18) Food insecurity (2018) Households receiving SNAP with children (2014-18) Renters spending 30% or more of household income on rent (2014-18) Households with an internet subscription (2014-18) Households with one or more types of computing devices (2014-18) Homeownership – occupied by homeowners (2014-18) Adults needing AND receiving behavioral health care services (2016-17) People 65+ living alone (2014-18) AARP Livability Index (2018) Support person available in times of need (2019) Concern about water pollution (2019) Concern about litter (2019) Concern about water availability/saltwater intrusion Annual particle pollution (2016-18) Residents that installed higher efficiency water fixture inside their homes (2019) Residents that learned about local wildlife, birds, or fish (2019) Residents who reduced storm water and irrigation run-off (2019) Residents who attended a cleanup event, habitat restoration, or active volunteer day (2019) Residents who installed a rainwater harvesting system Coastal bluff erosion Greenhouse gas emissions Access to exercise opportunities (2020) Recreation and fitness facilities per 1,000 population (2016) Adults who walk regularly (2015-16) Mean travel time to work (2014-18) Workers commuting by public transportation (2014-18) Workers who drive alone to work (2014-18) Workers who walk to work (2014-18) Age-adjusted death rate due to motor vehicle traffic collisions per 100,000 population (2016-18) Bicycle-involved collision rate per 100,000 population (2017) Renters spending 30% or more of household income on rent	Measure M-4	Develop and implement an Municipal Transportation Demand Management (TDM) Plan by end of 2023

Community Well-Being Indicator Metrics (adopted Nov 2021) Supported by Climate Action Plan Measure	Measure Sector	Measure Description
Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Annual particle pollution (2016-18) Greenhouse gas emissions	Measure M-5	Electrify or otherwise decarbonize the municipal fleet by 2040
Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Annual particle pollution (2016-18) Greenhouse gas emissions Workers who walk to work (2014-18) AARP Livability Index (2018) Adults needing AND receiving behavioral health care services (2016-17)	Measure M-6	Electrify or otherwise decarbonize all municipal off-road equipment by 2040
Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Annual particle pollution (2016-18) Greenhouse gas emissions Concern about water pollution (2019) Concern about litter (2019) Concern about water availability/saltwater intrusion Residents that installed higher efficiency water fixture inside their homes (2019) Residents that learned about local wildlife, birds, or fish (2019) Residents who reduced storm water and irrigation run-off (2019) Residents who attended a cleanup event, habitat restoration, or active volunteer day (2019) Residents who installed a rainwater harvesting system	Measure M-7	Increase municipal procurement of recovered organics waste products
Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Concern about water pollution (2019) Annual particle pollution (2016-18) Greenhouse gas emissions Concern about water availability/saltwater intrusion	Measure M-8	Promote efficient municipal water consumption

Community Well-Being Indicator Metrics (adopted Nov 2021) Supported by Climate Action Plan Measure	Measure Sector	Measure Description
Adults (19-64), any type of health insurance (2018) Children under age 19, any type of health insurance coverage (2018) People with a usual source of care (2016-18) Adults needing AND receiving behavioral health care services (2016-17) Consumer expenditures: Fruits and vegetables (2020) Adult fast food consumption (2016) Adults who walk regularly (2015-16) Access to exercise opportunities (2020) Children and teens who engage in regular physical activity (2015-16) Adults who binge drink (2015) Teens who have used alcohol (2011-12) Liquor store density per 100,000 population (2018) Babies with low birth weight (2016-18) Self-reported General Health Assessment: Good or Better (2018) Poor mental health: Average number of days (2017) Children in working families that don't have licensed child care (2019) Average annual cost of child care for an infant - family child care home (2018) Average annual cost of child care for an infant - child care center (2018) Average annual cost of child care for a preschooler - family child care home (2018) Average annual cost of child care for a preschooler - child care center (2018) Quality of educator-learner relationships at school: Caring adult/7th grade (2017) Quality of educator-learner relationships at school: Caring adult/9th grade (2017) Quality of educator-learner relationships at school: Caring adult/11th grade (2017) Chronic absenteeism from school (2018-19) Youth not in school or working (2014-18) 3rd grade students proficient in English/Language Arts (2019) 3rd grade students proficient in math (2019) 8th grade students proficient in English/Language Arts (2019) 8th grade students proficient in math (2019) 11th grade students proficient in English/Language Arts (2019) 11th grade students proficient in math (2019) Students prepared for college/career (2019) High school graduation (2018-19) Unemployed workers in civilian labor force (Aug 2020) Median household income (2014-18) People living below poverty level (2014-18) Children living below poverty level (2014-18) Families living below poverty level (2014-18) People 65+ living below poverty level (2014-18) Food insecurity (2018) Households receiving SNAP with children (2014-18) Renters spending 30% or more of household income on rent (2014-18) Households with an internet subscription (2014-18) Households with one or more types of computing devices (2014-18) Homeownership – occupied by homeowners (2014-18) Substantiated child abuse rate per 1,000 children (2019) Foster care entry among infants and toddlers per 1,000 children 0-3 years old (2018)Children with 2 or more Adverse Childhood Experiences, parent reported (2016-18) via http://kidsdata.org Prevalence of 4+ ACEs during childhood, adult retrospective (2011-17) via http://kidsdata.org People 65+ living alone (2014-18) AARP Livability Index (2018) Support person available in times of need (2019)	Measure M-9	Support climate action planning

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City of Santa Cruz

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**Resilient
Together**