

# City of Carmel-by-the-Sea Climate Action Plan

## *The Path Forward*

Adopted by the Carmel-by-the-Sea City Council  
on \_\_\_\_\_

Final Draft  
July 2022

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## Credits and Acknowledgments

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Many thanks to the members of the public who have attended the Climate Committee meetings starting in November 2019 and provided valuable input throughout the plan development process.



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## **Appendix A – Greenhouse Gas Inventory and Forecasting Technical Memo**

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## INTRODUCTION

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Rising concentrations of carbon dioxide and other greenhouse gases are altering temperature and rainfall patterns and contributing to rising sea levels globally. In California, recent historic wildfires, droughts, floods, mudslides, and public safety power shutoffs represent the types of climate change impacts that will continue to be experienced with increasing frequency and severity. Although climate change is a global issue, regional and local governments are uniquely positioned to identify the specific risks and most effective solutions for their communities.

Recognizing the importance of local action, the City of Carmel-by-the-Sea (City) Climate Action Plan (CAP) presents measures that will serve as a road map to meeting Carmel-by-the-Sea's greenhouse gas (GHG) emission reduction targets. It addresses government operations emissions under the City's control, as well as community-wide emissions. The emissions reduction measures build on existing plans, policies and practices already adopted by the City and other regulators, and are consistent with statewide climate legislation. This plan is a companion document to the City's Climate Adaptation Plan and includes several measures that not only reduce the community's GHG emissions but also improve public health and community resilience.

### Scope of the Climate Action Plan

This Climate Action Plan consists of the following elements:

- (1) a greenhouse gas emissions inventory (summarized in this chapter and provided in full as Appendix A),
- (2) a 2030 greenhouse gas emissions target and forecast, and a 2045 carbon neutrality goal, in line with Statewide goals,
- (3) an action plan to meet these targets, and
- (4) implementation and monitoring recommendations to ensure continued success towards reaching GHG reduction goals.

The CAP identifies strategies to guide the development and implementation of GHG reduction measures in the City of Carmel-by-the-Sea, and quantifies the emissions reductions that result from these strategies. The overall benefits of the CAP are much greater than reducing GHG emissions; it includes quality of life and resilience improvements for the community, potential energy cost savings for residents and businesses, and protection of environmental and community assets for future generations.

The CAP proposes strategies to reduce GHG emissions from community-wide activities and government operations. Strategies are broken down into six goals:

- Goal 1:** Energy Efficiency and Electrification of Residential and Commercial Buildings
- Goal 2:** Improved Transportation Choices
- Goal 3:** Renewable Energy Sources
- Goal 4:** Water Efficiency
- Goal 5:** Waste Reduction
- Goal 6:** Urban Forest Protection and Heat Island Effect Reduction

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# GREENHOUSE GAS EMISSIONS INVENTORY AND FORECAST

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GHG emissions inventories are the foundation of planning for future reductions. Establishing an inventory of emissions helps to identify and categorize the major sources of emissions produced over a single calendar year. A community inventory includes GHG emissions that result from the activities of city residents and businesses. The inventory identifies the major sources of GHG emissions resulting from activities in sectors that are specific to community activities.

## Community GHG Inventory Scope

The Association of Monterey Bay Area Governments (AMBAG) has prepared community inventories for its member jurisdictions, including the City, for the years 2005, 2010, 2015, 2018, and 2019. The 2019 inventory is the most recent year for which data is available. Table A provides the sectors evaluated in the GHG inventories.

**Table A: Community Sectors Evaluated**

Community Sectors
Residential Energy (Electricity and Natural Gas)
Commercial Energy (Electricity and Natural Gas)
On-Road Transportation
Solid Waste
Wastewater

AMBAG calculated GHG emissions using the available activity data (e.g., kilowatt-hours of electricity) in the State Energy Efficiency Collaborative (SEEC) ClearPath tools to convert

activity data to emissions output using relevant emission factors.

## Transportation GHG Analysis

LSA Associates (LSA) was retained by the City to develop an updated GHG emissions inventory to address specific concerns associated with the City's unique tourist-based economy that attracts visitors from around the State and the world (Appendix A). The City wanted to better understand the relationship between its tourist economy and GHG emissions resulting from tourism. The City had two specific goals: (1) understanding GHG emissions from on-road transportation based upon the origins and destinations of vehicle trips attributable to the City; and (2) developing GHG reduction strategies that will be effective for different types of vehicle trips including vehicle trips resulting from tourism, vacation homes, employee commutes, delivery services, and other local trips.

The analysis determined the following vehicle trip information:

- Local trips made up approximately 7 percent (%) of all vehicle trips in the City and averaged 6.5 miles.
- Commute trips represented 38% of all vehicle trips in the City and averaged 27 miles per trip.
- Delivery services providing supplies to local businesses and construction sites in the City made up approximately 10% of all vehicle trips and averaged 27 miles.

- 20% of vehicle trips result from the occupants of second homes in Carmel with an average trip length of 120 miles from their origin to the second home.
- Domestic tourists (primarily from the Bay Area and Salinas) make up 22.5% of vehicle trips. Their mileage varies depending on their origin from 27 miles for visitors from Salinas to 322 miles for those from Los Angeles and Orange Counties.
- International tourists make up approximately 2.5% of vehicle trips. Many of these visitors took a tour bus to arrive in Carmel from San Francisco International Airport.

There are three types of GHG emissions that the United States Environmental Protection Agency (EPA) defines in their guidance protocols: Scope 1 GHG emissions are “direct” emissions from sources that are controlled by the jurisdiction; Scope 2 emissions are “indirect” emissions from sources controlled by the jurisdictions, such as emissions from the generation of electricity; Scope 3 emissions are from sources not controlled by the jurisdiction.

According to the EPA protocols, GHG emissions associated with vehicle miles traveled within Monterey County boundaries are considered “Scope 1” emissions and are counted in the City’s GHG inventory and target setting. The GHG emissions associated with vehicle miles

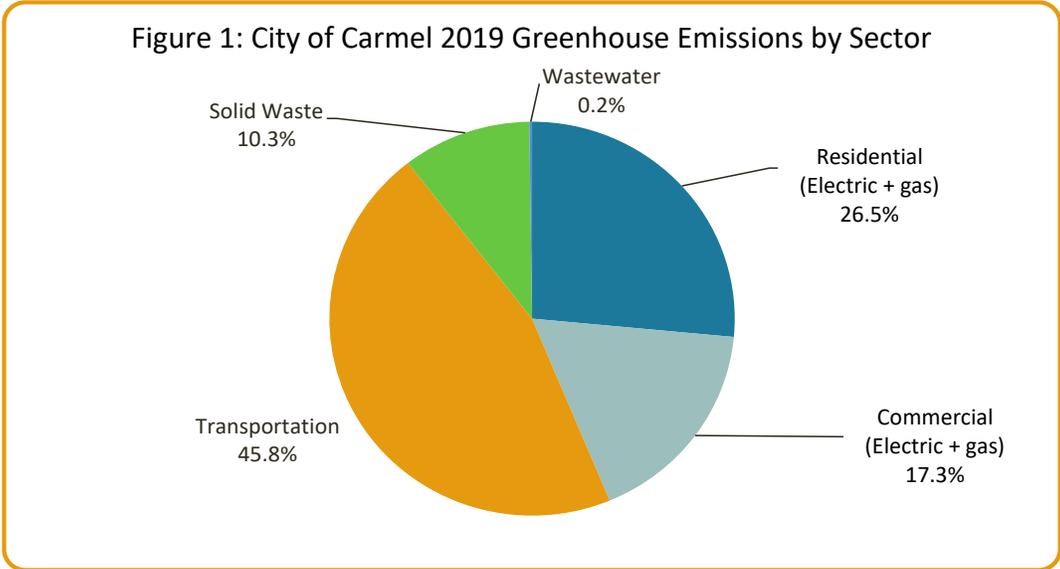
traveled outside of the Monterey County boundaries are considered Scope 3 emissions. Although these emissions are not included in the target setting, the City has developed strategies focused on reducing these emissions as well.

## GHG Inventory Results

The City’s total emissions in 2019 were 30,962 metric tons of carbon dioxide equivalent (MT CO<sub>2</sub>e). As shown in Figure 1 and Table B, the on-road transportation sector was the largest contributor to emissions in the 2019 inventory, with 45.8% of the City’s total GHG emissions. Natural gas from residential and commercial buildings made up 43.2% of the City’s GHG emissions.

The third most significant category of emissions was solid waste at 10.3% of total emissions. Solid waste emissions are associated with the decomposition of organic waste material in landfills, which generates methane gas, a greenhouse gas 84 times more potent than carbon dioxide.

Electricity (0.5%), and wastewater (0.2%) comprised the remainder of the emissions. As shown in Figure 2, electricity accounts for a low percentage of total emissions due to the power supply mix provided by Central Coast Community Energy (3CE), which relies largely on low-carbon energy sources.

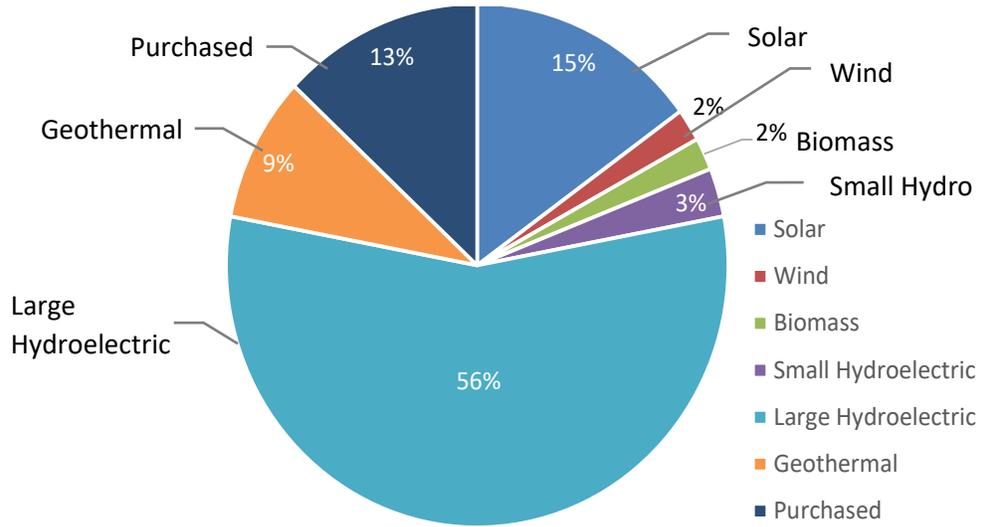


**Table B: Communitywide GHG Emissions by Sector for 2019**

Sector	2019 (MT CO <sub>2</sub> e)	Percent of Total
<b>On-road Transportation</b>		
Scope 1	14,173	45.8
Scope 3	15,115	
<b>Electricity</b>		
Residential	63	0.5
Commercial	92	
<b>Natural Gas</b>		
Residential	8,138	43.2
Commercial	5,250	
<b>Solid Waste</b>		
	3,178	10.3
<b>Wastewater</b>		
	68	0.2
<b>Total Scope 1 Emissions</b>	<b>30,962</b>	
<b>Total with Scope 3 Emissions</b>	<b>46,076</b>	100

Source: AMBAG and LSA 2021.  
 MT CO<sub>2</sub>e = metric tons of carbon dioxide equivalent

Figure 2: 3CE Electric Power Generation Mix



### GHG Emissions Forecast

Forecasting future GHG emissions allows the City to understand how emissions are expected to increase or decrease in the future. Major changes in growth or land uses may affect how to best plan to reduce emissions in the future. GHG emissions are forecast using two scenarios: a Business-as-Usual (BAU) scenario and an Adjusted BAU (ABAU) scenario. The BAU scenario describes emissions based on projected growth in population and employment and does not consider policies that would reduce emissions in the future (that is, the policies and related efficiency levels in place in 2019 are assumed to remain constant through 2045). The City’s projected growth is estimated using data from AMBAG’s adopted growth forecasts for Carmel by-the-Sea, which provides the City’s demographic growth indicators for the years 2030 and 2045. The growth rates for households, population, and employment were estimated based on the available data and used to estimate the growth in households, population, and employment into the year 2045. Table C shows the growth

projections used to develop the emissions forecasts. As shown in this table, population, jobs, and energy consumption will experience very low growth rates in the City through 2045.

The ABAU scenario describes emissions based on projected growth *and* considers policies that will achieve GHG reductions in the future. By evaluating the two scenarios, the City can evaluate the effect that existing policies may have on future emissions and determine which local measures would provide additional reductions.

Two future years are forecast for each scenario: 2030 and 2045. The 2030 forecast year is consistent with the goals identified in the Senate Bill (SB) 32, and the corresponding Statewide Scoping Plan, which identifies Statewide GHG reduction targets for 2030.

As shown in Table D, the 2030 BAU emissions are estimated to be 29,445 MTCO<sub>2</sub>e. By 2045, emissions are estimated to decrease to 27,471MT CO<sub>2</sub>e. This modest reduction in GHG

emissions is due to changes over time as people purchase newer and more energy efficient automobiles and appliances.

As shown in Table E, the City’s ABAU emissions are estimated to be 23,013 MT CO<sub>2</sub>e in 2030, and 19,013 MT CO<sub>2</sub>e in 2045. The ABAU takes into account stringent State regulations related

to transportation (vehicle efficiency and low carbon fuel standards) and energy sectors (renewable energy portfolio standards and requirements for a portion of the natural gas supply to be renewable natural gas).

**Table C: Growth Indicators for 2020, 2030, and 2045**

Sector	Demographic Indicator	2020	2030	2020–2030 CAGR <sup>1</sup> Percent	2045	2020–2045 CAGR Percent
Residential Energy	Households	3,437	3,442	0.0002	3,459	0.0064
Commercial/Industrial Energy	Jobs	3,556	3,674	0.0033	3,915	0.0040
N/A <sup>2</sup>	Population	3,949	3,954	0.0001	3,984	0.0035
VMT, Solid Waste and Wastewater	Service Population (Population + Jobs)	7,505	7,628	0.0015	7,899	0.0020

Source: AMBAG, 2022 Regional Growth Forecast

<sup>1</sup> CAGR = Compound annual growth rate.

<sup>2</sup> Not applicable. Population data are shown for informational purposes but are not used for forecasting any sector.

**Table D: Business As Usual (BAU) Forecast Emissions**

Sector	2019 (MT CO <sub>2</sub> e)	2030 (MT CO <sub>2</sub> e)	Percent Change 2019–2030	2045 (MT CO <sub>2</sub> e)	Percent Change 2019–2045
On-road Transportation					
Scope 1:	14,173	13,316	-5%	12,582	-11%
Scope 3:	15,115	14,201		13,418	
Electricity					
Residential	63	60	-5%	56	-11%
Commercial	92	87		82	
Natural Gas					
Residential	8,138	7,759	-4%	7,239	-11%
Commercial	5,250	4,961		4,628	
Solid Waste	3,178	3,033	4%	2,830	-11%
Wastewater	68	59	-5%	55	-12%
<b>Total (Scope 1)</b>	<b>30,962</b>	<b>29,445</b>	<b>-5%</b>	<b>27,471</b>	<b>-11%</b>
<b>Total (Scope 3)</b>	<b>46,076</b>	<b>43,646</b>	<b>-5%</b>	<b>40,889</b>	<b>-11%</b>

Source: LSA forecasts for the City of Carmel by-the-Sea, 2021.

MT CO<sub>2</sub>e = metric tons carbon dioxide equivalent

**Table E: Adjusted Business As Usual (ABAU) Forecast Emissions**

Sector	2019 (MT CO <sub>2</sub> e)	2030 (MT CO <sub>2</sub> e)	Percent Change (2019–2030)	2045 (MT CO <sub>2</sub> e)	Percent Change (2019–2045)
On-road					
Transportation					
Scope 1:	14,173	10,407	-26.6%	8,708	-38.6%
Scope 3:	15,115	11,105		9,285	
Electricity					
Residential	63	47	-25.4%	39	-38.1%
Commercial	92	68		57	
Natural Gas					
Residential	8,138	6,138	-24.6%	5,010	-38.4%
Commercial	5,250	3,935		3,203	
Solid Waste					
Wastewater	3,178	2,372	-25.4%	1,958	-38.3%
Wastewater	68	46	-32.4%	38	-44.1%
<b>Total (Scope 1)</b>	<b>30,962</b>	<b>23,013</b>	<b>-25.7%</b>	<b>19,013</b>	<b>-38.6%</b>
<b>Total (Scope 3)</b>	<b>46,076</b>	<b>34,118</b>		<b>28,298</b>	

Source: LSA forecasts for the City of Carmel by-the-Sea, 2021.

MT CO<sub>2</sub>e = metric tons carbon dioxide equivalent

## GREENHOUSE GAS EMISSIONS TARGETS

The State has set goals for reducing statewide GHG emissions by 2030 and 2045 through Assembly Bill (AB) 32, Senate Bill (SB) 32, SB 100, and Executive Order (EO)-B-55-18. The State has also provided guidance to local jurisdictions as “essential partners” in achieving the State’s goals by identifying a 2030 GHG emissions target 40 percent below 1990 levels. Additionally, continued reduction goals should be implemented beyond the 2030 target to keep the State on a path toward Statewide climate neutrality by 2045.

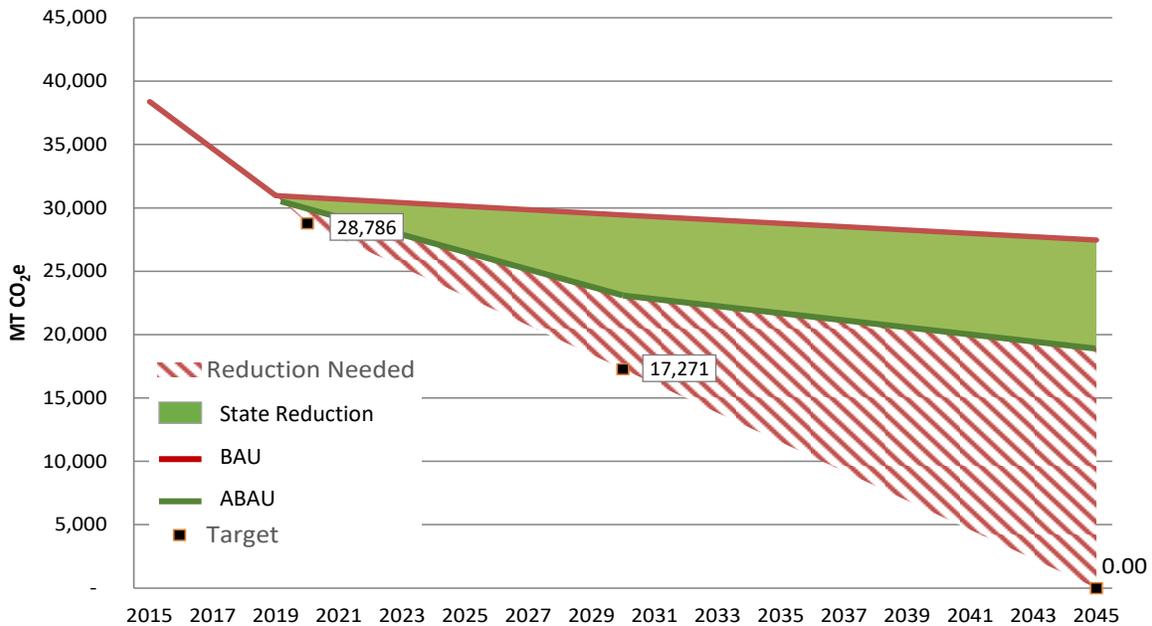
In the City of Carmel-by-the-Sea, the State’s target of 40 percent below 1990 levels by 2030 amounts to a reduction of 12,174 MT of CO<sub>2</sub> equivalent in annual emissions by 2030 compared to the BAU forecast and a reduction

of 5,742 MT CO<sub>2</sub>e by 2030 compared to the ABAU forecast to meet the State target. The City needs to implement strategies and measures to meet the State’s 2030 GHG reduction target.

Additionally, the City’s long-term goal is to also meet the State’s 2045 carbon neutrality goal. As the City begins to implement the Climate Action Plan, additional measures will need to be identified and developed over time to meet this long-term goal.

Figure 3 depicts the BAU and ABAU forecasts, reduction targets, and additional GHG emission reductions required to meet the reduction targets.

**Figure 3: BAU, ABAU forecasts, and Reduction Targets**



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# GREENHOUSE GAS EMISSION REDUCTION STRATEGIES

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Based on the City’s GHG emissions forecasts and identified targets, the City developed a strategy table (Table F) of community-wide goals, measures, and actions to meet its 2030 reduction target and work towards its 2045 carbon neutrality goal.

In the strategy table, goals describe overarching objectives in a particular sector of GHG emission reductions. There are six goal areas listed in the table:

**Goal 1:** Energy Efficiency and Electrification of Residential and Commercial Buildings

**Goal 2:** Improved Transportation Choices

**Goal 3:** Renewable Energy Sources

**Goal 4:** Water Efficiency

**Goal 5:** Waste Reduction

**Goal 6:** Urban Forest Protection and Heat Island Effect Reduction

Within each goal, one or more measures are presented. Each measure includes a GHG reduction potential by 2030 and one or more actions that indicate the steps the City plans to take in achieving the measure. Certain actions are noted as “supporting actions” that will enhance the effectiveness of program implementation and GHG reductions.

To facilitate implementation of each action by the City, additional information is included for each measure, as follows:

- **Metric:** A performance indicator to gauge progress on implementation of actions. Metrics are a key component of

implementing, monitoring, and evaluating the Climate Action Plan.

- **Timeframe:** The timeframe lays out a preliminary timeline for action implementation.
- **Implementation Lead:** The City department(s) that will lead the implementation of each action.
- **Cost:** Sorted into ranges of \$-Low (<\$25,000), \$\$-Medium (\$25,000 - \$100,000), and \$\$\$-High (>\$100,000), these estimates are used to determine the extent of funding and financing needed to implement these measures.

**TABLE F: GHG Emissions Reduction Strategy Table**  
**Goal 1. Energy Efficiency and Electrification of Residential and Commercial Buildings**

Action	2030 GHG Reduction Achieved (MT CO2)		Metric	Timeframe	Implementation Lead	Cost	Corresponding Adaptation Measure
	No Enhancing	With Enhancing					
<b>Measure 1.1 Energy Efficiency Training, Education, Incentives and Recognition for Residential and Commercial</b>							
<b>Action 1.1.1: Energy Efficiency Outreach</b> Post links on website and social media and provide materials at public events re: energy efficiency and electrification resources for residential and commercial, and green building programs such as Leadership in Energy and Environmental Design (LEED), Passive House, Active House, and Energy Upgrade California Promote an annual energy efficiency fair. Promote PG&E energy center and online resources. Hold trainings on energy efficiency and Title 24 requirements.	Supporting Action	Supporting Action	<ul style="list-style-type: none"> <li>- Energy efficiency resources on website, Friday Letter, social media</li> <li>- Energy efficiency fair held (Earth Day)</li> <li>- Title 24 training held</li> </ul>	2022-2024	Building, Planning, Public Works, Community Activities	\$	1.3.6
<b>Action 1.1.2: Energy Efficiency and Electrification Incentives</b> Partner with AMBAG, PG&E and 3CE to promote incentive programs for residential and commercial efficiency and electrification, including heat pump retrofits and gas appliance and fireplace retrofits.	71.1	71.1	<ul style="list-style-type: none"> <li>- Incentive programs posted on website, Friday Letter, social media</li> <li>- Incentive programs promoted at energy fair</li> <li>- Incentive program promoted thru Green Business and Green Citizen programs</li> </ul>	2023-2025	Building, Planning, Public Works	\$	1.3.2, 1.3.6
<b>Action 1.1.3: Energy Efficiency Audits</b> Promote PG&E energy audits and tools for residential and commercial	Supporting Action	Supporting Action	<ul style="list-style-type: none"> <li>- Audit Information on website, Friday Letter, social media</li> <li>- Information shared at annual fair</li> </ul>	2022-2024	Planning, Public Works	\$	

Action	2030 GHG Reduction Achieved (MT CO2)		Metric	Timeframe	Implementation Lead	Cost	Corresponding Adaptation Measure
	No Enhancing	With Enhancing					
<b>Measure 1.2 Energy Efficiency in Renovation Projects</b>							
<p><b>Action 1.2.1: Feasibility Study for Existing Building Electrification and Back-up Power.</b> Perform an electrification feasibility study/existing building analysis in order to understand the potential for, and associated costs of, electrification retrofitting, including heat pumps, along with on-site energy generation, battery storage, and electric car readiness to provide a more resilient back-up power supply. Establish a plan for reducing or eliminating natural gas from existing buildings, through a reach code, and building resilience to potential electrical grid shutoffs.</p>	Supporting Action	Supporting Action	- Feasibility Study for Existing Building Electrification and Back-up Power completed	2022-2024	Building, Planning, Public Works	 	1.3.4
<p><b>Action 1.2.2: Residential Home Energy Renovations.</b> Enhance enforcement of Title 24 compliance and promote participation in green building programs.</p> <p>Develop a Reach Code based on the results of the Feasibility Study (Action 1.2.1). If feasible, the Reach Code should require electrification retrofits, including electric car readiness, in major home renovations/additions.</p> <p>Evaluate feasibility of streamlining online permitting to facilitate electrification retrofits</p>	1,217.5	1,294.6	<ul style="list-style-type: none"> <li>- 100% of regulated projects are Title 24 compliant</li> <li>- Reach Code Adopted by City Council</li> <li>- Online permitting streamlined for electrification-only retrofits</li> <li>- Passive House, LEED, Build It Green, Energy Star information on City website and at energy fair</li> </ul>	2023-2025	Building, Planning	 	
<p><b>Action 1.2.3: Residential Home Energy Renovation Incentives.</b> Develop a program to promote home energy efficiency and electrification benefits, advertise incentives, and recognize residents that implement retrofits, such as a Green Citizen Program.</p> <p>Promote financing programs for home upgrades, such as Home Energy Renovation Opportunity (HERO) and Property Assessed Clean Energy (PACE)</p> <p>Promote incentives available to homeowners to convert to all-electric homes and install EV chargers. Evaluate the feasibility of providing additional incentives.</p>	Supporting Action	Supporting Action	<ul style="list-style-type: none"> <li>- Green Citizen Program developed</li> <li>- Financing information on website, at energy fair</li> <li>- Incentive information on website, at energy fair</li> </ul>	2022-2024	Building, Planning, Public Works		1.3.6

Action	2030 GHG Reduction Achieved (MT CO2)		Metric	Timeframe	Implementation Lead	Cost	Corresponding Adaptation Measure
	No Enhancing	With Enhancing					
<p><b>Action 1.2.4: Commercial Energy Renovations.</b> Enhance enforcement of Title 24 compliance</p> <p>Develop a Reach Code based on the results of the Feasibility Study (Action 1.2.1). If feasible, the Reach Code should require electrification retrofits in major commercial renovations/expansions, unless the business can show a need for natural gas (restaurants, pottery kilns etc.)</p> <p>Promote participation in green building programs such as Leadership in Energy and Environmental Design (LEED), Passive House, and Energy Upgrade California.</p> <p>Evaluate the feasibility of streamlining online permitting to facilitate electrification retrofits</p>	1,206.2	1,666	<ul style="list-style-type: none"> <li>- 100% of regulated projects are Title 24 compliant</li> <li>- Reach Code Adopted by City Council</li> <li>- Online permitting streamlined for electrification-only retrofits</li> <li>- Passive House, LEED, Build It Green, Energy Star information on City website and at energy fair</li> </ul>	2023-2025	Building, Planning	<p>Ⓢ</p> <p>Ⓢ</p>	
<p><b>Action 1.2.5: Commercial Energy Renovation Incentives.</b> Partner with AMBAG and 3CE incentive programs to increase business participation in commercial energy efficiency programs</p> <p>Promote financing programs for home upgrades, such as Property Assessed Clean Energy (PACE)</p> <p>Initiate a Green Business Certification Program for businesses that follow the California Green Business Program standards (<a href="http://www.greenbusinessca.org">www.greenbusinessca.org</a>).</p> <p>Promote existing incentives for businesses to convert to all-electric buildings. Evaluate the feasibility of providing additional incentives.</p>	69.4	69.4	<ul style="list-style-type: none"> <li>- Green Business Program initiated</li> <li>- Financing information on website, at energy fair</li> <li>- Incentive information on website, at energy fair, and shared via GBP</li> </ul>	2022-2024	Building, Planning, Public Works	Ⓢ	1.3.6

Action	2030 GHG Reduction Achieved (MT CO2)		Metric	Timeframe	Implementation Lead	Cost	Corresponding Adaptation Measure
	No Enhancing	With Enhancing					
<b>Measure 1.3 Energy Efficiency in New Construction Projects</b>							
<b>Action 1.3.1: Energy Efficiency in New Residential Construction</b> Educate City staff and developers on future Title 24 updates. Promote CalGreen Tier 1 and Tier 2 green building ratings such as Passive House, LEED, Build it Green or Energy Star certified buildings. Evaluate feasibility of streamlining online permitting. Develop a Reach Code based on the results of the Feasibility Study (Action 1.2.1). If feasible, the Reach Code should require new residential buildings to be all-electric homes.	0.01	0.01	<ul style="list-style-type: none"> <li>- 100% of projects are Title 24 compliant</li> <li>- Reach Code Adopted by City Council</li> <li>- Online permitting streamlined for electrification-only retrofits</li> <li>- Passive House, LEED, Build It Green, Energy Star information on City website and at energy fair</li> </ul>	2023-2025	Building, Planning	\$	
<b>Action 1.3.2: Energy Efficiency in New Commercial Construction</b> Educate City staff and developers on future Title 24 updates. Promote CalGreen Tier 1 and Tier 2 green building ratings such as Passive House, LEED, Build it Green or Energy Star certified buildings. Evaluate feasibility of streamlining online permitting. Develop a Reach Code based on the results of the Feasibility Study (Action 1.2.1). If feasible, the Reach Code should require new commercial buildings to be all-electric with exemptions for business that can show a need for natural gas (restaurants, pottery kilns etc.)	0.0	0.0	<ul style="list-style-type: none"> <li>- 100% of projects are Title 24 compliant</li> <li>- Reach Code Adopted by City Council</li> <li>- Online permitting streamlined for electrification-only retrofits</li> <li>- Passive House, LEED, Build It Green, Energy Star information on City website and at energy fair</li> </ul>	2023-2025	Building, Planning	\$	

## Goal 2. Improved Transportation Choices

Action	2030 GHG Reduction Achieved (MT CO2)		Metric	Timeframe	Implementation Lead	Cost	Corresponding Adaptation Measure
	No Enhancing	With Enhancing					
<b>Measure 2.1. Alternative Transportation Options</b>							
<p><b>Action 2.1.1: Reduce Reliance on Automobiles.</b>                      Work with AMBAG, TAMC and Caltrans to remove barriers to alternative transportation such as safe pedestrian and bicycle access to the City across Highway 1.                      Promote and provide incentives for bus ridership                      Explore the feasibility of increasing land use density in downtown during the next General Plan Land Use Element update.                      Identify and promote within the hotels and visitors center existing shuttle services between Carmel and the airports.                      Work with Monterey Airport and AMBAG to explore the feasibility of an electric shuttle service between Monterey Airport and destinations in the City.</p>	Scope 1 563  Scope 3 89	Scope 1 563  Scope 3 89	<ul style="list-style-type: none"> <li>- Outreach on shuttle services created and provided in Carmel hotels</li> <li>- Incentives developed and promoted to encourage bus use</li> <li>- Coordination meetings held with AMBAG, Monterey Airport on shuttle options</li> <li>- Coordination meetings held re: alternative transportation to Carmel</li> <li>- General Plan Land Use Element updated</li> </ul>	2023-2030	Planning, Public Works	\$ \$ \$	
<p><b>Action 2.1.2: Develop Bicycle Master Plan to Create Safe Bike Routes around the City</b>                      Develop customized bike routes to improve bike transit.                      Provide signage, reduce speed limits as necessary, and develop safety education programs on “sharing the road” with bikes.</p>	10	10	<ul style="list-style-type: none"> <li>- Bicycle master plan created</li> <li>- Signage installed</li> <li>- Outreach materials created and shared via City website, newsletters, local newspapers, and other outlets.</li> </ul>	2024-2026	Planning, Public Works	\$	
<p><b>Action 2.1.3: Ride-Sharing and Bike to Work Programs within City Operations and Businesses</b>                      Promote ride-sharing and facilitate air district incentives for ride-sharing                      Provide reserved preferential parking spaces for ride-sharing, carpooling, and ultra-low or zero emission vehicles in City parking lots. Encourage the same at private businesses that have employee parking.                      Require businesses of a certain size to provide facilities such as bike racks and showers.</p>	Supporting Action	Supporting Action	<ul style="list-style-type: none"> <li>- Incentives for ride-sharing created and advertised</li> <li>- Incentives for bike riding created and advertised</li> <li>- Reserved parking spaces created for ride-sharing, and low/zero emission vehicles</li> <li>- Bike racks included in design guidelines for commercial remodels</li> </ul>	2022-2024	Planning, Public Works	\$	

Action	2030 GHG Reduction Achieved (MT CO2)		Metric	Timeframe	Implementation Lead	Cost	Corresponding Adaptation Measure
	No Enhancing	With Enhancing					
<b>Measure 2.2. Electrify the Fleet</b>							
<b>Action 2.2.1: Prioritize Electric Vehicles (EVs)</b>	Scope 1	Scope 1	<ul style="list-style-type: none"> <li>- EV incentives shared on City website, newsletters, and at energy fair</li> <li>- EV chargers installed at City parking lots</li> <li>- Electric bus parking created and associated outreach</li> <li>- Green Visitor Program established</li> <li>- Outreach at Visit Carmel re: EV chargers on hotel properties</li> <li>- EV chargers included in design guidelines for commercial remodels</li> </ul>	2024-2026	Planning, Public Works, Community Activities	<ul style="list-style-type: none"> <li>\$</li> <li>\$</li> <li>\$</li> </ul>	
Promote electric vehicle incentive programs at outreach events.	1,511	1,538					
Apply for grants to install e-chargers at public facilities.							
Work with community groups and businesses to install additional e-chargers.	Scope 3	Scope 3					
Encourage hotels to provide priority parking for electric vehicles and provide e-chargers.	1,425	1,452					
Provide priority parking for bus tours that use electric buses.							
Work with Visit Carmel to develop and initiate a Green Visitor Program that rewards tourists that use electric vehicles, carbon credits for air-miles, and that adhere to the City's sustainability practices while visiting the City.							
Require or incentivize major commercial building renovations/expansions to install e-chargers.							
<b>Measure 2.3 Initiate Origin/Destination Transportation Model</b>							
<b>Action 2.3.1: Develop Model</b>	N/A	N/A	<ul style="list-style-type: none"> <li>- ODTM Model developed</li> <li>- ODTM results incorporated in updated CAP</li> </ul>	2024-2026	Planning, Public Works	<ul style="list-style-type: none"> <li>\$</li> <li>\$</li> </ul>	
Develop an Origin Destination Transportation Model focused on Carmel-by-the-Sea using the AMBAG regional model as a base.							
Update the CAP with new VMT data once the Origin Destination Model is completed.							

### Goal 3. Renewable Energy Sources

Action	2030 GHG Reduction Achieved (MT CO2)		Metric	Timeframe	Implementation Lead	Cost	Corresponding Adaptation Measure
	No Enhancing	With Enhancing					
<b>Measure 3.1. Promote Clean Energy</b>							
<b>Action 3.1.1: Incentivize Clean Energy Installations</b> Promote clean energy incentives to the community Incentivize solar panels installation on existing residential units Require or incentivize solar panel installation on major commercial building retrofits/expansions and commercial parking lots. Promote energy storage system installation with solar panels.	364	364	<ul style="list-style-type: none"> <li>- Incentive information on website, at energy fair, and shared via new City outreach and recognition programs</li> <li>- Incentive for solar panel and/or energy storage installation developed</li> </ul>	2024-2026	Building, Planning, Public Works	 	1.3.6
<b>Action 3.1.2: Increase uptake of 3CE Renewable Generation portfolio</b> Switch the City's electricity to 3CE's 100 Percent Renewable Energy Option Promote 3CE's 100 Percent Renewable Energy Option by encouraging residents and businesses to participate in the program.	-	-	<ul style="list-style-type: none"> <li>- City electricity accounts switched to 3CE's 100% renewable option</li> <li>- 3CE 100% renewable energy option promoted at energy fair and via City outreach and recognition programs</li> </ul>	2022-2024	Public Works, Planning	 	

## Goal 4. Water Efficiency

Action	2030 GHG Reduction Achieved (MT CO2)		Metric	Timeframe	Implementation Lead	Cost	Corresponding Adaptation Measure
	No Enhancing	With Enhancing					
<b>Measure 4.1. Water Conservation in Landscaping</b>							
<p><b>Action 4.1.1: Continued Implementation and Promotion of City and Model Water Efficient Landscaping Ordinance Water Conservation Standards</b></p> <p>Increase promotion of landscaping water conservation standards on website and social media</p> <p>Ensure all projects comply with the City's low-irrigation landscaping requirements.</p> <p>Work with the Monterey Peninsula Water Management District (MPWMD) to promote incentives for existing landscaping retrofits to reduce water use.</p>	2.9	3	<ul style="list-style-type: none"> <li>- Landscaping water conservation information on website</li> <li>- 100% of projects including landscape retrofits comply with requirements</li> <li>- Landscape retrofit incentives developed and promoted in documents and outreach for development projects</li> </ul>	2023-2025	Planning, Forestry, Public Works	 	3.1.7
<p><b>Action 4.1.2: Exceed Water Efficiency Standards</b></p> <p>In partnership with the MPWMD, conduct direct outreach to HOAs, businesses, residents re: water conservation, grey water, rainwater harvesting</p> <p>Allow and promote recycled water for commercial and multi-family residential landscape irrigation.</p> <p>Allow and promote greywater systems and rainwater harvesting.</p>	Supporting Action	Supporting Action	<ul style="list-style-type: none"> <li>- Direct outreach to HOAs, businesses, residents thru outreach and recognition programs</li> <li>- Recycled water Standard Operating Guidance developed and promoted for commercial and multi-family construction projects</li> <li>- Grey water systems and rainwater harvesting information promoted in documentation for development projects</li> </ul>	2024-2026	Building, Planning, Forestry		3.1.7

## Goal 5. Waste Reduction

Action	2030 GHG Reduction Achieved (MT CO2)		Metric	Timeframe	Implementation Lead	Cost	Corresponding Adaptation Measure
	No Enhancing	With Enhancing					
<b>Measure 5.1.</b> Reduce Waste that goes to the Landfill							
<p><b>Action 5.1.1: Increase the City's solid waste diversion to reduce landfill methane emissions</b></p> <p>Promote zero waste events, including the use of reusable rather than recyclable materials, and buy local to reduce waste.</p> <p>Work with the Monterey Regional Waste Management District and the waste hauler to implement the requirements of SB 1383, including organic waste collection for all commercial and residential properties to process into compost.</p> <p>Conduct outreach to residents and businesses to ensure compliance and to minimize contamination.</p> <p>Promote home composting and community gardens.</p> <p>Educate the community on proper use of the City-provided grey/green/blue containers.</p>	1500	1500	<ul style="list-style-type: none"> <li>- Develop zero waste event checklist and require City events to abide by it.</li> <li>- SB 1383 requirements implemented and waste diversion tracked</li> <li>- Outreach to residents and businesses through mailers, newsletters, City website, hauler website, letters, direct outreach.</li> </ul>	2022-2024	Public Works, Community Activities		

## Goal 6. Urban Forest Protection and Heat Island Effect Reduction

Action	2030 GHG Reduction Achieved (MT CO2)		Metric	Timeframe	Implementation Lead	Cost	Corresponding Adaptation Measure
	No Enhancing	With Enhancing					
<b>Measure 6.1. Urban Forest Maintenance for Shade and Energy Savings</b>							
<p><b>Action 6.1.1: Urban Forest Maintenance and Improvement</b>            Maintain the health of the urban forest tree canopy in the City to keep streets shaded and maintain cool surface and ambient air temperatures.</p> <p>Continue to work with the Friends of Carmel Forest and the community to facilitate urban forest maintenance.</p> <p>Update the City’s Urban Forest Management Plan to include tree planting guidelines to promote tree health and maintain a healthy urban forest canopy.</p>	-	-	<ul style="list-style-type: none"> <li>- Urban Forest Management Plan Updated</li> <li>- Tree planting and maintenance guidelines updated</li> <li>- Number of replacement trees planted</li> </ul>	2023-2025	Forestry, Public Works	\$ \$	2.1.2
<b>Measure 6.2. Light-reflecting Surfaces for Energy Savings</b>							
<p><b>Action 6.2.1: Allow Cool Roof Options</b>            Evaluate the feasibility of allowing cool roof options in residential and commercial areas of Carmel.</p> <p>If feasible, revise existing ordinances to allow cool roof options on residential, commercial and office buildings.</p> <p>Support the use of “Green Roofs” as an option for cool roofs with the use of drought-tolerant plants.</p>	-	-	<ul style="list-style-type: none"> <li>- Cool roof options researched and evaluated for consistency with Carmel design guidelines</li> <li>- Design Guidelines and/or ordinances revised</li> </ul>	2024-2026	Planning	\$	

## Summary of GHG Emissions Reductions

By implementing the Statewide and local reduction measures described in Table F, the City would reduce its communitywide GHG emissions by 48 percent below 2019 levels of emissions by 2030. Table G below summarizes the strategies and the potential total GHG reductions for the community.

Figure 4 on the following page summarizes the 2015 through 2019 emission inventories, projected 2020, 2030, and 2045 emission forecasts, as well as the 2020, 2030, and 2045 reduction targets after implementation of the local reduction measures.

As shown in Figure 4, with implementation of the local reduction measures, emissions in 2030 are anticipated to be below the 2030 reduction target and provide additional reductions beyond 2030. However, even the proposed set of reduction strategies will not achieve carbon neutrality by 2045.

The City should track implementation of the Climate Action Plan over the next few years, update the 2045 ABAU forecasts, and provide local reduction strategy updates once the State has provided an updated Scoping Plan demonstrating how the State can achieve carbon neutrality by 2045.

**Table G: Summary of Local GHG Reduction Strategies and Emissions Reductions**

Goals and Measures	2030 Emission Reductions (MT CO <sub>2</sub> e)
<b>Goal 1: Energy Efficiency and Electrification of Residential and Commercial Buildings</b>	
1.1: Energy Efficiency Training, Education, Incentives and Recognition for Residential and Commercial	71
1.2: Energy Efficiency in Renovation Projects	2,960
1.3: Energy Efficiency in New Construction Projects	0.01
<b>Goal 2: Improved Transportation Choices</b>	
2.1: Alternative Transportation Options	573
2.2: Electrify the Fleet	1,538
2.3: Initiate Origin-Destination Transportation Model	N/A
<b>Goal 3: Renewable Energy Sources</b>	
3.1: Promote Clean Energy	364
<b>Goal 4: Water Efficiency</b>	
4.1: Water Conservation in Landscaping	3
<b>Goal 5: Waste Reduction</b>	
5.1: Reduce Waste that Goes to the Landfill	1,500
<b>Goal 6: Urban Forest Protection and Heat Island Effect Reduction</b>	
6.1: Urban Forest Maintenance for Shade and Energy Efficiency	-
6.2: Light-reflecting Surfaces for Energy Savings	-
<b>Total Community Measures</b>	<b>7,009</b>

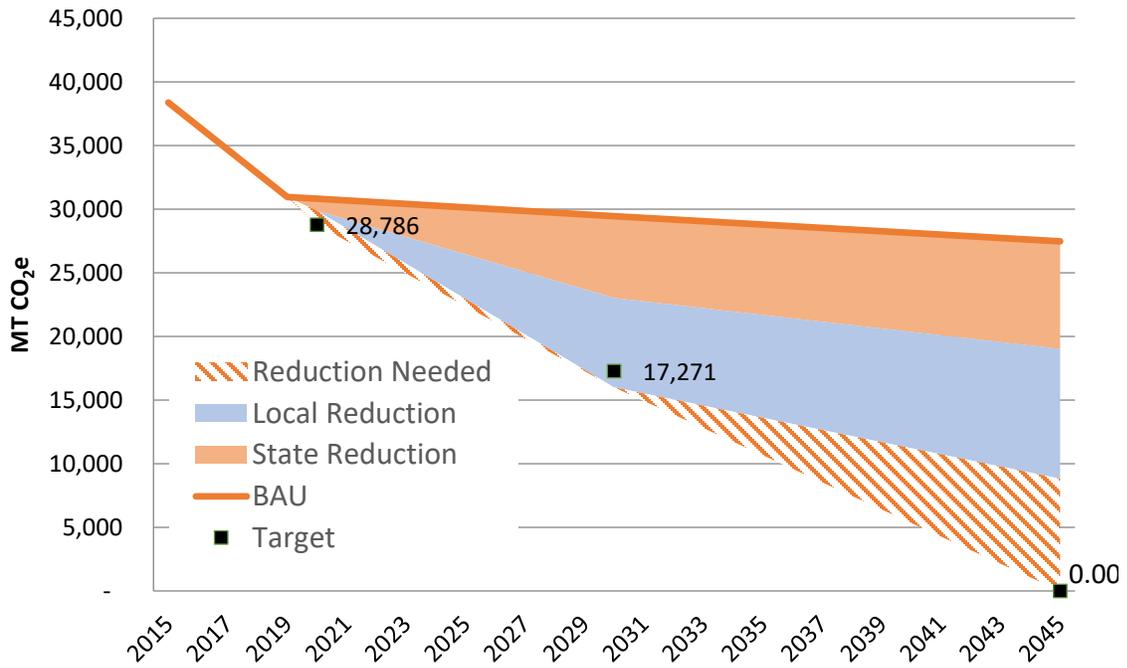
Source: Compiled by LSA 2022

MT CO<sub>2</sub>e = metric tons of carbon dioxide equivalent

N/A = Not Applicable

- = Not quantified

**Figure 4: Existing and Forecasted Emissions with Local Reduction Measure Implementation**



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## IMPLEMENTATION

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Implementation of the Climate Action Plan will require significant City staff time, consultants, and financial resources, along with collaboration with regulatory and utility partners to conduct community engagement. The successful implementation of the proposed actions will depend on the involvement of the whole community, including:

- City staff,
- Elected officials,
- Community group partners,
- Business community,
- Residents,
- Visitors.

This plan serves as a framework to strengthen the partnerships needed to meet the City's GHG reduction goals.

In addition to partnerships and community involvement, implementation of the Climate Action Plan will also require regular tracking and reporting to measure progress against the plan's goals. This section describes the guidance, tools, responsibilities, and analysis required to effectively implement and monitor progress with the adaptation strategy.

### Strategies for Success

The strategies described below are recommended to ensure the successful implementation of this long-term multifaceted program:

- **Build on existing programs:** the Climate Action Plan focuses on building capacity based on existing programs and actions

already in progress rather than “reinventing the wheel.” There are many existing programs that the City can leverage, such as 3CE and PG&E incentive programs, LEED, and Energy Upgrade California, by ensuring businesses and residents have the knowledge and tools necessary to participate in them. Additionally, the CAP also builds on existing City policies and regulations that already provide GHG reduction benefits.

- **Leverage existing partnerships:** the CAP also prioritizes existing partnerships to leverage the expertise and resources that others, such as partner agencies and community groups, can bring to the table. This approach provides mutual benefits for the City and its partners.
- **Maintain communication:** it is essential to maintain communication within and between City departments, as well as with partners, elected bodies, and the community. A robust community outreach program, as well as regular updates to elected bodies, will be critical to the long-term success of the CAP.
- **Prioritize actions:** since the City and its partners cannot implement all the proposed measures and actions concurrently, each action has been prioritized for implementation over the next 10 years. Actions were prioritized in such a way that later actions could build on the outcomes of earlier actions. Early actions include those that can readily build on existing programs

and increase community awareness of necessary climate action measures to reduce the community's GHG emissions.

- **Regularly monitor implementation and evaluate success:** the Climate Action Plan will be monitored through tracking quantitative metrics, as described in the strategy table, to assess progress towards implementation of actions and measures. An annual report should be developed and should include an evaluation of the implemented actions and measures, assessing their effectiveness, and recommend modifications as needed. Elements that should also be considered in the evaluation include new regional and statewide programs and regulations, shifting community priorities, implementation hurdles, changes in best practice, and technological advances.
- **Seek guidance and leadership from elected bodies:** The City Council should consider establishing and appointing a new Sustainability Commission that could be responsible for reviewing the annual report, providing feedback on progress, and reviewing recommendations for enhancing the effectiveness of proposed measures. Based on feedback from the Sustainability Commission, City and partner staff, and the community, the City may conduct an update to the Climate Action Plan on or before 2030.
- **Funding:** although it is premature to estimate the overall cost of the CAP at this time, implementation will require significant staff time and capital investment. The City will ultimately

need to develop a funding plan to implement the more costly actions in the Climate Action strategy. The City should consider a variety of revenue sources, including:

- (1) adjusting existing fees to cover the costs associated with new or modified programs and services,
- (2) allocating portions of new fees, such as a downtown parking fee, to fund sustainability projects and programs,
- (3) exploring regional and state funding sources such as 3CE, the California Public Utilities Commission's California Solar Initiative, California Energy Commission and PG&E energy efficiency programs, the California Climate Action Corps Fellowship Program, CalRecycle grants and loans, and other similar programs.

## Monitoring and Evaluation

The City should designate one department as the lead for carrying out implementation monitoring and evaluation of climate action. Although some GHG reduction measures and actions can be implemented using existing staff time, full implementation and coordination of efforts will require additional staff resources. For example, the City's Grant Writer/Climate Coordinator that is identified in the Climate Adaptation Plan could be tasked with carrying out implementation coordination, monitoring and evaluation of the CAP. The Grant Writer/Climate Coordinator could also lead the compilation of all monitoring data and an overall assessment of effectiveness annually.

Re-evaluation of GHG emissions reduction strategies should occur when new information indicates that a measure or action is either infeasible or ineffective. The CAP should be

monitored through tracking quantitative metrics as described in the strategy table (Table F). The CAP should be monitored and evaluated simultaneously with the City's Climate Adaptation Plan to measure the City's overall progress towards acting on climate change and increasing community sustainability and resilience.

Annually, the City should aggregate monitoring and evaluation results into an annual report describing achievements towards meeting the GHG reduction goals and measures in the Climate Action Plan. The report should be

posted on the City's website and disseminated into the community, with support from engagement partners, to maintain awareness of success of the climate action strategies. Once implementation has been on-going for a few years and based on monitoring and evaluation results, as well as feedback from commissions, the City Council, and the public, the Climate Action Plan should be updated on or before 2030. As part of the Climate Action Plan update, the City should re-evaluate the ABAU forecast based on the latest State Scoping Plan, and should update its GHG emissions reduction strategy to reach Carbon Neutrality in 2045.



# APPENDIX A