CHAPTER 10 CLIMATE AND RESILIENCE

10.1 Chapter Context

10.1.1 Introduction

In 2023, the Washington State legislature passed House Bill 1181, declaring that municipalities planning under the Growth Management Act must integrate climate and resiliency policies in their comprehensive plans. The Washington State Department of Commerce (COM) created guidance for cities that have laid the framework for this element. That framework includes assessing the City's climate sensitivities and adaptive capacity and characterizing its vulnerabilities and risks to specific natural hazards.

The City participated in the 2024 update to the Clallam County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP), which provides a framework and identifies mitigations for Clallam County jurisdictions to reduce vulnerability to natural and human-caused hazards, including climate change.

10.1.2 GMA Requirements

Washington's Growth Management Act (GMA) requires quickly growing Washington cities and counties to develop comprehensive plan elements that respond to challenges associated with population growth. Amended in 2023 by HB1181, the GMA now requires integrating climate policies into comprehensive plan updates.

The goal of HB 1181 is to ensure that comprehensive plans:

- adapt to and mitigate climate change;
- reduce greenhouse gas (GHG) emissions and per capita vehicle miles traveled (VMT);
- prepare for climate impact scenarios;
- foster resilience to climate impacts and natural hazards;
- protect and enhance environmental, economic, and human health and safety, and advance environmental justice.

Commerce led a multi-year project to develop model element guidance, which provides steps and pathways to integrate both a climate resilience and mitigation sub-element into a comprehensive plan, either as a set of integrated policies or a standalone element. For Sequim, these required policy changes address the Resilience Sub-Element requirements to consider climate impacts and increase resilience across local sectors. Sequim is not required to address requirements in the GHG Emissions Reduction Sub-Element at this time. The Resilience Sub-element must include measures to mitigate natural hazards exacerbated by climate change and adapt to unavoidable impacts. Specifically, policies must:

- **Requirement 1**: Address natural hazards created or aggravated by climate change, including sea level rise, landslides, flooding, drought, heat, smoke, wildfire, and other effects of changes to temperature and precipitation patterns.
- **Requirement 2**: Identify, protect, and enhance natural areas to foster climate resilience, as well as areas of vital habitat for safe species migration.

- **Requirement 3**: Identify, protect, and enhance community resilience to climate impacts, including social, economic, and built-environment factors, which support adaptation to climate impacts consistent with environmental justice.

HB 1181 also identifies that the Climate Element recognize and promote as many co-benefits of climate resilience as possible, such as climate change mitigation, salmon recovery, forest health, ecosystem services, and socioeconomic health and resilience.

This Climate and Resiliency Chapter aligns with Commerce guidance and identifies policies to foster sustainable and equitable planning. Other chapters within the comprehensive plan, such as the Natural Environment, Transportation and Capital Facilities, also contain policies that address these requirements.

Additionally, the City has two resolutions that directly address climate and resiliency. Resolution 2012-11 Greenhouse Gas defines the City's Greenhouse Gas Emission Reduction Policy, and Resolution 2016-16 Sustainability and Resiliency. Both Resolutions include strategies that have been incorporated into this Chapter.

10.1.3 Clallam County's Hazard Vulnerability and Risk Assessment

As part of the MJHMP planning process, a Vulnerability and Risk Assessment (MJHMP Section 4) of different potential hazards was conducted. Hazards assessed include flood, drought, landslide, sea level rise, severe weather, and wildfire, among others. Climate change has the potential to exacerbate many of these hazards that may impact Clallam County, and the MJHMP also considered how each hazard would intersect or become more significant with the impacts of climate change. Exhibit CR-1 summarizes the projected hazards within Clallam County that will be exacerbated by climate change.

Exhibit CR-1 Projected Climate Change Impacts for Clallam County



Source: Clallam County Climate Vulnerability Assessment, 2024

One of the primary outputs of the Vulnerability and Risk Assessment is the determination of which critical facilities are located within hazard zones. A summary of critical facilities that intersect with hazard areas throughout the county is provided in MMJHMP Appendix D-2: Vulnerability Summary for Critical Facilities. This information is valuable as it shows if certain critical facilities are vulnerable and to which jurisdiction.

Additionally, the Vulnerability and Risk Assessment considered four priority sectors for Clallam County and reported a vulnerability score based methodology that evaluate Climate Risk, Adaptive Capacity, and Vulnerability; these are presented in Exhibits CR-2 through CR-5 below. The *Climate Risk* column indicates the extent to which systems encounter climate

hazards, as well as how likely those sectors are affected by those climate hazards. The *Adaptive Capacity* column represents the systems' ability to adapt to climate impacts through activities like building or retrofitting infrastructure, adopting natural solutions, or behavior and policy changes. The *Vulnerability* column is an overall rating relative to both risk and adaptive capacity.

Community Health and Well-being

Climate impacts pose significant risks to health and community well-being, such as extreme heat, wildfire smoke, and severe weather events, likely to increase heat-related illnesses, air quality issues, and infrastructure damage. Vulnerable populations, including Tribal communities, older, and low-income residents, face heightened risks, underscoring the need to strengthen emergency response, public health services, and community resilience.

Exhibit CR-2 Community Health and Well-being Climate Vulnerability Scoring

Sector	Climate Risk	Adaptive Capacity	Vulnerability
Public Health	Mod - High	Low - Mod	Mod - High
Emergency Management	High	Moderate	Mod - High
Community Resources	Mod - High	Moderate	Moderate

Source: Climate Vulnerability Assessment, 2024

Natural Environment and Water Resources

Clallam County's natural environment and water resources face growing threats from climate impacts, including hotter temperatures, decreased summer rainfall, reduced snowpack, melting glaciers, and more intense precipitation events. These changes pose risks to aquatic species like salmon and shellfish, increase the vulnerability of trails and open spaces to flooding and drought, and jeopardize freshwater supplies through reduced storage, saltwater intrusion, and higher demand.

Exhibit CR-3 Natural Environment and Water Resources Climate Vulnerability Scoring

Sector	Climate Risk	Adaptive Capacity	Vulnerability
Ecosystems and Critical Areas	Mod - High	Mod - High	Moderate
Parks, Trails, and Open Space	Low	Mod - High	Low
Water Supply	Mod - High	Moderate	Moderate

Source: Climate Vulnerability Assessment, 2024

Economic Development and Land Use

Clallam County's economy, rooted in natural resource industries and tourism, faces moderate vulnerability to climate impacts due to its dependence on natural resources and limited supply chain routes. Many workers in climate-impacted jobs, for example, fisheries, construction or agritourism, face physical health risks as well as risks from economic impacts from possible resource degradation of climate change.

Exhibit CR-4 Economic Development and Land Use Climate Vulnerability Scoring			
Sector	**Climate Risk**	**Adaptive Capacity**	**Vulnerability**
Local Industries and Businesses	Mod – High	Moderate	Moderate
Land Use and Resource Lands	Low – Mod	Moderate	Moderate

Source: Climate Vulnerability Assessment, 2024

Built Infrastructure

Aging and undersized infrastructure faces significant climate risks, including flooding, sea level rise, and extreme heat, which threaten roadways, housing, stormwater systems, and energy networks. Key vulnerabilities include highways at risk of inundation, aging housing stock exposed to wildfire hazards, stormwater systems, and energy infrastructure that may struggle to meet future demands, particularly in remote areas.

Exhibit CR-5 Built Infrastructure Climate Vulnerability Scoring			
Sector	**Climate Risk**	**Adaptive Capacity**	**Vulnerability**
Transportation	Mod - High	Moderate	Moderate
Housing	High	Low - Mod	High
Water Systems	Mod - High	Mod - High	Mod - High
Energy	High	Moderate	Mod - High

Source: Climate Vulnerability Assessment, 2024

Other Risk and Vulnerability Considerations

The Vulnerability and Risk Assessment component of the 2024 MJHMP also provides an account of previous natural hazards that have affected Sequim and establishes a hazard ranking for each type of hazard based on the probability of it happening again or continuously, how large the impact is expected to be, and the number of areas it will affect. As reported in Exhibit CR-6 below, the most probable hazards identified are wildfire smoke and drought, with a "high" rank. Severe weather, including windstorms and extreme heat, flooding, and utility failures, all ranked "medium".

Exhibit CR-6 Sequim Climate Hazard Assessment and Ranking	
Hazard Type	**Hazard Planning Prioritization Consideration**
Wildfire Smoke	High
Drought	High
Severe Weather - Windstorm	Medium
Utility Failure/Power Outage	Medium
Severe Weather – Extreme Heat	Medium
Flood	Medium
Wildfire	Low
Landslide	Low

Source: City of Sequim Annex, MJHMP Volume 2, 2024, Table 3-3

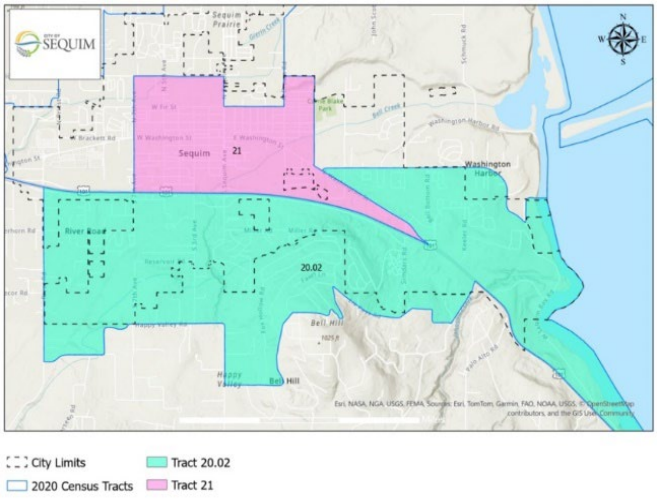
In addition to potential physical or geographic hazards, socially vulnerable populations (the people most susceptible to the immediate effects of hazards) were also identified using the

Centers for Disease Control and Prevention (CDC) and the Washington State Department of Health Social Vulnerability Index (SVI).

Determining vulnerable populations was based on census tracts and concentrations of certain demographics within them. Sequim's Census Tract 20.02 (green) was identified as medium-high vulnerability, and Census Tract 21 (pink) was identified as high vulnerability. These census tracts generally included concentrations for the following indicators of social vulnerability identified by Washington's SVI:

- Persons with income below 150% of the poverty rate;
- Persons aged 65 or older;
- Civilian noninstitutionalized population with a disability;
- Persons reporting minority status; and
- Persons living in mobile homes.

Exhibit CR-7 Census Tracts 20.02 and 21



10.1.4 Climate and Resiliency Mitigation Measures

The City has identified a comprehensive series of mitigation objectives and supporting actions that are focused on reducing vulnerability and maximizing loss reduction from hazards. Mitigation actions prioritize various goals such as expanding capabilities (planning and regulatory, administrative, financial, education and awareness), infrastructure/capital improvement projects, natural systems and nature-based solutions, and socially vulnerable populations considerations.

Mitigation actions that accomplish these priorities in response to climate-related hazards are summarized in Exhibit CR-8 below and are included in detail in the MJHMP Volume 2. Most of the identified mitigation actions address multiple objectives.

Exhibit CR-8 City of Sequim Mitigation Actions

Mitigation Action Description	Hazards Addressed	Status
Capital Project Improvements		
Replace the 3-mile 12" water main from Ranney Well (infiltration gallery) beginning near the Dungeness River and ending at the Reservoir Road Reservoirs.	Floods, Utility Failure, Winter Storm,	Identified for future CIP
Purchase a portable water purification system and small tanks. Prepare multiple sites and equipment to operate the water purification.	Earthquake, flooding, tsunami	Identified for future CIP
Locate site for new potable water reservoir, purchase property, design and construct.	Winter storms, flooding	Identified for future CIP

Mitigation Action Description	Hazards Addressed	Status
Construct deep water well (>600 feet) to increase resiliency and reliability within the water system.	Utility Failure, Drought, Water Shortage	Current Project; 2nd well future CIP
Capture stormwater and re-infiltrate using green stormwater infrastructure to benefit the watershed.	Flooding, Drought, Wildfire	Partnership with Clallam County on Project Planning
Install an energy storage microgrid for storing solar energy and backup generators in critical City facilities.	All hazards	Funding application submitted in 2024 for Guy Cole
Protect/reinforce Johnson Creek Trestle for the Olympic Discovery Trail.	Earthquake, Flooding, Landslide, Winter Storm	Funding for Design secured in 2024
Construct capital improvements on West Sequim Bay Road, a critical evacuation route to Highway 101. Evaluate solutions for Pitship Bridge to protect the asset from flooding and storm surge.	Flood, Sea Level Rise	Preliminary Proposal Developed; Funding being pursued
Programmatic Activities		
Update risk assessments, including GIS analysis, for landslides, dam/reservoir failures, tsunamis, with substantial changes.	Landslides, Tsunamis, Dam/Reservoir Failure	Establish as GIS priority
Identify temperature-controlled storage needs for emergency supplies and a plan for procurement of both storage and supplies for essential government functions.	Disease, Active Shooter/Terrorism, All Hazards	Ongoing
Develop and maintain a Reliable Backup Program for Critical City Data Entry Post-Disaster	All hazards	In progress (2025)
Implement asset management using GIS for all capital facilities.	All hazards	In progress (2025)
Coordinate Emergency Management/Incident Response trainings for North Olympic Peninsula jurisdictions.	All hazards	In progress (2025)
Public education of potential hazards, local agency response, and preparedness.	All hazards	Ongoing
Develop risk assessment and response plan for vulnerable populations regarding excessive heat, cold, smoke inhalation – including loss of power and/or ability to transport.	All hazards	MJHMP and Mitigation Priorities
Participate in the County-wide Community Wildfire Protection Plan as a stakeholder. Utilize technical findings to understand areas of local vulnerability and relevant	Wildfire	In progress (2025)

Mitigation Action Description	Hazards Addressed	Status
risk reduction strategies. Conduct wildfire risk assessment for the City of Sequim and Fire District 3.		

Source: City of Sequim; MJHMP Volume 2, 2024

In addition, Sequim has made investments in emergency and hazard preparedness through a coordinated, multi-layered approach. These efforts include a robust partnership with Clallam County Fire District #3 to support an active Community Emergency Response Team (CERT) and provide community hazard preparedness education. The City is committed to providing dedicated emergency preparedness staff support as well as engaging in regular training and exercises with first responders and regional partners.

The City has also established partnerships with local businesses and organizations to support community emergency response needs and has incorporated the use of drone technology to enhance situational awareness and damage assessment. Together, these proactive measures position Sequim to respond more effectively and resiliently in the event of a hazard or emergency.

10.2 Goals and Policies

The following goals and policies are organized under the eleven climate sectors identified by the Washington State Department of Commerce:

1. Water Resources
2. Ecosystems
3. Agriculture & Food Systems
4. Buildings & Energy
5. Economic Development
6. Zoning & Development
7. Emergency Management
8. Health & Wellbeing
9. Transportation
10. Waste Management
11. Cultural Resources & Practices

These eleven sectors were consolidated and adjusted into the following eight sections to best represent the City of Sequim's approach to climate resiliency.

10.2.1 Water Resources

As regional precipitation patterns shift and mountain snowpack is reduced, the City should plan for more variable and extreme conditions affecting local water supply. A climate-resilient future includes management of water resources through conservation, reuse, stormwater integration, and sustainable landscaping practices.

GOAL CR-1
Protect, conserve, and enhance water resources in Sequim to create more climate-resilient water systems.

Policy CR-1.1
Explore opportunities for water collection and storage to prepare for decreased snowpack and increased rainfall.

Policy CR-1.2
Manage water resources sustainably by integrating effective stormwater practices, preventative system maintenance, water conservation measures, increased reclaimed water use, climate-appropriate plant selection, and responsible landscape management.

Policy CR-1.3
Support the expanded use of reclaimed water from its water reclamation system as a sustainable and climate-resilient resource. The City will prioritize water reuse for potable and non-potable applications such as irrigation, landscaping, groundwater recharge, and environmental restoration, where technically and economically feasible. Promote educational materials that highlight the benefits and safety of reclaimed water use and help encourage its implementation in private developments.

Policy CR-1.4
Promote efficient water use through infrastructure improvements, public education, incentives, and landscaping standards. Conservation efforts support drought resilience and reduce potable water demand.

10.2.2 Ecosystems

The City is dedicated to preserving the ecological features that make up the surrounding natural environment and provide invaluable ecosystem services. The upkeep and restoration of these elements is vital to the community's ability to withstand a changing climate, keep businesses and local industries afloat, and preserve native cultural ties to the land. Sequim aims to collaborate with tribes, residents, and other stakeholders to maintain ecological and hydrological integrity, allowing niche industries to continue to thrive, and future generations to enjoy the same natural scenery.

GOAL CR-2
Increase the City's adaptability to climate change by supporting ecological restoration projects, preserving environmental assets, and ensuring the vitality of local waterways and green spaces.

Policy CR-2.1
Invest in restoration of riparian areas and local waterways to increase watershed vitality, improve habitat, reduce flood risk, and curb bank erosion.

Policy CR-2.2
Promote urban forestry to restore, retain, and enhance parks, open spaces and greenbelts to increase tree canopy and maximize carbon storage opportunities.

Policy CR-2.3
Consider and research the benefits of acquiring a Green City Certification, such as the Evergreen Community Designation from WA DNR, to streamline and receive guidance on

urban forestry management as well as create more opportunities to receive environmental grants.

10.2.3 Agriculture, Food Systems, and Local Business

The City is committed to protecting the local supply chain from climate change, including local agriculture, businesses, and industries. Through educating stakeholders on the climate risks to livelihoods and investing in self-sustenance and local food resiliency strategies, the City can be better equipped to handle potentially adverse climate effects on local food production.

GOAL CR-3
Support a sustainable local and regional agriculture sector that sequesters carbon, provides local jobs and food supply, and is resilient to the impacts of climate change.

Policy CR-3.1
Partner with regional agricultural and economic development organizations to conduct assessments of climate impacts on tourism, the economy, and industries resilient on local food production, incorporating unique climate scenarios like Sequim's micro-climate. Support small businesses to adapt their operations and promote local sourcing.

Policy CR-3.2
Encourage partnerships between local farms/farmers, businesses and residents on local food production and food rescue projects, composting, and green waste recycling projects.

10.2.4 Cultural Resources and Practices

The City recognizes the importance of acknowledging and celebrating the local cultural ties to the natural environment. Traditional environmental practices used by Native American communities can serve a unique educational role in community resilience today.

GOAL CR-4
Preserve and promote cultural, agricultural heritage and traditional environmental practices by collaborating with tribes, farmers and educational organizations to solidify ecological knowledge as a cornerstone for community sustainability.

Policy CR-4.1
Collaborate with tribes to identify traditional environmental stewardship methods that can be employed to protect historical and cultural assets from climate risks.

Policy CR-4.2
Collaborate with schools and tribes to develop community-driven initiatives to integrate traditional ecological knowledge and native stewardship practices into environmental adaptation. Engage cultural heritage to give members of the community insight into sustainability and resilience.

Policy CR-4.3
Coordinate with tribes to protect access to important cultural sites. Prevent the development and degradation of surrounding lands that could jeopardize the area's integrity in a climate event.

Policy CR-4.4
Work toward protecting ecosystem functions that support Tribal Treaty Rights and preserve culturally significant resources, including but not limited to archaeological and sacred sites, ecosystems, traditional foods, plants, and resources at risk from climate change impacts.

10.2.5 Emergency Management

The City is part of the emergency responder network that responds to climate-related and other disasters. Utility infrastructure is some of the most at-risk facilities relative to climate threats like wildfires, more volatile storms, and sea level rise. As climate-related disasters increase, the City must also increase coordination with the regional emergency response network including utility providers, prepare to support citizens in the wake of disasters, and inventorying/assessing current weak points in the infrastructure system to be fully prepared for climate-related emergencies.

GOAL CR-5
Collaborate with Clallam County, Fire District 3, Jamestown S'Klallam Tribe, Public Utility District and other emergency responders to promote and invest in programs, inventory systems, and technologies that strengthen the City's infrastructure resilience, response capabilities and ability to rebound after a natural disaster or extreme climate event.

Policy CR-5.1
Coordinate emergency preparedness and response efforts with Clallam County and regional partners to promote a unified and effective approach to public safety consistent with the Clallam County and Sequim Comprehensive Emergency Management Plans (CEMP).

Policy CR-5.2
Explore the development of resilience hubs for extreme weather and other climate-related events, considering accessibility for all.

Policy CR-5.3
Collaborate regionally to ensure continuity of operations in the event of supply chain issues from climate events or natural disasters.

Policy CR-5.4
Identify and support initiatives to provide at-risk populations with PPE (personal protective equipment) during wildfire and smoke-related events.

Policy CR-5.5
Maintain a vulnerable infrastructure inventory to assess what facilities and transportation networks may be jeopardized during a state of emergency. Include relevant criteria such as infrastructure age, expected lifespan, and criticality to city functionality.

Policy CR-5.6
Coordinate with utility providers and support efforts to ensure energy infrastructure is capable of withstanding extreme weather events or natural disasters. Vulnerable systems should be replaced and/or retrofitted to increase reliability.

Policy CR-5.7
Advocate for increased grid reliability, energy storage and alternative energy capacity in state and local policy.

Policy CR-5.8
Consider code updates that require utilities to be located underground, increasing long-term reliability and reducing exposure to climate-related disasters.

10.2.6 Health, Well-Being, and Climate Justice

Ensuring the health and well-being of Sequim's population requires a proactive, equitable approach that prioritizes community resilience. Climate justice, ensuring all individuals have equal protection from climate risks and access to adaptive resources, is a guiding principle. Sequim must also prepare for climate migration, as its relatively temperate environment may attract new residents seeking relief from more climate-impacted regions.

GOAL CR-6
Enhance community resiliency equitably, improving the safety and health of vulnerable populations during emergencies, and fostering a proactive approach to climate justice.

Policy CR-6.1
Continue to strengthen strategies for evacuating vulnerable populations with reduced mobility or a lack of transportation means.

Policy CR-6.2
Ensure home energy efficiency programs have equitable access and research ways to subsidize entry into these programs for low-income households.

Policy CR-6.3
Ensure equitable access to information and influence on decision-making about climate hazards and preparedness by utilizing a variety of mechanisms, including regional notification systems, social and other media, and other engagement.

10.2.7 Transportation

Sequim aims to emphasize both equitable and ecologically sustainable transportation. Creating better access for vulnerable communities, adopting cleaner technologies, and promoting a reduction in personal vehicle usage are key to helping us evolve into an environmentally sound transportation system.

The City of Sequim's Transportation Master Plan establishes a long-term vision for improving mobility options consistent with the City's climate goals. As part of the City's broader climate change response, the transportation system should contribute to reducing greenhouse gas emissions (GHG), enhancing community resilience, and protecting natural resources. By prioritizing safe, connected, and low-carbon travel options, such as walking, biking, public transit, and emerging clean technologies, the City supports the other co-benefits of climate action, such as community health.

GOAL CR-7
Minimize the negative impacts of the transportation system on ecological, environmental, civic, and human health. Improve multi-modal connectivity to reduce vehicle miles traveled (VMT).

Policy CR-7.1
Prioritize pedestrian and bicycle infrastructure connectivity to essential services, increasing viable active transportation options for reducing total vehicle miles travelled.

Policy CR-7.2
Promote and adopt the usage of alternative fuels, electric engines, and other technologies that allow the transportation network to reduce its total emissions.

Policy CR-7.3
Ensure transportation projects provide equitable access for minority, low-income, and vulnerable populations, avoid disproportionately adverse health or environmental impacts, and include public engagement that seeks input from all community members.

Policy CR-7.4
Incentivize and support carpooling, ride share, public transportation opportunities, and other shared transportation initiatives.

10.2.8 Development, Buildings, and Energy

Reducing greenhouse gas (GHG) emissions and preparing the built environment for climate impacts are important climate response strategies. Actions such as supporting low-carbon construction practices, transitioning municipal equipment to clean technologies and promoting green building design, help align development with climate response objectives.

GOAL CR-8
Integrate programs and development practices that work toward reducing the City's GHG emissions and waste while reducing climate impacts and risk to the built environment.

Policy CR-8.1
Utilize zoning and critical area protections to direct new development away from areas with the highest disaster-risk and environmentally sensitive areas.

Policy CR-8.2
Incentivize green building certifications, energy-efficient technologies, low-carbon materials, and the reuse of construction waste for new development.

Policy CR-8.3
Continue alternative materials for parking lots and large paved surfaces in new developments to reduce stormwater runoff, consistent with the current Department of Ecology Stormwater Management Manual and best practices.

Policy CR-8.4
Transition the City vehicle fleet to electric and hybrid engines when possible, starting with the least fuel-efficient and oldest vehicles.

Policy CR-8.5
Transition City maintenance, landscaping, and construction machinery from gas-operated to electric when applicable.

Policy CR-8.6
Provide educational resources on and encourage building features such as vertical gardens, green roofs, skylights, and rain gardens to passively increase carbon sequestration and stormwater runoff quality. If appropriate, consider such features' contribution to a project's landscaping or open space requirements.