

Woodland Climate Resilience Discussion Guide

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Purpose and Objectives

Responding to state legislation,¹ the Washington Department of Commerce (Commerce) is developing guidance for counties and cities to voluntarily address climate change issues within their comprehensive plans. When complete, the Model Element will address both resilience (preparation for adverse effects from climate change) as well as mitigation (greenhouse gas reduction).

Through an interagency effort² Commerce has developed a Model Climate Element with resilience planning guidance (Resilience Guidance) to illustrate how counties and cities can develop and implement plans, goals, and policies that build communitywide climate resilience. In addition, the University of Washington Climate Impacts Group's has developed a county-level climate planning tool (Planning Tool) to identify expected changes in the climate and related natural hazards.³

To test and improve Resilience Guidance, Commerce developed a pilot program. Woodland is one of three pilot jurisdictions (along with Port Angeles and Pullman). Cascadia Consulting Group and BERK Consulting were selected by Commerce to apply the Resilience Guidance and Planning Tool and develop potential goal and policy changes in collaboration with the pilot jurisdiction.

The purpose of this Discussion Guide is to share the early results of the Resilience Guidance and Planning Tool application in Woodland, identify the potential hazards that may be exacerbated by

Use of the Resilience Guidance

The Resilience Guidance and Planning Tool will help jurisdictions to identify and address natural hazards exacerbated by climate change, including landslides, floods, droughts, wildfires, and other impacts of changes to temperature, precipitation, and sea levels. For example, the Resilience Guidance can help a jurisdiction identify, design, and invest in traditional and "green" infrastructure — for example, curbside bioswales — as well as conserve and protect natural areas that provide flood storage or habitat for fish and wildlife.

New or modified Comprehensive Plan goals and policies can also help prioritize health and safety and the needs of residents that may have less ability to adapt to hazards exacerbated by climate change (e.g. those with pre-existing health conditions, lower incomes, etc.) as well as address continuity of businesses, emergency services, and other needs.

¹ The model element is described in the [2021 budget \[Section 129 \(126\)\]](#) and must be completed by June 2023.

² Washington State [Department of Commerce](#), Washington State Department of Transportation, Department of Ecology, Department of Health, Department of Fish & Wildlife, Department of Natural Resources, and Military — Emergency Management Division. The core team also includes members from the U.W. Climate Impacts Group, Municipal Research & Services Center, and Association of Washington Cities.

³ See UW CIG Tool, Climate Mapping For A Resilient Washington, available: <https://cig-wa-climate.nkn.uidaho.edu/>.

climate change, and the goals, policies, and strategies that could be reinforced or added in the Woodland Comprehensive Plan.

Addressing climate resilience in the Comprehensive Plan is optional, though could be valuable to the City for a variety of reasons, including but not limited to:

- Woodland has an extensive floodplain. More intense or frequent precipitation can affect its residents, businesses, and service providers/staff. The City can consider its risks and better allocate scarce resources in its Capital Facilities Plan (e.g., adapting parks, road design) knowing the potential vulnerability of infrastructure.
- Woodland has populations that may be more sensitive to extreme heat and extreme precipitation (e.g., elderly, persons with pre-existing health conditions, low-income) and have less capacity to adapt to changing conditions and may require more community services during or after events. The City can build on its policies and partnerships to address building designs promoting passive cooling, drought-tolerant landscape materials, and emergency response service delivery.
- Incorporating climate resilience into City policies, codes, strategies, and public services can help the City seek federal and state grants for infrastructure or service delivery. The grants now often require addressing climate change and populations at risk.

Resilience Guidance Process

The Resilience Guidance covers 11 sectors that are important to counties and cities, including:

- **Agriculture** (includes production and distribution). For a city this could focus on industrial areas that process and distribute agricultural products, as well as food systems that ensure local communities are more self-sufficient and have access to local food.
- **Buildings & Energy** (includes generation, transmission, and consumption)
- **Cultural Resources & Practices** (includes historic sites and cultural resources and practices that may be at risk of damage due to hazards exacerbated by climate change such as flooding)
- **Economic Development** (includes business continuity, opportunities)
- **Emergency Management** (includes preparedness, response, recovery)
- **Human Health** (includes community well-being and engagement)
- **Ecosystems** (includes terrestrial and aquatic species, habitats, and services)
- **Transportation** (includes multimodal travel and infrastructure)
- **Waste Management** (includes materials recycling and disposal)
- **Water Resources** (includes water quality and quantity)
- **Zoning & Development** (includes site use, design, and other development facets)

The Resilience Guidance is a tool to evaluate existing plans considering how they address each sector and the potential local climate impacts, and identify new or amended goals and policies to bolster existing plans and local government partnerships. The audit focused on these plans:

- City of Woodland [Comprehensive Plan](#) 2016-2036 (last amended 2019)

- City of Woodland [Shoreline Master Program](#) 2021
- City of Woodland [General Sewer Plan](#) 2017
- Cowlitz County [Comprehensive Emergency Management Plan](#) 2019. Woodland is a partner in the Comprehensive Emergency Management Plan along with the other cities and the County.
- Cowlitz County [Comprehensive Plan](#) 2017. Affects lands, shorelines, and infrastructure around the city limits including the City's desired urban growth area.

To develop recommendations, the project team met bi-weekly with Community Development staff and:

- **Analyzed local climate impacts** using the Planning Tool.
- **Performed an audit of existing plans** and policies to identify relevant goals, policies and strategies that support communitywide resilience across the sectors. (See list of plans above.)
- **Linked climate impacts to relevant existing relevant policies.** The plans reviewed address some hazards and sectors.
- **Utilized a menu of measures**, drafted by Commerce and its partners, to fill in any gaps. The menu of measures included example goals and policies by sector that could be effective for local governments depending on their local circumstances.
- **Drafted preliminary climate resilience goals and policies (amendments or additions to goals and policies).** The preliminary recommendations consider the co-benefits of activities that would result in one or more of the following: enhances resilience; improves public health and well-being; promotes economic development; provides cost savings; provides ecosystem services; improves air quality; reduces emissions; sequesters carbon; improves salmon recovery; promotes equity and justice; protects tribal treaty rights; and, builds knowledge.

Definitions

As the City considers preliminary goal and policy amendments, it could add or refer to common definitions. The Resilience Guidance and Planning Tool use terms and definitions from published sources such as the US Climate Resilience Toolkit: <https://toolkit.climate.gov/content/glossary>. The definition of resilience includes: *The capacity of a community, business, or natural environment to prevent, withstand, respond to, and recover from a disruption.*

Local Climate Hazards

Woodland has experienced and will continue to experience climate hazards, like other communities in Washington State, such as:

- **Increased Heat:** Warmer summers with longer and more intense heat waves.
- **Heavy Rains, Flooding, and Landslides:** More frequent and intense precipitation and storms that cause extreme flooding and increase landslide risk. Changes in timing and hydrologic conditions in rivers.
- **Summer Drought, Reduced Snowpack, and Wildfire:** Less rain in the summer and warmer winters with reduced snowpack may create drought conditions. Additional summer dry conditions may create more wildfire risk and smoke.

These local climate hazards have implications for how the City plans ahead to adapt existing areas to be more resilient (e.g., new buildings and street locations and designs, new or retrofitted tree and landscaping standards for drought resistance and shade), or how the City responds during or after hazards (public service and business continuity, evacuation, recovery).

The Planning Tool developed by UW Climate Impacts Group (<https://cig-wa-climate.nkn.uidaho.edu/>) illustrates climate indicators by sector, and hazards. While much information is at a county level, some information is more local (e.g., potential changes in stream temperature).

Preliminary Draft Goals and Policies

By the 11 sectors addressed in the Resilience Guidance, following are some potential draft goals or policies (new or amended) for review. They will be shared with the Planning Commission on February 16, 2023 as part of an interactive discussion, including:

- Do any of the policies stand out as very important?
- Are there any policies missing?
- What needs to be revised?

Agriculture

Woodland's Comprehensive Plan notes its agricultural history and port and transportation assets to support businesses:

Woodland has a rich agricultural and resource heritage and a burgeoning industrial Port, both of which can provide cornerstones for Woodland's economic future. Because of our location along the Interstate 5 corridor and access to rail and river transportation, Woodland is, and will continue to be, a commercial service center for southern Cowlitz County and northern Clark County. Woodland will develop and maintain a magnetic, highly active and vibrant business community that generates consistent, stable and sustainable economic growth and local jobs. (Section 1 Introduction and Community Vision)

Agriculture is important to the Cowlitz County economy broadly though in a city limits agriculture is not typically part of the long-term land uses. Woodland's Comprehensive Plan considers it an interim land use in industrially zoned areas.

EC 4.6 Allow interim uses like agriculture and open space for vacant industrial sites to prevent encroachment by incompatible non-industrial uses.

The Washington Employment Security Department notes that 17 percent of Cowlitz County employment was in factories, twice the national average.⁴ A city role in agriculture could be to support agricultural processing and distribution in its industrial areas (see draft policy under Economic Development Goal EC 4). Also, at a small scale, Woodland can support local food systems such as community gardens and kitchens as part of urban agriculture;⁵ a new goal and policy is suggested.

⁴ See: <https://esd.wa.gov/labormarketinfo/county-profiles/Cowlitz>.

⁵ See: <https://www.planning.org/knowledgebase/urbanagriculture/>.

Table 1. Agriculture (includes production and distribution)

Goals (Existing/New)	Policy (Existing/New)	Comp Plan Element	Co-Benefits
EC 4 Create a stable and diversified economy offering a wide variety of employment opportunities.	<u>Promote processing and distribution of agricultural goods in city industrial areas to advance the regional natural resource economy and food system resilience.</u>	Economic Development	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Promotes economic development.
<u>Support urban agriculture.</u>	<u>Allow for small-scale urban farms, community gardens, community kitchens, or other efforts to promote local food security. Work in partnership with the School District, local non-profits, and other entities that support local food systems.</u>	Land Use	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Improves health and well-being. ▪ Reduces emissions (mitigation).

Buildings & Energy

The City has a key role in ensuring both private and public buildings are designed to fit community character and support energy conservation by applying its zoning and building codes including the State Energy Code. It can also influence community responsiveness to climate hazards by how infrastructure is designed (e.g., streets and power lines).

Existing City policies promote placing utilities underground to address City character and stability goals. Amended policy language would add more implementation strategies such as code requirements to underground lines and a plan to protect the power grid infrastructure from climate-exacerbated events. The City’s Energy & Utilities Element addresses energy conservation. Other new goal/policy concepts would add ideas about how private and public buildings could be designed to be more resilient to extreme heat and extreme precipitation to support public health and safety and the local economy.

Table 2. Buildings & Energy (includes generation, transmission, and consumption)

Goal	Policy	Comp Plan Element	Co-Benefits
LU 1 Protect and enhance the character and long-term stability of the city through current standards for land development and subdivision.	Policy LU 1.3 - Place utilities underground where possible. <u>Implement development regulations to require new development to underground power and telecommunication infrastructure. Prioritize and incentivize underground utilities in existing developed areas.</u>	Land Use	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Provides cost savings. ▪ Improves public health & wellbeing.

Goal	Policy	Comp Plan Element	Co-Benefits
EU 6. Reduce energy demands by developing and implementing energy conservation measures. <u>Enhance energy resilience.</u>	<u>Encourage design features in commercial and employment districts to integrate exterior building features (e.g., awnings, cool roofs, solar panels) that reduce the impacts of climate change.</u>	Energy & Utilities	<ul style="list-style-type: none"> Enhances resilience. Provides cost savings. Improves public health & wellbeing.
Same as above.	<u>Promote the use of electric heat pumps and heat pump water heaters in new commercial construction consistent with the State Building Code.</u>	Energy & Utilities	<ul style="list-style-type: none"> Enhances resilience. Reduces emissions (mitigation).
Same as above.	<u>Diversify the grid to build resilience and capacity to prepare for increased energy demand. Increase resilience of utilities to extreme precipitation, fire danger, or other events.</u>	Energy & Utilities	<ul style="list-style-type: none"> Enhances resilience. Provides cost savings. Improves public health & wellbeing.
EU 4 Manage and upgrade city infrastructure to conserve resources.	<u>Retrofit all publicly owned buildings for energy efficiency. Integrate alternative energy such as solar panels and electric heat pumps.</u>	Energy & Utilities	<ul style="list-style-type: none"> Enhances resilience. Reduces emissions (mitigation). Builds community knowledge.

Cultural Resources

Cultural resources include archeological resources and historic structures. The full Woodland city limits is mapped as an area with a high likelihood of potential archeological resources like other areas along the Lewis River and the floodplain by the Washington Department of Archaeology and Historic Preservation (see WISAARD Tool: <https://wisaard.dahp.wa.gov/Map>). The City has one listed historic structure but the Comprehensive Plan identifies a list of other potentially eligible structures.

Climate related impacts to cultural resources could include loss of cultural and historic sites due to more frequent and intense severe weather events such as extreme precipitation. The Woodland Comprehensive Plan has a goal related to cultural resources in the Land Use Element. More focused resilience policies are suggested.

Table 3. Cultural Resources & Practices (historic sites and cultural resources and practices)

Goal	Policy	Comp Plan Element	Co-Benefits
LU 2 Encourage the protection and preservation of significant historic, archaeological, architectural, aesthetic, and cultural resources.	<u>Encourage the preservation and adaptation of cultural resources and practices that are at risk due to more frequent and intense severe weather events. [include the two items below as sub-policies]</u>	Land Use	See below.
Same as above.	<u>Establish and maintain government-to-government relations with Native American tribes for the preservation of archaeological sites and traditional cultural properties that are vulnerable to climate impacts.</u>	Land Use	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Protects tribal treaty rights.
Same as above.	<u>Preserve significant historic sites — e.g., via raising, retrofitting, or relocating buildings — prone to floods or other hazards worsened by climate change.</u>	Land Use	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Promotes economic development.

Economic Development

Woodland residents work in manufacturing, education, health care, and retail sectors. Continuity of businesses in Woodland and access to the transportation network for those who work outside Woodland is important. A goal and policy supports regional planning for business continuity and recovery.

Woodland is also a commercial center that supports regional recreation / tourism assets (e.g. Mount St. Helens). Additionally, Woodland provides its own parks and recreation assets including along the Lewis River. Providing for resilient designs and management can help both the economy and public health and wellbeing. A goal and policies would reflect the importance of resilient recreation facilities to the economy.

Table 4. Economic Development (includes business continuity, opportunities)

Goal	Policy	Comp Plan Element	Co-Benefits
EC 1 Support a diverse and balanced local economy to ensure sustained growth, locally available commercial services, and varied employment opportunities.	EC 1. 3 Actively participate in county, state and federal planning and programs for Mount St. Helens related tourism and recreation development, to promote consistency with local objectives and policies. <u>Support adaptation of regional parks and trails to be resilient to extreme heat and extreme precipitation.</u>	Economic Development	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Promotes economic development. ▪ Improves health and wellbeing.

Goal	Policy	Comp Plan Element	Co-Benefits
<u>Prepare for changes in recreation due to heat, wildfire, and reduced snowpack.</u>	<u>Promote the design of city parks and trails to be climate resilient. Utilize water conservation methods and technologies in development of irrigation infrastructure. Develop standards for native drought-resistant landscaping. Provide low-impact green infrastructure to support improved stormwater management. Allow parks to provide flood storage in winter and play and recreation in dry periods.</u>	Economic Development or Parks, Recreation and Open Space	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Promotes economic development. ▪ Provides cost savings. ▪ Improves health and wellbeing.
<u>Protect businesses, travel, and shipping routes with increased infrastructure resilience.</u>	<u>With community partners implement the Cowlitz County [and Clark County] Comprehensive Emergency Management Plans and infrastructure resilience plans to help ensure continuity of business and a sustainable recovery.</u>	Economic Development or Capital Facilities	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Promotes economic development.

Emergency Management

Woodland provides police services. Clark County Fire and Rescue currently provides emergency fire and basic and advanced life support services to the city. Woodland also participates in regional emergency management planning.

Climate change can increase the severity of extreme heat and extreme precipitation events (e.g. flooding) as well as other intense hazard events. This can result in increased costs and demands for emergency preparedness, response, and recovery activities (e.g. emergency personnel overtime, sand to put in sandbags, etc.). Also, more residents could be impacted by hazards more frequently. A new goal and associated policies could be added to the City’s Capital Facilities Element that addresses public services as well as capital needs. The County’s Comprehensive Plan identifies the need for temporary shelters as part of disaster response. A similar role for the City could be to identify the community center or parks as resilience hubs, which can be day use or overnight facilities where the City or emergency personnel can distribute resources or coordinate communication.⁶

⁶ See: <http://resilience-hub.org/>.

Table 5. Emergency Management (includes preparedness, response, recovery)

Goal	Policy	Comp Plan Element	Co-Benefits
<u>Enhance emergency plans, resources, and response to minimize the impacts of emergencies and disasters on people, property, environment, and economy.</u>	<u>Through interagency efforts with emergency services providers, identify safe areas for evacuation and assist in the implementation process with the city Police and Fire District.</u>	Capital Facilities	
Same as above.	<u>Factor climate impacts into the planning of operations and coordination of preparedness, response, and recovery activities among first responders and partners, including public health, law enforcement, fire, school, and emergency medical services (EMS) personnel. Plan for emergency evacuations and post damage evaluation of City buildings and infrastructure.</u>	Capital Facilities	
Same as above.	<u>Develop resilience hubs — community-serving facilities augmented to support residents and coordinate resource distribution and services before, during, and after a hazard event.</u>	Capital Facilities, and Parks, Recreation and Open Space	

Human Health

Extreme heat and rising temperatures, wildfires, and decreasing summer precipitation can adversely affect sensitive populations that are at risk of heat-related and air quality-related illnesses and death (e.g. heat-related deaths and illnesses, ozone and particulate matter and cardiovascular and respiratory illnesses, disease vectors-e.g. mosquitos). As summarized in the Planning Tool, the elderly, very young (e.g. under 5 years old), people with preexisting health conditions, and people without adequate housing are likely to be more affected.

Planning ahead and providing sufficient resources for human health is a role the City can support. See also relevant policies under Buildings & Energy, Emergency, Ecosystems, and other sectors that affect impervious surfaces, tree canopy, building design, and community hubs that can affect access to shade and clean air.

Table 6. Human Health (includes community well-being and engagement)

Goal	Policy	Comp Plan Element	Co-Benefits
<u>Plan for and respond to extreme heat and smoke hazards on human health such as vector-borne illnesses, increased pollution, and increased heat-related illnesses, deaths, and hospitalizations.</u>	<u>Work with the Fire District and Cowlitz County Health Department to address extreme heat and wildfire smoke planning and resources for homeowners and businesses owners, designating clean air or cooling centers, and planning for emergency medical responses for populations at risk (e.g. outdoor workers, older residents, very young residents, persons with preexisting health conditions, etc.).</u>	Capital Facilities	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Improves health and wellbeing. ▪ Improves air quality.
See above.	<u>Develop a program to distribute cooling units and install heat pumps, prioritizing households with residents (e.g., low-income seniors) most vulnerable to extreme temperature events.</u>	Capital Facilities	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Improves health and wellbeing.
See above.	<u>Use integrated pest management on shorelines, stormwater facilities, parks, and open spaces to reduce exposure to vectors (e.g. mosquitos and standing water, etc.).</u>	Environment	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Provides ecosystem services. ▪ Improves health and wellbeing.
See above.	<u>Develop and implement a wildfire smoke resilience strategy in partnership with local residents, emergency management officials, regional clean air agency officials, and other stakeholders.</u>	Capital Facilities	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Improves health and wellbeing. ▪ Improves air quality.

Ecosystems

Although urban in part, Woodland contains habitats including wetlands, streams, oak woodlands, and waterfowl and duck concentrations and breeding areas. (Comprehensive Plan Environment Element and Table 10-2). The Comprehensive Plan notes the City has a variety of open spaces including parks, critical areas and their buffers as well as others but these lack interconnection.

Changes in winter and summer precipitation and exposure to climate related hazards (drought, floods, wildfire) can impact stream flows and fish habitat, trees and plants, and wildlife habitat. Woodland has Comprehensive Plan goals and policies that support protection of critical areas and shoreline management. Enhancement of goals and policies addressing the protection and resilience of critical areas, shorelines, and open space is proposed. Also proposed are goals and policies to promote tree canopy and improved landscaping standards.

Table 7. Ecosystems (includes terrestrial and aquatic species, habitats, and services)

Goal	Policy	Comp Plan Element	Co-Benefits
E 1 Be an effective steward of the environment, protect critical areas, and conserve land, air, water, cultural, and energy resources.	E 1.4 Ensure development is compatible with other environmental factors, such as ground water, climate, scenic, historic and cultural resources, and wildlife. <u>Preserve, restore, and enhance critical areas considering climate resilience. Link open space and habitat within ecosystems through shoreline restoration plans, critical areas regulations, and conservation design of developments and subdivisions.</u>	Environment	<ul style="list-style-type: none"> Enhances resilience. Provides ecosystem services.
See above.	<u>Adaptatively manage, monitor, and periodically amend the City's critical areas regulations to promote resilience to extreme precipitation or heat and in coordination with other jurisdictions in watersheds.</u>	Environment	<ul style="list-style-type: none"> Enhances resilience. Provides ecosystem services.
<u>Protect and conserve ecosystems by increasing resilience to climate hazards such as heat, flooding, drought, and reduced snowpack that pose a risk to forest productivity, pest outbreaks, fish and wildlife habitats, and water quality.</u>	<u>Protect and enhance tree canopy particularly native trees to provide shade and reduce heat islands, improve air quality, and support fish and wildlife habitat.</u>	Environment	<ul style="list-style-type: none"> Enhances resilience. Sequesters carbon. Provides ecosystem services.
See above.	<u>Update landscape standards to promote native drought- and pest-resistant trees, shrubs, and grasses to support climate resilience. Encourage landscape enhancement on existing developed sites. Develop an identification and monitoring program for urban trees to analyze risks or impacts of pests and disease, factoring in climate impacts.</u>	Environment	<ul style="list-style-type: none"> Enhances resilience. Sequesters carbon. Provides ecosystem services.

Transportation

Woodland has a network of arterials, collectors, and local roads that connect to county, state, and federal roads. The City has sidewalks, trails, and bike facilities, though not continuous. The Transportation Element inventories the current system and plans for improvements to it to meet local levels of service.

Climate-related hazards (e.g. flooding or landslides, fires, or heat) could affect transportation systems including travel disruptions, road and bridge damage, and increased maintenance of road surfaces and roadside vegetation. Improving the resilience of the transportation network could mean design and location of facilities considering hazards, as well as offering new connections in multiple modes (e.g. pedestrian and bicycle routes and transit). Encouraging multiple modes can offer flexibility in terms of access and evacuation, offer active living, and reduce greenhouse gas emissions (mitigation). Draft goals and policies suggest additional emphasis on non-motorized and transit systems connectivity and service as well as design and location of all transportation modes to be more resilient.

Table 8. Transportation (includes multimodal travel and infrastructure)

Goal	Policy	Comp Plan Element	Co-Benefits
<u>Increase the resilience of transportation structures to floods and changes in maintenance due to cold-season precipitation. Provide a convenient, safe, and efficient multi-modal transportation system that promotes the mobility of people and goods within and through the city.</u>	<u>Maximize bicycle and pedestrian infrastructure and other active-transportation systems. Prioritize non-motorized routes to connect homes to work and other destinations.</u>	Transportation	<ul style="list-style-type: none"> ▪ Reduces emissions. ▪ Enhances resilience. ▪ Improves health and wellbeing. ▪ Improves air quality.
See above.	<u>Expand and improve access to public transportation through transit system improvements and land use practices that support transit. Adapt community park and ride facilities to support improved transit service.</u>	Land Use, Transportation	<ul style="list-style-type: none"> ▪ Reduces emissions. ▪ Enhances resilience. ▪ Improves health and wellbeing. ▪ Improves air quality.
See above.	<u>Improve street connectivity and walkability, including sidewalks and street crossings, to serve as potential evacuation routes.</u>	Transportation	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Improves health and wellbeing.
See above.	<u>Consider future climate conditions during siting and design of capital facilities like roads, bridges, utilities and other infrastructure. Address anticipated changes to temperature, rainfall, and flooding, to help ensure they function as intended over their planned life cycle.</u>	Transportation	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Provides cost savings

Waste Management

The City facilitates garbage and recycling services with waste management contractors. However, climate impacts could include increased solid waste affecting public works and emergency responders, such as increased cleanup of downed trees and vegetation debris and building damage and rubble.

The City’s Comprehensive Plan addresses solid waste services in the Capital Facilities Element (see CF 5.4 and CF 5.5) though not in the context of hazard responses. Draft goal and policy language would address the role the City could play in responding to events and developing a program of recycling addressing demolition debris.

Table 9. Waste Management (includes materials recycling and disposal);

Goal	Policy	Comp Plan Element	Co-Benefits
<u>Increase municipal cleanup and refuse capacity to prepare for increased need following extreme precipitation events.</u>	<u>Develop and implement a strategy to expedite the removal of waste (e.g., downed tree limbs and buildings blocking roads and streams) during and after a disaster incident to reduce the risks of subsequent fire, flood, injury, and disease vectors.</u>	Capital Facilities	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Provides cost savings. ▪ Improves health and wellbeing.
See above.	<u>Incentivize recycling of construction and demolition debris. Develop a program that will enable recycling of all construction and demolition debris.</u>	Capital Facilities	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Provides cost savings. ▪ Improves health and wellbeing.

Water Resources

Climate impacts to water resources could include increased risk of flooding and drought, changes in water quality, changes in available water supply, and more demands on stormwater facilities. Some of these impacts are addressed under Ecosystems and Zoning and Development. This section focuses on water supply and conservation.

Woodland manages a water system including a water treatment plant and distribution system. The City’s water comes from an aquifer beneath the North Fork of the Lewis River.⁷ The Comprehensive Plan addresses the water system in its Growth Management and Capital Facilities Elements.

The City has a Water System Plan most recently updated in 2020. The Water System Plan addresses water quality, quantity, and efficiency. Comprehensive Plan Growth Management Element goals consider adequate water in the city and urban growth area. Water conservation is not directly addressed in the Comprehensive Plan though covered in the Water System Plan.

A goal and policies addressing sustainable water resources – surface and groundwater, stormwater, landscape management, is proposed.

⁷ See: <https://www.ci.woodland.wa.us/publicworks/page/water-treatment-plant-wtp>.

Table 10. Water Resources (includes water quality and quantity)

Goal	Policy	Comp Plan Element	Co-Benefits
<u>Prepare conservation strategies to increase resilience to drought and reduced snowpack.</u>	<u>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.</u>	Land Use, Environment, or Capital Facilities	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Provides cost savings. ▪ Provides ecosystem services.
See above.	<u>Through the Water System Plan and regional water supply coordination, encourage "smart" metering, groundwater monitoring, and other proven measures to conserve water and enhance drought resilience.</u>	Land Use, Environment, or Capital Facilities	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Provides cost savings. ▪ Provides ecosystem services.

Zoning & Development

The City applies zoning, critical areas regulations, and building standards including flood hazard management that affects the location, intensity and design of housing, commercial and other uses. The City’s Comprehensive Plan identifies critical areas and refers largely to the Shoreline Master Program for additional management along the river and floodplains.

Climate-related impacts such as flooding could cause increased stormwater runoff on impervious areas, erode streambanks, damage flood protection facilities, require new flood-control facilities, and change housing stock availability, etc. the City’s zoning and development regulations (e.g., flood hazard protection) can help the City address these hazards. A goal and policies that further emphasize green infrastructure (e.g., low-impact stormwater design), adaptive housing designs and locations, and other topics are proposed.

Table 11. Zoning & Development (includes site use, design, and other development facets)

Goal	Policy	Comp Plan Element	Co-Benefits
<u>Utilize zoning and other development regulations to limit development in at risk areas, and resilience of existing and new developments.</u>	<u>Encourage low-impact development techniques and green infrastructure that enhance climate resilience in proposals for new development, such as green roofs, rain gardens, and others.</u>	Land Use	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Provides cost savings. ▪ Provides ecosystem services.
See above.	<u>Require the use of green infrastructure and low-impact development to address increased storm intensities and stormwater runoff.</u>	Land Use	<ul style="list-style-type: none"> ▪ Enhances resilience. ▪ Provides cost savings.

Goal	Policy	Comp Plan Element	Co-Benefits
			<ul style="list-style-type: none"> Provides ecosystem services.
See above.	<u>Improve the siting and design of housing and landscaping to promote climate resilience such as passive heating and cooling, natural lighting, solar panels and heat pumps, drought resistant landscaping, and other techniques.</u>	Land Use	<ul style="list-style-type: none"> Enhances resilience. Provides cost savings. Provides ecosystem services.
See above.	<u>Add infill code to encourage redevelopment of residential lots, accessory dwelling units, and other middle housing options to promote housing near amenities and increase multiple modes of transportation, improve resiliency, and reduce greenhouse gas emissions.</u>	Land Use	<ul style="list-style-type: none"> Reduces emissions. Enhances resilience. Improves health and wellbeing
See above.	<u>Strengthen development regulations that promote compatible uses and protection of health and safety in geologic, flood, and other hazard areas including areas more prone to risks due to extreme precipitation and heat.</u>	Land Use, Environment	<ul style="list-style-type: none"> Enhances resilience. Improves health and wellbeing
See above.	<u>Consider a flood adaptation hierarchy with strategies and interventions to protect, accommodate, or retreat from flood hazard areas that would be exacerbated with climate change. Where interventions are necessary for protection prefer nature based designs.</u>	Land Use, Environment	<ul style="list-style-type: none"> Enhances resilience. Provides ecosystem services.

Use of Recommendations

The evaluation of Woodland’s Comprehensive Plan under the draft Resilience Guidance is meant to provide a resource for the City to enhance its Comprehensive Plan to continue to effectively plan for all aspects of the community while considering the effects of climate change on its people and places.

All of the ways Woodland plans, permits, and responds to community needs are considered, including land use, housing, economic development, environment, transportation, capital facilities, utilities, and public services including ongoing and emergency services.

Once the City vets and considers how best to amend its comprehensive plan to reflect its needs, the City can wrap the potential amendments into its annual docket or next periodic review. The Model Element Resilience Guidance allows each jurisdiction to decide on how best to integrate climate

resilience goals and policies, such as to list all climate element goals and policies (mitigation and resilience) in one climate chapter, or to integrate them into several chapters/elements (Land Use, Housing, Transportation, etc.). A jurisdiction could also do a combination of central and dispersed goals and policies.