CITY OF REDLANDS

Climate Action Plan 2050

ADOPTED JULY 1, 2025

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Prepared for the City of Redlands

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Executive Summary

Redlands Climate Action Plan Update

The Redlands Climate Action Plan (CAP) was adopted on December 5, 2017, to emphasize the City's commitment to reducing greenhouse gas (GHG) emissions and demonstrate how the City will comply with the State of California's GHG emission reduction targets. As a Qualified GHG Reduction Strategy, the CAP also enables streamlined environmental review of future development projects, in accordance with the California Environmental Quality Act (CEQA). The 2017 CAP included:

- An inventory of the city's GHG emissions (referred to as a "community-wide" GHG inventory);
- Forecasts of future GHG emissions for 2030 and 2035;
- Monitoring and reporting processes to ensure targets (for 2030 and 2035) are met; and
- Options for reducing GHG emissions beyond State requirements that could be adopted at a future date, if so needed or desired.

Since the time that CAP was prepared, the State of California has updated its GHG reduction targets and conditions in Redlands have also evolved. This updated CAP establishes new targets consistent with State goals, evaluates the City's progress since the last CAP, projects GHG emissions through 2050 and assesses the City's capacity to support the State's climate objectives, including an ambitious goal of carbon neutrality by 2045. The GHG Reduction Strategy of the CAP includes actions that will help the City meet and/or exceed State requirements.

Local Government Actions for Climate Change

The updated Redlands CAP reflects the latest guidance from the California Air Resources Board (CARB) as reflected in the 2022 Scoping Plan, which is designed to implement the State's GHG emission reduction targets set in Assembly Bill (AB) 32, Executive Order (EO) S-3-15, and Senate Bill (SB) 32. Although previous guidance (i.e., in the 2017 Scoping Plan, which is now superseded by the 2022 Scoping Plan) provided efficiency metrics for local governments to implement these targets, this is no longer the primary approach recommended by CARB; rather, local governments are encouraged to adopt CAPs and implement local actions that support State efforts to electrify transportation, decarbonize buildings, and reduce vehicle miles traveled (VMT), among other GHG-reducing measures. The GHG Reduction Strategy outlined in this updated CAP aligns with this new approach. Nevertheless, quantified metrics, including the GHG emissions inventory and forecasts, remain essential to climate action planning (as described below).

Greenhouse Gas Emissions Inventory, Forecast, and Mitigation

GHG emissions inventories are used to measure a community's progress toward reducing GHGs. AB 32 established a statewide target of reducing GHG emissions to 1990 levels by 2020. California has exceeded this now-past target and has already established longer-term goals for 2030 (in SB 32) and 2045 (in AB 1279). The previous target for 2050 (80 percent below 1990 levels) is assumed to be in line with the State-adopted goal to achieve carbon neutrality (85 percent statewide reductions below 1990 levels) by 2045.

The earliest available GHG emissions inventory for the City of Redlands is 2015, as prepared for the 2017 CAP, which also included forecasts for 2030 and 2035, in accordance with the State target under SB 32 and the Redlands General Plan 2035. The updated Redlands CAP includes a new baseline GHG inventory for 2022 and updated emissions forecasts for 2030 and 2050. It is noted that the 2015 GHG inventory has been adjusted using the same methodology as the 2022, 2030, and 2050 inventories to allow valid comparison and measure progress since adoption of the 2017 CAP, due to change in data accounting methods/models and unavailability of tools used to prepare the 2015 GHG inventory for the 2017 CAP.

The 2022 GHG emissions inventory and 2030 and 2050 forecasts cover direct GHG emissions from sources within the boundaries of Redlands, including fuel combusted and solid waste generated within the city. Indirect emissions associated with the consumption of energy in Redlands that is generated outside the borders of the city (such as electricity, with no end point emissions) are also included. **Table ES-1** shows the 2022 emissions inventory and 2030 and 2050 adjusted business-as-usual (BAU) emissions forecasts which reflect reasonably foreseeable future conditions with the land use and transportation network modeled by the San Bernardino Travel Activity Model Plus (SBTAM+) and includes the effect of state-level actions and efforts that would reduce GHG emissions in Redlands.

FIGURE ES-1: PROJECTED TRAJECTORY, TARGETS, AND REQUIRED REDUCTION, 2015-2050

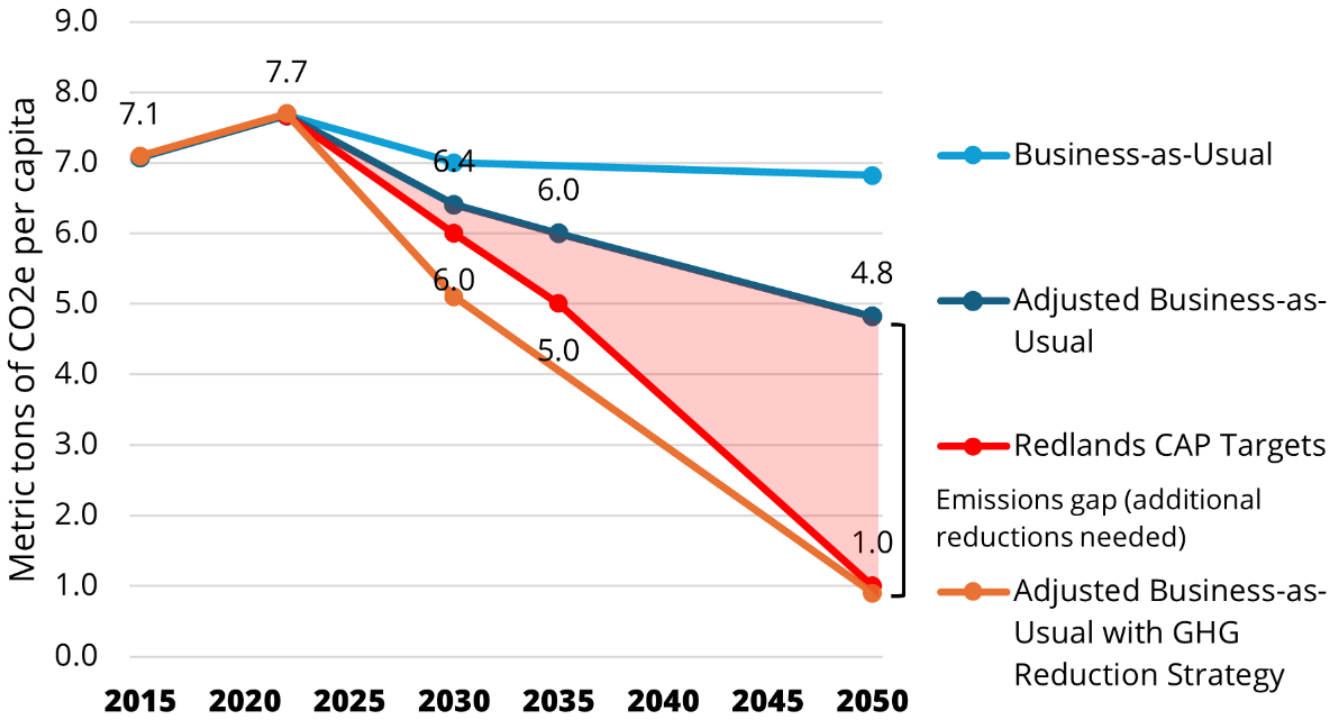

Table ES-1 and **Figure ES-1** show the city's current trajectory of population growth, total GHG emissions, and per capita emissions. Targets for per capital GHG emissions for 2030 and 2050 aligned with State goals are also presented. As can be seen, current projections indicate that GHG emissions in Redlands will exceed targets for both 2030 and 2050. In particular, significant additional GHG reductions will be required to align with the State's carbon neutrality goal and meet the proposed new long-term target for the Redlands CAP Update by 2050. In order to meet these goals, the updated CAP introduces a GHG Reduction Strategy with measures and performance standards that would collectively achieve the specified emissions levels. **Table ES-1** and **Figure ES-1** also show how the GHG Reduction Strategy would meet the CAP's target metrics and reduction levels. The CAP places the biggest emphasis on mitigation through on-site GHG-reducing design features, vehicle-miles traveled (VMT) reduction, access to transit or shared mobility services, building decarbonization, and electric vehicle (EV) charging.

TABLE ES-1: PROJECTED TRAJECTORY, TARGETS, AND REQUIRED REDUCTION, 2015-2050

METRIC	2015 BASELINE1	2022 BASELINE	2030 ADJ. BAU2	2050 ADJ. BAU2	2030 ADJ. BAU WITH GHG REDUCTION STRATEGY	2050 ADJ. BAU WITH GHG REDUCTION STRATEGY
Projected Trajectory						
Population[3]	70,310	72,259	75,243	82,228	75,243	82,228
Total annual GHG emissions (MTCO2e)	497,625	554,413	481,891	396,512	385,188	70,474
Per capita emissions (MTCO2e per capita)	7.1	7.7	6.4	4.8	5.1	0.9
Target Metrics and Reduction Levels						
GHG targets (MTCO2e per capita)[4]	-	-	6.0	1.0	6.0	1.0
Emissions level if target is achieved (MTCO2e)[5]	-	-	451,458	82,228	451,458	82,228
Additional emissions reductions needed to achieve target (MTCO2e)	**-**	**-**	**-30,433**	**-314,284**	**0**	**0**

1. Emissions for 2015 are adjusted from the 2015 GHG Inventory included in the 2017 CAP using the same methodology as the 2022 baseline inventory to allow for valid comparison.
2. Adj. BAU = Adjusted Business-As-Usual forecast.
3. Population for 2015 and 2022 are from California Department of Finance estimates (Tables E-4 and E-5). Population for 2030 and 2050 are as modeled by SBTAM+, consistent with regional projections under Connect SoCal 2024. All population values are consistent with those used to calculate the GHG inventories.
4. The 2017 CAP target for 2035 is not shown because an updated GHG inventory forecast has not been quantified for that year, so gap analysis cannot be conducted.
5. Product of the GHG reduction targets and the population shown in the table.

Source: Source: Dyett & Bhatia, 2024

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1 Introduction

1.1 Climate Change and Greenhouse Gases Overview

Climate Change and Climate Planning

Evolving climate science is continually improving our understanding of the climate system and how each of its components have changed over time. New climate model simulations, analyses, and sophisticated, evidence-based methods have helped to illustrate the extent of human influence on a range of climate variables, including weather and climate extremes.

> Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming, with global surface temperature reaching 1.1°C above 1850-1900 in 2011-2020.
>
> Global greenhouse gas emissions have continued to increase, with unequal historical and ongoing contributions arising from unsustainable energy use, land use and land-use change, lifestyles and patterns of consumption and production across regions, between and within countries, and among individuals.
>
> *Intergovernmental Panel on Climate Change*[1]

The main driver of climate change is the concentration of greenhouse gases (GHGs) in the atmosphere from human activities, especially transportation and energy used in buildings. The increase in atmospheric GHGs has led to increase in global temperatures and changes in precipitation patterns, with cascading impacts on other climate conditions. California, with its diverse geography and range of climates, has been recognized as one of the most "climate-challenged" regions of North America that faces warming temperatures, heat waves, reduced snowpack and droughts, wildfires, coastal and inland flooding, and sea level rise, among other effects. However, the State is also a leader in climate action and adaptation planning to address these impacts and improve resiliency and equity in communities throughout California.[2]

State guidance and objectives have also evolved in response to the latest climate science. Since Assembly Bill (AB) 32 was passed in 2006, California has achieved a reduction in GHG emissions down to 1990 levels by 2020 and is on track to achieving 40 percent below 1990 levels by 2030, per Senate Bill (SB) 32. Executive Orders (EOs) S-3-05 and B-30-15 follow this downward trajectory, striving toward a GHG emissions reduction of 80 percent below 1990 levels by 2050.

Yet, the severity of the climate crisis has become more evident, with communities already feeling the impact of more frequent and severe climate events such as "wildfire seasons," "atmospheric river" storms, and heat waves. California has taken a firm stance against the continuation of business as usual by aiming for a more aggressive target of statewide carbon neutrality no later than 2045 (per EO B-55-18 and AB 1279), which translates to a reduction of GHG emissions to at least 85 percent below 1990 levels.[3]

1 Intergovernmental Panel on Climate Change. "Summary for Policymakers." Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, 1-34. https://doi.org/10.59327/IPCC/AR6-9789291691647.001.

2 California Air Resources Board. 2022 Scoping Plan for Achieving Carbon Neutrality. November 16, 2022. Accessed October 10, 2023. https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp.pdf.

3 California Air Resources Board. 2022 Scoping Plan

Climate Equity

Comprehensive mitigation and adaptation solutions that address both the causes and impacts of climate change will be required to meet California's ambitious carbon neutrality goal. Climate equity is also a key component of the State's vision for a more sustainable and equitable future. Along with public health policies in the General Plan, the GHG reduction strategies included in this CAP seek to benefit communities hardest hit by climate impacts and ongoing pollution from the use of fossil fuels. The CAP also balances co-benefits to support the decarbonization of transportation infrastructure and built systems across all sectors of the economy.

The GHG Reduction Strategy (Chapter 4) has been informed and prioritized based on input from the community, stakeholders, and decision-makers through two community workshops, an online community survey, and two stakeholder group input meetings. In general, input from community members revealed ideas that supported safety improvements, expanded bike lanes, and more public transit options in order to reduce private vehicle reliance. Climate resilience efforts like retrofitting older buildings, increasing shading, and promoting community gardens also received strong backing. Community members highlighted the need for a more sustainable, equitable approach to climate action in Redlands, including ambitious greenhouse gas reduction goals and improved air quality initiatives.

This CAP's GHG Reduction Strategy also maximizes co-benefits based on top community priorities, such as shading from trees that lower energy demand to cool buildings, among other environmental benefits. The City also aims to prioritize such approaches in low-income areas, where residents may not be able to afford energy efficiency upgrades. Co-benefits from the GHG Reduction Strategy also communicate the value of complementary actions like landscape water efficiency, as well as potential to strengthen climate resilience and adaptation.

for Achieving Carbon Neutrality. November 16, 2022. Accessed October 10, 2023. https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp.pdf.

1.2 Scope and Purpose

State law requires local jurisdictions to address climate vulnerability and incorporate climate adaptation policies into their planning. Many jurisdictions also develop greenhouse gas mitigation or climate action plans to achieve local, regional, and State emission reduction goals. In 2017, Redlands approved its first Climate Action Plan (CAP), which focused on reinforcing the City's commitment to reducing GHG emissions, and demonstrating how the City planned to comply with State of California GHG emission reduction standards.

However, since the 2017 CAP was prepared, the State has passed new laws that require a more aggressive GHG reduction trajectory than was previously outlined in EO S-03-05. Assembly Bill (AB) 1279 codifies the goal set in EO B-55-18 to achieve statewide carbon neutrality no later than 2045, translating to statewide GHG emissions reductions to at least 85 percent below 1990 levels by 2045.

Further, the City has not monitored progress since the 2017 CAP was prepared to ensure that it is on the path to attaining the GHG reduction targets for 2030 and 2035. The 2017 Redlands CAP states the City will update the GHG inventory periodically. For continuity, the inventory updates will tally emissions from the same sectors analyzed in Chapter 2 of the original CAP. If an updated inventory reveals that Redlands is not making adequate progress toward meeting the GHG target, or that new technologies and programs emerge that warrant inclusion in the CAP, the City will adjust the CAP by modifying, adding, and/or replacing policies in the General Plan or elsewhere, or incorporating measure(s) outlined in Chapter 4.

As such, the purpose of the Redlands Climate Action Plan 2050 is to outline practical, innovative, and cost-effective methods of achieving targets that support the State's latest GHG reduction objectives (discussed further in Section 1.3).

This update to the 2017 CAP reflects the latest climate science with updated baseline and forecasted GHG emissions inventories, as well as aligns with new City and State targets for 2030 and 2045.

To enable streamlining, this plan fulfills the requirements for a CAP that is compliant with the California Environmental Quality Act (CEQA) and supports the State's GHG and vehicle-miles traveled (VMT) reduction goals. The following sections meet the criteria for a CEQA-qualified plan:

- **Chapter 2** quantifies GHG emissions, both existing and projected over a specific period, resulting from activities within the City of Redlands. This section also identifies and analyzes the GHG emissions resulting from specific actions or categories of actions anticipated within the City of Redlands.
- **Chapter 3** establishes a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the General Plan would not be cumulatively considerable.
- **Chapter 4** specifies the measures and performance standards, that would collectively achieve the specified emissions level (i.e., GHG reduction targets established in Section 3.1), as demonstrated by substantial evidence, if implemented on a project-by-project basis.
- **Chapter 5** includes a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels.

1.3 California GHG Legal Framework

This section describes the key State legislation that sets the framework for the CAP.

Assembly Bill 32 and the Scoping Plan

Assembly Bill (AB) 32, or the Global Warming Solutions Act of 2006, is a landmark legislation that recognized the significant detrimental effects that human activity has on the climate and set the stage for California to transition to a sustainable, low-carbon future by taking a comprehensive, long-term approach to address climate change.[4] AB 32 established the State's first GHG reduction target to reach 1990 levels by 2020.

Technological feasibility and cost-effectiveness are also important factors of AB 32, which requires the California Air Resources Board (CARB) to adopt regulations that most effectively achieve GHG emissions reductions while maintaining a robust economy. Every five years, CARB develops a Scoping Plan that lays out California's strategy for meeting the goals. The Scoping Plan[5] was first approved in 2008 and has since been updated in 2014, 2017, and 2022. The current 2022 Scoping Plan reflects the latest regulations and outlines the State's plan to achieve both its short- and long-term GHG reduction targets, described in the next sections.

The Scoping Plan is also an important guiding document that contains recommendations from CARB for local governments to support the State's efforts to reduce GHG emissions. In

4 California Air Resources Board. "AB 32 Global Warming Solutions Act of 2006." Last updated September 28, 2018. Accessed June 21, 2024. https://ww2.arb.ca.gov/resources/fact-sheets/ab-32-global-warming-solutions-act-2006.

5 California Air Resources Board. 2022 Scoping Plan for Achieving Carbon Neutrality. November 16, 2022. Accessed October 10, 2023. https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp.pdf.

doing so, local governments can demonstrate alignment with the State's GHG reduction goals. The Redlands CAP has been developed based on such guidance from CARB in the 2022 Scoping Plan as a means to prepare a CEQA-qualified GHG reduction plan.

Senate Bill 32 – 2030 Target

Passed in 2016, Senate Bill (SB) 32 codifies the direction in Executive Order (EO) B-30-15 to extend the GHG reduction target set in AB 32 to 40 percent below 1990 levels by 2030. This short-term target was established as a marker along the way to longer-term reduction goals that align with the scientifically established emissions levels needed in the U.S. to limit global warming below the threshold at which there would likely be major climate disruptions such as super droughts and rising sea levels.[6]

Assembly Bill 1279 – Carbon Neutrality by 2045

Passed in 2022, AB 1279 codifies the long-term carbon neutrality goal initially outlined in EO B-55-18. Specifically, the bill requires California to achieve statewide net zero GHG emissions as soon as possible but no later than 2045, then maintain carbon neutrality thereafter. In similar terms to previously established goals, the 2045 target would be achieved if the state reduces its emissions to 85 percent below 1990 levels.[7]

Carbon neutrality is an ambitious but necessary goal to address climate change. The 2022 Scoping Plan recognizes that GHG-generating sources and activities will not be entirely eliminated due to technological and/or economic reasons. Rather, achieving net zero emissions depends on the ability of natural and working lands and carbon dioxide removal technologies throughout the state to remove carbon from the atmosphere. In most cases, such carbon sequestration and removal are limited at a local level or not within the local government's control; this is true for Redlands. This limitation is acknowledged in the 2022 Scoping Plan, which directs local governments to determine locally appropriate targets that support the State's climate objectives, without necessarily achieving carbon neutrality themselves.

1.4 Redlands Community Profile

The health and economic impacts of climate change are not experienced equally, or in the same way, by all members of the population. Factors such as where people live, their access to food and reliable transportation, occupation, overall health, daily activities, and history of exposure to environmental burdens can all affect individual and community levels of exposure, degree of sensitivity, and the ability to adapt to the effects of climate change.[8] Climate change effects interact with a complex socio-cultural landscape in which various groups already experience different levels of access to economic, health, and political resources. Some of these resources include financial assets, stable housing, food, insurance, social services, transportation, communication skills, social networks, and the knowledge necessary to manage economic and climate risks. Historically, many of these resources have been out of reach to the socially marginalized.[9]

6 California Office of Governor. Brown, Edmund G., Jr. "Governor Brown Establishes Most Ambitious Greenhouse Gas Reduction Target in North America." April 29, 2015. https://archive.gov.ca.gov/archive/gov39/2015/04/29/news18938/index.html.

7 California State Assembly Democratic Caucus. District 66. Muratsuchi, Al. "Governor Newsom signs Assemblymember Muratsuchi's AB 1279, the California Climate Crisis Act." September 16, 2022. https://a66.asmdc.org/press-releases/20220916-governor-newsom-signs-assemblymember-muratsuchis-ab-1279-california-climate.

8 Maxwell, K., Julius S., Grambsch A., Kosmal A., Larson L., Sonti, N., Built Environment, Urban Systems, and Cities. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II (Washington D.C., 2018). Oct 28 2019: https://nca2018.globalchange.gov/chapter/11/.

9 Thomas K, Hardy RD, Lazrus H, Mendez M, Orlove B, Rivera-Collazo I, Roberts JT, Rockman M, Warner BP, Winthrop R. "Explaining differential vulnerability to climate change: A social science review." WIREs Climate Change

FIGURE 1-1: TIMELINE OF KEY STATE CLIMATE REGULATIONS

2006

AB 32 sets the first statewide goal to reduce GHG emissions by to 1990 levels by 2020.

2008

CARB adopts its first Scoping Plan that outlines actions to achieve the 2020 target.

2011

SB X1-2 increases Renewable Portfolio Standards for 20% of retail electricity to be from renewable resources by 2010 and 33% by 2020.

AB 341 requires local jurisidictions to reduce, recycle, or compost 50% of solid waste by 2000 and sets a statewide policy goal of 75% solid waste diversion by 2020.

2012

CARB adopts the Advanced Clean Cars program that set fuel economy standards, low-emission vehicle criteria, and zero-emission vehicle regulations through 2025.

2014

CARB approves the 2013 scoping plan, which sets the gorundwork for achieving the 2020 target and new longer-term targets.

2015

SB 350 accelerates the Renewable Portfolio Standards program to 50% by 2030.

2018

SB 100 further accelerates Renwable Portfolio Standards to 60% by 2030 and sets a goal to power 100% of retail electricity with renewable and zero-carbon resources by 2045.

2020

California meets its AB 32 target and continues to be on track for 2030.

EO N-79-20 sets a course to end sales of internal combustion passenger vehicles by 2035. Transition to zero-emission trucks and off-road vehicles and equipment operations would follow.

2022

AB 1279 codifies EO B-55-18, establishing the stastewide goal of achieving carbon neutrality, or 85% reduction below 1990 levels, by 2045.

CARB approves the 2022 Scoping Plan, laying out the State's pathway to achieving carbon neutrality.

CPUC adopts Renewable Gas Standards (biomethane procurement targets per SB 1440) for natural gas utilites to collectively displace some of the fossil fuel natural gas supplied to core customers with biomethane by 2025 and 2030.

CARB approves the Advanced Clean Cars II rule, which codifies EO N-79-20 and requires automakers to reach 100% sales of zero-emission or plug-in hybrid electric light-duty vehicles by 2035.

Within the United States, those groups that have been found to generally be more socially vulnerable to climate change include very low-income communities, communities of color, older adults, young children, people with physical and mental illness, people with cognitive and physical disabilities, immigrants, those experiencing discrimination, the socially isolated, those with limited transportation options, and those with inadequate housing.[10,11,12] The current City of Redlands 2021-2029 Housing Element has developed a community profile to identify such socially vulnerable groups in order to administer its programs and activities in a manner to affirmatively further fair housing (AFFH).

As detailed in the Housing Element's AFFH analysis, segregation patterns exist in the city, including the concentration of minority populations in central north Redlands. In addition, there is a north/south segregation by race/ethnicity and income with higher-income and predominantly white residents located in southern Redlands. Contributing factors to the areas of high segregation and poverty include the older housing stock and buildings in the tract, limited housing opportunities for higher density and more affordable housing elsewhere in the city, and higher air pollution and diesel particulate pollution due to the proximity of I-10. As such, priority factors the City aims to address include the north/south pattern of segregation; inequal access to opportunities, especially in the downtown area and additional areas of high segregation and poverty; and addressing disproportionate housing needs, including more units available to lower-incomes. These factors limit fair housing choice and mobility the most, which also makes affected community members more susceptible to the health and economic impacts of climate change.

Local Climate Action

In accordance with the 2017 CAP and 2035 General Plan, Redlands has implemented several local programs and actions to aid in the mitigation of GHG emissions. Redlands has endorsed the US Mayors Climate Protection Agreement, effectively establishing City policy to pursue environmental stewardship pertaining to a broad array of environmental programs and initiatives. The City has committed to exceed the target of reducing global warming pollution levels to seven percent below 1990 levels. The green policy initiatives that will be necessary to achieve this goal include land use policies that promote walkable communities, preserve open space, and reduce sprawl; amenities that promote alternative transportation such as public transit, bicycle use, etc.; use of alternative sources of energy and energy efficiency; sustainable building practices such as Leadership in Energy and Environmental Design (LEED) development; increased recycling rates; and the promotion of healthy urban forests and shade trees. The City has implemented several other programs and actions to reduce energy use, increase efficiency and reduce waste:

- *Electrical generation from landfill gas*: The City installed a landfill gas (LFG) collection system and constructed a cogeneration facility for electricity generation from

(2019). Nov 8 2019: https://onlinelibrary.wiley.com/doi/full/10.1002/wcc.565.

10 Maxwell, K., Julius S., Grambsch A., Kosmal A., Larson L., Sonti, N., Built Environment, Urban Systems, and Cities. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II (Washington D.C., 2018). Oct 28 2019: https://nca2018.globalchange.gov/chapter/14/.

11 U.S. Global Change Research Program, Climate and Health Assessment (Washington D.C., 2016). Oct 28 2019: https://health2016.globalchange.gov/populations-concern.

12 Benevolenza MA, DeRigne L. "The impact of climate change and natural disasters on vulnerable populations: A systematic review of literature." Journal of Human Behavior in the Social Environment (2019). Nov 8 2019: https://www.tandfonline.com/doi/abs/10.1080/10911359.2018.1527739?journalCode=whum20.

the LFG. This system currently generates approximately 700 KW to provide approximately 60-70 percent of the electrical demand of the Wastewater Reclamation Facility. The City temporarily discontinued use of the facility as a result of it failing a "smog test" and new AQMD regulations but has since come back online. The 2035 General Plan contains policies directed at the investment in new infrastructure and technology for the reuse of methane gas emissions from the landfill.

- *Conversion of the solid waste fleet to liquefied natural gas/compressed natural gas (LNG/CNG) alternative fuel*: The City has replaced all of its trucks with LNG/CNG vehicles.
- *Expansion of City recycling programs*: As a result of expanded programs, and implementation of best practices and technology, the California Street Landfill has an extended lifespan of 2053.
- *Ride share*: The City promotes ride sharing among its employees through the Ride Share Time Off program.
- *LED streetlights*: The Municipal Utilities and Engineering Department installed LED lights in all existing traffic signals in the City and has established specifications for requiring LED lights in all new traffic signals. This action resulted in a 90 percent reduction in energy usage per traffic signal with a 3.7-year payback for the cost of installation. The City has been converting non-traffic streetlights and requires that LED light be installed during right-of-way improvement projects.
- *Conversion of park irrigation controllers to SMART Controllers*: In addition to saving water through changes in the park irrigation control system, the City also has a program to provide irrigation timer scheduling assistance to residents and businesses.
- *Adoption of a Water Efficient Landscape Ordinance*: Chapter 15.54 of the Municipal Code addresses water-efficient landscape requirements throughout the City. This Chapter of the Code establishes a structure for planning, designing, installing, maintaining, and managing water efficient landscapes in new construction and rehabilitated projects.

1.5 Planning Process

How This Plan Was Prepared

The CAP reflects the City's commitment to the core values presented in the General Plan, and links elements of the plan—including Distinctive City, Livable Community, Connected City, Healthy Community, and Sustainability—with the goal of GHG reduction. The CAP also evaluates the City's progress toward meeting targets established under the 2017 CAP and updates the plan to respond to new State goals and mandates. The CAP update was prepared in 2025 by City staff and consultants.

Relationship to California Environmental Quality Act

The California Environmental Quality Act (CEQA) is a statute that requires local agencies to identify significant environmental impacts of their actions and avoid or mitigate those impacts, if feasible. In 2007, California's lawmakers enacted SB 97, which expressly recognizes the need to analyze GHG emissions as part of the CEQA process. SB 97 required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to address GHG emissions as an environmental effect.

In 2010, OPR's amendments to the CEQA guidelines addressing GHG emissions became effective. Lead agencies are now obligated to describe, calculate, or estimate the amount of GHG emissions resulting from a project, by using a model or methodology to quantify GHG emissions resulting from a project or relying on a qualitative analysis or performance-based

standards. The lead agency should determine whether a project's GHG emissions significantly affect the environment by considering whether the project's emissions, as compared to the existing environmental setting, exceeds a threshold of significance that the lead agency determines applies to the project, and the extent to which the project complies with the regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. In addition, the lead agency is required to impose feasible mitigation to eliminate or substantially reduce significant effects.

This updated CAP will help the City with compliance with CEQA Guidelines Section 15183.5(b): Tiering and Streamlining the Analysis of Greenhouse Gas Emissions[13], which became effective in 2010. The required elements of a CAP, as cited in the guidelines, state that a plan for the reduction of GHG emissions should:

- Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;
- Establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable;
- Identify and analyze the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the geographic area;
- Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;
- Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels; and
- Be adopted in a public process following environmental review.

Relationship to General Plan and Future Projects

The City's approach to addressing GHG emissions within the General Plan is parallel to the climate change planning process followed by numerous California jurisdictions. A General Plan is a project under CEQA, and projects under CEQA are required to estimate carbon dioxide (CO2) and other GHG emissions, as described above. The CAP is designed to provide discrete actions to operationalize the General Plan policies that help with GHG reduction. The preparation of a CAP is also consistent with CEQA Guidelines Section 15183.5 that allows jurisdictions to analyze and mitigate the significant effects of GHG at a programmatic level, by adopting a plan to reduce GHG emissions.

Project-specific environmental documents prepared for projects consistent with the General Plan may rely on the programmatic analysis contained in the CAP and the certified Initial Study-Negative Declaration for the Redlands CAP.

1.6 How to Use this Plan

The CAP is intended to be a tool for policy makers, community members and others to guide the implementation of actions that limit Redlands's GHG emissions. Ensuring that CAP translates from policy language to on-the-ground results is critical to its success. Chapter 5 describes how the City can monitor progress in reducing emissions and periodically revisit assumptions and key provisions of the plan.

13 15183.5(b) of CEQA Guidelines states, "Plans for the Reduction of Greenhouse Gas Emissions. Public agencies may choose to analyze and mitigate significant greenhouse gas emissions in a plan for the reduction of greenhouse gas emissions or similar document. A plan to reduce greenhouse gas emissions may be used in a cumulative impacts analysis as set forth below. Pursuant to sections 15064(h)(3) and 15130(d), a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project complies with the requirements in a previously adopted plan or mitigation program under specified circumstances."

2 Emissions Inventory

This chapter identifies the major sources and the overall magnitude of greenhouse gas (GHG) emissions in Redlands, pursuant to Sections 15183.5(b)(1)(A) and 15183.5(b)(1)(C) of the state CEQA Guidelines. As part of the CAP preparation effort, this 2022 GHG inventory was prepared to provide a recent measure of emissions and is summarized in this chapter. Section 2.1 will discuss the methodology, Section 2.2 discusses the baseline emission inventory, Section 2.3 discusses the business-as-usual forecast, and Section 2.4 discusses the adjusted business-as-usual forecast.

The inventory follows the standards developed by the International Council for Local Environmental Initiatives (ICLEI) for community GHG inventories. The inventory methodology is described first, followed by the inputs, and results.

2.1 Methodology

Framework and Included Emissions

The emissions inventory covers direct GHG emissions from sources within the boundaries of Redlands, including fuel combusted and solid waste generated within the city. Indirect emissions associated with the consumption of energy in Redlands that is generated outside the borders of the city (such as electricity, with no end point emissions) are also included. The emissions inventory is calculated for the year 2022.

While the methodology for the updated GHG inventory is broadly consistent with the approach used for the current CAP (adopted in 2017), the 10 emissions sectors (Residential, Commercial, Industrial, Transportation, Solid Waste, Water, Wastewater, Agriculture, Off-Road Equipment, and Public Lighting) have been consolidated to better align with available data, types of emissions sources or activities, and the anticipated framework for potential GHG reduction strategies. The resulting five sectors are: Built Environment (including electricity and natural gas usage from residential, commercial, industrial uses and public lighting), Transportation, Solid Waste, Potable Water, and Wastewater. (See Section 2.2 for more information about excluded emissions.)

ICLEI U.S. Community Protocol (version 1.2, July 2019) methods and assumptions were used to estimate emissions from electricity and natural gas usage, solid waste generation, potable water delivery, and wastewater treatment. Although the 2017 CAP used ICLEI's ClearPath model to estimate emissions from these sources, the updated inventory follows the quantification methods described in the U.S. Community Protocol appendices that correspond to each applicable sector because the model is no longer available for public use.[1]

The California Air Resources Board's (CARB's) Emissions Factor (EMFAC) 2021 model was used to calculate on-road transportation emissions, and the companion OFFROAD2021 model was used for the off-road equipment sector. Unlike the previous version used to prepare the GHG inventory for the 2017 CAP, EMFAC 2021 is offered as a web-based tool and includes a Scenario Analysis option that directly calculates emissions specific to the selected location and year for the input vehicle miles traveled (VMT). The result includes total emissions from on-road vehicles during start-up, running, and idling phases and is therefore more comprehensive than the on-road emissions estimated for the 2017 CAP, which only included running emissions. The methodology for off-road transportation is unchanged.

1 ClearPath is a web-based model developed by ICLEI in 2013 to inventory, forecast, and manage GHG emissions. Use of the ClearPath model was available for any U.S. city, county, or regional government for free between 2015 and 2018 due to grant funding by Bloomberg Philanthropies. Since 2019, ClearPath is only available through paid ICLEI membership.

The basic approach to calculate emissions is based on activity data and emissions factors, using the following equation:

[Activity Data] x [Emissions Factor] = Emissions

Activity data refers to a measurement of energy use or another GHG-generation process, such as electricity consumption or decomposition of landfilled solid waste. Emissions factors are used to convert activity data to emissions and are usually expressed as emissions per unit of activity data (e.g., metric tons of carbon dioxide equivalent [MTCO2e] per kilowatt hour [kWh] of electricity). As an example, multiplying the total amount of electricity consumed (i.e., activity data, expressed in kWh) by the emissions factor (in MTCO2e per kWh) produces the GHG emissions from electricity consumption. Inputs for the emissions inventory based on activity data (or usage) for baseline year 2022 are described in the next section.

Although there are six internationally recognized GHGs that directly impact the climate—carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6)—the GHG inventory quantifies only the weighted sum of CO2, CH4, and N2O as carbon dioxide equivalents (CO2e) due to lack of reliable data about sources of HFCs, PFCs, and SF6 (broadly referred to as fluorinated gases), which are typically emitted by leaking refrigerants and fire suppressants. Further, the City has little to no control over this emissions source, so these GHGs are excluded from the inventory, consistent with the significant influence reporting framework of the ICLEI U.S. Community Protocol. Where CO2, CH4, and N2O emissions are calculated separately (e.g., when there is no CO2e emission factor available), the 100-year Global Warming Potential (GWP) factors are used to convert CH4 and N2O emissions to CO2e. According to the International Panel on Climate Change (IPCC), the GWP of CH4 is 27, and the GWP of N2O is 293.[2]

2 Intergovernmental Panel on Climate Change, Climate Change 2021: The Physical Science Basis [Table 7.15], Working Group I Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)] (Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press): 2021, https://doi.org/10.1017/9781009157896.

Excluded Emissions

Consistent with the current 2017 CAP, the updated baseline and forecasted community-wide GHG inventories are intended to encapsulate emissions generated by sources and activities within Redlands over which the City has significant influence to measure progress of existing local GHG reduction strategies, or revise/develop new strategies as necessary, that support short- and long-term climate objectives established by the State. The GHG inventories are as comprehensive as possible; however, some emissions are excluded because sufficient, accurate data was unavailable; there is no established method for quantification; or the scope or applicability to the City of Redlands was inappropriate or irrelevant. The following emissions were excluded from the GHG inventories:

Consumption-Based Emissions

Although emissions related to solid waste generated by residents and businesses in Redlands account for some of the goods consumed within the city, there is no widely accepted standard methodology for reporting consumption-based inventories or reliable database for tracking consumption (i.e., all the consumer goods of a household). ICLEI Community Protocol also notes that inclusion of consumption-based reporting frameworks may also increase potential for double-counting. As such, the prepared inventories are prepared at the community (citywide) level.

Emissions from Mountainview Generating Station

Consistent with the 2017 CAP, emissions related to the Southern California Edison (SCE) Mountainview Generating Station—including embodied or "upstream" emissions from energy generation, in addition to emissions associated with consumption of the electricity itself—were

excluded from the community-wide GHG inventory because these emissions are included at the points where energy is consumed (some of which are in Redlands) rather than where it is simply produced. Exclusion of emissions from the Mountainview Generating Station therefore ensures that they would not be double counted within the data provided by SCE for the Built Environment (electricity) sector. Additionally, large stationary sources (which are considered part of the Built Environment sector by ICLEI) are generally regulated at the state level, and the City has little to no influence over the facility. Finally, emissions from this production source are excluded because they would otherwise inflate emissions from electricity consumption, which is already the second largest contributor to GHG (as discussed in Chapter 4), such that it would critically undermine local climate action planning.

Natural and Working Lands

Although the City of Redlands is located within a context of significant natural and agricultural resources, a majority of land within city limits is classified as urban and built-up (developed) land. CARB's 2022 update of the AB 32 Scoping Plan (2022 Scoping Plan) emphasize the importance of natural and working lands to achieving statewide carbon neutrality; however, sufficient data and tools are not available to quantify local levels of carbon sinks and sources in this sector.

Emissions from Agricultural Operations

Agricultural land located within city limits is relatively limited and does not include major commercial-scale livestock activity, which would generate substantial emissions. Existing General Plan policies and other regulations allow certain urban agriculture activities within Redlands, and many of the emissions from these activities are covered by other sectors included in the inventory, such as off-road equipment within the Transportation sector. It is noted that the 2017 CAP included an Agriculture sector, which included electricity consumption by agricultural users. However, this data was not available for 2022 due to data aggregation laws, and therefore, an accurate estimate of agricultural emissions could not be quantified. Given that emissions from agricultural operations makes up only 0.13 percent of the 2015 baseline inventory, as presented in the 2017 CAP, this amount is considered relatively negligible for the CAP Update.

High-Global Warming Potential Greenhouse Gases

High-GWP GHGs, including sulfur hexafluoride (SF6), chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), and other fluorinated gases, are most commonly generated in urban environments by refrigerant leakage and fire suppressant emissions. Although these GHGs contribute a significant effect to climate change, there is no reliably accurate data source for this information, and the City has limited control over the issue. For these reasons, high-GWP GHGs are generally excluded from local community inventories.

2.2 Baseline Emissions Inventory

Total Emissions

The annual GHG emissions for baseline year 2022 total 554,413 MTCO2e. **Table 2-1** details the emissions by sector, and **Figure 2-1** depicts the distribution of emissions by sector. The largest sector is Transportation (66.2 percent), followed by Built Environment (29.5 percent).

In 2021, the San Bernardino County Transportation Authority (SBCTA) led preparation of the San Bernardino Regional Greenhouse Gas Reduction Plan, which includes GHG inventories and potential reduction measures to serve as a guide for more detailed community-level CAPs throughout the county. The Regional GHG

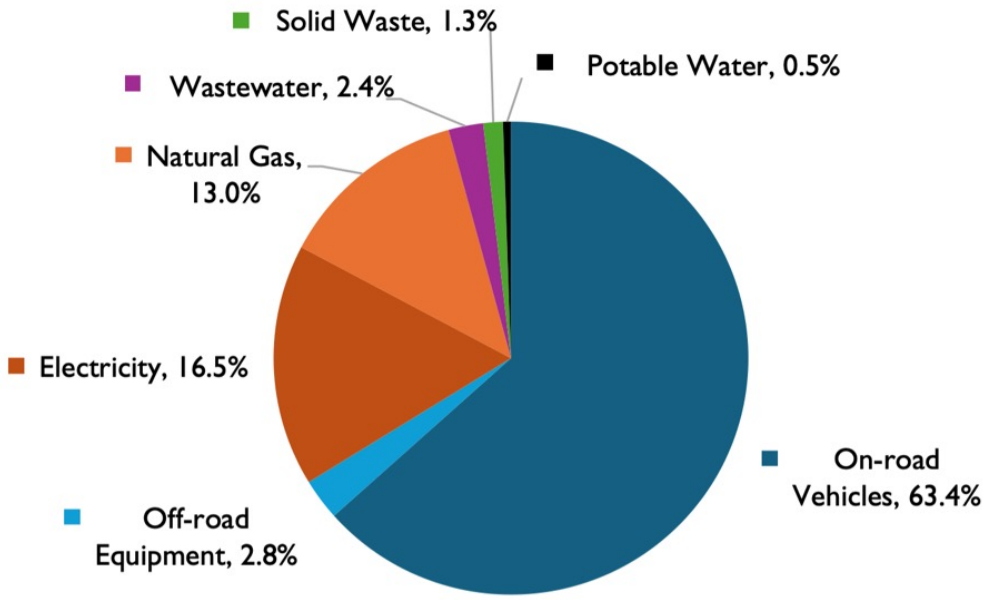
TABLE 2-1: 2022 BASELINE COMMUNITY-WIDE GHG EMISSIONS INVENTORY BY SECTOR

SECTOR	SOURCE/ACTIVITY	DETAILS	MTCO2E PER YEAR	
			EMISSIONS	SUBTOTAL
Built Environment	Energy - Electricity	Residential	43,020	91,750 (16.5%)
		Commercial	36,512	
		Industrial	11,618	
		Public Lighting	601	
	Energy - Natural Gas	Residential	56,017	72,002 (13.0%)
		Commercial	15,451	
		Industrial[1]	534	
Transportation	Fugitive/Energy	On-Road	351,444	367,144 (66.2%)
		Off-Road	15,700	
Solid Waste	Fugitive - Landfill	Residential	2,368	7,412 (1.3%)
		Commercial/ Industrial	5,031	
		Bulk Waste	13	
Potable Water	Energy - Supply	Extraction	582	2,975 (0.5%)
		Conveyance	53	
	Energy – Treatment[2]		327	
	Energy – Distribution[2]		2,013	
Wastewater	Stationary - Treatment		38	13,129 (2.4%)
	Process - Treatment		185	
	Fugitive - Treatment		376	
	Energy - Collection, Treatment[3]	Electricity	1,203	
		Natural Gas	11,327	
Grand Total				**554,413**

1. Industrial natural gas emissions may be underestimated due to unavailability of data from large facilities (customer confidentiality laws).
2. Emissions from electricity used to treat and distribute potable water are subtracted from the commercial category in the Built Environment sector to avoid double counting; emissions from water supply represent embodied energy and are not included in the SCE report for consumption by Redlands and therefore do not need to be subtracted.
3. Energy for wastewater collection and treatment is reported together and cannot be separated. Emissions are subtracted from the commercial electricity and natural gas categories in the Built Environment sector to avoid double counting.

Dyett & Bhatia, 2024.

FIGURE 2-1: 2022 BASELINE GHG EMISSIONS BY SECTOR



Dyett & Bhatia, 2024

Reduction Plan provides context for neighboring jurisdictions in the county; for example, the 2016 baseline was 203,924 MTCO2e for the City of Loma Linda, 218,940 MTCO2e for the City of Highland, and 1,440,525 MTCO2e for the City of San Bernardino.[3]

Likewise, neighboring cities in Riverside County have also prepared GHG inventories. According to their Economic Prosperity Action Plan and Climate Action Plan (2016), the 2020 forecasted business-as-usual GHG inventory for the City of Riverside was 1,045,427 MTCO2e.[4] The City of Moreno Valley also adopted a CAP in 2021, which estimates a 2018 baseline inventory of 866,410 MTCO2e.[5]

As reported in the 2017 CAP, the 2015 baseline inventory for Redlands was 419,417 MTCO2e. However, as noted in the Methodology section, tools and data sources used to prepare the 2015 baseline have changed or are no longer available. In addition, the updated 2022 baseline inventory recategorizes the emissions sectors to better align with recent State recommendations for local government actions for GHG reductions that support State efforts to decarbonize the built environment, electrify transportation, and reduce VMT. To enable valid comparison between 2015 and 2022 and assess progress, the 2015 baseline inventory has been adjusted using the new methodology and based on inputs reported in the 2017 CAP; the resulting 2015 adjusted baseline inventory is 497,625MTCO2e.

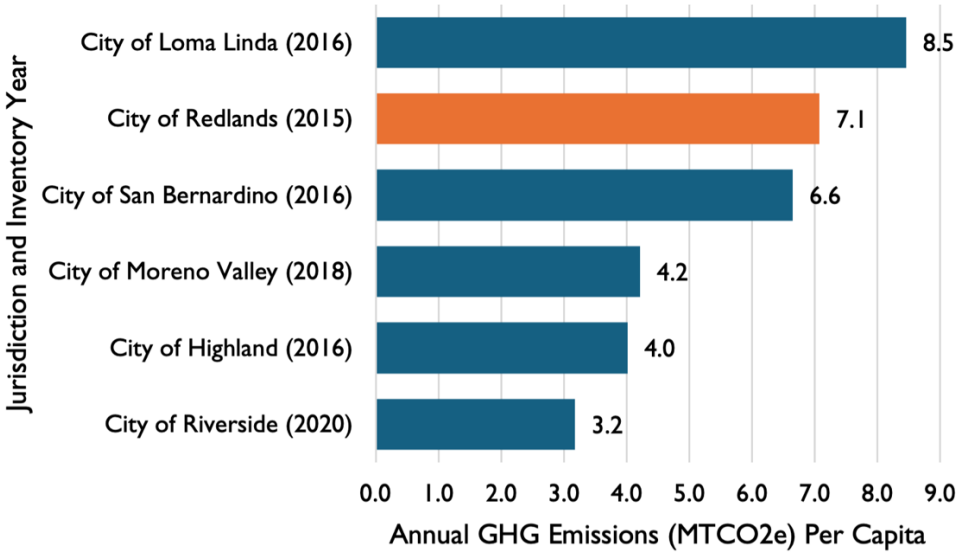
Given its geographic and population size, the relatively moderate level of GHG emissions generated by Redlands is comparable to neighboring jurisdictions based on a comparison of per capita emissions, shown in **Figure 2-2**. However, the updated baseline GHG Inventory for 2022 shows an increase in community-generated GHG emissions since 2015 (discussed further in Chapter 3), and therefore GHG reduction is recommended.

3 San Bernardino County Transportation Authority/San Bernardino Council of Governments, San Bernardino County Regional Greenhouse Gas Reduction Plan, March 2021, https://www.gosbcta.com/wp-content/uploads/2019/09/San_Bernardino_Regional_GHG_Reduction_Plan_Main_Text_Mar_2021.pdf

4 City of Riverside, Economic Prosperity Action Plan and Climate Action Plan, January 2016, https://corweb.riversideca.gov/cedd/sites/riversideca.gov.cedd/files/pdf/planning/other-plans/2016%20Riverside%20Restorative%20Growthprint%20Economic%20Proposerity%20Action%20Plan%20and%20Climate%20Action%20Plan.pdf

5 City of Moreno Valley, City of Moreno Valley Climate Action Plan, Adopted June 15, 2021, https://moval.gov/city_hall/general-plan2040/MV-CAP.pdf

FIGURE 2-2: ANNUAL GHG EMISSIONS PER CAPITA COMPARISON WITH NEIGHBORING JURISDICTIONS



Sources: City of Riverside Economic Prosperity Action Plan and Climate Action Plan, 2016; City of Moreno Valley Climate Action Plan, 2021; SBCTA San Bernardino County Regional Greenhouse Gas Reduction Plan, 2021; California Department of Finance Table E-4; Dyett & Bhatia, 2024

2.3 Business-as-Usual Forecast

As was done for the baseline inventory (see Section 2.2), the forecasted GHG inventories project all direct emissions from sources within Redlands city limits, including fuel combusted in the city, as well as indirect emissions associated with the consumption of energy that is generated outside the borders of the city. Included and excluded GHGs are as described in Section 2.1. The emissions inventories tally emissions from the same five sectors as the baseline inventory.

The emissions projected in the forecast use the activity data (or usage) from the 2022 baseline inventory as an initial value, then predicted growth in each sector is projected to scale with various Redlands characteristics, such as population and housing growth and increase in non-residential development in 2030 and 2050, unless specific growth projections (e.g., water use or energy demand) are otherwise provided.

The business-as-usual forecast estimates emissions through the years 2030 and 2050, assuming the land use and circulation system incorporated into the SBTAM+ regional transportation model, which is consistent with regional growth projections under the 2024 update to Connect SoCal that is currently underway. The growth assumptions, as shown in **Table 2-2**, include the housing and employment inputs for SBTAM+ provided by Fehr & Peers, as well as population estimates and projections from the California Department of Finance. This approach was used to model growth assumptions in absence of specific buildout projections that align with the target years 2030 and 2050. This methodology differs from the 2017 CAP, which used the 2035 General Plan buildout. Where possible, 2022 values were validated against or supplemented by the most recent estimates from the California Department of Finance.

In addition, the business-as-usual scenario includes the effects of key climate regulations at the federal and State levels, primarily affecting the Built Environment and Transportation sectors. These effects are incorporated into the energy demand forecasts prepared by the California Energy Commission (CEC) and used to project growth in electricity and natural gas

TABLE 2-2: POPULATION, HOUSING, AND EMPLOYMENT GROWTH ASSUMPTIONS, 2022-2050

	2022	2030		2050	
METRIC	**ESTIMATE**	**PROJECTION**	**GROWTH, 2022-2030**	**PROJECTION**	**GROWTH, 2030-2050**
Population[1]					
City of Redlands	72,259	75,243	4.1%	82,228	9.3%
San Bernardino County	2,180,777	2,368,002	8.6%	2,681,796	13.3%
Redlands Housing Units[2]	27,580	28,321	2.7%	32,849	16.0%
Single-family	17,766	18,024	1.5%	18,903	4.9%
Multifamily	9,814	10,297	4.9%	13,947	35.4%
Redlands Employment[3]	50,400	52,803	4.8%	60,103	13.8%
Retail jobs	9,474	9,232	-2.6%	8,499	-7.9%
Non-retail jobs	40,926	43,571	6.5%	51,604	18.4%

1. Population estimates for 2022 from California Department of Finance Table E-5 (May 2023 release), and 2030 and 2050 County population projections from Table P-2B. City of Redlands population projections for 2030 and 2050 as used in regional modeling and as provided by Fehr & Peers.
2. Housing for 2030 and 2050 calculated based on the number of households provided by Fehr & Peers and maintaining Redlands' vacancy rate in 2022 (5.14%) as estimated by California Department of Finance Table E-5 (May 2023 release).
3. Employment estimates and projections are provided by Fehr & Peers, consistent with inputs to the SBTAM+ used to calculate VMT. SBTAM+ is consistent with regional projections (by SCAG) under the 2024 Connect SoCal RTP/SCS but are locally scaled by SBCOG/SBCTA. Employment is categorized into retail (including retail trade) and non-retail (including all occupational sectors other than retail trade); the decrease in retail jobs is likely a result of both growth projections as well as the categorization method.

Sources: California Department of Finance, 2023; Fehr & Peers, 2024; Dyett & Bhatia, 2024

consumption, as well as EMFAC 2021 (and the corresponding OFFROAD 2021 model) used to model future transportation emissions. For example, both sources account for the impact of Executive Order (EO) N-79-20, which calls for 100 percent of passenger vehicle sales to be zero-emission by 2035 and all on-road trucks to be zero-emission where feasible by 2045, in addition to Advanced Clean Cars, Advanced Clean Fleets, and related Pavley regulations. A full description of the regulations incorporated into the CEC's energy demand forecast are described in the 2023 Integrated Energy Policy Report (IEPR)[6], and regulatory assumptions for EMFAC 2021 are as described in the EMFAC 2021 Volume III Technical Document.[7]

State actions that do not underlie growth assumptions were quantified separately and are reflected in the adjusted business-as-usual forecast (described in Section 2.4). These include Renewables Portfolio Standards (RPS) under SB 100 and SB 1020, 2022 Title 24 Building Energy Efficiency Standards, and Renewable Gas Standards (RGS) under SB 1440. Local actions that would be implemented by the City, such as increasing solid waste diversion in line with the statewide goal under AB 341, are not included but would instead be credited as a GHG reduction measure (to be developed) in the updated CAP.

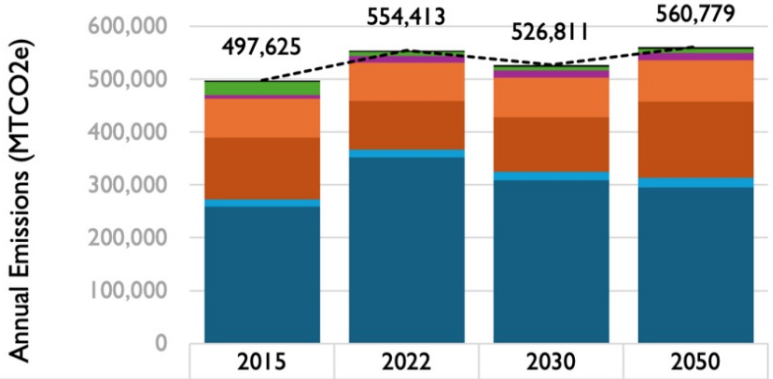
6 California Energy Commission, Adopted 2023 Integrated Energy Policy Report with Errata, February 14, 2024, https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2023-integrated-energy-policy-report.

7 California Air Resources Board, EMFAC2021 Volume III Technical Document (Version 1.0.1), April 2021, https://ww2.arb.ca.gov/sites/default/files/2021-08/emfac2021_technical_documentation_april2021.pdf.

Total Emissions

Table 2-3 and **Figure 2-3** compare the GHG emissions inventories by sector for the adjusted 2015 baseline, 2022 baseline, and 2030 and 2050 business-as-usual forecasts without reductions from State actions. As shown in **Figure 2-3**, annual GHG emissions in Redlands is estimated to continue increasing since 2015, except for a slight fluctuation in 2030, when the decrease in transportation emissions outweighs growth-induced increases in emissions from other sectors. In absolute terms, total annual emissions in the business-as-usual scenario are projected to increase from 497,625MTCO2e in 2015 to 560,779 MTCO2e in 2050 (an increase of 13 percent).

FIGURE 2-3: CHANGE IN TOTAL ANNUAL BUSINESS-AS-USUAL GHG EMISSIONS, 2015-2050



	2015	2022	2030	2050
Potable Water	3,189	2,975	2,990	3,417
Solid Waste	24,933	7,412	7,718	8,435
Wastewater	6,088	13,129	13,329	13,530
Natural Gas	73,676	72,002	75,021	77,827
Electricity	117,185	91,750	103,172	143,786
Off-road Equipment	13,315	15,700	16,108	18,592
On-road Vehicles	259,239	351,444	308,472	295,192
------- Total	497,625	554,413	526,811	560,779

Dyett & Bhatia, 2024

TABLE 2-3: BASELINE AND BUSINESS-AS-USUAL DETAILED COMMUNITY-WIDE GHG EMISSIONS INVENTORIES BY SECTOR, 2015-2050

SOURCE/ACTIVITY	DETAILS	2015[1] BASELINE	2022 BASELINE	2030 BAU FORECAST	2050 BAU FORECAST
Built Environment					
Energy - Electricity	Residential	46,892	43,020	47,326	63,400
	Commercial	50,240	36,512	43,9678	68,187
	Industrial	19,306	11,618	11,624	11,750
	Public Lighting	747	601	544	449
Energy - Natural Gas	Residential	49,983	56,017	56,078	56,266
	Commercial	23,362	15,451	18,404	21,017
	Industrial2	331	534	539	544
Subtotal		190,861	163,753	178,193	221,613

TABLE 2-3: BASELINE AND BUSINESS-AS-USUAL DETAILED COMMUNITY-WIDE GHG EMISSIONS INVENTORIES BY SECTOR, 2015-2050

SOURCE/ACTIVITY	DETAILS	2015[1] BASELINE	2022 BASELINE	2030 BAU FORECAST	2050 BAU FORECAST
Transportation					
Fugitive/Energy	On-Road	259,239	351,444	308,472	295,192
	Off-Road	13,315	15,700	16,108	18,592
Subtotal		272,554	367,144	324,580	313,784
Solid Waste					
Fugitive - Landfill	Residential	14,741	2,368	2,466	2,694
	Commercial/ Industrial	10,184	5,031	5,239	5,725
	Bulk Waste	8	13	14	15
Subtotal		24,933	7,412	7,718	8,435
Potable Water					
Energy - Supply	Extraction	621	582	533	609
	Conveyance	77	53	67	76
Energy – Treatment3		—4	327	334	382
Energy – Distribution3		2,490	2,013	2,057	2,350
Subtotal		3,189	2,975	2,990	3,417
Wastewater					
Stationary - Treatment		1	38	40	44
Process - Treatment		180	185	193	211
Fugitive - Treatment		402	376	393	430
Energy - Collection, Treatment5	Electricity	1,345	1,203	1,431	1,574
	Natural Gas	4,161	11,327	11,272	11,272
Subtotal		6,088	13,129	13,329	13,530
Grand Total		**497,625**	**554,413**	**526,811**	**560,779**
Percent Change from 2015		-	+11%	+6%	+13%
Per capita emissions		7.1	7.7	7.0	6.8

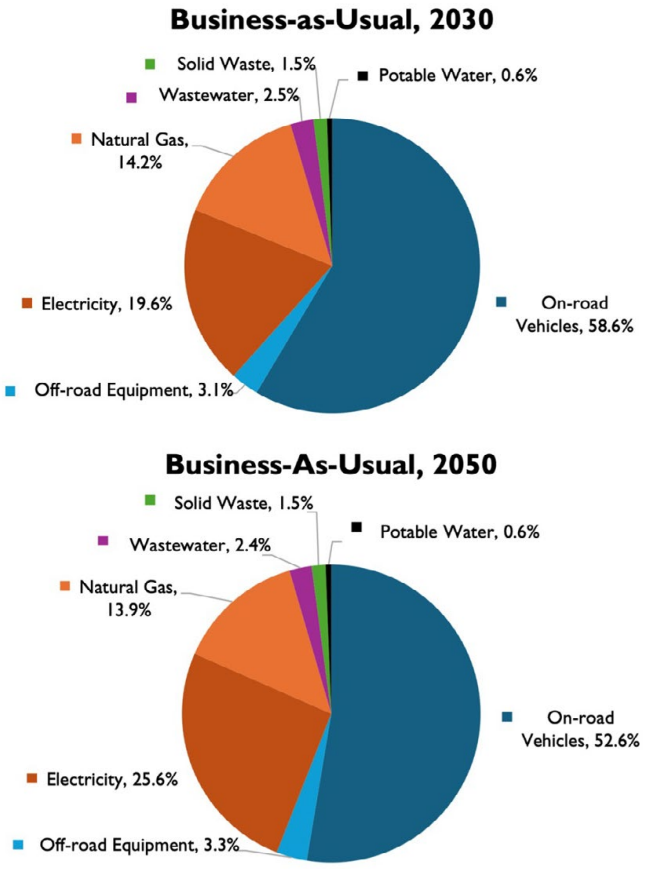
BAU = Business-As-Usual

1. Emissions for 2015 are adjusted from the 2015 GHG Inventory included in the 2017 CAP using the same methodology as the 2022 baseline inventory to allow for valid comparison. Emissions from the Residential, Commercial, Industrial, Agricultural, and Public Lighting sectors of the 2015 GHG Inventory were combined into the Built Environment sector; 2015 commercial electricity includes agriculture electricity, which is not available for other years.
2. Industrial natural gas emissions may be underestimated due to unavailability of data from large facilities (customer confidentiality laws).
3. Emissions from electricity used to treat and distribute potable water are subtracted from the commercial category in the Built Environment sector to avoid double counting; emissions from water supply represent embodied energy and are not included in the SCE report for consumption by Redlands and therefore do not need to be subtracted.
4. Energy (electricity) used for treatment and distribution of potable water were reported together for the 2015 GHG Inventory and are shown combined under distribution.
5. Energy for wastewater collection and treatment is reported together and cannot be separated. Emissions are subtracted from the commercial electricity and natural gas categories in the Built Environment sector to avoid double counting.

When evaluated based on an efficiency metric, business-as-usual forecast emissions are expected to improve compared to the 2022 baseline emissions level, which is substantially higher than in 2015 (as adjusted for valid comparison). As shown in **Figure 2-4**, the total annual emissions of 526,811 MTCO2e in 2030 would correspond to 7.0 MTCO2e per capita, decreasing from 7.7 MTCO2e per capita in 2022 as well as decreasing from 7.1 MTCO2e per capita in 2015. The efficiency metric for 2050 would also continue this downward trend to 6.8 MTCO2e per capita.

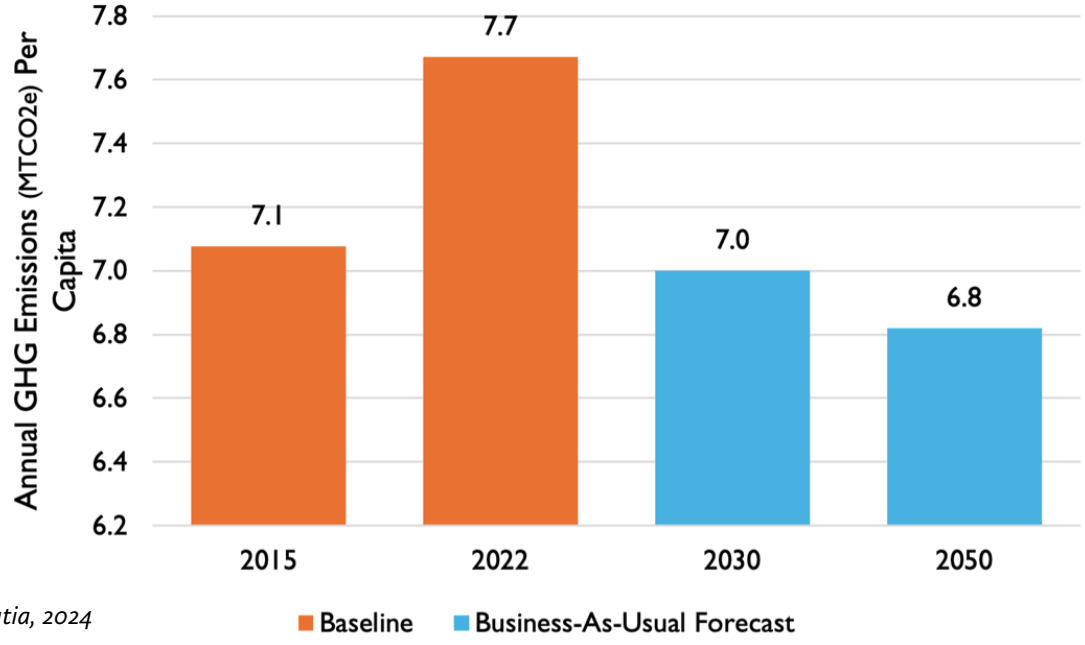
As shown in **Figure 2-5**, the transportation sector continues to represent the greatest source of community-wide emissions, accounting for 61.7 percent of emissions in 2030 and 55.9 percent in 2050. Built environment emissions remain as the second largest sector, making up 33.8 percent of emissions in 2030 and 39.5 percent in 2050.

FIGURE 2-5: 2030 AND 2050 BUSINESS-AS-USUAL GHG EMISSIONS BY SECTOR



Dyett & Bhatia, 2024

FIGURE 2-4: BUSINESS-AS-USUAL GHG EMISSIONS PER CAPITA, 2015-2050



Dyett & Bhatia, 2024

2.4 Adjusted Business-As-Usual Forecast

Reductions from State actions that could be quantified independently from growth assumptions are reflected in the adjusted business-as-usual forecast, as described in the following sections. Local actions that would be implemented by the City, such as increasing solid waste diversion in line with AB 341 or establishing a local food recovery goal as outlined by SB 1383, are not included but would instead be credited as a GHG reduction measure in the CAP.

Electricity Emissions Reductions from Renewables Portfolio Standards

Renewables Portfolio Standards (RPS), established in 2002 by SB 1078 with the initial requirement that 20 percent of electricity retail sales (such as by investor-owned utilities like SCE) must be served by renewable resources by 2017. RPS requirements were accelerated in 2015 with SB 350 to 50 percent by 2030, then again in 2018 with SB 100, which increased the 2030 target to 60 percent and requires all of the state's electricity to come from carbon-free resources by 2045. In 2022, SB 1020 clarified interim RPS targets: 90 percent by 2035, 95 percent by 2040, and 100 percent by 2045. Quantified reductions in the adjusted business-as-usual forecast reflect the latest RPS consistent with SB 100 and SB 1020.

Natural Gas Emissions Reductions from Renewable Gas Standards

CPUC Decision 22-02-025[8] requires California's four largest investor-owned utilities providing natural gas (one of which is SoCalGas) to meet collective biomethane procurement targets for 2025 and 2030 to implement SB 1440 (2022) and support California's organic waste diversion goal under SB 1383 (2016). Under this decision, SoCalGas is responsible for procuring its proportionate share of Cap-and-Trade allowances (49.26 percent) of the collective renewable natural gas procurement target of 17.6 billion cubic feet (Bcf) annually by 2025, as well as contributing its proportionate share of 2020 annual bundled core natural gas demand forecasted in the 2020 California Gas Report[9] of the collective 72.8 Bcf annually by 2030. The latter target is referred to as the "Renewable Gas Standard" (RGS) and applies to 2030 and beyond, but CPUC will re-evaluate and revise, as necessary, this standard for the longer term in 2025.

SoCalGas' Aspire 2045 Sustainability Strategy establishes a goal of delivering 20 percent renewable natural gas to core customers by 2030,[10] in line with these regulations. According to the Aspire 2045 Factsheet, SoCalGas is currently (as of August 2023) providing five percent renewable gas.[11] Given this direction, quantified reductions in the adjusted business-as-usual forecast reflect SoCalGas' goal for 2030 and assume this goal would be maintained thereafter (through 2050). Although SoCalGas is the locally specific utility for Redlands, SoCalGas' compliance with RGS is included as a state-level (rather than local) action because it is directly tied to SB 1440 and the City has no influence over this action.

Built Environment Reductions from Title 24

The Title 24 Building Energy Efficiency Standards (Part 6, Energy Code) are updated every three years and set increasingly stringent standards to reduce wasteful, uneconomical, and unnecessary uses of energy in residential and non-residential buildings. The 2022 standards are effective as of January 1, 2023. The CEC estimated annual savings over the previous (2019)

8 California Public Utilities Commission, Decision 22-02-025: Decision Implementing Senate Bill 1440 Biomethane Procurement Program (Rulemaking 13-02-008), February 24, 2022, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M454/K335/454335009.PDF

9 California Gas and Electric Utilities, 2020 California Gas Report, October 2020, https://www.socalgas.com/sites/default/files/2020-10/2020_California_Gas_Report_Joint_Utility_Biennial_Comprehensive_Filing.pdf.

10 Southern California Gas Company, Aspire 2045: SoCalGas Sustainability Strategy, February 2022, https://www.socalgas.com/sites/default/files/2022-02/SoCalGas_Sustainability_Strategy_final.pdf.

11 Southern California Gas Company, Aspire 2045 Factsheet, August 2023, https://www.socalgas.com/sites/default/files/2023-08/ASPRIE_2045_Factsheet.pdf.

standards in the 2022 Energy Code Impact Analysis.[12] Quantified reductions in the adjusted business-as-usual forecast reflect these estimates for climate zone 10 (Riverside County), applied to electricity and natural gas consumption of residential and non-residential new construction and alterations, using the same assumptions as the CEC. Savings from Title 24 due to avoided electricity and natural gas consumption are in addition to reductions from RPS and RGS.

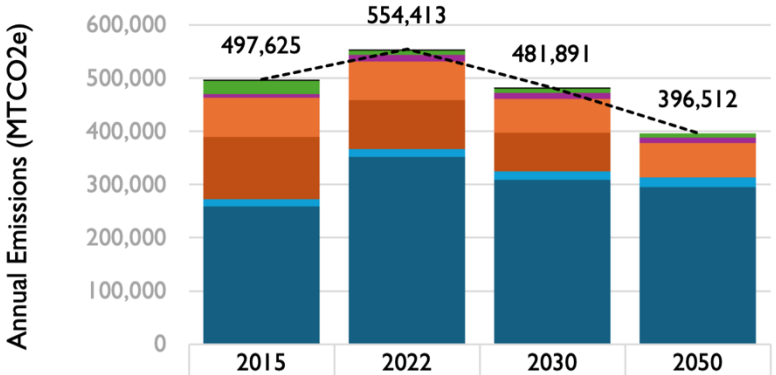
Summary

As shown in **Figure 2-6**, annual community-wide GHG emissions in Redlands have increased since 2015, rising about 11 percent from 497,625 MTCO2e in 2015 (adjusted using the methodology described in this report using inputs from the 2017 CAP for valid comparison) to 554,413 MTCO2e in 2022. Without State actions to decarbonize electricity and natural gas GHG emissions generated by Redlands would continue to increase to 560,779 MTCO2e in 2050 under the business-as-usual scenario, representing a 13-percent rise above 2015 levels.

However, annual community-wide GHG emissions are estimated to decrease under the adjusted business-as-usual scenario to 396,512 MTCO2e in 2050, representing a 20-percent reduction from 2015 levels. These significant reductions, particularly in the Built Environment and Potable Water sectors, reflect the achievement of 100-percent carbon-free electricity from SCE by 2045 (supporting RPS) and 20-percent renewable gas delivered by SoCalGas by 2030 and beyond (supporting RGS). In fact, emissions in the Potable Water sector would virtually be reduced to zero, based on the carbon-free energy used to supply, treat, and deliver potable water. In addition, Transportation sector emissions are expected to decrease slightly due to State efforts such as the Advanced Clean Cars Program and EO N-79-20, despite an absolute increase in VMT within Redlands.

12 California Energy Commission, 2022 Energy Code Impact Analysis, June 30, 2023, https://www.energy.ca.gov/publications/2023/impact-analysis-2022-update-california-energy-code.

FIGURE 2-6: CHANGE IN TOTAL ANNUAL ADJUSTED BUSINESS-AS-USUAL GHG EMISSIONS, 2015-2050



	2015	2022	2030	2050
Potable Water	3,189	2,975	2,175	0
Solid Waste	24,933	7,412	7,718	8,435
Wastewater	6,088	13,129	11,159	10,176
Natural Gas	73,676	72,002	62,919	64,117
Electricity	117,185	91,750	73,340	0
Off-road Equipment	13,315	15,700	16,108	18,592
On-road Vehicles	259,239	351,444	308,472	295,192
------- Total	497,625	554,413	481,891	396,512

Dyett & Bhatia, 2024

Meanwhile, emissions from the Solid Waste sector would continue to increase in proportion with increasing solid waste disposed by the growing population of Redlands. However, emissions quantified in this report do not include the impact of increasing solid waste diversion in line with the statewide target under AB 341 or establishing a local food recovery goal under SB 1383, which would be implemented as a City action and credited under the updated CAP. Inclusion of these GHG reduction measures, to be developed as part of the updated CAP's GHG Reduction Strategy, is recommended to offset increasing emissions in this sector.

Despite the increase between 2015 and 2022 baseline conditions, future per capita emissions under the adjusted business-as-usual scenario would also decrease to about 6.4 MTCO2e per capita in 2030 and 4.8 MTCO2e in 2050, as shown in Table 2-4. Based on this efficiency metric, the City would not meet its adopted target for 2030 of 6.0 MTCO2e per capita contained in the adopted 2017 CAP, and additional reductions would be required, especially in the Transportation and Built Environment sectors.

TABLE 2-4: SUMMARY OF ADJUSTED BUSINESS-AS-USUAL COMMUNITY-WIDE GHG EMISSIONS INVENTORY, 2015-2050

METRIC	2015 BASELINE	2022 BASELINE	2030 ADJ. BAU	2050 ADJ. BAU
Total Annual GHG Emissions (MTCO2e)	**497,625**	**554,413**	**481,891**	**396,512**
Percent change from 2015 levels	-	+11%	-3%	-20%
Per capita emissions1	7.1	7.7	6.4	4.8

Adj. BAU = Adjusted Business-As-Usual (includes reductions from State actions, including RPS, RGS, and Title 24)

1. Per capita emissions calculated based on population shown in Table 7.

Sources: Dyett & Bhatia, 2024

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3 GHG Reduction Targets and Forecasts

This chapter describes the greenhouse gas (GHG) reduction targets provided by State law, provides a baseline forecast of GHG emissions, and models forecasts of future GHG emissions through 2050 with quantified GHG reductions from State actions.

3.1 Greenhouse Gas Reduction Targets

State Goals and Guidance

Since passage of AB 32 in 2006, California's statewide GHG reduction targets have continued their downward trajectory below 1990 emissions levels. Namely, these state-level targets have included achievement of 1990 levels by 2020 (AB 32), 40 percent below 1990 levels by 2030 (SB 32), and 80 percent below 1990 levels by 2050 (EO S-03-05). However, long-term goals have changed in response to EO B-55-18 and AB 1279, which call for statewide carbon neutrality, or 85 percent below 1990 levels, by no later than 2045 and net zero emissions (or better) thereafter.

In the previous 2017 Scoping Plan, the California Air Resources Board (CARB) provided recommendations for local GHG reduction targets that aligned with the State's targets for 2030 and 2050. Especially given that many local jurisdictions do not have GHG inventories for 1990, these recommended targets were provided as efficiency metrics calculated based on the population. Specifically, the 2017 Scoping Plan recommended that local jurisdictions achieve 6.0 MTCO2e per capita in 2030 and 2.0 MTCO2e per capita in 2050 to demonstrate consistency with statewide targets. However, given that the new carbon neutrality goal for 2045 is more ambitious than the 2050 target, this recommendation for 2050 is no longer appropriate. According to the updated 2022 Scoping Plan, CARB now recommends that jurisdictions focus on developing locally appropriate, plan-level targets that align with the trajectory to carbon neutrality instead of focusing on a per capita 2050 target.

Methodology for Target Setting

The City of Redlands adopted two GHG reduction targets in the 2017 CAP that are now considered short-term targets: 6.0 MTCO2e per capita in 2030 and 5.0 MTCO2e per capita in 2035. These adopted targets remain consistent with the State's GHG reduction objectives and therefore do not need to be revised for the Redlands CAP Update. However, the updated CAP will extend the City's GHG reduction strategy to reflect the State's revised long-term goal through the year 2050. The methodology for determining a locally appropriate target for Redlands is described in the following sections.

Comparison with the 2022 Scoping Plan

Consistency with the Scoping Plan is considered alignment with the State's climate goals and relevant State plans or policies adopted for the purposes of reducing GHGs because the Scoping Plan itself was prepared to implement these regulations. As such, the Scoping Plan and its corollary documents and data are used as the primary source and guidance for determining a local target.

The 2022 Scoping Plan lays out the State's plan to achieve carbon neutrality by 2045 and improves upon previous versions of the plan that focused only on the industrial, energy, and transportation sectors by expanding actions for carbon capture and storage through the state's natural and working lands as well as a variety of mechanical approaches. The 2022 Scoping Plan acknowledges that, despite efforts to significantly reduce emissions from combustion of

fossil fuel for energy and transportation, some residual emissions will inevitably remain from sources such as certain industrial activities, internal combustion vehicles still on the road, and refrigerants. At a statewide level, forests, shrublands/chaparral, croplands, wetlands, and other natural and working lands will necessarily play a critical role to feasibly achieve carbon neutrality, but sequestration and storage by these lands will also need to be supplemented by additional methods to remove carbon from the atmosphere.

Strategies and actions included in the 2022 Scoping Plan are based on the statewide emissions that were modeled for each AB 32 GHG inventory sector for the 2022 Scoping Plan scenario from 2018 through 2045. More information about the modeling is available in the 2022 Scoping Plan's Appendix H: AB 32 GHG Inventory Sector Modeling.[1] **Table 3-1** shows the statewide emissions by sector for the 2022 Scoping Plan scenario in 2020, 2030, and 2045, followed by three types of total emissions:

1. Net total emissions include all sectors shown in the table;
2. Gross total emissions include all sectors except for the reductions from carbon dioxide removal (CDR); and
3. "CAP inventory total" emissions, which include the same sectors that are included in the Redlands CAP community-wide GHG emissions inventory:
    - Built environment emissions from residential, commercial, industrial, and public lighting electricity and natural gas consumption;
    - Transportation emissions from on-road vehicles and off-road equipment;
    - Solid waste landfill emissions;
    - Potable water emissions from energy used to supply, treat, and deliver water; and
    - Wastewater emissions from treatment processes and wastewater treatment plant energy demand.

Performance levels are shown relative to emissions in 2022 rather than 1990 levels to align with the 2022 updated baseline year quantified for Redlands and because data for 1990 is not available for Redlands. Further, the earliest year for 2022 Scoping Plan data is 2018, which does not align with the earliest available inventory year for Redlands (2015). The corresponding emissions per capita efficiency metrics were calculated using population estimates from the California Department of Finance.

As seen in **Table 3-1**, the 2022 Scoping Plan is estimated to meet and exceed the carbon neutrality target for 2045, with a greater level of carbon removed from the atmosphere than emitted. When accounting for carbon removal and sequestration, net statewide emissions in 2030 would be about 40 percent below 2022 levels and 5.6 MTCO2e per capita, further decreasing in 2045 to about 103 percent below 2022 levels and -0.3 MTCO2e per capita. Without carbon removal and sequestration, the gross total emissions would be about 82 percent below 2022 levels and 1.6 MTCO2e per capita. When only considering the same emissions as included in the Redlands CAP inventories, the 2022 Scoping Plan would be about 87 percent below 2022 levels and achieve 1.0 MTCO2e per capita.

Proposed Long-Term Local Target

As noted above, CARB recommendations in the 2022 Scoping Plan suggest that jurisdictions should focus on developing locally appropriate, plan-level targets that align with the trajectory to carbon neutrality instead of focusing on a per capita 2050 target. However, this guidance does not necessarily preclude usage of a per capita target. The long-term target for 2050 is therefore expressed in MTCO2e per capita for consistency with the metrics used in the 2017 CAP.

1 California Air Resources Board, "Appendix H: AB 32 GHG Inventory Sector Modeling," 2022 Scoping Plan, November 2022, https://ww2.arb.ca.gov/sites/default/files/2024-01/nc-2022-sp-appendix-h-ab-32-ghg-inventory-sector-modeling.pdf.pdf; AB 32 GHG Inventory Sectors Modeling Data Spreadsheet is available at: https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-PATHWAYS-data-E3.xlsx.

TABLE 3-1: 2022 SCOPING PLAN EMISSIONS, PERFORMANCE LEVELS, AND EFFICIENCY METRICS, 2022-2045			
METRIC	**2022**	**2030**	**2045**
California Population[1]	39,028,571	39,430,871	40,152,224
2022 Scoping Plan Scenario Statewide Emissions (MTCO2e)			
Agriculture	32,400,217	20,099,616	15,301,010
Carbon Dioxide Removal (CDR)[2]	0	-6,774,430	-74,991,771
Electric Power	46,887,456	39,199,474	8,680,822
High Global Warming Potential	20,250,000	9,900,000	9,000,000
Industrial	70,691,831	40,550,536	11,519,123
Recycling and Waste	9,840,000	9,179,852	7,989,708
Residential and Commercial	34,829,287	26,815,926	4,404,489
Transportation, Communications, Utilities (TCU)	152,548,276	80,578,332	7,942,868
Statewide GHG Emissions Totals (MTCO2e)			
Net emissions with all sectors	367,447,067	219,549,306	-10,153,751
Gross emissions without CDR[3]	367,447,067	226,323,736	64,838,020
CAP Inventory emissions[4]	314,796,850	196,324,120	40,537,010
Statewide Performance Levels Relative to 2022 (% below 2022 emissions)			
Net (all sectors)	-	40.3%	102.8%
Gross (without CDR)	-	38.4%	82.4%
CAP Inventory[3]	-	37.6%	87.1%
Statewide Efficiency Metrics (MTCO2e per capita)			
Net (all sectors)	9.4	5.6	-0.3
Gross (without CDR)	9.4	5.7	1.6
CAP Inventory[3]	8.1	5.0	1.0

1. Population data from the California Department of Finance Table P-2A Total Population for California and Counties (2020-2060).
2. The 2022 Scoping Plan assumes carbon dioxide removal (CDR) reductions would take effect starting 2028.
3. Includes all AB 32 GHG Inventory Sectors except CDR: agriculture, electric power, high-GWP, industrial, recycling and waste, residential and commercial, and transportation.
4. Includes only the same sectors that are included in the Fairfield CAP community-wide GHG emissions inventory (see Section 2): electric power, industrial, recycling and waste, residential and commercial, and transportation.

Sources: California Air Resources Board, 2022; California Department of Finance (Table P-2A), 2024; Dyett & Bhatia, 2024

In addition, the target year 2050 was selected in favor of 2045 to best align with the horizon year of long-term planning efforts, including the Southern California Association of Governments (SCAG) regional transportation plan/sustainable communities strategy (RTP/SCS), Connect SoCal 2024. Given the State's most recent update to its long-term GHG reduction target for 2045 and overall climate goals, it is assumed that carbon neutrality—or net positive emissions as shown in **Table 3-1**—would be maintained through 2050. The performance levels and efficiency metrics calculated for 2045 are therefore assumed to be sufficient for 2050.

The net total emissions shown in **Table 3-1** includes all sectors quantified for the 2022 Scoping Plan per AB 32 and provides a comprehensive picture of GHG-generating activities, as well as efforts to offset some of those GHGs in California. This level of detail was necessary in the 2022 Scoping Plan to show the feasibility of achieving statewide carbon neutrality by 2045. However, sufficient data and tools are not available to quantify local levels of carbon sequestration and storage, and carbon removal efforts are generally beyond the scope of local actions and influence. Therefore, setting a local target based on the net total emissions is not appropriate. The gross total emissions calculated from the 2022 Scoping Plan data includes all sectors except carbon removal and therefore adjusts for the fact that this sector cannot be quantified at the local level. However, this total would also be inappropriate for setting the local GHG reduction target because it includes other sectors such as agriculture and high-GWP emissions that were not included in the community-wide inventory for Redlands and is therefore not a valid comparison.

As such, the subset of total emissions from the 2022 Scoping Plan that correspond to the same five primary sectors included in Redlands' inventory (the "CAP inventory total" shown in **Table 3-1**) is the most appropriate total that provides the closest match between state- and local-level emissions inventories. The recommended long-term target for the Redlands CAP Update is 1.0 MTCO2e per capita by 2050.

Emissions and Targets Gap Analysis

Summary of Greenhouse Gas Emissions Inventories

Table 3-2 summarizes the results of the updated baseline and forecasted GHG inventories for Redlands. The forecasted emissions for 2030 and 2050 correspond to the "adjusted business-as-usual" scenario, which represents reasonably foreseeable future conditions with the land use and transportation network modeled by the San Bernardino Travel Activity Model Plus (SBTAM+) and includes the effect of state-level actions and efforts that would reduce GHG emissions in Redlands. State-level actions that were incorporated into the adjusted business-as-usual forecasted inventory are detailed in Section 2.4.

Need for Additional Reductions

Table 3-3 and **Figure 3-1** show how the City will need to take actions to reduce GHG emissions beyond the adjusted business-as-usual scenario to meet its GHG targets for 2030 and 2035 as adopted in the 2017 CAP. Significant additional reductions will also be required to align with the State's carbon neutrality goal and meet the proposed new long-term target for the Redlands CAP Update by 2050.

TABLE 3-2: BASELINE AND ADJUSTED BUSINESS-AS-USUAL FORECASTED GHG EMISSIONS INVENTORIES, 2015-2050

METRIC	2015 BASELINE[1]	2022 BASELINE	2030 ADJ. BAU[2]	2050 ADJ. BAU[2]
Total annual GHG emissions (MTCO2e)	**497,625**	**554,413**	**481,891**	**396,512**
Built environment – Electricity	117,185	91,750	73,340	-
Built environment – Natural gas	73,676	72,002	62,919	64,117
Transportation – On-road	259,239	351,444	308,472	295,192
Transportation – Off-road	13,315	15,700	16,108	18,592
Solid waste	24,933	7,412	7,718	8,435
Potable water	3,189	2,975	2,175	-
Wastewater	6,088	13,129	11,159	10,176
Reductions from state-level actions[3]	-	-	-30,433	-314,284
Performance Metrics				
Percent below 2015 levels	-	+11%	-3%	-20%
Population[4]	70,310	72,259	75,243	82,228
Per capita emissions	7.1	7.7	6.4	4.8

Emissions for 2015 are adjusted from the 2015 GHG Inventory included in the 2017 CAP using the same methodology as the 2022 baseline inventory to allow for valid comparison.

Adj. BAU = Adjusted Business-As-Usual forecast.

State-level actions include RPS, RGS, and Title 24; reductions from Title 24 are beyond (distinct from) reductions from RPS and RGS. Transportation sector reductions are already built into the emissions modeling tool and cannot be separated.

Population for 2015 and 2022 are from California Department of Finance estimates (Tables E-4 and E-5). Population for 2030 and 2050 are as modeled by SBTAM+, consistent with regional projections under Connect SoCal 2024.

Sources: California Department of Finance (Table E-4 estimates for 2000-2010 and Table E-5), 2012-2023; Dyett & Bhatia, 2024

TABLE 3-3: PROJECTED TRAJECTORY, TARGETS, AND REQUIRED REDUCTION, 2015-2050				
METRIC	**2015 BASELINE[1]**	**2022 BASELINE**	**2030 ADJ. BAU[2]**	**2050 ADJ. BAU[2]**
Projected Trajectory				
Population[3]	70,310	72,259	75,243	82,228
Total annual GHG emissions (MTCO2e)	497,625	554,413	481,891	396,512
Per capita emissions (MTCO2e per capita)	7.1	7.7	6.4	4.8
Target Metrics and Reduction Levels				
GHG reduction targets (MTCO2e per capita)[4]	-	-	6.0	1.0
Emissions level if target is achieved (MTCO2e)[5]	-	-	451,458	82,228
Additional emissions reductions needed to achieve target (MTCO2e)	**-**	**-**	**-30,433**	**-314,284**

Emissions for 2015 are adjusted from the 2015 GHG Inventory included in the 2017 CAP using the same methodology as the 2022 baseline inventory to allow for valid comparison.

Adj. BAU = Adjusted Business-As-Usual forecast.

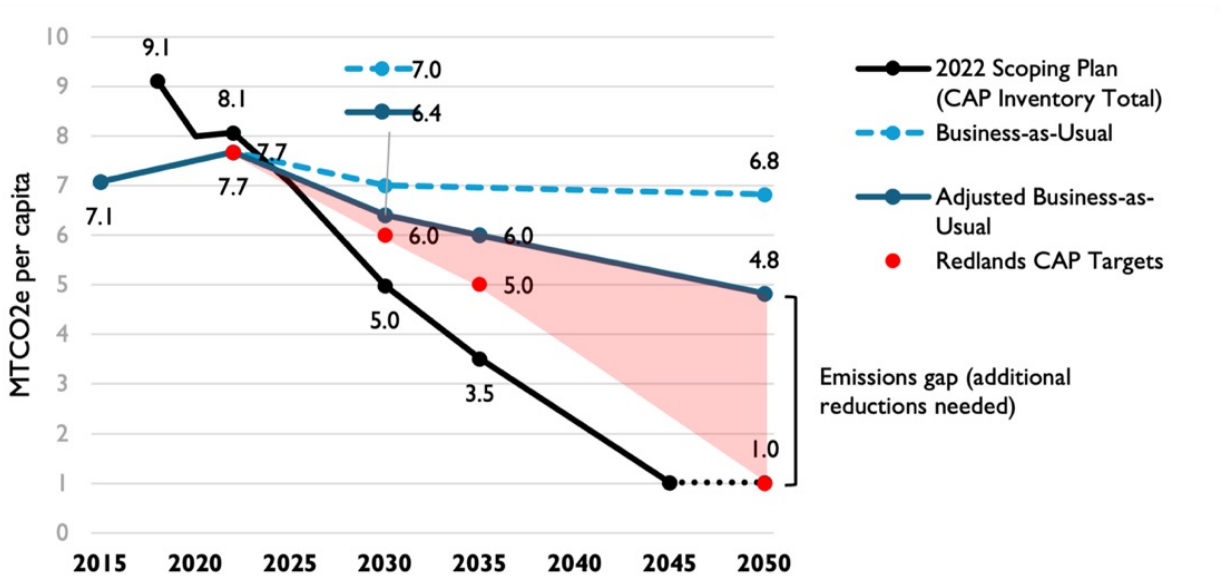
Population for 2015 and 2022 are from California Department of Finance estimates (Tables E-4 and E-5). Population for 2030 and 2050 are as modeled by SBTAM+, consistent with regional projections under Connect SoCal 2024. All population values are consistent with those used to calculate the GHG inventories.

The 2017 CAP target for 2035 is not shown because an updated GHG inventory forecast has not been quantified for that year, so gap analysis cannot be conducted.

Product of the GHG reduction targets and the population shown in the table.

Source: Dyett & Bhatia, 2024

FIGURE 3-1: COMPARISON OF STATE AND REDLANDS PER CAPITA EMISSIONS, 2015-2050



Source: Dyett & Bhatia, 2024

Note: Business-as-Usual scenario represents future conditions without reductions from state-level actions, which are included in the Adjusted Business-as-Usual forecast.

4 Greenhouse Gas Reduction Strategy Framework

This section presents GHG reduction strategies with key considerations for selecting and prioritizing specific measures. The chapter also quantifies GHG reductions from (1) State actions and (2) the updated CAP measures and actions and applies these reductions to the emissions forecast.

4.1 Key Considerations

Significant Contributors

As shown in **Figure 4-1**, the transportation sector—specifically from on-road vehicles (see also **Table 3-2** above)—is expected to continue to make up the large majority of Redlands' total annual GHG emissions in 2030 and 2050. This trend would be moderated by federal and state-level actions, Advanced Clean Cars program, Innovative Clean Transit, and other regulations incorporated into EMFAC 2021, that are expected to result in lower annual emissions primarily due to electrification of vehicle fleets and use of cleaner and more efficient technologies. However, this means that vehicle miles traveled (VMT) will be an increasingly critical lever; without decreasing total VMT overall, the transportation sector would continue to represent a disproportionately large share of total emissions.

The second largest contributor to total emissions in Redlands is the built environment sector, which includes emissions associated with electricity and natural gas consumption by residential, commercial, and industrial buildings as well as public lighting. **Figure 4-1** also shows how the built environment sector is expected to represent 28.3 percent of total emissions in 2030 and 16.2 of total emissions in 2050. Energy consumption would grow in proportion with the population, housing, and non-residential development in Redlands, consistent with regional growth (see the Progress Report for more information). Significant emissions reductions are expected due to State-level actions noted in Section 3.1 to decarbonize the energy sector. However, such changes are limited by the feasibility of technologies that are still under development. Therefore, controlling energy demand and consumption, such as by increasing energy efficiency and conservation, will continue to be the key to decreasing built environment sector emissions in the foreseeable future.

Significant Influence

As noted above, the City can influence VMT, energy demand, and generation of solid waste within the community. Though solid waste, potable water, and wastewater emissions are substantially less than transportation and built environment emissions, the City has significant influence over these sectors because the systems are under the City's direct control. That is, the City owns and operates the California Street Landfill, the Tate and Hinckley surface water treatment plants, and the Redlands Wastewater Treatment Facility, which are all located within the city.

As shown in **Table 3-2** above, solid waste emissions would continue to grow from the 2022 baseline through 2050 in proportion with the population. Local actions will help to reduce the upward trajectory for both residential as well as commercial and industrial waste streams, as well as provide an opportunity to align with the State's focus on short-lived climate pollutants (SB 1383). Guidance for local solid waste regulations and programs are provided by CalRecycle and continue to develop along with statewide efforts such as under AB 341 and SB 1383.

Potable water emissions quantified in the GHG inventory are based on the energy it takes to supply, treat, and deliver water to Redlands residents. As shown in **Figure 4-1** and **Table 3-2**,

these emissions would virtually reach zero due to state-level actions that would reduce emissions from electricity used to operate the City's water system. However, anticipated changes in technologies would best be coupled with actual reductions in water demand and corresponding energy needs to ensure emissions reductions in this sector. The forecasted inventories are based on water demand projections from the City's 2020 Urban Water Management Plan (UWMP), which assumes water demand would increase in proportion with population growth, but increased water efficiency and conservation efforts would be expected to help reduce these needs.

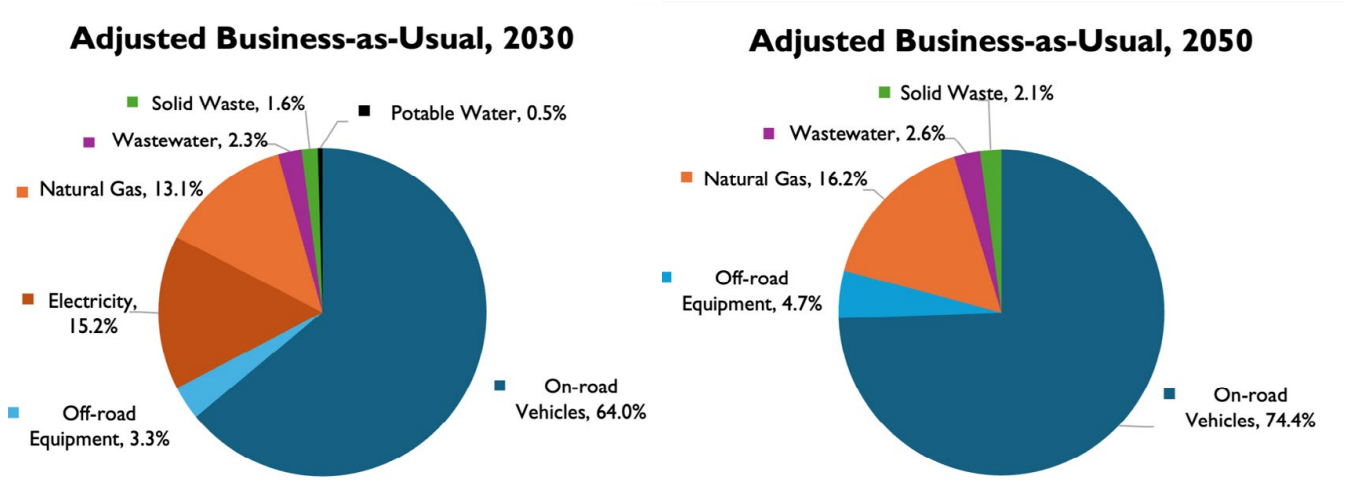
The wastewater sector represents a larger share of total annual emissions (about two percent) compared to the potable water sector, but these two sectors are inherently interrelated because consumption of potable water results in generation of wastewater. While methane and nitrous oxide emissions generated as byproducts of the wastewater treatment process are inevitable, the City can influence the significant portion of wastewater sector emissions generated by natural gas consumed by the wastewater treatment plant, such as by using biogas (methane from wastewater treatment) or other sources of on-site energy in place of natural gas.

Input from Stakeholder Outreach

Potential reduction strategies are also based on input from the Stakeholder Meeting conducted on July 25, 2024, that was attended by 14 participants representing Accelerate Neighborhood Climate Action (ANCA), University of Redlands, Redlands YIMBY, Omnitrans, City of Riverside, and City of Redlands staff from the Facilities and Community Services Department, Municipal Utilities and Engineering Department, and Building and Safety Division. Key highlights from the meeting include the following considerations.

- **Infrastructure supporting electric vehicles (EVs).** Publicly available EV chargers should be distributed equitably throughout the city—especially in North Redlands, low-income areas, and disadvantaged communities—and accessible at all hours. The City should provide wayfinding signage, have a plan to maintain and repair public EV chargers, and ensure there is adequate technical support for users experiencing issues with their EVs or the infrastructure. The CAP should prioritize actions, such as exceeding Title 24 requirements or innovative solutions like EV chargers serving on-street parking, that most effectively achieve the target number of EV chargers, in a manner that

FIGURE 4-1: ADJUSTED BUSINESS-AS-USUAL EMISSIONS BY SECTOR, 2030-2050



proportionately distributes public and private obligation to provide public, publicly accessible, and shared private EV chargers. Grants and other incentives to offset costs of owning an EV should be provided, especially for low-income residents.

- **Renewable electricity.** The City should transition its electricity provider to Community Choice Energy to maximize renewable energy usage, especially as electricity demand increases in proportion with EV ownership.
- **Mixed-use and higher density land uses to reduce VMT**. The City should consider zoning changes—such as increasing base densities, allowing more mixed uses, reducing setbacks, raising maximum heights, allowing single-stair reform in multifamily and commercial development, promoting row houses by eliminating side setbacks, and reducing parking requirements—to enable transit-supportive densities, provide nearby services and amenities, and reduce driving. Existing bike infrastructure could be improved by focusing on enhancing safety, including by installing protected bike lanes. Programs to increase transit ridership is a cost-effective way to leverage recent improvements to the transit system, though services could also be improved through targeted strategies – such as expanding SBX to Redlands to increase residents' access to medical facilities in Loma Linda, addressing fragmentation of sidewalks or other pedestrian and bicycle networks, and enhancing connections to key community destinations.
- **Partnership with schools.** Existing opportunities to reduce driving and encourage the transition to EVs include the Safe Routes to School program and ANCA's efforts to organize neighborhood carpools. It was noted that outreach and education efforts through schools represents an opportunity to effectively engage with students and families. The University of Redlands has plans to reduce its emissions through installation of additional EV chargers and solar panels but is interested in doing more, such as renewing efforts to implement a bike-share program connecting the campus to the Downtown area.
- **Costs and co-benefits**. The GHG Reduction Strategy should include a mix of measures that target new construction and existing buildings, as well as land use type (i.e., residential, commercial, industrial, medical, educational, etc.). Financial impact—such as direct costs to upgrade or retrofit homes or potential long-term costs of natural gas for households that cannot afford upgrades—on low-income residents is an important consideration, and measures should minimize negative consequences, such as rents raised by landlords who need to offset the cost of upgrading/retrofitting their properties, through tax rebates and other resources. Measures should also maximize co-benefits, such as shading from trees that lower energy demand to cool buildings, among other environmental benefits. The City should prioritize such approaches in low-income areas, where residents may not be able to afford energy efficiency upgrades. Co-benefits should also communicate the value of complementary actions like landscape water efficiency, as well as potential to strengthen climate resilience and adaptation.
- **Outreach and education.** Education about EVs should be provided to EV suppliers and service providers, not only consumers. For example, used EV retailers should be knowledgeable about rebates that are available to help residents access affordable options for owning an EV. Education about home electrification should be more clearly coordinated by the City to prevent misinformation and scams, as well as address lack of awareness, such as by endorsing trusted information and resources. More funding for education and outreach about existing recycling and

organic waste diversion programs is needed to increase awareness about these requirements, along with enforcement to increase compliance.

- **City- and community-led efforts.** The City should "lead by example," such as converting vehicle fleets to EVs, installing solar panels and batteries, striving for zero waste, and reducing emissions from City-owned facilities including the landfill and wastewater treatment plant. The City can also facilitate community-led efforts, such as ANCA's Repair Café program to encourage residents to repair and reuse items rather than throw them away or a sustainable food system consisting of local food produced in community gardens and composting. The City may consider a single-use plastics and containers ban, which is strongly supported by ANCA.

2017 Climate Action Plan Measures (2035 General Plan Policies)

The 2017 CAP forecasted that the 2035 General Plan land use and circulation system as well as the reasonably foreseeable State actions at the time would be sufficient to meet the established GHG reduction targets for 2030 and 2035. In addition, the 2017 CAP estimated that additional General Plan policies and actions—including bikeway system improvements, pedestrian improvements and increased connectivity, traffic calming, parking facilities and policies, and transportation improvements—would further reduce the City's future emissions. Reductions corresponding to these five measures were calculated using the Quantifying Greenhouse Gas Mitigation Measures methodology developed by California Air Pollution Control Officers Association (CAPCOA) to quantitatively demonstrate how the 2017 CAP would achieve the plan's reduction targets.

However, as discussed in Chapter 3, the updated GHG inventory shows that the City is not on track to meet its targets and would need to significantly reduce its emissions to align with the State's long-term GHG goals. In other words, the 2035 General Plan policies and actions alone would not be sufficient to meet the City's and the State's climate goals. Many of the measures quantified in CAPCOA's methodology, which was updated in 2021, apply to projects rather than to communities as a whole and thus require specific, project-level data that is not available at this time and/or not appropriate for the community-wide scale of the CAP.

Therefore, the 2017 CAP measures are not quantified for the CAP Update. However, applicable policies and actions from the 2035 General Plan are included as supportive measures or incorporated into other potential reduction measures and quantified where possible.

Cost and Benefit Considerations

In addition to the GHG reduction potential and degree of local jurisdictional control, the ease of implementation and enforcement for each reduction measure may vary. Section 4.2 below provides an initial estimate of each measure's GHG emissions reduction potential and associated City and/or private costs to implement the measure (approximately rated as low, moderate, or high). Additional financial feasibility considerations are noted where applicable with respect to availability of relevant federal, state, local, and other potential funding sources – such as eligible projects and programs, funding amounts, and schedules for application and award of funds. Co-benefits—including cost savings, job creation, air quality or other environmental quality, adaptation, public health, and equity—are also identified in Section 4.2 and have been confirmed and refined in response to community and stakeholder input.

4.2 Preferred Strategy

As shown in **Table 3-3**, the City will need to take actions to reduce GHG emissions beyond the legislatively adjusted business-as-usual (BAU) scenario to meet its GHG targets for 2030 and 2035 as adopted in the 2017 CAP. Significant additional reductions will also be required to align with the State's carbon neutrality goal and meet the proposed new long-term target for the Redlands CAP Update by 2050. **Table 4-1** and **Table 4-2** detail the Preferred Strategy to meet the City's greenhouse gas (GHG) reduction targets. The

TABLE 4-1: SUMMARY OF REDUCTIONS FROM QUANTIFIED POTENTIAL MEASURES, 2030-2050

	EMISSIONS REDUCTIONS (MTCO2E)[1]	
METRIC/MEASURE	**2030**	**2050**
Reduction Targets		
Projected per capita emissions (MTCO2e per capita)	6.4	4.8
GHG Reduction Target (MTCO2e per capita)	6.0	1.0
Total emissions reductions needed to achieve target[2]	-30,433	-314,284
Quantified Reduction Measures		
TR-1a. Achieve EV charger target to support on-road ZEVs	-71,745	-251,700
TR-2a. Limit idling of off-road equipment and require upgraded equipment using cleaner fuels	-3,723	-12,948
TR-2b. Require electric landscaping equipment	-411	-1,771
TR-3a. Reduce fragmentation of pedestrian network	-771	-738
TR-3b. New bike paths, separated bike lanes, or bikeways	-60	-58
TR-3c. Transit-supportive roadway treatments	-10	-10
BE-2a. Adopt a local benchmarking ordinance	-351	-1,053
BE-2b. Require existing residential buildings to meet building performance standard	-10,706	-36,218
SW-1a. Accelerate solid waste diversion target to 75%	-1,496	-1,635
SW-1b. Divert 75% of organic waste (SB 1383)	-3,976	-4,346
SW-1c. 20% edible food recovery (SB 1383)	-437	-478
CS-1a. Increase urban tree canopy by planting new trees	-3,017	-15,083
Total Reductions from Measures[3]	**-96,703**	**-326,038**
Target achieved?	Yes	Yes

1. Estimated emissions reductions beyond the adjusted business-as-usual forecast scenarios for 2030 and 2050. Table shows these as negative values to emphasize that they are reductions, and do not mean they are additional emissions.
2. Emissions reductions needed to achieve targets beyond state-level actions, including RPS, RGS, Title 24, and transportation sector reductions are already built into EMFAC 2021, that are included in the adjusted business-as-usual inventories.
4. Numbers may not sum exactly due to rounding.

Source: Dyett & Bhatia, 2024

Preferred Strategy reflects input from City staff, stakeholders, and community members as well as accounts for significant contributors to GHG emissions and areas in which the City has significant influence.

Table 4-1 shows greenhouse gas measures that could be implemented to achieve the proposed reduction target presented in **Table 3-3**. Measures that can be quantified are summarized in **Table 4-1**, and additional supportive measures that cannot be quantified due to lack of available data, established quantification methodology, or potential for double counting are excluded from the summary table but are described in **Table 4-2** below. As shown in **Table 4-1**, implementation of the potential GHG reduction measures is expected to be sufficient to meet the City's GHG reduction targets for both 2030 and 2050.

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES						
MEASURE	**PERFORMANCE METRIC**	**REDUCTION POTENTIAL (MTCO2E)[1,2]**	**APPROX. COST LEVEL**	**POTENTIAL RESOURCES**	**CO-BENEFITS**	**NOTES**
TRANSPORTATION						
TR-1. Provide and maintain EV refueling infrastructure, with a focus on disadvantaged areas, to support transition to ZEVs.						
TR-1a. 760 EV chargers citywide by 2030 (26% of passenger and 27% of medium/heavy duty vehicles on the road are ZEVs); 3,300 chargers by 2050 (100% of passenger and 85% of medium/heavy duty vehicles on the road are ZEVs) *Citywide total in 2024: 546 (383 commercial)*	760 EV chargers citywide by 2030 (26% of passenger and 27% of medium/heavy duty vehicles on the road are ZEVs); 3,300 chargers by 2050 (100% of passenger and 85% of medium/heavy duty vehicles on the road are ZEVs)	2030: 71,745 MTCO2e 2050: 251,700 MTCO2e *Estimated for passenger and medium/heavy duty on-road ZEVs corresponding to target.*	Moderate cost to City as new public works projects or increased project cost for private developer	Various programs and incentives available	Air quality, public health, equity, job creation	This measure supports the goals of EO N-79-20 to electrify transportation.
TR-1b. Work with SCE to utilize existing streetlight infrastructure to provide additional EV charging stations throughout the city. Prioritize installation in disadvantaged neighborhoods.	Pilot program launched by 2027	See TR-1a	Moderate to High cost to City as new public works projects	US Dept. of Energy Vehicle Technologies Office funding	Air quality, cost savings, equity	Opportunity to expand on existing Street Light Upgrade Program
TR-1c. Identify additional opportunities to make the zoning code and installation process more "EV-friendly," such as creating a definition for alternative fuels and recharging facilities, specifying EV chargers as a permitted use in as many districts as possible, and allowing online permitting for small-scale installations.	Review and update, as necessary, Redlands Municipal Code Chapter 15.58, Electric Vehicle Charging Systems, Chapter 18.08, Definitions and Construction, and applicable zoning districts by 2026	See TR-1a	Low cost to City	SoCalREN services	Air quality	

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES

MEASURE	PERFORMANCE METRIC	REDUCTION POTENTIAL (MTCO2E)[1,2]	APPROX. COST LEVEL	POTENTIAL RESOURCES	CO-BENEFITS	NOTES
TR-1d. Require installation of EV direct current (DC) fast chargers at new gas stations and existing gas stations that undergo a proposed amendment to the existing CUP and streamline review of these changes.	Adopt ordinance by 2026	See TR-1a	Low cost to City, high cost to developer or property owner	SCE Charge Ready Program, Low Carbon Fuel Standard credits, SB 445 opportunity to transition gas stations to EV charging	Air quality, public health, economic development	May require amendment to Redlands Municipal Code Sec. 18.156, Automobile Service Stations.
TR-1e. Work with Redlands Unified School District, Esri, and Omnitrans and seek other public-private partnerships to provide publicly accessible EV chargers at popular community destinations and within disadvantaged neighborhoods.	Locations identified by 2026; Joint-use agreements signed by 2027-	Supportive (not quantified)	Low to moderate costs, assumed to be shared by partners	Veloz Public-Private Partnership, SoCalREN Public Power-Up program, CALeVIP 2.0	Air quality, equity, cost savings	
TR-1f. Increase EV charging wayfinding and signage to help navigate EV drivers to the nearest station. Review, and amend as necessary, design standards to increase visibility of EV chargers.	Signs installed for all publicly accessible EV charging stations with more than 4 Level 2 chargers or 2 DC fast chargers	Supportive (not quantified)	Low cost to City, low cost to developer or business	Free Caltrans highway system trailblazer signs	Air quality	
TR-1g. Provide a GIS-based community reporting system and publicly accessible online map of EV chargers for residents to locate nearby chargers, report chargers in need of repair, or suggest locations for new EV charging stations. *This could build on the existing Redlands 311 system and/or federal or State mapping tools.*	Develop program and conduct outreach by 2026; use inputs to prioritize implementation of TR-1a	Supportive (not quantified)	Low cost to City	US Dept. of Energy Alternative Fuels Data Center, CEC Electric Vehicle Chargers in California Dashboard	Air quality, equity	

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES						
MEASURE	**PERFORMANCE METRIC**	**REDUCTION POTENTIAL (MTCO2E)[1,2]**	**APPROX. COST LEVEL**	**POTENTIAL RESOURCES**	**CO-BENEFITS**	**NOTES**
TR-1h. Designate a City EV Coordinator to oversee EV programs, resources, and outreach, as well as encourage participation in California Climate Action Corps programs. Expand community education and awareness about making the transition to ZEVs and resources to help make the transition affordable for all residents.	City will appoint EV Coordinator responsibilities by 2026; Annual outreach conducted	Supportive (not quantified)	Low cost to City	Resources compiled by SCE, South Coast AQMD, SoCalREN, federal and State agencies, etc.	Cost savings, equity, job creation	
TR-2. Work with South Coast AQMD to reduce emissions from off-road sources.						
TR-2a. Adopt a policy that limits idling of construction, industrial, and commercial off-road equipment and requires upgraded equipment that uses cleaner fuels.	25% of construction, industrial, commercial, and portable off-road equipment energy demand is electrified by 2030; 75% by 2050	2030: 3,723 MTCO2e 2050: 12,948 MTCO2e	Low cost to City, low to moderate costs for applicable businesses	Clean Off-road Equipment (CORE) vouchers, GoGreen Financing, Carl Moyer Program, South Coast AQMD incentives and programs	Air quality, public health	This measure supports the goals of EO N-79-20 to electrify transportation. Assumptions in line with 2022 Scoping Plan scenario.
TR-2b. Require landscaping equipment to be electric-powered for both residential and commercial projects	25% of residential and commercial landscaping equipment is electric-powered by 2030; 100% by 2050	2030: 411 MTCO2e 2050: 1,771 MTCO2e	Low cost to City, low to moderate costs for landscaping businesses	South Coast AQMD electric lawn and garden rebate, incentive, and exchange programs	Air quality, public health	This measure supports the goals of EO N-79-20 to electrify transportation and is in line with AB 1346.

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES

MEASURE	PERFORMANCE METRIC	REDUCTION POTENTIAL (MTCO2E)[1,2]	APPROX. COST LEVEL	POTENTIAL RESOURCES	CO-BENEFITS	NOTES
TR-3. Increase the convenience, reliability, affordability, and safety of walking, bicycling, and taking public transit to reduce VMT.						
TR-3a. Improve pedestrian network by reducing fragmentation. Implement actions in the Sustainable Mobility Plan to prioritize pedestrian safety and first-last mile connectivity, especially in low-income and disadvantaged communities.	Increase sidewalk length by 5% by 2030 (17 miles, relative to the existing sidewalk network) *See priority projects recommended in the Sustainable Mobility Plan*	2030: 771 MTCO2e 2050: 738 MTCO2e *Estimated for 5% total network increase*	Moderate cost to City as new public works projects	Redlands Measure T, SBCTA Measure I, Caltrans Climate Adaptation Planning grant, SBCTA Transportation Development Act	Air quality, public health, equity, community cost savings	This is a plan/ community level CAPCOA measure to reduce VMT. Supported by General Plan policies, Safe Routes to School programs, and other related plans, including Sustainable Mobility Plan goal of 7.21 miles of pedestrian routes
TR-3b. Improve bicycle network by constructing bike paths, separated bike lanes, or bikeways. Implement actions in the Sustainable Mobility Plan to improve safety and connectivity, especially in low-income and disadvantaged communities.	Increase bikeway network length by 7.64 miles of Class I, II, or IV lanes by 2030 (resulting in a 10% increase of the existing bikeway network) *See priority projects recommended in the Sustainable Mobility Plan; 4.05 miles of Class I, II, or IV currently proposed*	2030: 60 MTCO2e 2050: 58 MTCO2e *Estimated for 10% network increase*	High cost to City as new public works projects or increased project cost for private developer	SBCTA Transportation Development Act, SCAG Sustainable Communities Program, Caltrans Sustainable Transportation Planning Grant	Air quality, public health, community cost savings, equity	This is a plan/ community level CAPCOA measure to reduce VMT. Supported by General Plan policies, bicycle parking requirements in the California Green Code, and other related plans
TR-3c. Implement transit-supportive roadway treatments to improve transit travel times and reliability	Improve 10% of transit routes. Examples: transit signal priority, bus-only signal phases, queue jumps, curb extensions to speed passenger loading, dedicated bus lanes	2030: 10 MTCO2e 2050: 10 MTCO2e *Estimated for 10% network improvement*	High cost to City as new public works projects	Partnership with Omnitrans, SCAG Carbon Reduction Program, SBCTA Transportation Development Act	Air quality, public health	This is a plan/ community level CAPCOA measure to reduce VMT. Supported by General Plan policies and other related plans

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES						
MEASURE	**PERFORMANCE METRIC**	**REDUCTION POTENTIAL (MTCO2E)[1,2]**	**APPROX. COST LEVEL**	**POTENTIAL RESOURCES**	**CO-BENEFITS**	**NOTES**
TR-3d. Work with Omnitrans to develop and market a program that improves public perception and increases ridership of buses and zero-emission transit.	Program implemented by 2026; Increase ridership by 5% by 2035; 10% by 2050	Supportive (not quantified)	Low cost to City, low cost to Omnitrans	Partnership with Omnitrans, Volkswagen Environmental Mitigation Trust	Public health, equity, community cost savings, adaptation with shade covers at bus stops	Work with Omnitrans to obtain ridership data for annual CAP monitoring and explore the idea of shuttle services that provide first-/last-mile connections to transit stations
TR-3e. Implement the integrated land use and transportation policies, such as allowing greater mixed uses and denser housing near transit, envisioned in the Transit Villages Specific Plan (TVSP) and General Plan to reduce VMT. Prioritize projects that achieve transit-supportive densities.	Apply to grant programs listed in TVSP Table 9-1, Funding Tool Matrix by 2026; buildout of future planned improvements in the TVSP by 2040	Supportive (not quantified)	Moderate to high cost to City for feasibility studies and subsequent public works projects	Partnership with SBCTA, Omnitrans, and Esri; resources in TVSP Funding Matrix	Air quality, public health, equity, job creation	
TR-3f. Install roundabouts as a traffic control device when feasible to smooth traffic flow, reduce idling times, eliminate bottlenecks, and manage speed.	Install 5 roundabouts or traffic circles by 2035	Supportive (not quantified)	High cost to City as new public works projects	SCAG Sustainable Communities Program, Caltrans Sustainable Transportation Planning Grant	Air quality, energy and fuel savings, enhanced pedestrian or traffic safety, public health	
TR-4. Implement transportation demand management strategies to reduce commute trips to work, school, and other frequent destinations.						
TR-4a. Work with RUSD and ANCA to establish a neighborhood carpool program and/or increase ridership of zero-emission school buses.	Develop goal in partnership with RUSD and ANCA (example: 75% of students signed up for carpool by 2030 and 90% by 2050)	Supportive (not quantified)	Low cost to City and partners	Safe Routes to School program, Volkswagen Environmental Mitigation Trust	Public health, adaptation	

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES

MEASURE	PERFORMANCE METRIC	REDUCTION POTENTIAL (MTCO2E)[1,2]	APPROX. COST LEVEL	POTENTIAL RESOURCES	CO-BENEFITS	NOTES
TR-4b. Encourage University of Redlands, Esri, and other employers with 250 or more employees to implement commute trip reduction programs. Elements may include providing vanpool or ridesharing, transit passes, or other ways to reduce driving. Program must include at least one mandatory element and regular monitoring and reporting.	Decrease the percentage of Redlands residents who drive alone to work to 75% by 2030 and 65% by 2050 *2022 ACS five-year estimates (Table B08006): 76.1%*	Supportive (not quantified)	Low cost to City, moderate to high costs to employers	South Coast AQMD Employee Commute Reduction Program (Rule 2202), University of Redlands Shuttle Services, Esri Rideshare Program and loaner bicycles	Air quality, public health	Same performance metric target for 2030 as Sustainable Mobility Plan
TR-4c. Use the recommendations in the TVSP and findings of the Downtown Parking Study to develop pilot projects of parking strategies that encourage less solo driving.	Pilot project located Downtown launched by 2027	Supportive (not quantified)	Moderate cost to City, moderate cost to private vehicle owners	The City of San Diego implemented a Downtown Parking Pilot Program to test the use of varying meter rates and time restrictions in the downtown area. The new strategies increased parking utilization rates; the revenue of which could be used to implement other transit-supportive roadway treatments	Air quality, public health	

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES						
MEASURE	**PERFORMANCE METRIC**	**REDUCTION POTENTIAL (MTCO2E)[1,2]**	**APPROX. COST LEVEL**	**POTENTIAL RESOURCES**	**CO-BENEFITS**	**NOTES**
TR-4d. Pilot programs for EV-preferential policies such as dedicated loading zones, parking, and other incentives	Pilot project launched by 2027	Supportive (not quantified)	Moderate cost to City		Air quality	
BUILT ENVIRONMENT						
BE-1. Facilitate the transition to renewable, clean energy and enhance communitywide electric readiness.						
BE-1a. If a regional Community Choice Aggregation (CCA) is created by a multi-jurisdictional agency, consider opting in to participate, with the goal of transitioning all City accounts to 100% renewable.		Supportive (not quantified)	Low cost to City to participate in an already-created CCA			
BE-1b. Develop a community shared solar generation system, such as microgrids and storage of local electricity at schools, public facilities and community centers, fire stations, and libraries.	Pilot project completed by 2035	Supportive (not quantified)	High initial cost to City and/or developer, but future savings	US Dept. of Energy Community Power Accelerator, Low-Income Weatherization, California Strategic Growth Council Community Assistance for Climate Equity Program, SCE Community Renewables Program	Equity	
BE-1c. Work with SCE to promote and further incentivize battery storage as a means to maximize electrification benefits and improve resiliency	Establish baseline percentage of homes with battery storage beginning in 2025; increase or maintain year over year	Supportive (not quantified)	Low cost to City, low to moderate costs to owners to purchase batteries	Self-Generation Incentive Program, SCE New Home Energy Storage Pilot, SCE Storage Marketplace	Adaptation	

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES

MEASURE	PERFORMANCE METRIC	REDUCTION POTENTIAL (MTCO2E)[1,2]	APPROX. COST LEVEL	POTENTIAL RESOURCES	CO-BENEFITS	NOTES
BE-1d. Partner with educational institutions and local businesses to support development of a local green economy by providing resources for and marketing education and training programs	Provide outreach materials (e.g., to businesses and schools)	Supportive (not quantified)	Low cost to City	SoCalREN Workforce Education & Training Program, CalSEED, potential partnership with Esri	Job creation, equity, adaptation	
BE-1e. Encourage lenders to participate in solar and green lending education and certification programs; market certified lenders to homeowners	City to provide outreach materials	Supportive (not quantified)	Low cost to City	Example: University of New Hampshire-Inclusive Solar and Green Lending	Job creation, equity	
BE-2. Increase energy efficiency and reduce energy demand, especially from existing buildings.						
BE-2a. Adopt a local benchmarking ordinance that expands AB 802 to require existing large commercial and multifamily buildings of 30,000 square feet or larger to conduct energy assessments with the EPA ENERGY STAR Portfolio Manager and disclose assessments to the City annually.	10% of energy assessments result in at least 15% energy efficiency improvements	2030: 351 MTCO2e 2050: 1,053 MTCO2e	Low cost to City and low cost to owners of large commercial and multifamily buildings, with future savings	CEC AB 802 resources (e.g., ENERGY STAR Portfolio Manager); City of San Jose Energy and Water Building Performance Ordinance (BPO)	Cost savings	Assumes voluntary upgrades; City Building & Safety Division staff to monitor/enforce reporting and send out notices to comply

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES

MEASURE	PERFORMANCE METRIC	REDUCTION POTENTIAL (MTCO2E)[1,2]	APPROX. COST LEVEL	POTENTIAL RESOURCES	CO-BENEFITS	NOTES
BE-2b. Adopt building performance standards that require existing single-family and multi-family residential buildings undergoing remodels and/or additions meeting certain criteria to meet a minimum energy savings score (in site MMBtu per year).	Single family, pre-1978: 39 site MMBtu/year Single family, 1978-1991: 30 Single family, 1992-2010: 18 Multifamily, pre-1978: 17 Multifamily, 1978-1991: 16 Multifamily, 1992-2010: 13	*2030: 10,706 MTCO2e* *2050: 36,218 MTCO2e Estimated for 2022 Code Cycle*	Low City cost to adopt criteria; approx. 8.6-year payback period for multifamily properties; approx. 16.5-year payback period for single-family properties; Low to moderate costs to owners with future savings	Local Energy Codes – Cost Effectiveness Explorer, Low-Income Weatherization Program	Cost savings	Based on Action BE-2b, if a single-family or multifamily building's remodel or addition meets the stated criteria (to be defined and adopted in a reach code), the energy improvements will be proportionate to the size or value of the renovation project, with a flexible menu of options; Reach code needs to be adopted for every Energy Code cycle (e.g., 2025 code cycle begins in 2026).
BE-2c. Provide information to owners about resources, such as funding sources, tax credits, on-bill financing, rebates, or other incentives, to make energy efficiency upgrades	Information provided on City's website, at permitting counter, and during related outreach events	Supportive (not quantified)	Low cost to City	Federal Solar Investment Tax Credit, CPUC Self-Generation Incentive Program, CPUC Single-Family Affordable Solar Homes (SASH) Program, SoCalREN, SCE, South Coast AQMD resources	Cost savings, equity	

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES

MEASURE	PERFORMANCE METRIC	REDUCTION POTENTIAL (MTCO2E)[1,2]	APPROX. COST LEVEL	POTENTIAL RESOURCES	CO-BENEFITS	NOTES
BE-2d. Continue implementation of Redlands Municipal Code Section 18.156.950, Sustainable Energy, for new warehouses and logistics distribution centers and explore the opportunity to apply similar requirements to large commercial developments.	Track compliance of development projects subject to Section 18.156.950 with respect to the zero-emission equipment, renewable energy, energy efficiency, solar PV, EV charging, and tree planting requirements. By 2030, evaluate and update requirements, as needed, and consider similar requirements for commercial developments.	Supportive (not quantified)	Low cost to City	Collaboration with developers	Adaptation, cost savings	Recent example of project to track: Resolution No. 8620 (Lot Merger No. 8 and Planned Development No. 7)
BE-3. Lead by example by achieving carbon neutrality of City buildings and operations						
BE-3a. Develop and implement a City "lead by example" plan to increase energy efficiency in City buildings, facilities, and operations. Ensure adequate staffing, such as dedicated climate staff or fellows, and determination of responsibilities by various departments, agencies, and partners to successfully implement the plan.	Adopt plan by 2028; conduct annual performance reviews	Supportive (not quantified)	Low cost to City	SoCalREN services, Climate Mayors network resources	Adaptation, cost savings	

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES

MEASURE	PERFORMANCE METRIC	REDUCTION POTENTIAL ($MTCO_2E$)[1,2]	APPROX. COST LEVEL	POTENTIAL RESOURCES	CO-BENEFITS	NOTES
BE-3b. Consider joining the national Climate Mayors coalition to demonstrate commitment to climate leadership	Join by 2026; annually participate in meetings or events	Supportive (not quantified)	Low cost to City	Access to network resources and idea sharing opportunities	Cost savings	
BE-3c. Enroll in SoCalREN's services for energy efficiency resources and participate in network events	Complete enrollment and maintain membership; attend meetings	Supportive (not quantified)	Low cost to City as eligible public agency	None needed; resources gained	Cost savings	SoCalREN is administered by the County of Los Angeles and funded by utility ratepayers under the auspices of the California Public Utilities Commission (CPUC). SoCalREN offers an objective, third party resource for enrolled agencies at no cost.
BE-3d. Electrify the City's vehicle fleet	60% of the municipal fleet is electrified by 2035; 100% of all feasible vehicles and equipment by 2050. Incorporated into the lead by example plan	Supportive (not quantified)	Moderate cost to City	US Dept. of Energy and CEC funding for EV readiness plans	Air quality	
BE-3e. As part of Measure BE-3a, include projects in the City's Capital Improvement Plan for installing solar PV systems and battery storage at City facilities	Priorities identified and underway by 2030	Supportive (not quantified)	Moderate to high costs to City as public works projects	Alternative Fuel Vehicle Refueling Property Credit	Adaptation, cost savings	

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES

MEASURE	PERFORMANCE METRIC	REDUCTION POTENTIAL (MTCO2E)[1,2]	APPROX. COST LEVEL	POTENTIAL RESOURCES	CO-BENEFITS	NOTES
SOLID WASTE						
SW-1. Solid waste diversion						
SW-1a. Achieve a solid waste disposal rate through local action that matches the statewide goal of 75% diversion	Disposal rate of 2.95 pounds per person per day (PPD) by 2030 and maintained thereafter; organic waste diversion and food recovery counts toward this goal (see SW-1b and SW-1c)	2030: 1,496 MTCO2e 2050: 1,635 MTCO2e	Low to moderate cost to City for enforcement and outreach (e.g., SW-1c and SW-1d), higher costs to City for facility and management improvements (e.g., SW-3a); moderate costs to businesses	Beverage Container Recycling City/ County Payment Program	Environmental quality, job creation Environm	Accelerates AB 939 "Good Faith Effort" jurisdiction targets in line with but do not exceed statewide goals
SW-1b. Continue to implement Redlands Municipal Code Sec. 13.67, Mandatory Organic Waste Disposal Reduction, that supports SB 1383 by locally diverting 75% of organic waste from landfills in order to match the statewide goal	75% organic waste diversion by 2025 and maintained thereafter; Review and update, as necessary, code by 2026	2030: 3,976 MTCO2e 2050: 4,346 MTCO2e	Same as SW-1a	CalRecycle SB 1383 Implementation Resources (see SW-1c through SW-1e)	Environmental quality, job creation	

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES

MEASURE	PERFORMANCE METRIC	REDUCTION POTENTIAL (MTCO2E)[1,2]	APPROX. COST LEVEL	POTENTIAL RESOURCES	CO-BENEFITS	NOTES
SW-1c. Adopt a Food Waste Prevention and Edible Food Recovery policy, such as expanding Redlands Municipal Code Sec. 13.67.060 and 13.67.070, to develop a program, in collaboration with community partners, including San Bernardino County, with guidance and incentives for compliance and monitoring in line with SB 1383 for food recovery and distribution.	20% of currently disposed, edible commercial food surplus is recovered for human consumption by 2025 and maintained thereafter	2030: 437 MTCO2e 2050: 478 MTCO2e	Low to moderate cost to City; can be combined with SW-1d	Edible Food Recovery Grant Program, CalRecycle Model Edible Food Recovery Agreement and jurisdiction examples	Public health, equity, job creation	Intended to support SB 1383 through local action to match the statewide goal of 75% diversion
SW-1d. Increase education and enforcement of organics waste collection, processing, and diversion from landfills, especially activities that prevent contamination of recyclable or divertible waste streams.	Determine baseline compliance through required enforcement activities per SB 1383 by 2025 and implement an annual inspection and enforcement program ; Annual outreach for residents and enforcement to Tier One and Two commercial edible food generators	Supportive (not quantified)	Low to moderate cost to City; can be combined with SW-1c	CalRecycle Mandatory Organic Waste Disposal Reduction jurisdiction examples, CalRecycle Beverage Container Recycling grants, Best Practices for Route Review, and other SB 1383 resources	Job creation	

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES

MEASURE	PERFORMANCE METRIC	REDUCTION POTENTIAL (MTCO2E)[1,2]	APPROX. COST LEVEL	POTENTIAL RESOURCES	CO-BENEFITS	NOTES
SW-1e. Adopt a communitywide Recovered Organic Waste Product Procurement Policy that supports continued achievement of Redland's annual recovered organic waste product procurement target, as established by CalRecycle. Explore partnerships with local farms to help meet the annual procurement target. Example strategies include using the maximum possible amount of compost for City parks and landscaping.	Annually procure 0.08 tons of organic waste per resident	Supportive (not quantified)	Low cost to City	CalRecycle Model Procurement Policy and jurisdiction examples, City's current utilization of compost/mulch from One Stop Landscape	Environmental quality, community cost savings	Per SB 1383, procurement does not necessarily have to be from organic waste generated by the city
SW-2. Solid waste reduction						
SW-2a. Encourage the reduction of single use plastics and containers communitywide, especially at City events and facilities	Ordinance adopted by 2026	Supportive (not quantified)	Low cost to City, moderate to high cost for businesses	Partnership with ANCA, Beverage Container Recycling Grant Program, Beverage Container Recycling City/ County Payment Program	Environmental quality	

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES

MEASURE	PERFORMANCE METRIC	REDUCTION POTENTIAL (MTCO2E)[1,2]	APPROX. COST LEVEL	POTENTIAL RESOURCES	CO-BENEFITS	NOTES
SW-2b. Adopt policies to reduce waste from City operations such as "Buy Recycled" or actions to encourage paper reduction, such as a "think before you print" campaign, reducing margins and logos on City-branded materials, requiring fewer copies or smaller-sized project plans or submittals, using computer software to remove blank pages and images from documents, etc.	Ordinance adopted by 2026	Supportive (not quantified)	Moderate cost to City but potential future savings	Recycled-Content Product Manufacturers directory, RecycleStore	Cost savings	
SW-2c. Require projects that require a construction and demolition recycling plan to divert a minimum of 65% of non-hazardous construction and demolition waste with third-party verification, in compliance with CALGreen Tier 1 requirements	Amend Sec. 13.66.050 to include a mandatory target of 65% diversion of construction and demolition waste with third-party verification	Supportive (not quantified)	Low cost to City		Environmental quality	Consider increasing local requirement and/or revising as CALGreen requirements change.
SW-2d. Adopt a policy, in compliance with AB 2593, to require recycled asphalt pavement for bikeways and greenways, as well as commercial and community parking lots where feasible.	Ordinance adopted by 2026	Supportive (not quantified)	Low to moderate costs to City for future public works projects	Rubberized Pavement Grant Program	Public health	

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES

MEASURE	PERFORMANCE METRIC	REDUCTION POTENTIAL (MTCO2E)[1,2]	APPROX. COST LEVEL	POTENTIAL RESOURCES	CO-BENEFITS	NOTES
SW-2e. Require new commercial developments to submit waste reduction plans and encourage existing businesses to conduct waste audits. Develop a green business program that recognizes and rewards local businesses for high waste diversion and/or other sustainability measures	50% of businesses conduct waste audits by 2030, and 100% by 2050. Green business program established by 2027.	Supportive (not quantified)	Low to moderate cost to City, moderate cost to developers or businesses with potential future savings or revenue	California Strategic Growth Council Community Assistance for Climate Equity Program	Adaptation, job creation	May require amendment to Sec. 13.66.030
SW-2f. Work with ANCA, schools, local art groups, and businesses to expand neighborhood-scale programs that support a circular economy by encouraging reuse to reduce waste generation, such as creative reuse workshops or community exchange programs.	Establish program by 2026, and conduct at least one event per year	Supportive (not quantified)	Low cost to City	Partnership with ANCA and others, Recycling Market Development Revolving Loan Program, New Market Tax Credits	Job creation	
SW-3. Reduce emissions from the City's landfill facility						
SW-3a. Explore opportunities to increase waste-to-energy capacity at the landfill, such as using captured landfill gas to meet the facility's energy demand and/or providing the energy on a local grid. *This action also supports progress toward Redlands' procurement target (see SW-1e).*	60% landfill facility energy demand met by energy generated on site by 2035; 100% by 2050	Supportive (not quantified)	Moderate cost to City to connect current landfill gas capture system for waste-to-energy, with potential future savings or revenue	Greenhouse Gas Reduction Loans, Clean Electricity Investment Tax Credit	Adaptation, cost savings	Emissions from energy usage by the landfill facility are included in the built environment sector for this inventory due to lack of site-specific data.

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES						
MEASURE	**PERFORMANCE METRIC**	**REDUCTION POTENTIAL (MTCO2E)[1,2]**	**APPROX. COST LEVEL**	**POTENTIAL RESOURCES**	**CO-BENEFITS**	**NOTES**
SW-3b. Coordinate capacity planning with the County per SB 1383 and increase sorting capabilities at the landfill to support diversion goals. Seek to achieve a high diversion organic waste processing facility status	Divert 75% of organic waste (see SW-1b).	Supportive (not quantified)	Low to cost to City, potentially higher costs (see SW-1b)	Greenhouse Gas Reduction Loans	Job creation	
POTABLE WATER						
PW-1. Increase water efficiency and water conservation						
PW-1a. Continue to implement the Water Efficient Landscape Ordinance, Urban Water Management Plan, and Water Systems Master Plan.	Review and update plans; monitor progress in an annual report	Supportive (not quantified)	Cost varies with projects	California Climate Investments, Watershed Resilience Program, WaterSMART Small-Scale Water Efficiency Projects grants	Water quality, adaptation	
PW-1b. Require CALGreen Tier 2 water efficiency requirements for indoor water uses in new development and renovated buildings.	Ordinance adopted by 2026	Supportive (not quantified)	Low cost to City, moderate potential costs to developers or owners	WaterSMART Small-Scale Water Efficiency Projects grants	Water quality, cost savings	Consider reductions for smaller projects
PW-1c. Explore options to reduce prevalence of water-intensive ornamental lawns, especially in lower density residential districts, such as by reducing front yard setback requirements	Study of options completed by 2026; amendments to zoning code by 2027	Supportive (not quantified)	Low to moderate cost to City to hire consultant		Adaptation, cost savings, environmental quality	Potential opportunity to connect to infill housing objectives

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES

MEASURE	PERFORMANCE METRIC	REDUCTION POTENTIAL (MTCO2E)[1,2]	APPROX. COST LEVEL	POTENTIAL RESOURCES	CO-BENEFITS	NOTES
PW-1d. Increase enforcement activities of water use restrictions to ensure compliance. Require noncompliant water customers to participate in an education program.	Establish baseline level of noncompliance by 2027 and reduce or maintain this level year over year	Supportive (not quantified)	Low to moderate cost to City for inspections, potential revenue from inspection fees		Water quality	
PW-1e. Join the EPA-sponsored national WaterSense partnership to promote water-efficient products and practices	Join partnership by 2026, attend meetings or events annually	Supportive (not quantified)	Low cost to City with potential savings	WaterSense partner resources	Water quality, cost savings	
PW-1f. Continued education, incentives, and assistance services to comply with AB 1668 and SB 606, such as events that showcase the city's demonstration gardens to encourage landscape conversion	Annually monitor program participation and assess opportunities to improve	Supportive (not quantified)	Low cost to City	City of Redlands Water Efficiency Rebate Program	Adaptation	Demand management measures included in the UWMP and Water Systems Master Plan
WASTEWATER						
WW-1. Reduce emissions from wastewater treatment						
WW-1a. Continue to implement the recommendations in the Wastewater Master Plan to optimize operational efficiency.	Projects identified in the Capital Improvement Plan	Supportive (not quantified)	Low to moderate costs to City as public works projects, with potential future savings		Cost savings	Focus will be on advancing and innovating WWTP processes to increase water and energy efficiency.

TABLE 4-2: EVALUATION OF GREENHOUSE GAS REDUCTION MEASURES						
MEASURE	**PERFORMANCE METRIC**	**REDUCTION POTENTIAL (MTCO2E)[1,2]**	**APPROX. COST LEVEL**	**POTENTIAL RESOURCES**	**CO-BENEFITS**	**NOTES**
CARBON SEQUESTRATION						
CS-1. Increase capacity for local carbon sequestration						
CS-1a. Update the Street Tree Policy and Protection Guidelines Manual and City Street Tree Planting Plan and/or develop an urban forest master plan with a new tree planting goal to equitably increase the city's urban forest.	Plant 880 new trees by 2030 (2% increase in current tree canopy); 4,400 new trees by 2050 (10% increase in current tree canopy)	2030: 3,017 MTCO2e 2050: 15,083 MTCO2e	Moderate cost to City for planting and maintenance	Honorary Tree Program, Redlands Community Foundation, CAL FIRE Urban and Community Forestry Grants, CNRA Urban Greening Program	Air and other environmental quality, adaptation, public health, equity	Trees to be planted will be in parks, right-of-way planters, and other City property. Reductions include energy saving benefits from trees. Related efforts include existing tree shade cover requirement under Section 18.156.930(D).
CS-1b. Use compost (organic waste procurement) for urban forest planting and maintenance.	Achieve Redland's annual recovered organic waste product procurement target (See SW-1e)	Supportive (not quantified)	Low cost to City		Environmental quality, cost savings	Per SB 1383, procurement does not necessarily have to be from organic waste generated by the city
CS-1c. Allow community gardens in as many districts as possible as a way to support growth of a local food system, encourage stewardship, and create spaces with capacity to sequester carbon.	Amend zoning code by 2026	Supportive (not quantified)	Low cost to City	CAL FIRE Urban and Community Forestry Grants, CNRA Urban Greening Program, University of Redlands SURF Garden	Environmental quality, job creation, public health	

1. Reductions in the built environment sector in 2050 are from avoided natural gas emissions only because it is assumed electricity would be 100% carbon-free due to RPS requirements by 2045.
2. There are no additional emissions reductions from potable water sector in 2050 because electricity would be 100% zero emission due to RPS.

Source: Source: Dyett & Bhatia, 2025

5 Monitoring, Evaluating, and Reporting

The Climate Action Plan (CAP) outlines a strategic roadmap for Redlands to meet its 2030 and 2035 greenhouse gas (GHG) emission reduction targets as well as the State's carbon neutrality goal and proposed new long-term target for 2050. Recognizing that underlying assumptions and data—such as adoption rates of measures, technological advancements, cost changes, legislative updates, and co-benefits—will evolve over time, the CAP is intended to be a living document that provides flexibility for updates as new information becomes available and success is monitored over time.

This chapter identifies the monitoring framework for the CAP to implement the GHG Reduction Strategy presented in Chapter 4.

5.1 Updated Baseline Inventory Progress Reports

The City remains committed to the ongoing, incremental, and comprehensive efforts required to meet the long-term climate goals set forth in this CAP. As measures are implemented, data on the timing and success of implementation, as well as communitywide GHG emissions trends, will be used to inform updates to individual GHG reduction measures and the CAP as a whole. The intent is to allow City staff to evaluate and monitor CAP performance over time and alter or amend the plan if it is not achieving the desired outcomes. This may include community engagement, providing regular progress updates, and creating opportunities for public input as policies and programs are developed and infrastructure is built. The City should conduct communitywide GHG emissions inventories supported by GHG standard protocols and climate commitments, approximately every two to three years if feasible.

5.2 Annual CAP Monitoring Report

The City will periodically monitor and report on progress towards achieving the emissions targets every year. The monitoring report will include information on the status of the federal and State level emissions reductions measures identified in Chapter 3 of this CAP, as well as any new efforts that may emerge in the reporting year. The report will be presented to the City Council at a public meeting during which interested parties may comment on the report.

5.3 Updates to the CAP

As technologies and markets evolve, and the City implements the CAP actions, these reports will help track progress and identify areas needing improvement, adjustment, or replacement. The City should update the CAP every five years to reflect the findings and recommendations from the inventory updates (described in Section 5.1) and monitoring reports (described in Section 5.2). Updates will also address new state or federal legislation, market trends, or regional initiatives that may influence local climate change mitigation efforts. Moreover, the updates provide an opportunity to reassess measures and actions that were previously challenging to implement due to unavailable technologies or high upfront costs.

5.4 GHG Reduction Strategy Implementation Matrix

Table 4-2 above summarizes the performance metrics, timeframe, and responsibilities for each GHG reduction measure and supporting action to ensure successful implementation of the CAP. A list of resources, including federal, state, and regional programs that represent opportunities for funding or partnerships that are currently available as preparation of this CAP are included in **Table 4-2**.

DYETT & BHATIA

Urban and Regional Planners