

6.0 Climate

Introduction

The Climate Element ensures that Washougal can respond to climate change in a way that supports long-term resilience, equity, and sustainability. Policies in this element inform the management of natural systems, community health and well-being, and essential energy, transportation, and waste systems.

Long-term climate planning enables Washougal to protect public health, critical infrastructure, ecosystems, and economic vitality while centering environmental justice. It also reduces long-term costs by mitigating the impact of climate-driven disasters and increasing efficiency in public and private systems.

As part of development of the Climate Element, the City conducted several analyses to understand key climate hazards and vulnerabilities facing Washougal and to understand sources of greenhouse gas (GHG) emissions locally, both now and into the future. The policies in this Climate Element address the City's most pressing vulnerabilities, prioritize frontline communities, and chart a clear path toward reducing emissions in key sectors.

Regulatory Framework

Growth Management Act

In 2023, the Washington State Legislature passed House Bill 1181, amending the Growth Management Act (GMA) to require that local governments integrate climate change into their comprehensive plans. In accordance with the GMA, the Climate Element includes two sub-elements:

The **Resilience Sub-Element**, required for all fully planning jurisdictions, including Washougal, identifies local climate hazards such as flooding, wildfires, and extreme heat, and outlines strategies to prepare for, respond to, and recover from these risks. Following the Resilience Sub-Element's requirements, the goals and policies in the Climate Element:

- Address natural hazards created or aggravated by climate change.
- Identify, protect, and enhance natural areas to foster climate resilience, and preserve areas of vital habitat for safe species migration.
- Identify, protect, and enhance community resilience to climate impacts, including social, economic, and built-environment factors, which supports adaptation to climate impacts consistent with environmental justice.

The **GHG Emissions Reduction Sub-Element**, required for cities over 6,000 in population within Washington's 11 most populous counties, including Washougal, establishes goals and policies to

reduce GHG emissions and vehicle miles traveled (VMT). These city efforts will contribute to the state's target of a 95% reduction in GHG emissions by 2050. Aligning with the GHG Emissions Reduction Sub-Element requirements, the goals and policies in the Climate Element:

- Result in reductions in overall GHG emissions generated by transportation and land use within the jurisdiction without increasing emissions elsewhere in Washington.
- Result in reductions in per capita vehicle miles traveled within the jurisdiction without increasing GHG emissions elsewhere in Washington.
- Prioritize reductions that benefit overburdened communities to maximize the co-benefits of reduced air pollution and environmental justice.

Relationship to Other Elements

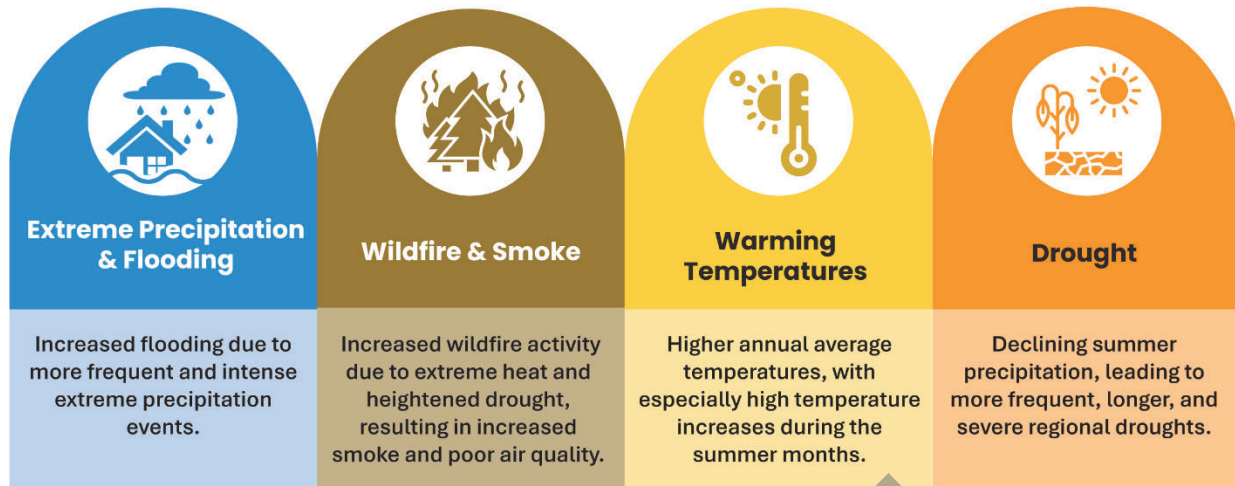
The Climate Element is closely interconnected with other elements of the Comprehensive Plan, as the City seeks to bolster climate resilience across aspects of infrastructure, natural systems, and communities and to address key sources of GHG emissions, which include buildings and transportation and solid waste systems. For example, GHG emissions reduction policies support compact, walkable development and multimodal mobility, which impacts the Transportation, Housing, and Capital Facilities Elements. In addition, the Climate Element considers the long-term impacts of climate change on infrastructure and energy systems, which coordinates with the Utilities and Capital Facilities elements.

Climate Risks and Vulnerability

Key Climate Risks

Climate change refers to the long-term shifting of environmental conditions and weather patterns that is primarily caused by human activity, particularly the emission of GHG emissions from burning fossil fuels. It affects the environment with rising temperatures, drought, flooding, wildfire risk and smoke, which then impact systems like water, energy, transportation, ecosystems, health, food, and more. The key climate risks facing Washougal are described in **Error! Reference source not found..**

Figure 6-1 Key Climate Risks in Washougal

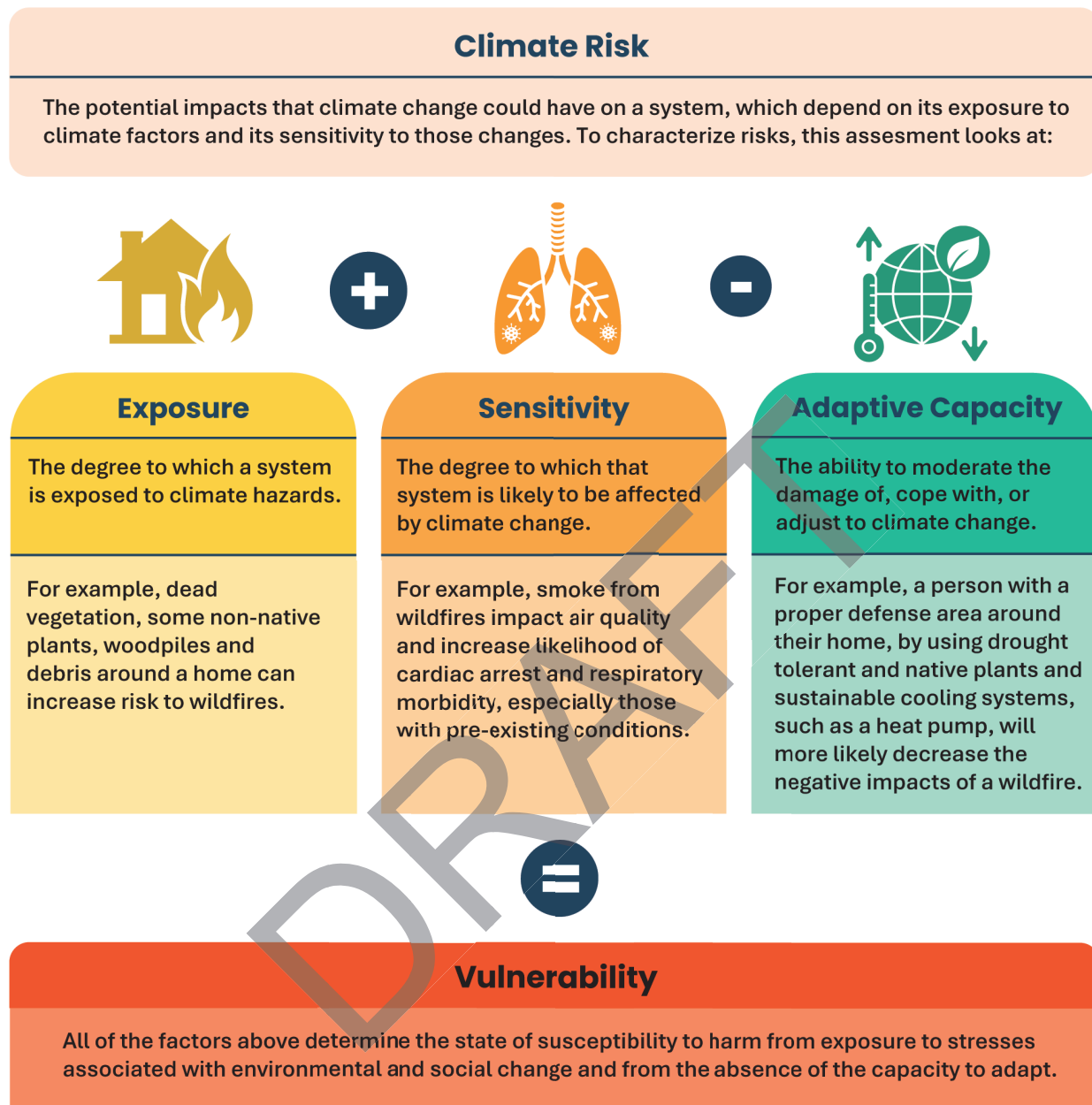


Climate Vulnerability

Washougal's Climate Vulnerability Assessment identifies the climate vulnerabilities of various communities and sectors, including physical assets. The assessment draws on literature review, staff and community engagement, and spatial analysis.

Climate vulnerability is the sum of exposure to a changing climate and the inherent sensitivity/vulnerability of people, infrastructure, and environments to a changing climate, minus the adaptive capacity of the community and place to cope with impacts of a changing climate. This is shown in **Error! Reference source not found..**

Figure 6-2 Climate Vulnerability Framework



Vulnerable Communities

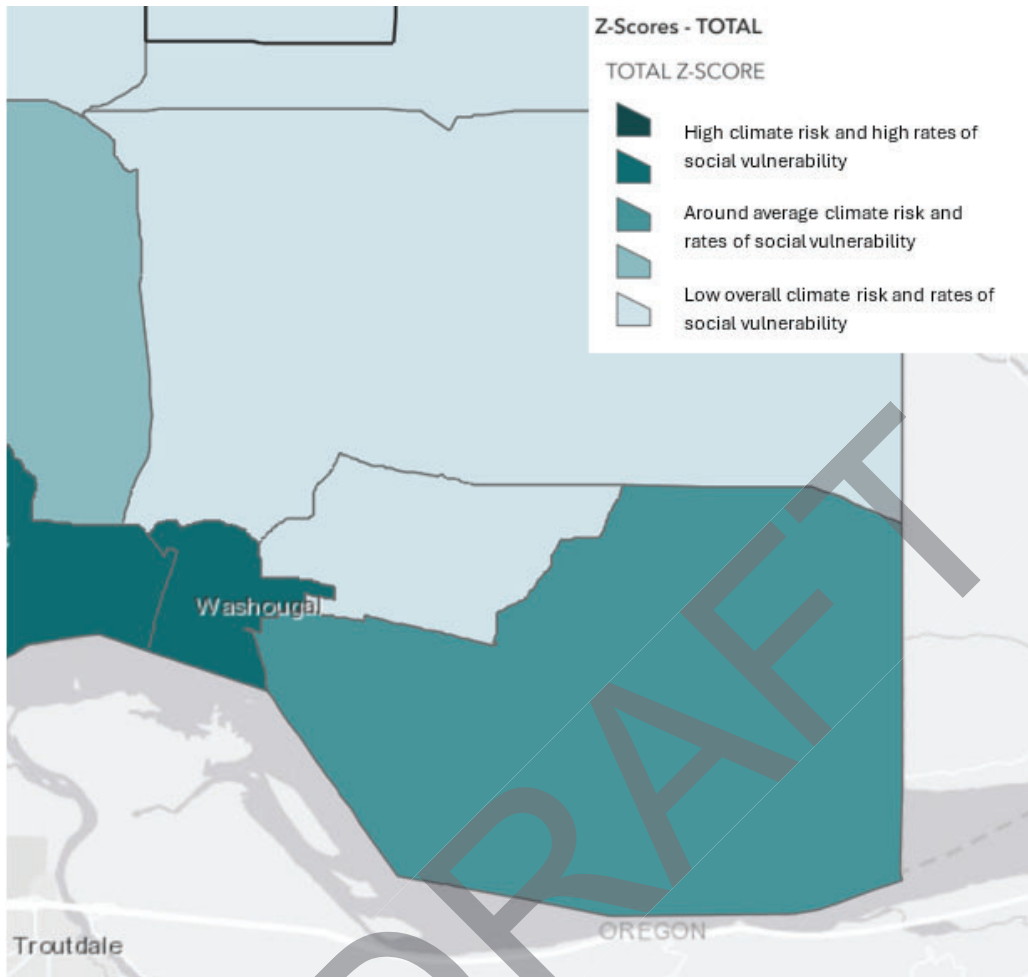
Climate impacts affect everyone in Washougal, but those impacts are not distributed evenly. Some individuals and communities are impacted first and worst by climate risks. **Invalid source specified.. Error! Reference source not found.** identifies potential vulnerable communities in Washougal and example climate vulnerability considerations (the full Climate Vulnerability Assessment is included as Appendix X).

Table 6-1 Potential Vulnerable Communities in Washougal and Example Vulnerability Considerations

| Vulnerable Populations | Percent of Residents ¹ | Example Vulnerability Considerations |
|---|-----------------------------------|---|
| Total Non-White Residents | 15.1% | Black and African American individuals are projected to face higher impacts of climate change. |
| Hispanic or Latino Residents | 10.9% | Hispanic and Latino people have high participation in weather-exposed industries, such as construction and agriculture, which are especially vulnerable to the effects of extreme temperatures. |
| Renter-occupied housing units | 26.1% | Renters typically have less ability to take actions like making energy efficiency upgrades and adding air conditioners. |
| People in Poverty | 12.6% | Low-income individuals have fewer economic resources to cope with climate impacts like property loss and health impacts. |
| People with Disabilities (under 65 years) | 9.1% | People with disabilities (such as those with low vision or blindness, hearing loss, or mobility issues) face barriers in evacuating during extreme weather events. |
| Youth under 5 years old | 4.9% | Young children are especially vulnerable to the harmful impacts of wildfire smoke. |
| Youth under 18 years old | 22.3% | Youth experience anxiety and depression related to climate change. They are impacted by school closures and cancelled events. |
| Seniors 65 years+ | 16.1% | Seniors tend to have reduced ability to regulate body temperature and higher susceptibility to heat-related illnesses. |

Mapping the locations of higher rates of vulnerable communities can inform place-based strategies. Figure 2, from Clark County, shows priority populations and environmental exposure indicators. The darker teal colors indicate census tracts that have higher-than-average exposure to climate risks (including poor air quality, flooding and heat) and also higher social vulnerability (such as people who have low incomes or disabilities). Washougal's southern census tracts (especially the southwest), have relatively high climate risk and social vulnerability, though lower than parts of Vancouver and Ridgefield (not shown).


Figure 6-3 Map showing census tracts with their overall combined rates of vulnerable population and climate risk indicators. Source: Clark County's Climate Priority Populations and Places StoryMap)



Vulnerability of Key Sectors

The Climate Vulnerability Assessment also addresses the vulnerability of four sectors: Built Infrastructure, Businesses and Housing, Environment and Water Resources, and Human Well-Being and Emergency Management. The key findings for climate risks by sector are indicated in **Error! Reference source not found..**

Table 6-2 Climate Risks: Key Findings by Sector

| Sector |  Climate Risks: Key Findings |
|---|--|
| Built Infrastructure (Transportation and Energy) | <ul style="list-style-type: none"> • Key roads like State Route 14 may be impacted, limiting evacuations and leading to extensive and costly repairs. • Walking and biking routes can be impacted. • Bus stops lack shelter • The City's electricity substations and power lines are susceptible to damage from fires, storms, and high winds. |
| Businesses and Housing | <ul style="list-style-type: none"> • Businesses face risk of damage caused by flooding, storms, wildfires, and extreme heat, particularly for areas in floodplains (including the Port of Camas Washougal). • The Town Center is not at high direct risk, though may be impacted by road closures. • A lot of housing in Washougal is in the Wildland Urban Interface. Planned growth areas are closer to wildland forests, which brings potential increased risk of fire exposure. • Low-income housing stock may be less resilient to extreme heat and extended wildfire smoke events. |
| Environmental and Water Resources | <ul style="list-style-type: none"> • Some of the natural areas and parks are vulnerable to wildfires, summer drought, and extreme heat. • Rivers and streams- and fish- may be impacted by floods and rising water temperatures and changing precipitation patterns. • Summer droughts could place further strain on the water supply. • Water resources and infrastructure may be affected by flooding and extreme storms. |
| Human Well-Being and Emergency Management | <ul style="list-style-type: none"> • Community spaces (libraries, schools, health facilities, and parks), may be at risk to flooding, wildfire, and extreme heat. • Smoke and heat events raise health risks- and heat is not distributed equally. • Parks located in low-lying areas, current floodplains or regulatory flood zones are expected to be more exposed to riverine and/or tidal flooding. • Emergency management responses and social systems will be stressed by climate events like flooding, wildfire and heat. |

Current and Future GHG Emissions

Climate change is primarily caused by emissions of GHGs from burning fossil fuels. Fossil fuels are burned in daily activities, including using natural gas and gasoline to heat and cool homes and to power cars and other vehicles. As part of the Climate Element development process, the City conducted a GHG emissions inventory to understand what emissions the city contributes to climate change. One study addressed emissions generated within the city (local emissions) and the other addressed emissions from imported goods and food, fuel, air travel, and the purchase of carbon offsets (imported emissions).

Local Greenhouse Gas Emissions in Washougal

In 2022, the Washougal community generated 110,943 MTCO₂e (metric tons of carbon dioxide equivalent), a measure of GHG emissions. This quantity of GHGs is equivalent to the carbon captured and stored in one year by about 130,000 acres of average forest land in the U.S., which is about 33 times the size of Washougal. Annual local emissions are nearly 6.4 MTCO₂e per resident. Emissions come from building energy and heating (56%), transportation including car and truck (39%), industrial process and product use (4%), and solid waste and wastewater (1%), as shown on the left side of **Error! Reference source not found.**

Imported Greenhouse Gas Emissions

Imported emissions (also called consumption-based emissions) are produced outside of Washougal to produce and provide the goods, food, services, air travel, and production and transport of fuels used by local households on a daily basis. For Washougal, imported emissions add up to 174,337 MT CO₂e, which are in addition to sources of local emissions. **Error! Reference source not found.** compares the scale of local emissions to imported emissions.

Within goods, the largest purchasing categories are furniture, clothing, construction materials, vehicles and parts, and electronics. Within food, the largest emissions are from the consumption of meats, particularly beef products. The production of gasoline, diesel, electricity, and natural gas at its source and air travel from flights taken by residents (regardless of airport location) are also significant sources of imported emissions.

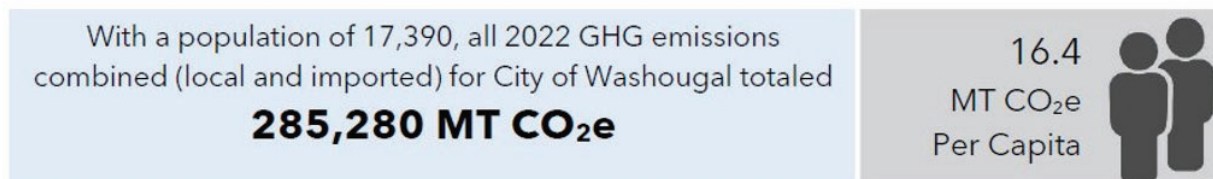
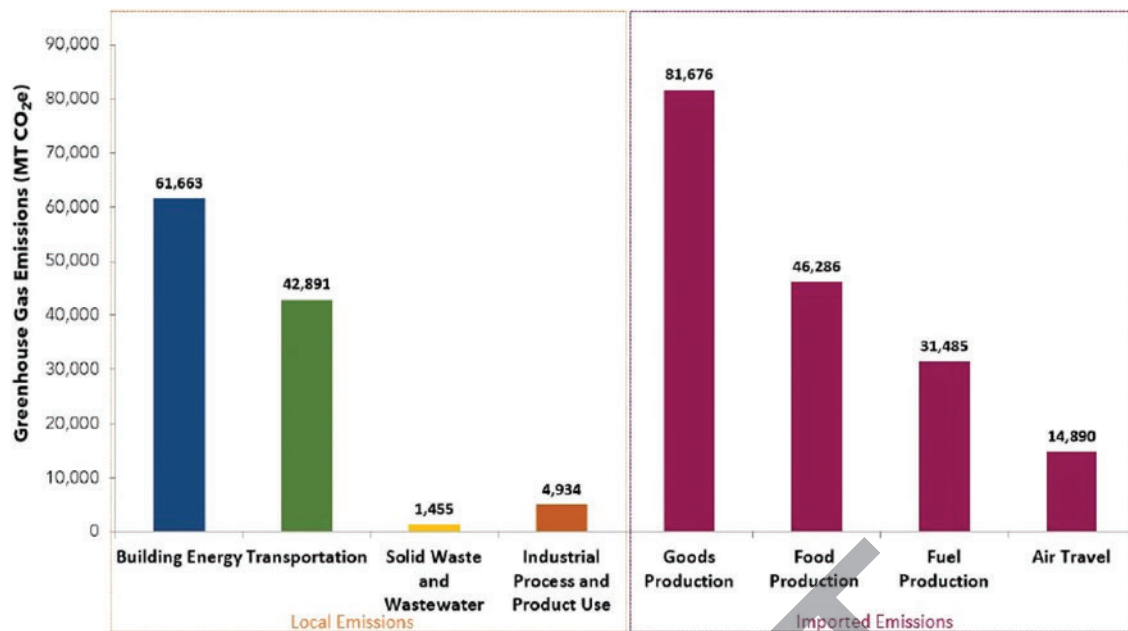


Figure 6-4 Local and Imported Emissions



Future Greenhouse Gas Emissions

According to the Washington State Department of Commerce (Commerce) Guidance,

- Washougal should use 2022 as its emissions baseline year and set incremental targets that lead to achieving net zero emissions in 2050, consistent with Washington's statewide target.
- When selecting goals and policies that reduce emissions and per capita vehicle miles traveled, Washougal will need to report on its five-year progress implementing the measures. Washougal should identify measures for which it is able to track and report implementation progress to Commerce.

Addressing GHG emissions requires the combined efforts of local, state, federal, and regional policy change. Several federal, state, and regional policies, as well as Clark

County policies and plans will advance GHG emissions reductions and support Washougal in meeting its GHG emissions reduction targets:

- Washington State Energy Code (SB 5854)
- Washington Clean Buildings Act (HB 1257)
- Federal Vehicle Regulations (CAFE)
- Washington Clean Fuel Standard (HB 1091)
- Washington Zero Emission Vehicle (ZEV) Standards
- Washington Hydrofluorocarbon Policies (HB 1112 & HB 1050)
- Washington Clean Energy Transformation Act (CETA)
- Washington Climate Commitment Act (E2SSB 5126)

However, the above policies will not get Washougal all the way to the state goals alone. The goals in the GHG Emissions Reduction Sub-element address Washougal's remaining emissions after

accounting for the reductions driven by these state and federal policies. Local policies that help the city reduce emissions from on-road transportation and natural gas use in buildings will be especially critical in the coming decades, as these will make up increasingly large percentages of remaining emissions.

Goals and Policies

Resilience Sub-Element

Key analyses for this sub-element include the Climate Impacts Summary and Climate Vulnerability Assessment.

GOAL 1: To support community health and well-being in the context of climate change, particularly the health of vulnerable and overburdened communities.

- Policy 1-A: Ensure that vulnerable and overburdened communities are prioritized when allocating climate resilience investments such as increased tree canopy and green infrastructure, which help mitigate environmental stresses and improve quality of life.
- Policy 1-B: Provide all residents, especially vulnerable and overburdened populations, diverse opportunities to learn about climate impacts, influence policy decisions, and co-develop equitable mitigation and recovery strategies that reflect community needs and priorities. For example, offer educational materials in multiple languages and formats to facilitate access and understanding.
- Policy 1-C: Expand local food security and the food-related economy to address climate impacts and increase access to healthy, affordable, and climate-friendly foods. Build on existing local efforts, including community gardens, farmers markets, food banks and pantries, and meal services.
- Policy 1-D: Support organizations that facilitate a green jobs pipeline within vulnerable and overburdened communities. Prioritize programs that:
 - a. Create living-wage green jobs
 - b. Promote green industry sectors such as solar panel installation, green roof installation and maintenance, urban forestry, and ecosystem restoration
 - c. Support workers displaced from carbon-intensive industries
 - d. Support local businesses in strengthening their climate friendly practices

GOAL 2: To protect ecosystems from impacts of climate change while balancing development goals.

- Policy 2-A: Expanding habitat protection and improve habitat quality and connectivity through conservation area designations, buffers, and open space corridors.
- Policy 2-B: Establish an urban forestry ordinance to maintain and improve the city's tree

canopy. Ensure that the ordinance includes climate change considerations and encourages biodiversity.

Policy 2-C: Support the protection, enhancement, and, where possible, restoration of streams, wetlands, and corridors between wetlands to provide biological and hydrological connectivity. This connectivity will foster ecosystem resilience to climate impacts, such as such high stream temperatures and flooding.

GOAL 3: To strengthen emergency response systems to climate hazards by improving coordination, infrastructure, and community preparedness.

Policy 3-A: Develop and support resilience hubs, which are community-serving facilities that are designed to support residents, coordinate communication, distribute resources, and reduce carbon pollution while enhancing quality of life.

Policy 3-B: Integrate climate vulnerability assessment results into hazard mitigation planning and emergency management planning.

Policy 3-C: Collaborate with energy utilities to improve the safety and reliability of infrastructure vulnerable to climate change.

Policy 3-D: Coordinate with local agencies to identify risk areas, develop targeted response plans, and ensure equitable access to education, outreach, resources, and recovery assistance. Prioritize clear communication and access to information before emergencies occur.

GOAL 4: To enhance community resilience to wildfire, smoke, and extreme heat by strengthening infrastructure and community systems.

Policy 4-A: Develop, support and coordinate with programs that distribute or incentivize heat pumps, improve building weatherization, and/or implement building passive cooling techniques, prioritizing households with residents who are most vulnerable to extreme temperature events (such as low-income seniors).

Policy 4-B: Develop, support and coordinate with programs that distribute or incentivize heat pumps, improve building weatherization, and/or implement building passive cooling techniques, prioritizing households with residents who are most vulnerable to extreme temperature events (such as low-income seniors).

Policy 4-C: Implement and encourage the use of cooling infrastructure such as trees, permeable pavement, and other heat-resistant features near high-traffic transportation areas with elevated temperatures and in locations where sensitive populations congregate, such as schools, elder care facilities, and medical facilities.

Policy 4-D: Develop a comprehensive, communitywide wildfire resilience strategy to improve emergency response capabilities, create fire-resilient landscapes, promote fire-adapted communities, protect the economy, and foster short- and long-term recovery.

Policy 4-E: Educate businesses on protocols regarding extreme heat and poor air quality and consider implementing and supporting outreach efforts to businesses and

outdoor workers to promote safety, ensure compliance, and reduce exposure to climate-exacerbated hazards.

GOAL 5: To manage water resources and natural spaces to build resilience to drought and flooding impacts.

Policy 5-A: Manage water resources sustainably in the face of climate change through smart irrigation, stormwater management, preventative maintenance, water conservation and wastewater reuse, plant selection, and landscape management.

Policy 5-B: Construct and maintain water storage systems to provide back-up water supplies during droughts and support climate resilience.

Policy 5-C: Expand municipal reclaimed water systems and allow onsite non-potable water systems to reduce water demand in private-sector commercial and residential buildings.

Policy 5-D: Encourage the use of green infrastructure and low-impact development in new developments and major retrofits to address increased storm intensities and stormwater runoff.

GOAL 6: To reduce the contributions of buildings and energy consumption to climate change.

Policy 6-A: Streamline permitting and approval processes for energy efficiency upgrades, passive heating/cooling techniques, building electrification retrofits, and clean energy projects, with the goal of reducing GHG emissions from buildings while maintaining grid capacity and reliability.

Policy 6-B: Seek and support funding for programs that focus on energy efficiency and building weatherization with an emphasis on vulnerable communities (such as renters and low-income households).

Policy 6-C: Incentivize green building certification to improve energy and environmental performance (such as through timely review of permit applications).

Policy 6-D: Maximize renewable energy sources for the supply of electricity and heating/cooling to new and existing buildings, such as by supporting solar panel installations and community solar programs.

Greenhouse Gas Emissions Sub-Element

Key analysis for this sub-element includes the Greenhouse Gas Emissions Inventory.

GOAL 7: To enable and encourage residents to drive less and turn to alternate modes of transportation.

Policy 7-A: Coordinate with land use and transportation planning partners to expand public transit access.

Policy 7-B: Develop a complete, long-term multimodal network plan and adopt complete streets policies and ordinances.

Policy 7-C: Implement complementary, mixed land uses versus traditional zoning, to

promote cycling and walking and reduce driving.

Policy 7-D: Create a safe, well-connected and attractive bicycle and pedestrian network to encourage active transportation.

Policy 7-E: Improve street connectivity and walkability, including sidewalks and street crossings, to encourage carbon-free transportation and to serve as potential evacuation routes.

Policy 7-F: Prioritize, develop, and maintain mobility hubs (convenient places for accessing multiple alternative transportation options and for switching between modes) in transportation-efficient locations—especially in overburdened communities experiencing a scarcity of transportation alternatives.

GOAL 8: To promote development that advances climate planning and greenhouse gas emissions reduction.

Policy 8-A: Reduce parking minimum requirements and establish parking maximums where relevant.

Policy 8-B: Implement complementary, mixed land use and transit-oriented development, such as locating businesses, parks, and schools in residential neighborhoods where relevant and increasing density in areas well-served by transit.

Policy 8-C: Support the expansion of electric vehicle charging infrastructure throughout the community—including at municipal buildings, multifamily developments, major commercial areas, and parking garages—to advance the decarbonization of the transportation sector developments.

Policy 8-D: Convert public-owned fleets to zero-emission vehicles (e.g., electric) as they need to be replaced and as soon as feasible.

GOAL 9: To reduce waste generation and increase recycling rates.

Policy 9-A: Set and achieve specific goals around waste generation and periodically measure waste via waste characterization studies, in partnership with the City's waste collection service provider.

Policy 9-B: Focus on reducing generation and disposal of high-emissions materials, such as organic waste and paper. Consider implementing food rescue policies.

Policy 9-C: Conduct equitable outreach and engagement and support residents and businesses in waste reduction, recycling, and composting of food and yard waste.

Policy 9-D: Incentivize recycling of construction and demolition waste.