

PUBLIC DRAFT

# Milpitas Climate Action Plan Update



Prepared for:



City of Milpitas

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Prepared for:



**City of Milpitas**  
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## List of Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
2008 Scoping Plan	<i>Climate Change Scoping Plan: A Framework for Change</i>
2017 Scoping Plan	<i>California's 2017 Climate Change Scoping Plan Update</i>
AB	Assembly Bill
BAU	"business-as-usual"
Bay Area	San Francisco Bay Area
BayCAN	Bay Area Climate Adaptation Network
BayREN	Bay Area Regional Energy Network
CAP Update	Climate Action Plan Update
CAP	Climate Action Plan
CARB	California Air Resources Board
CBEI	"consumption-based" emissions inventory
CEQA	California Environmental Quality Act
CH <sub>4</sub>	methane
city	City of Milpitas
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	carbon dioxide equivalent
Community Protocol	<i>U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions</i>
Delta	Sacramento-San Joaquin River Delta
EO	Executive Order
EOP	City of Milpitas Emergency Operations Plan
GHG	greenhouse gas
GWP	global warming potential
ICLEI	ICLEI – Local Governments for Sustainability
IPCC	Intergovernmental Panel on Climate Change

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LGOP	<i>Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories</i>
Milpitas OES	Milpitas Emergency Services
MTC/ABAG	Metropolitan Transportation Commission/Association of Bay Area Governments
MTCO <sub>2</sub> e	metric tons of CO <sub>2</sub> e
N <sub>2</sub> O	nitrous oxide
NO <sub>x</sub>	oxides of nitrogen
OAHMP	Operational Area Hazard Mitigation Plan
OPR	California Governor's Office of Planning and Research
PG&E	Pacific Gas and Electric
PM	particulate matter
ppm	parts per million
PSPS	power shutoff events
RCP	Representative Concentration Pathway
RWF	San Jose-Santa Clara Regional Wastewater Facility
SB	Senate Bill
SCVWD	Santa Clara Valley Water District
SFPUC	San Francisco Public Utilities Commission
SVCE	Silicon Valley Clean Energy
UC Berkeley	University of California, Berkeley



# Executive Summary

The City of Milpitas lies in the northeastern corner of the Santa Clara Valley, 45 miles south of San Francisco. Set within a warm Mediterranean climate zone, Milpitas has historically enjoyed warm, sunny weather with few extreme temperatures. Before the arrival of the Spanish in the late 1700s, this attractive climate supported the native Tamien population for thousands of years. The city is now home to just over 80,000 residents – up from 66,790 in 2010 – and serves as a vital hub for the region’s tech economy.

In the context of the worsening climate crisis, however, Milpitas’s favorable climate is increasingly under threat. At a regional level, average annual temperatures in the San Francisco Bay Area region are projected to increase significantly by mid-century under multiple greenhouse gas (GHG) emissions scenarios, leading to increased frequency and duration of heatwaves. This is demonstrated in Table ES-1. Increasingly variable and volatile precipitation patterns and events are projected to result in more frequent and intense droughts. Combined with accelerated sea-level rise, these changes are expected to adversely impact transportation infrastructure, energy systems, human health and safety, and economic prosperity in the region.

**Table ES-1 Increases in Extreme Heat in Milpitas**

Average Annual	Historic Average Annual (1961-1990)	Mid-Century (2035-2064)		End of Century (2070-2099)	
		Medium Emissions	High Emissions	Medium Emissions	High Emissions
Number of Extreme Heat Days	4	17	15	20	38
Number of Heat Waves	1	1	1.4	1.3	3.2

Notes: °F = degrees Fahrenheit; Extreme Heat Day = Maximum daily temperature of 91.6 °F;

Heat Waves = four or more consecutive extreme heat days.

Source: CEC 2021a; CEC 2021b.

# City of Milpitas Climate Action Plan Update

While climate change is a global issue, local governments have an essential role in reducing GHG emissions and preparing for the impacts of climate change in their communities. The City of Milpitas has a longstanding commitment to enhancing community resilience and promoting sustainability. In 2013, the City adopted a Climate Action Plan (CAP) to create a more sustainable community by reducing GHG emissions. In 2018, the City achieved a historic milestone when nearly all residents and businesses in the city (97 percent) began receiving carbon-free electricity from Silicon Valley Clean Energy (SVCE). To date, the City has implemented over half of the actions directed by the CAP, while undertaking additional initiatives to further reduce GHG emissions from food waste and transportation while improving water security and increasing urban green space.

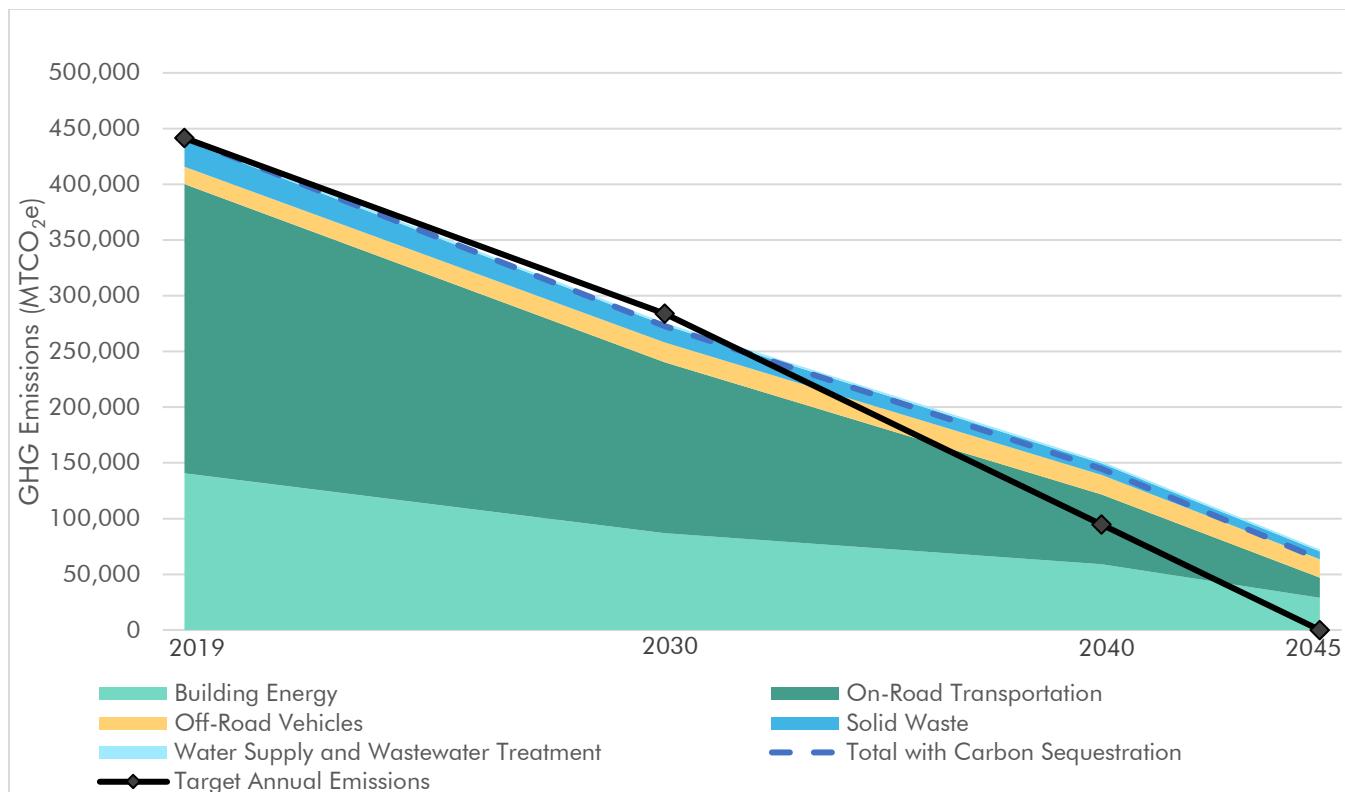
The City's efforts have allowed the community to reduce its contributions to climate change while preparing for impacts. However, the acceleration of global and regional climate change rapidly presents unprecedented risks to safety, quality of life, and prosperity in the city. April 4, 2022, the Intergovernmental Panel on Climate Change's (IPCC's) Report *Climate Change 2022: Mitigation of Climate Change* was released and sounded the alarm that the world was not on track to meet climate change commitments. It also emphasized that technology exists to turn the tide and to do so the world must decarbonize and move away quickly from fossil fuels.

In response to these risks and to accelerate local action, the City has developed this Climate Action Plan Update (CAP Update) to serve as a comprehensive roadmap to continue addressing the challenges of climate change. The CAP Update forms a crucial element of ongoing City and regional climate change planning efforts, including updating the City's General Plan, Transit Area Specific Plan, and the 2017 Santa Clara County Operational Area Hazard Mitigation Plan. The CAP Update is consistent with and complementary to State climate legislation and regulatory mandates and aligns with the State's and the region's approach to addressing climate change at the local level. The CAP Update also includes actions that the City should take to emissions from its municipal operations. This ensures that the City continues to lead by example and bring more visibility to key climate actions.

The CAP Update is the product of extensive and ongoing engagement with residents, businesses, local government, and other organizations and stakeholders. The City hosted public workshops to engage residents, stakeholders, and other interested organizations and individuals and provide an opportunity to participate in the CAP Update planning process. These extensive community engagement efforts have resulted in locally based and context-specific strategies, measures, and actions designed to achieve the City's climate objectives while simultaneously enhancing the quality of life for Milpitas's residents, workers, and visitors.

The CAP Update has two overarching objectives: (1) to reduce GHG emissions from local activities to achieve GHG reduction targets and (2) to build community resilience to prepare for and adapt to the impacts of climate change. **Figure ES-1** shows the community emissions by sector for 2019 and the GHG reductions to be achieved by CAP Update measures. Figure ES-1 displays the City's achievement of the 2030 target with the GHG reduction measures and demonstrates progress toward the City's target of achieving carbon neutrality by 2045.

# City of Milpitas Climate Action Plan Update



**Figure ES-1 Milpitas Community Greenhouse Gas Emissions Reduction Measures Analysis**

Source: Ascent Environmental 2021.

In addition to reducing GHG emissions, it is equally important for communities to prepare for the impacts of climate change and improve resilience through adaptation planning. As part of the development of the CAP Update, a climate change vulnerability assessment was developed to understand which hazards are going to be most affected by climate change, as well as what the potential impacts of their worsening hazards may be. The results of the vulnerability assessment were then used to develop and prioritize a set of adaptation strategies for the CAP Update.

While the CAP Update is primarily geared towards reducing GHG emissions and addressing climate change-related vulnerabilities within the city, it will also result in numerous "co-benefits" to residents and businesses. Co-benefits result from the implementation of CAP actions and are additional valuable outcomes that are not the primary intent of climate change mitigation or adaptation actions, such as improvements to local air quality and water supply, increases in local green jobs and cost savings, and benefits to public health and improved mobility options (Figure ES-2). For example, implementation of an action to weatherize older buildings to improve energy efficiency will reduce GHG emissions and strengthen resilience to extreme weather conditions, but it will also provide the co-benefit of financial savings to building owners through reduced energy costs.

# City of Milpitas Climate Action Plan Update



**Figure ES-2 Co-Benefits**

Source: Ascent Environmental 2021.

The climate change mitigation and adaptation strategies are organized into seven sectors: building energy, transportation and land use, waste, off-road vehicles and equipment, water and wastewater, carbon sinks, and circular and green economy. Each sector presents strategies that serve as the foundation for reducing GHG emissions in the city. CAP strategies are outlined in the Plan-at-a-Glance section below.

## Plan-at-a-Glance

The following tables provide a summary of the strategies and measures developed for each of the seven focus areas for GHG mitigation and the six focus areas for climate adaptation. For GHG mitigation measures, the range of GHG reduction potential on a scale of low to high is included. For climate adaptation measures, the range of climate resilience benefits is included on a scale of low to high. Additional details regarding the strategies and measures are provided in **Chapter 4** and **Chapter 5** for GHG mitigation and adaptation, respectively, and specific implementation actions are presented in **Chapter 6**.

STRATEGY	MEASURES	MITIGATION			GHG REDUCTION POTENTIAL
		Low	Medium	High	
<b>BUILDING ENERGY</b>					
<b>BE-1</b> <b>Shift to Clean and Reliable Energy</b>		<b>Measure BE-1.1:</b> Achieve 100 percent carbon-free electricity by 2030 in all existing and new development.	  		
		<b>Measure BE-1.2:</b> Facilitate innovative approaches to energy generation, distribution, and storage (e.g., microgrids).	  		
		<b>Measure BE-1.3:</b> Strengthen community awareness of energy efficiency, energy conservation, electrification, and clean energy.	  		
<b>BE-2</b> <b>Maximize Building Decarbonization and Efficiency</b>		<b>Measure BE-2.1:</b> Adopt updated "reach" building codes with each building and energy code cycle to accelerate all-electric new development.	  		
		<b>Measure BE-2.2:</b> Facilitate all-electric development projects for industrial buildings.	  		
		<b>Measure BE-2.3:</b> Expand the City's Green Building Program.	  		
		<b>Measure BE-2.4:</b> Retrofit existing residential and nonresidential buildings and municipal facilities to improve energy efficiency and facilitate fuel switching.	  		

STRATEGY	MITIGATION	MEASURES	GHG REDUCTION POTENTIAL		
			Very High	High	Medium
TR-1 Facilitate Sustainable Transportation and Land Use Planning	<b>Measure BE-2.5:</b> Facilitate energy audits for existing buildings to identify energy efficiency retrofit and electrification opportunities.				
	<b>Measure BE-2.6:</b> Reduce plug loads in existing buildings.				
TRANSPORTATION AND LAND USE					
TR-2 Decarbonize Vehicles	<b>Measure TR-1.1:</b> Reduce VMT from new development in compliance with SB 743.				
	<b>Measure TR-1.2:</b> Reduce VMT from existing development.				
	<b>Measure TR-1.3:</b> Continue to implement and adopt policies that support high-density, mixed-use, and transit-oriented development and housing near jobs.				
	<b>Measure TR-1.4:</b> Explore car-free zones or shared streets in appropriate areas.				
	<b>Measure TR-2.1:</b> Increase EV charging infrastructure.				
TR-2 Decarbonize Vehicles	<b>Measure TR-2.2:</b> Increase EV and low-carbon vehicle adoption.				
	<b>Measure TR-2.3:</b> Reduce vehicle idling.				
	<b>Measure TR-2.4:</b> Reduce the amount of parking such that it meets the needs of residents, workers, and visitors in a way that is consistent with the City's sustainability goals.				

STRATEGY	MITIGATION	MEASURES	GHG REDUCTION POTENTIAL		
			High	Medium	Low
TR-3 <b>Increase Active and Public Transportation Use</b>		<b>Measure TR-3.1:</b> Enhance and expand transit facilities and infrastructure.	<div style="width: 40%;"></div>	<div style="width: 40%;"></div>	<div style="width: 20%;"></div>
		<b>Measure TR-3.2:</b> Increase transit ridership.	<div style="width: 40%;"></div>	<div style="width: 40%;"></div>	<div style="width: 20%;"></div>
		<b>Measure TR-3.3:</b> Improve active transportation options.	<div style="width: 30%;"></div>	<div style="width: 30%;"></div>	<div style="width: 40%;"></div>
<b>WASTE</b>					
SW-1 <b>Achieve Zero Waste</b>		<b>Measure SW-1.1:</b> Eliminate the disposal of organic solid waste in landfills.	<div style="width: 30%;"></div>	<div style="width: 30%;"></div>	<div style="width: 40%;"></div>
		<b>Measure SW-1.2:</b> Increase recycling and the diversion of other inorganic solid waste.	<div style="width: 30%;"></div>	<div style="width: 30%;"></div>	<div style="width: 40%;"></div>
		<b>Measure SW-1.3:</b> Reduce the generation of waste from residents and businesses.	<div style="width: 30%;"></div>	<div style="width: 30%;"></div>	<div style="width: 40%;"></div>
		<b>Measure SW-1.4:</b> Reduce the generation of construction and demolition waste.	<div style="width: 30%;"></div>	<div style="width: 30%;"></div>	<div style="width: 40%;"></div>
		<b>Measure SW-1.5:</b> Facilitate repair and reuse of consumer products.	<div style="width: 30%;"></div>	<div style="width: 30%;"></div>	<div style="width: 40%;"></div>
<b>OFF-ROAD VEHICLES AND EQUIPMENT</b>					
OT-1 <b>Shift to Clean Off-Road Equipment and Vehicles</b>		<b>Measure OT-1.1:</b> Reduce landscaping-related emissions.	<div style="width: 30%;"></div>	<div style="width: 30%;"></div>	<div style="width: 40%;"></div>
		<b>Measure OT-1.2:</b> Reduce construction-related emissions.	<div style="width: 30%;"></div>	<div style="width: 30%;"></div>	<div style="width: 40%;"></div>

STRATEGY	MITIGATION	MEASURES	GHG REDUCTION POTENTIAL		
			High	Medium	Low
WATER AND WASTEWATER					
WA-1 Promote Resilient Water Supply, Water Use, and Water Resources		<b>Measure WA-1.1:</b> Reduce indoor water consumption in buildings.			
		<b>Measure WA-1.2:</b> Reduce water consumption for irrigation and landscaping.			
		<b>Measure WA-1.3:</b> Increase the use of recycled water and support efforts to drought-proof our water supply.			
CARBON SINKS					
CS-1 Resilient Infrastructure and Healthy Forest and Natural Systems		<b>Measure CS-1.1:</b> Protect native trees and vegetation and enhance carbon sequestration.			
		<b>Measure CS-1.2:</b> Reduce the urban heat island effect to conserve energy.			
		<b>Measure CS-1.3:</b> Increase the use of green infrastructure.			
		<b>Measure CS-1.4:</b> Increase soil carbon content.			
		<b>Measure CS-1.5:</b> Use low-carbon and carbon sequestering construction materials in new development.			
CIRCULAR AND GREEN ECONOMY					
GE-1 Foster Green and Sustainable Economic Development Opportunities		<b>Measure GE-1.1:</b> Support and attract clean technology businesses and green jobs in Milpitas.			
		<b>Measure GE-1.2:</b> Incentivize and promote green business practices.			

STRATEGY	MITIGATION	MEASURES	GHG REDUCTION POTENTIAL
<b>CG-2</b> <b>Support Circular Economy Policies</b>		<b>Measure GE-2.1:</b> Engage with circular economy and zero waste policymaking at the Federal, State, and local levels.	
<b>ADAPTATION</b>			
STRATEGY	MEASURES	CLIMATE RESILIENCE BENEFIT	
<b>1. Resilient Communities and Equity and Environmental Justice</b>	<b>Measure 1.1:</b> Increase community resilience to impacts from air pollution.		
	<b>Measure 1.2:</b> Increase community resilience to respond to a recover from widespread health emergencies.		
	<b>Measure 1.3:</b> Protect populations vulnerable to extreme heat.		
	<b>Measure 1.4:</b> Increase community awareness of climate change.		
	<b>Measure 1.5:</b> Ensure that climate impacts and climate adaptation measures aimed at reducing climate risks to not lead to disproportionately adverse effects on vulnerable populations.		
	<b>Measure 1.6:</b> Improve mobility and ensure basic needs are met for vulnerable populations.		
	<b>Measure 1.7:</b> Ensure completeness and availability of emergency supplies and resources to all segments of the population, focusing especially on vulnerable populations and individuals.		

STRATEGY	ADAPTATION MEASURES	CLIMATE RESILIENCE BENEFIT		
		1	2	3
2. Resilient Transportation Systems and Resilient Energy Resources	<b>Measure 2.1:</b> Integrate climate change considerations in all transportation agency planning and decision-making processes.			
	<b>Measure 2.2:</b> Reduce local flooding impacts to transportation infrastructure.			
	<b>Measure 2.3:</b> Increase the resilience of existing residential and commercial development through energy efficiency upgrades and onsite energy generation and storage.			
	<b>Measure 2.4:</b> Minimize stress on the electrical grid and increase the resilience of existing residential and commercial development through energy efficiency upgrades and onsite energy generation and storage.			
	<b>Measure 2.5:</b> Protect critical energy and telecommunications infrastructure and systems from climate change.			
3. Reduced Flooding	<b>Measure 3.1:</b> Minimize risks to life and property resulting from flooding and flood-induced hazards.			
	<b>Measure 3.2:</b> Evaluate proposed development in areas of the city subject to flooding impacts caused by rising sea levels.			
	<b>Measure 3.3:</b> Maintain up-to-date flood risk and hazard data.			
4. Robust Emergency Services and Improved Disaster Recovery	<b>Measure 4.1:</b> Ensure that emergency services have adequate capacity to address increased demand due to climate change-related impacts.			
	<b>Measure 4.2:</b> Develop programs to improve efficiency and equity of disaster recovery.			

STRATEGY	MEASURES	ADAPTATION	CLIMATE RESILIENCE BENEFIT
5. Reduced Urban Heat Island Effect and Resilient Water Resources	<p><b>Measure 5.1:</b> Reduce urban heat island effect through cool roofs, parking lot shading, landscaping, and urban greening in new and existing private and public development.</p>		
	<p><b>Measure 5.2:</b> Advocate for drought-proof water supplies including recycled water systems or indirect potable recharge.</p>		
6. Integrated Resilience Planning and Improved Biodiversity and Habitat	<p><b>Measure 6.1:</b> Embed climate resiliency and adaptation across planning efforts.</p>		
	<p><b>Measure 6.2:</b> Integrate findings of climate vulnerability into all phases of emergency planning.</p>		
	<p><b>Measure 6.3:</b> Prioritize nature-based solutions to improve resilience while promoting biodiversity.</p>		

MUNICIPAL OPERATIONS		
STRATEGY	MEASURES	GHG REDUCTION POTENTIAL
Employee Commute		
<b>MEC-1. Sustainable Employee Commutes</b>	<b>Measure MEC-1.1:</b> Reduce employee commute VMT and support low-carbon alternatives.	
Vehicle Fleet		
<b>MVF-1. Zero- and Low-Emission Fleet Vehicles and Equipment</b>	<b>Measure MVF-1.1:</b> Convert the City's fleet vehicles and equipment to all-electric or alternative fuels, such as renewable diesel.	
Buildings and Public Lighting		
<b>MBL-1. Clean Energy</b>	<b>Measure MBL-1.1:</b> Continue to use SVCE-supplied 100 percent renewable electricity.	
	<b>Measure MBL-1.2:</b> Transition to 100 percent clean energy for municipal operations.	
	<b>Measure MBL-2.1:</b> Reduce lighting-related energy consumption.	
<b>MBL-2. Energy Efficiency and Conservation</b>	<b>Measure MBL-2.2:</b> Increase energy efficiency.	
	<b>Measure MBL-2.3:</b> Implement conservation best practices to reduce energy use.	
<b>MBL-3. Electrification</b>	<b>Measure MBL-3.1:</b> Transition municipal buildings and facilities to be all-electric.	

MUNICIPAL OPERATIONS		
STRATEGY	MEASURES	GHG REDUCTION POTENTIAL
<b>Solid Waste</b>		
<b>MSW-1. Zero Waste</b>	<b>Measure MSW-1.1:</b> Increase waste diversion and achieve zero waste by 2030.	
<b>MSW-2. Responsible Consumption</b>	<b>Measure MSW-2.1:</b> Implement an environmentally preferable purchasing policy.	
<b>Water</b>		
<b>MWA-1. Water Efficiency and Conservation</b>	<b>Measure MWA-1.1:</b> Reduce municipal water consumption.	

# Milpitas Climate Action Plan Update

The Plan-at-a-Glance summary of the strategies and measures for GHG mitigation and climate adaptation provides a high-level overview of the scope of the CAP Update. Within these strategies and measures are specific implementation actions, which are presented in **Chapter 6**. The actions included in **Chapter 6** are those considered “near-term” for implementation (i.e., will be implemented within the next 3-5 years). These 28 actions are further prioritized into which actions will be implemented within the first 18 months after CAP Update adoption. These immediate actions were considered during a City Council Study Session in April 2022 and are shown in the table below, as well as in **Chapter 6**.

ACTIONS
Adopt an updated reach code for all electric new construction and increase EV charging station standards beyond State requirements. (BE-2.1.1 and TR-2.1.2)
Promote benefits and incentives for clean energy, improved energy efficiency, and electrification of existing buildings. (BE-1.3.2 and BE-2.4.1)
Enforce the City's requirements for SB 743 and continuously Update VMT Policy and Implementation Tools to further reduce VMT (TR-1.1.1)
Incorporate Sustainable Design Measures and incentives into the City's new Zoning Ordinance Update (BE-2.3.1 and TR-1.3.1)
Improve awareness of incentives for low- and zero-emission vehicles and increase EV purchases in Milpitas (TR-2.2.1)
Implement the Milpitas OnDemand "hub-and-spoke" micro-transit pilot program (TR-3.1.1)
Implement the updated Trail, Pedestrian, and Bicycle Master Plan to enhance and expand bicycle and pedestrian infrastructure and networks (TR-3.3.5)
Implement and enforce the requirements of SB 1383 and eliminate disposal of compostable organic materials to landfills (SW-1.1.1)
Based on the recommendations from the City's Urban Forestry Management Plan, implement a tree planting program to expand the city's urban forest canopy (CS-1.1.1 and CS-1.1.2)
Work with partners offer courses/training that prepare students/workers for green jobs (GE-1.1.1)
MUNICIPAL OPERATIONS ACTIONS
Install EV charging and alternative fuel stations at appropriate City sites (MVF-1.1.1)
Update the City's Green Fleet Policy to convert the City's non-specialized fleet to all electric and identify alternative fuel options for other vehicles and equipment (MVF-1.1.3)
Pursue funding to expand solar and back up battery systems to other City facilities such as PW/PD, City Hall, Sports Center (MBL-1.2.2)
Inventory and develop strategy to retrofit existing municipal buildings and facilities to be all-electric (MBL-3.1.2)
Enhance and expand waste reduction policies and programs for City facilities (MSW-1.1.1 and MSW-2.1.3)
Use resource efficient landscaping techniques in new or renovated medians and parks (MWA-1.1.4)



# Introduction

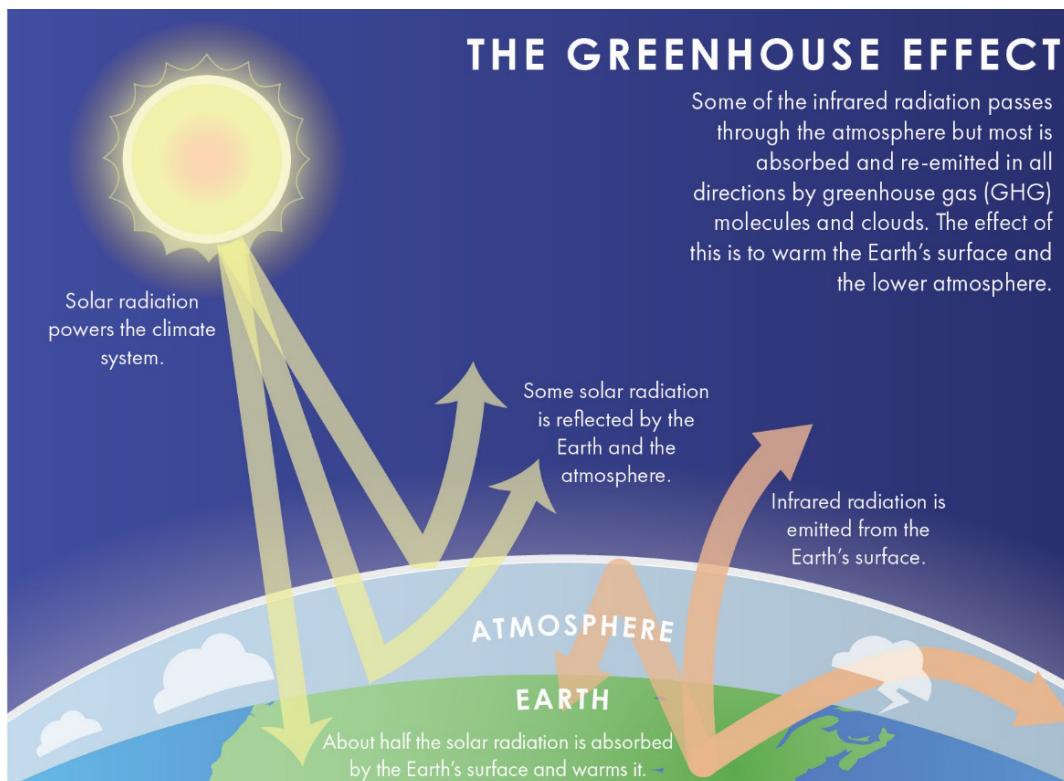
The City of Milpitas (hereafter referred to as "city") has a longstanding commitment to enhancing community resilience and promoting sustainability. Recognizing the threats posed by climate change and the responsibility to act, the City of Milpitas government (hereafter referred to as "City") developed its first Climate Action Plan (CAP) in 2013 to reduce locally generated greenhouse gas (GHG) emissions. Over half of the actions directed by the CAP have been implemented since its adoption, and the City has undertaken a multitude of additional initiatives to further reduce GHG emissions from local activities. The City achieved a historic milestone in 2018 when nearly all residents and businesses in the city began receiving carbon-free electricity from Silicon Valley Clean Energy (SVCE). Additionally, the City launched a communitywide organics and food scraps diversion program; updated the Milpitas Trail, Pedestrian, and Bicycle Master Plan; developed its innovative Milpitas OnDemand pilot project; and adopted plans and guidelines to improve water security and increase urban green space. These efforts have allowed the community to reduce its contributions to climate change while preparing for impacts, but the acceleration of global climate change is rapidly presenting unprecedented risks to safety, quality of life, and prosperity in the city.

In response to these risks, the City has developed this Climate Action Plan Update (CAP Update) to serve as a comprehensive roadmap to continue addressing the challenges of climate change. The overarching objectives of the CAP Update are two-fold: (1) to reduce GHG emissions from local activities to achieve GHG reduction targets and (2) to build community resilience to prepare for and adapt to the impacts of climate change. The CAP Update establishes locally based strategies, measures, and actions that will serve to achieve these objectives and simultaneously enhance the quality of life for residents, workers, and visitors of the city. The CAP Update is consistent with and complementary to State climate legislation and regulatory mandates and aligns with the State's and the region's approach to addressing climate change at the local level in communities across California.

## Code Red for Climate

Immediately after the August 2021 release of the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report—the IPCC's most recent, comprehensive report outlining the scientific community's latest information on climate change, its causes, and potential impacts—the United Nations Secretary-General António Guterres issued a statement. For his opening remark, he declared, "[the] Report is a code red for humanity. The alarm bells are deafening, and the evidence is irrefutable: greenhouse gas emissions from fossil fuel burning and deforestation are choking our planet and putting billions of people at immediate risk. Global heating is affecting every region on Earth, with many of the changes becoming irreversible."

The combustion of fossil fuels and other anthropogenic (i.e., human-caused) activities since the Industrial Revolution in the 19<sup>th</sup> century have introduced GHGs into the atmosphere at an increasingly accelerated rate. These significantly elevated levels of GHGs above natural ambient concentrations have intensified the greenhouse effect. This phenomenon, illustrated in **Figure 1-1** below, is a natural process that insulates the Earth and helps regulate its temperature. After absorbing sunlight, the Earth emits infrared radiation (i.e., heat), which is reabsorbed by a collection of naturally occurring atmospheric gases called GHGs. These gases, which consist mainly of water vapor, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O), all act as effective global insulators by absorbing some of the infrared radiation that is emitted by Earth and re-emitting it back down towards the planet. This process, where some heat is prevented from escaping out of the atmosphere, is what keeps temperatures on Earth conducive to life.



**Figure 1-1 The Greenhouse Effect**

Source: Ascent Environmental 2021.

# City of Milpitas Climate Action Plan Update

The greenhouse effect supports life on Earth as we know it, but it is also responsible for causing the planet's climate to warm at an unnatural and unprecedented rate, an impact known as global climate change. This consequence is the driver behind changes in more extreme weather patterns, rapid melting of the polar ice caps, an increase in sea level, and other impacts on biological resources and humans.

According to the Sixth Assessment Report, there is scientific consensus that observed increases in atmospheric GHG concentrations and the consequential warming of Earth's atmosphere, oceans, and lands have "unequivocally" been caused by human activities and influence. The report states that human activities are estimated to have caused over 2 degrees Fahrenheit (°F) of warming across the globe compared to pre-industrial era levels (i.e., before the year 1900), and global average temperature is expected to increase by up to approximately 8 °F by the end of the century unless additional efforts to reduce GHG emissions are made (IPCC 2021). The Sixth Assessment Report also contains the IPCC's strongest warnings to date on the impacts of climate change, highlighting key insights into the importance of global climate "tipping points," or thresholds (e.g., global temperatures) that, when exceeded, can result in large changes in the state of the climate system leading to a rapid series of cascading events with vast repercussions.

As California continues to experience rising average temperatures, more severe storms, and intense drought, it has become evident that the effects of global climate change are already occurring. The impacts of climate change in California vary across the state due to its diverse biophysical setting, climate, and community characteristics, but even modest changes in temperature and precipitation regimes could have significant effects on the state's ecosystems (OPR, CEC, and CNRA 2018a). At a regional level, average annual temperature in the San Francisco Bay Area region is projected to increase significantly by mid-century, and precipitation patterns and events are expected to exhibit high year-to-year variability, with volatile swings between very wet years and very dry years. These changes are anticipated to result in increased frequency and duration of heat waves, more frequent and intense drought, and accelerated sea level rise, resulting in adverse impacts on transportation infrastructure, energy systems, human health and safety, and economic prosperity in the region (OPR, CEC, and CNRA 2018b).

Climate change poses an imminent threat to the city and the world at large, but it is not too late for the global community to put the brakes on climate change and ensure a livable, healthy, and prosperous planet for generations to come. After outlining the dire consequences projected due to climate change, the Secretary-General ended his statement with the following:

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*If we combine forces now, we can avert climate catastrophe. But, as today's report makes clear, there is no time for delay and no room for excuses. I count on government leaders and all stakeholders to ensure COP26<sup>1</sup> is a success.*

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<sup>1</sup> The 2021 United Nations Climate Change Conference, also known as COP26, is the 26<sup>th</sup> United Nations Climate Change conference. The COP26 summit will bring together almost every country on Earth to accelerate action towards the goals of the Paris Agreement and the United Nations Framework Convention on Climate Change.

## Planning for a Sustainable Future

While climate change is a global issue, local governments have an important role to play in reducing GHG emissions and preparing for the impacts of climate change in their communities. To help achieve these objectives, public agencies develop action plans, which serve as long-term strategic planning frameworks that outline specific strategies, measures, and actions an agency can take to mitigate GHG emissions and strengthen resilience to climate change. CAPs also contain specific guidance for governments to effectively implement emissions reduction and adaptation measures and monitor progress over time. Through the development and implementation of its CAP Update, the City is joining hundreds of other communities across the nation in tackling the challenges posed by climate change.

### Climate Change Mitigation and Adaptation



Aerial View of Milpitas

Addressing climate change requires an integrated approach that targets both its sources and impacts. Efforts that focus on reducing the sources of climate change are commonly known as climate change mitigation, GHG mitigation, or climate action. The focus of climate change mitigation planning is to reduce communities' generation of GHG emissions and, therefore, minimize their contributions to climate change. Climate change adaptation or climate change resilience efforts are those that serve to prepare for and reduce harm from future

effects of a changing climate. Climate change adaptation planning aims to analyze local climate-related vulnerabilities and enhance community resilience to climate change through developing strategies to respond to and prepare for its impacts. **Figure 1-2** illustrates the relationship between these two facets of climate change planning. State law requires communities to address climate change mitigation in local planning and environmental review processes and climate change adaptation in local long-range planning processes, such as general plans (CalOES 2020).

Climate change mitigation and adaptation are both crucial components of comprehensive climate change planning. While mitigation and adaptation are often separate planning efforts, it is important to consider both components within the overall climate action planning process. Many initiatives that focus on climate mitigation and reducing GHG emissions include co-benefits for adaptation, and vice versa. For example, renewable energy installations combined with battery storage systems will reduce reliance on fossil fuel-generated grid electricity and thus reducing GHG emissions, but will also improve energy independence and resilience in the face of climate hazards that threaten energy services. Consequently, this initiative would yield adaptation benefits as well as GHG emissions reductions. On the flip side, increasing urban tree canopy will help to combat extreme heat events and decrease risks to humans of heat-related

# City of Milpitas Climate Action Plan Update

illnesses, but will also reduce buildings' cooling demands and thus reduce GHG emissions through energy savings. This dynamic has contributed to the increasingly common approach of combining climate change mitigation and adaptation in the climate action planning process. Recognizing the importance and benefits of this relationship, the City's CAP Update focuses on both climate change mitigation and adaptation to address climate change.



**Figure 1-2 Relationship between Climate Mitigation and Adaptation**

Source: CalOES 2020; adapted by Ascent Environmental in 2021.

## Solutions Across Agencies

In response to the increase in anthropogenic GHG emissions and the threat of global climate change, federal, State, regional, and local governments and other agencies have already taken several steps to reduce GHG emissions and build resilience to climate change impacts. These efforts, and the legislative background summarized in the following sections, provide important policy direction and context for this CAP Update.

## California Climate Legislation

### Mitigation Legislation

Executive Order (EO) S-3-05 was signed in 2005, which directed California to reduce statewide GHG emissions to 1990 levels by 2020 and 80 percent below 1990 levels by 2050. A year later, the Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) was passed, establishing regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions. AB 32 put a cap on GHGs and set a target of reducing statewide emissions to 1990 levels by 2020. In 2008, the California Air Resources Board (CARB) developed the *Climate Change Scoping Plan: A Framework for Change* (2008 Scoping Plan) as part of its role in implementing AB 32 and EO S-3-05 (CARB 2008). The 2008 Scoping Plan, along with its update in 2014, describes the approach California will take to reduce GHG emissions to achieve reduction targets and goals. In 2016, California achieved the AB 32 target of reducing GHG emissions to 1990 levels, 4 years ahead of schedule, based on its reported statewide 2016 inventory (CARB 2020). The annual statewide GHG inventories for 2017, 2018, and 2019 have shown that the state continues to achieve the AB 32 target.

In September 2016, Senate Bill (SB) 32 codified into statute the midterm 2030 target of 40 percent below 1990 levels by 2030. The 2030 GHG emissions reduction target places California on a trajectory toward meeting the goal of reducing statewide emissions to 80 percent below 1990 levels by 2050.

In November 2017, CARB published California's *2017 Climate Change Scoping Plan Update* (2017 Scoping Plan) (CARB 2017), which lays out the framework for achieving the 2030 target as established in SB 32. The 2017 Scoping Plan identifies GHG reductions by emissions sector to achieve a statewide emissions level that is 40 percent below 1990 levels by 2030.

EO B-55-18, signed in September 2018, furthers California's efforts to reduce GHG emissions by setting a goal to achieve carbon neutrality no later than 2045 and to achieve net negative GHG emissions thereafter. CARB is currently drafting the 2022 Scoping Plan that will lay out the pathway to meeting the carbon neutrality goal.

### Adaptation Legislation

In 2009, the State released its first climate adaptation strategy, *Safeguarding California*. The passing of AB 1482 in 2015 required the California Natural Resources Agency (CNRA) to update the State's climate adaptation strategy by July 1, 2017, and every 3 years thereafter. The most recent update of the strategy, now called the *Safeguarding California Plan*, contains implementation measures and specific actions and responsibilities for State agencies to carry out those policies. AB 1482 also required CNRA, in collaboration with the Strategic Growth Council, to oversee and coordinate these State agency adaptation actions. It mandated that State agencies maximize specified objectives, including promoting the use of *Safeguarding California* to inform planning decisions and ensure that State investments consider climate change impacts.

SB 246, signed in 2015, directed the California Governor's Office of Planning and Research (OPR) to establish the Integrated Climate Adaptation and Resilience Program. The program has two components: the State Adaptation Clearinghouse and the Technical Advisory Council. The

# City of Milpitas Climate Action Plan Update

goal of these initiatives is to coordinate regional and local efforts with State climate adaptation strategies to improve resilience to the impacts of climate change across California. This bill also required OPR to review and update, as needed, the *California Adaptation Planning Guide*.

Also adopted in 2015, SB 379 required cities and counties within California to integrate climate change vulnerability, adaptation strategies, and emergency response strategies into the safety element of their general plans. The bill requires the preparation of a vulnerability assessment, which must identify the risks that climate change poses to the local jurisdiction and the geographic areas at risk from climate change impacts, using federal, state, regional, and local climate vulnerability documentation. Adaptation policies, goals, and objectives are to be developed based on findings from the vulnerability assessment, and jurisdictions are required to create a set of feasible implementation measures to reduce climate change impacts on new or proposed land uses. Lastly, SB 379 states that jurisdictions that have adopted a CAP or climate adaptation plan separate from the general plan may reference that document to comply with SB 379 requirements.

## Regional and Local Climate Planning Efforts

The City has a longstanding commitment to climate planning at the local level through the development, implementation, and periodic updating of planning documents, partnerships with other agencies and stakeholders, and outreach and educational efforts.

These activities provide the foundation for sustainability activities occurring at the municipal and communitywide levels and are complementary to the CAP Update. Some of the major efforts that provide context for and support this CAP are described below.



## 2013 Climate Action Plan

In 2013, the City adopted its first CAP, which was developed to serve as a roadmap for meeting a GHG emissions reduction target of 15 percent below 2005 baseline emissions by 2020, consistent with State targets. The CAP included a GHG emissions inventory, forecasted emissions in the future, and identified strategies and measures for reducing local GHG emissions. Additionally, the CAP was designed to streamline environmental review of future development projects in the city. Since its adoption, over half of the GHG mitigation measures included in the CAP have been implemented, resulting in significant GHG emissions reductions.

# City of Milpitas Climate Action Plan Update

## Milpitas 2040 General Plan Update

Following a multi-year process that involved extensive community outreach, the City adopted its *General Plan 2040* in 2021. The *General Plan 2040* provides the long-term vision and policy direction guidance for residents, city staff, decision-makers, and the broader community. The *General Plan 2040* serves as the foundation for most City regulatory documents and addresses land use, circulation, community design, economic development, conservation and sustainability, utilities and community services, safety, noise, parks and recreation, and community health and wellness. The Conservation and Sustainability Element includes Goal CON-1: Climate Action, which contains climate change-related policies and actions, including a directive to develop this CAP Update. The Safety Element provides information pertaining to the natural hazards that have historically affected the city including earthquakes, flooding, and hillside wildfire, as well as climate resiliency and adaptation policies consistent with SB 379.

## Specific Plans

The City regularly develops and updates its specific plans, which are comprehensive planning and zoning documents for a defined geographic region that implement the goals and policies of the City's General Plan. The City is in the process of developing the Milpitas Metro Specific Plan to serve as an update to the Transit Area Specific Plan, which will guide the redevelopment of an approximately 437-acre area in the southern portion of the City that currently includes a number of industrial uses near the Great Mall shopping center. The Milpitas Midtown Specific Plan, released in 2010, provides the vision for an approximately 1,000-acre area of land which is currently undergoing changes related to its growing role as a housing and employment center in Silicon Valley. The City is beginning the process of updating this document through the development of a new Main Street-Gateway Specific Plan.

## Santa Clara Operational Area Hazard Mitigation Plan

The County of Santa Clara Office of Emergency Services updated its Operational Area Hazard Mitigation Plan (OAHMP) in 2017. The OAHMP is intended to enhance public awareness and understanding, create a decision tool for management, promote compliance with State and federal program requirements, enhance local policies for hazard mitigation, provide inter-jurisdictional coordination of mitigation-related programming, and achieve regulatory compliance. The OAHMP update includes an assessment of risk and vulnerability associated with hazards including wildfire/structure fires, flooding, coastal storms/erosion/tsunamis, earthquakes/liquefaction, rain-induced landslides, dam failures, drought, hazardous materials incidents, terrorism, and emerging risks from climate change. The OAHMP specifically targets climate change resiliency as a component of emergency preparedness.

## Partnerships and Collaboration

Strategic partnerships and active collaboration with regional agencies and organizations have been a key component to the City's success in reducing GHG emissions and improving climate resilience. The City's partnership with SVCE—a public, not-for profit community choice energy provider that was formed to serve the communities of Silicon Valley—has contributed to

# City of Milpitas Climate Action Plan Update

significant emissions reductions since the community began receiving clean electricity in 2018. The City has also supported a number of SVCE-led regional efforts, such as the Building Decarbonization Joint Action Plan and Electric Vehicle Infrastructure Joint Action Plan. The City also participates in the Bay Area Regional Energy Network (BayREN), a regional collaborative that provides energy efficiency programs, services, and resources to members. Collaboration with many other agencies and organizations, such as the County of Santa Clara Office of Emergency Services and the Bay Area Climate Adaptation Network (BayCAN), has helped the City advance its climate-related goals.

## Reducing Emissions and Preparing for Changes

The City has developed this CAP Update to achieve GHG emissions reduction targets and minimize contributions to climate change while building resilience to climate change impacts. For climate change mitigation, this involves:

- establishing an updated baseline inventory of GHG emissions,
- projecting future GHG emissions,
- setting GHG emissions reduction targets, and
- identifying strategies, measures, and actions to reduce GHG emissions.

For climate change adaptation, this involves preparing a vulnerability assessment and adaptation strategies, which consists of:

- evaluating the city's exposure to climate change-related hazards,
- analyzing sensitivity to these hazards and identifying vulnerabilities and potential impacts,
- determining the city's existing adaptive capacity to prepare for and adapt to these impacts, and
- developing adaptation strategies to improve community resilience.

This CAP Update also includes an implementation strategy, which will be key to achieving the City's climate-related goals. As part of CAP Update implementation, GHG reduction and adaptation efforts will be tracked and monitored over time to ensure the City is making progress toward achieving its GHG reduction targets and climate resilience objectives.

This CAP Update will serve as a living document that will require periodic updates, including reporting on the status of implementation and conducting updates to the GHG emissions inventory, vulnerability assessment, and climate change mitigation and adaptation measures. These updates will help ensure that this CAP Update is being effectively implemented and supporting the City in addressing climate change. Ultimately, the overarching goals of this CAP Update will remain the same: to reduce GHG emissions and build resilience to the effects of climate change.

## Co-Benefits

While the CAP Update is primarily geared towards reducing GHG emissions and addressing climate change-related vulnerabilities within the city, it will also result in numerous “co-benefits” to residents and businesses. Co-benefits result from the implementation of CAP actions and are additional valuable outcomes that are not the primary intent of climate change mitigation or adaptation actions, such as improvements to local air quality and water supply, increases in local green jobs and cost savings, and benefits to public health and improved mobility options. For example, implementation of an action to weatherize older buildings to improve energy efficiency will reduce GHG emissions and strengthen resilience to extreme weather conditions, but it will also provide the co-benefit of financial savings to building owners money through reduced energy costs.

Co-benefits identified in this CAP Update, as shown in **Figure 1-3**, include enhanced equity, air pollution prevention, benefits to health and well-being, improved reliability of critical infrastructure and services, strengthened climate resilience, economic development, and resource preservation.



**Figure 1-3 Co-Benefits**

Source: Ascent Environmental 2021.

## Development Process

The City has implemented a suite of climate action and adaptation initiatives over the past decade, and while significant progress has been made, the City recognizes the importance of developing a CAP Update to continue reducing GHG emissions and achieving reduction targets in line with State objectives. Additionally, the City desires to develop a comprehensive plan that considered climate change resilience, which was not included in the 2013 CAP. These goals were used to inform the scope, vision, and objectives of the project and guided the CAP Update development process.

As shown in **Figure 1-4** below, the City initiated a scoping phase for the project in early 2020. After project kickoff in October 2020, the City prepared GHG emissions inventories and forecasts, set GHG reduction targets, and conducted a climate change vulnerability assessment. These tasks were completed by mid-2021, and then the City developed GHG emissions reduction and adaptation strategies, measures, and actions to be included in the CAP Update. These efforts created the foundation for developing the planning document, which occurred in Fall 2021. Details regarding CAP Update implementation are provided in **Chapter 6**.



**Figure 1-4 Project Timeline**

Source: Ascent Environmental 2021.

Engagement with City staff, members of the public, government officials, and other stakeholders was conducted throughout the entirety of the project. Outreach and engagement efforts are described in the following section.

## Community Input and Response

Local community engagement and participation with climate action and adaptation efforts is an essential element of the planning and development process. Local action on climate change cannot be achieved solely by one agency; it requires active and ongoing partnerships between residents, businesses, local government, and other organizations and stakeholders. By meaningfully engaging a cross-section of the community, the City strengthened its ability to effectively implement local climate change solutions. The following sections summarize the engagement efforts for the CAP Update.

# City of Milpitas Climate Action Plan Update

## Community Engagement



The City hosted public workshops to engage residents, stakeholders, and other interested organizations and individuals and provide an opportunity to participate in the CAP Update planning process. Due to the COVID-19 pandemic, most public workshops and CAP Update events were held virtually. The workshops served to inform attendees about the project scope and goals and solicited input to gain a better understanding of the community's climate change concerns and priorities. The first workshop, held on May 6, 2021, provided an overview of the purpose and objectives of the CAP, outlined the results

of the City's GHG emissions inventories, presented the City's GHG emissions forecasts and reduction targets, and offered an opportunity for attendees to comment on proposed GHG reduction strategies and measures.

The City hosted a pop-up booth at the Milpitas Farmers' Market on July 25, 2021, to gauge public perception of the proposed GHG reduction strategies and measures and to identify barriers to personal climate action choices.

In May 2021, the City hosted a workshop with students from Milpitas High School to discuss climate change concerns and proposed GHG reduction strategies and measures to be included in the CAP Update.

The second workshop was held on June 1, 2022, and focused on the Draft CAP Update document, and attendees provided feedback that was used to refine the final document. These events played a key role in determining the City's approach to climate change mitigation and adaptation through ground-truthing the technical analyses conducted for the CAP Update.

## Steering Committee and Energy and Environmental Sustainability Commission

A Steering Committee was formed to help guide the CAP Update development process. This group consisted of representatives from various City departments, including Public Works, Engineering, Recreation Services, and Planning, as well as the Office of the City Manager. In addition to regularly meeting with the Steering Committee, City staff also provided project milestone updates and solicited feedback on an ongoing basis with the Energy and Environmental Sustainability Commission at their monthly public meetings throughout the project. Members of the public were encouraged to attend all public meetings.

# City of Milpitas Climate Action Plan Update

## Project Websites and Press Releases

To provide project information and resources to the community and stakeholders, the City developed *Climate Action Milpitas*, an interactive online dashboard dedicated to the CAP Update (located at <https://www.climateactionmilpitas.org/home>) and shown in **Figure 1-5**. The dashboard includes an overview of the project, GHG emissions- and adaptation-related information, news and updates, and supporting documents and materials. This webpage was kept up-to-date and supported public participation throughout the project. Additionally, the dashboard hosted a series of short surveys that were used to gather feedback on proposed GHG reduction and adaptation strategies and measures. Public engagement was also facilitated by a series of press releases and newsletters, which were used to disseminate information regarding CAP Update progress and engagement events, such as the public workshops.

## Dashboard

The screenshot displays the *Climate Action Milpitas* website with six main sections arranged in a grid:

- Get Involved With The CAP Update** (Green background):
  - Image: A person's hands working with colorful sticky notes on a table.
  - Text: "We need your input and ideas on best ways to reduce community carbon emissions; your feedback is critical to our success!"
  - Links: "Engage and Connect" →, "Planning for Our Future" →
- Understanding Our Emissions** (Blue background):
  - Image: A parking lot with solar panels installed above the cars.
  - Text: "We've reduced greenhouse gas emissions (GHGs) by 19% from our 2005 baseline. Let's keep the momentum going!"
  - Links: "Our Greenhouse Gas Emissions" →, "Municipal Operations" →
- Promoting Clean Energy** (Yellow background):
  - Image: A house with solar panels installed on the roof.
  - Text: "Between 2005 and 2015, the City of Milpitas increased electric energy usage by 16%. But since 2018, much of this electricity is carbon free."
  - Links: "What is Clean Energy?" →, "Going All-Electric" →, "How You Can Help" →
- Traveling Sustainably** (Purple background):
  - Image: The exterior of the Milpitas BART station.
  - Text: "Our new BART station is transforming mobility for Milpitas."
- Conserving Natural Resources** (Dark Blue background):
  - Image: A view of a wetland or natural area.
  - Text: "12% of California's energy use is
- Reducing Waste** (Green background):
  - Image: A recycling truck and a green trash bin on a street.
  - Text: "Did you know that Milpitas is leading the way with its unique

**Figure 1-5 Climate Action Milpitas Website Screenshot**

## How to Read This Plan

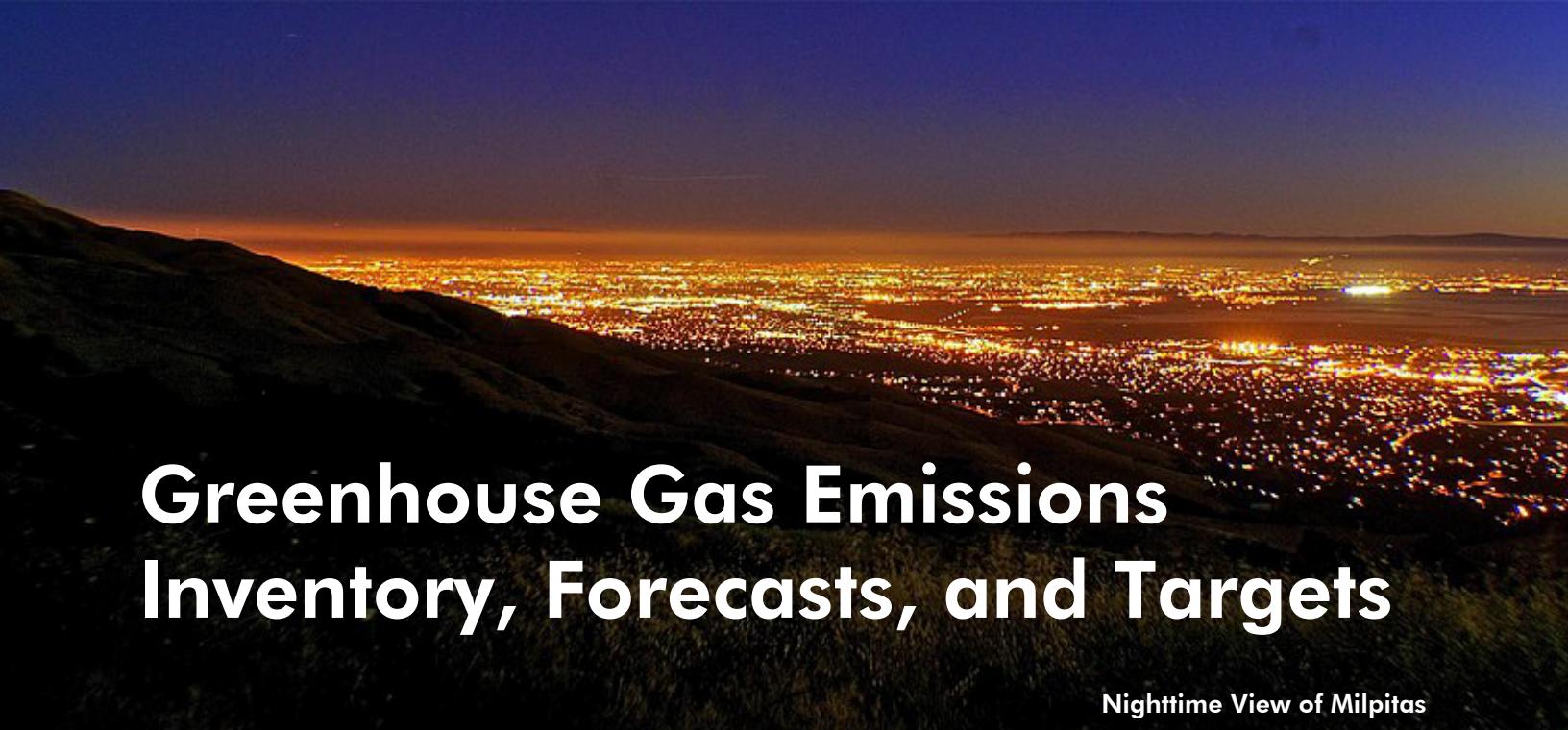
### Organization

This CAP Update is divided into six main chapters. This chapter, **Chapter 1**, introduces the city, outlines the context and purpose of the CAP Update, describes existing legislation and efforts aimed at addressing climate change, and summarizes the proposed mitigation and adaptation initiatives. **Chapter 2** describes the community's GHG emissions inventories, presents a forecast of future emissions in the city, and identifies community emissions reduction targets. The City's municipal operations GHG emissions inventories, forecasts, and reduction targets, along with strategies and measures to reduce GHG emissions, are included in **Chapter 3**. GHG emissions reduction strategies and measures are included in **Chapter 4**, organized into seven sectors: Building Energy, Transportation and Land Use, Waste, Water and Wastewater, Off-Road Vehicles and Equipment, Carbon Sinks, and Consumption-Based Emissions that generally align with the emissions sectors used in the City's GHG inventories. **Chapter 5** presents an overview of the climate adaptation planning process and a summary of the city's climate change vulnerability assessment along with adaptation strategies and measures that the City will implement to strengthen community resilience to climate change. Lastly, **Chapter 6** provides a framework for implementing and monitoring the CAP Update and includes guidance for future climate action and adaptation planning efforts.

### GHG Reduction and Adaptation Framework

The GHG emissions reductions initiatives included in **Chapter 4** and the adaptation and resilience efforts in **Chapter 5** are presented under the same framework. Each chapter presents **strategies** that serve as the foundation for addressing the ways in which GHG emissions can be reduced and resilience can be improved in the community. Within each strategy are one or more **measures** that represent specific expressions of the broad strategies. **Chapter 6** includes detailed actions for each programs, or policies the City will implement or support to reduce GHG emissions and strengthen resilience. These actions have been identified as priorities and are intended to be implemented within the first 3 to 5 years after CAP Update adoption. This framework is outlined in **Figure 1-5**.





# Greenhouse Gas Emissions Inventory, Forecasts, and Targets

Nighttime View of Milpitas

This chapter sets the foundation for the CAP Update by describing current and forecasted GHG emissions and reduction targets. It summarizes the City's standard emissions inventories; presents the anticipated change in emissions if local actions are not taken; and establishes targets for reducing emissions consistent with statewide GHG reduction targets and goals for the years 2030, 2040, and 2045. Lastly, it provides an additional framework for evaluating and addressing the community's contribution to climate change.

## Why Prepare a Greenhouse Gas Emissions Inventory?

The critical first step in the overall climate action planning process is to prepare a GHG emissions inventory. To develop and implement a CAP that will effectively reduce GHG emissions, local governments must first have a comprehensive understanding of the emissions that are generated by activities within their jurisdictions. GHG emissions inventories not only serve to provide this knowledge, but they also act as the basis for measuring progress and provide agencies with a framework to track emissions over time and assess the effectiveness of CAP implementation.

The standard GHG emissions inventory used in the climate action planning process, known as a "production-based" inventory, estimates GHG emissions generated within a defined geographic boundary during a single year. It identifies the sources, activities, and sectors that are producing these emissions and the relative contribution of each, while also providing a baseline used to forecast emissions trends into the future. This information is used to set reduction targets that are consistent with State objectives and then to create solutions for reducing GHG emissions locally through the creation of a CAP.

In addition to traditional production-based emissions inventories, it is becoming increasingly common for local governments to prepare a "consumption-based" emissions inventory (CBEI). A CBEI evaluates GHG emissions generated by the production, use, and disposal of goods and services consumed by residents of a community within a given year. While there is some overlap

with the production-based inventory, the CBEI evaluates emissions that are not accounted for in the traditional approach, so this additional lens through which to view community-generated GHG emissions provides further opportunities for a community to reduce its contribution to climate change (e.g., purchasing decisions). Additional information regarding consumption-based emissions and the City's CBEI are presented in the final section of this chapter. Throughout this CAP Update, information and data associated with the consumption-based approach will be stated and labeled explicitly; any other references to the city's GHG emissions and emissions inventories refer to the production-based methodology and data.

## Community Inventories

The City has developed several GHG emissions inventories over the past decade, which provide a detailed accounting of the sources and quantities of GHG emissions generated from activities within the community for different years. Three primary GHGs are quantified: CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O. Emissions of these gases are converted to a comparable unit by multiplying each non-CO<sub>2</sub> gas by their global warming potential (GWP), enabling the reporting of emissions in terms of carbon dioxide equivalent (CO<sub>2</sub>e). This conversion allows consideration of all gases in a single unit and makes it easier to communicate how various sources and types of GHG emissions contribute to climate change. Emissions are reported in metric tons of CO<sub>2</sub>e (MTCO<sub>2</sub>e), the standard measurement for the amounts of GHG emissions produced and released into the atmosphere. GWP values for CH<sub>4</sub> and N<sub>2</sub>O included in the IPCC Fifth Assessment Report are used for calculating emissions estimates (IPCC 2013). In August 2021, IPCC released its Sixth Assessment Report, which includes updated GWP values. Because these values were not available at the time the GHG inventory and forecasts were prepared, the GWP values from the Fifth Assessment Report were used.

ICLEI – Local Governments for Sustainability (ICLEI) develops protocols for local-scale accounting of emissions that have become the industry standard for local governments developing GHG emissions inventories. The most recent guidance for community-scale emissions inventories is ICLEI's July 2019 publication, *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions* (Community Protocol), Version 1.2 (ICLEI 2019). State agencies, including CARB and OPR, recommend that jurisdictions prepare GHG emissions inventories using the guidelines included in the Community Protocol. Consistent with these recommendations and industry best practices, the City's community GHG emissions inventories have been prepared according to the Community Protocol.

## 2005 Baseline Inventory

As described in **Chapter 1**, the City's 2013 CAP included a 2005 baseline GHG emissions inventory. Since the 2005 inventory was prepared, protocols for estimating community GHG emissions in various sectors have been updated and expanded (see Appendix A for additional details). These changes reflect refinements in the planning process that have resulted from research in the field and shared knowledge from local governments engaged in climate action planning.

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Because methods to calculate GHG emissions change regularly, past GHG inventories often need to be recalibrated based on current methodologies. For this CAP Update, the 2005 baseline GHG emissions inventory was revised using methodologies and guidance provided by ICLEI in the most recent Community Protocol. The revised 2005 baseline inventory incorporated updated GWP values, additional emissions sources, and refined data and emissions factors.

The revised 2005 baseline inventory estimates community emissions in seven sectors: on-road transportation, nonresidential building energy, residential building energy, solid waste, off-road vehicles and equipment, wastewater treatment, and water supply. **Table 2-1** describes each GHG emissions sector.



**Table 2-1 Milpitas Community Greenhouse Gas Emissions Inventory Sectors**

Emissions Sector	Description
On-Road Transportation	On-road transportation emissions are associated with gasoline and diesel fuel consumption from motor vehicles on local and regional roadways.
Nonresidential Building Energy	Nonresidential building energy emissions are associated with the consumption of electricity, natural gas, and diesel in nonresidential buildings within the city.
Residential Building Energy	Residential building energy emissions are associated with the consumption of electricity and natural gas in homes within the city.
Solid Waste	Solid waste emissions are associated with the decomposition of community-generated mixed and organic waste in landfills.
Off-Road Vehicles and Equipment	Off-road emissions are associated with gasoline and diesel fuel use from construction and mining, entertainment, industrial, lawn and garden, commercial, and recreational equipment, as well as railyard operations and transportation refrigeration units.
Wastewater Treatment	Wastewater treatment emissions include process and fugitive emissions, stationary emissions from the combustion of digester gas, and energy-related emissions.
Water Supply	Water emissions are associated with the electricity used to supply, convey, treat, and distribute water in the city.

Source: Ascent Environmental 2021.

Based on the modeling conducted for the revised baseline inventory, community activities in the city generated approximately 547,972 MTCO<sub>2</sub>e in 2005. The largest emissions-generating sectors included on-road transportation, nonresidential building energy, and residential building energy. The city's 2005 baseline emissions by sector are presented under the "Inventories Comparison" section in **Table 2-3** and **Figure 2-3**.

## Updated 2019 Baseline Inventory

In preparation of the CAP Update, the City developed an updated baseline inventory, which evaluated community emissions in 2019 using the same seven emissions sectors in the revised 2005 inventory. The updated 2019 baseline inventory estimated that community emissions were approximately 441,557 MTCO<sub>2</sub>e in 2019. Emissions from on-road transportation, which include emissions from fossil fuel (i.e., gasoline and diesel) combustion in vehicles, accounted for approximately 59 percent of community emissions. The second-largest emissions sector, nonresidential building energy, contributed approximately 22 percent of community GHG emissions in 2019, and the residential building energy sector generated approximately 10 percent of the city's emissions. The solid waste and off-road vehicles and equipment sectors accounted for 5 percent and 4 percent, respectively, and wastewater treatment and water supply each contributed less than 1 percent of total emissions. The 2019 baseline inventory serves as the City's updated GHG emissions baseline for the CAP Update.

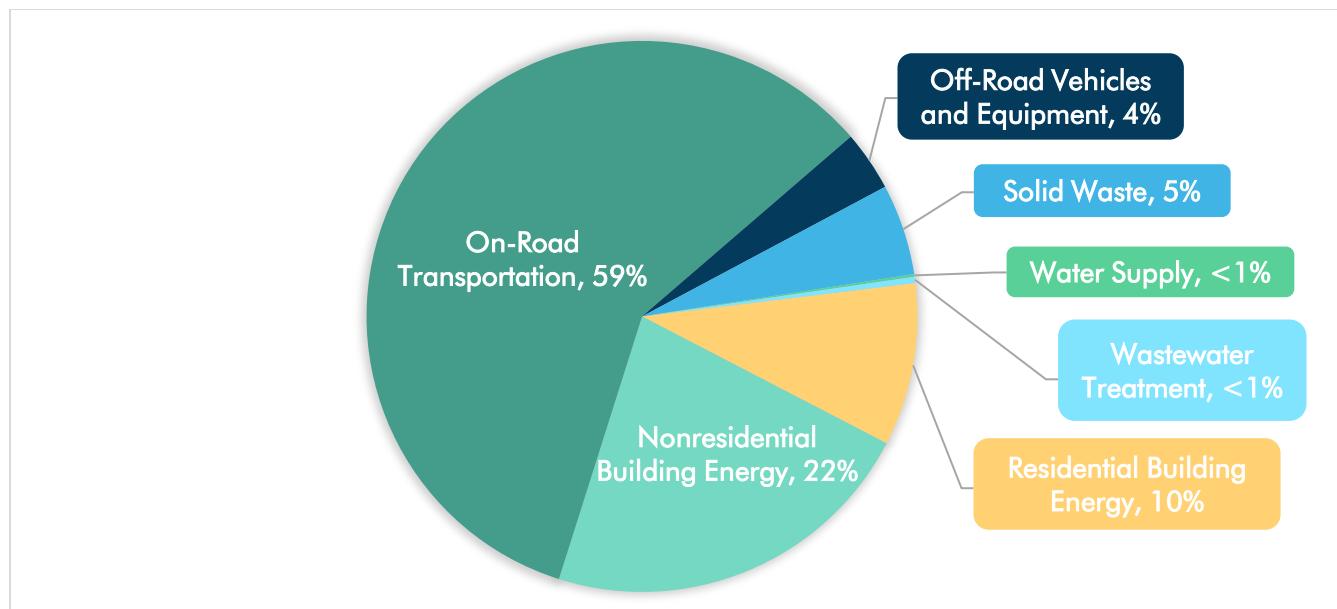
**Table 2-2 Milpitas 2019 Community Greenhouse Gas Emissions Inventory**

Emissions Sector	GHG Emissions (MTCO <sub>2</sub> e)	Percent of Total
On-Road Transportation	259,627	59%
Nonresidential Building Energy	98,319	22%
Residential Building Energy	42,218	10%
Solid Waste	23,566	5%
Off-Road Vehicles and Equipment	15,554	4%
Wastewater Treatment	1,578	<1%
Water Supply	694	<1%
<b>Total</b>	<b>441,557</b>	<b>100%</b>

Note: Columns may not sum exactly due to independent rounding. MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent.

Source: Ascent Environmental 2021.

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**Figure 2-1 Milpitas 2019 Community Greenhouse Gas Emissions Inventory**

Source: Ascent Environmental 2021.

As shown in **Figure 2-2**, community emissions in 2019 of approximately 441,557 MTCO<sub>2</sub>e are equivalent to combusting 50 million gallons of gasoline, or the total combustion from 96,000 passenger vehicles driving continuously for one year (EPA 2021).

## HOW MUCH IS 441,557 METRIC TONS OF GREENHOUSE GASES ?



**50 million gallons**  
of gasoline consumed



**96 thousand passenger vehicles**  
driving continuously for one year



**21 thousand garbage trucks**  
of waste recycled instead of landfilled



**53 thousand household's**  
electricity use for one year

**Figure 2-2 Milpitas 2019 Community Greenhouse Gas Emissions Equivalencies**

Source: EPA 2021; adapted by Ascent Environmental in 2021.

## Inventories Comparison

Evaluating community GHG emissions over time is a crucial element of climate action planning. Tracking and comparing emissions levels allows jurisdictions to assess where progress has been made and which emissions sources and sectors should be prioritized in planning.

In addition to preparing the City's revised 2005 and updated 2019 baseline inventories, a 2015 inventory was developed as a representative interim year to measure changes in the city's emissions levels. A comparison of the city's GHG emissions by sector in 2005, 2015, and 2019 is presented in **Table 2-3** and illustrated in **Figure 2-3**.

<b>Table 2-3 Comparison of Milpitas Community Greenhouse Gas Emissions Inventories</b>				
<b>Emissions Sector</b>	<b>Revised 2005 Inventory (MTCO<sub>2</sub>e)</b>	<b>2015 Inventory (MTCO<sub>2</sub>e)</b>	<b>2019 Inventory (MTCO<sub>2</sub>e)</b>	<b>Percent Change 2005 – 2019</b>
On-Road Transportation	252,864	278,061	259,627	+3%
Nonresidential Building Energy	183,424	202,368	98,319	-46%
Residential Building Energy	64,108	57,581	42,218	-34%
Solid Waste	26,998	28,984	23,566	-13%
Off-Road Vehicles and Equipment	15,034	16,511	15,554	+3%
Wastewater Treatment	1,078	1,935	1,578	46%
Water Supply	4,466	2,974	694	-84%
<b>Total</b>	<b>547,972</b>	<b>588,414</b>	<b>441,557</b>	<b>-19%</b>

Notes: Totals may not sum exactly due to independent rounding. MTCO<sub>2</sub>e = metric tons of carbon dioxide.

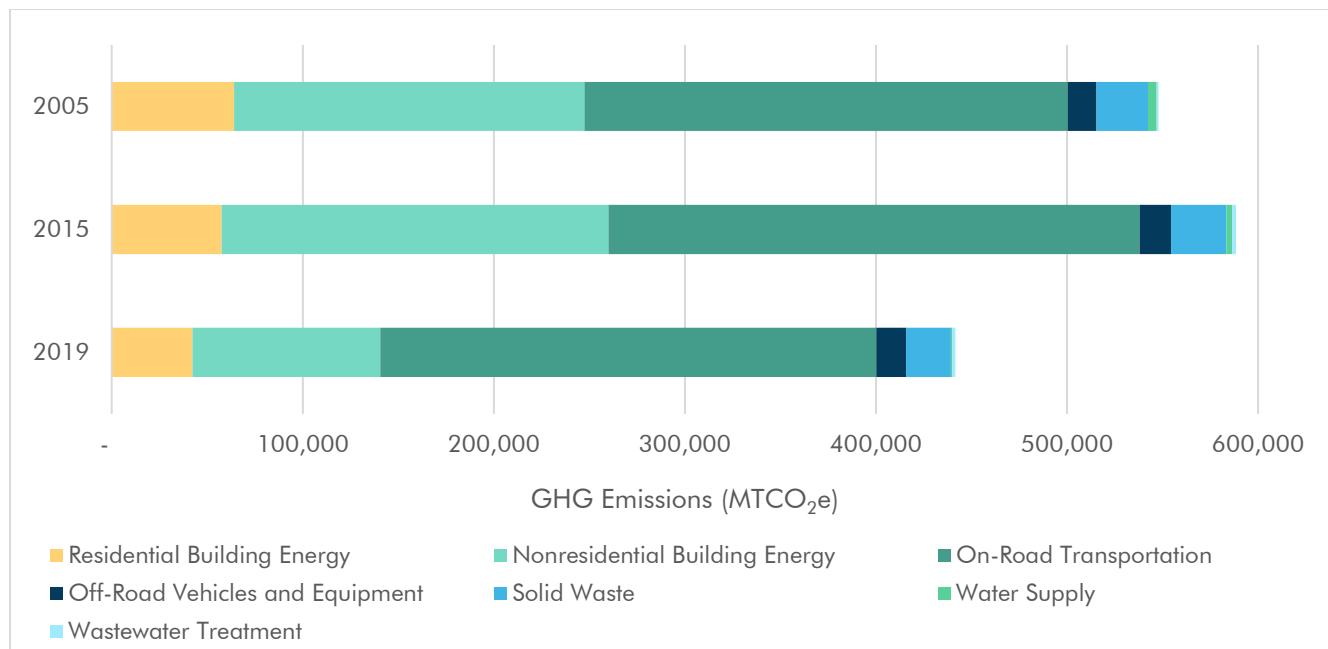
Source: Ascent Environmental 2021.

Community GHG emissions increased by approximately 7 percent above the revised 2005 baseline in 2015 as a result of population and employment growth in the city. In 2019, community GHG emissions decreased by approximately 19 percent below the revised 2005 baseline. Although population and employment continued to rise in 2019, the reduction in emissions between the revised 2005 inventory and the 2019 inventory can be explained by:

- improvements in vehicle and equipment fuel efficiency due to State and federal regulations,
- reductions in the carbon intensity of grid electricity due to State regulations, and
- the supply of near-zero-emissions grid electricity from SVCE to the Milpitas homes, businesses, and city facilities starting in 2018.

Further details regarding differences between the inventories are included in Appendix A.

# City of Milpitas Climate Action Plan Update



**Figure 2-3 Comparison of Milpitas Community Greenhouse Gas Emissions Inventories**

Source: Ascent Environmental 2021.

## Community Forecasts

GHG emissions forecasts provide a modeled estimate of future emissions levels based on a continuation of current trends in activity, population, and job growth, while also accounting for known regulatory actions by State and federal agencies (i.e., “legislative” actions) that are expected to reduce emissions in the future. Emissions forecasts provide insights into the scale of local reductions needed to achieve GHG emissions reduction targets after applying anticipated reductions from regulatory actions.

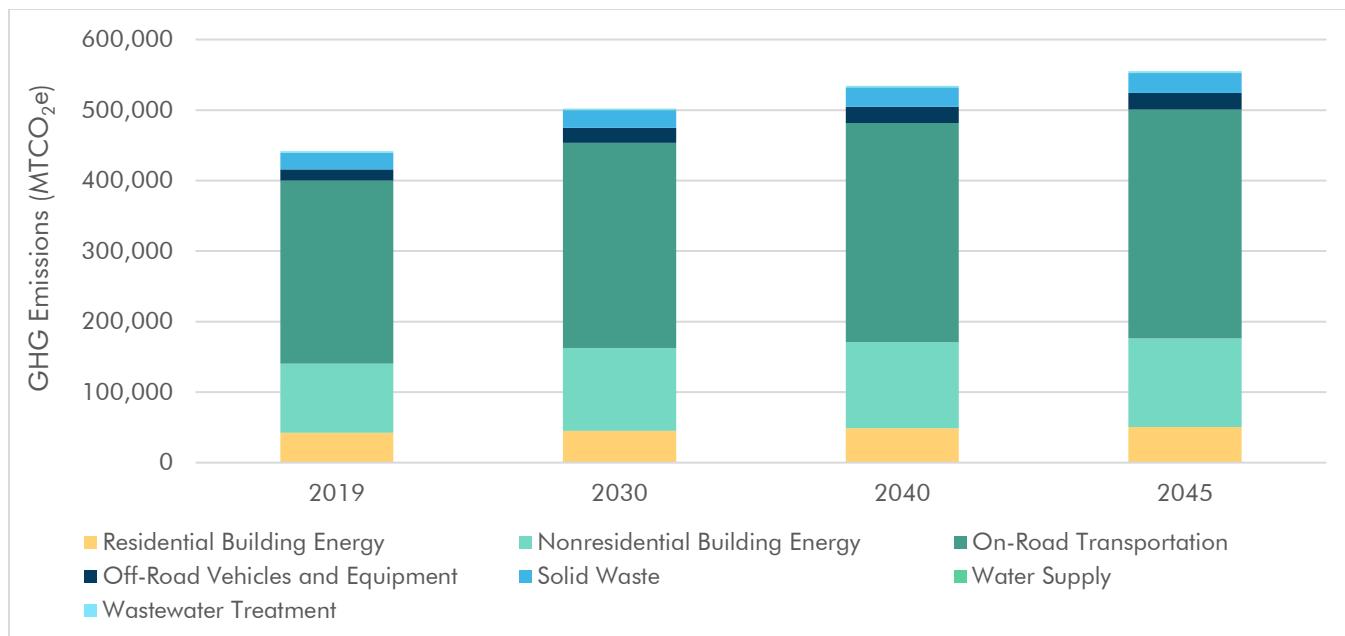
This CAP Update includes two forecast scenarios: a “business-as-usual” (BAU) scenario, and a legislative-adjusted BAU scenario. The BAU scenario is based on a variety of scaling factors for each sector (or activities that occur within the sector[s]) in the city and assumes no additional State or federal actions will occur after 2019 (the updated baseline inventory year). In the legislative-adjusted BAU scenario, the BAU forecast is “adjusted” to account for the effects of State and federal laws and regulatory requirements on the city’s forecasted emissions. The forecasts estimate emissions for the years 2030, 2040, and 2045, which align with the State’s GHG reduction target years established in key legislation and policies, including SB 32 and Executive Order (EO) B-55-18, as well as the City’s General Plan Update horizon year. The long-term target year of 2045 was chosen to better align with newer State GHG targets such as the statewide carbon neutrality goal, rather than the previously issued 2050 goal of an 80 percent reduction from 1990 levels.

Details on how the forecasts were developed and the activity data used to forecast emissions in each sector can be found in Appendix A.

## Business-as-Usual Forecasts

The BAU forecast estimates GHG emissions based on predicted growth in existing demographic forecasts, including population and employment changes. These forecasts assume the continuation of current behaviors and activities within the city and that no additional efforts or legislative actions beyond what have already been implemented will be made to reduce GHG emissions in the future.

Based on 2019 GHG emissions levels, the city's BAU forecast estimates annual GHG emissions to increase steadily and rise approximately 26 percent in 2045. This projected increase in BAU emissions is due to anticipated growth in demographics and vehicle activity within the city. Community BAU emissions are shown in **Figure 2-4**.



**Figure 2-4 Milpitas Community Business-as-Usual Greenhouse Gas Emissions Forecasts**

Source: Ascent Environmental 2021.

## Legislative-Adjusted Business-as-Usual Forecasts

Legislative-adjusted BAU emissions forecasts evaluate how the city's GHG emissions would change over time accounting for legislative actions at the State and federal levels, such as regulatory requirements to increase vehicle fuel efficiency. This forecast provides the City with the information needed to focus efforts on certain emissions sectors and sources that have the most GHG reduction opportunities. A summary of the legislative reductions applied is provided in **Table 2-4**. Detailed descriptions of the specific legislative reductions can be found in Appendix A.

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**Table 2-4 Legislative Reductions Summary**

Source	Legislative Reduction	Sectors Applied
State	SB 100 (Renewables Portfolio Standard)	Building Energy, Water
State	California's Building Energy Efficiency Standards (Title 24, Part 6)	Building Energy
State	Advanced Clean Car Standards	On-Road Vehicles
State	Truck and Bus Regulation	On-Road Vehicles
Federal	Fuel Efficiency Standards for Medium- and Heavy-Duty Vehicles	On-Road Vehicles
Federal	EPA Off-Road Compression-Ignition Engine Standards	Off-Road Vehicles and Equipment

Notes: EPA = U.S. Environmental Protection Agency; SB = Senate Bill.

Source: Table compiled by Ascent Environmental in 2021.

Accounting for the reductions outlined above, the city's forecasted legislative-adjusted emissions are expected to decrease by 5 percent in 2030 and 10 percent in 2045 from 2019 levels. **Table 2-5** and **Figure 2-5** below illustrate the anticipated gradual decline of GHG emissions through 2045, and **Figure 2-5** also shows the emissions trend that would occur without legislative reductions (i.e., BAU emissions).

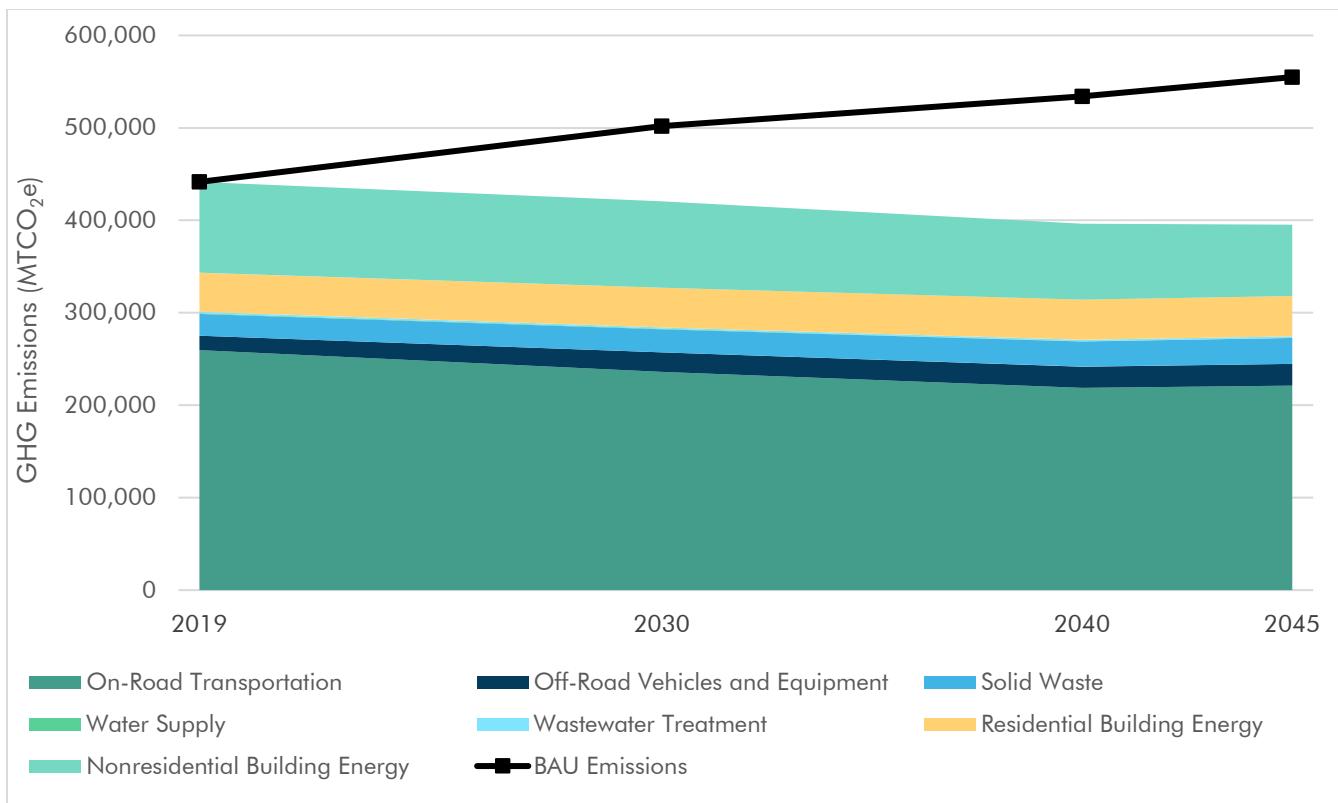
**Table 2-5 Milpitas Community Legislative-Adjusted Business-as-Usual Greenhouse Gas Emissions Forecasts (MTCO<sub>2</sub>e)**

Emissions Sector	2019	2030	2040	2045
On-Road Transportation	259,627	236,310	218,898	221,388
Nonresidential Building Energy	98,319	93,467	82,288	77,177
Residential Building Energy	42,218	42,660	43,399	43,658
Solid Waste	23,566	25,026	27,215	28,074
Off-Road Vehicles and Equipment	15,554	21,139	22,984	23,421
Water Supply	694	421	153	0
Wastewater Treatment	1,578	1,612	1,692	1,713
<b>Total</b>	<b>441,557</b>	<b>420,636</b>	<b>396,629</b>	<b>395,432</b>
<i>Percent change from 2019</i>	<i>—</i>	<i>-5%</i>	<i>-10%</i>	<i>-10%</i>

Notes: Total may not sum exactly due to independent rounding. MTCO<sub>2</sub>e = metric tons of carbon dioxide.

Source: Ascent Environmental 2021.

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**Figure 2-5 Milpitas Community Legislative-Adjusted Business-as-Usual Greenhouse Gas Emissions Forecasts**

Source: Ascent Environmental 2021.

## Community Reduction Targets

The emissions reduction targets in this CAP Update have been established to be consistent with statewide GHG emissions targets. As directed in SB 32, EO B-55-18, and EO S-3-05, the State aims to reduce annual GHG emissions to:

- 40 percent below 1990 levels by 2030,
- 80 percent below 1990 levels by 2050, and
- carbon neutrality by 2045.

The State's 2030 and 2050 targets are in line with the scientifically established levels needed to limit the rise in global temperature to no more than 2 degrees Celsius (°C), the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected. These targets also pursue efforts to limit the global temperature increase even further to no more than 1.5 °C (United Nations 2015:3).

In addition to these targets, California set a new statewide GHG reduction goal in 2018 through EO B-55-18. The order directs the State to achieve carbon neutrality no later than 2045 and to achieve net negative emissions thereafter. The carbon neutrality goal is separate from and complements existing statewide targets and goals for reducing GHG emissions. EO B-55-18 is

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the first California executive order or legislative action to explicitly mention the use of carbon sequestration to achieve GHG reduction targets and goals; therefore, it is distinct from other State reduction targets and goals and does not compete or conflict with existing policies.

The City aims to reduce GHG emissions in proportion to the State's targets and goals. Community emissions levels from 1990 are not available, which is the case for most local jurisdictions in California. Therefore, community GHG reduction targets for the City's CAP Update were developed relative to the city's revised 2005 baseline emissions inventory, consistent with guidance provided by CARB. Detailed descriptions of the associated calculations and estimates are provided in Appendix B.

The targets developed relative to 2005 emissions levels were used to calculate equivalent reductions needed from the updated 2019 baseline inventory.

The city's community GHG reduction targets are as follows:

- 2030 target: 36 percent below 2019 levels;
- 2040 target: 79 percent below 2019 levels; and
- 2045 target: carbon neutrality.

The city's 2030 target requires GHG emissions to be reduced to 283,817 MTCO<sub>2</sub>e in 2030. The 2040 target, which the City has set based upon the trajectory necessary to meet the 2045 goal, requires community emissions to be reduced to 94,606 MTCO<sub>2</sub>e in 2040. The 2040 goal is intended to align with the General Plan 2040 horizon year. The City has chosen to adopt a target to achieve carbon neutrality no later than 2045, consistent with the State's goal under EO B-55-18. **Table 2-6** and **Figure 2-6** in the following section present the city's emissions reductions targets.

## Community Local Emissions Gap

State and federal regulations alone will not be sufficient to achieve the City's GHG emissions reduction targets. The City needs to implement additional actions to close the remaining "local emissions gap" and achieve its reduction targets. **Table 2-6** and **Figure 2-6** display the city's forecasted emissions and targets.

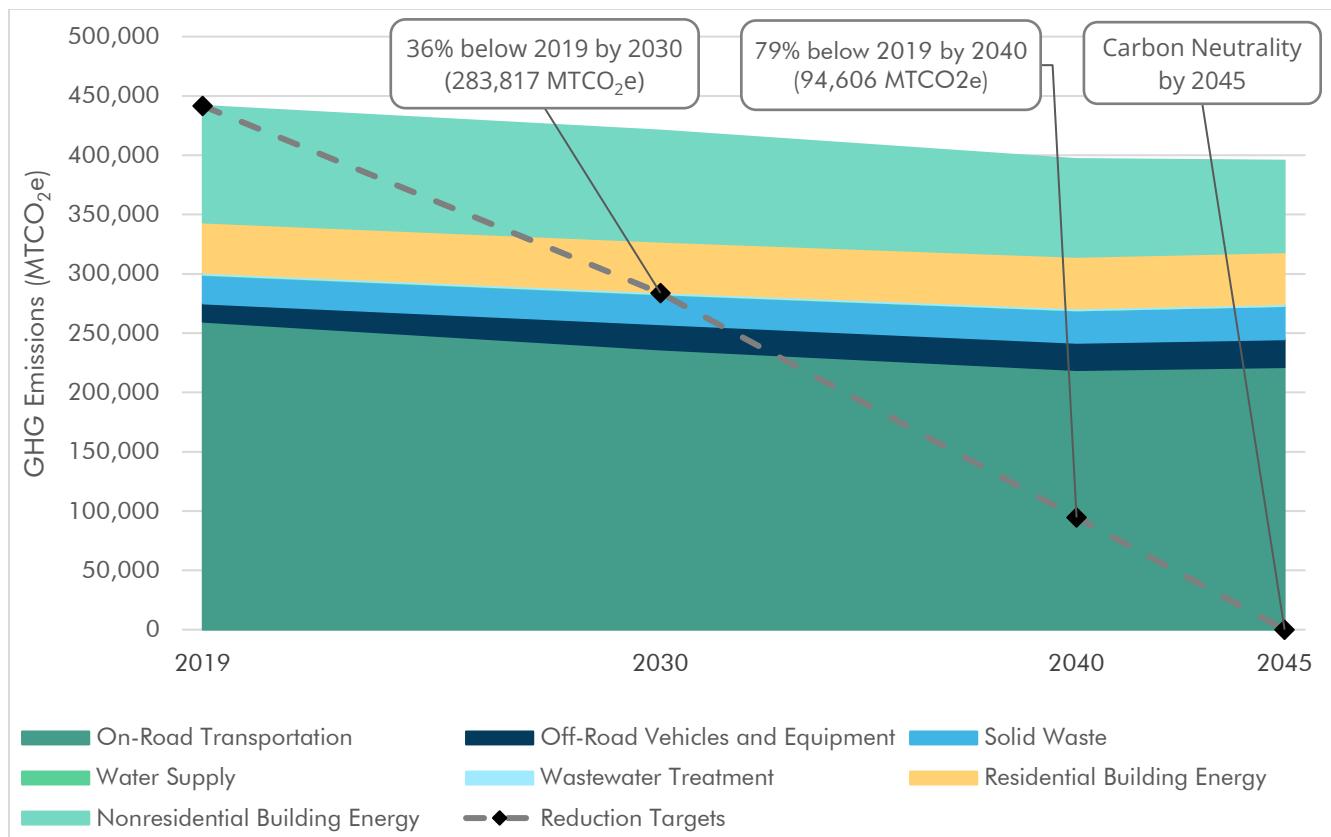
**Table 2-6 Milpitas Community Greenhouse Gas Local Emissions Gap (MTCO<sub>2</sub>e)**

Emissions Sector	2019	2030	2040	2045
Business-as-Usual Emissions	441,557	502,207	534,465	555,142
Legislative-Adjusted Business-as-Usual Emissions	441,557	420,636	396,629	395,432
Target Percent Reduction below 2019 Levels	—	36%	79%	100%
Target Annual Emissions	—	283,817	94,606	0
<b>Local Emissions Gap</b>	—	<b>136,819</b>	<b>302,023</b>	<b>395,432</b>

Notes: MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent.

Source: Ascent Environmental 2021.

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**Figure 2-6 Milpitas Community Local Emissions Gap**

Source: Ascent Environmental 2021.

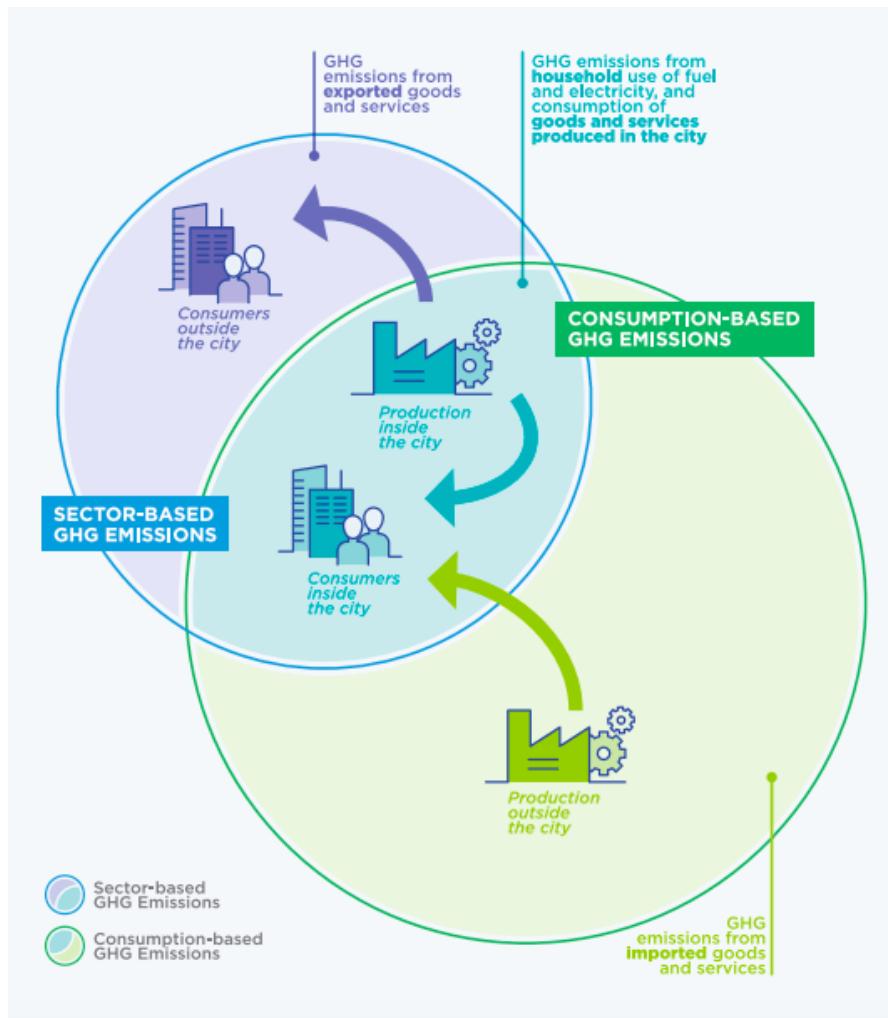
This CAP Update is primarily focused on achieving the 2030 target and aims to make substantial progress in achieving the longer-term 2040 and 2045 targets. Achievement of the 2030 target and the longer-term 2040 and 2045 targets will require the implementation of locally enacted GHG reduction measures, along with updates to CARB's Scoping Plan and future State and federal actions.

## Consumption-Based Emissions Inventory

To understand the full impact of community activities and the city's contribution to global climate change, the City has prepared a Consumption-Based Emissions Inventory (CBEI). A CBEI accounts for the total quantity of GHG emissions associated with the production (e.g., extraction of raw materials, manufacturing, and transportation), use, and disposal of products and services consumed by residents of a community within a given year. Unlike production-based inventories, which only estimate GHG emissions generated from activities that occur within specific geographic boundaries, CBEIs account for indirect lifecycle GHG emissions, or "embedded" emissions, and attribute them to residents of a jurisdiction, regardless of where the emissions are released into the atmosphere, as shown in **Figure 2-7**. For example, if a resident of California purchases a car that was made in Japan, the emissions embedded within the supply chain of producing and shipping that car are allocated to the Californian consumer, rather than to Japan

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(as they would be in a production-based approach). In addition to these embedded GHG emissions, all emissions produced from the resident driving the car – both within and outside of the community – are accounted for in the consumption-based inventory approach.



**Figure 2-7 Overlap Between Consumption-Based and Production-Based GHG Inventories**

Source: C40 Cities 2018

By accounting for lifecycle emissions generated outside of a community's boundaries, CBEIs capture a different subset of emissions than those included in production-based inventories. Therefore, CBEIs complement the findings of traditional production-based inventories and provide an additional lens through which local governments and individuals can view the responsibility to reduce local GHG emissions and mitigate impacts to climate change. In particular, the information on communities' carbon footprints (i.e., the amount of GHG emissions attributable to a community) associated with the consumption of food, goods, and services offers additional opportunities for GHG mitigation, as these sectors are unique to the consumption-based inventorying approach. CBEIs typically report emissions at the household level, although they are often scaled to jurisdiction levels using per capita metrics.

## 2013 CBEI Inventory

In the first effort to comprehensively explore household carbon footprints at a fine geospatial resolution, University of California, Berkeley (UC Berkeley) developed CBEIs for all census block groups, cities, and counties within the San Francisco Bay Area (Bay Area), including Milpitas. Using local consumption and emissions data wherever possible, researchers calculated GHG emissions for the year 2013 and published their results in *A Consumption-Based Greenhouse Gas Inventory of San Francisco Bay Area Neighborhoods, Cities and Counties: Prioritizing Climate Action for Different Locations* (hereafter referred to as “the study”) (UC Berkeley 2015). The study provides consumption-based emissions estimates for six emissions sectors: transportation, food, goods, services, housing, and composting.

The study and its findings are commonly referenced by other CBEI protocols and guidance, including ICLEI’s Community Protocol and Stockholm Environment Institute’s *Estimating Consumption-Based Greenhouse Gas Emissions at the City Scale: A Guide for Local Governments* (ICLEI 2019; SEI 2019). These protocols recommend that Bay Area communities seeking to gain an understanding of local consumption-based emissions utilize the study’s data and results. The researchers published jurisdiction-specific consumption and carbon footprint data for each emissions sector, which were used to prepare the City’s CBEI. It is important to note that the City does not have a production-based inventory for the same year as the study (i.e., 2013). However, the City’s main objective in preparing a CBEI is to gain a better understanding of consumption-based emissions in the community, and it is unlikely that the overall picture of the city’s consumption-based emissions changed significantly between 2013 and 2015 (the production-based inventory year closest to 2013). Therefore, this CAP Update uses the data, methods, and results of the study to address the community’s consumption-based emissions.

Consumption by Milpitas residents generated approximately 988,496 MTCO<sub>2</sub>e in 2013, equivalent to **approximately 15 MTCO<sub>2</sub>e per person or 50 MTCO<sub>2</sub>e per household**, which is slightly higher than the California household average of 45.7 MTCO<sub>2</sub>e. Major emissions sectors included transportation, food, goods, and services. **Table 2-7** and **Figure 2-8** present the results of the City’s 2013 CBEI by sector and source.

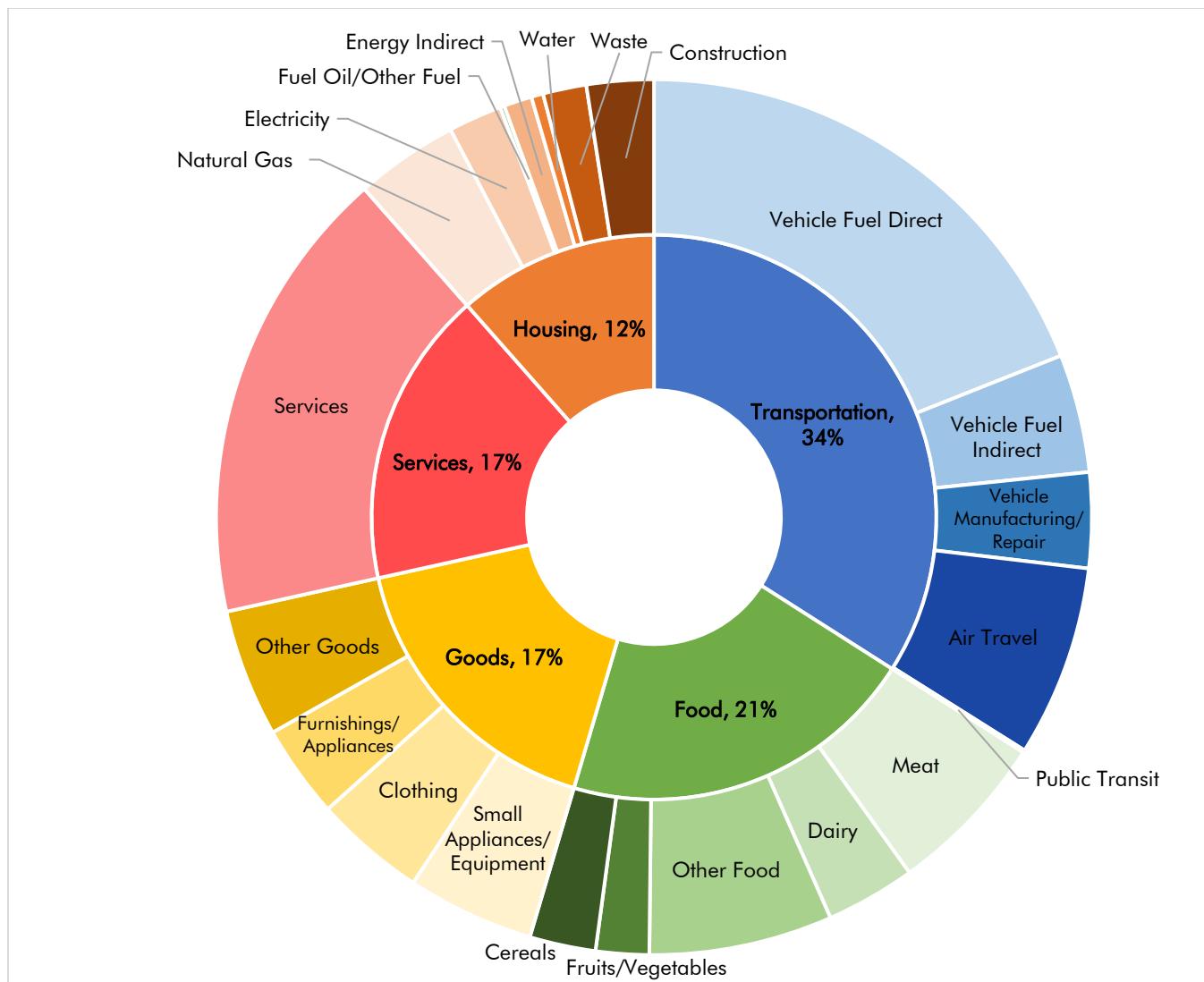
**Table 2-7 2013 Milpitas Consumption-Based Emissions Inventory by Sector and Source**

Sectors/Sources	MTCO <sub>2</sub> e/ person	MTCO <sub>2</sub> e/ household	Total MTCO <sub>2</sub> e	Percent of Total
<b>Transportation</b>	<b>5.2</b>	<b>17.3</b>	<b>339,023</b>	<b>34%</b>
Vehicle Fuel Direct	2.9	9.6	189,149	19%
Vehicle Fuel Indirect	0.7	2.2	43,506	4%
Vehicle Manufacturing/Repair	0.5	1.8	35,066	4%
Air Travel	1.1	3.6	70,414	7%
Public Transit	0.01	0.05	888	<1%
<b>Food</b>	<b>3.1</b>	<b>10.4</b>	<b>204,686</b>	<b>21%</b>
Meat	0.9	3.1	60,308	6%
Dairy	0.5	1.7	33,012	3%
Fruits/Vegetables	1.0	3.4	67,468	7%
Cereals	0.3	1.0	19,587	2%
Other Food	0.4	1.2	24,310	2%
<b>Goods</b>	<b>2.6</b>	<b>8.6</b>	<b>168,983</b>	<b>17%</b>
Small Appliances/Equipment	0.7	2.4	46,790	5%
Clothing	0.6	2.1	40,971	4%
Furnishings/Appliances	0.5	1.7	34,230	3%
Other Goods	0.7	2.4	46,992	5%
<b>Services</b>	<b>2.6</b>	<b>8.6</b>	<b>168,956</b>	<b>17%</b>
<b>Housing</b>	<b>1.7</b>	<b>5.8</b>	<b>114,608</b>	<b>12%</b>
Natural Gas	0.6	1.9	37,979	4%
Electricity	0.3	1.0	19,718	2%
Fuel Oil/Other Fuel	0.0	0.1	1,565	<1%
Energy Indirect	0.2	0.5	10,332	1%
Water	0.1	0.2	4,371	<1%
Waste	0.2	0.8	15,984	2%
Construction	0.4	1.3	24,659	2%
<b>Composting</b>	<b>(0.1)</b>	<b>(0.4)</b>	<b>(7,759)</b>	<b>(1%)</b>
<b>Total</b>	<b>15.1</b>	<b>50.4</b>	<b>988,496</b>	<b>100%</b>

Notes: Totals may not sum exactly due to independent rounding. Values in parentheses represent net negative emissions, or emissions reductions. MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent.

Source: UC Berkeley 2015; adapted by Ascent Environmental in 2021.

# City of Milpitas Climate Action Plan Update



**Figure 2-8 2013 Milpitas Consumption-Based Emissions Inventory by Sector and Source<sup>1</sup>**

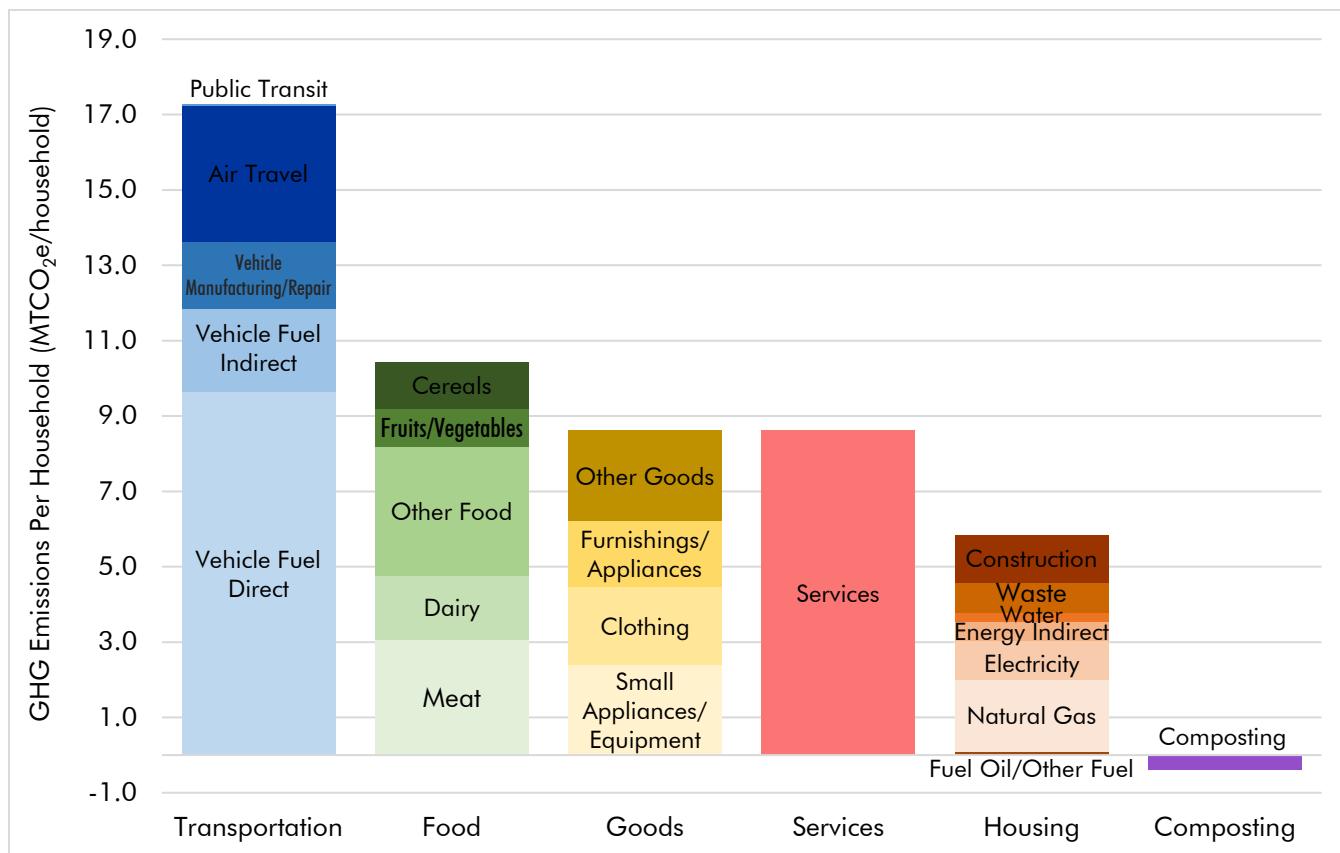
<sup>1</sup> Consumption-based emissions estimates for composting are not shown in the chart, as these are emissions reductions (or avoided emissions) and cannot be represented in the chart type.

Source: Ascent Environmental 2021.

As shown above, transportation represented the city's largest consumption-based emissions sector in 2013, accounting for 34 percent of the CBEI. Transportation sector emissions result primarily from the consumption of vehicle fuel, which includes both direct emissions from the combustion of fuel as well as indirect emissions from fuel production. Transportation emissions also include embedded emissions associated with vehicle manufacturing and repair, as well as emissions from air travel and public transit. The second-largest emissions-generating sector was food, which contributed 21 percent of the city's consumption-based emissions in 2013. Meat and dairy products contribute significantly to this sector, producing nearly half of all food-related emissions, with the remaining emissions generated from fruits, vegetables, cereals, and other food. The goods and services sectors were also substantial contributors, with each sector accounting for 17 percent of the city's CBEI. The goods sector consists of embedded emissions

# City of Milpitas Climate Action Plan Update

from small appliances and equipment, clothing, furnishings and large appliances, and other goods, and the services sector includes GHG emissions embedded in the services consumed by Milpitas residents, including health care, education, financial services, communication, and entertainment. The housing sector, which consists of emissions from household energy use, construction, water, and wastewater, contributed the smallest proportion of the city's consumption-based emissions, accounting for 12 percent in 2013. Composting in the city accounted for a net negative contribution to the city's CBEI, reducing GHG emissions per household by 0.4 MTCO<sub>2</sub>e in 2013. **Figure 2-9** below presents the city's CBEI by household.



**Figure 2-9 2013 Milpitas Consumption-Based Emissions Inventory by Household**

Source: Ascent Environmental 2021.

## Consumption-Based and Production-Based Comparison

The city's consumption-based emissions in 2013 are 68 percent higher than its production-based emissions in 2015. Certain emissions sectors are accounted for in both inventories, including direct emissions from vehicle transportation fuels, household energy use, and waste disposal. The CBEI captures emissions not included in the production-based inventory, such as embedded lifecycle emissions from the production of fuel, food, goods, services, and construction. These indirect emissions represent over two-thirds of the city's CBEI. The inclusion of these additional GHG emissions provides new opportunities for the City and Milpitas community to reduce emissions and mitigate their overall impact to climate change. **Table 2-8**

# City of Milpitas Climate Action Plan Update

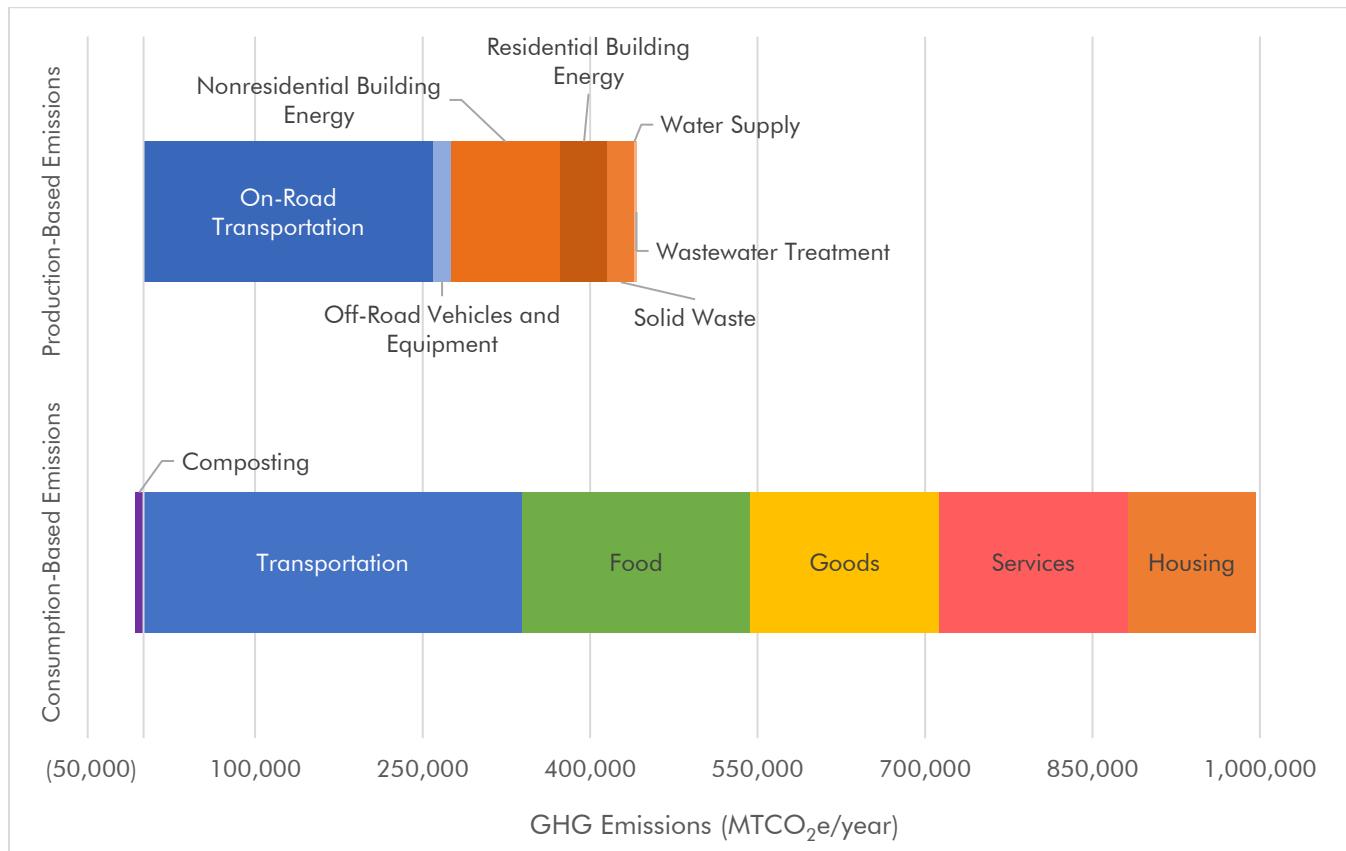
presents a comparison of the city's 2013 consumption-based emissions and 2015 production-based emissions, and **Figure 2-10** illustrates the two inventories by sector.

**Table 2-8 Comparison of Milpitas Greenhouse Gas Emissions Inventories (MTCO<sub>2</sub>e)**

Emissions	Production-Based Emissions Inventory	Consumption-Based Emissions Inventory	Percent Difference
Total	588,414	988,496	68%

Notes: MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent.

Source: Production-based emissions inventory prepared by Ascent in 2021. Consumption-based emissions inventory prepared by UC Berkeley in 2015; adapted by Ascent Environmental in 2021.



**Figure 2-10 Comparison of Milpitas Production-Based and Consumption-Based Greenhouse Gas Emissions Inventories**

Source: Ascent Environmental 2021.



# Municipal Operations Emissions

Milpitas Senior Center  
Microgrid Project

This chapter summarizes the City's greenhouse gas (GHG) inventories and forecasts for municipal operations and outlines its GHG reduction targets. This chapter also presents the strategies and measures that the City will implement to reduce GHG emissions from municipal operations.

## Climate Action Planning for Municipal Operations

In addition to taking action at the community-level, the City of Milpitas (City) is furthering its commitment to addressing climate change for this Climate Action Plan Update (CAP Update) through climate action planning for its municipal operations. Local governments have an important role to play in influencing GHG reductions throughout their communities, and by taking steps to reduce contributions to climate change from its municipal operations, the City is demonstrating its commitment and setting an example for the community at large. The inclusion of municipal operations in this CAP Update builds on over a decade of action taken by the City to reduce its GHG emissions, and provides an opportunity to strengthen the City's operations and ability to positively impact the community.

The City has prepared GHG emissions inventories, forecasted future emissions, and established reduction targets for municipal operations. These steps set the foundation for developing GHG reduction strategies and measures that the City will take to reduce emissions from municipal operations.

## Municipal Operations Inventories

Like community GHG emissions inventories, ICLEI has developed guidance to assist local governments in conducting municipal operations inventories. The most recent standardized guidance for municipal operations-scale emissions inventories is ICLEI's May 2010 publication, *Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas*

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*Emissions Inventories (LGOP) (ICLEI 2010).* Using the guidance provided by ICLEI in the LGOP, the City has prepared municipal operations inventories for 2015 and 2019. These inventories were conducted consistent with the accounting methodologies used for the City's community inventories, which are described in detail in **Chapter 2**.

The 2015 and 2019 municipal operations GHG emissions inventories estimate emissions in seven sectors: buildings and facilities, employee commute, vehicle fleet, streetlights and traffic signals, solid waste, water supply, and wastewater treatment. **Table 3-1** describes each GHG emissions sector.

<b>Table 3-1 Milpitas Municipal Operations Greenhouse Gas Emissions Inventory Sectors</b>	
<b>Emissions Sector</b>	<b>Description</b>
Buildings and Facilities	Buildings and facilities emissions are associated with the consumption of electricity, natural gas, and diesel in City-owned and leased buildings, as well as other infrastructure such as park buildings, park lighting and irrigation controllers, and other facilities.
Employee Commute	Employee commute emissions are associated with gasoline and diesel fuel consumption from municipal employees' motor vehicles while commuting to and from work.
Vehicle Fleet	Vehicle fleet emissions are associated with gasoline and diesel fuel consumption in on-road vehicles and off-road vehicles and equipment owned and operated by the City.
Streetlights and Traffic Signals	Streetlights and traffic signals emissions are associated with electricity consumption to power City-owned and operated streetlights and traffic signals, including road and highway lights.
Solid Waste	Solid waste emissions are associated with the decomposition of municipal operations-generated mixed and organic waste in landfills.
Water Supply	Water emissions are associated with the electricity used to supply, convey, treat, and distribute water for municipal operations.
Wastewater Treatment	Wastewater treatment emissions include process and fugitive emissions, stationary emissions from the combustion of digester gas, and energy-related emissions associated with treating municipal operations-generated wastewater.

Source: Ascent Environmental 2021.

Based on the modeling conducted, the City's municipal operations generated approximately 5,019 metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>e) in 2015 and 3,252 MTCO<sub>2</sub>e in 2019. Major emissions sectors included buildings and facilities, employee commute, and vehicle fleet. **Table 3-2** presents the City's 2015 and 2019 municipal operations GHG emissions inventories by sector, and **Figure 3-1** illustrates the 2019 municipal operations inventory. The 2019 municipal operations inventory serves as the municipal operations GHG emissions baseline for the CAP Update.

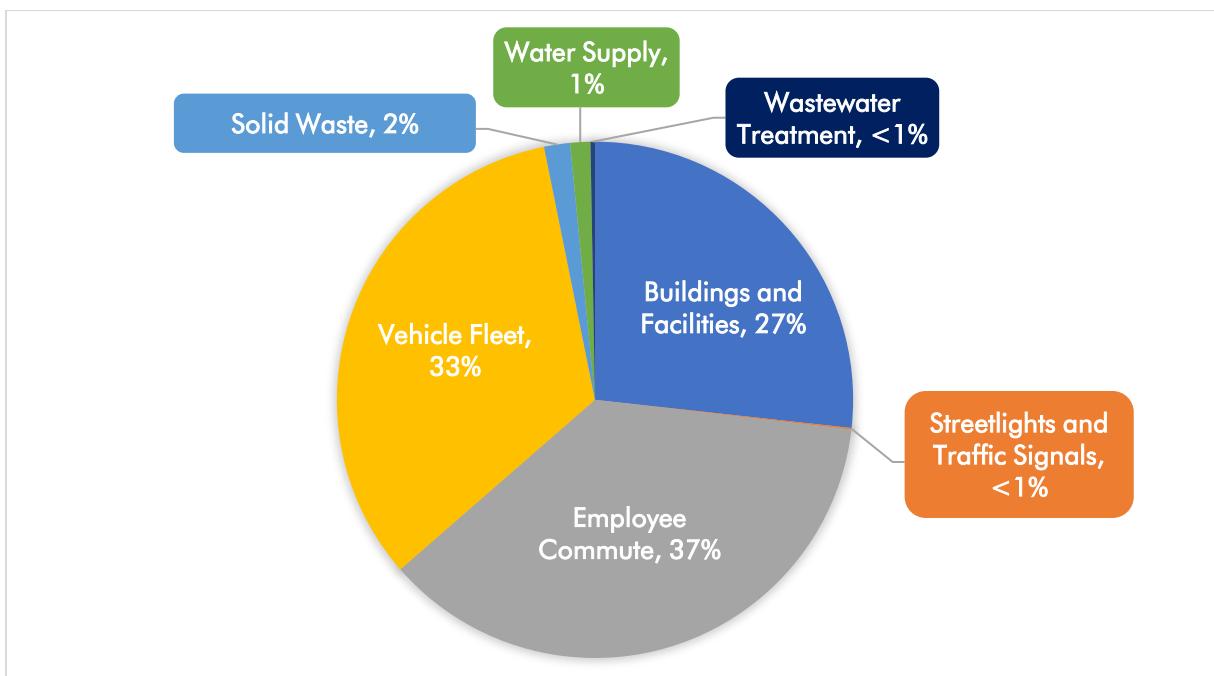
# City of Milpitas Climate Action Plan Update

**Table 3-2 Milpitas 2015 and 2019 Municipal Operations Greenhouse Gas Emissions Inventories**

Sector	2015 Inventory		2019 Inventory	
	MTCO <sub>2</sub> e	Percent of Total	MTCO <sub>2</sub> e	Percent of Total
Buildings and Facilities	2,001	40%	870	27%
Employee Commute	1,304	26%	1,195	37%
Vehicle Fleet	1,017	20%	1,081	33%
Streetlights and Traffic Signals	564	11%	3	<1%
Solid Waste	52	1%	53	2%
Water Supply	70	1%	41	1%
Wastewater Treatment	11	<1%	9	<1%
<b>Total</b>	<b>5,019</b>	<b>100%</b>	<b>3,252</b>	<b>100%</b>

Notes: Totals may not sum exactly due to independent rounding. MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent.

Source: Ascent Environmental 2021.



**Figure 3-1 Milpitas 2019 Municipal Operations Greenhouse Gas Emissions Inventory**

Source: Ascent Environmental 2021.

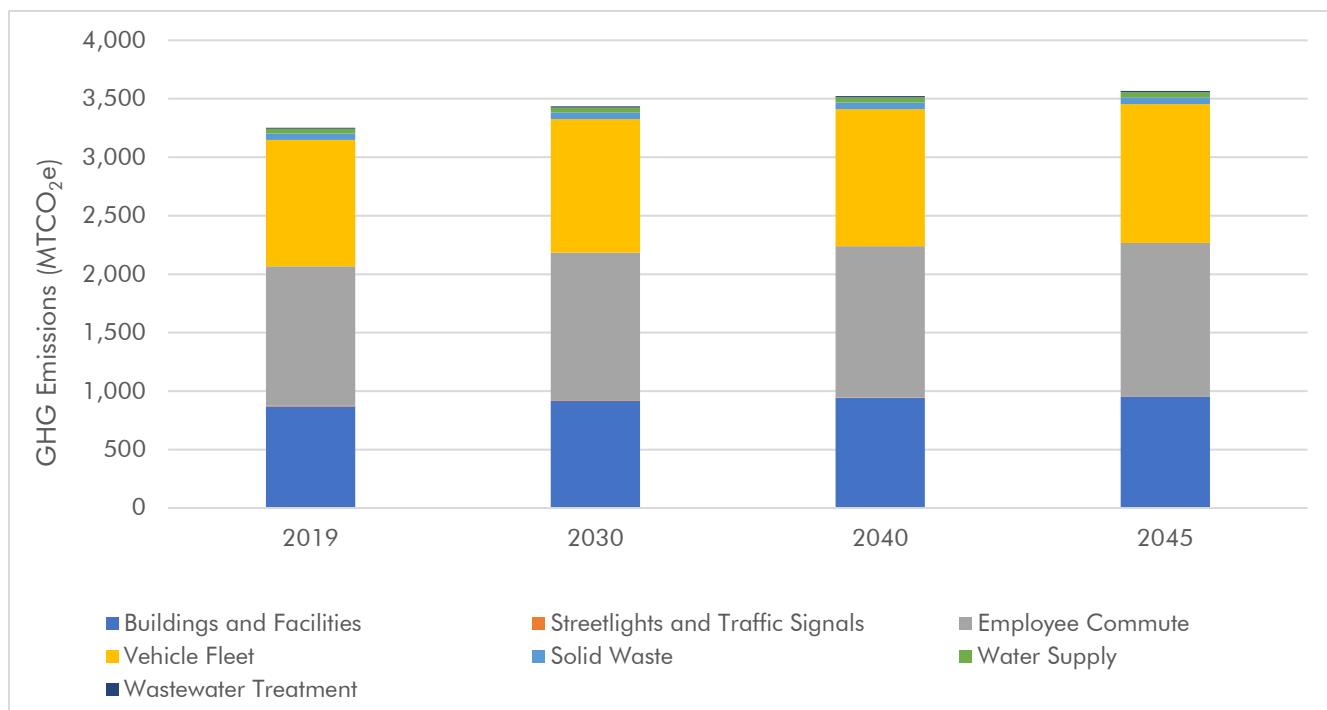
GHG emissions from municipal operations decreased by approximately 35 percent between 2015 and 2019. These reductions can be explained primarily by the supply of near-zero-emissions grid electricity from SVCE for municipal operations beginning in 2018. Additional information regarding the City's municipal operations inventories can be found in Appendix A.

## Municipal Operations Forecasts

The City prepared a “business-as-usual” (BAU) and legislative-adjusted BAU forecasts of municipal operations GHG emissions for this CAP Update. Using 2019 emissions levels as the baseline, the municipal operations forecasts estimate emissions for the years 2030, 2040, and 2045. The forecasts were prepared using the same methodologies as described in **Chapter 2** for the community forecasts, and further details on how the forecasts were developed and the activity data used to forecast emissions in each sector can be found in Appendix A.

### Business-as-Usual Forecasts

The BAU forecasts estimate GHG emissions for all sectors based on predicted growth in municipal employment. These forecasts assume the continuation of current behaviors and activities within City operations and that no additional efforts or legislative actions beyond what have already been implemented will be made to reduce GHG emissions in the future. As illustrated in **Figure 3-2** below, BAU emissions are projected to rise approximately 10 percent above 2019 levels in 2045.



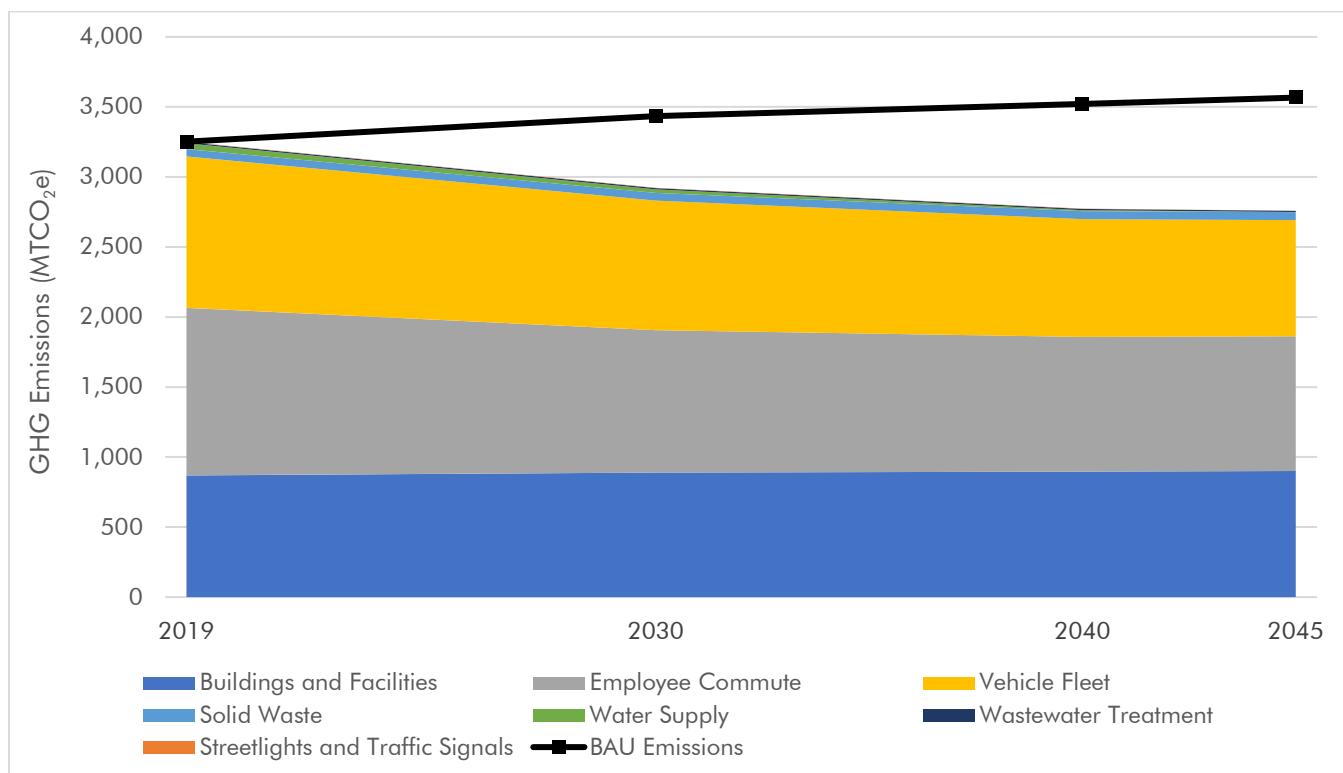
**Figure 3-2 Milpitas Municipal Operations Business-as-Usual Greenhouse Gas Emissions Forecasts**

Source: Ascent Environmental 2021.

## Legislative-Adjusted BAU Forecast

Legislative-adjusted BAU emissions forecasts project municipal operations GHG emissions accounting for municipal employment growth and legislative actions at the State and federal levels (a summary of the legislative reductions applied can be found in **Chapter 2 in Table 2-4**). These forecasts allow the City to identify emissions sectors and sources that can be prioritized when developing GHG reduction strategies and measures.

Accounting for legislative reductions, municipal operations GHG emissions are expected to decline steadily over time, with a 10 percent reduction and 15 percent reduction below 2019 levels anticipated in 2030 and 2045, respectively. These forecasts are presented in **Figure 3-3** and **Table 3-3** below, and **Figure 3-3** also shows the emissions trend that would occur without legislative reductions (i.e., BAU emissions).



**Figure 3-3 Milpitas Municipal Operations Legislative-Adjusted Business-as-Usual Greenhouse Gas Emissions Forecasts**

Source: Ascent Environmental 2021.

**Table 3-3 Milpitas Municipal Operations Legislative-Adjusted Business-as-Usual Greenhouse Gas Emissions Forecasts (MTCO<sub>2</sub>e)**

Sector	2019	2030	2040	2045
Buildings and Facilities	870	889	897	900
Employee Commute	1,195	1,017	961	961
Vehicle Fleet	1,081	925	840	830
Streetlights and Traffic Signals	3	2	1	0
Solid Waste	53	56	57	58
Water Supply	41	25	8	0
Wastewater Treatment	9	9	9	9
<b>Total</b>	<b>3,252</b>	<b>2,923</b>	<b>2,773</b>	<b>2,759</b>

Notes: Total may not sum exactly due to independent rounding. BAU = business-as-usual; MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent.

Source: Ascent Environmental 2021.

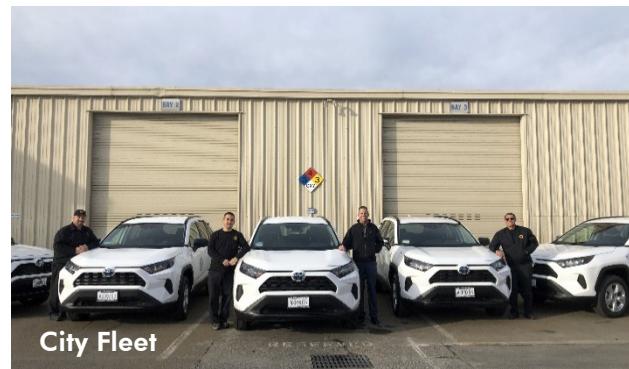
## Municipal Operations Reduction Targets

The City aims to reduce its municipal operations emissions in proportion to the State's targets and goals (outlined in [Chapter 2](#)). Like most local public agencies in California, municipal operations emissions levels for 1990 are not available, so GHG reduction targets for the City's municipal operations were developed relative to the City's municipal operations 2019 emissions inventory, consistent with CARB guidance. The methodology used to calculate the City's municipal operations emissions reduction targets for 2030, 2040, and 2045 is consistent with the methodology used to calculate community targets described in [Chapter 2](#).

Municipal operations GHG emissions in 2019 were 3,252 MTCO<sub>2</sub>e. Therefore, the City's municipal operations GHG reduction targets are as follows, consistent with State targets and goals:

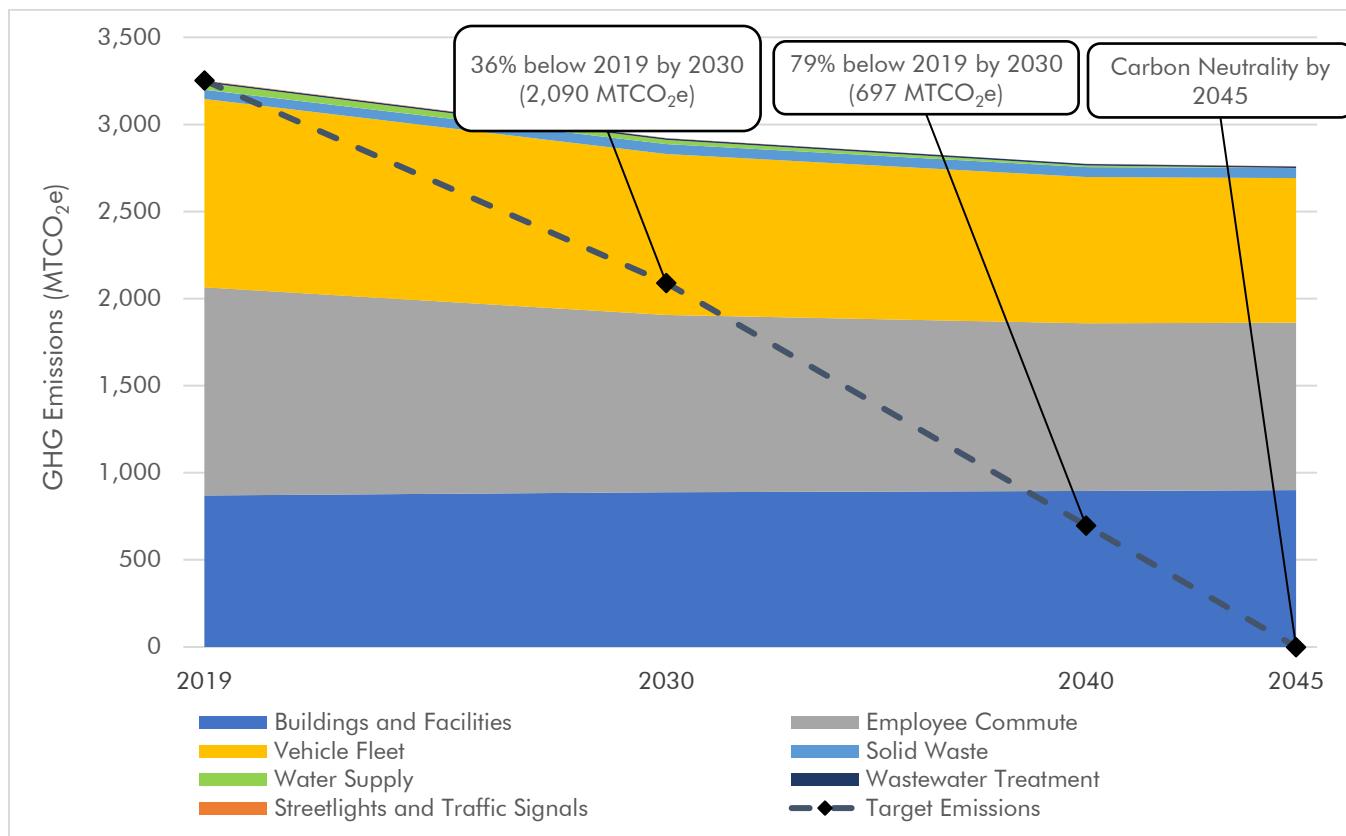
- 2030 target: 36 percent below 2019 levels;
- 2040 target: 79 percent below 2019 levels; and
- 2045 target: carbon neutrality.

The 2030 target requires municipal operations GHG emissions to be reduced to 2,090 MTCO<sub>2</sub>e in 2030. The 2040 target, which the City has set based upon the trajectory necessary to meet the 2045 goal, requires municipal operations emissions to be reduced to 697 MTCO<sub>2</sub>e in 2040. The City has chosen to adopt a target to achieve carbon neutrality across municipal operations no later than 2045, consistent with the State's goal under EO B-55-18.



# City of Milpitas Climate Action Plan Update

Actions at the State and federal levels will reduce GHG emissions associated with the City's municipal operations. However, the City will need to implement local actions in addition to State and federal regulations to close the "local emissions gap" and achieve its municipal operations GHG reduction targets. Municipal operations emissions and targets are summarized in **Figure 3-4** below.



**Figure 3-4 Milpitas Municipal Operations Local Emissions Gap**

Source: Ascent Environmental 2021.

## Municipal Operations GHG Emissions Reduction Quantification Analysis

In preparation of the CAP Update, the City conducted a GHG quantification analysis to estimate potential emissions reductions associated with municipal operations measures, which are discussed in **Chapter 4**. The total estimated GHG emissions reductions from all municipal operations measures quantified would be 1,703 MTCO<sub>2</sub>e in 2030; 2,158 MTCO<sub>2</sub>e in 2040; and 2,520 MTCO<sub>2</sub>e in 2045. The total estimated reductions from all proposed GHG reduction measures would be **sufficient to meet the 2030 and 2040 targets**. The results of the quantification analysis are shown in **Table 3-4** below.

**Table 3-4 Milpitas Municipal Operations Greenhouse Gas Emissions Quantification Analysis (MTCO<sub>2</sub>e)**

Emissions	2019	2030	2040	2045
Legislative-Adjusted Business-as-Usual Emissions	3,252	2,923	2,773	2,759
Target Percent Reduction below 2019 Levels	—	36%	79%	100%
Reduction Needed to Meet Target	—	832	2,076	2,759
<b>Total Reductions from Measures</b>	—	<b>1,703</b>	<b>2,158</b>	<b>2,520</b>
Remaining Gap to Target		(862) <sup>1</sup>	(68) <sup>1</sup>	239
<b>Target Met?</b>	—	<b>Yes</b>	<b>Yes</b>	<b>No</b>

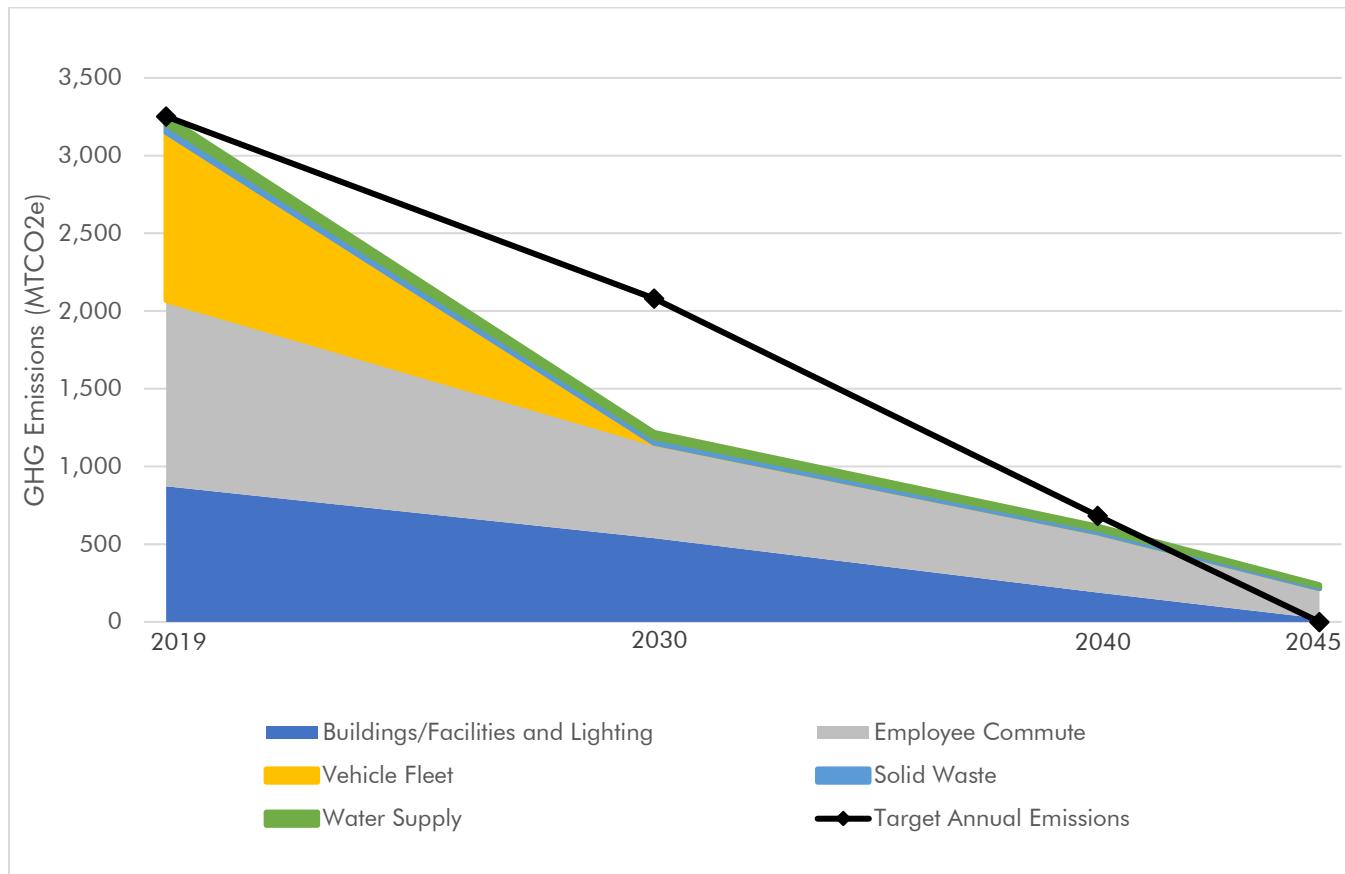
Notes: Totals may not sum exactly due to independent rounding. MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent.

<sup>1</sup> Indicates target has been achieved with a surplus of reductions.

Source: Calculations conducted by Ascent Environmental in 2021.

# City of Milpitas Climate Action Plan Update

**Figure 3-5** shows the GHG reductions achieved by CAP Update measures, organized by the sectors used for the municipal operations inventory and forecasts. **Figure 3-5** displays the City's achievement of the 2030 and 2040 targets with the GHG reduction measures and demonstrates progress toward the 2045 carbon neutrality target.



**Figure 3-5 Milpitas Municipal Operations Greenhouse Gas Emissions Reduction Measures Analysis**

Source: Ascent Environmental 2021.



# Greenhouse Gas Reduction Strategies and Measures

This chapter presents the strategies and measures that the City will implement to reduce greenhouse gas (GHG) emissions to achieve its emissions reduction targets. These locally based initiatives are organized under six emissions sectors and include descriptions of actions that can be taken for implementation, GHG reduction potential, and associated co-benefits.

## Overview

This Climate Action Plan Update (CAP Update) includes **11 strategies and 38 measures** that will reduce GHG emissions in the community. The strategies are organized into seven sectors: building energy, transportation and land use, waste, off-road vehicles and equipment, water and wastewater, carbon sinks, and circular and green economy. Each sector presents strategies that serve as the foundation for addressing GHG emissions reductions in the city. Within each strategy are one or more measures that represent specific expressions of the broad strategies. Measures are further evaluated in **Chapter 6** with specific actions that define the activities, programs, policies, or projects that the City will implement or support to achieve the CAP Update's goals. While the initiatives included in this chapter are primarily intended to reduce emissions, they will also result in co-benefits, such as air pollution prevention, health and well-being improvements, and resource preservation.

The strategies and measures discussed in this chapter were developed based on a combination of factors, including the results of the City's GHG emissions inventories and forecasts, robust engagement with the public and stakeholders, feedback from City staff and elected officials, and the best available climate action planning guidance. The following sections provide background information and context for each sector and present the GHG emissions reduction strategies and measures. Measures provide a description of actions that the City will take for effective implementation as well as the associated GHG emissions reduction potential estimated in the City's GHG emissions reduction quantification analysis (discussed further below; see Appendix B for additional details). GHG emissions reductions were quantified for measures

# City of Milpitas Climate Action Plan Update

wherever substantial evidence and reasonable assumptions were available to support calculations. Measures that were not quantifiable because of lack of available data or quantification methods but would still be expected to reduce GHG emissions are also included. Co-benefits that will result from implementation of each measure are also identified. Further explanation of these metrics and full descriptions of each action are included in **Chapter 6**.

This chapter also contains measures for reducing consumption-based emissions. While emissions reduction quantifications were not conducted for these measures, they still provide opportunities for the City and community to reduce contributions to climate change.

Consumption-based emissions reduction measures are presented at the end of the chapter.

## GHG Emissions Reduction Quantification Analysis

In preparation of the CAP Update, the City conducted a GHG quantification analysis to estimate potential emissions reductions associated with all measures. The total estimated GHG emissions reductions from all community measures quantified would be 147,697 MTCO<sub>2</sub>e in 2030; 251,999 MTCO<sub>2</sub>e in 2040; and 331,780 MTCO<sub>2</sub>e in 2045. The total estimated reductions from all proposed GHG reduction measures would be sufficient to meet the 2030 target. The results of the quantification analysis are shown in **Table 4-1** below.

**Table 4-1 Milpitas Community Greenhouse Gas Emissions Quantification Analysis (MTCO<sub>2</sub>e)**

Emissions	2019	2030	2040	2045
Legislative-Adjusted Business-as-Usual Emissions	441,557	420,636	396,629	395,432
Target Percent Reduction below 2019 Levels	—	36%	79%	100%
Reduction Needed to Meet Target	—	136,819	302,023	395,432
<b>Total Reductions from Measures</b>	—	<b>147,697</b>	<b>251,999</b>	<b>331,780</b>
Remaining Gap to Target		(10,878) <sup>1</sup>	50,024	63,651
<b>Target Met?</b>	—	<b>Yes</b>	<b>No</b>	<b>No</b>

Notes: Totals may not sum exactly due to independent rounding. MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent.

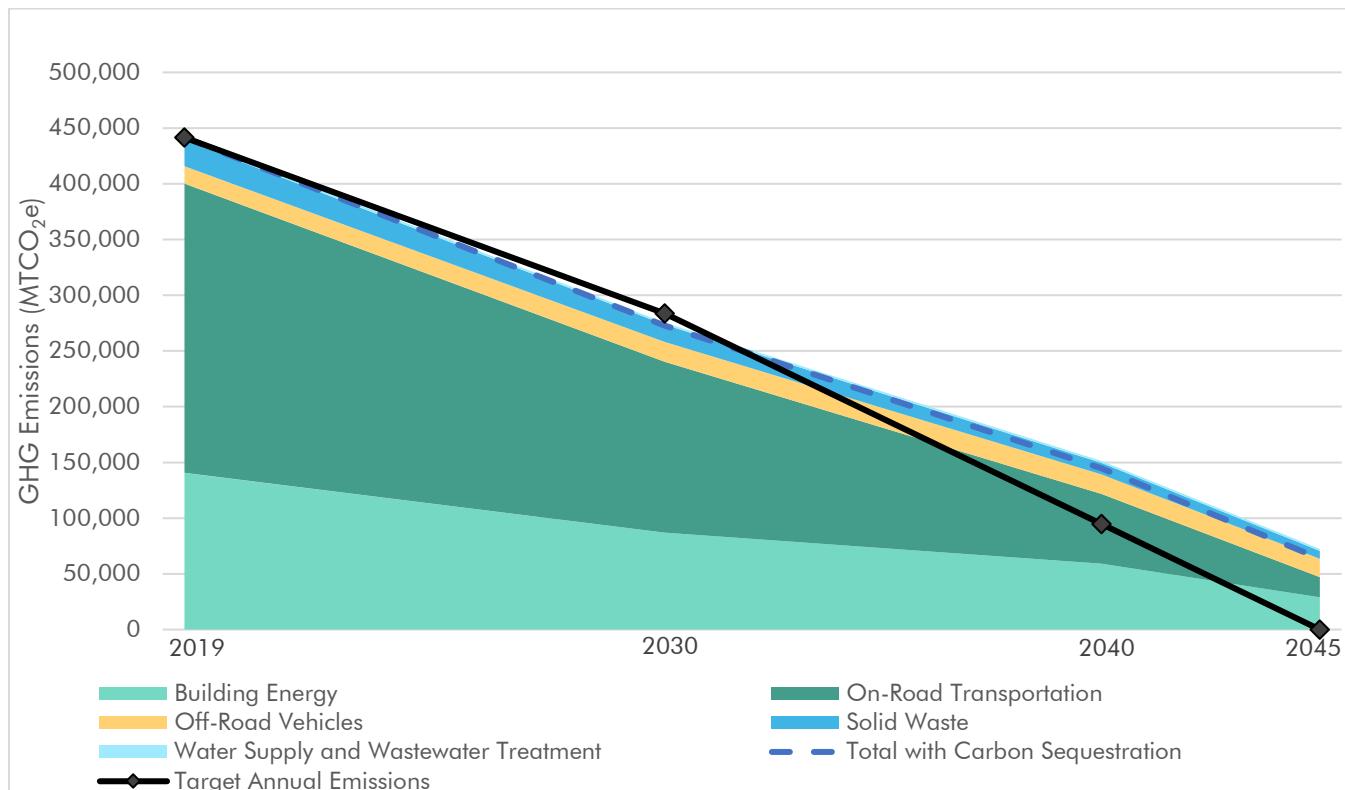
<sup>1</sup> Indicates target has been achieved with a surplus of reductions.

Source: Calculations conducted by Ascent Environmental in 2021.

The scale of reductions required to achieve the 2040 target and the carbon neutrality target for 2045 would require significant improvements in the availability and/or cost of near-zero- and zero-emission technologies, as well as potential increased reductions from ongoing State and federal legislative actions that are currently unknown. Progress toward meeting future targets that could be set by the State would be part of the ongoing monitoring and updates to the CAP Update as new legislation or future updates to the State's Climate Change Scoping Plan are adopted.

## City of Milpitas Climate Action Plan Update

**Figure 4-1** shows the GHG reductions achieved by CAP Update measures, organized by the sectors used for the inventories and forecasts (note: the nonresidential and residential building energy sectors have been combined, as have the water supply and wastewater treatment sectors). The chart shows the estimated GHG reductions due to carbon sequestered through Measure CS-1.1 as a dashed line that is not associated with an emissions sector included in the community inventory. **Figure 4-1** displays the City's achievement of the 2030 target with the GHG reduction measures and demonstrates progress toward the 2045 carbon neutrality target.



**Figure 4-1 Milpitas Community Greenhouse Gas Emissions Reduction Measures Analysis**

# BUILDING ENERGY

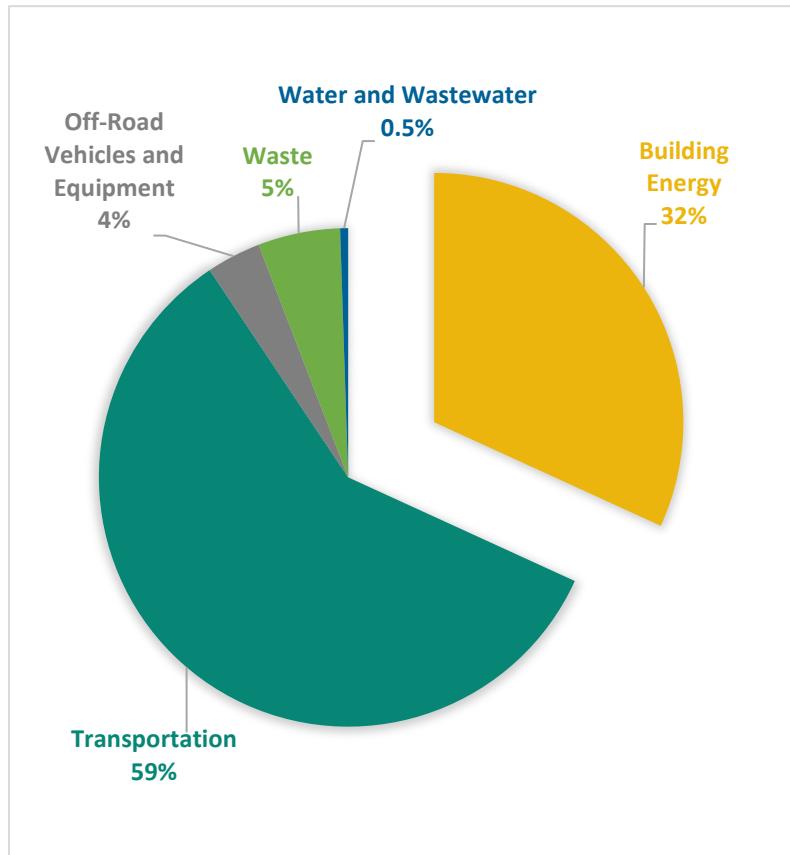


STRATEGY BE-1 Shift to Clean and Reliable Energy



STRATEGY BE-2 Maximize Building Decarbonization and Efficiency

The energy used in buildings and facilities throughout the city, including residences and businesses, is a significant contributor to community GHG emissions. Building-related GHG emissions accounted for **32 percent of total GHG emissions in the city in 2019**. Importantly, natural gas consumption was responsible for 78 percent of building energy emissions. Although legislative reductions from adopted State actions will help reduce building energy emissions by 4 percent by 2030, additional reductions through local action are needed for the City to reach its GHG emissions reduction targets.



## Strategies and Measures

The building energy sector offers one of the greatest opportunities to achieve emissions reductions. This section outlines strategies and measures the City will implement to reduce building energy-related GHG emissions. Building energy measures are classified into three strategies that focus on adopting carbon-free energy throughout the city, improving energy efficiency and transitioning to electrification in all buildings, and reducing GHG emissions associated with new development.



### BE-1: Shift to Clean and Reliable Energy



**Solar Carports**

In 2019, electricity consumption generated approximately 7 percent of community GHG emissions due to the City's participation in Silicon Valley Clean Energy since 2018. While participation in SVCE has been high, a small portion of electricity use is not yet carbon-free, developing renewable energy systems, and improving awareness of clean energy throughout the city will further reduce emissions associated with building energy use.

#### Co-Benefits:



**Measure BE-1.1:** Achieve 100 percent carbon-free electricity by 2030 in all existing and new development.

2030 Target	2040 Target	2045 Target
100% Carbon-Free Electricity in All Buildings	Continuation of 100% Carbon-Free Electricity in All Buildings	Continuation of 100% Carbon-Free Electricity in All Buildings
Continuation of 100% Carbon-Free Electricity in Municipal Buildings	Continuation of 100% Carbon-Free Electricity in Municipal Buildings	Continuation of 100% Carbon-Free Electricity in Municipal Buildings
<b>22,581 MTCO<sub>2e</sub></b>	<b>8,691 MTCO<sub>2e</sub></b>	<b>0 MTCO<sub>2e</sub></b>

# City of Milpitas Climate Action Plan Update

## ACTIONS

**Action BE-1.1.1:** Require new development to install onsite renewable energy and storage systems capable of meeting anticipated building energy consumption, or participate in a group-buy solar and storage program, or opt in to SVCE's carbon-free electricity option.

**Action BE-1.1.2:** Review zoning regulations for opportunities to simplify and encourage the installation of renewable energy systems.

**Action BE-1.1.3:** Conduct outreach to residents and business owners to increase awareness of SVCE's carbon-free electricity supply.

**Action BE-1.1.4:** Require all newly built parking structures to have solar generation capabilities.

**Action BE-1.1.5:** Collaborate with the Milpitas Chamber of Commerce and other partners to identify regional programs that could provide necessary financial arrangements to facilitate the use of PPAs for residential and nonresidential buildings. Work with SVCE to provide a cost-effective direct access program.

**Action BE-1.1.6:** Require the installation of solar heaters for all new swimming pools.

**Action BE-1.1.7:** Work with utility partners (e.g., PG&E, SVCE, state regulators) to improve electric grid reliability.

## MUNICIPAL ACTIONS

- Continue participate in SVCE whereby City-owned facilities, parks, and streetlights will be supplied with carbon-free electricity.
- Install solar photovoltaic systems at the Senior Center, Community Center, City Hall, and Sports Center. Pursue funding to expand installations of solar systems to the Public Works Administration Building/Facility, Corp Yard, Vehicle Shop, Police Department, and other City facilities such as fire stations.



**Measure BE-1.2:** Facilitate innovative approaches to energy generation, distribution, and storage (e.g., microgrids).

## ACTIONS

**Action BE-1.2.1:** Consider opportunities for alternative energy generation, energy recapture (in-conduit hydro, co-generation), and distributed energy storage systems.

**Action BE-1.2.2:** Collaborate with SVCE to encourage local schools and hospitals to develop microgrids, separate from utility-scale storage systems.

## MUNICIPAL ACTIONS

- Install battery electric storage microgrid systems at Public Works facilities, City Hall, Senior Center, Sports Center, and Community Center. Pursue funding to expand microgrid systems to the Public Works Administration Building/Facility, Corp Yard, Police Department, and other City facilities such as fire stations.
- Eliminate fossil fuel-powered backup generator usage by 2040 and replace with zero-emission alternatives to ensure energy resilience at municipal facilities.

## Measure BE-1.3: Strengthen community awareness of energy efficiency, energy conservation, electrification, and clean energy.

### ACTIONS

**Action BE-1.3.1:** Work with regional partner agencies and utilities, such as BAAQMD, PG&E, and SVCE to promote State rebates and other incentives and funding opportunities for renewable energy.

**Action BE-1.3.2:** Develop and implement a comprehensive energy efficiency, energy conservation, electrification, and clean energy outreach and education campaign to support emissions reductions from building energy use.

### MUNICIPAL ACTIONS

- Develop and enforce energy conservation guidelines for municipal employees to implement at facilities and in day-to-day operations.



## BE-2: Maximize Building Decarbonization and Efficiency

Nearly 80 percent of the city's building energy GHG emissions are associated with natural gas use. Improving energy efficiency in homes and businesses will reduce natural gas consumption, which will result in GHG emissions reductions.

Transitioning away from natural gas-powered heating and appliances and electrifying the building stock will further reduce emissions in the community. While most of the city's building energy-related GHG emissions in the future will be generated by existing buildings (i.e., those that are already built today), new development will contribute to community GHG emissions. Improving the energy efficiency of new buildings, increasing renewable energy installations, and maximizing all-electric development will reduce emissions associated with new development.



Residential Development

### Measure BE-2.1: Adopt updated "reach" building codes with each building and energy code cycle to accelerate all-electric new development.

2030 Target	2040 Target	2045 Target
100% All-Electric New Residential and Nonresidential Buildings	Continuation of All-Electric New Residential and Nonresidential Buildings	Continuation of All-Electric New Residential and Nonresidential Buildings
100% All-Electric New Municipal Buildings	100% All-Electric New Municipal Buildings	100% All-Electric New Municipal Buildings
<b>4,445 MTCO<sub>2e</sub></b>	<b>7,016 MTCO<sub>2e</sub></b>	<b>8,961 MTCO<sub>2e</sub></b>

## ACTIONS

**Action BE-2.1.1:** Adopt an updated reach code for the 2022 code cycle that prohibits the installation of natural gas infrastructure in new development. Include a ban on the installation of fossil fuel-powered backup energy sources in new development by 2030.

**Action BE-2.1.2:** Partner with BayREN, SVCE, PG&E, other cities, and the private sector to develop effective strategies to facilitate electrification implementation.

**Action BE-2.1.3:** Increase awareness and create incentives for developers to build all-electric buildings, such as reduced permit and/or impact fees.

## MUNICIPAL ACTIONS

- Require all new municipal development to be all-electric by 2030.
- Require all new municipal facility lighting to be LEDs (or other high-efficacy lighting where LEDs are infeasible).

## Measure BE-2.2: Facilitate all-electric development projects for industrial buildings.

### ACTION

**Action BE-2.2.1:** Build market demand for all-electric industrial buildings.

## Measure BE-2.3: Expand the City's Green Building Program.

### ACTION

**Action BE-2.3.1:** Develop additional incentives, above and beyond expedited building permit processing, for projects that incorporate sustainable design approaches and/or elements that exceed local, regional, and State requirements.

## Measure BE-2.4: Retrofit existing residential and nonresidential buildings and municipal facilities to improve energy efficiency and facilitate fuel switching.

2030 Target	2040 Target	2045 Target
36% of Existing Residential Buildings will be All-Electric	72% of Existing Residential Buildings will be All-Electric	100% of Existing Residential Buildings will be All-Electric
13% of Existing Nonresidential Buildings will be All-Electric	36% of Existing Nonresidential Buildings will be All-Electric	60% of Existing Nonresidential Buildings will be All-Electric
40% of Existing Municipal Buildings will be All-Electric	80% of Existing Municipal Buildings will be All-Electric	100% of Existing Municipal Buildings will be All-Electric
60% of Existing Municipal Buildings with Diesel Backup Generators will be Replaced with Carbon-Free Alternatives	100% of Existing Municipal Buildings with Diesel Backup Generators will be Replaced with Carbon-Free Alternatives	100% of Existing Municipal Buildings with Diesel Backup Generators will be Replaced with Carbon-Free Alternatives
22,462 MTCO <sub>2</sub> e	51,613 MTCO <sub>2</sub> e	82,945 MTCO <sub>2</sub> e

# City of Milpitas Climate Action Plan Update

## ACTIONS

**Action BE-2.4.1:** Develop a comprehensive energy retrofit program to transition existing residential buildings to all-electric by 2045. Begin program providing education and incentives, then transition to point-of-sale and replace retrofit requirements.

**Action BE-2.4.2:** Connect building owners to funding resources and financing options, such as Energy Upgrade California, for energy efficiency retrofits and improvement projects.

**Action BE-2.4.3:** Develop a comprehensive energy retrofit program to transition existing nonresidential buildings to all-electric, aiming for a 60 percent conversion rate by 2045. Begin program providing incentives then transition to point-of-sale and replace retrofit requirements.

**Action BE-2.4.4:** Eliminate the provision of fossil fuel-powered backup generator permits for existing nonresidential development by 2030.

## MUNICIPAL ACTIONS

- Retrofit existing municipal buildings and facilities to be all-electric by 2045.
- Retrofit all municipal facility lighting with LEDs (or other high-efficacy lighting where LEDs are infeasible) by 2025.
- Continue to retrofit all City-owned streetlights and park/sport facility lighting to LEDs.
- Replace outdated electricity transformers with new, high-efficiency models at the Sports Center, Police Department, Public Works, and City Hall.
- Replace current Energy Management Systems at municipal buildings with Automated Logic building management/automation systems.
- Replace outdated HVAC equipment at municipal facilities based on City's 2019 Facility Condition Assessment.

**Measure BE-2.5:** Facilitate energy audits for existing buildings to identify energy efficiency retrofit and electrification opportunities.

## ACTIONS

**Action BE-2.5.1:** Work with PG&E, SVCE, and other agencies to provide free energy audits of existing residential and nonresidential buildings.

**Action BE-2.5.2:** Encourage ongoing energy benchmarking in existing nonresidential buildings, consistent with regulatory benchmarking programs and existing green building standards to help close the energy efficiency information gap.

## MUNICIPAL ACTIONS

- Conduct energy audits of City facilities to identify cost-effective energy efficiency upgrades.

**Measure BE-2.6:** Reduce plug loads in existing buildings.

## ACTIONS

**Action BE-2.6.1:** Use partnerships to promote appliance upgrades to energy-efficient technologies and products through campaigns targeted at residents and local businesses, ENERGY STAR® appliance change-out programs, and incentives (e.g., give-a-ways, federal/state/utility rebates, etc.).

**Action BE-2.6.2:** Facilitate the adoption of smart grid and other peak load reduction technologies, such as building energy management systems and smart appliances, within existing buildings.

# TRANSPORTATION AND LAND USE



STRATEGY TR-1 Facilitate Sustainable Transportation and Land Use Planning



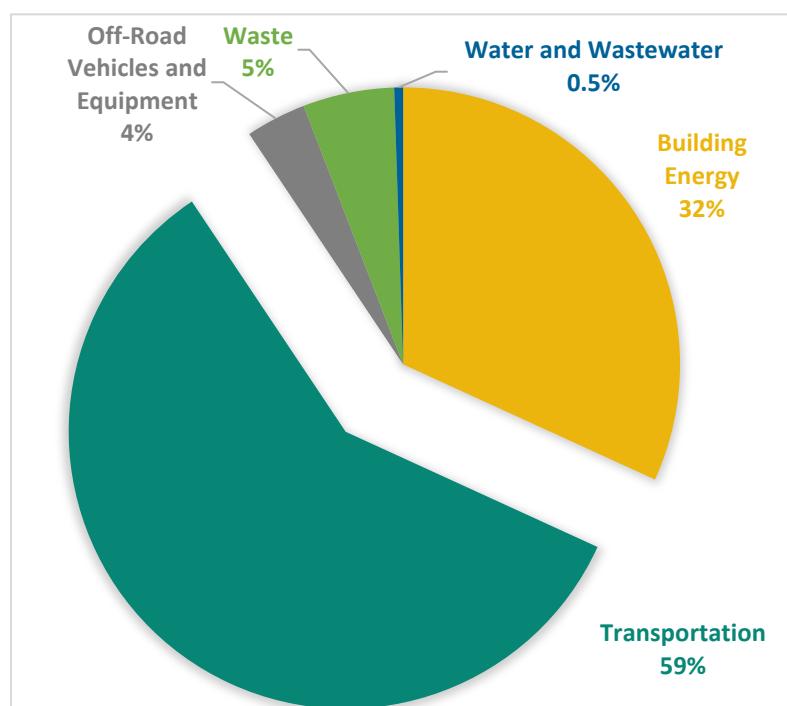
STRATEGY TR-2 Decarbonize Vehicles



STRATEGY TR-3 Increase Active and Public Transportation Use

The majority of GHG emissions from activities occurring in the city are associated with the on-road transportation sector. These emissions are generated by the combustion of fossil fuels (i.e., gasoline and diesel) in motor vehicles, and in 2019, this sector accounted for **59 percent of total community GHG emissions**.

The amount of vehicle miles traveled (VMT) in the city, or the distance of travel by residents and visitors, is the primary factor that determines on-road transportation emissions. VMT in the city is impacted by factors such as accessibility of alternative



transportation options (e.g., transit) and land use planning. Vehicle fuel efficiency and fuel carbon intensity standards also affect GHG emissions generated by on-road transportation.

Adopted State and federal regulatory actions will help to reduce community transportation-related GHG emissions 9 percent by 2030. However, the City will need to implement additional local actions to achieve its GHG emissions reduction targets.

## Strategies and Measures



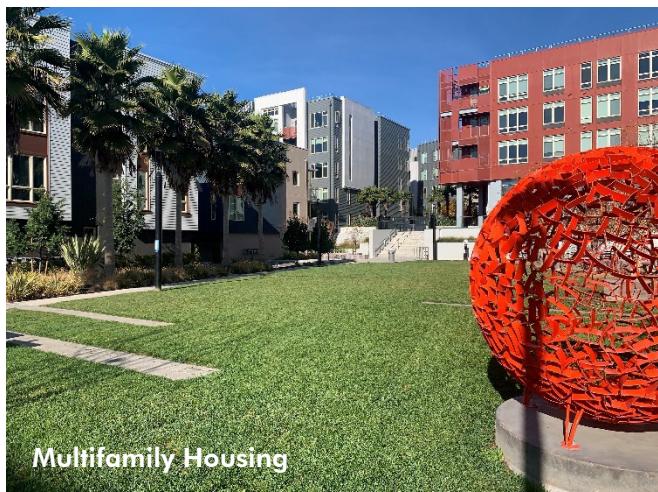
Because the transportation sector represents the largest source of community GHG emissions, it presents the most significant opportunities to achieve emissions reductions. This section outlines transportation and land use-related strategies and measures the City will implement to help meet its emissions reduction targets. Transportation and land use measures are organized under five strategies that aim to utilize development and planning processes to reduce contributions to climate change, increase the

use of electric vehicles (EVs) and other low-emission vehicles, improve the accessibility of transit and active transportation options, and implement initiatives to reduce passenger vehicle usage, all of which will result in substantial GHG emissions reductions.



### TR-1 Facilitate Sustainable Transportation and Land Use Planning

Development projects and other land use changes directly impact VMT within the city. Incorporating climate change considerations into the transportation and land use planning processes will reduce VMT and



GHG emissions from the on-road transportation sector and generate a multitude of co-benefits. Transportation demand management (TDM) initiatives complement and support other strategies and measures in this sector by facilitating the use of transit, active transportation, and other mobility options such as ridesharing to reduce VMT. Implementing TDM measures and balancing transportation modes will result in GHG emissions reductions and improved flexibility for residents and workers in the city.

#### Co-Benefits:



# City of Milpitas Climate Action Plan Update

## Measure TR-1.1: Reduce VMT from new development in compliance with SB 743.

2030 Target	2040 Target	2045 Target
15% Reduction in New Passenger and Commercial VMT <b>3,852 MTCO<sub>2e</sub></b>	20% Reduction in New Passenger and Commercial VMT <b>7,029 MTCO<sub>2e</sub></b>	25% Reduction in New Passenger and Commercial VMT <b>10,714 MTCO<sub>2e</sub></b>

### ACTIONS

**Action TR-1.1.1:** Enforce the City's requirements for SB 743, which mandate a 15 percent reduction in new project-generated VMT.

**Action TR-1.1.2:** Continuously update the City's VMT policy and implementation tools to further reduce VMT.

### MUNICIPAL ACTIONS

- Require all new municipal development to be all-electric by 2030.
- Require all new municipal facility lighting to be LEDs (or other high-efficacy lighting where LEDs are infeasible).

## Measure TR-1.2: Reduce VMT from existing development.

2030 Target	2040 Target	2045 Target
15% Reduction in Passenger VMT 40% Reduction in City Employee Commute VMT <b>10,597 MTCO<sub>2e</sub></b>	25% Reduction in Passenger VMT 60% Reduction in City Employee Commute VMT <b>11,412 MTCO<sub>2e</sub></b>	30% Reduction in Passenger VMT 80% Reduction in City Employee Commute VMT <b>11,469 MTCO<sub>2e</sub></b>

### ACTIONS

**Action TR-1.2.1:** Work with local employers to provide subsidies to employees for using transit or active transportation to commute to work, and encourage flexible work schedules (e.g., 9/80s and 4/10s) as well as telecommuting.

**Action TR-1.2.2:** Partner with local businesses to provide discounts or rewards programs to incentivize using transit or active transportation to travel to businesses.

**Action TR-1.2.3:** Require employers of 50 or more employees to implement vehicle trip reduction programs and limit car commutes to 40 percent of their workforce by 2030.

**Action TR-1.2.4:** Adopt and phase a citywide TDM ordinance by 2023, building on recommendations of the Metro Specific Plan and incorporate the TDM ordinance into the Zoning Ordinance Update (anticipated in 2025).

**Action TR-1.2.5:** Implement existing TDM plans, such as The District at Milpitas Lot 3A TDM Plan.

**Action TR-1.2.6:** Support growth of on-demand mobility services (e.g., ride-, car- and bike-sharing, scooter- e-hailing) in Milpitas.

### MUNICIPAL ACTIONS

- Expand and improve existing incentives for City employees to choose alternatives to single-occupant auto commuting, such as flexible work schedules, telecommuting, transit incentives and subsidies, and ridesharing and carpooling services and subsidies.
- Provide secure bicycle parking, showers, lockers, and other amenities at City facilities.

**Measure TR-1.3:** Continue to implement and adopt policies that support high-density, mixed-use, and transit-oriented development and housing near jobs.

2030 Target	2040 Target	2045 Target
6.5% Reduction in Existing Passenger VMT <b>7,496 MTCO<sub>2</sub>e</b>	Continue achieving 6.5% Reduction in Existing Passenger VMT <b>6,626 MTCO<sub>2</sub>e</b>	Continue achieving 6.5% Reduction in Existing Passenger VMT <b>6,350 MTCO<sub>2</sub>e</b>

## ACTIONS

**Action TR-1.3.1:** Facilitate the development of complete streets and neighborhoods.

**Action TR-1.3.2:** Maintain and continue to improve regional arterials within the City.

**Action TR-1.3.3:** Promote and facilitate the creation of an innovation district within the Metro Specific Plan Area to provide more jobs near transit and housing.

**Action TR-1.3.4:** Support high levels of ridership at the Milpitas BART station by encouraging higher density, mixed uses, and connectivity along transit corridors and at transit nodes. Promote the increase of density and mixed uses in key opportunity areas.



**Action TR-1.3.5:** Promote dense development in central locations and along transportation corridors. Support Redevelopment of older commercial or gateway areas (Main Street and Calaveras) to intensify development and a mix of uses along major transit corridor. Encourage development of urban plazas in new development in the Milpitas Metro Specific Plan, Midtown Specific Plan, and town center areas to encourage pedestrian activity and vibrant mixed-use centers that reduce vehicular activity.

**Action TR-1.3.6:** Promote the increase of density and mixed uses in key opportunity areas.

**Action TR-1.3.7:** Encourage development of urban plazas in new development in the Milpitas Metro Specific Plan, Midtown Specific Plan, and town center areas to encourage pedestrian activity and vibrant mixed-use centers that reduce vehicular activity.

**Measure TR-1.4:** Explore car-free zones or shared streets in appropriate areas.

## ACTIONS

**Action TR-1.4.1:** Explore car-free zones in commercial hubs such as those identified in the Midtown Specific Plan and Metro Specific Plan areas.



## TR-2 Decarbonize Vehicles

The consumption of gasoline and diesel in internal combustion engine vehicles produces over half of all GHG emissions in the city. Increasing EV charging infrastructure to facilitate EV adoption and supporting other low-emission alternative fuels, such as renewable diesel, will significantly reduce GHG emissions and improve local air quality and public health.



While most vehicle-related GHG

### Co-Benefits:



emissions are emitted during travel, vehicle idling also contributes to community emissions. Idling can occur in proximity to sensitive populations, such as at schools or health care facilities. Limiting vehicle idling will reduce GHG emissions and improve public health. Additionally, parking standards impact how often and where vehicles are driven. Minimizing parking standards helps change travel behavior and requires less space in desirable areas like commercial centers, which encourages the use of active transportation and transit, reducing VMT that generate emissions while benefitting quality of life.

### **Measure TR-2.1: Increase EV charging infrastructure.**

2030 Target	2040 Target	2045 Target
36% of Passenger Vehicles are EVs 26% Increase in Commercial EV Usage 70% of Municipal Vehicles and Equipment are Zero Emission <b>47,065 MTCO<sub>2</sub>e</b>	59% of Passenger Vehicles are EVs 102% Increase in Commercial EV Usage 85% of Municipal Vehicles and Equipment are Zero Emission <b>115,567 MTCO<sub>2</sub>e</b>	85% of Passenger Vehicles are EVs 127% Increase in Commercial EV Usage 100% of Municipal Vehicles and Equipment are Zero Emission <b>156,570 MTCO<sub>2</sub>e</b>

### **ACTIONS**

**Action TR-2.1.1:** Work with SVCE and other partners to provide incentives and increase EV charging stations in visible, accessible, shared locations such as mixed-use development or accessible to multi-family renters and provide free public charging.

**Action TR-2.1.2:** With each Title 24 and CALGreen code cycle, adopt updated EV charging station standards for all new development through the City's reach codes that go beyond State requirements.

Require 50 percent of parking spaces in new development to be EV-ready by 2030.

**Action TR-2.1.3:** Provide rebates and other incentives to home and business owners to install EV chargers.

**Action TR-2.1.4:** Ensure EV charging stations are encouraged and allowed through land use designations that currently permit gas fueling stations.

# City of Milpitas Climate Action Plan Update

## MUNICIPAL ACTIONS

- Install EV charging and alternative fuel stations at appropriate sites throughout the city, including the Senior Center, Sports Center, City Hall, and Public Works, to service the fleet's alternative fuel vehicles.
- Provide preferential parking, free EV charging, and/or other benefits for carpool and EVs and alternative fuel vehicles at City facilities.

### Measure TR-2.2: Increase EV and low-carbon vehicle adoption.

#### ACTIONS

**Action TR-2.2.1:** Improve awareness of local, regional, and State incentives for low- and zero-emission vehicles and increase EV purchases in Milpitas through events and resource promotion such as through Climate Action Milpitas Dashboard.

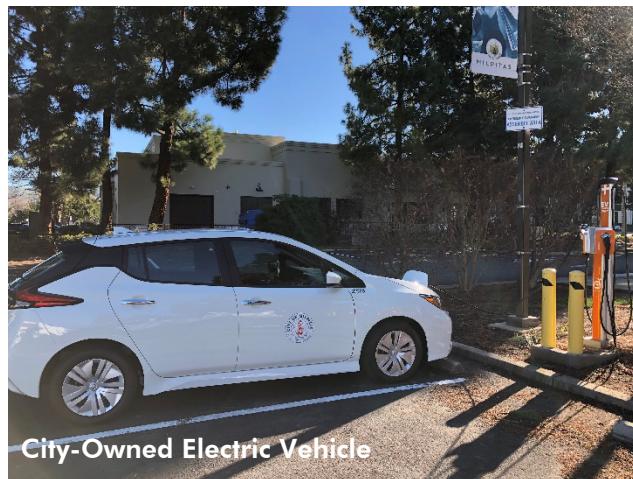
**Action TR-2.2.2:** Partner with the BAAQMD, Joint Venture Silicon Valley, and the Silicon Valley Clean Cities Coalition to pursue funding for EV deployment projects in the city.

**Action TR-2.2.3:** Include a provision in the next contract with the City's solid waste franchise hauler that they use alternative fuel vehicles for the fleet which services Milpitas.

**Action TR-2.2.4:** Partner with Acterra and its GoEV Program to deploy a public outreach campaign that gives the public opportunities to drive EVs and provides EV education.

**Action TR-2.2.5:** Adopt an ordinance that phases out development of new gasoline and diesel fuel stations as the market shifts to fossil fuel free vehicles.

**Action TR-2.2.6:** Provide incentives to convert vehicle fleets (e.g., rental, private, school) in the city.



## MUNICIPAL ACTIONS

- Convert the City's fleet vehicles and equipment to all-electric or alternative fuels, such as renewable diesel.
- Where practical, utilize bicycles and low- or zero-emissions vehicles for City employees traveling between facilities and for park maintenance and operations.



## Measure TR-2.3: Reduce vehicle idling.

### ACTIONS

**Action TR-2.3.1:** Adopt ordinances to limit idling at institutions and businesses to reduce the impacts of vehicle idling on adjacent uses, such as housing, schools, and health care facilities.

**Action TR-2.3.2:** Discourage the construction of new drive-throughs in the Metro Specific Plan.

**Action TR-2.3.3:** Require all new nonresidential development with loading docks to supply sufficient electrical power for delivery trucks and associated equipment to reduce idling when making deliveries.

## Measure TR-2.4: Reduce the amount of parking such that it meets the needs of residents, workers, and visitors in a way that is consistent with the City's sustainability goals.

### ACTIONS

**Action TR-2.4.1:** Revise development standards for multifamily and mixed-use developments to separate parking costs from the cost to rent, purchase, or lease residential and nonresidential buildings.

**Action TR-2.4.2:** Revise development standards to eliminate or reduce the minimum parking requirements for new development and redevelopment of nonresidential buildings and mid-to higher-density residential development.

**Action TR-2.4.3:** Develop and require parking maximums at new development.





## TR-3 Increase Active and Public Transportation Use



AC Transit with Bike

While transitioning the community to less fossil fuel-intensive vehicles will be the most effective strategy to reduce transportation GHG emissions, increasing the use of transit and active transportation options (e.g., biking, walking) will further reduce GHG emissions and will provide significant benefits to quality of life and public health.

### Co-Benefits:



### **Measure TR-3.1:** Enhance and expand transit facilities and infrastructure.

2030 Target	2040 Target	2045 Target
10.3% Reduction in Existing Passenger VMT	12.5% Reduction in Existing Passenger VMT	14.8% Reduction in Existing Passenger VMT
14,418 MTCO <sub>2</sub> e	16,124 MTCO <sub>2</sub> e	18,852 MTCO <sub>2</sub> e

### **ACTIONS**

**Action TR-3.1.1:** Implement the Milpitas OnDemand "hub-and-spoke" micro-transit pilot program, including on-demand shuttle service for first- and last-mile connections to existing transit hubs such as the BART Station and VTA light rail stops.

**Action TR-3.1.2:** Ensure a pedestrian-friendly environment around the Milpitas BART and light rail transit stations.

### **Measure TR-3.2:** Increase transit ridership.

2030 Target	2040 Target	2045 Target
10.3% Reduction in Existing Passenger VMT	12.5% Reduction in Existing Passenger VMT	14.8% Reduction in Existing Passenger VMT
14,418 MTCO <sub>2</sub> e	16,124 MTCO <sub>2</sub> e	18,852 MTCO <sub>2</sub> e

### **ACTIONS**

**Action TR-3.2.1:** Work with transit agencies to provide free or subsidized transit to low-income residents, expanding to all residents by 2030.

**Action TR-3.2.2:** Improve reliability and convenience of existing transit services through increased frequency, expanded service areas, extended service hours, and better facilities.

## Measure TR-3.3: Improve active transportation options.

2030 Target	2040 Target	2045 Target
50 miles of new bikeways	70 miles of new bikeways	80 miles of new bikeways
25 miles of new pedestrian paths	35 miles of new pedestrian paths	40 miles of new pedestrian paths
55 MTCO <sub>2</sub> e	99 MTCO <sub>2</sub> e	128 MTCO <sub>2</sub> e

### ACTIONS

**Action TR-3.3.1:** Require all new development other than single family to provide short-term and long-term bicycle parking facilities to meet peak season maximum demand.

**Action TR-3.3.2:** Increase awareness of existing City initiatives to facilitate active transportation, including Bike Paths maps and Suggested Routes to School Program maps.

**Action TR-3.3.3:** Require new nonresidential developments projects to provide "end-of-trip" facilities for cyclists, including showers, secure bicycle lockers, and changing spaces.

**Action TR-3.3.4:** Require new nonresidential developments have adequate e-bike and e-scooter infrastructure and options.

**Action TR-3.3.5:** Implement the updated Trail, Pedestrian, and Bicycle Master Plan to enhance and expand bicycle and pedestrian infrastructure and networks.

### MUNICIPAL ACTIONS

- Provide secure bicycle parking, showers, lockers, and other amenities at City facilities.

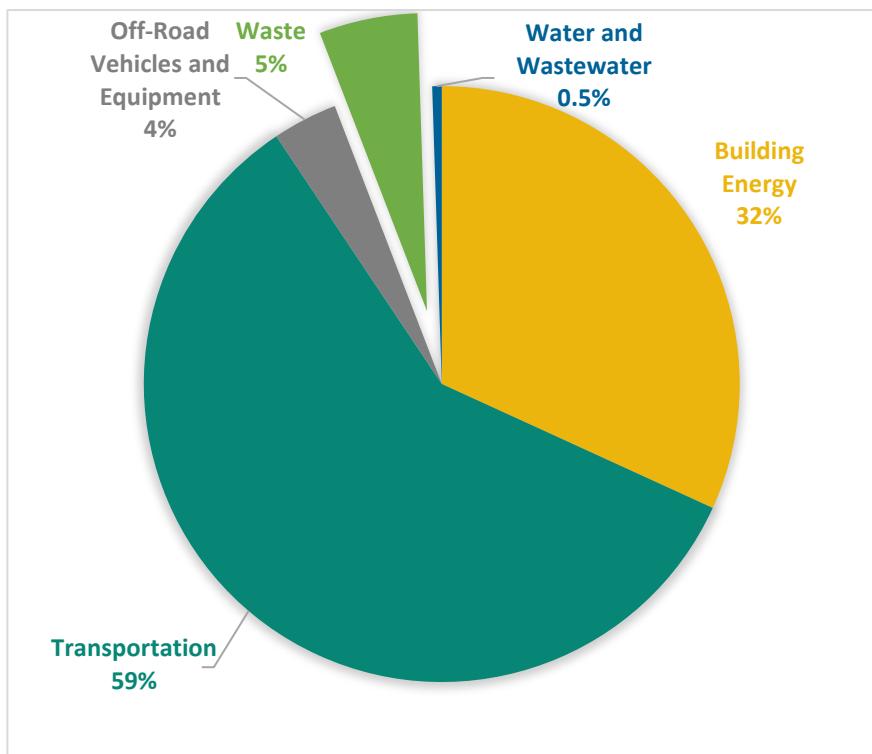


# WASTE



## STRATEGY SW-1 Achieve Zero Waste

Emissions in the solid waste sector are associated with the decomposition of community-generated organic waste in landfills. In 2019, this sector contributed a total of 5 percent of the city's GHG emissions. Without additional local action, community GHG emissions from solid waste are anticipated to rise steadily into the future and increase by nearly 20 percent in 2045. The State has adopted a variety of legislative actions aimed at reducing GHG emissions from organic waste, but the City will need to take steps at the local level to effectively reduce waste emissions and achieve its emissions reduction targets.



## Strategies and Measures



Recycle Pick Up

Implementing strategies and measures to reduce waste generation, increase the reuse of products, and improve waste diversion programs will serve to protect natural resources while minimizing contributions to climate change. This section outlines the strategies and measures the City will implement to support these objectives. Waste measures are organized within three strategies that focus on achieving zero waste, improving the sustainability of landfills, and supporting relevant regional and State policy efforts.



**SW-1**

### Achieve Zero Waste



Food Scraps

The decomposition of organic waste releases emissions of  $\text{CH}_4$ , a potent GHG, into the atmosphere. Achieving “zero waste,” which entails diverting at least 90 percent of community-generated waste from landfills through efforts such as recycling and composting, will nearly eliminate GHG emissions from this sector and benefit the natural environment.

#### Co-Benefits:



# City of Milpitas Climate Action Plan Update

## Measure SW-1.1: Eliminate the disposal of organic solid waste in landfills.

2030 Target	2040 Target	2045 Target
75% of waste is diverted from landfills citywide, including at municipal facilities 9,385 MTCO <sub>2</sub> e	85% of waste is diverted from landfills, including at municipal facilities 17,010 MTCO <sub>2</sub> e	90% of waste is diverted from landfills, including at municipal facilities 21,055 MTCO <sub>2</sub> e

### ACTIONS

**Action SW-1.1.1:** Require local restaurants to increase food recovery and donate edible food, consistent with SB 1383.

**Action SW-1.1.2:** Expand existing organic waste collection routes and drop-off sites to improve composting services for interested residents and businesses.

**Action SW-1.1.3:** Implement and enforce the requirements of SB 1383 and eliminate disposal of compostable organic materials to landfills.

### MUNICIPAL ACTIONS

- Increase on-site composting organics diversion/composting at City facilities.

## Measure SW-1.2: Increase recycling and the diversion of other inorganic solid waste.

### ACTIONS

**Action SW-1.2.1:** Partner with RecycleStuff.org to enhance awareness of local and regional recycling opportunities.

**Action SW-1.2.2:** Adopt an ordinance that requires recycling and composting services, the use of only recyclable and compostable materials by vendors, and adequate staff to ensure proper disposal and recycling at events that require a City-issued permit.

**Action SW-1.2.3:** Partner with waste haulers to expand the diversion of non-food, non-construction, and non-demolition solid waste.

### MUNICIPAL ACTIONS

- Increase the amount of recycling at City facilities.



## Measure SW-1.3: Reduce the generation of waste from residents and businesses.

### ACTIONS

**Action SW-1.3.1:** Enforce the City's plastic bag and Styrofoam ban.

**Action SW-1.3.2:** Encourage local businesses to reduce the use of single-use, non-biodegradable products, and support the establishment of a regional ordinance that restricts and/or limits the use of these products by local businesses.

**Action SW-1.3.3:** Require organizations over 50 employees to implement organization-wide waste reduction initiatives.

**Action SW-1.3.4:** Promote responsible consumption of products and materials.

**Action SW-1.3.5:** Coordinate with other local jurisdictions and landfills to implement a divertible materials (e.g., recyclables) ban at landfills.

### MUNICIPAL ACTIONS

- Continue to increase the percentage of recycled content in purchases made through City purchasing policies and other efforts, such as 100 percent recycled content paper, other office supplies, and transportation supplies.
- Enhance and expand waste reduction policies and programs for City facilities, such as the environmentally preferable purchasing policy.

## Measure SW-1.4: Reduce the generation of construction and demolition waste.

### ACTIONS

**Action SW-1.4.1:** Amend the building demolition permit requirements and adopt a comprehensive construction and demolition ordinance to reach a 75 percent diversion rate.

### MUNICIPAL ACTIONS

- Require 75 percent of construction and demolition debris to be recycled and reused from municipal projects by 2030.

## Measure SW-1.5: Facilitate repair and reuse of consumer products.

### ACTIONS

**Action SW-1.5.1:** Develop a reuse facility that makes building materials available to customers, and acts as an outlet for reusable items otherwise destined for landfill.

**Action SW-1.5.2:** Create and support "fix-it clinics" at Parks and Recreation facilities and other City buildings that can build skills among local businesses and residents in innovation, repair, and reuse.

**Action SW-1.5.3:** Support Extended Producer Responsibility initiatives that drive end of product life management.

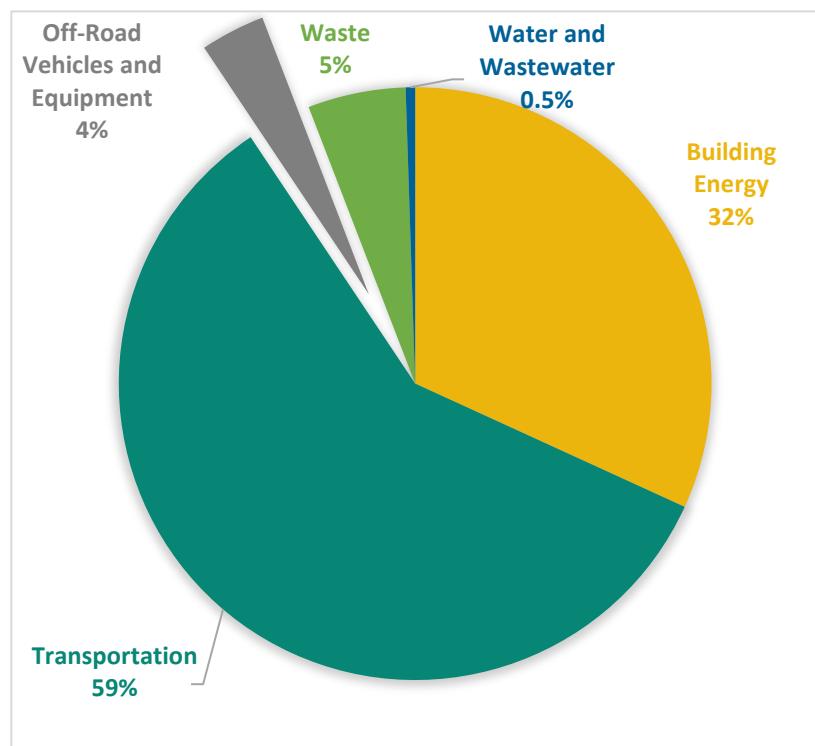
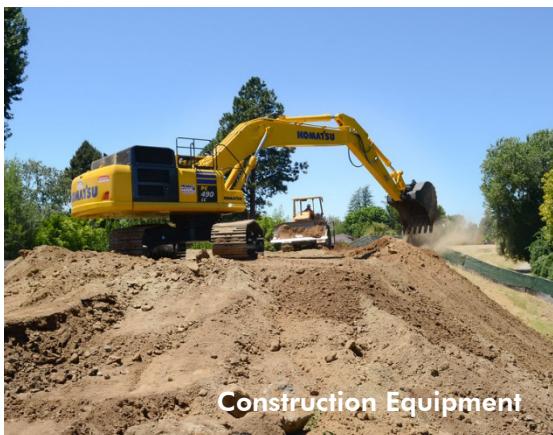
**Action SW-1.5.4** Promote redesign of products so that they do not require end of life disposal, but are incorporated back into useful products.

# OFF-ROAD VEHICLES AND EQUIPMENT



## STRATEGY OT-1 Shift to Clean Off-Road Equipment and Vehicles

The operation of off-road vehicles and equipment, such as construction vehicles and landscaping equipment, generates GHG emissions through the combustion of fossil fuels, primarily diesel. These sources accounted for approximately 4 percent of emissions in the city in 2019. Without local efforts to reduce GHG emissions from this sector, emissions are expected to rise over 50 percent by 2045.



Historically, reducing GHG emissions from the off-road vehicles and equipment sector has been challenging. However, with technological improvements and new State objectives in recent years, emissions reduction from this sector have become more feasible. The City can implement actions that will effectively reduce emissions from off-road vehicles and equipment to help meet its GHG reduction targets.

## Strategies and Measures

As other sectors in the city are decarbonized in the future, the off-road vehicles and equipment sector will become an increasingly important focus for local emissions reductions. Off-road vehicles and equipment measures are organized under one strategy that focuses on transitioning fossil fuel-powered vehicles and equipment to electric and other low-carbon alternatives while reducing GHG emissions from idling.



### SW-1 Shift to Clean Off-Road Equipment and Vehicles

Diesel burned to operate off-road vehicles and equipment generates GHG emissions and degrades local air quality. Reducing the use of and electrifying vehicles and equipment will result in significant emissions reductions in this sector while improving public health and natural resources.

#### Co-Benefits:



#### Measure OT-1.1: Reduce landscaping-related emissions.

2030 Target	2040 Target	2045 Target
60% of fossil fuel-powered landscape equipment is replaced with zero-emission alternatives	100% of fossil fuel-powered landscape equipment is replaced with zero-emission alternatives	Continued achievement of 100% of zero-emission landscape equipment
962 MTCO <sub>2</sub> e	1,681 MTCO <sub>2</sub> e	1,759 MTCO <sub>2</sub> e

## ACTIONS

**Action OT-1.1.1:** Promote regional and State incentive programs to encourage residents and business owners to convert or replace their fossil fuel-powered gardening equipment, such as lawn mowers, leaf blowers, and edge trimmers, with electric alternatives.

**Action OT-1.1.2:** Adopt an ordinance that prohibits the sale of fossil fuel-powered landscaping equipment by 2024 to transition to zero-emission landscaping equipment.

**Action OT-1.1.3:** Require all new development to install sufficient exterior electrical outlets to charge electric-powered landscaping equipment.

## MUNICIPAL ACTIONS

- Use electric-powered landscape equipment at City facilities and parks.



## Measure OT-1.2: Reduce construction-related emissions.

2030 Target	2040 Target	2045 Target
40% of fossil fuel-powered construction equipment uses renewable diesel or is replaced with zero-emission alternatives <b>2,361 MTCO<sub>2</sub>e</b>	60% of fossil fuel-powered construction equipment uses renewable diesel or is replaced with zero-emission alternatives <b>3,746 MTCO<sub>2</sub>e</b>	80% of fossil fuel-powered construction equipment uses renewable diesel or is replaced with zero-emission alternatives <b>5,176 MTCO<sub>2</sub>e</b>

## ACTIONS

**Action OT-1.2.1:** Reduce idling of construction vehicles and equipment.

**Action OT-1.2.2:** Prohibit the use of fossil fuel-powered generators at construction sites in all new discretionary projects.

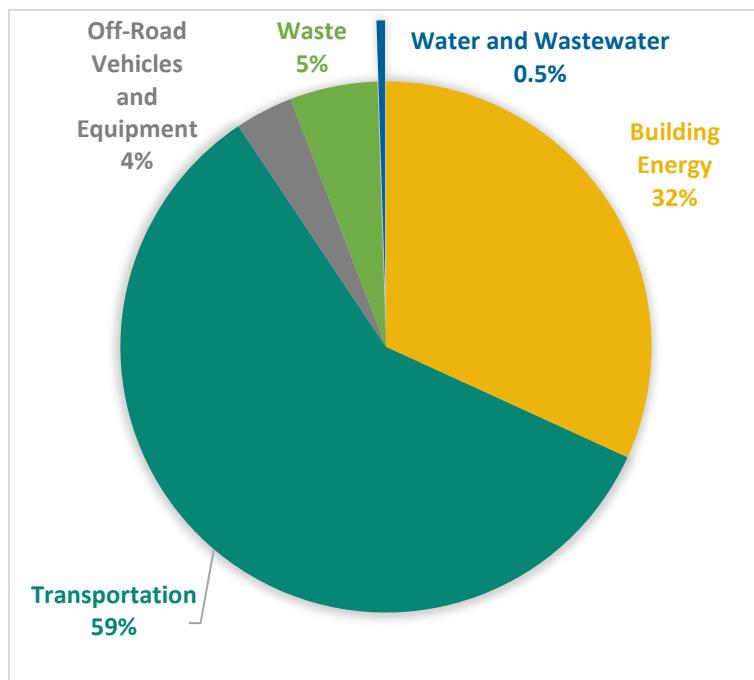
**Action OT-1.2.3:** Require all construction projects to use renewable diesel in diesel-powered construction equipment.

# WATER AND WASTEWATER



## STRATEGY WA-1 Promote Resilient Water Supply, Water Use, and Water Resources

The water supply and wastewater treatment sectors represent the city's smallest emissions-generating sectors. Together, water and wastewater activities represented roughly 1 percent of community GHG emissions in 2019. State legislative actions (i.e., SB 100 [Renewables Portfolio Standard]) will eliminate water supply-related emissions in 2045, but wastewater treatment emissions will continue to grow over time. Although emissions from water supply will be eliminated and wastewater



treatment will account for a minimal proportion of the city's emissions in the future, implementing local actions focused on these sectors will increase the pace of GHG emissions reductions while improving community resilience and energy reliability.

## Strategies and Measures

GHG emissions from the water supply and wastewater treatment sectors can be reduced through strategies and measures that will simultaneously provide co-benefits to the city's residents and businesses. This section outlines water supply and wastewater treatment strategies and measures the City will implement to help meet its emissions reduction targets. Measures are organized under three strategies that aim to conserve water, increase the use of recycled water, and realize benefits from wastewater treatment facilities.



### WA-1 Promote Resilient Water Supply, Water Use, and Water Resources

GHG emissions from water supply are minimal in the city—but not nonexistent—and water supply reliability is threatened by climate change. Implementing water conservation measures will contribute to community emissions reductions and improve the resilience of the city to climate change while providing additional benefits to residents, businesses, and the natural environment. Water supply in the city consists primarily of water imported and treated from rivers and reservoirs, but the city also receives recycled water that is used for irrigation and other applications (e.g., industrial). Increasing the supply of recycled water will improve resilience and align with City and State goals.

#### Co-Benefits:



#### **Measure WA-1.1:** Reduce indoor water consumption in buildings.

2030 Target	2040 Target	2045 Target
20% reduction in water consumption from existing buildings	25% reduction in water consumption from existing buildings	30% reduction in water consumption from existing buildings
25% reduction in water consumption from new buildings	30% reduction in water consumption from new buildings	35% reduction in water consumption from new buildings
3% reduction in water consumption from municipal facilities	Continued achievement of 3% reduction in water consumption from municipal facilities	Continued achievement of 3% reduction in water consumption from municipal facilities
85 MTCO <sub>2</sub> e	39 MTCO <sub>2</sub> e	0 MTCO <sub>2</sub> e

## ACTIONS

**Action WA-1.1.1:** Increase residential and nonresidential participation in the High Efficiency Clothes Washer Rebate Program and the High Efficiency Toilet Rebate Program by ensuring continued funding to the City's Water Conservation Program, operated in conjunction with resources provided by SCVWD and BAWSCA.

**Action WA-1.1.2:** Collaborate with San Francisco Public Utilities Commission (SFPUC) and Santa Clara Valley Water District (SCVWD) to develop a retrofit program to encourage installation of water conservation measures in existing businesses and residences.

**Action WA-1.1.3:** Regularly review and update the City's Water Conservation Ordinance and water conservation measures to be consistent with current best management practices and ensure effective and ongoing conservation efforts.

**Action WA-1.1.4:** Continue water conservation efforts outlined in the 2021 Urban Water Management Plan (UWMP).

**Action WA-1.1.5:** Require ultra-low-flow fixtures in new residential and nonresidential development.

**Action WA-1.1.6:** Continue to assess and manage distribution system losses through efforts including replacing existing meters with smart meters, implementing a Supervisory Control and Data Acquisition (SCADA) system, replacing selected water pipe with upgraded design criteria to withstand seismic events, and maintaining an active cathodic protection system.

**Action WA-1.1.7:** Coordinating with SFPUC and SCVWD, facilitate the development of a water auditing program for existing residential and nonresidential development.

## MUNICIPAL ACTIONS

- Develop and implement a "water neutrality program" that requires new municipal development not increase the City's total municipal water demand.

## Measure WA-1.2: Reduce water consumption for irrigation and landscaping.

2030 Target	2040 Target	2045 Target
25% reduction in outdoor water consumption from existing buildings	30% reduction in outdoor water consumption from existing buildings	35% reduction in outdoor water consumption from existing buildings
60% reduction in outdoor water consumption from new buildings	70% reduction in outdoor water consumption from new buildings	75% reduction in outdoor water consumption from new buildings
59 MTCO <sub>2</sub> e	28 MTCO <sub>2</sub> e	0 MTCO <sub>2</sub> e

## ACTIONS

**Action WA-1.2.1:** Continue to fund and operate the City's Water Conservation Program in conjunction with resources provided by SCVWD and BAWSCA, including the Irrigation Equipment Upgrades Rebate Program, Landscape Conversion Rebate Program, Water Wise Survey Program, and Water Efficient Gardening workshops.

**Action WA-1.2.2:** Increase residential and nonresidential participation in the Landscape Conversion Rebate and Irrigation Equipment Upgrades programs to convert lawns to a healthy habitat with native and drought-tolerant species that use water-efficient irrigation equipment.

**Action WA-1.2.3:** Implement and enforce the Water Efficient Landscape Ordinance and the Water Conservation Ordinance.

**Action WA-1.2.4:** Require drought-tolerant, water-conserving, and/or native landscaping in new development and redevelopment projects.

## MUNICIPAL ACTIONS

- Plant drought-tolerant, water-conserving, and/or native landscaping in City facilities and parks.
- Ensure that all of the City's irrigation systems in parks and other spaces are controlled by computer systems that tie watering cycles to soil moisture.

**Measure WA-1.3:** Increase the use of recycled water and support efforts to drought-proof our water supply.

## ACTIONS

**Action WA-1.3.1:** Increase residential and nonresidential participation in the Rainwater Catchment Rebate and Graywater Laundry to Landscape Rebate programs to utilize rainwater and graywater for landscaping and irrigation purposes.

**Action WA-1.3.2:** Continue to require all commercial and industrial development south of the Hetch Hetchy right-of-way to install recycled water lines and require conversion of landscape irrigation to recycled water, as feasible.

**Action WA-1.3.3:** Support use of recycled water as drought proof water supply including potential indirect potable recharge.

**Action WA-1.3.4:** Encourage the use of recycled water for industrial uses and landscape irrigation where feasible, within the parameters of State and County Health Codes and standards and in compliance with regional agency requirements.



Irrigated Lawn

**Action WA-1.3.5:** Encourage residents and businesses to install on-site recycled water systems (i.e., greywater systems) and rainwater harvesting systems, consistent with all State and County Health Codes and standards and in compliance with regional water agency requirements.

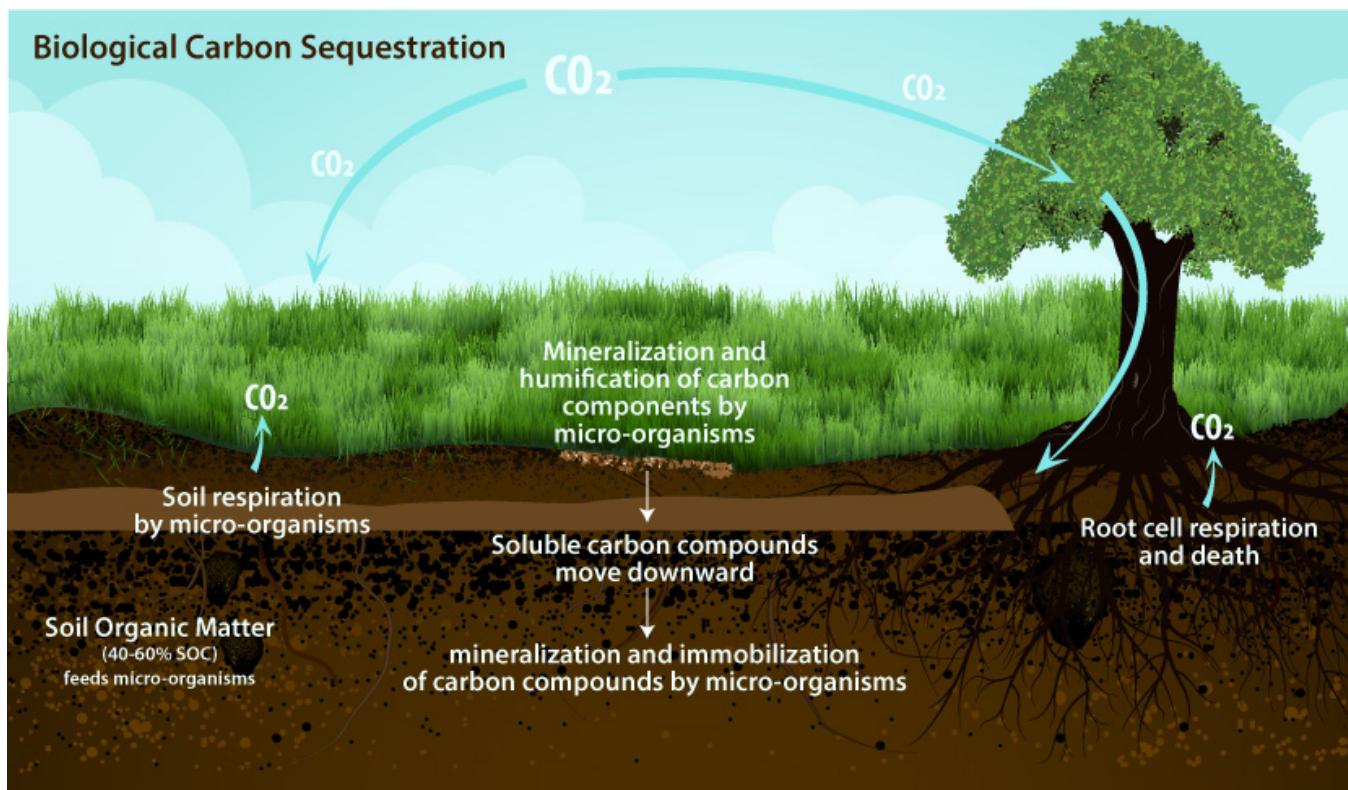
**Action WA-1.3.6:** Require all new residential and nonresidential development to include a separate piping system for recycled water (i.e., "purple pipes") to be used for irrigation and other outdoor water uses, as feasible.

# CARBON SINKS



## STRATEGY CS-1 Resilient Infrastructure and Healthy Forest and Natural Systems

The opposite of emissions sources, emissions sinks (i.e., any reservoir, natural or otherwise, that accumulates and stores GHG emissions) are expected to play an important role in addressing the challenge of climate change. The Earth's largest and most effective carbon sink is the ocean, which stores enormous amounts of carbon, but natural lands and open space are also key emissions sinks, as they effectively sequester carbon in soils and vegetation. This is shown in Figure 4-2 below.



**Figure 4-2 Biological Carbon Sequestration Process**

Source: CalRecycle 2020

Although carbon sinks were not evaluated in the City's GHG emissions inventory, incorporating them into climate action and adaptation planning efforts will help the City to achieve its climate change-related objectives. The City can take steps to enhance carbon sinks while improving climate change resilience and enhancing quality of life in the community.

## Strategies and Measures

Implementing carbon sinks strategies and measures will help to remove local emissions from the air and will provide a variety of co-benefits in the city. Additionally, as climate action planning evolves, the City may be able to quantify further GHG emissions reductions from this sector. This section outlines strategies and measures the City will implement to enhance local carbon sinks while building community resilience to climate change. Measures are organized under five strategies that aim to increase urban forestry and open space, utilize green infrastructure and other climate change natural solutions, create green jobs, and increase carbon sequestration.





## CS-1 Resilient Infrastructure and Healthy Forest and Natural Systems

Climate change is expected to result in increased temperatures in the city. Rising average temperature is exacerbated by the urban heat island effect, which increases risks to the community such as heat-related illnesses. Reducing the urban heat island effect will mitigate risks associated with increased temperatures and enable energy conservation, reducing GHG emissions. Green infrastructure is an effective and economical approach to water management that protects, restores, or mimics the natural water cycle while enhancing community safety through reduced flooding risk. Green infrastructure is an alternative to “gray infrastructure” (i.e., systems of gutters, pipes, and tunnels) that filters and absorbs stormwater where it falls through assets such as rain barrels, green roofs, and protected open space. Implementing green infrastructure will improve the community’s resilience to extreme storm impacts and sequesters carbon. Sequestering carbon in plants and soils is an effective climate change mitigation strategy.

### Co-Benefits:



Ed R. Levin County Park

### Measure CS-1.1: Protect native trees and vegetation and enhance carbon sequestration.

2030 Target	2040 Target	2045 Target
50% increase in tree coverage citywide 2,632 MTCO <sub>2</sub> e	124% increase in tree coverage citywide 6,601 MTCO <sub>2</sub> e	35% increase in tree coverage citywide 8,586 MTCO <sub>2</sub> e

### ACTIONS

**Action CS-1.1.1:** Based on the recommendations from the City's Urban Forestry Management Plan, implement a tree planting program to expand the city's urban forest canopy.

**Action CS-1.1.2:** Develop and implement a street tree planting program for residential neighborhoods.

**Action CS-1.1.3:** Identify high priority areas for civic tree planting activities that provide the greatest benefits to the community and provides urban canopy coverage in areas of the city that are currently underserved by street trees and trees within public spaces.

**Action CS-1.1.4:** Make available a list of plants and trees native to the region that are suitable for use in landscaping, consistent with the requirements of Milpitas' Water Efficient Landscape Ordinance (WELO).

**Action CS-1.1.5:** Update Milpitas's Tree Protection Regulations as specified in the General Plan.

**Action CS-1.1.6:** Identify thresholds for new development mitigation for the provision of parks or open space.

**Action CS-1.1.7:** Identify natural areas that could be obtained and preserved through land transfers and acquisitions of undeveloped/unprotected private and public lands.

## Measure CS-1.2: Reduce the urban heat island effect to conserve energy.

### ACTIONS

**Action CS-1.2.1:** Amend the Zoning Code to create tree planting standards for new and renovated development; require the planting of two trees in single-family development in the front, side, or rear yard as feasible; and create lineal landscaping standards for commercial development that identify a minimum number of tree plantings based on lineal frontage length.

**Action CS-1.2.2:** Require all new development to install cool pavements, plant low-maintenance and drought-tolerant landscaping, and plant shade trees.

**Action CS-1.2.3:** Reduce heat gain from surface parking lots in new development for a minimum of 50 percent of the site's hardscape. Develop standards to provide shade from the existing tree canopy or from appropriately selected new trees that complement site characteristics and maximize drought tolerance.



## Measure CS-1.3: Increase the use of green infrastructure.

### ACTIONS

**Action CS-1.3.1:** Develop and implement a green infrastructure program for the installation and maintenance of projects and existing public resources, such as the parks system and other open spaces.

**Action CS-1.3.2:** Review Capital Improvement Program projects to identify opportunities for green infrastructure.

**Action CS-1.3.3:** Develop guidelines for the inclusion of green infrastructure in the design of transportation improvements.

**Action CS-1.3.4:** Encourage the use of green roofs on existing and new development.

## Measure CS-1.4: Increase soil carbon content.

### ACTIONS

**Action CS-1.4.1:** Develop a healthy soil strategy for the city to support urban agriculture, address carbon sequestration, and increase water capture.

### MUNICIPAL ACTIONS

- Require new municipal development and redevelopment projects to use locally produced compost for various applications, including landscaping and erosion control.

## Measure CS-1.5: Use low-carbon and carbon sequestering construction materials in new development.

### ACTIONS

**Action CS-1.5.1:** Adopt standards to require the use of pervious paving materials in plazas, in addition to the provision of mature landscaping and other strategies that will maximize carbon sequestration.

**Action CS-1.5.2:** Require building materials that store carbon (e.g., wood, calcium carbonate-based cementitious substances, synthetic limestone) in all nonresidential construction.

# CIRCULAR AND GREEN ECONOMY

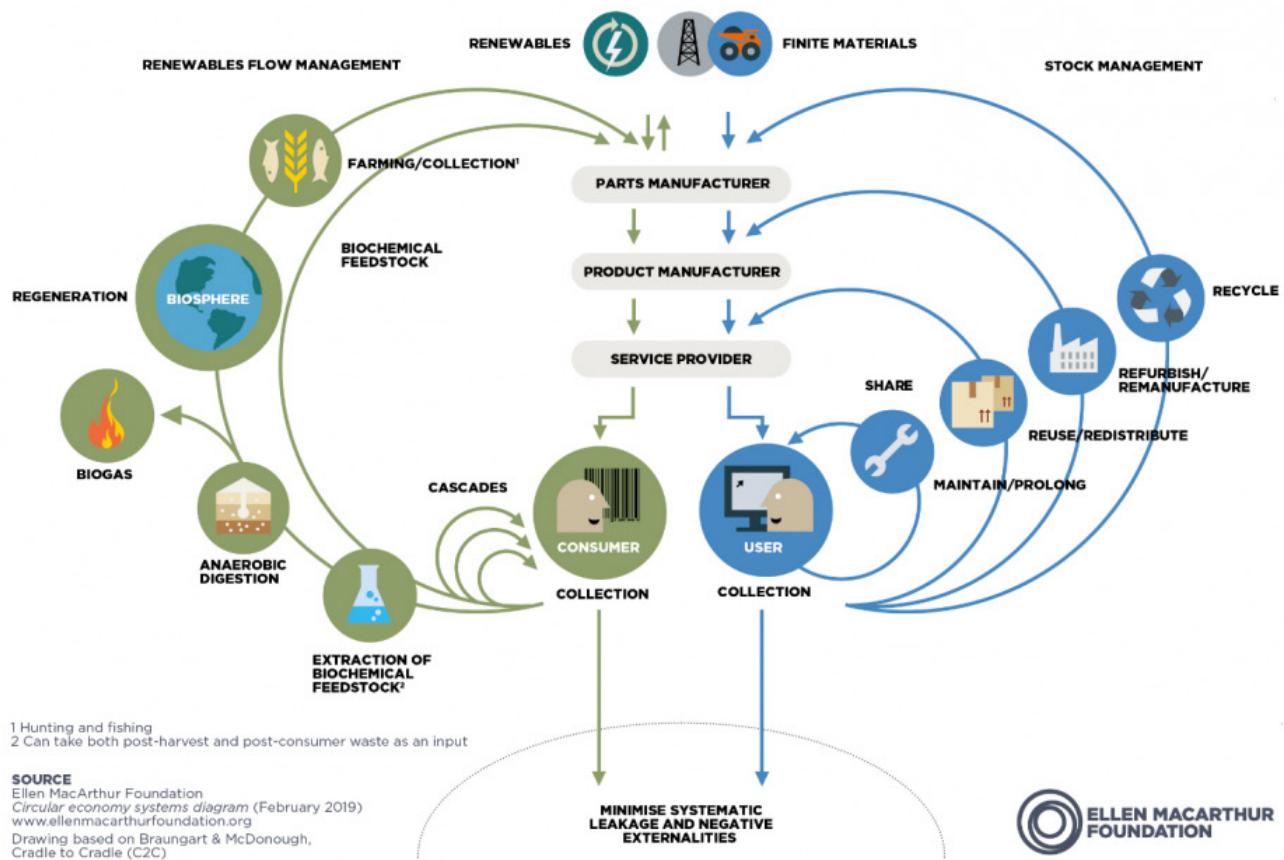
## STRATEGY 1 Foster Green and Sustainable Economic Development Opportunities

## STRATEGY 2 Support Circular Economy Policies

Economic strategies, measures, and actions included in this section seek to advance economic development opportunities in a way that includes green jobs and supports a just transition. This section also supports circular economy: a systemic approach to how we think about consumption and waste from a linear model to one that is regenerative by design. Circular economy policies aim to reduce material consumption and redesign materials and products to be less resource intensive. Figure 4-3 shows the flow of technical and biological materials in a circular economy.

Although economic development and circular economy measures are not quantifiable from a GHG perspective, incorporating them into climate action and adaptation planning efforts will help the City to achieve its climate change-related objectives. The City can take steps to foster green and sustainable economic development opportunities and support a circular economy.





**Figure 4-3 Circular Economy Systems Diagram**

Source: Ellen MacArthur Foundation 2019

## Strategies and Measures

This section outlines measures the City could implement to foster green and sustainable economic development opportunities and support circular economy policies.

### GE-1 Foster Green and Sustainable Economic Development Opportunities



Enabling new economic development opportunities within the city that are in green and sustainable industries can boost the local economy while positioning Milpitas as a leader in clean technologies and manufacturing. Providing training opportunities, strategic plans, and incentive programs can foster this type of economic growth.

#### Co-Benefits:



## Measure GE-1.1: Support and attract clean technology businesses and green jobs in Milpitas.

### ACTIONS

**Action GE-1.1.1:** Partner with local and regional agencies and educational institutions to offer courses/training that prepare students/workers for green jobs, such as the Milpitas Adult School Program, South Bay Consortium for Adult Education, Center for Employment Training in San Jose and PG&E's on-demand energy trainings.

**Action GE-1.1.2:** Develop a Green Business Strategic Plan to support environmentally friendly business development in Milpitas.

**Action GE-1.1.3:** Collaborate regionally to conduct outreach and training with local contractors and businesses on electrification.

**Action GE-1.1.4:** Explore the feasibility of creating an eco-innovation district -- a vibrant, mixed-use neighborhood committed to advancing sustainability, resilience, and equity through targeting a variety of performance areas, such as access and mobility, appropriate development, community health and well-being, energy, water, and materials management.

## Measure GE-1.2: Incentivize and promote green business practices.

### ACTIONS

**Action GE-1.2.1:** Promote green tenant and leasing practices for commercial businesses. Examples include the Green Tenant Toolkit developed by the Business Council on Climate Change and San Francisco Environment.

**Action GE-1.2.2:** Develop and implement marketing and technical assistance to green businesses, and consider developing incentives such as reduced business license taxes/fees.

**Action GE-1.2.3:** Develop a Clean Energy Pledge for area businesses to bring visibility to those businesses already purchasing carbon-free electricity or pledging to do so in the future. In collaboration with SVCE.

## GE-2 Support Circular Economy Policies

Not only do we need to evaluate how we can reduce our waste generation and consumption of virgin materials, the City can be a leader through support policies that drive a circular economy. This can be at the local, regional, State, or Federal levels to drive more recyclability, reusability, and repairability of the goods and products that we use.

## Measure GE-2.1: Engage with circular economy and zero waste policymaking at the Federal, State, and local levels.

### ACTIONS

**Action GE-2.1.1:** Support regional and State legislation intended to reduce GHG emissions from waste and virgin materials use and promote recyclability and repairability of products.

### MUNICIPAL ACTIONS

- Continue to increase the percentage of recycled content in purchases made through City purchasing policies and other efforts, such as 100 percent recycled content paper, other office supplies, and transportation supplies.
- Enhance and expand waste reduction policies and programs for City facilities, such as the environmentally preferable purchasing policy.



Sunset over the Bay Area

# Making Milpitas Climate Ready

This chapter describes the context of climate change adaptation and resilience for the city. It summarizes the city's exposure to existing hazards, sensitivity to these hazards, and discusses potential climate-related impacts to the city's population and key resources. This chapter serves as a summary of the City's Community Preparedness and Resiliency Plan, which was developed in preparation of the Climate Action Plan Update (CAP Update). Additional information, data, and methodologies can be found in the report included in Appendix C.

## Climate Change Effects on Milpitas

The effects of climate change are already occurring at global and regional scales and will continue to worsen existing hazards in the city. The primary effects of climate change include increased temperatures and changes in precipitation patterns. Alterations to these climate variables are expected to heighten and exacerbate risks posed by secondary climate effects, including extreme heat events, wildfires, drought, and large storms. While many of these hazards have existed historically in the city, the frequency and intensity of many of these hazards are projected to increase as a result of global climate change.

While it remains imperative that global GHG emissions be reduced to combat climate change, it is equally important for communities to prepare for the impacts of climate change and improve resilience through adaptation planning. Regional and local efforts are critical in building climate resilience—the capacity of a community to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience related to climate change—and can lead to a greater understanding of climate risks and strategies to reduce their impacts.

There are many plans, policies, and programs already in place at the local and regional levels that address existing hazards. In some cases, these may be sufficient to address the potential for climate change to worsen existing hazards. In other cases, gaps exist where novel climate-related hazards are projected to impact the city, and new policies are needed. This CAP Update aims to identify and address those gaps.

## Vulnerability Assessment Summary

As part of the development of the CAP Update, a climate change vulnerability assessment was developed to understand which hazards are going to be most affected by climate change, as well as what the potential impacts of their worsening hazards may be. The results of the vulnerability assessment were then used to develop and prioritize a set of adaption strategies for the CAP Update. The full climate change vulnerability assessment, including detailed data, additional information, and references, can be found can be in the Community Preparedness and Resiliency Plan in Appendix C. Provided below is a summary of the findings of the vulnerability assessment, specifically projected changes in key climate variables (e.g., precipitation, extreme heat) and a summary projected impacts on the city.

### Climate and Geography

The city encompasses an area of approximately 18 square miles (35 kilometers), extending between the south end of the San Francisco Bay and the Los Buellis Hills of the Mount Diablo Range in northern Santa Clara County. The city spans across a diverse topographic area with elevations ranging from sea level to about 2,600 feet near Monument Peak. The topography can be divided into two distinct sub-areas referred to as the Valley Floor and the Hillside, each characterized by landscapes that are prone to specific hazards.

During winter, temperatures in the city range from 31 °F to 59 °F. Showers and cloudy days come and go during this season and produce most of the city's annual 15 inches (380 millimeters) of precipitation, with precipitation tapering off in the spring. The summer months are dry and warm but cooler than other parts of the Bay Area. Temperatures can reach over 100 °F with most days in the mid- to high-70s. From June to September, the city experiences little rain, and as autumn approaches, the temperature gradually cools down.

### Vulnerable Populations

In general, historically marginalized communities and communities of color are more susceptible to climate change-related hazards due to limited access to financial resources, health challenges or disabilities, living or working conditions, or historical and current marginalization. Appendix C provides an overview of key demographic information, highlighting the need to prioritize historically marginalized and disadvantaged communities during climate adaptation planning efforts.

### Hazard Exposure

This section includes a summary of the existing hazards within the city and how changes in climate variables (e.g., average temperature, precipitation) are projected to affect these hazards. Existing hazards that can be worsened by the effects of climate change are identified and described, based on historical data from sources such as the County of Santa Clara Office of Emergency (OAHMP). Climate projection data are used to develop projections for how existing hazards are expected to change by mid-century (2035–2064) and late-century (2065–2099).

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Though the precise extent of future climate change effects is uncertain, historical climate data and forecasted GHG emissions can be used to project climate change effects for the mid-century (2035-2064) and late-century (2065-2099) periods. To assess the potential effects of climate change, the California Adaptation Planning Guide recommends using Cal-Adapt, a tool developed by the California Energy Commission and the University of California, Berkeley's Geospatial Innovation Facility that uses global climate simulation model data to identify how climate change might affect various geographies in California.

Cal-Adapt addresses the uncertainty in future GHG emissions by using Representative Concentration Pathways (RCPs) developed by the IPCC. The RCP scenarios used in the Cal-Adapt tool are the RCP 8.5 scenario (High Emissions), which represents a business-as-usual future emissions scenario that would result in atmospheric CO<sub>2</sub> concentrations exceeding 900 parts per million (ppm) by 2100, and the RCP 4.5 (Medium Emissions) scenario, which represents a lower GHG emissions future and likely the best-case scenario for climate impacts, under which GHG emissions would peak in 2040 and then decline through the rest of the century, resulting in a CO<sub>2</sub> concentration of about 550 ppm by 2100. The emissions scenarios depend on global GHG emissions trends in the future and the efficacy of global GHG reduction strategies proposed by the international community. Because the efficacy of the GHG reduction strategies and the likelihood that a certain RCP scenario will occur is uncertain, a discussion of both emissions scenarios and their subsequent impacts are included in this analysis.

## Changes in Temperature and Extreme Heat



The historic (1961-1990) annual average maximum temperature for the city was 68.3 °F, and the historic annual average minimum temperature was 48.2 °F. As shown in **Table 5-1**, both annual average maximum and minimum temperatures are projected to increase by mid-century and further increase by the end of the century under both emissions scenarios. The annual average maximum temperatures in the city are projected to be 72.8 °F by mid-century (2035–2064) and 73.7 °F by the late-century period (2065–2099) under the medium-emissions scenario. Under the high-emissions scenario, the annual average maximum temperature in the city is

projected to be 73.7 °F by mid-century (2035–2064) and 77.1 °F by the late-century period (2065–2099) (CEC 2021a). This equates to an increase in temperature of approximately 1.5 to 4.3 °F by the end of the century, depending on a medium- or high-emissions scenario (CEC 2021a).

The Cal-Adapt tool provides estimates of future instances of extreme heat events. Extreme heat events represent extreme heat days and heat waves. Extreme heat days occur when the daily maximum/minimum temperature exceeds the 98th historical percentile of the daily maximum/

# City of Milpitas Climate Action Plan Update

minimum temperatures between April and October. Heat waves are characterized as periods of sustained extreme heat over multiple days (i.e., four or more consecutive extreme heat days).

Based on historical data, the extreme heat day threshold in the city is defined as 91.6 °F. Historically, the city has experienced an average of four extreme heat days per year. As a result of rising annual average maximum temperatures from climate change, the city is projected to experience up to 17 extreme heat days annually by mid-century and 20 extreme heat days by late-century under the medium-emissions scenario. Under the high-emissions scenario, the city is projected to experience up to 15 extreme heat days annually by mid-century and 38 extreme heat days by late-century (CEC 2021b).

Heat wave events (i.e., four or more consecutive extreme heat days) have historically been infrequent in the city, with fewer than one recorded per year. Based on projections, heat waves will likely continue to be infrequent in the future. Under the medium-emissions scenario, the city is projected to experience 1.3 heat waves per year by late century. Under the high emissions scenario, the city is projected to experience 1.4 heat waves per year by mid-century and 3.2 heat waves per year by late-century (CEC 2021b).

**Table 5-1 Changes in Average Annual Temperatures and Increases in Extreme Heat in Milpitas**

Average Annual	Historic Average Annual (1961-1990)	Mid-Century (2035-2064)		End of Century (2070-2099)	
		Medium Emissions	High Emissions	Medium Emissions	High Emissions
Maximum Temperature (°F)	68.3	72.8	73.7	73.6	77.1
Minimum Temperature (°F)	48.2	52.4	53.5	53.3	56.9
Number of Extreme Heat Days	4	17	15	20	38
Number of Heat Waves	1	1	1.4	1.3	3.2

Notes: °F = degrees Fahrenheit; Extreme Heat Day = Maximum daily temperature of 91.6 °F;

Heat Waves = four or more consecutive extreme heat days.

Source: CEC 2021a; CEC 2021b.

## Changes in Precipitation and Flooding

The historic annual average (1961–1990) precipitation in the city has been 15.6 inches. As shown in Table 4-2, the total annual precipitation in the city is projected to be 17.6 inches by mid-century (2035–2064) and 17.7 inches by the late-century period (2065–2099) under the medium-emissions scenario. Under the high-emissions scenario, the annual average precipitation in the city is projected to be 17.8 inches by mid-century (2035–2064) and 19.4 inches by the late-century period (2065–2099) (CEC 2021a).

The city is projected to experience increases in the size of large storm events under both the Medium and High Emissions scenarios. As shown in Table 5-2, the historic total 2-day rainfall during a 50-year storm event (i.e., a large storm that has a 2 percent chance of occurring in

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any given year) in the city is 10.7 inches. Under the medium-emissions scenario, this rainfall is projected to decrease slightly to 10.2 inches by mid-century (2035–2064) but increase to 11.3 inches by the late-century period (2065–2099). Under the high-emissions scenario, the rainfall during these events is projected to remain at 10.7 inches by mid-century (2035–2064) and increase significantly to 14.1 inches by the late-century period (2065–2099) (CEC 2021c).

Notably, while annual precipitation is projected to increase, increases in annual rainfall will largely occur during larger storm events rather than gradual increases in rainfall throughout the year. In current practice, the stormwater management systems in urban areas are modeled to manage large storm events based on characteristics of rainfall specific to the region from observed historical data. If these historic rainfall intensities are exceeded, as is projected in the future, stormwater management systems can be compromised and affect the performance of the City's stormwater management and flood protection systems.

**Table 5-2 Changes in Average Annual Precipitation and Increases in Large Storm Events in Milpitas**

Average Annual Precipitation	Historic Period (1961-1990)	Mid-Century (2035-2064)		End of Century (2070-2099)	
		Low Emissions	High Emissions	Low Emissions	High Emissions
Average Annual Precipitation (inches)	42	17.6	17.8	17.7	19.4
50-Year Storm Event <sup>1</sup>	10.7	10.2	10.7	11.3	14.1

<sup>1</sup> = 2-day rainfall in the Lower Coyote Creek-Frontal San Francisco Bay Estuaries Watershed

Source: CEC 2021a; CEC 2021c.

## Changes in Wildfire Risk

Wildfire risk is determined by several factors: wind speeds, drought conditions, available wildfire fuel (i.e., dry vegetation), past wildfire suppression activity, and expanding wildland-urban interface, defined as areas of human development in or near high wildfire risk areas (Westerling 2018). Climate change is expected to worsen many of the factors that contribute to wildfire risk by increasing the intensity of drought events and creating hotter and drier landscapes more susceptible to burning.



As discussed above, climate change will result in changes in precipitation patterns, increased temperature, and drought conditions. Wetter months may lead to increased vegetative growth followed by periods of drought causing the vegetative growth to dry up, creating greater amounts of fuel for fires.

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Wildfire events not only cause direct physical damage to humans, structures, and biological and hydrological resources, but also contribute to global climate change and air quality degradation. The incomplete combustion of vegetation releases smoke composed of carbon monoxide (CO); particulate matter (PM); hydrocarbons; oxides of nitrogen (NO<sub>x</sub>) and reactive organic gases, which combine to produce ground-level ozone); and thousands of other compounds. CO emissions are highest during the smoldering stages of a fire and NO<sub>x</sub> emissions are produced primarily from oxidation of the nitrogen deposits in vegetation (Ahuja and Proctor 2018:439).

City residents will likely face future conditions where air quality is severely degraded due to wildfire activity within the state. For instance, during the 2020 fire season, air quality in the Bay Area was rated the worst globally due to three major wildfire complexes in the East Bay, North Bay, and southern Peninsula burning concurrently (ABC News 2020).

Air quality impacts related to wildfire smoke are disproportionately felt by low-income residents, and particularly, individuals experiencing homelessness.

Low-income residents may not be equipped with sufficient filtration systems to provide respite from the smoke in their homes. Moreover, individuals experiencing homelessness face challenges in finding indoor areas that could shelter them from exposure to high concentrations of air pollution. Additionally, outdoor laborers may be required by their employers to continue working even during periods of dangerous levels of air pollution. While regulatory mechanisms implemented by the federal Occupational Safety and Health Administration and the California Division of Occupational Safety and Health (better known as Cal/OSHA) exist, enforcement of these protocols is uncertain, particularly in industries that employ undocumented individuals, who are less likely to request compliance with such protocols.



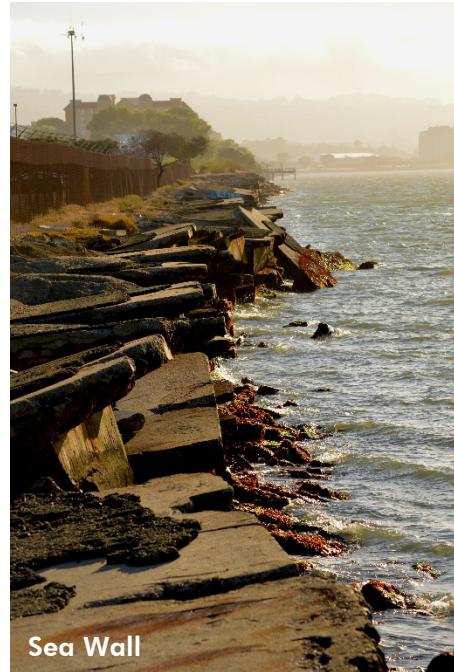
## Sea Level Rise

Rising sea levels are considered a secondary effect of climate change due to warming ocean temperatures and melting glacial ice sheets. The California coast has already seen a rise in sea level of 4 to 8 inches over the 20th century due to climate change (DWR 2021). Sea-level rise poses the greatest risk during coastal storms which increase tidal elevations. The large waves associated with storm surges can cause flooding in low-lying areas, loss of coastal wetlands, saltwater contamination of drinking water, impacts on roads and bridges, and increased stress on levees (DWR 2021). In addition, rising sea levels result in coastal erosion as shoreline

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sediment is re-deposited back into the ocean. A portion of the city's water supply is obtained from SCVWD, which sources its groundwater from the Santa Clara and Llaga groundwater subbasins. The Santa Clara subbasin, located in northern Santa Clara County, borders the San Francisco Bay. However, due to the Santa Clara subbasin's characteristic steep upward gradient, saltwater intrusion to the aquifer is minimized (SCVWD 2016).

The Bay Area will be particularly susceptible to sea-level rise in the 21st century. Cal-Adapt uses global models to indicate where California will see a substantial sea-level rise, with the exact magnitude depending on a variety of factors including global GHG emissions, the rate at which oceans absorb heat, melting rates, and movements of land-based ice sheets, and local coastal land subsidence or upshift. Cal-Adapt presents data in the form of a mapping tool that identifies where inundation may occur from varying degrees of sea-level rise ranging from 0 to 1.41 meters. While the region and neighboring communities to the city will directly experience the sea-level rise and its impacts, the city is not located within an area that Cal-Adapt predicts inundation from up to 1.41 meters of sea-level rise combined with flooding from the 100-year storm event.



## Changes in Drought and Water Supply

The city's water supply is generated from multiple locations and sources. The city is supplied by two potable water wholesalers, the San Francisco Public Utilities Commission (SFPUC) and the Santa Clara Valley Water District (SCVWD). SFPUC receives its water from an intricate water system sourced by waters of the Hetch Hetchy Reservoir in Yosemite National Park. The water flows through the San Joaquin Valley where it is distributed to the users of San Francisco, San Mateo, and Santa Clara counties, including the city. SCVWD provides water from a combination of surface and groundwater resources. A large percentage of SCVWD's water supply is supplied by the Sacramento River and its tributaries, which flow into the Sacramento-San Joaquin River Delta (Delta). Approximately 15 percent of SCVWD's water supply is sourced from groundwater with plans to increase groundwater extraction in the future. Additionally, a small, but growing portion of SCVWD's water supply is recycled water (SCVWD 2016). The city also receives some recycled water from South Bay Water Recycling, which originates from the San Jose-Santa Clara Regional Wastewater Facility (RWF).

Snowpack in the Sierra Nevada Mountains of Northern California plays a critical role in water supply for the region, including the city, replenishing the watersheds and reservoirs used as water resources throughout the state. Due to increases in climate variability and rising temperatures, California has already seen signs of decreased snowmelt in Northern California: snowpack in the Sierra Nevada is expected to decline by as much as 33 percent by mid-century and 66 percent by end of century, relative to historic baseline snowpack (OPR, CEC, and CNRA 2018b). Warmer temperatures have also caused California snowpack to melt faster and earlier

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in the year. This change in California's snowpack disrupts the normal timing of groundwater and surface water recharge and makes it harder to store and use during hotter times of the year or during drought conditions. Reduced snowpack and earlier snowmelt will lead to more frequent water shortages and less water available in the Delta and other water supply systems. This lack of a reliable imported water supply may place stress on the city's water supply resources as these waters are equitably distributed throughout the state (City of Milpitas 2016).

In addition to the surface water derived from the Hetch Hetchy Reservoir and the Delta, the city relies on a portion of its water supply from local sources such as groundwater. As stated above, of the SCVWD's water supply portfolio, groundwater makes up about 15 percent, and could be affected by projected changes in annual precipitation. The Sustainable Groundwater Management Act regulates groundwater and requires governments and water agencies of high- and medium-priority basins to develop

groundwater sustainability plans. These plans are intended to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge by 2040 for critically over-drafted basins and by 2042 for the remaining high- and medium-priority basins. SCVWD, the district that supplies groundwater to the city, pumps its groundwater from the Santa Clara (medium-priority) and Llaga (high-priority) subbasins, which are both located entirely in Santa Clara County. Future periods of drought may result in a greater overdraft of these basins.

As shown in **Table 5-2** above, under both the medium- and high-emissions scenarios, the city is not expected to experience significant overall changes in average precipitation. However, the city will experience increased variability in precipitation. The city and state have a highly variable climate that is susceptible to prolonged periods of drought. Recent research suggests that extended drought occurrence (a "mega-drought") could become more pervasive in future decades (CEC 2021d). An extended drought scenario is predicted for all of California from 2051 to 2070 under the HadGEM2-ES simulation and high-emissions scenario. The extended drought scenario is based on the average annual precipitation over 20 years. This average value equates to 78 percent of the historic median annual precipitation averaged for the North Coast and Sierra regions. The city's observed historical average annual rainfall accumulation is 15.6 inches. Under the anticipated drought scenario between 2051 and 2070, the city's average annual rainfall accumulation would decrease to 13.4 inches (CEC 2021d). Predicted drought conditions due to climate change will result in stress on reliable water supply and will likely result in water shortages. During extended drought periods, alternative local water storage methods will increasingly be relied upon.



**Hetch Hetchy Reservoir**

## Vulnerability Scoring for Key Impact Areas

This section provides a summary of the city's sensitivity to climate-related hazards and summarizes potential impacts from these hazards. Climate change effects will impact the city differently, such that some population groups and physical assets will be affected much more severely than others. Key populations and assets identified in the city are organized into the following overarching categories: populations, transportation, energy, water, and emergency services.

The city's vulnerability to each identified climate change impact has been assessed based on the magnitude of risk posed to populations and assets, and the City's adaptive capacity, which refers to a community's current and future ability to address climate-related impacts. Potential impacts and adaptive capacity are rated on a qualitative scale from Low to High based on guidance from the APG. A description of each qualitative rating for both factors is provided in **Table 5-3**.

**Table 5-3 Potential Impacts and Adaptive Capacity Rating Criteria**

Rating	Potential Impacts Rating Description	Adaptive Capacity Rating Description
Low	Impact is unlikely based on projected exposure; would result in minor consequences to public health, safety, and/or other metrics of concern.	The population or asset lacks the capability to manage climate impact; major changes would be required.
Medium	Impact is somewhat likely based on projected exposure; would result in some consequences to public health, safety, and/or other metrics of concern.	The population or asset has some capacity to manage climate impact; some changes would be required.
High	Impact is highly likely based on projected exposure; would result in substantial consequences to public health, safety, and/or other metrics of concern.	The population or asset has high capacity to manage climate impact; minimal to no changes are required.

Source: CalOES 2020.

After rating potential impacts and adaptive capacity, an overall vulnerability score is determined for each climate change impact. This scoring can help the City understand which effects pose the greatest threats and should be prioritized in future planning efforts. **Table 5-4** presents the rubric used to determine the overall vulnerability scores based on the ratings for potential impacts and adaptive capacity.

Vulnerability scoring for key climate-related impacts is discussed below and organized by the following overarching categories: populations, transportation, energy, water, and emergency services. Some similar impacts have been combined to reduce redundancy.

**Table 5-4 Vulnerability Scoring Rubric**

		Vulnerability Score			
Adaptive Capacity	Low	3	4	5	
	Medium	2	3	4	
	High	1	2	3	
		Low	Medium	High	
		Potential Impacts			

Source: CalOES 2020; adapted by Ascent Environmental in 2021.

## Impacts on the City's Populations

In general, historically marginalized communities and communities of color are more susceptible to climate change-related hazards due to limited access to financial resources, health challenges or disabilities, living or working conditions, or historical and current marginalization. These factors, among others, can lead to increased susceptibility to, and disproportionate harm from climate impacts. Vulnerable populations in the city include low-income persons, communities of color, linguistically isolated persons, senior citizens, persons with disabilities, and persons experiencing homelessness, among others.

Climate change affects human health through environmental changes, such as more frequent extreme heat events, more frequent and powerful wildfires, degradation of air quality, heightened growth and dispersal of allergens, and enhanced prevalence of infectious diseases. The resulting human health impacts include, but are not limited to, increases in the risk of asthma, allergies, and other respiratory illnesses, cardiovascular diseases, vector-borne diseases, mental health impacts, civil conflicts and migrations, malnutrition, injuries, health-related illness, heatstroke, and death (Bell et al. 2016). While all persons in the city are anticipated to experience some level of health impacts from climate change, the populations most vulnerable to these health impacts are the same communities that experience health inequities or systemic differences in health status under current conditions (CDPH 2019). The vulnerable communities described below face climate change impacts that compound and exacerbate existing public health sensitivities and vulnerabilities.

Data from California Office of Environmental Health Hazard Assessment's California Environmental Health Screening Tool 3.0 (CalEnviroScreen 3.0) and Public Health Alliance of Southern California's California Healthy Places Index indicate that there are several locations in the city where populations are at increased risk of climate impacts due to sociodemographic characteristics or environmental exposure. These include the neighborhood directly south of Calaveras Boulevard and east of Interstate 680 (Census Tract 5044.18) as well as the neighborhood directly south of Scott Creek Road and west of Interstate 680 (Census Tract 5044.22). Additionally, the residents in the northeastern and southwestern parts of the city are proportionally healthier, in general, than other California census tracts, whereas the residences of the central part of the city are comparatively less healthy (OEHHA 2020, PHASC 2021).

# City of Milpitas Climate Action Plan Update

## Adaptive Capacity: Populations

The Santa Clara County Public Health Department provides resources for the prevention and treatment of infectious diseases, heat-related illnesses, and mental health concerns. SCVWD also provides flood management planning in its E2, Emergency Response Planning project, which allows SCVWD to coordinate with local municipalities, including the City, to clearly identify roles and responsibilities for floodplain management and flood emergency management. The E2 program is a continually evolving project. The City's Water Infrastructure Risk and Resilience Assessment evaluates the risk of the city's water-related infrastructure and has concluded that the infrastructure is of high resiliency. SCVWD's Water Supply Master Plan also looks forward to a future affected by climate change and accounts for water planning in future extended drought conditions.

Santa Clara County provides residents with real-time information regarding flooding events, among other emergency events, through their AlertSCC notification system, which administers notifications through cell phone calls and SMS text messages. The Milpitas Fire Department Office of Emergency Services (Milpitas OES) keeps its Emergency Operations Center in a constant state of readiness to manage and respond to emergencies affecting residents and the business community of the city. The structure of command supports the state-mandated Standardized Emergency Management System and the federal-mandated National Incident Management System.

To address impacts to people during power shutoff events (PSPS) events, Pacific Gas and Electric (PG&E) partners with the City to operate Community Resource Centers. Community resource centers provide information, resources, and necessities to customers in the city. Historically, the Milpitas Sports Center has been used as a Community Resource Center during PSPS events and will likely be used during future events. The following policies from the General Plan 2040 Safety Element address climate-change-related impacts to the city's vulnerable populations:

- **Policy SA 6-5:** Ensure that climate impacts and climate adaptation measures aimed at reducing climate risks do not lead to disproportionately adverse effects on vulnerable populations.
- **Policy SA 6-6:** Consider the needs of vulnerable populations and individuals with limited mobility when planning for access to safe and comfortable shelter during extreme heat events or other severe weather events.

**Table 5-5** provides a summary of the vulnerability scores for the potential climate change impacts on vulnerable populations.

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**Table 5-5 Population Vulnerability Scoring**

Vulnerability Description	Vulnerability Score		
	Potential Impact	Adaptive Capacity	Vulnerability
Increased human health risk (i.e., poor air quality, infectious diseases, mental health concerns, limited access to potable water, heat-related illnesses)	High	Medium	4
Lack of electricity during Public Safety Power Shutoffs implemented during times of high wildfire risk	Medium	Low	4
Reduced available water supply from extended drought periods	High	High	3
Increased exposure to flood risk from extreme precipitation and sea-level rise	Medium	Medium	3
Increased exposure of people to landslides	Medium	High	2
Limited ability to prepare for climate events and to respond and evacuate	Medium	High	2
Increased exposure of people to wildfires	Low	High	1

Source: Ascent Environmental 2021.

## Impacts on the City's Transportation System



The public roadway system, including bicycle and pedestrian facilities, in the city is operated and maintained by the City's Public Works Department. One of the major effects of climate change on the city's roadway system is the reduction in the overall lifespan of transportation infrastructure (OPR, CEC, and CNRA 2018a). Increased average temperatures and extreme heat can result in the degradation of pavement and could impact roadway, trail, and bicycle facilities. Increases in flooding-related hazards along

roadways can result in increased erosion of subbase materials underneath roadways and further roadway degradation. This impact can result in secondary impacts on roadway facilities, including disruptions to vehicular access and commerce between cities. Roadway degradation over time can increase the risk to human safety by damaging or blocking evacuation routes and limiting access for emergency responders.

Transit services in the city are operated by the Santa Clara Valley Transportation Authority. The city is also serviced by Bay Area Rapid Transit, which operates a station in the Milpitas Transit Center. The transit systems available in the city also include local bus services, light rail, and

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ride-sharing programs. Transit access, safety, and cost can be impaired by climate change impacts such as extreme heat. Transit stops without adequate sheltering (i.e., bus shelters or street trees) can lead to dangerous exposure to extreme heat with disproportionate impacts on low-income populations who, in general, use transit at higher rates. Additionally, bus and rail transit vehicles can undergo increased stress to maintain proper air conditioning and engine cooling during extreme heat events and risk failure during extreme heat days over 100 °F (Cambridge Systems 2015).

## Adaptive Capacity: Transportation System

The Santa Clara County Public Health Department provides resources for regional and local agencies. These agencies collaborate to effectively prepare and adapt to climate change impacts on the transportation system. The Metropolitan Transportation Commission/Association of Bay Area Governments (MTC/ABAG) and Caltrans have developed plans and programs to identify roadway network vulnerabilities as well as guidance for how to prioritize transportation projects. Project prioritization through Caltrans' Adaptation Decision-Making Assessment Process will help the city's transportation system increase resilience as climate impacts become more frequent and severe over time, for roadways under Caltrans' jurisdiction. MTC/ABAG's Plan Bay Area 2040 provides strategies to incorporate climate adaptation in the design of new projects and improvements of existing infrastructure. The next iteration, Plan Bay Area 2050, will provide even more resiliency strategies to be implemented throughout the Bay Area.

The City's General Plan 2040 Circulation Element contains goals and policies that address the safe and efficient operation, maintenance, and management of the transportation network. The following policies serve to bolster the efficacy of the city's transportation network:

- **Policy CIR 1-3:** Promote interconnectivity of the transportation network in existing and new developments and actively measure the quality of conditions in neighborhoods to better understand what barriers exist in order to support use of and access to the network.
- **Policy CIR 1-7:** Coordinate with neighboring jurisdictions regarding planned developments and transportation improvements that impact communities in both jurisdictions.
- **Policy CIR 6-9:** Maximize efficient maintenance of transportation infrastructure of all modes, such as coordinating roadway paving or striping projects to include maintenance of pedestrian and bicycle infrastructure.

The vulnerability scores for impacts on transportation facilities and infrastructure in the county are provided in **Table 5-6**.

**Table 5-6 Transportation System Vulnerability Scoring**

Vulnerability Description	Vulnerability Score		
	Potential Impact	Adaptive Capacity	Vulnerability
Increased impacts to evacuation routes and emergency access during hazard events	Medium	High	4
Increased risk of damage to roadways from landslides	Medium	Medium	3
Increased risk of damage to roadways from extreme heat events	Low	Medium	2
Increased risk of damage to roadways from flooding or sea-level rise	Low	Medium	2
Increased risk of damage to roadways from wildfires	Low	Medium	2
Increased risk of damage to transit facilities	Low	Medium	2
Increased risk of damage to railways	Low	Medium	2
Increased risk of damage to bicycle paths and trails	Low	Medium	2
Increased stress on transit service and reduced ridership from increased extreme weather events and spread of infectious disease	Low	Medium	2

Source: Ascent Environmental 2021.

### Impacts on the City's Energy Systems

Electrical and natural gas infrastructure within the city is owned and operated by PG&E. Electricity delivered to consumers in the city is generated from a mix of power sources from elsewhere in the region and state, as well as on-site generation of electricity from local public and private facilities. The City is a member of Silicon Valley Clean Energy (SVCE), a local community-choice aggregator, that partners with PG&E and supplies carbon-free electricity to its members. The City supports the development and maintenance of electricity generation and storage at City-owned sites (i.e., on-site solar panels and battery storage at City facilities).

Impacts on electricity resources from climate hazards can include stress and physical damage to the electricity generation, transmission, and distribution system. Extended drought periods may reduce the available surface water supply to generate hydroelectric power. Transmission facilities face increasing climate-related risks as a result of the increased frequency of wildfires, severe wind, and extreme heat events. Extreme heat events result in increased energy demand for cooling in residential and commercial buildings and can add stress to transmission systems, resulting in brownouts and damage to electricity infrastructure. Wildfires, flooding, landslides, and severe wind can cause physical damage to or destruction of transmission facilities. Due to a number of recent large-scale wildfires caused by electricity infrastructure exposed to extreme heat and high winds, utilities have begun to implement PSPS events to avoid wildfire risk. PSPS events can result in communities experiencing no electricity for multiple days and prevent individuals from using prescribed medications and treatments that rely on electricity or

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refrigeration. PSPS events can also result in impacts to commerce and economic losses, particularly for businesses that rely on refrigeration such as grocery stores. Hazards such as landslides, wildfires, and flooding can also affect underground natural gas pipelines, exposing and/or damaging these pipelines. The damage resulting from climate change-related hazards on electricity and natural gas infrastructure can have a greater impact on disadvantaged populations, particularly communities that are low-income or individuals who have limited mobility or lack the financial means to make repairs to their property.



**Workers on Transmission Tower**

Increases in extreme heat and heat waves will have implications for energy demand in residential and nonresidential buildings in the city with a higher energy demand for cooling and a decrease in energy demand for heating, in general. In general, for buildings in the city, temperature increases will result in increased electricity demand for cooling and place increased demand on the electricity grid, particularly during extreme heat days and heat wave events which are projected to increase peak electricity demand for utilities. Currently, during extreme heat days and heat wave

events, electricity utilities and the State's grid operator, California Independent System Operator, initiates "Flex Alerts," requesting customers to conserve energy during certain times of the day to reduce stress on the electricity grid. Some initial research that models future changes in peak load for utilities in California during extreme heat events has demonstrated that peak loads are substantially more sensitive to temperature anomalies, indicating warm-anomalous temperatures (e.g., extreme heat days and heat waves) will have a disproportionate impact on higher-intensity electricity consumption (Kumar et al. 2020). The research also indicates that disregarding the asymmetry in the temperature response of electricity demand will lead to underestimating the climate-sensitive portion of the upper extremes of demand for electricity utilities in California, for short-term (2021-2040) and long-term (2081-2099) time periods included in the study. This will likely lead to an increase in the frequency of brownout and blackouts, in which portions of the electricity grid are disrupted and communities lose power due to an imbalance between power generation and power consumption.

Studies of PG&E's electricity and natural gas infrastructure show that hazards from sea-level rise, flooding, and wildfire are the greatest threats from climate change. As flooding may occur from a storm event, power system infrastructure in the coastal regions may be damaged and could be impacted for several weeks (OPR, CEC, and CNRA 2018a). As flooding becomes more frequent, transmission lines will become more susceptible to corrosion. Though impacts on natural gas infrastructure would be less severe than impacts on electrical facilities because gas pipelines are generally located underground, natural gas infrastructure will require increased maintenance due to climate change-related impacts such as wildfire and flooding (Bruzgul et al. 2018).

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## Adaptive Capacity: Energy System

The city relies on PG&E and SVCE for the generation and distribution of a majority of its electricity and natural gas supply. In the event of an emergency or a climate change-related hazard event, PG&E and the California Independent System Operator issue preventative measures that may reduce stress on energy systems and reduce energy demand. These measures include conservation notifications such as Flex Alerts and operational notifications such as restricted maintenance operations or PSPS events. PG&E has also invested in the implementation of wildfire safety measures, which are included in its 2021 Wildfire Mitigation Plan, which provides updated details on PG&E's comprehensive Community Wildfire Safety Program, incorporates lessons learned from 2020, and outlines additional programs to continue to reduce wildfire risk ignited by electrical infrastructure (PG&E 2021). Based on the 2021 Wildfire Mitigation Plan, PG&E operated over 300 Community Resource Centers in 2020 with plans to expand this number through partnerships with participating counties and cities (PG&E 2021). Additionally, SVCE has partnered with Bay Area-based solar installer Sunrun to install up to roughly 20 megawatts of emissions-free solar and battery backup power to 6,000 households vulnerable to emergency power shutoffs during wildfire seasons.

Additionally, the following policy from the General Plan 2040 Safety Element addresses the city's energy resources:

- **Policy SA 6-3:** Encourage and support private sector investment in climate adaptation through climate-resilient infrastructure such as on-site renewable energy, integrated stormwater management, and water conservation.
- **Policy SA 6-4:** Promote community awareness of climate-resilient actions that can be implemented by homeowners, such as water conservation, on-site water collection, passive solar designs, and alternative energy strategies.

The vulnerability scores for impacts to energy resources are shown in **Table 5-7**.

**Table 5-7 Energy Vulnerability Scoring**

Vulnerability Description	Vulnerability Score		
	Potential Impact	Adaptive Capacity	Vulnerability
Increased demand for electricity generation during extreme heat events	Medium	Low	4
Increased system stress during droughts and extreme heat events	Medium	Low	4
Reduced effectiveness of hydro-electric electricity generation facilities during drought and extreme precipitation events	Low	Low	3
Reduced effectiveness of solar electricity generation facilities due to increased smoke from wildfires	Low	Low	3
Increased system stress and physical damage from flooding, sea-level rise, and landslides	Medium	Medium	3
Risk of physical damage from wildfires	Low	High	1

Source: Ascent Environmental 2021.

# City of Milpitas Climate Action Plan Update

## Impacts on the City's Water Supply

The city's water resources will be affected by climate change due to changes in precipitation, and a slight increase in the occurrence of extreme precipitation events. Extreme precipitation events that occur with more intensity over a short period could cause flooding, limiting access or damage to water facilities. As previously discussed, snowmelt in Northern California is also projected to occur earlier in the year, causing springtime recharge to occur before the warmer and drier summer months when it is most needed. Reduced snowpack also reduces water captured for storage in surface water bodies and aquifers for potable water. As a result, the city and region could experience decreased water supply during the spring and summer months, which are also projected to become drier and warmer as a result of climate change.

Changes in rainfall and snowmelt timing can affect SFPUC and SCVWD's ability to provide adequate and safe drinking water on a reliable basis. While these agencies may be able to rely on groundwater to provide additional supply, which is currently the direction SCVWD is moving, drawing from these sources can substantially lower water tables, resulting in land subsidence. Precipitation variability will also affect the city's local surface and groundwater supply causing the city to rely on other sources such as recycled water resources, which is currently the intent of SCVWD moving into the future.

It is estimated that by 2040, the city's water demand will increase by approximately 28 percent from 2020 levels due to population and economic growth, further emphasizing the need for a sustainable water supply and water supply management (City of Milpitas 2021). Increased episodes of drought and increased water demand could result in water shortages for the region, endangering residents, and ecological systems (e.g., flood control or sensitive habitat, recreational areas).

SFPUC and SCVWD and their member agencies contribute to the region's local water supply, which is composed of surface water, groundwater, and recycled water. Throughout Northern California, and extending from the coast to the Sierra Nevada mountains, surface water reservoirs retain water resources for residents in the region. Currently, groundwater does not supply customers located in the city; however, groundwater resources do supply water to SCVWD, the main water provider for the city. Recycled water in the region has increased over time and provides non-potable water to recreational areas in the city with plans to increase overall recycled water use in the future.

The city's stormwater infrastructure was developed to maintain flood control while directing water northwest to the San Francisco Bay. The system consists of conveyance pipelines known as municipal separate stormwater systems which discharge stormwater and non-stormwater. The



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City identifies the highest priority water quality conditions within each watershed and specific goals, strategies, and schedules to address those priorities, including numeric goals and activity levels, and requirements for water quality monitoring and assessment (City of Milpitas 2016).

Wastewater facilities are also threatened by climate change. Flooding during larger storm events increases the risk of sewage and hazardous and/or toxic materials being released into waterways if wastewater treatment plants are inundated, storage tanks are damaged, or pipelines are damaged. Wastewater treatment facilities in Santa Clara County have already been impacted during large storms that have caused sewage spills. During these flooding-induced spill events, there is an increased risk of contracting water-borne illnesses and fungal infections. While the City does not treat wastewater, it pumps its wastewater through two force mains to the San Jose/Santa Clara Water Pollution Control Plant, also known as the RWF, which is located approximately 0.25-miles directly west of the northwestern boundary of the city. Though the City may not have jurisdiction over operations of the RWF, flooding-related incidences may be widespread and could affect city residents.

## Adaptive Capacity: Water System

The majority of the city's water supply is imported from areas outside of the city. SFPUC imports water from the Hetch Hetchy Reservoir located in Yosemite National Park; SCVWD imports water from the Delta. The City's 2020 UWMP, prepared in coordination with SFPUC and SCVWD, demonstrates a goal of meeting future demand through a combination of implementing water conservation and demand management strategies, and increasing recycled water usage. Additionally, the City's Water Supply Augmentation Study recommends that the City add groundwater as a water resource to meet future demand. The City has also amended its water conservation ordinance that addresses extended periods of drought. In 2015, the city was able to conserve 30 percent more water than the previous year in response to the state's 4-year period drought period from 2012-2016, demonstrating the City's adaptive capacity to reduce water consumption when necessary. The vulnerability scores for impacts on water resources are shown in **Table 5-8**.

**Table 5-8 Water Vulnerability Scoring**

Vulnerability Description	Vulnerability Score		
	Potential Impact	Adaptive Capacity	Vulnerability
Reduction in available water supply	Medium	Medium	3
Increased risk of physical damage to flood control and water conveyance facilities	Medium	High	2
Increased demand for flood control and water conveyance facilities	Medium	High	2
Increased water demand	Medium	High	2
Increased risk of contamination of potable water supply from sea-level rise	Low	Medium	2

Source: Ascent Environmental 2021.

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## Impacts to the City's Emergency Services

On August 5, 2021, the Milpitas City Council approved a full update to the City's Emergency Operations Plan (EOP). The EOP provides an overview of the City's approach to emergency operations. It identifies emergency response policies, describes the response and recovery organization, and assigns specific roles and responsibilities to City departments, agencies, and community partners. The EOP has the flexibility to be used for all emergencies, including climate change-related hazards, and will facilitate response and recovery activities efficiently and effectively.

The EOP is reviewed, updated, republished, and redistributed on a 2-year review, 5-year revision cycle in accordance with the 2016 State Homeland Security Grant Program guidance. The EOP may be modified as a result of post-incident analyses and/or post-exercise reviews and assessments. City staff will coordinate future revisions to ensure that relevant or updated climate-related hazards or risk conditions are included.

Emergency operation facilities are locations that provide essential products and services to the public, particularly during emergency events. Emergency operation facilities can include hospitals or other health care facilities, police and fire stations, and communication facilities. An increase in climate-related hazard event emergencies will place more demand on emergency operation facilities, emergency personnel, related infrastructure, and equipment in the city. As discussed above, the city is anticipated to experience more frequent hazard events including coastal storms, erosion, floods, wildfire impacts, drought, and extreme weather. As temperatures increase and heat waves occur more frequently, the city is likely to experience potential public health impacts. Floods and landslides may threaten transportation routes, emergency services stations, and evacuation routes, which could hinder emergency response times during such events. PSPS events may place pressure on emergency generators, which are used during black-out periods to power police, fire, and the emergency operations center.

Additionally, physical damage to emergency services facilities could occur as a result of climate change-related hazards. Within the city, four fire stations and one police station are located within either the 100- or 500-year flood zones. Schools often serve as community resource centers and evacuation centers during emergencies. Based on the GIS analysis in the OAHMP, 12 schools are located within the Federal Emergency Management Agency floodplain designations. Notification of emergencies and evacuation instructions rely upon functioning communication facilities such as AM/FM antennas, broadband radio transmitters, and television transmitters. Communications facilities within the city may be affected by increases in frequency and severity of flooding events and extreme heat events.

## Adaptive Capacity: Emergency Services

Milpitas OES is responsible for emergency response in disaster situations. Milpitas OES provides alerts and notifications to residents through various communication channels in the event of an emergency and is also responsible for ensuring resources are available and for implementing emergency response and recovery procedures. The City contributed to the development of the OAHMP, which identifies goals, objectives, and potential actions to reduce hazard risks and enhance emergency response capabilities. The City also retains and updates a city-specific Multi-Hazard Mitigation Plan and manages the Community Emergency Response Team.

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program to train residents to protect themselves, family, and neighborhood in the event of an emergency. Additionally, the City keeps the Emergency Operation Center active at all times and provides residents with emergency preparedness resources on its website. Also, Policy SA-62 of the General Plan 2040 directs the City to “ensure that emergency response plans and training programs continue to evolve and are modified to protect residents, infrastructure, and facilities during emergencies and extreme weather events.” The vulnerability scores for impacts to emergency services are shown in **Table 5-9**.

Vulnerability Description	Vulnerability Score		
	Potential Impact	Adaptive Capacity	Vulnerability
Increased exposure of emergency responders to heat-related sickness, smoke inhalation, and infectious disease	High	Medium	4
Increased risk of damage to emergency facilities (e.g., hospitals, cooling centers, telecommunication systems, and evacuation centers)	Medium	Medium	3
Increased demand for emergency response services	Medium	High	2
Increased demand for emergency facilities (e.g., hospitals, cooling centers, telecommunication systems, and evacuation centers)	Medium	High	2

Source: Ascent Environmental 2021.

## Climate Adaptation Strategies

This section includes a comprehensive set of adaptation strategies that are intended to help the City prepare for and become more resilient to the impacts of climate change. The strategies have been developed based on the findings of the vulnerability assessment, discussed above, and based on input from community members, City staff, and elected officials and are designed to complement the existing set of local and regional plans that address natural hazards in the city. Each strategy in this section also includes a corresponding set of measures and associated actions. Each of the measures included here has been given a Climate Resilience Benefit score of 4, 6, or 8 which helps the City prioritize implementation of the measures based on the appropriateness and efficacy of the measure. The measures also include a list of key co-benefits for the city when the measure is implemented. The actions associated with each measure are included in **Chapter 6**.

## Strategy 1. Resilient Communities and Equity and Environmental Justice

The Resilient Communities and Equity and Environmental Justice strategy focuses on ensuring that city residents and businesses can thrive in the face of climate change. The strategy prioritizes the protection of the city's most vulnerable populations, recognizing that past and current social inequities place certain populations at increased risk from the impacts of climate change.

### **Measure 1.1: Increase community resilience to impacts from air pollution.**

This measure and associated actions focus on providing resources and education to city residents to help protect them from the worsening air quality impacts caused by climate change.

Climate Resilience Benefit: 6



Co-Benefits:

### **Measure 1.2: Increase community resilience to respond to and recover from widespread health emergencies.**

This measure and associated actions focus on helping prepare City staff and residents for large public health emergencies that may be caused or exacerbated by climate change such as vector-borne diseases.

Climate Resilience Benefit: 8



Co-Benefits:

### **Measure 1.3: Protect populations vulnerable to extreme heat.**

This measure and associated actions focus on preparing for public health impacts associated with projected increases in the frequency and severity of heat wave events with an emphasis on protecting vulnerable populations.

Climate Resilience Benefit: 8



Co-Benefits:

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## **Measure 1.4: Increase community awareness of climate change.**

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This measure and associated actions focus on conducting outreach to educate the city's residents and businesses about climate change, its projected impacts, and how individuals can become more resilient in the face of climate change.

Climate Resilience Benefit: 6



Co-Benefits:

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## **Measure 1.5: Ensure that climate impacts and climate adaptation measures aimed at reducing climate risks do not lead to disproportionately adverse effects on vulnerable populations.**

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This measure and associated actions are intended to ensure that as the City begins to implement the actions included in the CAP Update, implementation is not resulting in a negative impact (e.g., financial impacts) on historically disadvantaged or climate-vulnerable populations.

Climate Resilience Benefit: 4



Co-Benefits:

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## **Measure 1.6: Improve mobility and ensure basic needs are met for vulnerable populations**

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This measure and associated actions, while not directly addressing a specific climate impact, focus on increasing mobility access and options for vulnerable populations. This will increase the resilience of the city's vulnerable populations during emergency evacuation events as well their ability to access services and resources during emergency events more broadly. The measure also works to ensure that climate-vulnerable populations have their basic needs met and are adequately prepared to protect themselves in emergency events and post-disaster recovery periods.

Climate Resilience Benefit: 6



Co-Benefits:

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**Measure 1.7: Ensure completeness and availability of emergency supplies and resources to all segments of the population, focusing especially on vulnerable populations and individuals.**

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This measure and associated actions ensure that emergency supplies and resources are equitably provided to all city residents as the frequency and severity of climate-related hazards increase in the future.

Climate Resilience Benefit: 8



Co-Benefits:

## Strategy 2. Resilient Transportation Systems and Resilient Energy Resources

The Resilient Transportation Systems and Resilient Energy Resources strategy focuses on ensuring that the city's transportation system and energy system are adequately prepared and upgraded to withstand the impacts of climate change. The strategy focuses on steps the City can take independently to prepare these systems for climate change as well as steps the City can take to collaborate and advocate for changes to systems outside its jurisdictional control.

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**Measure 2.1: Integrate climate change considerations in all transportation agency planning and decision-making processes.**

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This measure and associated actions ensure that the City's future planning efforts take into consideration and plan for the projected impacts of climate change.

Climate Resilience Benefit: 8



Co-Benefits:

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**Measure 2.2: Reduce local flooding impacts to transportation infrastructure.**

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This measure and associated actions focus on increasing the overall resilience of the city's transportation system to projected future changes in the intensity of large storm events.

Climate Resilience Benefit: 6



Co-Benefits:

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**Measure 2.3: Increase the resilience of existing residential and commercial development through energy efficiency upgrades and onsite energy generation and storage.**

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This measure and associated actions focus on decentralizing energy supplies and energy storage through the development of microgrids and battery storage.

Climate Resilience Benefit: 8



Co-Benefits:

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**Measure 2.4: Minimize stress on the electrical grid and increase the resilience of existing residential and commercial development through energy efficiency upgrades and on-site energy generation and storage.**

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This measure and associated actions focus on helping reduce stress on the electricity grid during extreme heat events by reducing overall energy demand from buildings in the city. The measure can also help increase energy independence during PSPS or other utility disruption events (e.g., brownouts, blackouts).

Climate Resilience Benefit: 6



Co-Benefits:

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**Measure 2.5: Protect critical energy and telecommunications infrastructure and systems from climate change.**

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This measure and associated actions focus on advocating for and partnering with utility providers to increase the resiliency of the critical energy and telecommunications infrastructure that support services provided to the city.

Climate Resilience Benefit: 6



Co-Benefits:

## Strategy 3. Reduced Flooding

The Reduced Flooding strategy focuses on helping to reduce the impacts of flooding in the city as the intensity and frequency of large storm events increases throughout the 21st century, prioritizing nature-based solutions for flood management.

### **Measure 3.1: Minimize risks to life and property resulting from flooding and flood-induced hazards.**

This measure and associated actions support the ongoing protection of life and property from flood-related risks and ensure that climate-related changes in precipitation patterns are fully integrated into flood management planning.

Climate Resilience Benefit: 8



Co-Benefits:

### **Measure 3.2: Evaluate proposed development in areas of the city subject to flooding impacts caused by rising sea levels.**

This measure and associated actions ensure that future development in the city considers and implements measures to protect the city from the impacts of sea level rise.

Climate Resilience Benefit: 8



Co-Benefits:

### **Measure 3.3: Maintain up-to-date flood risk and hazard data.**

This measure and associated actions ensure that the City continues to assess and update flood risk and hazard data as the intensity and frequency of large storm events change over the 21st century.

Climate Resilience Benefit: 6



Co-Benefits:

## Strategy 4. Robust Emergency Services and Improved Disaster Recovery

The Robust Emergency Services and Improved Disaster Recovery strategy ensures that emergency services (e.g., Fire Department, Police Department) are adequately resourced for increases in the frequency and intensity of climate-related hazards as well prepared for novel hazards created by climate change. The strategy also ensures that the City is adequately prepared to assist residents and businesses in post-disaster recovery efforts.

### **Measure 4.1: Ensure that emergency services have adequate capacity to address increased demand due to climate change-related impacts.**

This measure and associated actions focus on assessing and adjusting, if necessary, the capacity (e.g., staffing, resources, education, and funding) of the City's emergency services to adequately address the increasing severity of hazards under climate change.

Climate Resilience Benefit: 8



Co-Benefits:

### **Measure 4.2: Develop programs to improve efficiency and equity of disaster recovery.**

This measure and associated actions focus on processes to improve the efficacy and efficiency of disaster recovery as hazards and disaster events become more common while also ensuring disaster recovery is implemented equitably.

Climate Resilience Benefit: 8



Co-Benefits:

## Strategy 5. Reduced Urban Heat Island Effect and Resilient Water Resources

The Reduced Urban Heat Island Effect and Resilient Water Resources strategy focuses on upgrades to the city's built environment to mitigate the urban heat island effect on the city which is projected to worsen under climate change. The strategy also works to ensure water resources provided to the city are resilient to worsening drought scenarios.

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### **Measure 5.1: Reduce urban heat island effect through cool roofs, parking lot shading, landscaping, and urban greening in new and existing private and public development.**

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This measure and associated actions focus on implementing various strategies for new and existing development in the city to mitigate the worsening impacts of the urban heat island effect.

Climate Resilience Benefit: 6



Co-Benefits:

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### **Measure 5.2: Advocate for Drought-Proof Water Supplies including recycled water systems or indirect potable recharge.**

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This measure and associated actions support the City in advocating for drought resiliency for the city's water supply, which is managed and provided by the SFPUC and the SCVWD.

Climate Resilience Benefit: 8



Co-Benefits:

## Strategy 6. Integrated Resilience Planning and Improved Biodiversity and Habitat

The Integrated Resilience Planning and Improved Biodiversity and Habitat strategy is intended to ensure that climate adaptation becomes an integral part of long-range planning at the City and that nature-based solutions are prioritized for addressing climate change.

### **Measure 6.1: Embed climate resiliency and adaptation across planning efforts.**

This measure and associated actions ensure that climate change and future changes in key climate variables are considered and integrated into planning projects and processes at the City.

Climate Resilience Benefit: 8



Co-Benefits:

### **Measure 6.2: Integrate findings of climate vulnerability into all phases of emergency planning.**

This measure and associated actions support the use of the vulnerability assessment finding to inform emergency planning efforts and help the City better anticipate changes in demand for emergency services.

Climate Resilience Benefit: 8



Co-Benefits:

### **Measure 6.3: Prioritize nature-based solutions to improve resilience while promoting biodiversity.**

This measure and associated actions promote the use of nature-based solutions (e.g., habitat conservation) to help the City become more resilient to climate impacts while also achieving the city's natural resource and conservation goals.

Climate Resilience Benefit: 8



Co-Benefits:



# Implementation and Monitoring

This chapter outlines actions that the City of Milpitas (City) will take to implement Climate Action Plan Update (CAP Update) strategies and measures, and it describes the process for assessing and monitoring progress over time to ensure the CAP Update is effective in reducing emissions and improving resilience to climate change. This chapter also discusses the application of the CAP Update for future development projects and provides potential funding resources to support implementation.

## Implementation Strategy

Effective implementation of this CAP Update will require ongoing management and oversight. To gauge progress over time, it will also require updates to the City's greenhouse gas (GHG) emissions inventory and vulnerability assessment. Ensuring that the measures identified in the CAP Update result in emissions reductions and resilience improvements is central to the success of this CAP Update. Achieving these goals will require investments and long-term commitments from the City as well as participation from City staff. The success of the CAP Update implementation will also depend on the participation of residents, businesses, and other stakeholders in the city and region.

To help guide the implementation of CAP Update actions, the City developed a prioritization matrix to evaluate each action considering a variety of criteria. GHG emissions reduction actions and adaptation actions were evaluated in two separate matrices. For GHG emissions reduction actions, these criteria included GHG emissions reduction potential, cost-effectiveness, technological/implementation feasibility, consistency with existing policies or programs, jurisdictional control, timeframe of implementation, and associated co-benefits, to generate a prioritization score. The same criteria were evaluated for adaptation actions, except that climate resilience benefit was scored rather than GHG emissions reduction potential. The criteria that were evaluated for prioritizing each action are described in further detail below. After CAP Update adoption, the prioritization matrix and scores will help City staff determine which actions should be implemented and when, which will contribute to the effectiveness of the CAP Update.

## Prioritization Evaluation Criteria

The following criteria were used to develop a prioritization score for each CAP Update action.

- ▶ **GHG Emissions Reduction Potential** was evaluated quantitatively for each emissions reduction action using the results of the City's GHG emissions reduction quantification analysis, which was conducted in preparation of the CAP Update (see Appendix B for more details). Each action was assigned a score of 4, 6, or 8, which correspond to a small, medium, or high GHG reduction potential. A score of 4 (low) was assigned to actions that would result in a 0 to 2 percent reduction in community emissions in 2030. A score of 6 (medium) was assigned to actions that would reduce emissions by 3 to 5 percent in 2030, and a score of 8 (high) was assigned to actions that would result in at least a 5 percent reduction in community emissions in 2030. It is important to note that the scores associated with this criterion are higher than those used for other criteria; this decision was made to increase the weight (i.e., importance) of each action's GHG reduction potential relative to other criteria in the prioritization process. Lastly, emissions reductions in the quantification analysis were evaluated at the measure level, rather than for each action, to capture the cumulative impact of multiple complementary actions and/or because some measures only include one action. Therefore, the GHG emissions reduction potential score for a measure was applied to each action under that measure.
- ▶ **Climate Resilience Benefit** was evaluated qualitatively, and each action was assigned a score of 4, 6, or 8, which corresponds to a low, medium, or high climate resilience benefit. It is important to note that the scores associated with this criterion are higher than those used for other criteria; this decision was made to increase the weight (i.e., importance) of each action's climate resilience benefit relative to other criteria in the prioritization process. The scoring reflects each action's ability to improve community resilience and reduce overall risk or exposure to climate change impacts based on the City's vulnerability assessment, in conjunction with associated research and established best practices. For example, because extreme heat impacts will continue to pose a high risk to the city, climate adaptation actions that will be effective in increasing resilience to extreme heat received a higher score than actions focused on improving resilience to climate changes effects that pose less risk to the city, such as increased landslides.
- ▶ **Cost-Effectiveness** was evaluated qualitatively, and each action received a score of 0 or 2 for either City cost-effectiveness or residential and business cost-effectiveness, depending on the applicability of the action. Actions that would primarily result in impacts to City budgets were rated for City cost-effectiveness. For example, **Adaptation Action 1.7.5** involves the City conducting outreach and education and therefore was evaluated for City cost-effectiveness. A score for residential and business cost-effectiveness was assigned to actions that would primarily impact residents and/or businesses. **GHG Action TR-2.1.1**, for example, provides incentives for installing EV chargers to residents and business owners, so residential and business-cost effectiveness was evaluated. A score of 0 was assigned where long-term financial benefits would be balanced with implementation costs or where cost-effectiveness was unknown, and a score of 2 was assigned where benefits would outweigh costs.

# City of Milpitas Climate Action Plan Update

- ▶ **Technological/Implementation Feasibility** scoring was determined for each action based on the availability of necessary technology or other resources (e.g., funding) for successful implementation and achievement of the action's intended goal. Actions received a score of 0 or 2. A score of 0 was assigned where technology or resources needed for implementation are on track to be deployed for successful implementation, or where the status of technology or resources are unknown. For example, **GHG Action BE-2.3.1**, which involves developing additional incentives for green building, would require additional funding, so it received a score of 0. Most actions received a score of 2, which was assigned where technology or resources needed for effective action implementation currently exist.
- ▶ **Current Policies or Ordinances** considered whether existing City policies or ordinances that would support the implementation of an action are currently in place. If policies or ordinances would need to be developed to support an action, a score of 0 was assigned. If policies or ordinances that support implementation currently exist, actions received a score of 2. Where City policies or ordinances did not exist, but either other City initiatives (e.g., established programs) or State regulations did exist, actions received a score of 2. For example, **GHG Action CS-1.1.1**, which involves implementing the City's Urban Forestry Management Plan, received a score of 2.
- ▶ **Jurisdictional Control** was rated on a scale of 0 to 2 and represents the City's ability to achieve the overall objective of an action. A score of 0 was assigned to actions where the City would only be able to influence—through encouragement, support, or similar effort—the success of the intended goal. Under **GHG Action BE-2.4.2**, for example, the City would connect building owners to funding resources and financing options, but would not require building owners to implement energy efficiency retrofits and improvements, so this action received a score of 0. When the City could require the desired outcome of an action through regulation and/or enforcement, a score of 1 was assigned. For example, **Adaptation Action 2.5.1** received a score of 1, as it would result in the development of an ordinance requiring all new power and gas lines and transformers to be installed underground, whenever feasible. Actions that involved the City developing a program, creating a partnership, or engaging in a similar initiative also received this score, such as **GHG Action GE-1.1.1**, which involves the City creating a regional partnership to provide a green jobs training program. Lastly, a score of 2 was given to actions where the City would have direct authority over implementation and control the success of the action. Actions associated with City municipal operations and policies received this score, such as **GHG Action CS-3.1.2**, which involves the City reviewing Capital Improvement Program projects to identify opportunities for green infrastructure.
- ▶ **Timeframe of Implementation** evaluated the amount of time that it would take for an action to be implemented and operational. This criterion was scored on a scale of 0 to 2, with the scoring favoring actions that could be implemented quickly. Actions that would take at least six years to implement received a score of 0, while actions that would be operational in three to five years received a score of 1. Actions that could be implemented in one to two years were assigned a score of 2. Actions that involve the City encouraging or supporting initiatives received a score of 2 because of the ease of implementation, while those that would require the City to create and implement a program, develop an ordinance, or install infrastructure received a score of 1.

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- ▶ **Co-benefits** evaluated include benefits to renters, improved equity, air pollution prevention, health and well-being benefits, increased reliability of critical infrastructure and services, strengthened resilience, job development, and resource preservation. To weight the importance of equity improvements, actions that would benefit equity in the city received a score of 2, while a score of 1 was given for all other co-benefits that would result from action implementation (i.e., maximum score of 9). Co-benefits are described in more detail in **Chapter 1**.

## GHG Reduction Prioritization Matrix

Based on the assessment approach described above, the maximum prioritization score for each action was 29. To enable the City to focus on and feasibly implement high-priority actions, a minimum score of 18 was chosen as the threshold for the inclusion of an action in the CAP Update. The 28 actions with prioritization scores equal to or greater than 18 are included in the summarized prioritization matrix below, which presents each action's overall prioritization score, and the City department responsible for implementation, which is based on the criteria above as well as additional considerations such as community values and priorities that may not be reflected elsewhere. The full prioritization matrix with all factor scores can be found in Appendix B. Details regarding monitoring, ongoing engagement, potential funding sources, and GHG emissions thresholds are included in the sections following the matrix.

Measure	Action	Prioritization Score	Implementing Department	Prioritized for Implementation in First 18 months?
<b>BUILDING ENERGY</b>				
<b>STRATEGY BE-1. SHIFT TO CLEAN AND RELIABLE ENERGY</b>				
<b>Measure BE-1.1:</b> Achieve 100 percent carbon-free electricity by 2030 in all existing and new development.	Action BE-1.1.1: Require new development to install on-site renewable energy and storage systems capable of meeting anticipated building energy consumption, or participate in a group-buy solar and storage program, or opt-in to SVCE.	22	BSH	NO
	Action BE-1.1.2: Review zoning regulations for opportunities to simplify and encourage renewable energy systems.	20	BSH/PL	NO
	Action BE-1.1.3: Conduct outreach to residents and business owners to increase awareness of SVCE's carbon-free electricity supply.	18	PW	NO

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Measure	Action	Prioritization Score	Implementing Department	Prioritized for Implementation in First 18 months?
<b>Measure BE-1.3:</b> Strengthen community awareness of energy efficiency, energy conservation, electrification, and clean energy.	Action BE-1.3.1: Work with regional partner agencies and utilities, such as BAAQMD, PG&E, and SVCE, to promote State rebates and other incentives and funding opportunities for renewable energy.	18	PW	YES
	Action BE-1.3.2: Develop and implement a comprehensive energy efficiency, energy conservation, electrification, and clean energy outreach and education campaign to support emissions reductions from building energy use.	18	PW	NO
<b>STRATEGY BE-2. MAXIMIZE BUILDING DECARBONIZATION AND EFFICIENCY</b>				
<b>Measure BE-2.1:</b> Adopt updated "reach" building codes with each building and energy code cycle to accelerate all-electric new development.	Action BE-2.1.1: Adopt an updated reach code for the 2022 code cycle that prohibits the installation of natural gas infrastructure in new development	20	BSH	YES
	Action BE-2.1.2: Include a ban on the installation of fossil fuel-powered backup energy sources in new development by 2030.	18	BSH	NO
<b>Measure BE-2.3:</b> Expand the City's Green Building Program.	Action BE-2.3.1: Develop additional incentives, above and beyond expedited building permit processing, for projects that incorporate sustainable design approaches and/or elements that exceed local, regional, and State requirements.	18	PL/BSH	YES
<b>Measure BE-2.4:</b> Retrofit existing residential and nonresidential buildings and municipal facilities to improve energy efficiency and facilitate fuel switching.	Action BE-2.4.1: Develop a comprehensive energy retrofit program to transition existing residential buildings to all-electric by 2045. Begin program providing education and incentives, then transition to point-of-sale and replace retrofit requirements.	23	PW/BSH	YES
	Action BE-2.4.2: Connect building owners to funding resources and financing options, such as Energy Upgrade California, for energy efficiency retrofits and improvement projects.	18	PW/BSH/ED	NO

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Measure	Action	Prioritization Score	Implementing Department	Prioritized for Implementation in First 18 months?
<b>TRANSPORTATION AND LAND USE</b>				
<b>STRATEGY TR-1. FACILITATE SUSTAINABLE TRANSPORTATION AND LAND USE PLANNING</b>				
<b>Measure TR-1.1:</b> Reduce VMT from new development with SB 743 compliance.	Action TR-1.1.1: Enforce the City's requirements for SB 743, which mandates a 15% reduction in new project-generated VMT.	18	PL	YES
	Action TR-1.1.2: Enforce the City's requirements for SB 743 and continuously update VMT Policy and Implementation Tools to further reduce VMT.	18	PL	YES
<b>Measure TR-1.2:</b> Reduce VMT from existing development.	Action TR-1.2.1: Work with local employers to provide subsidies to employees for using transit or active transportation to commute to work, and encourage flexible work schedules (e.g., 9/80s and 4/10s) as well as tele-commuting.	20	ED/EN	NO
	Action TR-1.2.2: Partner with local businesses to provide discounts or rewards programs to incentivize using transit or active transportation to travel to businesses.	20	ED	NO
<b>Measure TR-1.3:</b> Continue to implement and adopt policies that support high-density, mixed-use, transit-oriented development and housing near jobs.	Action TR-1.3.1: Facilitate the development of complete streets and neighborhoods.	19	PL	NO

# City of Milpitas Climate Action Plan Update

Measure	Action	Prioritization Score	Implementing Department	Prioritized for Implementation in First 18 months?
<b>STRATEGY 2. DECARBONIZE VEHICLES</b>				
<b>Measure TR-2.1:</b> Increase EV charging infrastructure.	Action TR-2.1.1: Work with SVCE and other partners to provide incentives and increase EV charging stations in visible, accessible, shared locations such as mixed-use development or accessible to multi-family renters.	21	PW	YES
	Action TR-2.1.2: With each Title 24 and CALGreen code cycle, adopt updated EV charging station standards for all new development through the City's reach codes that go beyond State requirements. Require at least 50% of parking spaces in new development to be EV-ready/EVSE installed by 2030.	20	BSH	NO
<b>Measure TR-2.2:</b> Increase EV and low-carbon vehicle adoption.	Action TR-2.2.1: Improve awareness of local, regional, and State incentives for low- and zero-emission vehicles and increase EV purchases in Milpitas through events and resource promotion such as through Climate Action Milpitas Dashboard.	18	PW	YES
<b>STRATEGY 3. INCREASE ACTIVE AND PUBLIC TRANSPORTATION USE</b>				
<b>Measure TR-3.1:</b> Enhance and expand transit facilities and infrastructure.	Action TR-3.1.1: Implement the Milpitas OnDemand "hub-and-spoke" micro-transit pilot program, including on-demand shuttle service for first- and last-mile connections to existing transit hubs such as the BART station and VTA light rail stops.	22	PL	YES
	Action TR-3.1.2: Ensure a pedestrian-friendly environment around the BART and light rail transit stations.	19	PL/EN	NO
<b>Measure TR-3.2:</b> Increase transit ridership.	Action TR-3.2.1: Work with transit agencies to provide free or subsidized transit to low-income residents, expanding to all residents by 2030.	21	CMO	NO

# City of Milpitas Climate Action Plan Update

Measure	Action	Prioritization Score	Implementing Department	Prioritized for Implementation in First 18 months?
<b>Measure TR-3.3: Improve active transportation options.</b>	Action TR-3.3.5: Implement the updated Trail, Pedestrian, and Bicycle Master Plan to enhance and expand bicycle and pedestrian infrastructure networks	19	EN	YES
<b>SOLID WASTE</b>				
<b>STRATEGY SW-1. ACHIEVE ZERO WASTE</b>				
<b>Measure SW-1.1: Eliminate the disposal of organic solid waste in landfills.</b>	Action SW-1.1.3: Implement and enforce the requirements of SB 1383 and eliminate disposal of compostable organic materials to landfills.	19	PW	YES
<b>WATER AND WASTEWATER</b>				
<b>STRATEGY WA-1. PROMOTE RESILIENT WATER SUPPLY, WATER USE, AND WATER RESOURCES</b>				
<b>Measure WA-1.2: Reduce water consumption for irrigation and landscaping.</b>	Action WA-1.2.1: Continue to fund and operate the City's Water Conservation Program in conjunction with resources provided by Valley Water and BAWSCA, including the Irrigation Equipment Upgrades Rebate Program, Landscape Conversion Rebate Program, Water Wise Survey Program, and Water Efficient Gardening workshops.	18	PW	YES
<b>CARBON SINKS</b>				
<b>STRATEGY CS-1. RESILIENT INFRASTRUCTURE AND HEALTHY FOREST AND NATURAL SYSTEMS</b>				
<b>Measure CS-1.1: Protect native trees and vegetation and enhance carbon sequestration.</b>	Action CS-1.1.1: Based on the recommendations from the City's Urban Forestry Management Plan, implement a tree planting program to expand the city's urban forest canopy.	18	PW	YES
	Action CS-1.1.2: Develop and implement a street tree planting program for residential neighborhoods.	18	PW	NO

# City of Milpitas Climate Action Plan Update

Measure	Action	Prioritization Score	Implementing Department	Prioritized for Implementation in First 18 months?
<b>Measure CS-3.1: Increase the use of green infrastructure.</b>	Action CS-3.1.1: Develop and implement a green infrastructure program for the installation and maintenance of projects and existing public resources, such as the parks system and other open spaces.	18	EN/PW	NO
<b>CIRCULAR AND GREEN ECONOMY</b>				
<b>STRATEGY GE-1. FOSTER GREEN AND SUSTAINABLE ECONOMIC DEVELOPMENT OPPORTUNITIES</b>				
<b>Measure GE-1.1: Support and attract clean technology businesses and jobs in Milpitas.</b>	Action GE-1.1.1: Partner with local and regional agencies and educational institutions to offer courses/training that prepare students/workers for green jobs, such as the Milpitas Adult School Program, South Bay Consortium for Adult Education, Center for Employment Training in San Jose and PG&E's on-demand energy trainings.	18	ED	YES

Notes: BAAQMD = Bay Area Air Quality Management District; BART = Bay Area Rapid Transit; BAWSCA = Bay Area Water Supply and Conservation Agency; BSH = Building Safety and Housing Department; CALGreen = California Green Building Standards; CMO = City Manager's Office; ED = Economic Development Department; EN = Engineering Department; EV = electric vehicle; FTE = Full-time equivalent; PG&E = Pacific Gas & Electric; PL = Planning Department; PW = Public Works Department; Valley Water= Santa Clara Valley Water District; SVCE = Silicon Valley Clean Energy; VTA = Santa Clara Valley Transportation Authority.

## Municipal Operations Actions

Municipal operations actions were not evaluated using the prioritization matrix. Action development for municipal operations relied heavily on existing and planned policies, programs, and other initiatives, as well as recommendations from previous efforts to identify GHG reduction opportunities. Therefore, the actions presented below only identify the suggested timing of implementation. Timing of implementation was assigned to each action using a scale of immediate, near-term, or mid-term. This rating was determined based on the magnitude of GHG emissions reductions associated with the action, the amount of time and effort required for the action to be operational, and the presence or absence of existing traction or support for each action.

Measure	Action	Timing	Implementing Department	Prioritized for Implementation in First 18 months?
<b>EMPLOYEE COMMUTE</b>				
<b>STRATEGY MEC-1. SUSTAINABLE EMPLOYEE COMMUTES</b>				
<b>Measure MEC-1.1:</b> Reduce employee commute VMT and support low-carbon alternatives.	Action MEC-1.1.1: Provide preferential parking, EV charging, and/or other benefits for City employee carpool and EVs and alternative fuel vehicles at City facilities.	Near-term	PW	NO
	Action MEC-1.1.2: Provide secure bicycle parking, showers, lockers and other amenities at City facilities.	Near-Term	PW	NO
	Action MEC-1.1.3: Expand and improve existing incentives for City employees to choose alternatives to single-occupant auto commuting, such as flexible work schedules, telecommuting, transit incentives and subsidies, and ridesharing and carpooling services and subsidies.	Immediate	CMO/HR	NO

# City of Milpitas Climate Action Plan Update

Measure	Action	Timing	Implementing Department	Prioritized for Implementation in First 18 months?
<b>VEHICLE FLEET</b>				
<b>STRATEGY MVF-1. ZERO- AND LOW-EMISSION FLEET VEHICLES AND EQUIPMENT</b>				
<b>Measure MVF-1.1:</b>  Convert the City's fleet vehicles and equipment to all-electric or alternative fuels, such as renewable diesel.	Action MVF-1.1.1: Install EV charging and alternative fuel stations at appropriate sites throughout the city, including the Senior Center, Sports Center, City Hall, and Public Works, to service the fleet's alternative fuel vehicles.	Mid-term	PW	YES
	Action MVF-1.1.2: Where practical, utilize bicycles and low- or zero-emissions vehicles for City employees traveling between facilities and for park maintenance and operations (e.g., electric golf carts).	Immediate	PW	NO
	Action MVF-1.1.3: Update the City's Green Fleet Policy to convert the City's non-specialized fleet to all electric and identify alternative fuel options for other vehicles and equipment.	Mid-term	PW	YES
<b>BUILDINGS AND PUBLIC LIGHTING</b>				
<b>STRATEGY MBL-1. CLEAN ENERGY</b>				
<b>Measure MBL-1.1:</b>  Continue to use SVCE-supplied 100 percent renewable electricity.	Action MBL-1.1.1: Continue to participate in SVCE whereby City-owned facilities, parks, and streetlights will be supplied by renewable electricity.	Immediate	PW	NO
<b>Measure MBL-1.2:</b>  Transition to 100 percent clean energy for municipal operations.	Action MBL-1.2.1: Implement solar photovoltaic installations at the Senior Center; Community Center; Sports Center. Pursue funding to expand to Public Works Administration Building/Corp Yard and Police Department, and other City facilities such as fire stations. .	Immediate to Mid-term	PW	YES

# City of Milpitas Climate Action Plan Update

Measure	Action	Timing	Implementing Department	Prioritized for Implementation in First 18 months?
	Action MBL-1.2.2: Install battery electric storage microgrid systems at Senior Center and Community Center. Pursue funding to expand to Public Works Administration Building/Corp Yard and Police Department, and other City facilities such as fire stations. .	Immediate to Mid-term	PW	YES
<b>STRATEGY MBL-2. ENERGY EFFICIENCY AND CONSERVATION</b>				
<b>Measure MBL-2.1:</b> Reduce lighting-related energy consumption.	Action MBL-2.1.1: Retrofit all municipal facility lighting with LEDs (or other high-efficacy lighting where LEDs are infeasible) by 2025.	Near-term	PW	NO
	Action MBL-2.1.2: Require all new municipal facility lighting to be LEDs (or other high-efficacy lighting where LEDs are infeasible).	Immediate	PW	NO
	Action MBL-2.1.4: Retrofit all City-owned streetlights to LEDs.	Near-term	PW	NO
	Action MBL-2.1.5: Retrofit lighting at City sports facilities and parks with LEDs.	Near-term	PW	NO
<b>Measure MBL-2.2:</b> Increase energy efficiency.	Action MBL-2.2.2: Replace outdated electricity transformers with new, high-efficiency models at the Sports Center, Police Department, Public Works, and City Hall.	Mid-term	PW	NO
	Action MBL-2.2.3: Replace current Energy Management Systems at municipal buildings with Automated Logic building management/automation systems.	Near-term	PW	NO
	Action MBL-2.2.4: Replace outdated HVAC equipment at municipal facilities.	Mid-Term	PW	NO

# City of Milpitas Climate Action Plan Update

Measure	Action	Timing	Implementing Department	Prioritized for Implementation in First 18 months?
<b>Measure MBL-2.3: Implement conservation best practices to reduce energy use.</b>	Action MBL-2.3.1: Develop and enforce energy conservation guidelines for municipal employees to implement at facilities and in day-to-day operations.	Near-term	PW	NO
<b>STRATEGY MBL-3. ELECTRIFICATION</b>				
<b>Measure MBL-3.1: Transition municipal buildings and facilities to be all-electric.</b>	Action MBL-3.1.1: Require new municipal development to be all-electric by 2030.	Mid-term	PW	NO
	Action MBL-3.1.2: Inventory and develop strategy to retrofit existing municipal buildings and facilities to be all-electric by 2045.	Mid-term	PW	YES
	Action MBL-3.1.3: Eliminate fossil-fuel powered backup generator usage by 2040 and replace with zero-emission alternatives to ensure energy resilience at municipal facilities.	Mid-term	PW	NO
<b>SOLID WASTE</b>				
<b>STRATEGY MSW-1. ZERO WASTE</b>				
<b>Measure MSW-1.1: Increase waste diversion and achieve zero waste by 2030.</b>	Action MSW-1.1.1: Increase the amount of recycling and organics diversion/composting at City facilities to achieve a 95 percent diversion rate by 2030.	Near-term	PW	NO
	Action MSW-1.1.2: Require 75 percent of construction and demolition debris to be recycled and reused from municipal projects by 2030.	Mid-term	PW	NO
	Action MSW-1.1.3: Require that contractors use best management practices to maximize diversion of waste from the landfill by including a provision in requests for services and City agreements.	Immediate	PL	NO

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Measure	Action	Timing	Implementing Department	Prioritized for Implementation in First 18 months?
<b>STRATEGY MSW-2. RESPONSIBLE CONSUMPTION</b>				
<b>Measure MSW-2.1:</b> Implement an environmentally preferable purchasing policy.	Action MSW-2.1.1: Use resource-efficient landscaping techniques in new or renovated medians and parks.	Immediate	PW	YES
	Action MSW-2.1.2: Continue to increase the percentage of recycled content in purchases made through City purchasing policies and other efforts, such as 100 percent recycled content paper, other office supplies, and transportation supplies.	Near-term	FD	NO
	Action MSW-2.1.3: Enhance and expand waste reduction policies and programs for City facilities, such as the environmentally preferable purchasing policy.	Near-term	ED	NO
<b>WATER</b>				
<b>STRATEGY MWA-1. WATER EFFICIENCY AND CONSERVATION</b>				
<b>Measure MWA-1.1:</b> Reduce municipal water consumption.	Action MWA-1.1.1: Implement the water fixture and water meter upgrades	Near-term	PW	YES
	Action MWA-1.1.2: Develop and implement a "water neutrality program" that requires new municipal development not increase the City's total municipal water demand.	Mid-term	PW	NO
	Action MWA-1.1.3: Ensure that all of the City's irrigation systems in parks and other spaces are controlled by computer systems that tie watering cycles to soil moisture.	Near-Term	PW	NO

Notes: CMO = City Manager's Office; ED = Economic Development Department; EV = electric vehicle; FD = Finance Department; FTE = Full-time equivalent; HVAC = heating, ventilation, and air conditioning; LED = light-emitting diode; PL = Planning Department; PW = Public Works Department

## Adaptation Prioritization Matrix

Based on the assessment approach described above, the maximum prioritization score for each adaptation action was 29. To enable the City to focus on and feasibly implement high-priority actions, a minimum score of 18 was chosen as the threshold for the inclusion of an action in the CAP Update. The 23 actions with prioritization scores equal to or greater than 18 are included in the summarized prioritization matrix below, which presents each action's overall prioritization score, the City department responsible for implementation, and the need for additional staffing in FTE, which is based on the criteria above as well as additional considerations such as community values and priorities that may not be reflected elsewhere. Many of the adaptation actions in the CAP Update are consistent with other City and regional planning documents including the General Plan 2040, the 2020 Local Hazard Mitigation Plan Update, the 2013 CAP, and Silicon Valley 2.0.

Measure	Action	Prioritization Score	Implementing Department
<b>STRATEGY 1: RESILIENT COMMUNITIES, EQUITY, AND ENVIRONMENTAL JUSTICE</b>			
<b>Measure 1.7: Ensure that climate impacts and climate adaptation measures aimed at reducing climate risks do not lead to disproportionately adverse effects on vulnerable populations.</b>	Action 1.7.3: Support health care facilities and services that assist underserved populations, including minorities, disabled persons, and the homeless community.	18	CMO, RCS, OEM
	Action 1.7.5: Continue to promote public safety through public education programs, and ensure programs are available and accessible to all segments of the community.	19	CMO, RCS, OEM
<b>STRATEGY 2: RESILIENT TRANSPORTATION SYSTEM AND RESILIENT ENERGY RESOURCES</b>			
<b>Measure 2.1: Integrate climate change considerations in all transportation planning and decision-making processes.</b>	Action 2.1.1: Update maintenance protocols to incorporate projected climate change effects and evaluate the potential for increased frequency or need to maintain transportation infrastructure, specifically from extreme heat and increased frequency of flooding events.	18	EN, PL

# City of Milpitas Climate Action Plan Update

Measure	Action	Prioritization Score	Implementing Department
<b>STRATEGY 3: REDUCED FLOODING</b>			
<b>Measure 3.1: Minimize risks to life and property resulting from flooding and flood induced hazards.</b>	Action 3.1.2: Continue to maintain good standing and compliance under the National Flood Insurance Program (NFIP). This will be accomplished through the implementation of floodplain management programs that will, at a minimum, meet the requirements of NFIP: <ul style="list-style-type: none"> <li>• Enforcement of the flood damage prevention ordinance.</li> <li>• Participate in the floodplain identification and mapping updates.</li> <li>• Provide public assistance/information on floodplain requirements and impacts.</li> </ul>	20	EN
	Action 3.1.3: Evaluate and consider increasing the design criteria for current and future flood protection projects from 100-year flood events to higher impact flood events.	19	PW
	Action 3.1.4: Evaluate the need to increase pump station capacity and provide protection for pump stations.	18	PW
<b>Measure 3.2: Evaluate proposed development in areas of the City subject to flooding impacts caused by rising sea levels.</b>	Action 3.2.1: Require evaluation of projected inundation for development projects near San Francisco Bay or at flooding risk from local waterways which discharge to San Francisco Bay.	19	PW
<b>STRATEGY 4: ROBUST EMERGENCY SERVICES AND IMPROVED DISASTER RECOVERY</b>			
<b>Measure 4.1: Ensure that emergency services have adequate capacity to address increased demand due to climate change-related impacts.</b>	Action 4.1.3: Establish resilience hub locations in neighborhoods throughout the community, equipped with backup power and disaster assistance and supplies.	18	OEM/PW/RCS
	Action 4.1.5: Continue to maintain the City's Emergency Operations Center and conduct regular staff training exercises to ensure that all City staff members, in addition to emergency responders, are adequately trained to fulfill their duties in the event of an emergency.	18	OEM

# City of Milpitas Climate Action Plan Update

Measure	Action	Prioritization Score	Implementing Department
	<b>Action 4.1.7:</b> Clearly communicate to the public the City's plans, procedures, and responsibilities in the event of a disaster or emergency. Communications and information made available to the public shall be provided in multiple languages to ensure the greatest number of community members have access to this information.	19	OEM, CMO
	<b>Action 4.1.9:</b> Develop Disaster Documentation Program to include tracking disasters affecting Milpitas and tracking via photos damage incurred during and after disaster events. This data can be used for tracking and trending, and ultimately mitigation planning.	19	OEM
<b>STRATEGY TR-5: REDUCED URBAN HEAT ISLAND EFFECT AND RESILIENT WATER RESOURCES</b>			
<b>Measure 5.1:</b> Reduce urban heat island effect through cool roofs, parking lot shading, landscaping, and urban greening in new and existing private and public development.	<b>Action 5.1.1:</b> Amend the Zoning Code to create tree planting standards for new and renovated development, to require the planting of two trees in single-family development in the front, side, or rear yard as feasible, and to create lineal landscaping standards for commercial development that identify a minimum number of tree plantings based on lineal frontage length.	18	PL
	<b>Action 5.1.2:</b> Encourage the inclusion of additional shade trees, vegetated stormwater treatment and landscaping to reduce the "heat island effect" in development projects.	20	PL/EN
	<b>Action 5.1.5:</b> Reduce heat gain from surface parking lots in new development for a minimum of 50 percent of the site's hardscape. Develop standards to provide shade from the existing tree canopy or from appropriately selected new trees that complement site characteristics and maximize drought tolerance. Where feasible, use open-grid pavement systems (at least 50 percent pervious, which would also satisfy the stormwater Low Impact Development requirement).	18	PL
<b>STRATEGY 6: INTEGRATED RESILIENC PLANNING AND IMPROVED BIODIVERISTY AND HABITAT</b>			
<b>Measure 6.1:</b> Embed climate resiliency and adaptation across planning efforts.	<b>Action 6.1.1:</b> Integrate climate resiliency throughout long-term planning and current development projects.	21	PL
	<b>Action 6.1.2:</b> Participate in regional climate adaptation planning efforts.	20	PW

# City of Milpitas Climate Action Plan Update

Measure	Action	Prioritization Score	Implementing Department
<b>Measure 6.2: Integrate findings of climate vulnerability into all phases of emergency planning.</b>	<b>Action 6.2.1:</b> Ensure that emergency response plans and training programs continue to evolve and are modified to incorporate future climate projections in order to protect residents, infrastructure, and facilities during emergencies and extreme weather events.	20	OEM
<b>Measure 6.3: Prioritize nature-based solutions to improve resilience while promoting biodiversity.</b>	<b>Action 6.3.1:</b> Continue the City's Tree Maintenance Program.	20	PW
	<b>Action 6.3.4:</b> Conserve existing native trees and vegetation where possible and integrate regionally native trees and plant species into development and infrastructure projects where appropriate.	20	PW
	<b>Action 6.3.5:</b> Work with Valley Water to restrict future fencing, piping and channelization of creeks when flood control and public safety can be achieved through measures that preserve the natural environmental and habitat of riparian corridors; in addition, evaluate opportunities to revert some existing concrete-lined channels to more natural alternatives such as levees.	18	EN, PW
	<b>Action 6.3.6:</b> Collaborate with Valley Water to support the priorities and projects of the Safe, Clean Water and Natural Flood Protection Program. Pursue grant funding opportunities from the District to provide funding for water conservation, habitat restoration, and open space projects that increase community resiliency, while improving water quality and increasing flood safety throughout the community.	19	EN, PW
	<b>Action 6.3.7:</b> Continue to collaborate with Valley Water and pursue grant funding from the district to support the priorities and projects of the Safe, Clean Water and Natural Flood Protection Program.	19	EN, PW
	<b>Action 6.3.8:</b> Encourage and accommodate multipurpose flood control projects that incorporate recreation, education, resource conservation, preservation of natural riparian habitat, and the scenic value of drainages, creeks, and detention ponds.	18	EN

Notes: CMO = City Manager's Office; ED = Economic Development Department; EN = Engineering Department; EV = electric vehicle; FTE = Full-time equivalent; OEM = Office of Emergency Management; PL = Planning Department; PW = Public Works Department; RCS = Recreation and Community Services Department.

## California Environmental Quality Act and CAP Update

Implementation of the CAP Update will require that new development is constructed with more sustainable and low-carbon features than existing development. New development projects that are consistent with the growth projections and applicable GHG reduction measures in the CAP Update are eligible for California Environmental Quality Act (CEQA) streamlining, per the provisions of State CEQA Guidelines Section 15183.5. Under these provisions, a project that is subject to discretionary review and is consistent with the City's General Plan 2040 growth projections can show consistency with applicable GHG reduction measures in the CAP Update, and the level of analysis for the project required under CEQA can be streamlined. Furthermore, a project's incremental contribution to cumulative GHG emissions may be determined not to be cumulatively considerable in such cases.

The "qualified" CAP Update will allow project-specific environmental documents, if eligible, to tier from and/or incorporate by reference the CAP Update's programmatic review of GHG impacts in their cumulative impact analyses. The CAP Update meets the requirements under Section 15183.5 of the State CEQA Guidelines as a qualified plan for the reduction of GHG emissions for use in cumulative impact analysis pertaining to new development projects. Details on how projects can demonstrate consistency with the CAP Update are provided in Appendix D, the guidelines and consistency review checklist.

The consistency review checklist is the mechanism that is used to demonstrate consistency with the CAP Update and contains GHG reduction measures applicable to development projects that are required to be implemented on a project-by-project basis to ensure that the specified emissions targets identified in the CAP Update are achieved. New development projects will need to incorporate all applicable CAP Update measures to demonstrate consistency with the CAP Update. These measures will be enforced as conditions of approval for ensuring that compliance can be confirmed before the project can be implemented.

## Monitoring and Updates

The City will begin implementing CAP Update measures and actions upon adoption, and data tracking will begin in the year following. As measures are implemented, the effects on emissions trends and climate resilience in the city will necessitate CAP Update maintenance and updates to ensure relevancy and effectiveness. Therefore, City staff will need to evaluate and monitor CAP Update performance over time and alter or amend the plan if it is not achieving the desired outcomes. This will include conducting periodic GHG emissions inventories and vulnerability assessment updates, as well as analyzing individual action performance.

City staff will evaluate the performance of each GHG reduction action that has been implemented. This entails monitoring the level of community participation, costs, benefits, effectiveness, and barriers to implementation, as well as actual reductions in activities that result in GHG emissions. In addition to considering these factors, assessing the performance of CAP Update adaptation actions will be informed by resilience-related improvements in the community. By evaluating whether the implementation of an action is on track to achieve its objective, the City can identify successful actions and reevaluate or replace underperforming measures.

# City of Milpitas Climate Action Plan Update

City staff will prepare a monitoring report annually and a GHG emissions inventory and vulnerability assessment update every two to three years. This report will provide updates on CAP Update progress, including the status of actions implemented to achieve GHG reductions and improve resilience as well as other important milestones in the CAP Update implementation process. As technologies and markets change and the City implements the actions in the CAP Update, these reports will be used to track progress and identify actions that need to be improved, adjusted, or removed. The report will also be used for periodic presentations to the City Council and Energy and Environmental Sustainability Commission about implementation progress on actions and overall progress towards CAP Update objectives. The report would also serve to provide transparency and promote engagement with the public for CAP Update implementation. The report will be derived from the online dashboard that the City has developed and monitoring and progress updates will be available through the tracking metrics included on the dashboard.

Finally, the City will prepare an update to the plan every five years, beginning in 2026. Updates would reflect the findings and recommendations of the monitoring reports and inventory updates. Future updates are necessary to account for any new State or federal legislation that may affect the CAP Update, and to focus on GHG reduction measures and actions that may have been difficult to implement previously due to a lack of available technologies or high upfront implementation costs.

## Ongoing Engagement

Continued engagement with and active participation by the community is critical for successful implementation of the CAP Update. As the City implements and monitors CAP Update measures, involvement with residents and businesses, community organizations, developers, property owners, and other local, regional, and State agencies will ultimately guide the City's measure implementation and promote achievement of CAP Update objectives. While a handful of mitigation strategies will be led solely by the City, many measures will require partnerships and collaboration.

Effective and long-term climate action and resilience building in the community depends on efforts that continue to change the way individuals interact with the environment. Numerous measures require participation from residents and visitors to fully implement, and the City is committed to continuing its outreach efforts through CAP Update implementation, monitoring, and future plan updates. Many of the measures in **Chapter 3** and **Chapter 4** are focused on increasing community awareness and participation in existing programs and connecting the community with new information, tools, funding, or resources.

Vulnerable populations typically experience disproportionate impacts of climate change relative to the rest of the community. Following CAP Update adoption, addressing some of these climate inequities in the form of more prominent engagement with vulnerable communities will be of utmost priority. The City is committed to overcoming the barriers of engagement with frontline communities, such as lack of access to technology and language barriers, to ensure a more equitable implementation process.

# City of Milpitas Climate Action Plan Update

In addition, the City is maintaining a CAP Update Dashboard which features an online way for residents and businesses to continue to engage with the CAP Update, monitor progress by the City, and provide a direct line of communication between City staff and residents and businesses. As part of this CAP Update, the City is preparing an education toolkit which provides additional resources for encouraging more sustainable practices in homes and businesses.

## Funding Sources

The City will incur costs to implement some of the measures included in the CAP Update. These include initial start-up, ongoing administration, staffing, and enforcement costs. While some measures will only require funding from the City and other public entities, others would result in costs impacts for businesses, developers, and residents. However, implementation of CAP Update measures will result in substantial cost-savings for the City, residents, and business owners in the long term. The City will be proactive in seeking cost-effective implementation and strategic funding opportunities and developing partnerships to lessen the burden of implementation costs.

Capital improvement, investment, and increased operation and maintenance costs will be required for successful CAP Update implementation. Funding options are available from a variety of sources, including the City funds, local utilities, and regional and State agencies. The City will continuously monitor private and public funding sources for new grant and rebate opportunities. A preliminary summary of available funding and financing options is presented in **Table 6-1**.

The funding sources and programs listed below are subject to change. Aside from seeking the listed funding sources, the City should continue to search for new funding sources through the State's [Climate Change Funding Wizard](#) website, which provides the most up-to-date information on funding opportunities for projects related to climate change mitigation and adaptation.

**Table 6-1    Funding Opportunities for Implementation**

<b>Residential and Nonresidential Energy</b>	
PG&E and SVCE Rebates and Incentives Program	PG&E and SVCE, the two main energy providers in the county, offer a variety of energy efficiency programs such as free energy audits designed to help residential and nonresidential customers save energy and money.
Energy Upgrade CA	Energy Upgrade California is a statewide initiative to improve energy efficiency, use renewable energy resources, and reduce demand on the electrical grid through incentives available for residents and businesses.
California Energy Commission 1 Percent Interest Rate Loans	The California Energy Commission offers 1 percent loans for local jurisdictions to conduct projects with proven energy savings at municipal facilities.

**Table 6-1 Funding Opportunities for Implementation**

<b>Residential and Nonresidential Energy</b>	
<b>California Lending for Energy and Environmental Needs Center</b>	This funding source, as a program of California Infrastructure and Economic Development Bank, provides direct public financing to municipalities, universities, schools, and hospitals to help meet the State's goals for GHG reductions, water conservation, and environmental preservation.
<b>GRID Alternatives</b>	GRID Alternatives is a nonprofit organization that provides no-cost solar installations to low-income residents and provides assistance for communities in developing multifamily and community-scale solar installations. The organization also provides hands-on job training for volunteers interested in employment in the solar industry.
<b>Low-Income Weatherization Program</b>	Administered by the California Department of Community Services and Development, the Low-Income Weatherization Program provides low-income households with solar photovoltaic (PV) systems and energy efficiency upgrades at no cost to residents. The program is designed with the primary goal of reducing GHG emissions by saving energy and generating clean renewable energy while reducing energy costs for low-income single-family households and multi-family affordable housing.
<b>Transportation and Land Use</b>	
<b>Federal Infrastructure Investment and Jobs Act</b>	The U.S. Department of Transportation announced the availability of nearly \$3 billion in competitive grant funding for surface transportation projects that were included in the infrastructure law. The grants can fund projects too large or complex for traditional funding programs like multijurisdictional and multimodal projects. The grants can also fund freight infrastructure.
<b>National Electric Vehicle Infrastructure Program</b>	The U.S. Department of Transportation and U.S. Department of Energy unveiled a new National Electric Vehicle Infrastructure formula program that was included in the Infrastructure Investment and Jobs Act. The program includes \$4.6 billion in grants to fund EV infrastructure.
<b>RAISE Grants</b>	The U.S. Department of Transportation is offering \$1.5 billion in grant funding through the Rebuilding American Infrastructure with Sustainability and Equity discretionary grant program. The program uses a merit-based process to select projects that will build and repair critical pieces of freight and passenger transportation networks.
<b>Caltrans Active Transportation Planning Program</b>	This program provides competitive planning grants for jurisdictions working on planning projects to increase the proportion of trips accomplished by biking and walking and reduce community-wide vehicle miles traveled.
<b>Caltrans Transportation Planning Grant Program</b>	The Transportation Planning Grant Program provides competitive planning grants to help local jurisdictions in a variety of transportation planning efforts including development and implementation of regional transportation plans. The program also helps address multimodal transportation deficiencies with a focus on transit and support planning actions that advance climate adaptation efforts for local transportation systems.

# City of Milpitas Climate Action Plan Update

**Table 6-1 Funding Opportunities for Implementation**

<b>Transportation and Land Use</b>	
<b>California Clean Vehicle Rebate Project</b>	This CARB program provides rebates of up to \$7,000 for the purchase or lease of a new, eligible zero-emission or plug-in hybrid light-duty vehicle.
<b>PG&amp;E California Clean Fuel Reward Program and Empower EV Program</b>	Through PG&E's participation in the California Clean Fuel Reward Program, customers can receive an upfront incentive worth up to \$1,500 on new EV purchases or leases. PG&E also offers incentives of up to \$2,500 per income-eligible single-family household to help cover the cost of purchasing and installing EV charging equipment through the Empower EV Program.
<b>Transportation and Land Use</b>	
<b>Affordable Housing and Sustainable Communities Program</b>	This program, administered by the California Department of Housing and Community Development, funds land use, housing, transportation, and land preservation projects that support infill and compact development and reduce GHG emissions. Funds are available in the form of loans and/or grants in two kinds of project areas: Transit-Oriented Development Project Areas and Integrated Connectivity Project Areas.
<b>SB 2 Planning Grant Program</b>	This planning grant program provides financial and technical assistance to local governments to update planning documents and zoning ordinances, including general plans, community plans, specific plans, sustainable communities strategies, and local coastal programs, to streamline housing production. The program does not use a competitive process to award funds. All localities that meet the eligibility requirements outlined in the grant application will be funded.
<b>Strategic Growth Council Affordable Housing and Sustainable Communities Program</b>	This program makes it easier for Californians to drive less by making sure housing, jobs, and key destinations are accessible by walking, biking, and transit. Program funding can be used for affordable housing development, sustainable transportation infrastructure and related amenities that reduce vehicle miles traveled, and programs to encourage an increase in modes of active transportation.
<b>Urban Greening Program</b>	Urban Greening Program will fund projects that reduce greenhouse gases by sequestering carbon, decreasing energy consumption, and reducing vehicle miles traveled, while also transforming the built environment into places that are more sustainable, enjoyable, and effective in creating healthy and vibrant communities. These projects will establish and enhance parks and open space, using natural solutions to improve air and water quality, reduce energy consumption, and create more walkable and bike-able trails.

# City of Milpitas Climate Action Plan Update

Table 6-1 Funding Opportunities for Implementation	
<b>Transportation and Land Use</b>	
<b>Volkswagen (VW) Environmental Mitigation Trust</b>	The VW Environmental Mitigation Trust provides about \$423 million for California to mitigate the excess nitrogen oxide emissions caused by VW's use of illegal emissions testing defeat devices in certain VW diesel vehicles. The trust provides funding opportunities for specified eligible actions that are focused mostly on "scrap and replace" projects for the heavy-duty sector, including on-road freight trucks, transit and shuttle buses, school buses, forklifts and port cargo handling equipment, commercial marine vessels, and freight switcher locomotives.
<b>Solid Waste</b>	
<b>CalRecycle Food Waste Prevention and Rescue Grant Program</b>	The purpose of this competitive grant program is to reduce overall GHG emissions by establishing new or expanding existing food waste prevention projects (source reduction or food rescue for people) in California to reduce the amount of food being disposed of in landfills.
<b>CalRecycle Local Enforcement Agency Grant Program</b>	CalRecycle administers a non-competitive grant program to assist local enforcement agencies with their solid waste facilities permit and inspection program.
<b>General Funding and Staff Capacity</b>	
<b>CivicSpark Program</b>	The CivicSpark Program supports sustainability-focused research, planning, and implementation projects throughout California by providing public agencies and other organizations with high-quality capacity-building support. This 11-month AmeriCorps program employs highly motivated emerging sustainability professionals.
<b>General Funding and Staff Capacity</b>	
<b>California Climate Investments</b>	California Climate Investments is a statewide initiative that provides funds from the state's cap-and-trade program for projects and programs that work to reduce GHG emissions in the state. Funds from California Climate Investments can go to support a variety of projects, including affordable housing, renewable energy, public transportation, zero-emission vehicles, environmental restoration, sustainable agriculture, and recycling. Numerous state programs already itemized above are funded by California Climate Investments; however, the program continues to evolve and is updated by the state periodically to include new or modified programs.
<b>Local Early Action Planning (LEAP) Grants</b>	LEAP provides one-time grant funding to cities and counties to update their planning documents and implement process improvements that will facilitate the acceleration of housing production and help local governments prepare for their 6th cycle Regional Housing Needs Assessment, much like the SB 2 Planning Grants.

<b>Table 6-1    Funding Opportunities for Implementation</b>	
<b>General Funding and Staff Capacity</b>	
<b>Regional Early Action Planning (REAP)</b>	<p>REAP allows councils of governments and other regional entities to collaborate on projects that have a broader regional impact on housing. Grant funding is intended to help regional entities and governments facilitate local housing production that will assist local governments in meeting their Regional Housing Need Allocation.</p>
<b>Sustainable Transportation Equity Project (STEP)</b>	<p>STEP is a new transportation equity pilot that aims to address community residents' transportation needs, increase access to key destinations, and reduce greenhouse gas emissions by funding planning, clean transportation, and supporting projects.</p> <p>STEP's overarching purpose is to increase transportation equity in disadvantaged and low-income communities throughout California via two types of grants: Planning and Capacity Building Grants and Implementation Grants. Within these two grant types, CARB currently has up to \$22 million available.</p>

Source: Compiled by Ascent Environmental in 2021.

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## Chapter 6

There are no references used in this chapter.



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