
Washington State Department of Commerce

We strengthen communities

# Climate Element Planning Guidance

June 2023 — Early Version

GROWTH MANAGEMENT SERVICES

v3.1

**The Washington State Department of Commerce published this June 2023 "early version" climate element planning guidance for local governments planning under the Growth Management Act. The agency will publish on its climate website an "intermediate version," which addresses 2023 legislation (2SHB 1181), by December 31, 2023.**

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**For people with disabilities, this report is available on request in other formats. To submit a request, please call 360.725.4000 (TTY 360.586.0772).**

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# Executive Summary

On May 3, 2023, Governor Inslee signed into law HB 1181 (Chapter 228, 2023 Laws),[1] which added climate planning as a new goal of the Growth Management Act (GMA)[2] and includes the following key changes:

- Takes effect on July 23, 2023 and will first apply to the jurisdictions with 2025 comprehensive plan periodic update deadlines [*See Section 1.4 Who Must Create a Climate Element*].
- Adds a greenhouse gas (GHG) emissions reduction sub-element[3] that is mandatory for 11 counties and their cities and would require actions to reduce overall GHG emissions and vehicle miles traveled.
- Adds a resiliency sub-element, which is mandatory for all jurisdictions planning under RCW 36.70A.040.[4] A natural hazard mitigation plan that is in substantial conformance with the guidance could be adopted, by reference, to satisfy the resilience sub-element requirements.
- Directs the Washington Department of Commerce (Commerce) to create guidance to support a jurisdiction in updating its comprehensive plan. Intermediate guidance to reflect this new law is due December 30, 2023.
- Directs Commerce, in collaboration with other state agencies, to develop a model climate element and adopt by rule minimum standards for compliance with state law by June 30, 2025.
- Requires consideration of environmental justice in order to avoid worsening environmental health disparities.
- Requires the Department of Ecology to update its Shoreline Master Program (SMP) guidelines to require that SMPs address the impact of sea level rise and increased storm severity.
- Requires the Department of Transportation to maintain a summary of the per capita vehicle miles traveled for cities and unincorporated portions of counties; and, adds multimodal[5] concurrency.

This guidance document was developed in advance of the legislation in order to assist cities and counties that choose to develop climate goals and policies prior to state directives.

This guidance provides options on how to develop a new climate element[6] or update an existing climate element as part of a periodic comprehensive plan for jurisdictions with varying capacities. This guidance was developed with an awareness of legislation being proposed. The first update on December 30, 2023, will be consistent with state law and available to jurisdictions with 2025 comprehensive plan periodic update deadlines.

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[1] Governor Inslee's medium article: New suite of climate laws continue path to 100% clean energy future | by WA Governor's Office | Washington State Governor's Office | May, 2023 | Medium

[2] RCW 36.70A

[3] Referred to as the "GHG Reduction sub-element" in this guidance.

[4] HB 1181 uses the term resiliency, which is most often used today in academic contexts. This planning guidance uses the term resilience, which is more widely used by planners, emergency managers, and other practitioners. The terms are variations of the same word.

[5] Refer to Glossary of Terms in Appendix K.

[6] Throughout this guidance, the term "element" is interchangeable with "chapter." The term "element" aligns with language within the Growth Management Act, RCW 36.70A.

# Acknowledgments

*Without the time and talent of those named below and many others, these pages would be empty and our state would be further from our climate goals. Thank you for your collaboration. We hope this guide will provide your county or city the planning tools to align your values with strategies to achieve them for current and future generations.*

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# Section 1: Introduction

## 1.1: Let's Get Started

This document provides guidance for local governments to incorporate climate change into their comprehensive plans. The guidance begins with recommendations regarding the importance of developing an outreach strategy and ensuring that historically underrepresented and overburdened communities are included in the early and continuous planning efforts. We suggest that jurisdictions with capacity include a climate policy advisory team. Next, the guidance provides flexible pathways to develop goals and policies to reduce greenhouse gas emissions and enhance community preparedness, response, and recovery efforts that build resilience to the impacts of wildfires, floods, and other hazards worsened by global climate change.

All pathways conclude with instructions regarding how to integrate a climate element into a comprehensive plan. This could look different depending on preferences of the jurisdiction. A mix of resilience and GHG reduction goals and policies could be consolidated into a single chapter or spread across multiple chapters associated with other Growth Management Act (GMA) elements (housing, transportation, land use, etc.). This flexible planning and implementation approach recognizes that climate change is a cross-cutting issue that affects many sectors and communities in different ways.

Commerce elicited significant input from tribal, federal, state, and local governments, as well as businesses, advocacy groups, and other private-sector stakeholders, to develop the climate element guidance and model measures.

The guidance is intended to be followed in order, with the last step resulting in the selection and customization of goals and policies, which will be brought forward to your decision-makers for adoption into the comprehensive plan [*Figure 1*]. The appendix includes helpful tools such as a **Menu of Measures** (model goals and policies); a workbook for capturing the analysis completed with development of the sub-elements [*Appendix B*]; a resource library of climate planning, policy design, funding, and implementation tools [*Appendix E*]; and summary reports from project collaborators.

**Figure 1: Climate Element Guidance**

## 1.2: Background

Commerce and its partners began developing the climate element planning guidance in late 2021, with the aid of a $3 million appropriation in the Washington State Legislature's 2021-2023 budget[7] and an initial deadline of June 30, 2023. This budget allocation reflected an urgency to fund early climate planning action as the first round of jurisdictions have their periodic comprehensive plan updates due in 2024. The Growth Management Act (GMA) calls for jurisdictions to review and, if necessary, revise their plans and regulations every 10 years to ensure they remain up-to-date.

This guidance includes planning for GHG emission reduction and resilience (climate preparedness, response, and recovery), as well as model goals and policies [*referred to throughout this guidance as the "**Menu of Measures**"*]. The guidance provides jurisdictions the option to integrate such measures into their comprehensive plans as part of the periodic update.

Commerce developed the climate element guidance with contributions from six other state agencies and approximately 80 planning professionals throughout the state, Western Washington University students, and private consultant firms. The consultant firms added the following expertise to the development of the guidance and model measures:

- **EcoAdapt** provided research and recommendations to assist with the Legislature's request for the GHG reduction measures to be demonstrably effective[8] at reducing emissions.

- **Front and Centered** facilitated a Community Leadership Committee (CLC), which conducted outreach and held listening sessions throughout the state, specifically within communities most impacted by climate change. The CLC included eight leaders from organizations in historically underrepresented communities. This work shaped guidance for prioritizing climate measures through an environmental justice lens in order to not exacerbate disproportionate climate impacts and to present opportunities to strengthen community resilience. See Appendix A for a summary of environmental justice guidance.

- **Cascadia Consulting Group and BERK Consulting** conducted a pilot test of the draft climate resilience guidance with the cities of Port Angeles, Woodland, and Pullman, in order to incorporate early lessons into the final guidance. See Appendix G for a summary of pilot program.

## 1.3: Climate Impacts in Washington State

Washington's social, economic, and environmental sectors and systems face serious climate risks, which require a dynamic mix of measures to build resilience and reduce emissions. Burning fossil fuels and other human activities are increasing emissions of carbon dioxide and other greenhouse gases that are trapping heat in the atmosphere and changing the climate. Even as Washington encourages residents to drive electric cars, install rooftop solar panels, and take other actions to mitigate greenhouse gas emissions, The

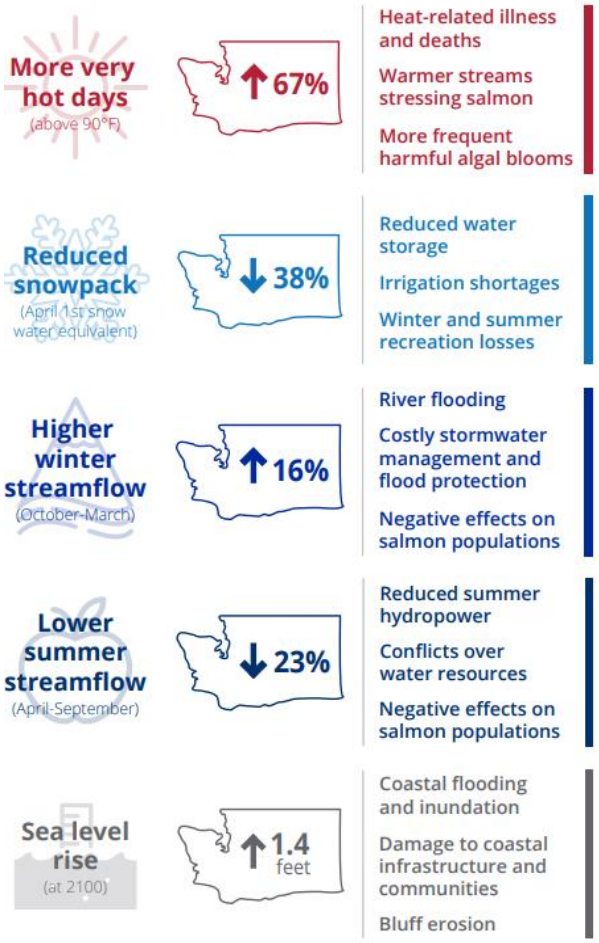
[7] SB 5092, Section 126
[8] The term "demonstrably effective" was included in the budget proviso as a required attribute of measures that would reduce greenhouse gas emissions.

Evergreen State faces unavoidable climate impacts. Our diverse landscape of snowy peaks, rolling fields, verdant forests, and rocky shores is already witnessing the effects of a warming world in the form of blazing wildfires, extreme heat events, rising seas, and other hazards. Many of the climate consequences we're seeing today will become more severe over time.

Human activities are estimated to have caused 1.1°C of global warming above pre-industrial (1850-1900) levels, and most emissions scenarios assessed project that global warming is likely to reach 1.5°C by the early 2030s.[9] Here in Washington, that would make the average year warmer than the hottest year of the 20th century.[10] Warming of 1.5°C would raise risks for the economy, environment, and human health and well-being [*Figure 2*]. For example, just one year of heat-related activity losses equates to more than $426.1 million in direct losses to industry sales, $178.3 million in lost gross state product, and 1,481 full-time-equivalent jobs.[11]

The effects of climate change also impact Washingtonians differently. Overburdened and vulnerable communities, such as ones with higher rates of poverty, limited English proficiency, and other indicators are more vulnerable to climate change due to historical trends, including the impact of redlining. These practices and other forms of discrimination concentrated racial minorities in communities that also experience disproportionately negative health impacts that can be further exacerbated by climate change. There is a more than five-year difference in life expectancy between communities ranked at highest risk versus those at lowest risk in the Washington State Department of Health's Environmental Health Disparities Map.[12]

## Figure 2: Washington climate impacts associated with a 1.5°C temperature change




**SOURCE:** University of Washington Climate Impacts Group

The future is now. We know effective ways today to mitigate our carbon emissions, reduce our risks, and build a more resilient and equitable Washington. From Port Angeles to Pullman, Woodland to Whatcom County, many of Washington's local jurisdictions are already implementing replicable policies to foster equitable and sustainable communities in the face of a changing climate.[13]

After signing the landmark Climate Commitment Act and HEAL Act into law in 2021, Governor Inslee remarked, "*Every Washingtonian deserves to live in a healthy environment, regardless of their zip code or*

[9] IPCC report (2023), Synthesis Report of the IPCC Sixth Assessment Report (AR6), Summary for Policymakers
[10] UW CIG report (2019), No Time to Waste. The Intergovernmental Panel on Climate Change's Special Report on Global Warming of 1.5°C and Implications for Washington State
[11] UW CIG and Washington State University report (2022), Biophysical Climate Risks and Economic Impacts for Washington State
[12] Washington State Department of Health Environmental Health Disparities Map (accessed June 1, 2023)
[13] MRSC website (2022), Local Government Climate Change Planning Documents

*socioeconomic status. We've studied the issue long enough. Now is the time to get to work and create a more just, healthy and equitable future for all Washingtonians*."

## 1.3: Key Climate Planning Concepts

Whether you're creating or updating your comprehensive plan's climate element or talking with community members about climate change, it's important to understand the interrelatedness of key concepts, including climate resilience, adaptation, GHG emissions reduction, hazard mitigation and environmental justice. A glossary of the terms used throughout the climate element guidance and its **Menu of Measures** can be found in the appendix [*Appendix J*]. The appendix also includes a curated list of climate planning articles, videos, and websites, in order to assist with deeper learning at any level [*Appendix E*].

Climate Resilience: Climate resilience is "the ongoing process of anticipating, preparing for, and adapting to changes in climate and minimizing negative impacts to our natural systems, infrastructure, and communities," as defined by state law.[14] Washington's cities and counties can build their resilience capacity by implementing a mix of climate preparedness, response, and recovery policies, including mitigating natural hazards, adapting to unavoidable impacts, and restoring degraded natural areas that provide key ecosystem services — all with an equity lens to account for how climate impacts may vary based on localized experiences of environmental injustice.

GHG emission reduction (climate mitigation): GHG emission reduction means taking action to reduce or eliminate GHG emissions, the quantity of which can determine the extent and severity of climate change over time. This guidance's GHG emission reduction strategies [*Section 4*] recommend principally targeting emissions in the building and transportation sectors, which are Washington's two biggest sources of GHG emissions.

The terms hazard GHG reduction and adaptation both relate to climate change, as discussed in this guidance. The Federal Emergency Management Agency (FEMA) defines hazard **mitigation** as "any sustained action to reduce or eliminate long-term risk to people and property from natural hazards and their effects." The related concept of adaptation is "the process of adjusting to new (climate) conditions in order to reduce risks to valued assets," which can include everything from roads and buildings, to health and well-being, to forests and streams.[15] These terms are expanded upon within the resilience sub-element guidance [*Section 3*].

Acknowledging the relationships between these concepts, this guidance and its companion model goals and policies aim to promote co-benefits — the additional social, economic, and environmental benefits of a climate policy. Jurisdictions can surface potential co-benefits through robust collaboration with communities, especially overburdened and vulnerable communities, that center climate and environmental justice as guiding principles.

For example, a GHG reduction policy that supports increasing compact "middle-density" housing (e.g., duplexes and triplexes) near transit, helps to reduce building energy consumption and vehicle miles traveled and also makes housing more plentiful and potentially affordable. This also improves access to public transportation and improves employment and health outcomes for transit-dependent community residents who might otherwise be unable to access these opportunities. A resilience policy that supports planting drought-tolerant street trees to adapt to hotter, drier summers also has GHG reduction co-benefits; such trees

[14] RCW 70A.65.010
[15] NOAA website (2022), U.S. Climate Resilience Toolkit glossary

store carbon and reduce energy demand in adjacent buildings. Collaborating with community partners early in the process can help refine where tree-planting should occur first, and how tree planting might create shade for neighborhoods without air-conditioning and potentially prevent heat-related illness and death.

## 1.4: Who Must Create a Climate Element

The Growth Management Act (GMA) includes 15 mandatory elements, with climate[16] planning being the most recently added. The climate-related changes to the GMA that are reflected in HB 1181 (Chapter 228, Laws of 2023) include amendments to other mandatory elements with timeframes for applicability based on the periodic update schedule. Applicable jurisdictions must update their transportation element, land use element, and add a climate element, which is comprised of a greenhouse gas emissions reduction sub-element and a resilience sub-element. These requirements apply to the following counties and their cities with a population greater than 6,000 as of April 1, 2021 (per the Office of Financial Management):

| Applicable counties and their cities | 2025 | 2026 | 2029* Progress Report | |
|---|---|---|---|---|
| Benton | | X | | ***Note**: The jurisdictions with the first implementation progress reports due in 2029 are only required to update* **two elements** *— the transportation element and add a climate element (greenhouse gas emissions reductions sub-element and a resilience sub-element).* |
| Clark | X | | | |
| Franklin | | X | | |
| King | | | X | |
| Kitsap | | | X | |
| Pierce | | | X | |
| Skagit | X | | | |
| Snohomish | | | X | |
| Spokane | | X | | |
| Thurston | X | | | |
| Whatcom | X | | | |

The resilience sub-element is mandatory for all counties and cities fully planning under the GMA and is encouraged for all other jurisdictions (counties and cities) not listed in the table above. Commerce provides a

[16] RCW 36.70A.070: Comprehensive Plan, Mandatory Elements

complete collection of training and guidance on the GMA. The following Commerce resources are available online: Periodic Updates; GMA regulations; and an overview of Washington local land use planning.

# Section 2: Climate Policy Creation

This guidance is intended to be followed in order by section. The public participation plan should be iterative and adjusted throughout the project until final adoption, given that public participation is a required component of the periodic update.[17]

County and city staff should establish a work plan at the outset of the project that outlines the entire periodic update process — including any new elements, such as climate. A work plan should include approximately two years planning to create and adopt a new climate element (one year per sub-element) concurrent with your broader comprehensive plan update.

See the Periodic Update webpage for an example work plan that identifies a procedure and schedule for the public to participate in the periodic update.[18] Communication to the public regarding the work plan should clearly identify the scope of the review and identify when legislative action on the review and update of the component are proposed to occur. The work plan must provide for early and continuous public participation. The best way for a county or city to fulfill this requirement is to schedule public engagement at the beginning of the update process, and iteratively review and adjust the plan throughout all of the key steps for best results.

County and city staff should also provide for early and continuous public engagement. They should work with community partner organizations to the fullest extent possible to anticipate barriers to public engagement and to make engagement more accessible. Identifying barriers to engagement — and gaps in engagement activities and outcomes — is also an iterative process. Such factors impacting meaningful notice and engagement may include the use of written and verbal materials, day and night opportunities, multiple language options (without community members having to request them), and in-person and virtual engagement.

> ***NOTE:*** *If the policy changes you are considering apply to use and development in shoreline areas, your jurisdiction will need to follow the process for updating a Shoreline Master Program (SMP).*[19] *The Washington Department of Ecology has additional resources for addressing climate change in SMPs.*

## 2.1: Form Climate Policy Advisory Team

Typically, a jurisdiction forms an internal staff team to manage the entire update process and will include at least one advisory committee composed of community volunteers and other stakeholders as its primary advisory committee for the comprehensive plan.

If there is capacity, consider including a climate-focused interdisciplinary team, in addition to the primary advisory committee, to focus on developing and revising the comprehensive plan's climate goals and policies. This team, hereafter referred to as the "climate policy advisory team," would coordinate with the primary planning and public-engagement efforts associated with updating housing, land use, transportation, and other comprehensive plan elements. If capacity is constrained, and only a singular advisory committee is possible, then consider recruiting individuals with expertise as described in this section to fill dual roles.

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[17] RCW 36.70A.035 and 130(2)(2)
[18] See above
[19] WAC 173-26-090

The main focus of the climate policy advisors is to analyze climate information gathered through periodic update engagement processes and provide recommendations on areas of focus. They could also provide recommendations on the following: goals with near-term due dates; actions that can be implemented readily; strategies for longer-term actions; and, a structure to update the plan.

Members of a climate policy advisory team should generally include planners and public works professionals, plus a diverse group of community members and agency partners with the goal of collaboratively creating a climate element that will center equity in policy development and implementation. The team should include a variety of partners with the following expertise:

- developing and implementing zoning and land use policy;
- hazard mitigation, public health, transportation, and other areas of expertise with a climate nexus;
- community engagement specialists;
- legal advisors to make sure goals and policies are consistent with state and local laws; and,
- elected officials who will provide oversight and can champion the project from beginning to end.

Commerce recommends that your jurisdiction's climate policy advisory team include leaders within overburdened communities that are most impacted by the changing climate conditions and whose insight will lead to the most equitable outcomes for your jurisdiction. Use the companion **Climate Element Workbook** [*Appendix B*] to list your climate policy advisory team members. The workbook could be adapted to suit your jurisdiction's needs and is designed for your internal use.

### Support Community Participants

Regardless of whether there is one or multiple advisory bodies, building an effective and inclusive advisory team will take significant time and trust. The Municipal Research and Services Center (MRSC) advises local jurisdictions to*: "Create a foundation for an ongoing relationship, not a one-off transaction designed to extract information and leave. Once a frontline community has provided input, follow up and show them how their participation has led to tangible results. Community members can also be invited to serve on an advisory or implementation task force."*[20]

Consider the following ways to support people who serve on your advisory team, namely those whose participation is not a paid position within an organization:

- Pay a stipend for participation in and travel to meetings.
- Host meetings in the evenings, and provide food and childcare.
- Offer meeting translation services, and ensure engagement materials are available in multiple languages and formats.
- Ask what support they would need to authentically participate.

When present in the jurisdiction, community based organizations (CBOs) and representatives of these organizations can be particularly helpful partners and collaborators because of their roles as trusted partners in overburdened communities. They also bring broader community perspectives, not only the perspectives of individual community members. When partnering with CBOs, also consider compensating organizations to participate meaningfully in development, implementation, and evaluation of engagement efforts.

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[20] MRSC website (2023), Equity and Engagement in Climate Response.

## 2.2: Establish a Public Engagement Strategy

**Your planning process should include a strategy to engage a diversity of community members in equitable and meaningful ways. It is important to integrate community members into your planning process early to provide them agency in shaping and implementing policies. It is also important to coordinate your climate engagement efforts with any broader public-engagement strategy that is required as part of your comprehensive plan/periodic update process.**

Climate change does not impact everyone equally.[21] Use the resources below to identify and recruit overburdened community organizations and members — people who experience the first and worst consequences of climate change. Also consider inviting representatives from local businesses, neighborhood associations, schools, and other groups, to participate in your process and share their technical expertise, cultural perspective, and lived experience. List these stakeholders in your **Climate Element Workbook**.

- **Establish goals and outcomes:** Start by establishing equity goals and desired outcomes for your engagement strategy. Next, identify the level of decision-making you're giving to community members (e.g., making policy and process recommendations directly to your advisory team or elected officials).
- **Design an equitable process:** Ask your stakeholders how they want to participate in your process — for example, as part of the climate policy advisory team, technical or cultural focus groups, or multisector committees. Ensure that all stakeholders have an equitable opportunity to participate collaboratively in your planning process' core steps and policy implementation efforts. Seek out ways to center historically marginalized voices [*see resources below]*.

[21] United Nations Department of Economic and Social Affairs working paper (2017), Climate Change and Social Inequality.

- **Engage broader community:** Consider the following ways to educate and engage the broader community about climate resilience and GHG emissions reduction:
  - Host interactive events (virtual and in-person meetings and site tours of at-risk areas of the community) to educate residents about local climate impacts and how you will integrate resilience and GHG emissions reduction goals and policies into your comprehensive plan;
  - Participate in other issue-specific forums — for example, about affordable housing and health — to discuss their nexus with climate change;
  - Work with leaders of overburdened community organizations to talk directly with residents about climate change and how your jurisdiction and other partners can help neighborhoods reduce their dependence on fossil fuels and build resilience;
  - Participate in existing community arts and cultural events [*see example, right*] to share draft policy ideas and elicit input from residents.

**Using festivals, books, and games to engage residents and build climate resilience**

During Olympia's fall 2017 Arts Walk festival, the Thurston Regional Planning Council (TRPC), Timberland Regional Library, and other partners hosted "Art of Change," an event that merged climate literacy, art, science, and policy. Against the backdrop of an ocean acidification mural painted on downtown's Puget Sound Estuarium building, Timberland staff hosted a "pop-up" library where festival visitors could sign up for a card and check out climate books, films, and other resources. Olympia staff members discussed the City's sea-level rise strategy, while Arts Walk visitors played a TRPC-created board game called "Resilience Road." The collaborative game enabled players to take *Thurston Climate Adaptation Plan* actions to respond to the impacts of floods, droughts, and other climate-exacerbated hazards.

## 2.3 Establish a Tribal Engagement Strategy

Tribal Engagement is an overarching term that encompasses all levels of tribal communication and partnership, from informal coordination to formal government-to-government consultation. Federally recognized tribes retain their rights as sovereign nations to a direct government-to-government relationship with the federal government, independent of the state or local jurisdictions. Tribal Sovereignty is a legal term that means the right of a people to self-govern within jurisdictional borders. According to Washington Tribes, "Tribal sovereignty recognizes that American Indian tribes have the political status of nations and that Indian nations are located within the territorial boundaries of the United States. As sovereigns, tribal nations have a government-to-government relationship with the two other sovereign governing bodies in the U.S. — the federal and state governments." At Commerce, we engage with tribes in a few different ways, including archaeological and historical project reviews, informal tribal coordination, informal tribal consultation, and formal government-to-government consultation.

Local governments can conduct tribal engagement at a level of tribal coordination — informal engagement with tribal communities through conversations focused on information sharing with tribal staff. Tribal coordination also includes working with Indigenous groups that are not tribal governments, such as urban Native American organizations and/or tribal populations not located in their Indian Country. This might include non-federally recognized tribes, Native American non-profits and Indigenous community-based organizations. It is important to understand the distinction between working with federally recognized tribes who are self-governing sovereign nations and other Native American groups.

Your jurisdiction should reach out to tribes that have reservation lands, ancestral lands and waters, and/or "usual and accustomed areas" that neighbor your jurisdiction. Local governments have a legal responsibility to uphold sovereignty and treaty rights by consulting with tribal governments to reach consensus. Consider how you can approach this in a culturally appropriate manner by learning about your neighboring tribes through research, talking to mutual contacts, and visits to cultural heritage centers. Key information about Washington's tribal governments and their reservations can be found online at the Governor's Office of Indian Affairs: www.goia.wa.gov.

Many tribes have their own comprehensive plans that have a climate resilience element, and expertise developing climate adaptation plans. Collaborative planning efforts may help identify mutual priority actions and strategies that can inform neighboring jurisdictions. Tribes may choose to participate in your formal process for comprehensive planning, or in any other formal or informal way they choose. If tribes decline to participate due to capacity constraints or any other issue, your jurisdiction should still share updates and invite input throughout the planning process. Tribal involvement in local government comprehensive planning is evolving and additional guidance is being developed to accompany recent updates to GMA through SHB 1717 (Ch. 252, Laws of 2022).

## 2.4: Develop a Vision Statement

Early in the local planning process, jurisdictions often begin with creating a vision statement. In this context, your climate policy advisory team should draft a statement about the social, economic, and environmental places, traditions, and values that matter most to your community members. Articulate why and how your community members want to sustain them in the face of a changing climate. The vision statement should include guiding principles or values consistent with those your jurisdiction has articulated already for the comprehensive plan and/or the periodic update in general [*see examples in Appendix H*]. This is also an opportunity to revisit those statements and values, and to view them through the lens of climate and equity:

- Ask your community members to describe their unique perspectives, assets, and climate-related challenges;
- Ask them to define what climate resilience and community well-being mean to them;
- Ask them how the guiding principles — and, ultimately, the comprehensive plan goals and policies — could better serve their communities' unique needs and priorities and leverage their strengths;
- Ask them how they want to be a partner in implementing climate policies in the community and how your jurisdiction could help.

> *"Given the placed-based nature of climate change-related risks, community members are likely to be the experts in developing and deploying solutions that enhance social cohesion, prevent displacement, and bolster community resilience to climate change."*
>
> — University of Washington and Front and Centered report, An Unfair Share

## 2.5: Organize Climate Element for Integration and Consistency

Commerce recommends that a jurisdiction develop a climate element, and then cross-reference the goals and policies with all of the applicable goals and policies in the other elements. The Menu of Measures [*Section 5*] includes cross-references to other likely comprehensive plan elements for ease of use. Each jurisdiction's development regulations, planning activities, and capital budget decisions must also be consistent with and implement the plan. For example, the 20-year population forecast should be consistent throughout the comprehensive plan. Or, for another example, the housing and transportation policies should be based on identical land use and population assumptions.

The primary reason for plan integration is the Growth Management Act (GMA) requires that all comprehensive plans be internally and externally consistent.[22] Internal consistency means that all goals and or policies must be based on the same future land use map designations and population projections. Internal consistency also requires reviewing your plan and addressing policies that conflict or create barriers to implementing new or amended goals and policies. Internal consistency also typically encompasses other adopted plans or development regulations of the jurisdiction. External consistency means that the plan must be consistent with the countywide planning policies and must also be coordinated with plans of adjacent cities and counties. In summary, plan integration means that climate change goals and policies that are included in a climate element should be paired with other comprehensive plan elements.

22 RCW 36.70A.130 (1)(d), "Any amendment of or revision to a comprehensive land use plan shall conform to this chapter. Any amendment of or revision to development regulations shall be consistent with and implement the comprehensive plan."

## Model Climate Element

The following model climate element is intended to demonstrate how to integrate climate change goals and policies throughout a comprehensive plan. Each of the goals and policies has identical goals and policies in other elements of a typical comprehensive plan. The example goals and policies below are from the **Menu of Measures** [*Section 5*]. They include specific policies to reduce GHG emissions from transportation sources and policies to increase resilience in transportation infrastructure.

The hypothetical references in parenthesis (e.g., "Goal T 3.1") are to demonstrate a method of cross-referencing where the goal and policy can be found in other elements of a comprehensive plan. The acronyms in parentheses mean: Transportation element (T), Land Use element (LU), Capital Facilities (CF), Natural Environment (NE).

**Pro Tip:** Visit MRSC's climate portal for a list of climate-related plans and studies from other Washington local governments, special purpose districts, and tribes.

### Climate Resilience and GHG Emission Reduction

**Purpose: The intent of this element is to provide the (city/county) a consolidated policy framework related to climate issues that is essential to facilitating planning for our (city/county) and to assist in meeting the planning goals of the Growth Management Act.**

GHG Reduction Sub-element

**Climate Goal 1(CG 1):** Reduce vehicle miles traveled [23] to achieve greenhouse gas reduction goals. (Goal T 3.)

**CG 1 Policies**

**1-1** Implement multimodal transportation planning to reduce single occupancy, internal combustion vehicle dependence. (T3.A.1)

**1-2** Retrofit all local (county/city) roadways to have bicycle and pedestrian infrastructure by 2040. (T3.A.2, LU 2.B.2)

**1-3** Require, support, and encourage active-transportation systems. (T 3.A.3)

**1-4** Ensure public transit stops and station are at or near (within 600 feet) of shopping centers and malls. (T3.B.2, LU 4.B.3)

**1-5** Prioritize and promote public transit expansion and use through land use and transportation planning. (T3.B.3, LU 4.B.4)

**1-6** Promote congestion pricing and tolling when designing and building new facilities. (T 4.B.1, CF 4.B.4)

## Note about model:

**A singular model could not capture your local context given the unique nature of cities and counties throughout Washington. This model climate element provides a small sample of the model goals and policies available to choose from in the companion Menu of Measures.**

[23] Vehicle miles traveled reductions would be limited to the boundaries of the jurisdiction.

**Climate Goal 2 (CG 2):** Develop targeted campaigns for recycling material with highest greenhouse gas reduction impact (paper, metal, food waste). (Goal CF 2)

### CG 2 Policies

**2-1** Incentivize recycling of construction and demolition debris.

**2-2** Develop a program that will enable recycling of all construction and demolition debris (include target date).

**2-3** Create a business technical assistance program to increase recycling and reduce waste.

**2-4** Recycle all paper, food, textile and metal waste by (date).

## Resilience Sub-element

**Climate Goal 3 (CG 3):** Ensure that the (county/city) transportation system (infrastructure, routes and travel modes) is able to withstand and recover quickly from the impacts of extreme weather events and other hazards exacerbated by climate change. (Goal NE 12.1, CF 11.1)

### CG 3 Policies:

**3-1** Improve street connectivity and walkability, including sidewalks and street crossings, to serve as potential evacuation routes. (CF 6.2, T 3.3)

**3-2** Implement "last-mile" strategies (shuttles, ride-sharing, and bike-sharing) — beginning with overburdened communities, people with physical impairments, children and elderly transit riders.

**3-3** Identify "resilience hubs" and gathering places along potential evacuation routes (community centers, schools, non-profits, etc.) that can be enhanced to serve as a resilience hub.

**3-4** Reduce stormwater impacts from transportation and development through watershed planning, redevelopment and retrofit projects, and low-impact development. (NE 12.A.4)

**3-5** Align low-impact development projects with green-space efforts in overburdened communities.

## 2.6: Take Legislative Action

Your jurisdiction might need to undertake significant shifts in operations and development in order to reduce emissions, adapt to climate change, and build resilience. Given the scope and complexity of this task, it is very important to clearly explain each policy you intend to adopt and its potential impacts or implications in a staff report. This guidance includes a Climate Element Workbook [*Appendix B*] that could be included as a companion to a staff report and support the recommended policies.

Generally, the beginning of legislative action is when you are ready to present your suite of comprehensive plan amendments to a planning commission. The advisory body will make recommendations that will be forwarded to the final approval authority, such as an elected council. You will want to plan time to incorporate feedback from your public-engagement process, planning commission, and other advisory bodies before presenting it to the elected body. Commerce recommends allowing time to revise and make adjustments to the climate element throughout this iterative legislative process.

The conclusion of a legislative process should result in your elected officials adopting the climate goals and policies into the jurisdiction's comprehensive plan and notifying state agencies. Implementation of such climate measures can begin after the plan's adoption.

# Section 3: Resilience Sub-element

## 3.1: Overview

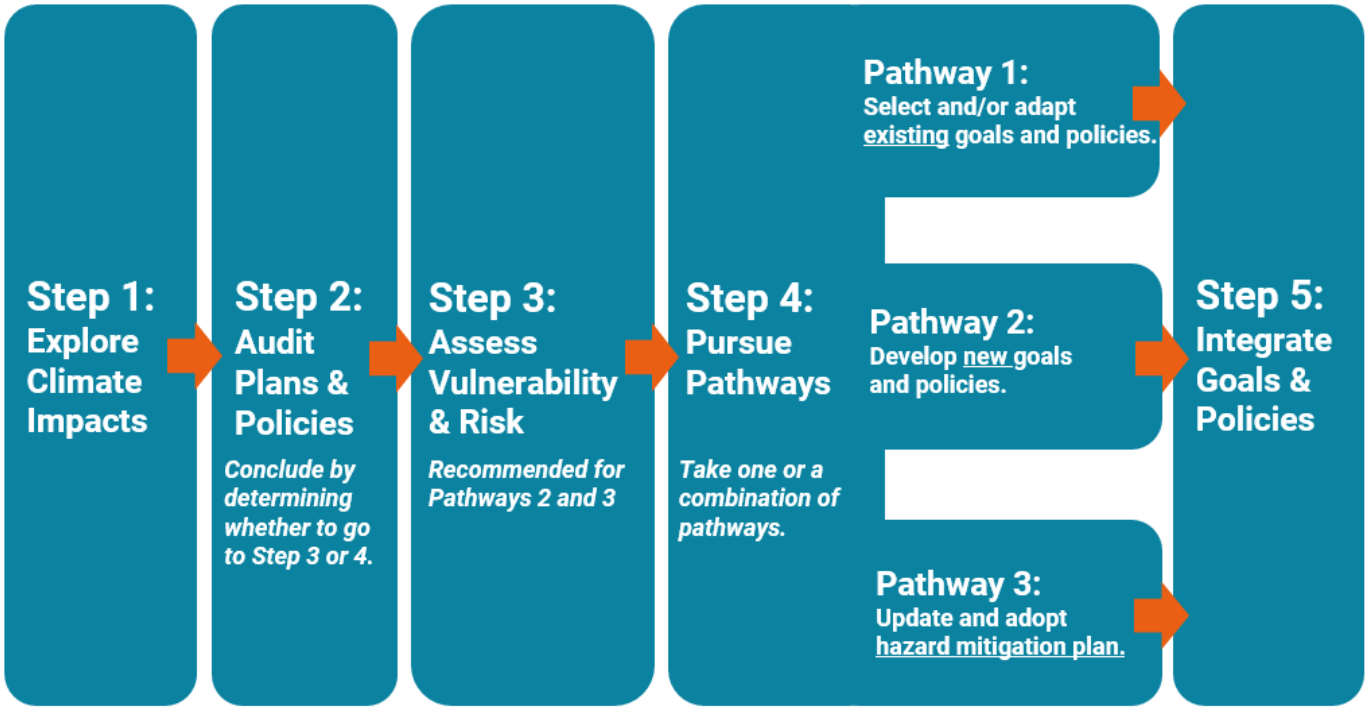
Washington's cities and counties should use the resilience sub-element's planning guidance (resilience guidance) to develop comprehensive plan goals and policies that support communitywide climate resilience, environmental justice, and equity. The resilience guidance will help jurisdictions to identify and address natural hazards exacerbated by climate change, including landslides, floods, droughts, wildfires, and other impacts of changes to temperature and precipitation patterns. The guidance and its companion resources will also help jurisdictions identify approaches to conserving natural areas, implementing traditional and green infrastructure solutions, maximizing policy co-benefits, and assessing overburdened communities' vulnerability to climate change.

**Defining Climate Resilience**

Climate resilience is the ongoing process of anticipating, preparing for, and adapting to changes in climate and minimizing negative impacts to our natural systems, infrastructure, and communities. Washington's cities and counties can build climate resilience by implementing a mix of preparedness, response, and recovery policies, including mitigating natural hazards, adapting to unavoidable impacts, and restoring degraded natural areas that provide key ecosystem services.

The resilience guidance provides a common planning framework, with iterative steps and flexible pathways included, to help local governments assess climate-exacerbated hazards and address impacts via comprehensive plan goals and policies [*Figure 3*]. All pathways lead you to the same destination: selection of at least one climate resilience goal and supportive policy within each of the model climate element's 11 sectors, including transportation, water resources, and ecosystems [*Figure 4*]. The number and nature of your jurisdiction's specific policies will be based on your assessment of local climate impacts and needs.

### Figure 3: Steps and pathways to integrate climate resilience into comprehensive plan



Washington's cities and counties should review their climate element at least once every 10-year comprehensive plan periodic update cycle and revise as needed [*Section 2*]. The revision should incorporate the best available science, updated climate modeling, and communities' evolving needs and priorities. This means your jurisdiction should take the resilience sub-element planning guidance's first two foundational steps to explore local climate impacts, identify resilience policy gaps and opportunities, and determine the appropriate next step: Your jurisdiction might want to proceed directly to Step 3 a**t this key decision point** and conduct a climate vulnerability and risk assessment to determine what hazard risks should be addressed soonest; or, your jurisdiction might be ready to skip to Step 4 to select policies for integration into the comprehensive plan. Your jurisdiction should choose its pathway(s) based on its staff capacity, body of climate work, budget, and other considerations.

**The Pathways Approach Provides Flexibility and Recognizes Existing Work**

Below are a few examples of how Washington jurisdictions — ranging in size, capacity, and existing climate planning work — could follow the flexible pathways approach for integrating climate resilience into a comprehensive plan. With each pathway, the jurisdiction could use the **Menu of Measures** as a resource for selecting goals and polices across all 11 of this guidance's sectors:

A **large jurisdiction** could use the guidance to identify resilience gaps and opportunities in its comprehensive plan and then integrate into the plan goals and policies from an existing climate action plan and Commerce's **Menu of Measures** [*Pathway 1*].

A **mid-size jurisdiction** could use the guidance to conduct a climate vulnerability and risk assessment to create a climate action plan and then integrate its new goals and policies into the comprehensive plan [*Pathway 2*].

A **small jurisdiction** with limited staff capacity could use the guidance to update an existing hazard mitigation plan and then adopt it, by reference, in the comprehensive plan [*Pathway 3*].

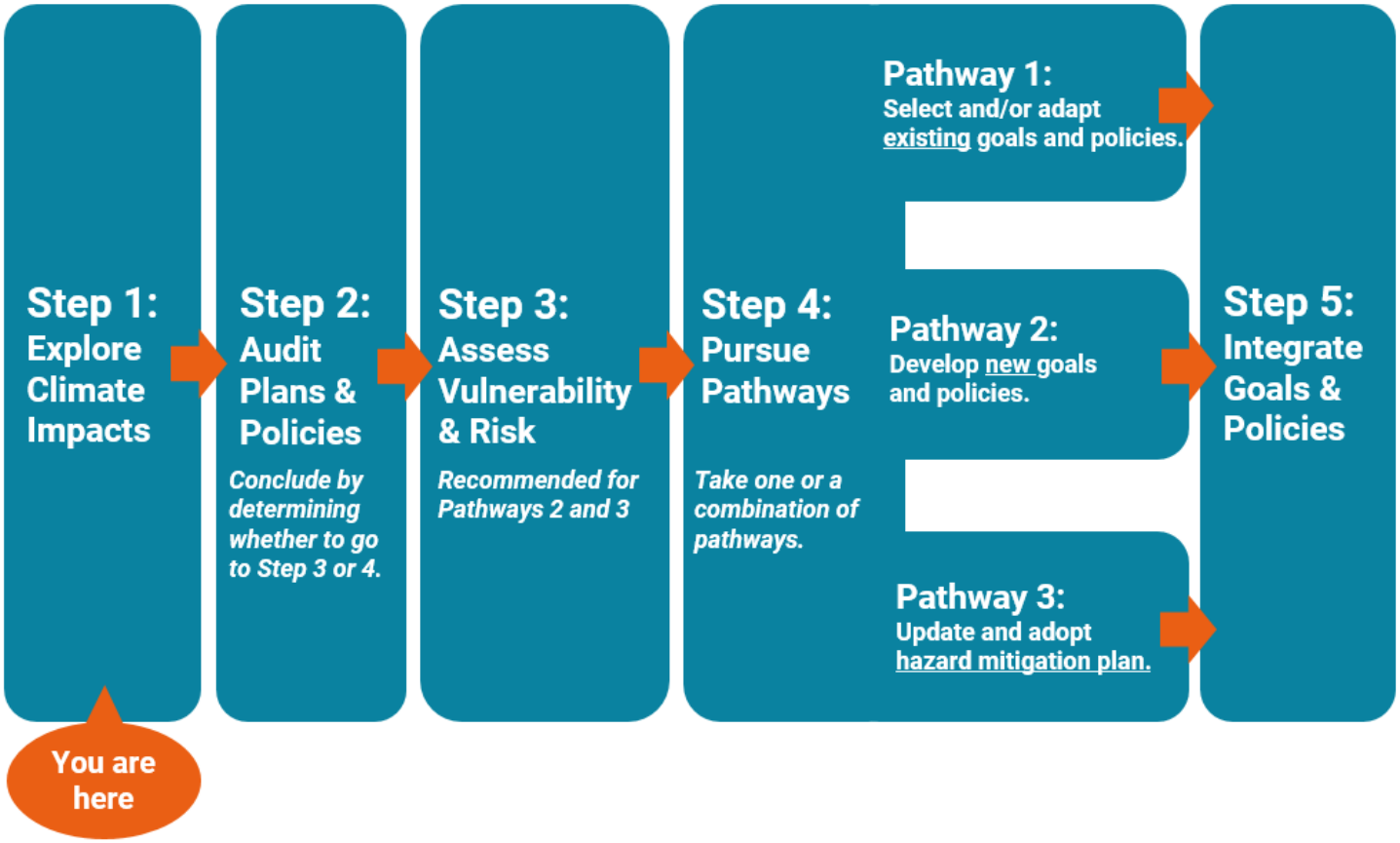
## 3.2: Resilience Guidance

The resilience guidance adapts the U.S. Climate Resilience Toolkit's "Steps to Resilience" framework[24] and integrates additional best practices recommended by the Association of Washington Cities (AWC), Municipal Research and Services Center of Washington (MRSC), American Planning Association (APA), and other organizations. The resilience guidance provides an iterative, yet flexible, approach for jurisdictions to explore climate science, assess impacts on local sectors and assets, and consider goals and policies.

The resilience guidance steps and associated tasks have corresponding tabs in the companion **Climate Element Workbook** for your jurisdiction to record its work [*Appendix B*]. Commerce recommends that jurisdictions review the workbook and the corresponding guidance steps before beginning work on this sub-element, which will take roughly 12-15 months to develop and adopt as part of a broader comprehensive plan update. The time and sequence of steps needed to complete work on this sub-element will vary based on a jurisdiction's capacity and body of planning work. For example, some jurisdictions may be pulling from a recent, separately completed vulnerability assessment rather than doing this step within their update cycle.

[24] The U.S. Climate Resilience Toolkit is published by the National Oceanic and Atmospheric Administration (NOAA) Climate Program Office. The Washington Department of Commerce adapted into its resilience guidance the NOAA Toolkit's Steps to Resilience risk assessment and decision-support framework and integrated best practices published in the October 2022 report, *Implementing the Steps to Resilience: A Practitioner's Guide*. The Guide includes links to many examples and resources.

## Step 1 — Explore Climate Impacts




In this first of two foundational steps, we recommend that your jurisdiction's climate policy advisory team use the University of Washington Climate Impacts Group's (UW CIG) Climate Mapping for a Resilient Washington (CMRW) webtool to build baseline awareness of how climate change is expected to affect your sectors (water resources, transportation, etc.) and their social, economic, and environmental assets in coming decades. Commerce considers using the CMRW webtool a best practice and encourages all communities to use it as a starting point. Commerce also encourages jurisdictions to use other resources [*examples below*], as needed, to explore climate impacts on your community assets and sectors.

### Task 1.1: Identify community assets

Use the **Climate Element Workbook** to list social, economic, and environmental assets that your community members value and want to protect. In this context, the term "asset" refers broadly to community groups, places, natural resources, infrastructure, and services. Your climate policy advisory team should lead this task and seek input from community members to ensure the list is comprehensive.

- Your initial list should include general asset themes (urban tree canopy, buildings, roads, etc.) within the 11 sectors. You will have an opportunity in Step 3 to refine this general list with specific assets (e.g., a key bridge or hospital), should you decide to conduct a more detailed vulnerability and risk assessment.

- **Resources:**
    - Your capital facilities and hazard mitigation plans can help you identify physical assets.
    - The **Washington Department of Ecology** report — Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy — can help your jurisdiction broaden its list of social and environmental assets.
    - The **NOAA** U.S. Climate Resilience Toolkit report — Implementing the Steps to Resilience: A Practitioner's Guide — provides useful ideas for grouping assets thematically.

## Task 1.2: Explore hazards and changes in the climate

In this task, your jurisdiction will explore how expected changes in the climate could exacerbate natural hazards (droughts, floods, etc.) and impact your local assets (ecosystem degradation, infrastructure damage, etc.).

**Integrating climate science into planning**

*"Comprehensive plans are more than just visioning documents for the future. They tend to be legally adopted by the local decision-making body, can require alignment with existing regulations and clear linkages with future infrastructure investments, and can spur the community to rewrite codes and regulations. Embedding climate science and information into plans can therefore be a trigger for more in-depth analysis as plan recommendations become a reality. Collecting and applying data … is therefore crucial to plans and processes that are informed by future climate conditions."*

— **American Planning Association,** Using Climate Information in Local Planning

- First, you might wish to read summarized climate information from statewide or regional reports[25] and key takeaways for your area.[26] You might also wish to review your local hazard GHG reduction plan to understand your assets' current risk exposure and vulnerability to the identified hazards.

- Next, use the CMRW webtool to explore county-level information about expected changes in the climate. Consider both near-term (20 years) and long-term (more than 20 years) climate projections, recognizing that planning might be required now to deal with changes expected in coming decades.
    - See UW CIG's user guide for its CMRW webtool.
    - Also see UW CIG's companion report, "Biophysical Climate Risks and Economic Impacts for Washington State," for information about filtering and customizing the webtool.

- Use the companion **Climate Element Workbook** to record your jurisdiction's findings.
    - Use the table's "Notes" column to note which emissions scenario(s) you used. You may also wish to identify potential information gaps that might warrant further analysis using other data [*additional resources below*] and/or via a more detailed vulnerability and risk assessment [*Step 3*].
    - Use the table's "Climate Impacts" column to note current and future climate impacts relevant to your jurisdiction. The following table [*Figure* 4], adapted from a UW CIG guidebook[27], can help with this.

[25] The State Climate Summary for Washington could be a helpful starting point, in addition to other statewide and regional reports.
[26] The Climate Explorer summarizes key takeaways for cities and counties under the "Take Action" tab of the tool.
[27] University of Washington Climate Impacts Group (2007), Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments

## Figure 4: List of potential climate impacts, by sector, in Washington

| Sector | Potential climate-related impacts |
|---|---|
| **Agriculture & Food Systems** (production and distribution, including food processing in industrial areas and community gardens in urban areas) | Changes in crop yields |
| | Farmworkers increasingly exposed to extreme heat |
| | Potential ability to "double crop" |
| | Increased heat stress on crops and livestock |
| | Reduced water availability for crops and livestock and increased demand for irrigation due to longer and warmer growing season |
| | Changes in weeds and/or plants that grow with the crops |
| | Increased pest outbreaks, disease, and weeds, impacting lending opportunities and crop insurance for farmers |
| | Increased food scarcity after hazardous events that disrupt food transportation, distribution |
| **Buildings & Energy** (includes generation, transmission, and consumption) | Reduced heating demand during winter months |
| | More frequent power loss due to extreme storms and other hazard events |
| | Increased cooling demand during summer months, extreme heat events |
| | Increased or decreased hydroelectric generating capacity due to potential for higher or lower streamflow |
| **Cultural Resource & Practices** (includes historic sites and cultural resources and practices) | Loss of cultural and historical sites on coastline to sea-level rise and related impacts |
| | Loss of cultural and historic sites due to more frequent and intense severe weather events |
| | Loss of locally grown, temperature-sensitive foods that are culturally important (berries, shellfish, salmon, etc.) |
| **Economic Development** (includes business continuity, opportunities) | Increased disruptions of business continuity from wildfires and other hazards |
| | Price volatility in energy and raw product markets due to more extreme weather events |
| | Increased insurance premiums due to more extreme weather |
| | Fewer shipping disruptions associated with snow and ice |
| | Impacts on business infrastructure within floodplains or coastal areas |
| | Shifts in business opportunities |

| Sector | Potential climate-related impacts |
|---|---|
| | Increased opportunities for warm-season activities in milder areas |
| | Decreased opportunities for warm-season activities during the hottest part of the year (e.g., from heat, forest fires, low water levels, reduced urban air quality) |
| | Reduced opportunities for cold-season recreation due to decreased snowpack and/or reduced snow or ice quality |
| | Increased reliance on snow-making at ski areas |
| | Shifts in tourism dollars within a jurisdiction from one recreation sector to another, or from jurisdiction losing recreational opportunities to jurisdiction gaining opportunities |
| **Emergency Management** (includes preparedness, response, recovery) | Increased costs and demands for emergency preparedness, response, and recovery activities due to more frequent and intense hazard events (e.g. overtime for snowplow drivers, salt/ice-melting tools, overtime for firefighters, sand to put in sandbags, etc.) |
| | Additional cost in human well-being as first responders are constantly on/responding with little downtime for recovery. In addition to first responders, more residents are impacted by hazards on a year-round basis |
| **Health & Well-being** (includes community well-being, equity, and engagement) | Rising temperatures will lead to an increase in heat-related deaths and illnesses, particularly among the elderly, poor, and other vulnerable populations. |
| | Rising temperatures and wildfires will increase ozone and particulate matter from smoke, elevating the risk of cardiovascular and respiratory illnesses and death. |
| | Increasing coastal and inland flooding exposes populations to negative health effects. |
| | Ticks will show earlier seasonal activity and be expanding northward, increasing risk of human exposure to Lyme disease. |
| | Increase in water temperatures will alter timing, extent, location and intensity of vibrio growth and harmful algal blooms, increasing exposure and risk of waterborne disease. |
| | Changes in exposure to weather-related disasters can cause or exacerbate stress and mental health consequences. |
| | Increased vulnerability of residents, particularly those who live in poverty and polluted and/or high-risk hazard areas. |
| | Longer pollen seasons and changing pollen composition will cause more severe seasonal allergies, increase hospitalizations for people with chronic respiratory diseases. |
| **Ecosystems** (includes terrestrial | Increased insect outbreaks |
| | Increased wildfire and smoke (from forests, grasslands, etc.) |

| Sector | Potential climate-related impacts |
|---|---|
| and aquatic species, habitats, and services) | Loss of near-shore habitat and coastal wetlands to sea-level rise and erosion, where sufficient space for habitat migration is not available |
| | Periodic drought could impact species diversity and distribution |
| | Loss of species not able to adapt to changes |
| | Increased competition from and expanded coverage of invasive species |
| | Increase in forest growth and productivity in the near-term where soil moisture is adequate and fire risk is low (and vice versa) |
| | Reduced presence of ephemeral wetlands |
| | Increased ocean acidification |
| | Increased sea surface temperature |
| | Increased stress on cold-water species in lakes and rivers |
| | Loss of shrubsteppe ecological function and biodiversity |
| | Potential reductions in water-based navigation due to lower summer streamflow |
| **Transportation** (includes multimodal travel and infrastructure) | Increased road surface damage from higher temperatures |
| | Increased maintenance requirements for roadside and median strip vegetation |
| **Waste Management** (includes materials recycling and disposal) | Increased solid waste (downed tree limbs, building rubble, roof shingles) and associated environmental and public-safety impacts following severe storms and other hazards |
| | Increased waste associated with population growth (climate migration) and hazards presents opportunities for recycling materials into new products (cradle-to-cradle) |
| | Increased emissions of carbon dioxide, methane and other greenhouse gases associated with the transport and disposal of waste |
| **Water Resources** (includes water quality and quantity) | Shift in the timing of spring snowmelt |
| | Lower summer streamflow |

| Sector | Potential climate-related impacts |
|---|---|
| | Increased drought impacts on water quality and quantity |
| | Increased flooding impacts |
| | Increased competition for water |
| | Warmer water temperature in lakes and rivers |
| | Changes in water quality |
| | Increased demands on stormwater management systems with the potential for more combined stormwater and sewer overflows |
| | Saltwater intrusion into coastal aquifers due to sea-level rise |
| | Increased risk of pollution from coastal hazardous waste sites due to sea-level rise |
| **Zoning & Development** (includes site use, design, and other development facets) | Increased climate-induced population displacement and migration |
| | Increased erosion or damage to coastal infrastructure, dunes, beaches, and other natural features due to sea level rise and storm surge |
| | Increased demand for irrigation of non-native, non-productive landscaping |
| | Changes in housing stock availability due to hazard events |
| | Increased stormwater runoff from impervious surfaces will increase stormwater management and infrastructure maintenance costs |
| | Increased costs for maintenance and expansion of coastal erosion control (natural or man-made) |
| | Need for new or upgraded flood-control and, erosion-control structures |
| | Reduced effectiveness of sea walls with sea-level rise increases risk of shoreline property and infrastructure damage and displacement |

**Resources:**

- **NOAA's** U.S. Climate Resilience Toolkit provides additional online resources, including county-scale climate data via The Climate Explorer.
- **NOAA's** companion Climate Mapping for Resilience and Adaptation (CMRA) tool provides information about past, present, and future climate conditions at the census tract and tribal reservation scales.
- **Washington Department of Commerce's** climate website also includes state- and regional-level reports, spatial planning tools, and other resources — several of which are noted as resources throughout this guidance.

## Task 1.3: Pair assets and hazards and describe exposure and consequences

Pair each of the community assets you identified in Task 1.1 with every climate-influenced hazard that could affect it; enter this information into your **Climate Element Workbook** [*Appendix B*]. Your list will likely include the same asset several times, and some hazards (e.g., extreme heat) might affect several assets.

**Defining Exposure and Consequences**

Exposure is the presence of assets in places where they could be adversely affected by hazards. Consequences are the subsequent results (usually negative) that follow from damage to or loss of an asset due to a hazard.

**— U.S. Climate Resilience Toolkit**

- Create a numbered row for each asset-hazard pair. Your jurisdiction will use these numbered asset-hazard pairs if it decides to proceed to Step 3 and conduct a vulnerability and risk assessment.
- Select a relevant climate indicator from UW CIG's CMRW webtool for each asset-hazard pair on your list (e.g., change in the annual number of hot days) and describe factors that affect the asset's exposure to the hazard (e.g., the extent of paved surfaces, tree canopy cover, and other features that exacerbate or ameliorate extreme heat).
- List non-climate stressors that can exacerbate the consequences of climate impacts, where applicable. Non-climate stressors can include population growth and land conversion (e.g., development actions such as converting forests into impervious surfaces can increase the urban heat island effect). Non-climate stressors also can include historic neighborhood pollution, redlining, disinvestment and other factors, which may lead to disproportionate climate impacts on overburdened communities.
- Describe potential consequences of the climate impacts in the tab's final column. Factor in exposure, non-climate stressors, and knowledge of how hazards have historically impacted your jurisdiction.

- **Explore:** Use your hazard mitigation plan and the resources below, as needed, to explore the impacts of past hazard events (e.g., the duration and extent of a heat wave and the social, economic, and environmental damage it caused).
- **Engage:** Encourage your stakeholders to describe their experiences to evoke rich details about the consequences of hazards, as this narrative information will be useful if your community decides to proceed to Step 3 and conduct a vulnerability and risk assessment.

**Resources:**

- **Washington Department of Natural Resources'** Geologic Information Portal includes an interactive map of past landslides and other geologic hazards across the state.
- **FEMA's** National Risk Index provides a comparative risk score for all counties and estimates estimated annual loss — in U.S. dollars — due to hazards.

- **FEMA's** Resilience Analysis and Planning Tool (RAPT) examines the interplay of infrastructure locations and hazards, including historic disasters and estimated frequency of hazard risk.
- **NOAA's** U.S. Climate Resilience Toolkit also has a variety of spatial analysis resources, including sea-level rise projections, to assess potential consequences.

## Task 1.4: Identify priority climate hazards

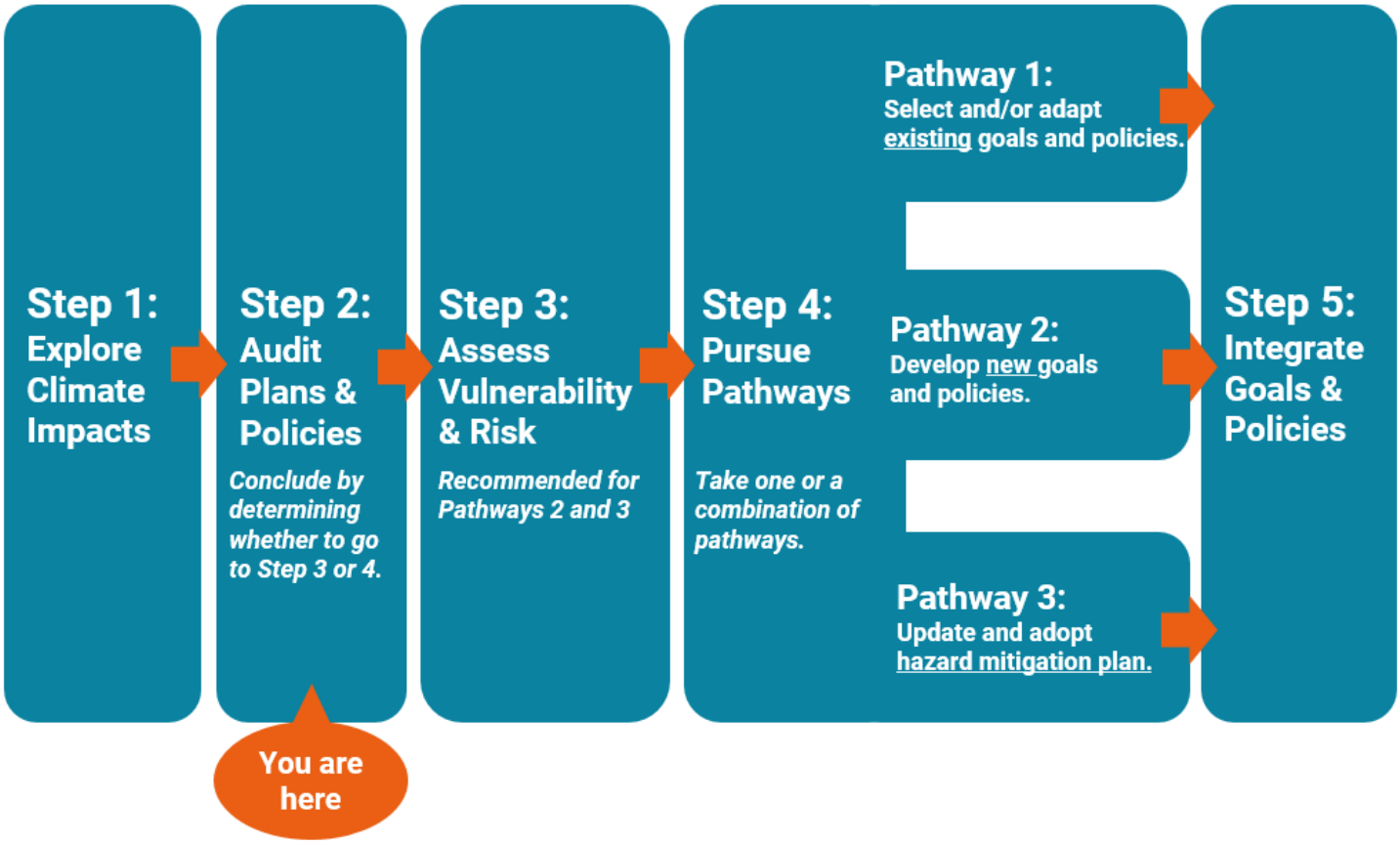
Decide which climate hazards you might need to address in your comprehensive plan based on your initial assessment of exposure and consequences — which are building blocks of vulnerability and risk. These are the areas you will focus on in your plan and policy audit [*Step 2*] and, if desired, your vulnerability and risk assessment [*Step 3*].

- Use the **Climate Element Workbook** to document the climate hazards you identify as local priorities.

**Resource:**

The **University of Washington-Front and Centered joint report** — An Unfair Share: Exploring the Disproportionate Risks from Climate Change Facing Washington State Communities[28] — is a helpful resource for applying an equity and environmental justice lens in this and other tasks.

## Step 2 — Audit Plans & Policies




[28] University of Washington Climate Impacts Group, UW Department of Environmental and Occupational Health Sciences, Front and Centered, and Urban@UW report (2018), An Unfair Share: Exploring the Disproportionate Risks from Climate Change Facing Washington State Communities.

In this second of two foundational steps, your jurisdiction will apply information from Step 1 to assess how well existing local plans and policies build climate resilience. Your jurisdiction will begin by reviewing your comprehensive plan and other local documents (hazard mitigation plan, shoreline master program, etc.) and looking for climate resilience opportunities, gaps, and barriers. Your jurisdiction will conclude this step by determining whether to proceed directly to Step 3 or skip to Step 4.

## Task 2.1: Review existing plans for climate gaps and opportunities

First, review your comprehensive plan and shoreline master program (SMP) for goals and/or policies that explicitly or implicitly build resilience to the climate hazards and impacts you identified in Step 1 as relevant to your jurisdiction.

- Note which hazards and impacts are not addressed by any policies or where existing policies are insufficient; these are the gaps to focus on as you review other plans and develop goals and policies later in the process.
- Look for maladaptation policies and practices that exacerbate assets' vulnerability to climate change (e.g., planting carbon-storing trees and building dense neighborhoods in areas prone to wildfire) or create barriers to implementing goals, policies, and more detailed development regulations.
- Begin considering where in the comprehensive plan you will add climate resilience-focused goals and policies.

Next, identify and review other plans that could have measures to build resilience to climate change (e.g., hazard mitigation plan, climate action plan, community wildfire protection plan, floodplain management plan, community health improvement plan, watershed restoration plan, transportation plan, etc.). These plans will include goals, strategies, objectives, recommended projects, and other information that can be adapted or drawn from to develop goals and policies for your comprehensive plan.

- Commerce recommends that your jurisdiction audit 3-5 plans and identify approximately 20-40 collective measures within those plans to make this process manageable. Your audit should, at a minimum, include your comprehensive plan (including SMP) and hazard mitigation plan.
- Use the **Climate Element Workbook** to list your documents and determine your desired next step for each measure (e.g., amend an existing measure; consolidate with a similar measure; add a new measure; keep existing measure in comprehensive plan). To help identify opportunities, gaps and barriers, crosswalk each measure with the relevant climate hazards and impacts you identified in Step 1.

The following table [*Figure* 5] can help you fill in your workbook.

## Figure 5: Crosswalk of the Climate Guidance's sectors with the Growth Management Act's goals[29] (numbered) and comprehensive plan elements

| SECTOR | NEXUS WITH GROWTH MANAGEMENT ACT GOALS[29] | NEXUS WITH COMPREHENSIVE PLAN ELEMENTS |
|---|---|---|
| **AGRICULTURE & FOOD SYSTEMS** (INCLUDES PRODUCTION AND DISTRIBUTION) | **(2) Reduce sprawl:** Reduce the inappropriate conversion of undeveloped land into sprawling, low-density development.<br><br>**(5) Economic Development**: Encourage economic development throughout this state that is consistent with adopted comprehensive plans, promote economic opportunity for all citizens of this state, especially for unemployed and for disadvantaged persons, promote the retention and expansion of existing businesses and recruitment of new businesses, recognize regional differences impacting economic development opportunities, and encourage growth in areas experiencing insufficient economic growth, all within the capacities of the state's natural resources, public services, and public facilities.<br><br>**(8) Natural resource industries:** Maintain and enhance natural resource-based industries, including productive timber, agricultural, and fisheries industries. Encourage the conservation of productive forest lands and productive agricultural lands, and discourage incompatible uses.<br><br>**(10) Environment:** Protect and enhance the environment and enhance the state's high quality of life, including air and water quality, and the availability of water.<br><br>**(14) Climate change and resiliency:** Ensure that comprehensive plans, development regulations, and regional policies, plans, and strategies under RCW 36.70A.210 and chapter 47.80 RCW adapt to and mitigate the effects of a changing climate; support reductions in greenhouse gas emissions and per capita vehicle miles traveled; prepare for climate impact scenarios; foster resiliency to climate impacts and natural hazards; protect and enhance environmental, economic, and human health and safety; and advance environmental justice. | Rural; Land Use; Natural Resource Lands |
| **BUILDINGS & ENERGY** (INCLUDES ENERGY GENERATION, TRANSMISSION, AND CONSUMPTION) | **(4) Housing:** Plan for and accommodate housing affordable to all economic segments of the population of this state, promote a variety of residential densities and housing types, and encourage preservation of existing housing stock.<br><br>**(12) Public facilities and services:** Ensure that those public facilities and services necessary to support development shall be adequate to serve the development at the time the development is available for occupancy and use without decreasing current service levels below locally established minimum standards.<br><br>**(13) Historic preservation:** Identify and encourage the preservation of lands, sites, and structures, which have historical or archaeological significance.<br><br>**(14) Climate change and resiliency** | Capital Facilities; Utilities; Housing; Land Use; Ports; Solar Energy; Economic Development; Transportation; Design; Environmental Protection; Conservation |
| **CULTURAL RESOURCES & PRACTICES** (INCLUDES HISTORIC SITES AND CULTURAL RESOURCES AND PRACTICES) | **(11) Citizen participation and coordination:** Encourage the involvement of citizens in the planning process, including the participation of vulnerable populations and overburdened communities, and ensure coordination between communities and jurisdictions to reconcile conflicts.<br><br>**(13) Historic preservation**<br><br>**(14) Climate change and resiliency** | Capital Facilities; Housing; Land Use; Rural; Historic Preservation |

[29] GMA goals 1-15 are in RCW 36.70A.020.

| SECTOR | NEXUS WITH GROWTH MANAGEMENT ACT GOALS[29] | NEXUS WITH COMPREHENSIVE PLAN ELEMENTS |
|---|---|---|
| **ECONOMIC DEVELOPMENT** (INCLUDES BUSINESS CONTINUITY, OPPORTUNITIES) | **(5) Economic Development**<br>**(8) Natural resource industries**<br>**(14) Climate change and resiliency** | Economic Development; Land Use; Ports; Capital Facilities; Solar Energy; Conservation |
| **EMERGENCY MANAGEMENT** (INCLUDES COMMUNITY PREPAREDNESS, RESPONSE, RECOVERY) | **(11) Citizen participation and coordination**<br>**(12) Public facilities and services**<br>**(14) Climate change and resiliency** | Capital Facilities; Utilities; Housing; Land Use; Ports; Economic Development; Natural Hazard Reduction |
| **HEALTH & WELL-BEING** (INCLUDES COMMUNITY WELL-BEING, EQUITY, AND ENGAGEMENT) | **(10) Environment**<br>**(11) Citizen participation and coordination**<br>**(14) Climate change and resiliency** | Housing; Land Use; Capital Facilities; Park & Recreation; Environmental Protection |
| **ECOSYSTEMS** (INCLUDES TERRESTRIAL AND AQUATIC SPECIES, HABITATS, AND SERVICES) | **(8) Natural resource industries**<br>**(9) Open space and recreation**: Retain open space and green space, enhance recreational opportunities, enhance fish and wildlife habitat, increase access to natural resource lands and water, and develop parks and recreation facilities.<br>**(10) Environment**<br>**(14) Climate change and resiliency**<br>**(15) Shorelines of the state**: For shorelines of the state, the goals and policies of the Shoreline Management Act as set forth in RCW 90.58.020 shall be considered an element of the county's or city's comprehensive plan. | Land Use; Rural; Park & Recreation; Capital Facilities; Conservation; Housing; Natural Resource Lands; Environmental Protection |
| **TRANSPORTATION** (INCLUDES MULTIMODAL TRAVEL AND INFRASTRUCTURE) | **(3) Transportation:** Encourage coordinated, multimodal transportation systems that will reduce greenhouse gas emissions and per capita vehicle miles traveled, and are based on regional priorities and coordinated with county and city comprehensive plans.<br>**(10) Environment**<br>**(14) Climate change and resiliency** | Transportation; Land Use; Housing; Ports; Capital Facilities; Environmental Protection |
| **WASTE MANAGEMENT** (INCLUDES MATERIALS RECYCLING AND DISPOSAL) | **(5) Economic Development**<br>**(10) Environment**<br>**(14) Climate change and resiliency** | Capital Facilities; Utilities; Economic Development; Conservation; Environmental Protection |
| **WATER RESOURCES** (INCLUDES WATER QUALITY AND QUANTITY) | **(10) Environment**<br>**(14) Climate change and resiliency**<br>**(15) Shorelines of the state** | Utilities; Land Use; Capital Facilities; Rural; Conservation; Housing; Economic Development; Park & Recreation; Environmental Protection |

| SECTOR | NEXUS WITH GROWTH MANAGEMENT ACT GOALS[29] | NEXUS WITH COMPREHENSIVE PLAN ELEMENTS |
|---|---|---|
| **ZONING & DEVELOPMENT** (INCLUDES SITE USE, DESIGN, AND OTHER DEVELOPMENT FACETS) | **(1) Urban growth:** Encourage development in urban areas where adequate public facilities and services exist or can be provided in an efficient manner.<br><br>**(2) Reduce sprawl**<br><br>**(6) Property rights:** Private property shall not be taken for public use without just compensation having been made. The property rights of landowners shall be protected from arbitrary and discriminatory actions.<br><br>**(7) Permits:** Applications for both state and local government permits should be processed in a timely and fair manner to ensure predictability.<br><br>**(11) Citizen participation and coordination**<br><br>**(12) Public facilities and services**<br>.<br>**(14) Climate change and resiliency**<br><br>**(15) Shorelines of the state** | Housing; Land Use; Capital Facilities; Park & Recreation; Ports; Conservation; Rural; Recreation; Subarea Plans; Economic Development; Environmental Protection |

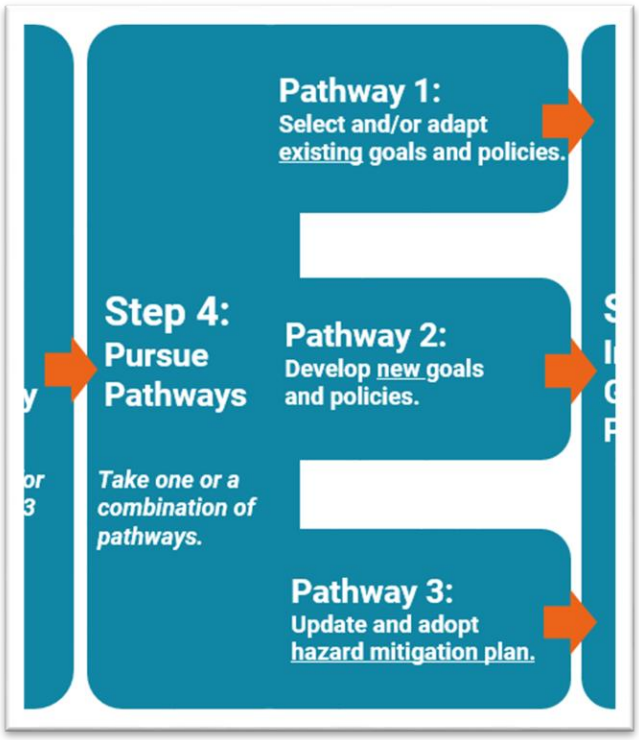
## Task 2.2: Determine next step

Your jurisdiction has reached a key decision point: Determine whether to proceed to Step 3 or skip to Step 4. This decision should factor in your initial climate impacts assessment and completed plan and policy audit.

- If you have enough information now to begin selecting climate resilience goals and policies for your comprehensive plan, then proceed to Step 4. If you want to first assess your assets' relative vulnerability and risks, then proceed to Step 3.
- Read the description of pathways below and use the **Climate Element Workbook** to answer a set of high-level questions that will help your jurisdiction determine the most appropriate next step.

## Description of Pathways

The following is a description of each pathway and an example of why a jurisdiction might want to pursue it. Many jurisdictions may find that they will need to pursue a combination of pathways to adequately address their climate-exacerbated hazards and impacts. Pathway 1 will generally require the least amount of time, staff capacity, and budget. Pathways 2 and 3 — in which Commerce recommends incorporating a climate vulnerability and risk assessment — may require more resources but could help a jurisdiction identify its highest relative climate risks to help prioritize and tailor measures that support climate resilience and environmental justice. All pathways conclude with Step 5 — integrating climate goals and policies — and may leverage the **Menu of Measures** as a resource.




## Pathway 1: Select or adapt existing goals and policies.

This pathway may be preferable for a jurisdiction that has already created a climate action plan and/or a climate element in its comprehensive plan. This pathway, like the others, could be taken by itself or in combination with another pathway. For example, if a jurisdiction's audit showed comprehensive plan resilience gaps, the jurisdiction might opt to adopt or adapt its existing climate action plan goals and policies [*Pathway 1*], develop new measures [*Pathway 2*], and select supplemental ones from Commerce's **Menu of Measures**.

> ***NOTE:*** *To pursue this pathway, a jurisdiction needn't have completed a climate action plan or other hazard-focused plan or strategy (e.g., a flood or wildfire protection plan). In such a case, a jurisdiction could simply use its foundational work on Steps 1 and 2 to help identify and adapt existing comprehensive plan goals and policies to address locally relevant hazards and support climate resilience. Again, the Menu of Measures could be a resource to fill remaining gaps.*

## Pathway 2: Develop new goals and policies.

This pathway provides jurisdictions the flexibility to develop new comprehensive plan goals and policies with or without developing a separate climate action plan and/or conducting a vulnerability and risk assessment. Commerce recommends such as assessment for a jurisdiction that wants to identify its highest relative climate risks to help prioritize and tailor measures for a climate action plan and/or comprehensive plan and development regulations. Using maps, indicators, and local knowledge to consider the sensitivity and adaptive capacity of social, economic, and environmental assets can help a jurisdiction better understand who and what are impacted by climate change, when, where, how, and why.

For example, assessing maps that identify areas with less tree canopy/higher sensitivity to extreme heat and areas with a higher poverty rate/lower adaptive capacity can show a jurisdiction where it might want to plant street trees and place community resilience hubs. A jurisdiction with less capacity may want to seek outside

technical assistance (from a university, Commerce, consultant, etc.) to complete a vulnerability and risk assessment and/or develop a climate action plan.

> ***NOTE:*** *Commerce recommends that jurisdictions that opt to complete a vulnerability and risk assessment follow Step 3's iterative tasks, which are adapted from NOAA's U.S. Climate Resilience Toolkit framework. Commerce considers NOAA's framework a model best practice, but local jurisdictions are free to use an alternative framework or take a limited approach to assess their assets' relative climate vulnerability and risks. For example, instead of conducting a vulnerability and risk assessment that considers all climate hazards across the entire jurisdiction, a city with less capacity might opt to conduct an assessment of a single sector or hazard within a limited geographic area (e.g., a downtown sea-level rise response strategy). Step 3's tasks and tools are applicable for a variety of approaches.*

## Pathway 3: Update hazard mitigation plan and adopt it in your comprehensive plan.

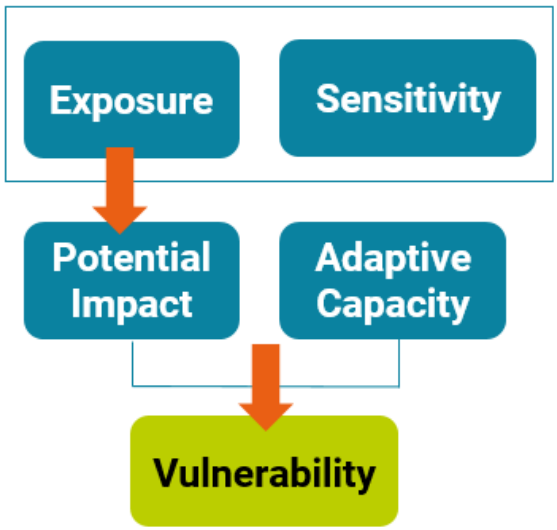
A jurisdiction might want to use Step 3's vulnerability and risk assessment framework and resources to help assess climate risks in a hazard mitigation plan. This could provide some efficiencies and better integration of the hazard mitigation plan and the comprehensive plan. The hazard mitigation plan would be approved by the Federal Emergency Management Agency (FEMA) and could be adopted, by reference, in a comprehensive plan.

> ***NOTE:*** *As of April 2023, FEMA requires that all updated local hazard mitigation plans assess the effects of climate change and other future conditions in the document's required risk assessment [See Appendix C for requirements]. If your updated and adopted hazard mitigation plan does not address all 11 of this guidance's sectors [Figure 5], however, your jurisdiction should address those sector gaps via supplemental measures in the comprehensive plan.*

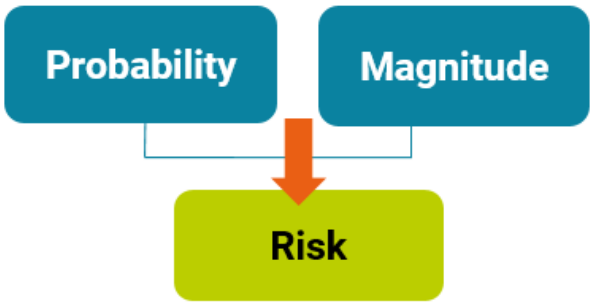
## Step 3 — Assess Vulnerability & Risk


In this optional step, your jurisdiction will use information from Step 1 and other resources below to consider the sensitivity and adaptive capacity of local assets to assess their vulnerability to climate change-exacerbated hazards and impacts [*Figure* 6]. Your jurisdiction will then characterize risk — the probability and magnitude of hazards impacting your jurisdiction [*Figure* 7].

### Figure 6: Elements of Climate Vulnerability




### Figure 7: Elements of Climate Risk




Source: U.S. Climate Resilience Toolkit

## Before you begin

Before beginning this technical step, review the glossary's key terms *[Appendix J]* and watch a U.S. Climate Resilience Toolkit primer video to better understand how elements such as sensitivity and adaptive capacity will help your jurisdiction to characterize the vulnerability of assets. Also, review FEMA's Local Mitigation Planning Policy Guide if your jurisdiction plans to use Step 3 to help assess climate risks in a hazard mitigation plan and then adopt it, by reference in the comprehensive plan [*Pathway 3*]. Appendix D includes a crosswalk of Commerce's resilience guidance and FEMA's requirements for updating local hazard mitigation plans.[30]

## Supplementing and Leveraging Hazard GHG reduction Plans

Your jurisdiction might use Step 3 of the resilience guidance in a variety of ways, including, but not limited to:

- Your jurisdiction could use the tasks and resources below to assess climate vulnerability and risk for sectors and assets that are typically beyond the core focus of a hazard mitigation plan (for example, winter recreation, active transportation, and urban farms and forests). This can help your jurisdiction to identify comprehensive plan goals and policies to supplement your hazard mitigation plan and address all 11 Climate Element sectors.
- Your jurisdiction could also leverage its hazard mitigation plan's information to assess climate vulnerability and risk associated with all hazards relevant to your jurisdiction. Alternatively, your jurisdiction's vulnerability and risk assessment could focus on a single hazard and/or sector — for example, extreme heat impacts on health.

## Task 3.1: Assess sensitivity

Use the **Climate Element Workbook** and the following guidance to assess the sensitivity of the asset-hazard pairs your jurisdiction developed in Step 1. The U.S. Climate Resilience Toolkit provides a simple litmus test for sensitivity: If an asset could sustain a negative impact from a hazard, it is sensitive to that hazard. Your task is to assess the degree of sensitivity in qualitative terms (*low, medium, or high*) for each asset using local knowledge and other available information. Commerce recommends the following approach, which uses indicators and rulesets:[31]

**Defining Sensitivity**

Sensitivity is the degree to which a system, population, or resource is or might be affected by hazards. For example, the yield of crops with a high sensitivity might be reduced in response to a change in daily minimum temperature during the pollination season.

**— U.S. Climate Resilience Toolkit**

- Start by articulating a core question that your jurisdiction could answer consistently for each asset-hazard pair (e.g., transit center-sea level rise). The following example question incorporates the U.S. Climate Resilience Toolkit's definition of sensitivity and could be answered qualitatively with a "low," "medium," or "high" response: *"To what degree would this hazard affect this asset?*

[30] As of April 2023, all updated local hazard mitigation plans' risk assessments must address climate change and other future conditions. For more information, consult FEMA's Local Mitigation Planning Policy Guide (2022).
[31] In October 2022, NOAA published a practitioners' guide for using the US Climate Resilience Toolkit's "Steps to Resilience" framework. Based on the NOAA guide and the pilot tests in Pullman and Port Angeles, Commerce added to this guidance examples of how cities and counties could use indicators and rulesets in their vulnerability and risk assessments.

- Next, select 1-3 indicators that your jurisdiction could use to answer this question. Your indicator(s) should be based on the asset type, hazard, and available information.

  - For physical assets, such as buildings and roads, examples of useful indicators include the asset's: age (What's the asset's age relative to its design life?); condition (What's the condition of the asset — poor, good, or excellent?); and, physical design (Is the asset physically protected from the hazard?).
  - For environmental assets, such as forests and wetlands, examples of indicators include the asset's fragmentation, temperature range, and exposure to pests and disease.
  - For social assets, such as community health and well-being, your jurisdiction might want to use air and water quality indicators (e.g., concentration of ozone and particulate matter) and socioeconomic indicators (population age, income, race, disability, etc.).

**Choosing Indicators**

Using indicators to help assess sensitivity and other components of vulnerability and risk is a common practice. Indeed, some practitioners might decide to use the same indicator in different ways (e.g., using an asset's age to rate its sensitivity or adaptive capacity). There is no wrong way. Commerce's advice is for a local jurisdiction to decide where the indicator works best and use it just once.

- Apply a simple ruleset for each indicator: For example, if a coastal transit center's age exceeds its design life — the period for which the building was designed — the building could be rated as having "high" sensitivity to flooding exacerbated by rising sea levels. The ruleset's assumption is that the aging asset is more likely to fail after flooding.
- If your jurisdiction uses more than one indicator, factor the collective information into a composite rating for sensitivity [*Example: Age (high) + Physical Design (low) = medium sensitivity].* Your jurisdiction could repeat this general approach for assessing adaptive capacity and other vulnerability and risk assessment tasks that follow.

***NOTE:*** *When assessing the predisposition of an asset to be harmed by a hazard, your jurisdiction may want to consider time of impact as an indicator. For example, some assets may have low sensitivity within the 20-year comprehensive planning horizon but have higher sensitivity within a longer timeframe.*

***NOTE:*** *This is a good time to consider revising the asset-hazard pairs you created in Task 1.3, based on your chosen pathway and sensitivity assessment. You might want to include specific assets among your list of general asset themes (e.g.,* a water treatment plant or repetitively flooded structures *within your buildings theme) if you want to use this step to help update your hazard* mitigation *plan or such assets might warrant a unique comprehensive plan policy or detailed implementation action(s). See Appendices C and D for FEMA's requirements for updating local hazard* mitigation *plans.*

**Resources:**

- **Washington Department of Health's** Environmental Health Disparities Map evaluates environmental health risk factors in communities. It estimates a cumulative environmental health impact score for each census tract, reflecting pollutant exposures and factors that affect people's vulnerability to environmental pollution. The tool incorporates indicators that include ozone concentration, wastewater discharge, poverty rate, disability, death from cardiovascular disease, and low birth weight.
- **Headwaters Economics'** Neighborhoods at Risk online spatial analysis tool shows census tract-level data for indicators including tree canopy cover and impervious surfaces, overlaid with

socioeconomic data. The tool can help identify communities where people could experience unequal impacts from climate-exacerbated flooding and extreme heat.

- **PolicyMap's** online spatial analysis tool shows census tract-level data for a wide range of indicators within categories that include housing, lending, education, economy, and quality of life.
- The **White House Council on Environmental Quality's** Climate and Economic Justice Screening Tool can help with this and other tasks that follow. The tool's interactive map uses datasets that are indicators of burden in eight categories: climate change; energy; health; housing; legacy pollution; transportation; water and wastewater; and, workforce development.
- The **U.S. Census Bureau** regularly updates online data profiles for all geographies, down to the city and town level. Users can access socioeconomic, housing, and business data via interactive maps and tables.

## Task 3.2: Assess adaptive capacity

Adaptive capacity is the ability of an asset (individual assets as well as populations and systems) to adjust to a hazard, take advantage of new opportunities, or cope with change. For example, if a coastal transit hub could be raised or relocated as sea levels rise, the asset has adaptive capacity.

- Use indicators and rulesets, as your jurisdiction did with sensitivity, to assess adaptive capacity qualitatively (*low, medium, high*). Record this rating in the **Climate Element Workbook**.
- Your core question, for each asset-hazard pair on your list, could be: *"What is the ability of this asset to adjust to the hazard, take advantage of new opportunities, or cope with change?*
- Examples of indicators to assess adaptive capacity include: design flexibility, financial resources availability, planning staff capacity, and back-up power/generator capability.

**Resources:**

- **NOAA's** Implementing the Steps to Resilience: A Practitioner's Guide provides examples of how to assess sensitivity, adaptive capacity, and other pieces of a vulnerability and risk assessment.
- The **National Wildlife Federation** report, Incorporating Nature-based Solutions into Community Climate Adaptation Planning, provides useful examples and advice for assessing the adaptive capacity of forests, marshes, and other assets that provide nature-based solutions to climate change. NWF and EcoAdapt prepared the report in support of the U.S. Climate Resilience Toolkit's Steps to Resilience planning framework.
- **Headwaters Economics'** Rural Capacity Map assesses rural jurisdictions with low capacity and high risk of climate-related hazards, specifically wildfires and floods. The interactive map assesses a jurisdiction's adaptive capacity through 10 indicators, including poverty level, educational attainment, health insurance, and planning staff capacity.

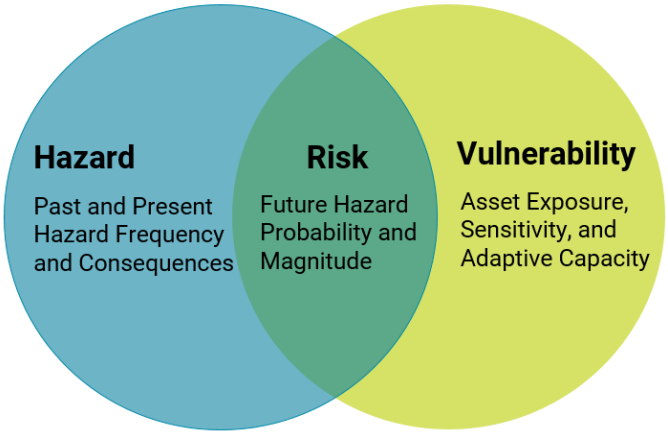
## Task 3.3: Characterize vulnerability

Now that your jurisdiction has assessed exposure, sensitivity, and adaptive capacity, use the **Climate Element Workbook** to characterize the vulnerability of each asset-hazard pair with a composite, qualitative rating (*low, medium, or high*). For example, your jurisdiction might determine that assets with high sensitivity and low adaptive capacity have high vulnerability. The U.S. Climate Resilience Toolkit defines vulnerability as "the propensity or predisposition of assets to be adversely affected by hazards." It encompasses exposure, sensitivity, potential impacts, and adaptive capacity.

## Task 3.4: Characterize risk

It is now time for your jurisdiction to narrow its focus and characterize risk for each asset-hazard pair with "medium" or "high" vulnerability. The U.S. Climate Resilience Toolkit explains that risk is a compound concept — encompassing a hazard's probability and magnitude of occurrence — which describes the chance of sustaining a substantial loss [*Figure* 8].

### Figure 8: Relationship between hazard, vulnerability, and risk




**Source: Washington Department of Commerce**

- **Probability:** Consider how often a hazard occurred in the past (frequency) and how likely (likelihood) it is to occur in the future to characterize probability. Recognize that climate change may alter the frequency and likelihood of your identified hazards.
  - Use the resources below to consider past frequency, and draw upon other information in your local hazard mitigation plan about past wildfires, landslides, avalanches, and other hazards in your jurisdiction.
  - Use the resources below to consider future likelihood, and draw upon the climate projections your jurisdiction explored in Step 1. You may also wish to consult your local hazard mitigation plan for timeframes, probability, and risk information so that the climate information in your comprehensive plan corresponds to that in your hazard mitigation plan.
  - The U.S. Climate Resilience Toolkit recommends using a simple ruleset to characterize probability consistently. The following Toolkit example incorporates timeframes that are useful for comprehensive plans:
    - Characterize hazardous events that are likely to occur within 5 years as "high" probability.
    - Characterize events that are likely to occur just once in 5 to 20 years as "medium" probability.
    - Characterize events that are likely to occur less frequently than once in 20 years as "low" probability.

**Resources:**

- **NOAA's** U.S. Climate Resilience Toolkit includes a database of spatial analysis tools — searchable by topic (ecosystems, health, water, etc.) and function (e.g., past conditions and applied forecasts).
- **FEMA**'s National Risk Index — searchable by county and census tract — provides annualized frequency figures for droughts, heat waves, and more than a dozen other natural hazards. The

figures are derived from the number of recorded hazard occurrences over a given period or the modeled probability of a hazard occurrence each year.
- The **UW CIG** report, "How to Choose: A Primer For Selecting Sea Level Rise Projections for Washington State," can help local jurisdictions make three critical choices when using sea level rise data: choosing an emissions scenario, selecting a time frame, and weighing the probabilities of different sea level rise projections against the risk. This general approach could be applied to other hazards and datasets, the report explains.

- **Magnitude:** To characterize magnitude — which the U.S. Climate Resilience Toolkit also refers to as magnitude of impact or loss — your jurisdiction could draw upon its Step 1 work describing hazard consequences. The U.S. Environmental Protection Agency recommends thinking about hazard events comparatively. For example, your jurisdiction might deem a high-impact hazard event as a costly, major disruption and a low-impact event as comparatively less costly and disruptive.[32]
  - Indicators that can help your jurisdiction assess magnitude include the asset's redundancy (e.g., if a roadway's pavement buckles due to extreme heat, is there an alternative route?), replacement cost (e.g., assessor's parcel value), and criticality. Your jurisdiction could develop its own rulesets for these and other indicators (e.g., if an asset meets FEMA's critical facility definition, this indicator's rating could be "high") as well as use the resources below.

  **Resources:**

  - **FEMA**'s National Risk Index provides qualitative ratings and dollar values (for building and agricultural assets and population fatalities and injuries) for a community's expected annual loss associated with a given natural hazard. The online mapping application also measures community resilience and social vulnerability.
  - **FEMA**'s Hazus software — distributed as a GIS-based desktop application — identifies areas of high risk and estimates the physical, economic, and social impacts from floods and other hazards.
  - Your local hazard mitigation plan can also help with this task.

- After characterizing risk for your most vulnerable asset-hazard pairs, plot them on the 3x3 matrix in your **Climate Element Workbook**.

[32] U.S. Environmental Protection Agency workbook (2014), Being Prepared for Climate Change: A Workbook for Devheloping Risk-Based Adaptation Plans

**The value of a simple, qualitative rating**

Using a qualitative rating is useful for several reasons when assessing climate risk:

- Future changes in the climate system cannot be projected with the exactness that is needed to precisely quantify the probability of a risk at any given future time.
- You might need to manage many distinct risks, and it would be prohibitively expensive to scientifically quantify the likelihood of each one.
- The general public has a limited ability to understand and process statistical probability.
- With participants in the process it likely will be easier to agree on a qualitative rating (e.g., *low, medium, high*) than on whether mathematical calculations of likelihood or consequence were done correctly.

The key is not to overcomplicate the process. Define what you mean by your scale and communicate these definitions to your stakeholders and regulators.

— **U.S. Environmental Protection Agency**, Being Prepared for Climate Change: A Workbook for Developing Risk-Based Adaptation Plans

## Task 3.5: Decide course of action

Based on your risk characterization matrix, decide which risks are more or less acceptable and categorize them as ones to address now or as ones to address later and monitor in the meantime. As with other tasks, it's important to engage your community stakeholders as part of this critical decision.

- **Decision Point:** Limit your course of action ruleset to either "Take Action" or "Accept Risk," and note your decision in the **Climate Element Workbook**:
    - **Take action** means deciding to address the risk's impacts now with policies (and, if desired, detailed implementation actions for a hazard-specific strategy). For example, your jurisdiction might choose to take action for all risks of higher magnitude and probability.
    - **Accept risk** means deciding to not address the risk with a policy, strategy, or action now, but to instead monitor and reassess the risk periodically (for example, as part of your periodic comprehensive plan update process). Your jurisdiction might decide this is the right path forward for risks of lower probability and magnitude.

## Step 4 — Pursue Pathways


In this penultimate step, your jurisdiction will pursue an individual pathway or a combination of pathways to select goals and policies that build climate resilience. Use the guidance below and the **Climate Element Workbook** to complete your work. Commerce encourages jurisdictional staff members developing measures as part of Step 5 to provide interim updates to their planning commission and city/county council, so they're prepared to efficiently integrate such measures into the comprehensive plan as part of Step 6.

### Pursuing Pathways

Your jurisdiction could pursue one or a combination of pathways. Alternatively, your jurisdiction could approach different hazards using different pathways and/or determine that a combination of pathways are needed to adequately address a single hazard. Commerce's goal is to provide wide flexibility to communities of varying climate planning experience and capacity.

All pathways lead to the same destination: selection of at least one climate resilience goal and supportive policy within each of the model climate element's 11 sectors (Transportation, Water Resources, etc.). The number and nature of your jurisdiction's specific policies will be based on your assessment of local climate impacts and needs.

Your policies should recognize and promote as many co-benefits as possible (supporting tribal treaty rights, salmon recovery, etc.). Your policies should also prioritize actions that benefit overburdened communities that will suffer disproportionately from compounding environmental impacts and will be most impacted by climate change.

- See Task 4.3 below to evaluate your policies' co-benefits.
- See Section 5 to prioritize your policies for integration into the comprehensive plan.
- Use the **Climate Element Workbook** to list your climate resilience goals and policies.

## Pathway 1 — Select or adapt existing goals and policies.

Pursuing this pathway means addressing your jurisdiction's climate hazards and impacts with existing goals and policies from your body of planning work.

- Based on Step 2's audit, list in the **Climate Element Workbook** the relevant comprehensive plan goals and policies you're retaining and the goals and policies from other existing local plans (climate action plan, hazard mitigation plan, etc.) you're adding to your comprehensive plan. Note any edits you're making to adapt these existing goals or policies to better support climate resilience, either explicitly or implicitly.
- Follow Tasks 4.1 and 4.2 below only if your jurisdiction opts to develop new goals and policies to supplement your existing ones (e.g., to address any remaining gaps and barriers identified by your audit).
- Follow Task 4.3 to identify your policies' co-benefits.

## Pathway 2 – Develop new goals and policies.

Pursuing this pathway means developing new climate resilience goals and policies for your comprehensive plan (and other documents, if desired). If you conducted a vulnerability and risk assessment, you can use it to help prioritize and tailor your measures.

- Follow Tasks 4.1-4.3 below to create goals and policies, and list them in the **Climate Element Workbook**.
- Remember, you can supplement your list of new goals and policies with ones from existing local plans [*Pathway 1*], the **Menu of Measures**, or other sources. Such resilience goals and policies could go into a climate action plan and/or directly into your comprehensive plan.

## Pathway 3 – Update hazard mitigation plan

Pursing this pathway means updating your hazard mitigation plan to assess climate risks and adopting it, by reference, in your comprehensive plan. As noted previously, as of April 2023, FEMA requires that all updated local hazard mitigation plans must assess the effects of climate change and other future conditions in the document's required risk assessment.

- Follow Tasks 4.1-4.3 to help craft climate resilience measures for your hazard mitigation plan, and ensure that they meet FEMA Local Mitigation Planning Policy Guide requirements (e.g., identify implementation lead, funding source, timeframe). Your jurisdiction should work with the Washington Emergency Management Division, FEMA, and other local partners while preparing and submitting a hazard mitigation plan for approval [*Appendix* C].
- List in the **Climate Element Workbook** your updated hazard mitigation plan's climate resilience measures that fit within the Model Climate Element's 11 sectors. If your updated hazard mitigation plan does not include at least one climate resilience goal and supportive policy (which FEMA guidance identifies as an "action" such as a planning regulation, education program, or infrastructure project) within each of the 11 sectors, directly integrate the missing sector measures into your comprehensive plan.

## Task 4.1: Develop goals

If your jurisdiction created guiding principles [*Section 2*], revisit them to develop resilience goals that address the climate hazards and impacts identified in this section's Step 1 and supplement the goals audited in Step 2. Also be sure that your goals factor in your vulnerability and risk assessment, if you completed Step 3.

- Ensure that your jurisdiction has at least one climate resilience goal within each of the 11 sectors below, and list the goals in the **Climate Element Workbook**:

  - **Agriculture & Food Systems** (includes production and distribution);
  - **Buildings & Energy** (includes energy generation, transmission, and consumption);
  - **Cultural Resources & Practices** (includes historic sites and cultural resources and practices);
  - **Economic Development** (includes business continuity, opportunities);
  - **Emergency Management** (includes community preparedness, response, and recovery);
  - **Health & Well-being** (includes community well-being, equity, and engagement);
  - **Ecosystems** (includes land and water species and habitat);
  - **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).

## Task 4.2: Develop policies

Develop at least one supportive policy for each goal, and list them in the **Climate Element Workbook**. Ensure your collective list of policies addresses the climate hazards and impacts you identified in Step 1, the gaps identified in Step 2, and (if applicable) the vulnerabilities and risks identified in Step 3.

- Start by revising your existing policies to better support climate resilience.
- Supplement your initial list of policies with ones suggested by your stakeholders, who could have ideas in mind based on their knowledge of past hazardous events and their communities' unique needs and assets.
- Supplement your list with policies from the **Menu of Measures** and other jurisdictions' climate plans, if desired.
- Where appropriate, identify next action steps, such as revising development codes and design standards to implement policies.

**Resilience as Cohesion, Connectivity and Capacity**

Whether your jurisdiction is revising existing policies or crafting new ones, it's helpful to think about climate resilience holistically. Think about equitable ways to build your communities' connectivity, cohesion, and capacity to reduce, withstand, respond to, and recover from climate impacts. Look for policy solutions that provide multiple co-benefits and achieve multiple goals. For example, planting drought-tolerant street trees to adjust to hotter, drier summers in frontline communities has GHG reduction and adaptation co-benefits: Such trees store carbon (*reduce*), use less water (*respond*), and provide cooling shade (*withstand*). Supporting community-run resilience hubs in these neighborhoods provides residents places to gather, build relationships, and share resources (*connectivity and cohesion*) year-round — not just when climate hazards occur.

**Resource:** Washington Department of Commerce's online climate dashboard has a list of helpful resources for this task, including: Commerce's **Menu of Measures**, MRSC's interactive map of Washington local and tribal governments' climate plans; the federal government's green infrastructure toolkit and Climate Mapping for Resilience and Adaptation portal (modeling, design, maintenance, funding resources); Georgetown University's Adaptation Clearinghouse; and, the Sustainable Development Code (municipal ordinances to implement higher-level climate policies).

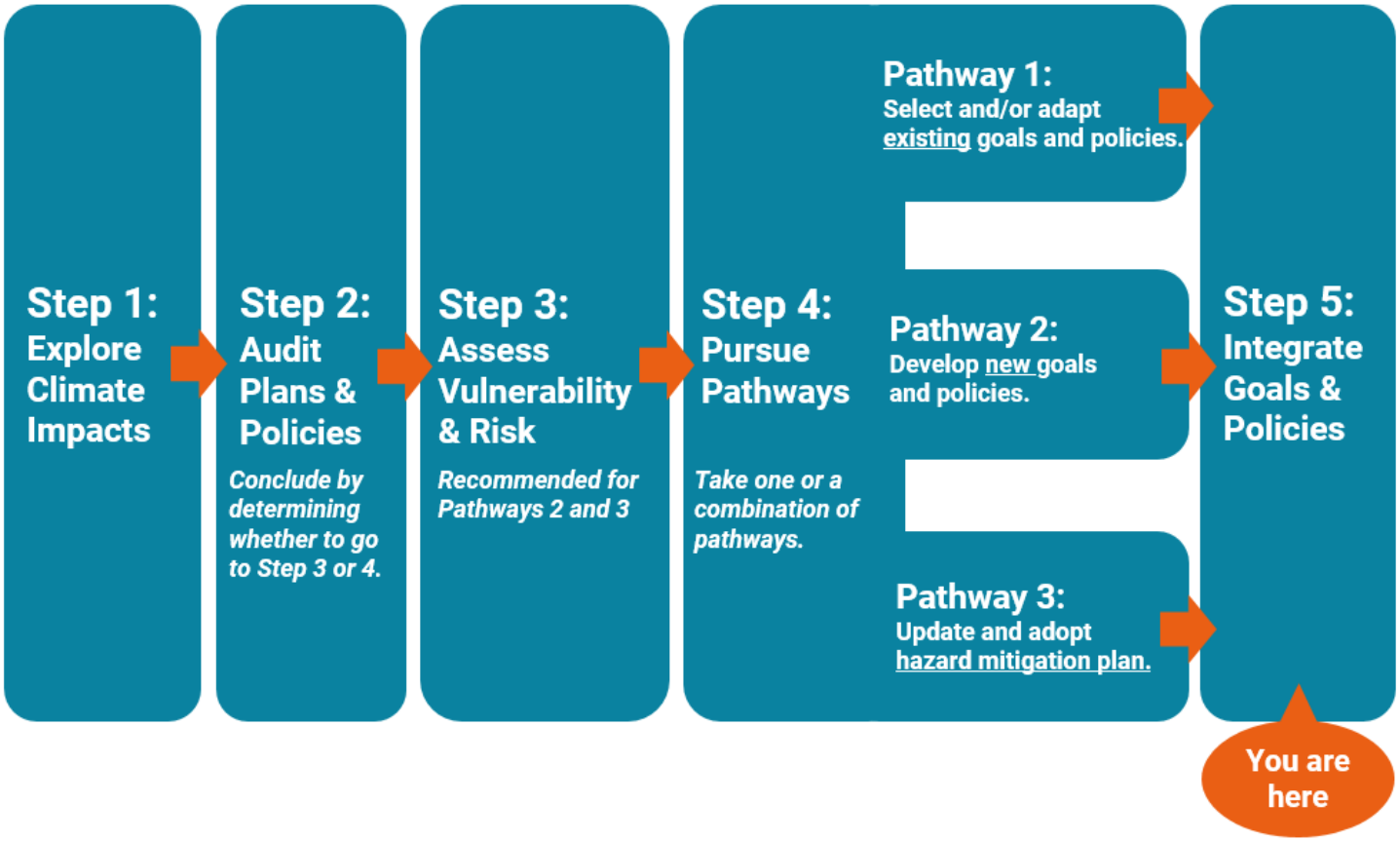
## Task 4.3: Identify policy co-benefits

Commerce and its partners identified co-benefits associated with every **Menu of Measures** policy:

- Reduces emissions
- Sequesters carbon
- Enhances resilience
- Improves salmon recovery
- Promotes economic development
- Promotes equity and justice
- Provides cost savings
- Provides ecosystem services
- Protects tribal treaty rights
- Improves public health and well-being
- Improves air quality
- Builds community knowledge

- In the **Climate Element Workbook**, note every co-benefit associated with each of your policies — including ones you've developed or selected from the **Menu of Measures** or other sources. The Workbook lists 12 co-benefit options from which to select.

## Step 5 — Integrate Goals & Policies




In this final step, your jurisdiction will decide where it intends to integrate its climate resilience goals and policies in its comprehensive plan and SMP. Your jurisdiction could choose to list all of its climate element goals and policies (GHG reduction and resilience) in one chapter or could choose to integrate them into several chapters/elements (Land Use, Housing, Transportation, etc.).

### Task 5.1: Review and finalize resilience goals and policies

During Step 4, you built a list of climate resilience goals and policies. Review this list and note where you will place each goal and policy in your comprehensive plan and/or SMP. Enter your climate resilience goals and policies into the **Climate Element Workbook** [*Step 5 tab*]. The workbook is organized by the climate element's 11 sectors to help you ensure that your list of goals and policies is complete.

- The workbook also enables you to note where you plan to place each measure in your comprehensive plan.
- Use this list to complete the checklist your jurisdiction submits to Commerce.

### Task 5.2: Consult with partners and stakeholders

Make sure your proposed list of goals and policies has internal support. Also, engage external stakeholders and partners to identify and address any concerns with the proposed updates. This is an opportunity to revisit the guiding principles and priorities raised by overburdened communities and ensure that the proposed updates accomplish what the planning group set out to achieve and meaningfully advance climate resilience, equity, and environmental justice.

# Section 4: GHG Emissions Reduction Sub-element

## 4.1: Overview

Global and local climate change is a direct result of excessive amounts of gasses such as carbon dioxide, methane, nitrous oxide, and certain synthetic chemicals trapping too much of the Earth's outgoing infrared radiation (heat). This results in retaining too much heat in the atmosphere and subsequent global warming, or more accurately, climate change. These gasses mentioned are collectively known as greenhouse gases. It is imperative that the sources and amounts of these gasses be reduced or eliminated so the negative effects of climate change may be minimized.

**Defining greenhouse gas emissions reduction (Climate mitigation)**

Actions taken to reduce or eliminate the emissions of greenhouse gases (present and future) in order to reduce the rate and extent of climate change damage.

This GHG Emission Reduction ["GHG Reduction"] sub-element planning guidance can be used by cities and counties to measure, reduce, and eliminate local greenhouse gas emissions via comprehensive plan goals and policies. GHG emission reduction is also commonly referred to as climate mitigation. The definition for both terms is identical.

Adding a climate change element to a comprehensive plan should allow a jurisdiction to holistically establish goals for greenhouse gas emission reduction and prepare the jurisdiction to be more resilient to the effects of a changing climate by reducing the extent and rate of future climate change.

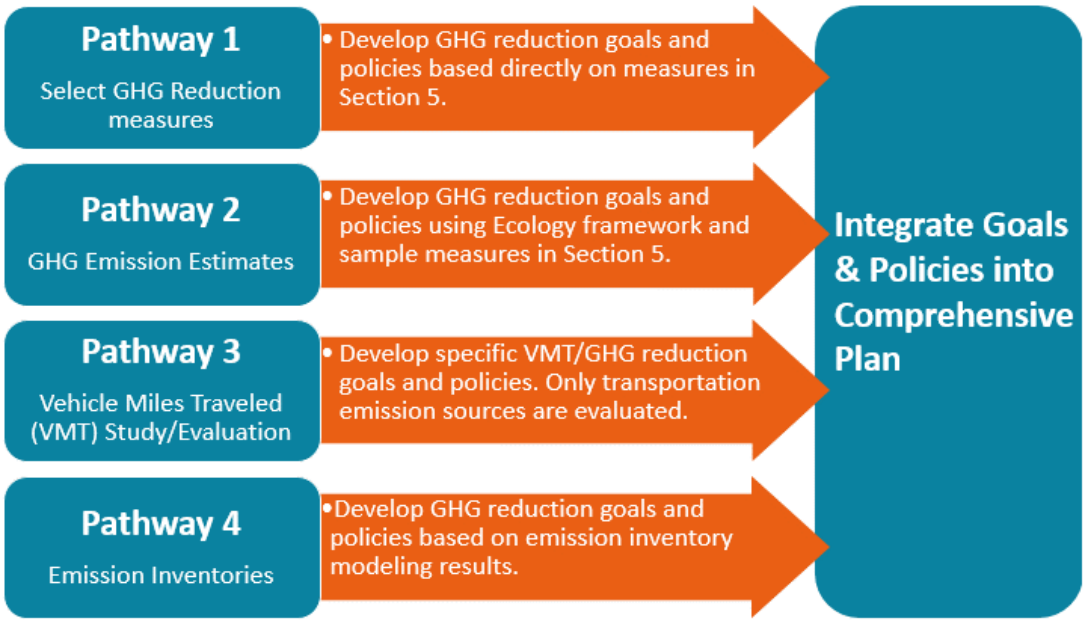
This section of the climate element guidance provides four pathways that depict how a jurisdiction could plan to reduce or eliminate its Greenhouse Gas (GHG) emissions and integrate goals and policies to that effect into its comprehensive plan.

## 4.2: GHG Reduction Guidance

The planning guidance for the GHG Reduction sub-element includes four specific pathways and each option requires a number of technical steps [*Figure 9*]. However, a jurisdiction could combine steps from different pathways to create a custom approach to GHG emissions reduction.

The pathways are designed to assist a jurisdiction in identifying GHG emission sources or sources of Vehicle Miles Traveled Per Capita (VMT) then how to choose GHG reduction goals and policies that

**Figure 9: Pathway Summary**



could be adopted in a climate change element of a comprehensive plan. The policies should reduce or eliminate GHG emissions when fully implemented.

A jurisdiction preparing to address GHG reduction in a comprehensive plan needs to answer these initial questions:

1) Do we already have GHG reduction objectives?
2) What type of GHG reduction measures do we want?
3) Which pathway will help us to attain these objectives given our staffing and fiscal resources?

All pathways depend on a multidisciplinary work group (such as planning and public works staff), and sometimes a consultant, to gather and evaluate critical climate change related planning data [*see Section 2*]. Brief similarities and differences of the pathways are as follows:

- Three pathways [*Figure 10*] ask a jurisdiction to set reduction targets (VMT or GHG or both).
- All pathways ask a jurisdiction to develop or choose goals and policies to help reduce or eliminate GHG emissions and meet reduction targets.
- All pathways require an implementation plan after adoption of goals and policies. This is not separate from a comprehensive plan implementation strategy.

## Figure 10: GHG Reduction Pathways — Advantages and Limitations

| Pathway Options | Advantages | Limitations |
|---|---|---|
| **Pathway 1**<br>Select GHG Reduction Measures | - Not technically rigorous<br>- Less likely to need a consultant to complete the analysis<br>- Goals and policies chosen have already been evaluated by state agencies for effectiveness. | - Not technically rigorous<br>- Baseline GHG emissions cannot be established for all GHG emission sources.<br>- Difficult to monitor progress toward emission reduction goals<br>- Some GHG emission sources could be missed. |
| **Pathway 2**<br>GHG Emissions Estimate | - Not as technically rigorous as a GHG inventory<br>- Might be able to perform analysis in-house and not need a consultant | - Baseline GHG emissions are harder to establish for all sources.<br>- Difficult to monitor progress toward emission reduction goals<br>- Some GHG emission sources could be missed. |
| **Pathway 3**<br>VMT Summary or Study | - More accuracy in evaluating emissions from internal combustion vehicles<br>- This could be done in conjunction with the other three pathways. Results could enhance transportation data derived from other pathways.<br>- Repeatable and will provide a baseline to track VMT reduction progress | - Might require a consultant<br>- Emissions information will be limited to transportation sources |

| Pathway Options | Advantages | Limitations |
|---|---|---|
| **Pathway 4**<br>GHG Emissions Inventory | - Provides a comprehensive baseline of emissions<br>- Repeatable process<br>- Progress can be tracked toward goals<br>- Accounts for all of a jurisdiction's emission sources | - Technically rigorous<br>- A jurisdiction without in-house expertise might need to hire a consultant<br>- Might be shortcomings with the quality of the data |

# Pathway 1: Select GHG Reduction Measures

The objective of Pathway 1 [*Figure 11*] is to facilitate the development of GHG reduction goals and policies based directly on the **Menu of Measures**. The process is not technically rigorous and is designed for a city or county staff to be able to do all the analysis, development, and selection of GHG reduction goals and policies.

### Figure 11: Pathway 1- Steps Summary


## Step 1: Gather local GHG emission and planning data

**The climate policy advisory team** [*see Section 2*] helping to develop the periodic update should be assigned the task of gathering local GHG emission data and relevant planning data. Most of the planning data needed should be collected as part of the comprehensive planning update process. Some of the relevant planning data that should be collected includes:

- 20-year population forecasts
- Population distribution
- Urban Growth Area (UGA) boundaries
- Rural lands distribution
- Critical area lands distribution

## Step 2: Identify probable sources of GHG emissions

**The climate policy advisory team** [*see Section 2*] should use existing information to identify the probable sources of GHG emissions in the jurisdiction.

### Task 2.1

- Study an emission inventory or an emission estimate from a neighboring jurisdiction or from Washington State Department of Ecology (Ecology), to evaluate in which ways your jurisdiction might be the same or differ.

### Task 2.2

- Evaluate historic or anecdotal information as part of identifying GHG sources/emissions to reduce or eliminate. Example sources of GHG emission sources include:

  - Large (suspected) generators of traffic (VMT)
  - Large solid waste facilities
  - Large agricultural waste operations (e.g., dairy waste)
  - Any point sources of air pollution

## Step 3: Identify GHG emission sources to reduce or eliminate

Jurisdictions should use the list of probable emissions sources to identify a subset of emissions sources to target with emission-reduction goals and policies. These decisions should be based on multiple factors determined by the multidisciplinary sub-committee. They might include the magnitude of emissions compared to other sources in the jurisdiction, feasibility of addressing an emission source given available resources, and timeframe that could be required to implement a reduction strategy and then begin to realize GHG emission reductions. This step should be completed within a jurisdiction's broad comprehensive plan and periodic update process.

- Use of Electricity
- Use of fuel in residential and commercial stationary combustion equipment
- On-road passenger and freight motor vehicle travel use; use of marine vessels
- Use of energy in potable water and wastewater treatment and distribution
- Generation of solid waste.

## Step 4: Select GHG emission reduction goals and policies

A jurisdiction could decide to develop its own goals and policies based on measures provided in Section 5 and/or its own research. The measures in Section 5 were developed by Commerce with assistance and vetting from a State Agency Climate Team[33] to reduce GHG emissions in specific environmental sectors.

These measures have been proven to be effective at reducing GHG emissions. There are, however, varying degrees of effectiveness between GHG reduction measures. Jurisdictions could use the following resource to estimate potential GHG reductions from individual GHG reduction measures: "*Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities and advancing Health Equity.*" This handbook was designed by the California Air Pollution Control Officers Association (CAPCOA) to (in part) provide a common platform and tools for evaluating/quantifying greenhouse gas reduction measures and promoting equitable land use planning and project design. It can be used to quantify the GHG reduction potential of many types of measures before adopting them. This would be particularly helpful for this GHG reduction pathway (1) because it provides a strong rationale for deciding which GHG reduction measures to adopt instead of only relying on anecdotal information.

This resource was developed for California, however, most methods can be used in or adapted for Washington jurisdictions. Jurisdictions should review the quantification methods for individual measures

[33] The model element as described in the 2021 budget [Section 129 (126)] was developed collaboratively among state agencies and other partners, referred to as the State Agency Climate Team.

prior to use to ensure accurate calculations. A summary of calculation samples may be found in Appendix J. (https://www.airquality.org/ClimateChange/Documents/Handbook%20Public%20Draft_2021-Aug.pdf)

The example goals and policies provided in Section 5 should be modified as appropriate for a specific jurisdiction and their comprehensive plan. Example: Some of the sample measures include a placeholder for inserting the target percentage of GHG reduction for your jurisdiction that would be based on vetting from the climate policy advisory team and the public process.

## Step 5: Implement policies as adopted in the comprehensive plan

The conclusion of a legislative process should result in your elected officials adopting the GHG reduction goals and policies into the jurisdiction's comprehensive plan. Implementation of climate-related goals, policies, and measures should begin after adoption.

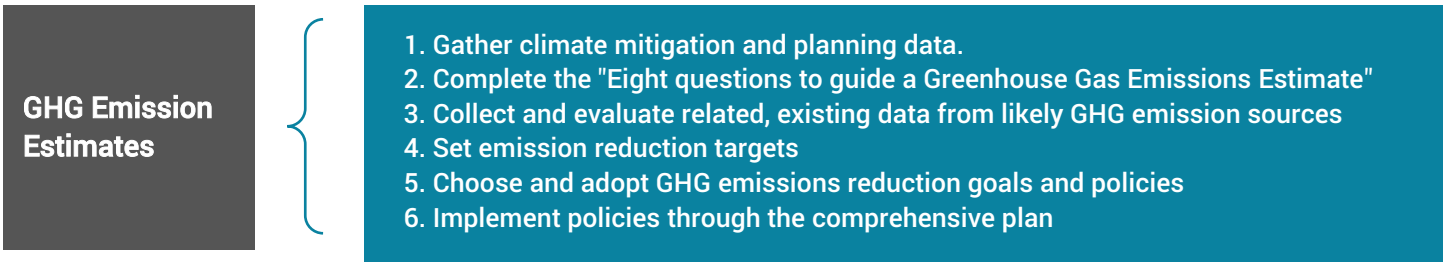
This step is predicated on adopting an implementation plan embedded in the comprehensive plan. The subsequent implementation tasks will vary depending on the goals and policies that have been adopted. It is also likely that a new implementation sub-committee will be needed within your jurisdiction to continue after the work of the planning and policy team is completed.

> ***NOTE:*** *Monitoring progress over time is more difficult with this pathway because it does not include a general baseline of GHG emissions. Maintaining the initial results of this exercise and initiating a similar exercise after five years should provide a general determination of progress toward your GHG reduction goals.*

# Pathway 2: GHG Emission Estimates

Pathway 2 [*Figure 12*] leads a jurisdiction to develop a GHG Emission Estimate based on a survey developed by Ecology. This survey is designed to help jurisdictions consider issues related to GHG emissions in their specific geography. It is called an "estimate" because the survey only asks a jurisdiction to evaluate GHG emissions from seven sources without the benefit/requirement of the specific GHG data that is required for Emission Inventories or VMT Studies. It is also an estimate because all the sources of GHG emissions in a jurisdiction might not be accounted for.

## Figure 12: Pathway 2 - Step Summary




## Step 1: Gather local GHG emission and planning data

**The climate policy advisory team** [*see Section 2*] helping to develop the periodic update should be assigned the task of gathering local GHG emission data and relevant planning data. Most of the planning data needed should be collected as part of the comprehensive planning update process. Some of the relevant planning data that should be collected includes:

- Population forecasts
- Population distribution
- Urban Growth Area (UGA) boundaries
- Rural lands distribution
- Critical area lands distribution

A list of topics in "Key Climate Change Action Topics to Address in GMA Policies" could be used (same as in Step 1, Pathway 1) in initial discussions on what climate change issues should be addressed.

State, regional, or county data might be available that can be used as a basis for a multidisciplinary group discussion. It is possible to assemble information from established inventories, referred to as “reference inventories,” and think through how those emission sources might be comparable to existing local information. It is also important to review and evaluate existing local state and federal climate change laws and goals. This will help you understand what emission sources should already be reduced or eliminated by target dates you may choose for your goals and policies.

Some relevant sources for such local data include: The National Renewable Energy Laboratory, which maintains a  database of state and local energy profiles. There are also commercial products such as

CoolClimate,[34] which has a mapping tool that can provide insights into average household-level carbon emissions data across the United States.

## Step 2: Questions to guide a Greenhouse Gas Emissions Estimate

Ecology developed the following questions to assist with developing a Greenhouse Gas Emissions Estimate in-house, following Washington state emissions inventory reporting categories. The "Eight Questions" and the subsequent discussion also provide an approach that could be used to estimate emissions based on how local sources compare to a known data set.

The advantage of this approach is that it is generally easier to assemble information from other established inventories and think through how those emission sources in your jurisdiction might be comparable to or different from that inventory. The questionnaire is based on following five primary activity and emission sources plus sectors used in Ecology's statewide emission inventory.

- Use of Electricity
- Use of fuel in residential and commercial stationary combustion equipment
- On-road passenger reduction and freight motor vehicle travel use; use of marine vessels
- Use of energy in potable water and wastewater treatment and distribution
- Generation of solid waste.

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### Eight Questions to Guide a Greenhouse Gas Emissions Estimate [35]

1) Determine the emissions associated with electricity use.

Electric utilities in Washington report annually the source of generation sold to their customers. Beginning in 2020, these reports were converted in CO2 emissions. The carbon content of your utility's electricity can be found here: Department of Commerce Fuel Mix Disclosure program under "Annual Reports." Local utilities are required to provide this information and could be of assistance as well.

- Multiply your Kilowatt-hour (kWhs) of electricity consumption by the average emission rate for your utility.
- Options to reduce this include establishing a contract for Environmental Preferred Power (EPP) or investing in renewable self-generation. Remember to invest first in energy efficiency to reduce your electricity needs.

2) Determine your local transportation profile. A transportation profile details the modes of transportation utilized in a particular jurisdiction and estimates the amount of people that utilize each mode. A transportation profile could determine:

- Total VMTs per day, week, month, or year;
- How many people use mass transit vs. single-occupancy vehicles;

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[34] The Department of Commerce references this product for **comparison purposes only** and is not recommending that a jurisdiction purchase this particular product.
[35] The questions follow Washington State emissions inventory reporting categories and were provided by the Department of Ecology (2022).

- The number of electric vehicles in use;
- How many people use non-motorized transit?
- Some jurisdictions might be able to obtain data for a transportation profile through existing transportation master plans, studies, and planning documents. If a jurisdiction lacks internal capacity to obtain such data, it could hire a consultant that specializes in transportation planning to obtain the data or perform a transportation study. Local planners can also contact the Washington Department of Transportation for more information on developing a transportation profile.

3) Determine the emissions from natural gas use within your jurisdiction.
If your jurisdiction is served with natural gas, work with your natural gas service provider to determine the quantity of gas sold in your area by residential, commercial, and industrial customer sectors. Note, if there are few customers in a sector, the information might be considered confidential.

- Convert NG therms to metric tons CO2: multiply therms by .00531 MT CO2/therm
- Convert NG Mcf (metric cubic feet) to CO2: multiply Mcf by .548 MT CO2.Mcf

4) Determine the propane and home heating oil use in your jurisdiction.

Determining the amount of propane and heating oil used in your jurisdiction could require a survey of propane and heating oil providers. However, some propane and heating oil providers are private companies that have no legal obligation to disclose information related to sales or use of their products. If local planners are unable to obtain this information, they can make an estimate of the amount of propane and heating oil used by determining the number of households in the jurisdiction that do not receive heat from electric and natural gas utilities and multiplying that number by the amount of propane or heating oil needed to heat an average-sized home. The following formulas can help planners convert gallons of propane or heating oil used to metric tons of CO2 equivalent:

- Convert gallons of heating oil: multiply gallons of oil by .0102 MT CO2/gallon
- Convert gallons of propane: multiply gallons of propane by .5574 MT CO2/gallon

5) Determine emissions associated with the generation and management of waste in your community. Local planners can work with waste management providers in their jurisdictions to determine the total VMTs from trucks collecting waste and estimate the amount of greenhouse gas emissions that result from those trips. If your jurisdiction has an existing contract with a waste management provider, the provider could be contractually required to provide information on emissions, but if not, they'll likely be open to discussing the topic.

Some jurisdictions are also home to waste management facilities that emit greenhouse gases, such as landfills and recycling centers. If your jurisdiction owns and operates such a facility, greenhouse gas emission information should be available internally. If a private entity operates the facility, the facility might not have a legal obligation to disclose information about emissions, but local planners should inquire nonetheless.

6) Determine emissions from wastewater treatment plants.

Most wastewater utilities are public entities and will likely provide greenhouse gas emissions information upon request. Planners should contact these utilities directly to discuss the emissions that they generate.

7) Determine emissions from industrial facilities in your jurisdiction.

Sources of emissions over 10,000 MTCO2 per year are legally obligated to report their emissions to Ecology and those reports can be found here. However, industrial operations that generate smaller amounts of emissions do not have a public reporting requirement. To estimate emissions from these facilities, local planners can either contact these operations directly or ask electric or natural gas utilities that supply energy to the jurisdiction.

8) Agricultural activities can also emit greenhouse gases, but quantifying the amount of emissions is complicated and not always possible. Using a reference inventory from a jurisdiction with a similar agricultural sector can help local planners estimate greenhouse gas emissions from agriculture. However, your jurisdiction's agricultural emissions might be less or greater than the reference inventory depending on the intensity/scale of livestock farming versus other types of agriculture, manure-management practices, fertilizer applications, and carbon sequestration capacity of local agricultural operations.

## Step 3: Collect and evaluate current data from the likely GHG emission sources

This step of Pathway 2 should be completed in collaboration with the **climate policy advisory team** assembled for the periodic update. Some of the activities that could be involved in this step are:

- Contacting local utilities and/or energy providers to determine how much local energy is being consumed and/or what GHG emissions are being emitted from wastewater treatment facilities
- Contacting WSDOT to determine what relevant transportation data is available
- Discuss obtaining industrial and agricultural GHG emissions information with Ecology.

### Task 1: Emissions Reduction Worksheet

Jurisdictions may use the following emissions reduction worksheet [*Figure 13*] to identify GHG emission sources and establish emission-reduction targets and actions, which should be taken based on the information from your "Eight Questions"/GHG Emissions Estimate.

Figure 13: Emissions Reduction Worksheet (See Appendix B Workbook for example)

| Emissions Source | Identify specific sources plus value and percentage, from inventory or estimate | Percentage of source statewide | Rank from highest to lowest | Rank statewide | Initial GHG Emission Reduction Targets |
|---|---|---|---|---|---|
| Electricity | | 16.3%* | | | |
| Transportation | | 44.9%* | | | |
| Heating | | | | | |
| Any other sectors? | | | | | |

| Emissions Source | Identify specific sources plus value and percentage, from inventory or estimate | Percentage of source statewide | Rank from highest to lowest | Rank statewide | Initial GHG Emission Reduction Targets |
|---|---|---|---|---|---|
| Total | | | | | |

* Current statewide percentages.

## Step 4: Set your own emission reduction targets.

Provide initial emission-reduction targets from each source based on your jurisdiction's goals, policies, and implementation plans that are developed in the next steps. This should be entered in the last column of the Emissions Reduction Worksheet [*Appendix B, Workbook Tab S4*]. The State Agency Climate Leadership Act (RCW 70.235.050 and 060) requires certain state agencies to reduce their greenhouse gas emissions consistent with statewide targets. The Washington state GHG reduction targets updated in 2020 are as follows:

- 2030 – Reduce GHG emissions to 45% below 1990 levels.
- 2040 – Reduce GHG emissions to 70% below 1990 levels.
- 2050 – Reduce GHG emissions to 95% below 1990 levels and achieve net zero emissions.

> ***NOTE:*** *Monitoring progress over time over time is more difficult with this pathway because it provides no general baseline of GHG emissions. Maintaining the initial results of this exercise and initiating the exercise again after five years should provide a general determination of progress toward your GHG reduction goals.*

## Step 5: Develop goals and policies to achieve your emission reduction targets

Goals and policies should be developed from measures that have been proven to be effective at reducing GHG emissions. There are, however, varying degrees of effectiveness between GHG reduction measures. Jurisdictions could use the following resource (mentioned in pathway 1) to estimate potential GHG reductions from individual GHG reduction measures: "*Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities and advancing Health Equity*." This handbook was designed by the California Air Pollution Control Officers Association (CAPCOA) to (in part) provide a common platform and tools for evaluating/quantifying greenhouse gas reduction measures and promoting equitable land use planning and project design. It can be used to quantify the GHG emission reduction potential of many types of measures before adopting them. This could be particularly helpful for this GHG reduction -- pathway 2--- because it provides an independent evaluation on your emission estimate and historical/anecdotal information.

This resource was developed for California, however, many of the methods presented can be used or adapted for Washington jurisdictions. Jurisdictions should review the quantification methods for the individual measures presented to ensure accurate calculations. A summary of some of the calculation samples may be found in Appendix J. (https://www.airquality.org/ClimateChange/Documents/Handbook%20Public%20Draft_2021-Aug.pdf)

After selecting GHG emission sources to set reduction targets, a jurisdiction could select measures from Section 5 to achieve its reduction goals, and include them as part of its comprehensive plan update process. The example goals and policies as provided in Section 5 could be modified as appropriate to the jurisdiction. Some of the sample measures (for example) could include a placeholder for inserting the target percentage of GHG reduction for your jurisdiction, based on vetting among the subcommittee and the public process.

Examples of questions to ask related to your goals:

- Is your jurisdiction trying to identify the largest sources of emissions so it can prioritize potential GHG reduction actions?
- Is the primary concern tracking whether the jurisdiction is meeting benchmarks for emissions reductions, or something else?
- Is the jurisdiction looking to inform residents about the relative sources of emissions and create a basis for public conversations around how members can reduce their carbon footprints?
- The goals should drive how, where, and when you communicate results, and how they are integrated into climate action goals to reduce GHG emissions.

If general public awareness and engagement is a driving force for a GHG Emissions Estimate, the communications and channels used for reporting are extremely important and should be considered from the very beginning of inventory planning. Inventory data that is visually engaging and meaningful to a wide audience (written in a format that is broadly and easily understood by a variety of ages and demographics), and actionable (e.g., now that you know 35% of the community carbon footprint is residential energy use, what can residents do about this?) are all important in communicating results.

Consider how to best communicate the initial analysis. There might be internal staff who can could create technical graphics; however, a jurisdiction might consider hiring staff, even for a limited duration. Jurisdictions are increasingly hiring climate or sustainability staff for climate planning and messaging to the public. Community organizations, including local non-profit organizations focused on environmental and climate issues, school districts, and local business networks can also be very effective partners in amplifying these messages to the community and should be considered as part of the reporting planning process. Communication of the results should be considered from the beginning, regardless of the approach. This early consideration should ensure the resources are in place to effectively communicate results when nearing the selection of goals and policies phase.

## Step 6: Adopt and implement the GHG reduction goals and policies

Adopting specific GHG emission reduction goals and policies into GMA comprehensive plans should turn research into action through the local legislative process, if these policies are implemented and GHG reduction goals are attained.

This legislative step of adopting climate change goals and policies will be more successful after conducting a broad public outreach effort. Public workshops that elicit ideas on greenhouse gas emission reduction could prove helpful in adopting and implementing climate change policies, especially with involvement from

vulnerable and disproportionately impacted residents. Refer to the Washington Department of Health's Environmental Health Disparities Map.

The conclusion of a legislative process should result in the adoption of GHG reduction goals and policies into the jurisdiction's comprehensive plan. Implementation of climate related goals and policies can begin after adoption.

# Pathway 3: VMT Study or Evaluation

This pathway [*Figure 14*] helps a jurisdiction define baseline vehicle miles traveled (VMT) conditions and evaluate strategies and transportation projects that provide substantial progress toward reducing transportation-related GHG emissions. This pathway should also lead to developing VMT reduction targets and measures to adopt in your comprehensive plan that have been proven to be effective at reducing VMT.

## Figure 14: Pathway 3 - Steps Summary


## Step 1: Determine project scope and geographic scale

Establish an appropriate size and number of zones/areas in the jurisdiction for a VMT analysis:

- Geography usually means either city boundaries or cities plus unincorporated areas for a county.
- Define modeling purposes; what are the existing model traffic analysis zones?
- Special attention should be given to identifying which VMT is of concern, including people who live, work, and travel through the area.

## Step 2: Acquire or purchase relevant VMT data

Acquire relevant VMT data (vehicle miles of travel for the time period and geography of interest — e.g., within a city for one year). VMT data can be purchased from various reputable and vetted sources (e.g., StreetLight data, Google[36]), or obtained from the Bureau of Transportation Statistics.[37]

> ***NOTE:*** *Local governments should reach out to their WSDOT and regional transportation planning partners for assistance in developing VMT data and analysis if they do not have capacity or expertise in-house.*

## Step 3: Determine most significant VMT sources

### Task 1: VMT data analysis

- Develop baseline data for current VMT and the associated GHG emissions (if available). Baseline data is from any relevant year of your choosing (e.g., 2019 — a regular, pre-COVID travel year). Consider, at a minimum, the travel of people who live in the area and the travel generated by employers in the area.

[36] The commercial datasets are for **reference purposes only** and are not an endorsement by this agency.
[37] United States, Bureau of Transportation Statistics, Local Area Transportation Characteristics for Households Data. https://www.bts.gov/latch/latch-data

### Task 2: Travel market assessment

- Identify large employers (already listed in the Commute Trip Reduction program), large residential areas, tourist activities, and other large trip generators. Consider which locations are well-served by transit and active transportation facilities to understand how reduction strategies would affect different areas — i.e., location with poor or limited transit service options and minimal protected bicycle facilities would benefit from demand strategies — e.g., carpooling, flexible work hours, as opposed to locations well-served by non-drive-alone modes.

## Step 4: Set VMT reduction targets

Develop or choose VMT reduction targets that can be achieved in the near term (five years) and longer term (10 years) for implementation. The implementation timeframes should match the timeframes of the other comprehensive plan goals of your jurisdiction. ***NOTE:*** *The GMA requires that cities and counties plan for a 20 year horizon. GMA comprehensive plans are required to be updated every 10 years.*

WSDOT has developed guidance to assist local jurisdictions in developing processes for establishing local VMT reduction targets and options for local jurisdictions to achieve the targets (June 30, 2023). The guidance will be available online at: https://wsdot.wa.gov/engineering-standards/planning-guidance/land-use-transportation-planning

## Step 5: Develop goals, policies and an implementation plan to achieve targets

The advisory team should develop or choose specific VMT reduction strategies to use that are sensitive to the locations identified in the travel market assessment. Develop goals, policies and an implementation plan to achieve your VMT and subsequent GHG reduction targets. Consider adopting strategies listed in the **Menu of Measures** or from Commerce's Guidebook for Transportation Plan Elements.[38]

The example goals and policies as provided in the **Menu of Measures** [*Section 5*] could be modified as appropriate to the jurisdiction. For example, some of the example measures include a placeholder for inserting the target date for VMT reduction.

## Step 6: Integrate the VMT reduction measures into your comprehensive plan

Ensure that the VMT reduction goals and policies (measures) are integrated into the comprehensive plan in this step. This means that the measures chosen should be consistent with and reference each other across plan elements such as transportation, housing, land use, or climate.

After selecting VMT goals and policies, include them as part of your jurisdiction's comprehensive plan update process. This step should include your advisory team, lead staff and planning commissioners, as appropriate. A jurisdiction might consider embedding an implementation or action plan into the

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United States, Bureau of Transportation Statistics, Local Area Transportation Characteristics for Households Data. https://www.bts.gov/latch/latch-data

[38] Washington State Department of Commerce. 2012. Your Community's Transportation System. Retrieved from https://deptofcommerce.app.box.com/s/erocgtpv3acyxv2m9bcb59c38s13qqjb

comprehensive plan as an additional step. This would speed up subsequent implementation after the goals and policies have been adopted.

**The following are ideas/measures that could move VMT research into actionable comprehensive plan policies:**

- Improve the presence, quality, and capacity of the walking and bicycling networks, and work with local transit agencies to improve access to transit, transit speed and reliability, and transit frequency.
- Change zoning to encourage a greater diversity of housing, services, commercial, and institutional uses within easy walking or bicycling distance of each other.
- Develop programming to encourage use of multimodal facilities and services. Washington state law (RCW 70A.15.4020) requires large employers (100 employees or more) to engage in commute trip reduction (CTR) activities. Most large employers already have transportation coordinators that promote transit, active transportation, and other demand management strategies to employees. Consider expanding this type of program elsewhere in the jurisdiction to provide information about available transportation options and facilitate events that could show the community the options available to them — e.g., walking school buses, ride-to-work month, etc. If there are no large employers in the jurisdiction, large reduction CTR programs can be scaled down or reconfigured to fit different requirements.

## Step 7: Revise your VMT study or data to evaluate progress toward your goals

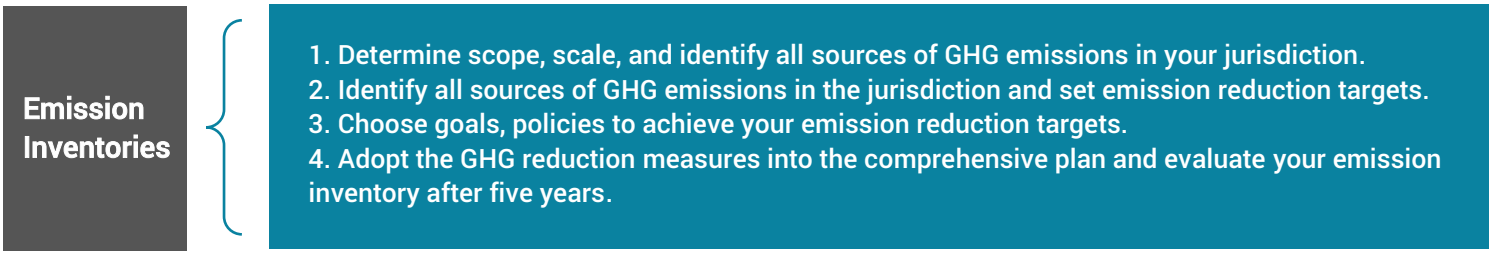
A jurisdiction needs to consider how to measure progress toward the selected VMT reduction targets. A jurisdiction could measure VMT changes by developing a comparison between the jurisdiction's baseline VMT data (e.g., 2019) and present values. If there are changes in data sources or methods, those changes should be documented — in order to distinguish how much of the change in figures is attributable to data sources rather than behavior change — and should be discussed.

Revisit the VMT data at regular intervals (at least every five years), and measure progress from the last review. A jurisdiction might choose to report on progress annually or at some longer reduction interval that coincides with plan updates or other milestones. This would depend on which VMT data you choose and potential related costs.

# Pathway 4: Emission Inventories

The Emission Inventory pathway [*Figure 15*] begins with an extensive modeling exercise that should help a jurisdiction determine all of the GHG emission sources in a jurisdiction and the relative amounts of the GHG emissions. This will allow a jurisdiction to establish a baseline of GHG emissions in order to develop specific GHG reduction targets and choose goals and policies that should reduce or eliminate the GHG emissions. Developing an emission inventory will also allow a jurisdiction to track progress toward emission reduction targets over time.

## Figure 15: Pathway 4 - Steps Summary




## Step 1: Determine scope, scale, and identify all sources of GHG emissions in your jurisdiction

A city or county's ability to take effective action on mitigating climate change and monitoring progress largely depends on having access to GHG emissions data. An Emission Inventory provides the data and allows local jurisdictions to understand the sources of emissions and the effectiveness of different activities (measures) to remove or reduce GHG emissions in a specific geography within a specific time frame. This is generally referred to as a "Geographic Analysis." There are other methodologies; however, this method is more commonly used.

The scope and detail of a GHG Emission Inventory should be driven by jurisdictional goals: What type of information does a jurisdiction need in order to support its climate change planning goals? Answering that question will help your jurisdiction make decisions about what emissions sectors/factors (e.g., transportation, energy production, solid waste) should be included in the inventory, how frequently the inventory should be revised, and to what level of detail emissions should be quantified.

### Task 1: Identifying a GHG Emission Inventory's scope and plan

A GHG Emission Inventory starts by identifying a scope and plan as follows:

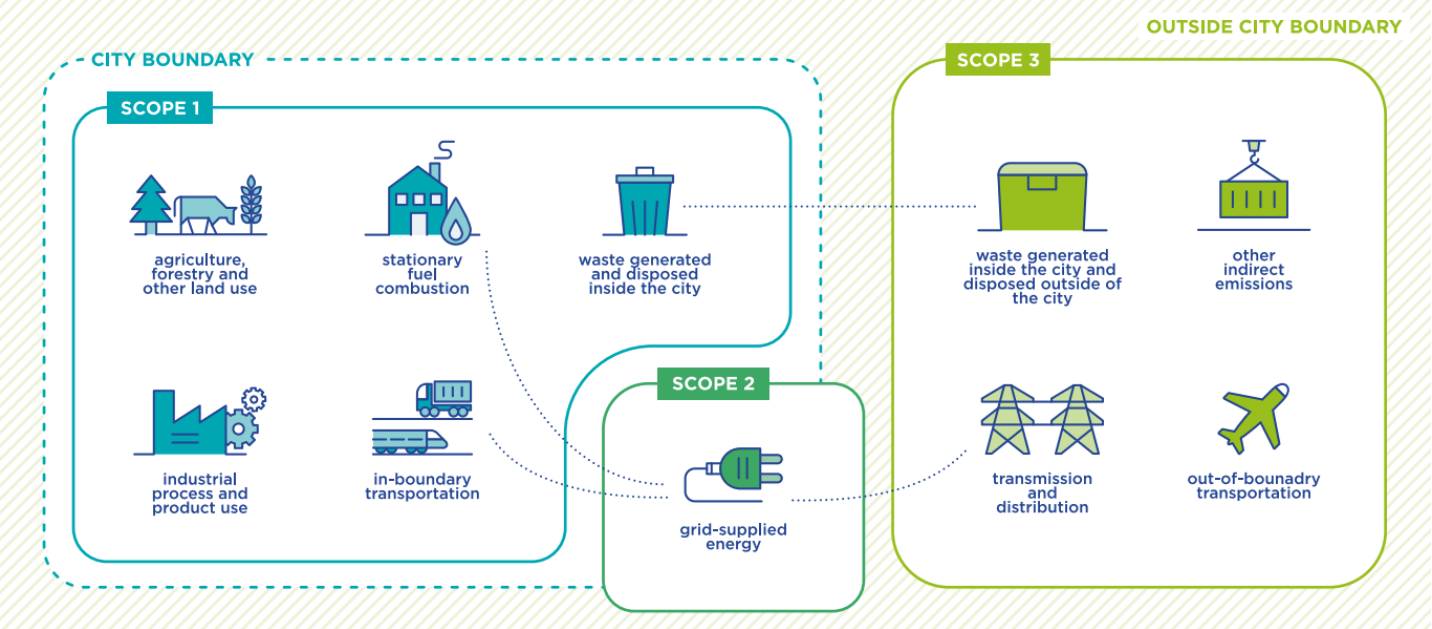
- Defining or identifying the geography (organizational and/or natural boundaries) that will be included and excluded from the inventory
- Defining the scope(s) (extent of factors to be analyzed inside the geography/boundaries)
- Establishing the accounting standards and methods
- Choosing an inventory base year

- **Define the geography and scope:** First, you must identify the geographic extent for the inventory and analysis. Will the inventory be based on the boundaries of the jurisdiction or other geographies?

You must define the scope, the extent of factors or emissions sources to include in the inventory [*Figure 16*], in addition to the geographic extent of a GHG inventory. The scope could include: only the area fully within

the boundary of the jurisdiction (Scope 1); the area of the jurisdiction, plus energy supplier (Scope 2); or, the area of the jurisdiction, plus indirect sources that a jurisdiction contributes to or is affected by (Scope 3). These scopes are described in more detail below, and a jurisdiction could choose to analyze one or more of these.

## Figure 16 — GHG emissions scopes for determining the extent of inventory analyses inside jurisdictional geographies/boundaries.




Source: C40 Cities Climate Leadership Group

**Scope 1:** GHG emissions generated within the jurisdictional boundary include things such as industrial processes and stationary fuel combustion that emit greenhouse gasses, transportation within the jurisdictional boundary, emissions associated with land uses such as forestry and agriculture, and waste and wastewater generated within the jurisdiction. Jurisdictions could choose to distinguish emissions sources according to what is directly under the control of the jurisdiction, and what emissions are generated from the community's residences and businesses, as follows:

- A municipal inventory that accounts for GHG emissions resulting from government operations. This can help the jurisdiction understand emissions stemming from activities that are entirely within their control, such as fleet vehicle emissions, or municipal building operations.
- A community inventory that considers the activities outside of government activities but comprehensive of all the activities of community residents, businesses and non-municipal organizations. This includes things such as fuels used by vehicles traveling within the community, solid waste generated by the community, and emissions due to energy to heat and power homes.

**Scope 2:** GHG emissions associated with grid-supplied energy. Most jurisdictions do not generate electricity within their jurisdictional boundary, but rather purchase it from a utility that generates the electricity and associated GHG emissions elsewhere. These emissions are counted as part of a jurisdiction's Scope 2 emissions.

**Scope 3:** Emissions embedded in the goods and services consumed in the community but which are generated outside it. This includes things such as food and other household purchases, and also typically includes activities such as airline travel in which community members are engaged but which occurs outside the jurisdictional boundary.

The GHG emission scope(s) that a jurisdiction chooses to incorporate into their GHG Emissions Inventory should be driven by the fundamental question laid out in the beginning of this guidance — what are the goals of the jurisdiction in creating this inventory? For example, if the jurisdiction is primarily interested in reducing emissions from sources over which they have direct control, an inventory focused on Scope 1 and 2 municipal emissions could be the most appropriate. If a broad picture of community emissions is desired, then an inventory that considers all three scopes could be the right approach.

## Task 2: Choose accounting standards and methods

It is critical that the methods used are accurate, repeatable, and verifiable, regardless of the scale and scope of the inventory. It is also helpful for GHG Emissions Inventories to be comparable across multiple jurisdictions or regions.

GHG emissions are estimated by multiplying activity data by the fuel-specific emissions factors.

**Examples of this are:**

- Kilowatt-hours (kWh) of electricity use x CO2/kwh = CO2 from electricity use
- Gallons of gasoline consumed by vehicles x CO2 per gallon = CO2 from transportation
- Natural gas therms consumed by buildings x CO2 per therm = CO2 from natural gas use in building

The most typical and prominent greenhouse gasses generated by human activities are carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6). These gasses have different warming potentials in the atmosphere, and are typically calculated and reported in units of metric tons of carbon dioxide equivalents (MT CO2e).

Many jurisdictions across the US have completed greenhouse gas inventories — ten in Washington as of the writing of this report. Four examples are listed in Task 6. Jurisdictions should look for widely used, commonly accepted tools and protocols to guide their inventory to ensure they are reporting emissions in a consistent, verifiable, and accurate way, and to understand how their inventory might compare relative to other cities or regions. Some of the most widely used protocols include:

- **The Greenhouse Gas Protocols for Cities** is used by many cities across the world to calculate and report emissions. This protocol was developed by the World Resources Institute (WRI), Local Governments for Sustainability (also known by the acronym ICLEI), and the C40 Cities Climate Leadership Group, to provide a robust, transparent, and comparable framework for developing and reporting GHG emissions. The protocol has been revised to align with the 2019 refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
- **The Local Government Operations Protocol** (LGO Protocol) focuses on accounting standards and methods for local government. The LGO Protocol was developed by the California Air Resources Board, the Climate Action Reserve, the Climate Registry, and additional partners. The protocol was first adopted in 2009 and is maintained by these entities. The LGO Protocol provides a set of guidance for local governments to develop emissions inventories following internationally recognized, transparent GHG accounting and reporting principles with attention to the unique context of local government operations. Use of the LGO helps create greater compatibility among GHG inventories

developed and reported across local governments. The partnering agencies who developed these tools have a variety of software available to their members to help simplify the tracking and calculation of GHG emissions.

- **The U.S. Community Protocol for Accounting and Reporting Greenhouse Gas Emissions** is used by many U.S. jurisdictions to create community-based GHG emissions inventories. The Community Protocol is developed and maintained by ICLEI. This protocol is designed to provide local governments with an assessment of GHG emissions associated with their communities so that they can make informed decisions about where and how to pursue GHG emissions reduction opportunities, and to help local governments engage with residents, businesses, and other stakeholders about opportunities in their communities for reducing GHG emissions. The protocol is also designed to advance consistent, comparable methods for measuring GHG emissions so that communities can compare their baseline emissions and their progress toward achieving emissions-reductions goals. This guidance is more streamlined and simplified with respect to its calculations and reporting requirements compared to the Greenhouse Gas Protocol described in the first bullet. The guidance document is freely available at the website linked above. ICLEI also offers many services including technical guidance and software to assist with inventory creation that are available to its members.

## Task 3: Choosing a GHG Emissions Inventory base year

Tracking GHG emissions over time is the primary way in which progress can be measured towards GHG emissions reductions targets. It is important to select a base year for the GHG Emissions Inventory as the benchmark against which current or future emissions are compared. The base year inventory can either be set as a single calendar or fiscal year, or it could be set as a base period that reflects an average of annual emissions over several consecutive years, which could have the advantage of dampening out departures from "typical" years.

**Example:** Significant changes in government operations associated with the COVID-19 pandemic might be a reason for a jurisdiction to use an average of multiple years of data. However, choosing a single baseline year can be easier for data collection purposes. Whichever option you chose, you will want to document it and explain.

Washington state requires annual greenhouse gas emissions reporting for state agencies creating more than 5,000 MT CO2e and for facilities and universities creating more than 10,000 MT CO2e annually. The state measures progress in emissions reductions relative to a baseline year of 1990. This choice of baseline year ties back to the Kyoto Protocol guidance that asked its member countries to establish reporting standards beginning with reporting 1990 emission levels, putting participating nations at a common starting point. The year 2005 is now also a common baseline choice, as that is what U.S. national targets are currently set against.

A jurisdiction could choose to use the same baseline year that the state does, for consistency with state-level reporting; or it might be necessary or desirable to choose a more recent timeframe as a baseline. It is likely easier to find more complete and accurate data to support an Emission Inventory from a more recent timeframe, as methods of tracking data for common emissions sources such as energy and transportation have become increasingly digitized and available online in recent years. Any baseline year chosen should make sense from an operational standpoint, in allowing a meaningful comparison of emissions moving forward from the baseline year.

**Example:** If a jurisdiction underwent significant changes in utility providers, or owned infrastructure, it might be appropriate to choose a baseline year subsequent to those changes, so as to move forward measuring organizational activities that are structurally similar to the baseline year.

## Task 4: Collecting data and quantifying emissions

The data that a jurisdiction collects depends on the objectives and scoping as described in Task 1 of this step. There are primary emissions-generating activities that should be included for a community inventory, and even for many smaller-scale municipal inventories, consistent with U.S. Community Protocol Guidance. These activities are associated with a specific set of emissions sources; both the activities and the sources are listed in Table 15. What emissions data is collected will depend on the activities and sources that are unique to a jurisdiction, but examples of the data sources are also noted in Figure 17. The data that is being collected by the jurisdiction should be adequately documented for subsequent updates to use the same method and data source.

***NOTE:*** *Consulting with stakeholders and or tribes could facilitate a data gathering process.*

### Figure 17: Five Primary Community GHG Emissions Sources, Associated Activities, and Examples of Data Sources

| Activity Resulting in Emissions | Emissions Sources | Examples of Data Sources |
|---|---|---|
| Use of Electricity | Power generating facilities; utilities that supply the jurisdiction or community | Utility providing power to the community |
| Use of fuel in residential and commercial stationary combustion equipment | Boilers, furnaces, propane tanks, generators; refrigerant leakage | Propane supply companies; community survey of consumers or industries |
| On-road passenger and freight motor vehicle travel use; use of marine vessels | On-road passenger, transit, and freight vehicles operating within the inventory boundary; marine vessels operating within the inventory boundary | Downscaled state or regional vehicle miles traveled (VMT) data study/modeling. |
| Use of energy in potable water and wastewater treatment and distribution | Operation of water delivery and wastewater infrastructure | Public works operations |
| Generation of solid waste | Solid waste disposal facility operations; solid waste transportation (or could be counted in motor vehicle category above) | Solid waste vendor |

Jurisdictions need to form and maintain relationships with key vendors and other partners in your jurisdiction for your data collection and tracking. Obtaining data on electricity usage from public utilities could be easier than from private entities as they have regulated reporting requirements. Others might be more challenging depending on the reporting requirements and accounting formats of vendors.

Other governmental or taxing entities in the jurisdiction might already be conducting their own GHG Emissions Inventory or collecting the kinds of data that would be useful to a local GHG Emissions Inventory. Entities such as school districts, park districts, fire districts and utility districts might also already have a community greenhouse gas inventory.

There might be cases in which GHG Emissions Inventory data specific to your community doesn't currently exist. Transportation data, for example, might only be available on a state or regional scale. If having community data for transportation-based emissions is important to your jurisdictional climate action goals, it could be necessary to implement or contract for a study to generate this data. Refer to Pathway 3 — Step 2 of this document for specific recommendations on obtaining this data.

The activity data collected for a GHG Emissions Inventory might arrive in different units from its source. Electricity use is reported in kWh, stationary fuel combustion will likely be expressed in gallons or another volumetric measure, and transportation is commonly expressed in terms of vehicle miles traveled (VMT). The protocols and links listed in Task 2 provide information on how to convert these different activity metrics into total emissions.

Jurisdictions have approached the development and on-going reporting of their GHG Emissions Inventories in many different ways such as but not limited to:

- Conducting and maintaining GHG emissions inventories primarily in-house;
- Joining an organization such as ICLEI to obtain relevant software and expertise for completing an inventory; and,
- Contracting with a consulting firm to complete the inventory and generate reporting for the jurisdiction.

Appendix F provides an example of an RFP that a jurisdiction might use to solicit bids for consultants to complete a GHG emissions inventory.

## Task 5: Developing a GHG Emissions Inventory management plan

A primary reason for creating a GHG inventory is to provide a tool for benchmarking progress toward climate action goals. The inventory should be regularly updated, so that progress toward those goals can be measured and shared. Primary components of a GHG Emissions Inventory Management Plan should include:

- Identifying an inventory update interval;
- Managing data quality;
- Reviewing and testing inventory assumptions and limitations; and,
- Sharing results with the broader community.

## Task 6: Identifying the GHG Emissions Inventory management plan update interval

GHG Emissions inventories are intended to be replicated in a consistent manner to report progress. The frequency of inventory updates should be driven by jurisdictional goals. The goals should include benchmarks for emissions reductions, which will later be important to have especially when evaluating progress toward those benchmarks.

The jurisdiction should identify an interval of reporting that is informative, realistic given resources, and aligns with the climate action goals. Shorter inventory intervals, such as every three to five years, are useful to obtain more regular input and information on the emissions over which the jurisdiction has the most control.

**Examples of GHG Emission Inventories**

Washington jurisdictions have recently completed GHG Emission Inventories. Here are four examples:

King County greenhouse gas emissions - King County (consultant-prepared)

Jefferson County (ICLEI-driven)

City of Spokane (prepared by Gonzaga University)

City of Bainbridge Island (consultant-prepared, ongoing ICLEI membership and in-house updates)

Many jurisdictions set ultimate and interim goals regarding GHG emissions reductions that inform the frequency with which inventories are conducted. Example: Washington's Clean Energy Transformation Act (CETA) commits Washington to an electricity supply free of greenhouse gas emissions by 2045, and sets interim benchmarks for actions including transitioning away from coal by 2025 and GHG neutrality by 2030. Washington greenhouse gas reporting is required from state agencies on a biennial basis, but consists of a more limited set of data sources than might be needed for a comprehensive jurisdictional inventory.

## Task 7: Data quality management

Adherence to data quality standards including a data management plan is essential for transparency and accountability. This will also ensure the creation of a GHG Emissions Inventory that accurately reflects emissions, and is repeatable in a manner that is consistent and valid for tracking emissions over time. The greenhouse gas inventory protocols referenced in Task 2 and in the resource section have a comprehensive set of guidelines regarding the integrity of inventory data.

**Here are some of the major components in designing a data collection and management plan:**

**Data**: Information regarding activity levels and emissions factors is the foundation of a GHG emissions Inventory. The design of a jurisdiction's inventory should facilitate and support consistent data collection and maintenance procedures, including the methods and review processes described in the following three paragraphs.

**Methods**: Jurisdictions should select and design methods for estimating emissions that accurately represent the characteristics of their emission sources. It is very possible that collection methods change over time.

**Inventory Processes and Systems**: An inventory should have technical and managerial consistency in the ways in which data is collected and managed. The staff or team should be clearly identified and assigned responsibility for the baseline and ongoing updates to the inventory. It might make sense, based on jurisdictional operations, to house this data management with staff who already conduct similar functions for other data collected and processed within the organization.

**Quality Assurance/Quality Control (QA/QC):** QC activities including regular checks on the consistency of the data being collected, whether from external sources or generated internally; and ensuring that widely accepted standardized procedures are being used for calculations, estimating uncertainties, and reporting. QA activities include the review of methods and results.

### Task 8: Reviewing and testing inventory assumptions and limitations

Conducting regular reviews of the assumptions and limitations of an inventory will ensure its continued relevance and accuracy. Inventory data can change over time and have meaningful implications for changes to emissions.

Some ways in which data can change over time include:

- Changes in vendors used for jurisdictional services;
- Changes in internal government operations; and
- Changes in services offered to the community (e.g., new public infrastructure or transit).

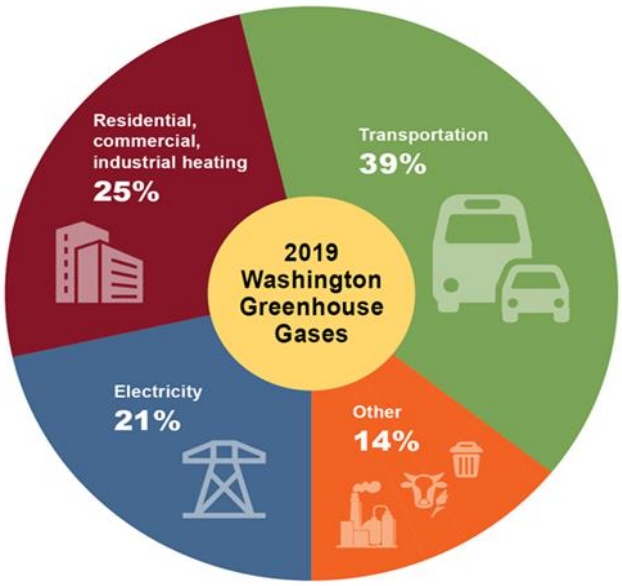
Building in a process for reviewing the scope and sources of the inventory is critical. It could be possible to embed this process in the QA/QC processes discussed above, including accessing independent technical expertise that can incorporate this type of thinking into their review.

Components such as emissions factors or regional GHG projections used in setting benchmarks and climate action goals are similarly subject to change as climate science and policy continues to develop. A regular review of protocols to ensure the inventory is using the most up-to-date science and methodology is important.

## Step 2: Identify all sources of GHG emissions in your jurisdiction and set emission reduction targets

Complete the identification of emission sources. Use the Emissions Inventory Worksheet in Appendix B to identify GHG emission sources and establish emission reduction targets.

Completing the Emissions Inventory Worksheet includes ranking the sectors from highest to lowest emissions. The ranking can be used to identify areas for priority action. Transportation is for many jurisdictions the highest source of GHG emissions. Finally, identify emission-reduction targets – potential emission reductions from each source. Emission inventory summaries should depict all sources of GHG emissions [*Figure 18*] and in specific percentages.




Ecology-Statewide Emission Inventory 2019

**Statewide emission reduction targets set by Executive Order 18-01 include:**

- 2030 – Reduce GHG emissions to 45% below 1990 levels.
- 2040 – Reduce GHG emissions to 70% below 1990 levels.
- 2050 – Reduce GHG emissions to 95% below 1990 levels and achieve net zero emissions.

***NOTE:*** *Some criteria air pollutants (CO, NOx, SOx, PM10, Pb, O3-ground level) can be correlated with some GHG emissions. Monitoring and measuring these pollutants near or in proximity to overburdened communities should facilitate environmental justice initiatives.*

**These are statewide goals. The challenge for cities and counties is to determine how they can contribute to an overall statewide reduction in GHG emissions. Consider these questions when establishing emission reduction targets:**

- What are the current total GHG emissions?
- What is the projected population growth and projected economic growth? [***NOTE:*** *GMA requires planning for 20-year population projections.*]
- What GHG sources of your jurisdiction can directly be influenced or controlled by the jurisdiction?
- Are there pre-existing natural sources/resources that reduce GHG emissions in your geography?
- How soon can GHG emission reductions be realized?

Washington's Cap-and Invest program, included in the Climate Commitment Act, may be helpful in this step. It applies to certain large CO2 emitters in some jurisdictions. Local governments may be able to find out major emitters covered by the program.

Your current total emissions, plus the sources, must be derived from the results of your GHG Emission Inventory. Ideally, a jurisdiction will establish two GHG emission reduction targets, one that can be achieved within a short amount of time (4-5 years) and another set of emission reduction targets that are for a longer term (10 - 20 years).

## Step 3: Develop goals, policies and an implementation plan that will let you achieve your GHG emission targets

A jurisdiction could decide to develop its own goals and policies based on measures provided in Section 5 or its own research. The selection of example goals and policies are provided in Section 5 for any jurisdiction to use as appropriate. Ensure that the internal departments that will be responsible for actions are at the table and involved when advancing to develop an implementation plan for the goals and policies.

Presenting the data results with the broader community is an important component of translating data into active climate change planning and action. It is important to return to juxtapose the goals of the jurisdiction in completing this inventory.

The goals should drive how, where, and when you communicate results, and how they are integrated into climate action goals to reduce GHG emissions. I/E data that is visually engaging and meaningful to a wide audience (written in a format that is broadly and easily understood by a variety of ages and demographics) and actionable (e.g., now that you know 35% of the community carbon footprint is residential energy use, what can residents do about this?) are all important in communicating results.

Consider how to best communicate the initial analysis. Communication of the results should be considered from the beginning of estimate planning, regardless of the approach. This early consideration should ensure the resources are in place to effectively communicate results.

**Ideas for setting GHG emission reduction target dates:**

Match targets with the comprehensive plan updates, such as 2034, 2044, and 2054.

If you don't have 1990 GHG emission levels for your jurisdiction, the year you begin to develop your comprehensive plan could be the best base year from which to begin.

Target reducing GHG emissions by 45, 70 and 95% respectively to match comprehensive plan updates with five year progress evaluation.

## Step 4: Integrate the GHG reduction goals, policies and implementation plan into your comprehensive plan

All the pathways generally lead a jurisdiction to select or develop the most appropriate emission reduction measures based on the list of measures provided in Section 5. Commerce developed the measures in Section 5 with assistance and vetting from a State Agency Climate Team. The objective is to reduce GHG emissions in specific environmental sectors. These measures have been proven to be effective at reducing GHG emissions.

A jurisdiction could decide to develop its own goals and policies based on measures provided in Section 5 and/or its own research. The example goals and policies as provided in Section 5 should be modified as appropriate for a specific jurisdiction and their comprehensive plan. Example: Some of the sample measures include a placeholder for inserting the target percentage of GHG reduction for your jurisdiction that would be based on vetting from an internal sub-committee and the public process. These measures would be included as part of a jurisdiction's comprehensive plan update process. The task of integrating new GHG reduction goals and policies into a comprehensive plan should include a multidisciplinary sub-committee, lead staff, and planning commissioners.

The GHG emission reduction goals and policies selected for your comprehensive plans should turn research into action through the legislative process, particularly when these policies are implemented and GHG reduction goals are attained. We recommend that you revise the emissions inventory every five years to evaluate your progress toward your GHG reduction goals and targets.

# Section 5: Climate Measures

The resilience and GHG Reduction sub-elements [*Sections 3 and 4*] recommend planning processes that include selecting climate measures for your comprehensive plan. This section describes the **Menu of Measures** and provides additional information to support selecting measures. The **Menu of Measures** contains examples of goals and supportive policies. Your team will review the measures and select ones that will build resilience and mitigate emissions in your jurisdiction. Most measures will need to be adapted to reflect local conditions and priorities before adding them to your comprehensive plan. These measures are the core of the model element that the state team was charged to deliver.

Commerce and its partners developed the measures in response to the 2021 state budget proviso (126) that directed that the climate measures include the following attributes (in brief):

- Prioritize greenhouse gas (GHG) reductions in communities that have historically been overburdened by air pollution;
- Promote measures that include other environmental, economic and social co-benefits in addition to addressing climate impacts;
- Provide a set of actions that have a demonstrated ability to reduce GHG emissions and vehicle miles traveled per capita (VMT);
- Prioritize actions in communities that will disproportionately suffer from compounding environmental impacts and natural hazards due to climate change; and,
- Provide options that will support housing diversity.

The **Menu of Measures** is comprehensive but not all-inclusive; there may be climate measures that your jurisdiction identifies that are essential to your climate element but are not on the Menu. No two jurisdictions will face the same vulnerabilities to climate change or have the same GHG reduction goals, so some measures will not apply to your jurisdiction.

**Climate element nexus with Shoreline Master Programs** (SMP): The sample measures are written for comprehensive plans. However, it will be important to consider your SMP when using the **Menu of Measures** to select goals and policies. There are two ways that the policies in the Menu could interact with your SMP. First, if you are adding a policy that is intended to apply throughout your jurisdiction, you may need to add or revise a complimentary policy in your SMP to ensure that the new policy can be implemented within the shoreline jurisdiction. Second, a measure may be primarily focused on the shoreline jurisdiction and will need to be incorporated directly into your SMP as a policy or regulation to be actionable (e.g., coastal resilience policies). Developments, uses, or geographic areas solely within the shoreline jurisdiction can only be effectively managed with policies and regulations within your SMP. As noted below, there is an SMP column in the Menu that indicates the climate resilience policies that will most likely need to be in your SMP. Policies that may have a nexus to your SMP depending on where and how they are intended to be implemented are not indicated in this column. SMP amendments for climate resilience require following the required amendment process (WAC 173-26-090) and must be reviewed for internal consistency.

## 5.1: How to Select Goals and Policies from the Menu of Measures

The menu's measures include the attributes described above and additional information that is intended to assist with the integration of policies into a comprehensive plan.

Commerce developed a searchable database that will allow a jurisdiction to sort the measures by any of the attributes described below. Commerce also created pre-defined reports with the measures sorted by these

attributes (e.g., by climate sector or by comprehensive plan element). All measures are matched with a mandatory or optional Growth Management Act (GMA) element, in addition to being categorized as a resilience or GHG reduction measure. The following list corresponds with the columns in the **Menu of Measures**:

- **Measure Type**: Measures are identified by whether they would best fit within the GHG reduction or resilience sub-element.
- **Climate Sector**: This category includes the same 11 sectors used by in UW CIG's *Climate Mapping for a Resilient Washington* webtool [*For more information, see Section 3 and Appendix B*]. The climate sectors include: Agriculture & Food Systems (includes production and distribution); Buildings & Energy (includes generation, transmission, and consumption); Cultural Resources & Practices (includes historic sites and cultural resources and practices); Economic Development (includes business continuity, opportunities); Emergency Management (includes preparedness, response, recovery); Health & Well-being (includes community well-being, equity, 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).
- **Supplemental Description**: As its name implies, this provides an explanation of reasons this measure should be considered in your jurisdiction and why it is relevant to address climate impacts. It can include links to research or other resources, citations from state laws (if applicable); links to research; and information to better explain the relevance of the measure.
- **Comprehensive Plan**: This attribute provides a suggested comprehensive plan element for integration and consistency.
- **Co-benefits.** The co-benefits selected for this category are in response to the directive of the state budget provision. The searchable co-benefits include: (1) reduces emissions; (2) sequesters carbon; (3) enhances resilience; (4) improves salmon recovery; (5) promotes economic development; (6) promotes equity and justice; (7) provides cost savings; (8) provides ecosystem services; (9) protects tribal treaty rights; (10) improves public health and well-being; and (11) improves air quality.
- **EJ Potential With**: This attribute — developed by Front and Centered, based on its work with frontline communities in Washington — includes four options to better highlight how each policy could be viewed through an environmental justice (EJ) lens. Front and Centered also used the Supplemental Description column to note how the policies' overarching goals align with the frontline communities' EJ priorities.
- **Policy Development and Implementation Tools**: Each policy on the Menu links to at least one resource (tool) that will help a local jurisdiction develop and/or implement the policy. Tools range from model development code provisions to project funding and design resources.
- **Hazards and Impacts**: This category includes climate-exacerbated hazards (e.g., sea level rise and wildfires) and impacts (coastal erosion and wildfire smoke) that are addressed by the measures. Every measure addresses at least one hazard or impact, and most measures address several. Selecting "all" as a search attribute will pull up all of the climate resilience and GHG reduction goals and policies. Selecting specific hazards or impacts will pull up a narrower field of measures.
- **Tracking**: Every policy lists one or more metrics that a jurisdiction could use to track implementation. Such metrics may be useful for reporting implementation progress at defined intervals.
- **Shoreline Master Program (SMP) Nexus**: This category is intended to identify measures that likely need to be incorporated into your SMP to allow for implementation. Adding these policies to your SMP would require consistency review and an SMP amendment.

- **Grouping**: This is a short narrative suggestion of measures that will complement one another, or that should be considered as a set of measures for ultimate effectiveness.

## Customize based on local conditions

The climate measures as drafted include varying levels of authority. Some measures, for example, include terminology that is typically reflected in language describing initial steps, such as "study" or "consider," whereas other measures include language that is associated with implementation actions, with such terms as "implement" or "adopt." You will even notice that some measures include blanks with prompts such as "***insert date***" or "***insert target.***" The state does not have emission-reduction targets for local jurisdictions at this time. It is therefore, impossible for this guidance to prescribe how much and how soon each jurisdiction must achieve progress on climate actions. This combination of terminology was intentional in order to provide a wide range of options and to spark inspiration in your community.

Your climate policy advisory team should be invited to customize the measures as they review and select them, in order to set targets that are relevant and appropriate for your jurisdiction. This aspect of customizing the measures is important to recognize as your climate policy advisory team selects and adapts measures, which must ultimately be appropriate for your local conditions, values, and climate goals.

# 5.2: Multicriteria Prioritization Analysis

Commerce and its partners evaluated each measure by utilizing a multicriteria prioritization analysis. The priority level indicates how well the measure met the attributes of the charge given to the state partners — meaning that this analysis does not include localized criteria that only your city or county would be able to assess. Given the subjective nature of the scoring, we suggest that the ranking be used as a starting point for conversation, but is not intended to be prescriptive.

The next section provides an explanation of the initial criteria and the basis for higher-priority measures. The score includes the sum of co-benefits and timeframe. The criteria for effectiveness and equity are not scored by the state team, as explained in the next section.

## Initial Criteria

Your climate element must prioritize policies that are in alignment with the vision and goals of your jurisdiction, and expressly prioritize overburdened communities, who will suffer disproportionately from compounding environmental impacts and will be most impacted by natural hazards due to climate change. Jurisdictions could adapt the framework by including additional local criteria to better align their climate element policies. Appendix I describes the development of the **Menu of Measures**' multicriteria analysis prioritization framework and provides examples of multicriteria analysis that has been applied in other jurisdictions.

Commerce elicited input from state agency staff and used the initial criteria to prioritize policies in the **Menu of Measures**. Commerce then asked each state agency partner to evaluate the measures using the framing questions. The prioritization reflected in the **Menu of Measures** includes an evaluation of the first three criteria. The fourth criterion was developed by the Uplift Communities Project, led by Front and Centered [*see Appendix A for more details*].

1) **Effectiveness**: The measures within the Menu are all considered to be effective at addressing GHG reduction and/or resilience after the state team affirmatively responded to the framing questions. The

level of effectiveness will ultimately need to be assessed at the local level in combination with the suite of measures that are selected to compliment your goals.

2) **Co-benefits:** Your jurisdiction could choose to utilize the co-benefits provided in this guidance or modify the list. The state team balanced the relative value of the multiple co-benefits of this criterion with the total criteria in order to ensure that this singular criterion not outweigh the others. This ensured that the top possible score for this criterion should not exceed the top value of the other criteria.
3) **Timeframe of Benefit**: This criterion reflects whether the measure will provide benefits in the short or long term. The assumption is that shorter-term benefits may be policies that need to be replaced or revisited within five years, in contrast to something that is long term, which would typically include considerable investment.
4) **Equity**: It is difficult to determine if a measure itself is equitable at a state level. Jurisdictions must identify the overburdened communities and vulnerable populations in their planning jurisdictions and collaborate with those stakeholders to adequately determine if a measure would have disparate impacts. The framing questions were created for jurisdictions and community representatives to evaluate the potential for equity for any measure and to identify necessary alterations through a just transition and an environmental justice lens [*See Appendix A: Summary Report: Climate Justice in Growth Management*].

| Criteria | Framing questions | |
|---|---|---|
| Effectiveness | For Resilience Measures: **Will the policy reduce the severity of projected climate impacts**?<br>For GHG Reduction Measures: **Does the policy have a demonstrated ability to reduce GHG emissions**? | |
| Timeframe of Benefit (long or short) | **How long are the effects of this measure**?<br><u>Short term (1-4 years):</u> Will the measure provide a benefit of less than five years? Example of these measures are those that are dependent on a personal choice, such as incentives for transit users or installing a "smart" meter to conserve water on private property.<br><br><u>Long term (5 or more years):</u> Is the policy a long-term response to the climate impact or reduction to GHG emissions? An example includes the considerable investment of replacing a fleet of combustion engine vehicles with electric vehicles, or relocating essential facilities out of the floodway. | |
| Co-benefits | **Does the measure provide any of the following co-benefits?**<br>1) reduces emissions (GHG reduction)<br>2) sequesters carbon (GHG reduction)<br>3) enhances resilience<br>4) improves salmon recovery<br>5) promotes economic development<br>6) promotes equity and justice | 7) provides cost savings<br>8) provides ecosystem services<br>9) protects tribal treaty rights<br>10) improves public health & wellbeing<br>11) improves air quality<br>12) builds community knowledge |

| Criteria | Framing questions | |
|---|---|---|
| Equity | • **Co-governance**: Does the measure show potential to build self-determination for frontline communities of color and/or low-income communities?<br>• **Targeted Universalism:** Is the measure clear on rights to healthy communities, and explicit in targeting interventions to communities furthest from achieving those rights? | • **Accountability:** Does the measure show potential to directly limit harm and holding those responsible? Does it prioritize effectiveness?<br>• **Community Wealth Building:** Does the measure show potential to invest-in and sustain local livelihoods, starting with communities with the greatest barriers to meeting their needs, through sustainable resource use and cooperative work? |

## Additional Considerations on Effectiveness

Any evaluation of effectiveness should include a consideration of opportunity costs — what other activities or measures could produce more environmental benefit for a similar cost? Jurisdictions should attempt to maximize environmental benefits within available resources when planning to reduce or eliminate GHG emissions. The effectiveness of GHG reduction projects can be assessed based on the cost to reduce one metric ton of CO2.

There are two metrics jurisdictions could use to assess effectiveness using this approach. First, the Washington State Utilities and Transportation Commission set the "social cost of carbon" at $87 per metric ton of CO2 for 2025. Spending more than that to reduce CO2 means the jurisdiction is spending more than the global benefit they are providing. The social cost of carbon is an estimate of global impact, not local.

The second metric that can be used is the cost of carbon offsets from the Climate Action Reserve and the American Carbon Registry, both of which have been approved by Ecology as having a track record of excellence. Both organizations offer opportunities to reduce the maximum amount of CO2 for any budget.

## Additional Criteria for Local Governments

The state team evaluated the relative priority of the policies provided in the **Menu of Measures** using criteria that could be assessed at a state level. This initial prioritization does not account for the unique attributes of a particular jurisdiction, and as such a local government should include additional criteria that better reflect your climate goals following sub-element development [*Sections 3 and 4*], along with readily available resources to accomplish near term activities. We recommend including the following criteria and framing questions:

- **Unintended Impacts**: Will implementing this policy result in unintended social, economic, or environmental impacts/externalities? *Example: population displacement*
- **Feasibility**: Administrative and other staff capacity to implement.
- **Cost**: Estimated cost to implement this policy. This criterion could provide more distinction to "feasibility" or it could stand alone.
- **Timeframe of Implementation**: How quickly can it be implemented? ***NOTE:*** *If less than five years, then it is considered to be quick or short term. If it will take longer than 5 years to initiate, then it is considered to be long term.*
- **Political or Public Support**: Is there community support for this policy? Is this a priority for the elected body?

- **Authority**: Jurisdictions should generally exclude measures that are outside their span of control. However, there might be measures that a jurisdiction could influence or affect through a partnership as described in a particular measure.

# Appendices

# A. Summary Report: Climate Justice in Growth Management: *Prioritizing Actions to Uplift Communities Disproportionately Impacted by Climate Change (The Uplift Communities Project)*

## Contents

# A. Summary Report: Climate Justice in Growth Management:

**Prioritizing Actions to Uplift Communities Disproportionately Impacted by Climate Change (The Uplift Communities Project)**

## Summary

Front and Centered (FC) presents this appendix report to document the work and lessons learned through its contract with the Washington State Department of Commerce (Commerce), through the "Prioritize Actions to Uplift Communities Disproportionately Impacted by Climate Change" (Uplift Communities) Project. The content of this report is drawn from an extensive community engagement process managed by FC, which involved a committee of community-based organizations representing overburdened and vulnerable communities [39] across Washington. Front and Centered provided the recommendations of this report in advance of the final draft of the climate element planning guidance.

GHG reduction and resilience planning is fundamentally a matter of equity. In approaching climate element measures, it is essential to reject "one-size-fits-all" approaches to the selection and application of measures. Rather, processes must effectively engage impacted communities through models of engagement that center community voices and priorities, and adjust based on the needs, perspectives, and realities of community members and the organizations that represent them.

**Findings with respect to this process:**

- Frontline[40] communities are very interested in comprehensive planning processes, and jurisdictions engaged in planning must meet community members where they are at. Too often, planning and engagement processes are overly complicated, lack sufficient clarity on what influence engagement may have, and lead to frustration in impacted communities.

- Frontline communities choose to not engage when there is strong belief their engagement will have no impact. Poorly designed engagement strategies discourage participation — in the near term and long term. Frontline communities are interested in both the process and the outcome of their engagement.

- There are models that jurisdictions can use to center the perspectives and voices of frontline communities. These models can increase engagement, build trust, and create opportunities for co-governance.

- Frontline communities care deeply about the impacts of climate change on their families and their lives. Comprehensive planning community engagement processes must strive to make connections between near-term and long-term impacts of climate change and communicate the role of planning in that context.

Jurisdictions must identify the overburdened communities and vulnerable populations in their scopes of work in order to determine if the proposed climate element measures are equitable. They must also collaborate with those stakeholders to adequately determine if a measure may enable or prevent disparate impacts.

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[39] Throughout this report, "overburdened and vulnerable" communities and individuals will interchangeably be referred to as "frontline" communities and individuals. Definitions for both terms are found within the glossary at Appendix J.
[40] Ibid (see notes above)

**This report serves as a tool to incorporate equity and environmental justice in the planning process.**

- It summarizes important frameworks, beginning with a summary of the Just Transition Framework, including principles of co-governance, and recommends tools and resources.
- It provides a tool to examine — in in partnership with community members — how criteria can be used to assess the equity/harm potential of draft measures.
- It also includes community-recommended measures, with a description of what goals those measures might address and how they might be applied in the planning process.

## Introduction: Climate Justice and Frontline Communities in Climate Planning

Commerce contracted with Front and Centered to provide guidance in the development of the climate element from the perspective of communities that disproportionately experience harm from climate change. Front and Centered is a statewide coalition of community-based organizations representing people of color and lower incomes.

***Climate is fundamentally an issue of equity.*** Climate impacts hit us wherever we live, work, and play in Washington. Climate pollution threatens our health and the health of future generations — but the impacts are not distributed evenly. Who is at risk is a factor of both who is most exposed, and who has the ability to respond, adapt, and decide. Communities of color, Indigenous peoples, and communities with lower wealth and incomes tend to face the greatest climate risks and are therefore on the frontlines of climate and environmental threats and face greater social, economic, and health issues.

To date, comprehensive plans in Washington have lacked adequate consideration and planning to address the current, historical, and ongoing environmental racism that many communities around our state experience. These plans shape the future of communities in the state and are often a deciding factor in how heat, floods, fires, and other climate-related impacts communities will endure. The existing comprehensive planning process is not accessible or equitable for many people who reside in frontline communities and does not address the disproportionate impacts from climate change.

If jurisdictions want to undo and prevent further disparity, they must identify the overburdened communities and vulnerable populations in their jurisdictions and make intentional efforts to understand the cumulative threats these communities are facing. They must also understand how those issues may be alleviated through land use planning, and how the local communities want to be supported. These efforts should be shaped heavily through collaboration with the overburdened communities through building community capacity and meaningful public participation processes. For additional guidance, please see the public engagement resources and best practices in Commerce's draft climate planning guidance [*Section 2*].

The Front and Centered coalition envisions a future where our communities and the Earth are healed and thriving, our people have dignified work and the building blocks of opportunity and prosperity, and our government values, respects, and represents us. Getting to a place where that vision is reality, requires a Just Transition. This involves transitioning away from regulations and policies that allow for or depend on the exploitation of natural resources and labor, and that protect wealth and power through land ownership and consumerism. Instead, local governments must move toward investment in the health and social well-being of all people and places through proper co-governance.

This report summarizes the approach of the Front and Centered coalition's Climate Uplift Project, led by a Community Leadership Committee (CLC), to developing guidance and reviewing draft measures for a

comprehensive plan climate element. It focuses on equity strategies for how jurisdictions can minimize burdens and maximize benefits to overburdened communities. The goals, guidance, and recommendations are informed by outreach conducted by seven community-based organizations that were created by and for communities of color, and low-income communities across Washington.

## The Just Transition Framework

The Front and Centered Coalition envisions climate justice as a transition away from an extraction-based economy to one centered on ecological restoration, community resilience, and social equity, fueled by regenerative resources and cooperative work, governed by deep democracy, and a culture of caring and sacredness. The report, "Accelerating a Just Transition in Washington State", is a primer on Front and Centered's application of the Just Transition framework to climate GHG reduction and resilience strategies.

Such a Just Transition will require interventions in four key areas that, while not historically the focus of climate work, are necessary conditions for achieving climate goals:

**Center Those Disproportionately Impacted in Governance.** The communities that experience climate impacts and fossil fuel pollution first and worst — or have the least ability to transition to a lower-carbon economy — can be active participants in identifying solutions that will work for them. New models of participatory governance — or "co-governance" between government leaders and agencies and impacted communities — will be necessary to truly address these gaps in community leadership and shared governance. Key cornerstones of co-governance include: a) establishing government commitment to the self-determination of communities; b) supporting communities to build their capacity to effectively participate (in government processes); c) developing shared governing power in principles and in process; and, d) demonstrating equitable processes and results.

**Restore Community Connections to Place.** Place-based communities that can practice self-determination, care for their social and economic well-being, and honor ecological stewardship and sustainability are at the heart of a Just Transition. A place-based approach focuses policy, programmatic interventions, and innovations in specific geographic areas that are suffering from environmental and social injustices. A place-based approach, where each community is valued, ensures that no community is sacrificed to climate impacts or to suffer emissions disproportionately. This creates pressure to eliminate, rather than move emissions from place to place. Jurisdictions can integrate this priority by placing greater value on and by centering in their public engagement processes the values, cultures, aspirations, hopes, and experiences of the communities impacted by their plans and actions.

**Create Livelihoods within a Healthy Environment.** A regenerative economy is one that prioritizes sustainable living and work within ecological limits. It would eradicate inequality, ensure all basic needs are met, and foster individual and community well-being and health. Rather than enabling economies rooted primarily in growth, the commodification of people and things, and the extraction of resources and labor, we must enable economies that are rooted in the dignity of people, their voice, and their work, where people can afford what they need, and where they benefit from clean and healthy air, land, and water. Jurisdictions can support movement toward a regenerative economy by prioritizing the needs of communities over the needs of corporations.

**Transition to Renewable Resources and Energy.** A key cornerstone of a Just Transition is enabling strategies to ensure energy is first conserved, and that energy generation is renewable and equitable. This means phasing out and rejecting extractive energy sources — for example, fossil fuels that harm the environment — and enabling adoption of healthier and environmentally sound energy sources and ensuring access to these

energy sources to everyone, including impacted communities. This also means, including distributed ownership opportunities that can support self-determination, economic development, and direct benefits in overburdened and vulnerable communities. Jurisdictions can support this pillar by planning for the use of renewable energy sources in their planning jurisdiction. Transitioning away from fossil fuels or non-renewable sources can reduce social and environmental harms in frontline communities.

Some government entities may question the relevance of these pillars to land use planning. Others may place limitations on potential policy interventions by setting standards for "proven effectiveness" that may intentionally or inadvertently exclude these factors. Moving forward in the climate realm, experimentation is needed to mitigate the impacts of climate change and to ensure the resilience of communities. Approaches to planning and policy that rely solely on what is comfortable or proven replicate harmful dynamics and shift power away from disproportionately impacted and marginalized communities. Such approaches bias planning toward keeping things the way they are and favor incremental change that may limit what is possible, and this will certainly fall short with respect to equity.

## Environmental Justice

Washington Gov. Jay Inslee signed a landmark environmental justice bill in 2021, the Healthy Environment for All Act (SB 5141), or the HEAL Act. The law grew out of a decades-long struggle by people of color and Indigenous peoples in Washington. And in more recent history, the HEAL Act emerged from the development of the Washington State Environmental Health Disparities Map, and the leadership of frontline communities seeking equitable treatment and outcomes, co-governance and self-determination, and just environmental policy.

The HEAL Act defines "Environmental Justice" as: "The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, rules, and policies. Environmental justice includes addressing disproportionate environmental and health impacts in all laws, rules, and policies by prioritizing vulnerable populations and overburdened communities, striving for the equitable distribution of resources and benefits, and eliminating harm."

The HEAL Act creates requirements for state agencies. These requirements include:

- The creation of an Environmental Justice Council of majority frontline community representatives and an interdepartmental environmental work group;
- The development of community engagement plans that emphasize reaching vulnerable populations in overburdened communities;
- The use of the Environmental Health Disparities Map to identify Overburdened Communities [*see Section 2 of guidance*];
- Environmental Justice (EJ) implementation plans that shape agency strategic plans;
- EJ assessments of significant policies, budgets, projects and expenditures by agencies;
- Application of EJ principles to budgets and funding, including a 40% goal for agency environmental expenditures to benefit Overburdened Communities; and,
- Public reporting, including a dashboard to monitor progress.

These components provide a foundation for climate planning to reduce environmental health disparities that can be adopted at the local level. For example, jurisdictions could undertake an environmental justice assessment of their draft comprehensive plan. More information about the HEAL act, including links to

agency community engagement plans and implementation plans, can be found at frontandcentered.org/heal-act.

## Engaging Priority Communities in the Planning Process

### Uplift Project Outreach as a Model

The outreach conducted for this project may serve as a model for local governments and their constituents. Organizations participating in the Uplift Community Leadership Committee designed and implemented community outreach activities tailored for their respective communities. Each of the organizations in the Committee conducted outreach in ways that they determined were most efficient and effective for their communities. Front and Centered staff supported the organizations by helping them plan outreach activities, create surveys, and attend outreach events to co-facilitate or take notes. Each member organization received monetary stipends to use for outreach activities, such as providing refreshment, translation, room rental, participation stipends, and other tools to maximize community participation.

Activities included survey collection, in-person forums, virtual workshop sessions, and one-on-one outreach with identified community members. The various formats allowed for the CLC to customize outreach based on the preferences of their communities. Some members chose to host stand-alone events or meetings to consult their communities. Others set aside time in existing meetings with their community. This approach maximized how many people were able to participate comfortably and reflected the diversity of communities across Washington. It also made outreach easier for the CLC because they were able to assess their own capacity and integrate the project into their organizational work plans.

The focus of outreach efforts also shifted based on the communities that the organizations represented. Some organizations provided general environmental justice education and learned from attendees what barriers they face in their neighborhoods. Others discussed specific issue areas that are already priorities in their communities, and connected them to the planning process. The CLC asked similar questions and discussed common topics but used different approaches and languages. This underscored how different communities need information to be delivered in different ways. Some preferred physical materials, presentations, and visuals. Others preferred surveys they could answer on their own time that led to facilitated discussions.

The CLC used various tools to advertise their outreach. Popular options were posting outreach on social media, listservs, and coalition network apps. Several of these advertisements were very general, focusing mostly on climate or environmental justice themes. Members chose to do this because they found that “comprehensive planning” and “the Growth Management Act” were not terms or phrases that many community members were familiar with or found enticing.

## Lessons and Guidance for Jurisdictions

There are a number of findings from our process that are relevant to planning organizations that will engage in comprehensive planning, including but not limited to the climate element. Some of these findings emerged from the CLC’s outreach and others came from the CLC monthly meetings. The findings convey the raw lessons learned during this project. Recommendations are our suggested way forward based on the findings. Jurisdictions can use these findings and recommendations to better engage with community members and community-based organizations (CBOs) representing vulnerable populations and overburdened communities.

First, there is significant interest in comprehensive planning among impacted communities, but there are real barriers to effective engagement. Community-based organizations and individuals in overburdened communities are interested in better understanding the comprehensive planning process and in the potential impact of a climate element on that process. For a range of reasons, people lack basic tools and information about the Growth Management Act (GMA) and the comprehensive planning process.

CBOs and community members conveyed feelings of exhaustion and frustration with the lack of access to educational resources needed to be involved in decision making. They also conveyed confusion over whether processes can provide for available assistance — financial or otherwise — to participate. They shared that it often takes too much effort to identify entry points into lengthy planning processes, and they stressed the importance of advertising and communicating what resources and assistance can be available. Participants also stated that there is not enough adequate notice on how and when to get involved in important meetings, such as those related to comprehensive planning.

CBOs are, therefore, often forced into untenable positions where they are providing education for community members, mobilizing to respond to notices, and engaging in activities that may detract from and drain their capacity to do other meaningful work. Community members and leaders also described the feeling of always having to play catch-up because they are not given the opportunity to be at the decision-making table. This is a problem because communities rely on CBOs to provide education on a range of topics, to connect community members to the resources they need, and to also meet basic needs. This places additional pressure on organizations attempting to respond to public planning processes that fail to take into account the day-to-day realities of organizations and community members in overburdened and vulnerable communities.

The lack of basic necessities for community members who may be in crisis, and lack of action to help is another barrier to involvement for communities interested in comprehensive planning. Community members are often preoccupied with trying to meet their basic needs. Differences in priorities between community members and those in power, such as lack of focus on basic necessities like the price of food and stable housing, can generate cynicism in planning processes and create more barriers to community involvement in comprehensive planning.

Second, there is significant uncertainty regarding the efficacy of comprehensive planning. Organizations participating in the CLC expressed concern over the efficacy of community engagement in the comprehensive planning process. While they acknowledged the importance of community engagement in the process, they also expressed dissatisfaction over the lack of clear accountability or transparency in the process. Too often, feedback provided through community engagement processes appear to be ignored and sometimes misinterpreted.

These experiences contribute to exhaustion and cynicism about community engagement processes. If feedback appears to have minimal impact, this in turn raises questions about whether community organizations should focus their limited time and resources in these efforts.

Poor community engagement processes can undermine community trust. Respondents to one survey conducted in the CLC process shared that they believed that they were being impacted now by climate change. They shared concerns that their cities and counties will be unlivable or too expensive to live in within the next few years. But rather than engage with public planning processes that felt irrelevant to their experiences, they prioritized individual actions they could take to mitigate or adapt to climate change. For example, attendees said they have taken to buying air conditioners and fans, or going to cooling areas, such as pools. This too is useful information for jurisdictions to consider.

Third, public participation in comprehensive planning processes should be more community-centered. Community members and leaders shared that local governments' outreach seems to vary across community demographics. There does not seem to be an equitable effort to include all stakeholders, regardless of their culture or language needs. Participants suggested that class and an intersection of identities are the root of this discrepancy and that it further harms their ability to access education or resources.

Communities that will be impacted by a particular plan or measure should have more decision-making power in what happens to their neighborhoods and how it is implemented. Particular communities, such as overburdened communities and vulnerable populations who bear greater systemic burdens, should have ample decision-making power to steward development in their areas. Indigenous tribes and Indigenous communities not recognized by the state or federal government should also be prioritized in decision making to empower their traditional knowledge and stewardship practices. The CLC emphasized the importance of prioritizing cultures that support the health of the environment.

Fourth, bridge short-term experiences and long-term priorities. Throughout the project, the CLC found that cities, and counties do not talk about the climate crisis in the present tense. More often, the impact of climate change is a somewhat theoretical issue. But participating organizations and leaders stressed that the climate crisis is happening now. Effectively engaging community members will require jurisdictions to both take into consideration the realities of people's lives, but it will also require them to communicate the relationship between current challenges, and how climate change may be shaping those experiences, not just in the future, but also in the present.

One of the biggest fears that came up in outreach efforts was the fear of displacement, including how climate change and climate-based disasters could force them to move from the communities they cherish. Community participants were eager to engage in discussions that considered the future in the context of present challenges facing communities.

The case for co-governance. Effective community engagement is difficult, but centering the perspectives and experiences of impacted communities can be transformational, in both shaping engagement processes, overcoming barriers, generating meaningful community input, and in building long-term support for priorities that reflect community priorities. Jurisdictions should be open to creative and novel solutions to overcome these obstacles.

Co-governance and education on the practice of co-governance should be integrated into the comprehensive planning process. Local governments should establish a commitment to the self-determination of communities, supporting communities to build their capacity to effectively participate in government processes, and in the process develop shared governing power in principles, processes, and results. Discussing weighty topics can be stressful on communities, especially when talking about policies or scenarios that directly affect a community when community members are not decision makers. Having space within communities to deliberate before interacting with government is critical. Community assemblies are one strategy to enable co-governance.

Community assemblies is a participatory democratic process that brings people together to articulate community needs with a focus on those furthest from economic well-being, assess solutions, and mobilize for action. Community assemblies bring together a group of people with a variety of life experiences that have been historically marginalized from decision making.

## Evaluating Climate Measures for Justice

One of the charges of the Commerce Climate Program's budget proviso[41] was to prioritize measures for equity. There is no one way to determine if a measure itself is equitable. Jurisdictions must identify the overburdened communities and vulnerable populations in their planning jurisdictions and collaborate with those stakeholders to adequately determine if a measure would have disparate impacts. Front and Centered created the following matrix for jurisdictions and community representatives to evaluate the potential for equity for any measure and to identify necessary alterations to improve a measure through a just transition and an environmental justice lens. [***Editor's note:*** *Each policy in Commerce's Menu of Measures is evaluated using the following criteria.*]

**Equity Criterion Matrix: Scale of low, medium, high (low being least potential and high being greatest potential)**

- **Co-governance:** Does the measure show potential to build self-determination for frontline communities of color and/or low-income communities?

  **Sub-Considerations:**

  - Are communities' most impacted identifying their needs and solutions?
  - Do they have the ability to meaningfully shape the decisions in implementation?

- **Targeted Benefits:** Is the measure clear on rights to healthy communities, and explicit in targeting interventions to communities furthest from achieving those rights?

  **Sub-Considerations:**

  - Do the goals and targets recognize our fundamental rights to healthy environments and communities?
  - Do the strategies prioritize those most facing highest cumulative impacts/risk?

- **Just Responsibility** (Accountability): Does the measure show potential to directly limit harm and holding those responsible? Does it prioritize effectiveness?

  **Sub-Considerations:**

  - Is the solution directly stopping the problem? Is it making anything worse?
  - Are those creating the greatest harm held most accountable?

- **Wealth Building:** Does the measure show potential to invest in and sustain local livelihoods, starting with communities with the greatest barriers to meeting their needs, through sustainable resource use and cooperative work?

  **Sub Consideration**:

  - Are we supporting production by local communities for local communities, based on a principle of using local resources and living wage labor?

## Assessing Draft Climate Measures

At the previous section of this summary report, Section E: Engaging Priority Communities in the Planning Process, it describes how we gathered input on climate measures. The Community Leadership Committee prepared a list of priority actions that were ranked at a statewide summit that was attended by over 100

[41] A description of the full charge of the Climate Program is described at page 6, Introduction.

community leaders from 60 CBOs. The Committee then finalized an order of prioritization of actions that are described in the section that follows. Staff used the Committee's prioritization to inform the supplemental description of measures and apply the criteria listed in the prior section to each of the measures gathered by the state, both of which appear in the **Menu of Measures**.

## Recommended Actions for Climate justice

The sections that follow share goals, guidance, and ranking for each category. The tables show the ranking of measures, the top being those that are the most priority for environmental and climate justice from the perspective of frontline communities. To create the rankings, FC staff first aggregated and translated the measures into common themes. Then the community leaders voted for the categories and measures that most aligned with their work, communities' needs, and overall coalition goals. Afterward, the CLC finalized the categories that are most urgent to the coalition, and the measures within those categories that are most impactful.

The top five categories of climate element measures prioritized by participants in the FC process are: Agriculture & Food Systems; Buildings & Energy; Economy & Finance; Governance & Health; and, Cultural Resources & Practices [***Editor's note:*** *In Commerce's planning guidance and companion* ***Menu of Measures****, Economy & Finance is listed as the Economic Development sector; Governance & Health is listed as Health & Well-being.*]. The measures were inadequate in describing community priorities. The proposed climate element measures — though comprehensive in some ways — revealed major gaps that aren't necessarily addressed elsewhere in the GMA. Community partners requested more guidance, information, and context on the implications of measures on potential local choices. For example, in the case of infrastructure choices, community members requested that measures require greater clarity regarding how infrastructure investments impact climate. They also wanted more information about infrastructure decisions, including how they are paid for. [***Editor's note:*** *Commerce used the following recommendations to revise and add* ***Menu of Measures*** *policies.*]

## Agriculture & Food Systems:

Farmworker health and safety should be taken into consideration for any measure in this category. Workers and those living and working in close proximity to agricultural processes, are more at risk to be impacted by the pollution and health impacts created by such processes.

Agroecology, or regenerative agriculture, is the relationship between nature and farming in an effort to create farming systems that prioritize long-term sustainability and traditional knowledge over short-term gains, and healthy food systems. Jurisdictions should consider how plans can enable cities, counties, and frontline communities in the development of systems that work with nature, without pesticides or fossil fuels, and that are resilient to climate impacts. These systems should be grown by farmworker owners, and be built to sustain difficult times. They should also aim to minimize carbon per nutritional value and cultural need, be distributed locally at low or no cost, and prioritize areas with least access and facing worse health outcomes currently.

| **Priority Actions** |
| --- |
| Regulate agricultural pollution and eliminate pesticides. |

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| Use agroecology, agriculture land management and livestock practices for absorbing carbon, and resilience. |
| Preserve land for agriculture, recreation, open space, rural/wild. |
| Support and create structures to shift diets away from frequent, mass-produced meat and dairy toward local healthy foods. |

## Buildings & Energy:

Plans should contemplate how to create fully weatherized, electrified homes built to manage energy demand and resilient to climate impacts in extreme heat or cold. Improvements to residential and non-residential buildings should be secured in trusts free from displacement, landlord decision-making, or rent increases based on climate improvements. And there should be guaranteed sufficient energy for home needs without excess, regardless of ability to pay. Conserve energy to reduce demand from generation sources. Meet resources needs through distributed solar covering every built environment surface prior to any resource land, and remove damaging energy supplies and harmful proposals such as dams, nuclear, and other resources that cause other ecological or social harm. Consider how the plan can articulate these goals and support implementation with the measures without creating burdensome transition costs on consumers, especially low-income consumers.

Participants expressed curiosity and need for information on what it would mean or look like to transition away from fossil fuels and GHG emissions on the economy, on lifestyles, and on communities. Jurisdictions should prioritize energy conservation and then solar and renewable energy in communities where it's used to create more jobs and require these systems be sourced from lowest-impact materials. Additionally, this cost should not fall on the consumers, especially those who may already face economic disadvantages.

Jurisdictions should consider what hurdles renters may face in advocating with landlords or property owners to assist transition on residential buildings. Renters may fear retaliation from landlords or property owners for participating in jurisdictions' planning process. Jurisdictions should consider how renters can give feedback in ways that do not put them in jeopardy of retaliatory actions; feedback methods could include using anonymous surveys and caucusing at meetings so different audiences can share feedback in safe spaces.

| **Priority Actions** |
|---|
| **Buildings** |
| Preserve people's ability to stay in their community and prevent displacement from gentrification and hazards exacerbated by climate change. |
| Design, build, change buildings for energy conservation, solar, and to withstand climate impacts. |
| Maximize use of existing buildings. |

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| Provide energy assistance and prevent shut-offs based on income. |
| Phase out fossil fuels from heating and appliances and convert to high efficiency electric. |
| Support conversion from "natural" gas (methane-producing) energy source. |
| **Generation** |
| Support the transition to renewable energy sources that can weather climate impacts. |
| Build solar energy in communities where its used, avoid long transmission. |
| Create energy limits that cap high energy users where feasible and require use of renewable sources where high energy use is unavoidable. |
| Create energy limits that cap high-energy users, where feasible, and require use of renewable sources where high energy use is unavoidable. |

## Economy & Finance

Plans should enable a future where cities and counties have small community-owned and producer/consumer cooperative businesses that meet most local needs without the risks of dependence on the global supply chain. They should also reimagine plans to create local economies that prioritize businesses. Especially those that reduce the racial wealth gap, provide livable wages, and phase out industries that harm human and environmental health while providing support and just transition for workers.

Comprehensive plans should reflect these needs and integrate frontline communities' vision into each element. Jurisdictions should avoid strategies that prevent bonuses for large businesses that are not environmentally friendly. Instead, they should prioritize support to essential businesses that are independently and locally owned, and serving local communities. Workers' well-being, both in and out of the workplace, should also be prioritized.

| **Priority Actions** |
|---|
| Identify and enact social safety nets around housing and poverty that reduce economic inequalities to provide resilience to climate impacts. |
| Support essential local-serving, independently owned businesses' ability to operate through climate impacts. |
| Expand worker control and ownership and better distribute work opportunities and support locally owned businesses. |

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|---|
| Support workforce to transition from climate impacted jobs. |
| Using zoning and permit authority, limit siting of industries that pollute and do not provide incentives for expansion. |

## Cultural Resources & Practices

Jurisdictions should seek guidance from leaders Indigenous to the land, inform and consult with tribal nations on issues affecting tribes and tribal lands, and seek wisdom of traditional cultural practices. This work must include perspectives from immigrant and refugee communities and those closest to the land.

Cultural and resource lands should be made into public trust or tribal stewardship. Jurisdictions should recognize and celebrate traditional practices and relationships between human cultures and ecologies. Indigenous populations should have access to natural lands and waters without substantial harm from polluting entities or interruption from jurisdictions.

| **Priority Actions** |
|---|
| Preserve culturally important sites and foods from climate impacts. |
| Recognize and incorporate cultural forms of conservation and adaptation. |
| Establish Legal Rights of Nature for protection of natural resources whether ascribed value is attached. |

## Ecosystems

Plans should prioritize identification of frontline communities that lack ecosystems (forests, wetlands, and eelgrass meadows) that capture carbon in/or near them. This information should be met with provisions for public access to restored lands such as former Superfund sites. Jurisdictions should prioritize ecological restoration and equity that buffers climate impacts (including sea level rise, flooding, and extreme heat) in frontline communities.

| **Priority Actions** |
|---|
| Build resilience to climate through ecological solutions, such as trees that prevent erosion and other co-benefits. |
| Use land and plants to absorb carbon pollution — and restore wetland, forest, and seagrass ecosystems and prioritize this work in frontline communities. |

## Emergency Management

Plans should contemplate how residents and workers can be fully prepared and informed about relevant cultural and language information and response systems for emergencies in their jurisdictions. Community-based organizations (CBOs) should be integral in the planning of resilience hubs, and building emergency

plans for their local areas. An example of this would be collaboration between CBOs and emergency service providers so that there can be more efficient rescue and assistance in times of need.

There should be a prioritization of households and vulnerable communities with least mobility and information to receive support before, during, and after emergencies. BIPOC and low-income communities often suffer the worst in emergencies, because they do not receive assistance first and do not have the same infrastructure as more affluent communities or those with more political and societal power. Jurisdictions should account for this by eliminating disparities in infrastructure and information and by working with community-based organizations in these neighborhoods.

| Priority Actions |
| --- |
| Create places in a community to go to in emergencies such as for shelter and resources when there is a natural disaster. |
| Provide government/first responder training, coordination to better prepare for natural disasters and to ensure that emergency response is equitable. |

## Materials & Waste Management

Reducing material waste requires a cultural shift by addressing consumer culture and power of markers and creation of need. Both consumer and producer waste reduction requires better product standards for durability and producer responsibility and creating shared-use models rather than private or individual ownership.

Plans should build on practices of Indigenous communities and traditional knowledge of immigrant and refugee communities. These can have many benefits such as the conservation of natural and built materials. Jurisdictions should also create plans that require reductions in material inputs and waste starting with wealthiest and most prolific.

Additionally, jurisdictions should also support entrepreneurs in a circular economy and provide public infrastructure for reuse. There should be plans to provide education targeted to overburdened communities and vulnerable populations for this. There should also be emphasis on circular production methods and bans on hazardous materials with research into alternatives that maintain accessible use.

| Priority Actions |
| --- |
| Reduce, reuse, and recycle materials and waste. |
| Reduce and limit material consumption and shift toward craft economies. |

## Governance & Health

Achieving equitable co-governance of frontline communities with government sector agencies can embed a worldview of care and sacredness over consumerism and shift to deeper participation.

Co-governance requires a commitment to the self-determination of communities, supporting communities to build their capacity to effectively participate (in government processes), developing shared governing power in principles and in process, Demonstrating equitable processes and results. Jurisdictions should adopt provisions of the HEAL Act [referenced in Section 2] and develop equitable community engagement plans, environmental justice implementation plans, and integrate environmental justice into budgeting and spending, and conduct environmental justice assessments of major regulations and ordinances, capital projects, and other decisions.

| **Priority Actions** |
| --- |
| Advance community control of land and resources, to include participatory budgeting of public funds. |
| Create pathways for communities who are most impacted to shape decisions that affect them. |
| Advance environmental justice by prioritizing health first, assuming risk prior to action, and targeting solutions to the most impacted. |
| Prevent privatization and fencing-off of common spaces. |
| Build community capacity for climate and Environmental Justice. |

## Transportation:

There should be reliable, accessible, and frequent public transportation that contemplates local use as well as cross-city and county use. Sidewalks, crosswalks, and bike paths should be commonplace and have a set quality standard such that anyone can use them without fear of injury or immobility.

Consider both cultural and practical implications of transportation projects. For example, electric vehicle (EV) chargers may signify displacement and harm to some communities or lack of chargers can mean exclusion for others — particularly in multifamily buildings. Measures that create limits or disincentives to driving or driving alone should require a diagnosis of who may be unfairly impacted by such plans. Telework may not be applicable or equitable based on other factors such as living space or internet access. Further, public transportation is not ideal for, workers with night shifts or with families. These populations may be negatively impacted by plans and policies that over prioritize carbon minimal options such as telework. Likewise, improving public transit service so that there is accessible transportation at all times of day would support non-drivers.

| Priority Actions |
| --- |
| Make it easier to not need a car by designing walkable neighborhoods and providing affordable public transportation. |
| Reduce fossil fuel vehicle miles by switching to electric and create EV charging stations near residences. |
| Create limits or disincentives to driving, or driving alone. |

## Water Resources

Plans should aim for jurisdictions where there is clean, accessible, and sufficient free drinking water for every household. Waters should also be clean for marine habitats. This can be achieved through intensive conservation, demand management, publicizing water rights, and thriving saltwater ecologies.

Plans should be attentive to local contexts and communities affected by interventions. These impacts may displace communities and/or make their lives substantially harder. Jurisdictions should contemplate how water resources can be maintained and improved without a disproportionate impact on any community — but especially frontline communities.

| Priority Actions |
| --- |
| Change water rights, from private into public trust. |
| Protect water from pollution by holding the polluting industry accountable.. |
| Ensure water systems can withstand climate impacts. |
| Plan and fund water systems for droughts and to reduce water consumption. |
| Use reclaimed water. |

## Zoning & Development

Plans should have zoning and development built into land trusts for common use and removed from speculative markets that create perverse outcomes for communities and climate outcomes. Plans and policies should prioritize public mobility and space over roads. This will build connections for community resilience and reduce auto-dependency.

| Priority Actions |
| --- |
| Prevent climate-risky development; avoid hazardous areas, use climate appropriate design to reduce emissions, improve resilience, and be relocation ready. |
| Build dense, affordable communities around public transportation. |
| Create and preserve open space, tree and green space, restore green infrastructure. |
| Build low-impact developments that are solar-ready. |
| Plan for people to move and migrate. |
| Create climate and pollution safe areas. |

## Conclusion

How local governments approach climate change — and the pollution that is causing it — in their planning processes is a critical issue for all Washington residents. Through the Uplift Communities Project, Front and Centered was asked to provide a model and best practices for centering equity. It is only through centering vulnerable communities and the principles of Just Transition that jurisdictions engaged in comprehensive planning can effectively mitigate the impact of climate change and adapt to its impacts. There are tools available to jurisdictions and communities to meet the challenges facing our climate and our communities [*see Section 2*].

We offer these approaches as a model for innovating the comprehensive planning process, but more innovation is possible if jurisdictions center the needs, experience, and aspirations of impacted communities in their important work.

# B. Climate Element Workbook

**Link to workbook for the GHG reduction and resilience sub-elements**

# C. Best Practices for Integrating Climate into Hazard Mitigation Plan

Hazard mitigation planning is the foundation of community resilience, FEMA explains, because it encourages the development of a long-term mitigation strategy.[42] The planning process spurs local jurisdictions to identify risks that hazards pose for assets and to develop policies before a disaster occurs. This potentially lessens the impacts to people and property and makes it easier to recover from hazard events.

Local governments must prepare a hazard mitigation plan and update it every five years to be eligible for certain types of non-emergency disaster assistance, including grants to mitigate floods.[43] Such plans must undergo review by the Washington Military Department's Emergency Management Division and the Federal Emergency Management Agency (FEMA). FEMA will grant approval of a hazard mitigation plan if it meets minimum federal requirements. Once approved, the hazard mitigation plan provides eligibility for certain FEMA grants. The state of Washington also has a hazard mitigation plan, and that document could be a resource for local jurisdictions.

> "Acknowledging the risk of future incidents builds a risk-conscious culture that enables community leaders to routinely and systematically evaluate a wide variety of threats and hazards. However, future conditions are not necessarily reflective of past conditions, requiring a consideration of science-based data and expertise to help inform decisions. Community leaders can then prioritize strategies, resources, and efforts using a well-informed comprehensive approach to preparedness."
>
> — **FEMA,** National GHG reduction Framework

## FEMA Planning Framework for Hazard Mitigation Plans

While there is no required format for a hazard mitigation plan, federal regulations require that it include: [44]

- Documentation of the planning process, which must include an opportunity for the public to comment on the plan during the drafting stage and prior to final approval;
- A risk assessment that provides the factual basis for activities proposed to reduce losses from hazards that can affect the jurisdiction. The assessment must describe the type, location, and extent of all natural hazards that can affect the jurisdiction, as well as include information regarding previous occurrences of hazard events and the probability of future hazard events;
- A mitigation strategy that provides the jurisdiction's blueprint — action plan — for reducing potential losses identified in the risk assessment;
- A plan maintenance process that includes: the method and schedule for updating the plan within a five-year cycle; a discussion of how the jurisdiction will be engaged in the plan's maintenance; a process by which local governments incorporate the plan's requirements into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate; and, documentation that the mitigation plan has been formally adopted.

## FEMA Requirements for Assessing Climate in Hazard Mitigation Plans

Climate change affects the characteristics of hazards and severity of impacts. For example, rising sea levels associated with warmer temperatures and melting polar ice raise the risk of coastal flooding in Puget Sound jurisdictions and increase the vulnerability of low-lying roads and buildings (i.e., assets) to impacts.

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[42] FEMA circular (2017), Planning For a Resilient Jurisdiction: A 4-Hour Workshop For Planners
[43] FEMA website (2022), Hazard GHG reduction Plan Regulations & Guidance
[44] Title 44 Code of Federal Regulations (CFR) §201.6

As of April 2023, FEMA requires that all updated local hazard mitigation plans' risk assessments must include the effects of future conditions, including population, land use, development, and climate change. Section 4 of the FEMA's Local Mitigation Planning Policy Guide (Policy Guide) specifies FEMA's requirements (elements) for climate assessment, equity inclusion, policy prioritization (needs to consider costs, etc.), and plan implementation (which can include integrating policies into a comprehensive plan). FEMA's companion Local Mitigation Planning Handbook helps local governments meet the Policy Guide's requirements and provides useful approaches to reducing vulnerabilities and long-term risk from natural hazards and disasters.

To help Washington's cities and counties with this work, FEMA conducted a crosswalk of its Policy Guide with Commerce's climate resilience sub-element [*see Appendix D*].

## D. Crosswalk Comparison of FEMA and Commerce Guidance

(See Smartsheet Dashboard)

## E. Climate Change Resources

(Smart Sheet Link)

# F. Sample RFP for Greenhouse Gas Inventory

## Greenhouse Gas Emissions Inventory Request for Proposals (RFP)

Project Title: Greenhouse Gas Emissions Inventory

Proposals Due: X:XX PM MO/DD/YYYY

_____ is requesting proposals from qualified consultants to develop a baseline greenhouse gas emissions inventory (GHG Inventory) for _____.

**Proposals should include:**

- General statement of the Consultant's understanding of the scope of services;
- Project team, including proposed sub-consultants;
- Project team's experience in GHG inventories and related tasks;
- Experience of the proposed project manager eduction and individuals who will be working on the project;
- Proposed task list and level of effort for each task;
- Schedule for completing the project;
- Description of the Consultant's approach to managing and completing the project;
- Description of the Consultant's approach to communicating with the client(s).

**Submission Instructions:**

- The City will only accept proposals in _____ format. Submit the proposal to: email@city.gov
- Proposals must be presented as a single, combined file that contains all proposal materials and any supporting documents.
- Proposals are due no later than_____. Late proposals will not be accepted. Applicants are solely responsible for ensuring that proposals are submitted and received on time. Applicants will receive an email acknowledging _____'s receipt of their proposal.
- Questions related to this RFP should be submitted via email to: email@city.gov.

Any firm failing to submit information in accordance with the procedures set forth in the Request for Proposals may not be considered responsive and may therefore be subject to disqualification.

### Introduction

_____ is seeking a consultant or team of consultants ("Consultant") to conduct a GHG inventory. This Request for Proposals ("RFP") outlines the information necessary to understand the Consultant selection process and the required documentation a Consultant must submit. After reviewing this RFP, any Consultant that determines it has the necessary expertise and experience and could successfully perform the required services may submit its Submittal, addressing the items set forth herein. A general overview of the selection process is as follows:

1.1. Submittals shall be emailed to _____ no later than X:XX on MM/DD/YYYY, after which time they will be reviewed and evaluated. The Submittal shall be emailed to: email@city.gov

1.2 _____may, at its option, contact a Consultant and ask clarifying questions concerning the Consultant's Submittal.

1.3 _____ may conduct interviews with consultants qualifying as finalists.

The purpose of this RFP is to obtain a qualified Consultant to provide professional services to develop a baseline GHG inventory for _____ [and/or] community emissions. A preliminary scope of services is provided as follows.

## Project background

## 2.1 Scope of Services

_____ is seeking technical assistance in developing a baseline GHG inventory for _____ [and/or] community emissions.

## 2.2 Background

[Insert text describing your jurisdiction's goals for reducing greenhouse gas emissions, the role of the inventory in supporting those goals including tracking GHG emissions on an ongoing basis. Also describe the Scope of the GHG inventory requested, including whether it addresses both jurisdictional operations and community activities, or is limited to one or the other. If desired, add additional context: as to how this fits into your jurisdictional planning process, if there are advisory committees or task forces engaged to provide review of this inventory, and how your jurisdiction will work with the consultant in terms of providing data for the GHG inventory.]

## 2.3 Scope of Work

_____is seeking a consultant or team of consultants ("Consultant") to conduct a GHG inventory. The GHG inventory project will consist principally of [insert number] main tasks; Consultant and _____ responsibilities for these tasks are described below. In their proposals, Consultants are encouraged to provide a detailed technical and project management approach that incorporates and expands on these tasks.

## Define methods

The GHG inventory shall be developed in accordance with [protocol of your choosing or you may ask the consultant to define, e.g., the ICLEI US Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (Community Protocol)]. _____seeks a GHG inventory that is transparent, replicable year-over-year, and allows for future benchmarking to regional and other municipal inventories. Components of the GHG inventory that will be defined include, but are not limited, to:

- Selection of the base year;
- Confirmation of data sources, calculation methods, emissions factors, context data, and analytical tools; and
- Confirmation of categories for GHG tracking and reporting, including emission sources and activities that will be included and excluded. GHG emissions should be reported for major sectors (e.g., residential, commercial, industrial, transportation, waste).

[Define the scopes or types of emissions to be included (e.g., jurisdictional, community, or both)]

In consultation with _____, the Consultant will recommend a process for selecting which GHG emissions sources and activities to include in the GHG inventory beyond the five "Basic Emissions Generating Activities" prescribed by the Community Protocol. Additional components may include:

- Emissions from community air travel;
- Communitywide consumption-based emissions (including upstream GHG emissions associated with consumption of household goods, food, and services);
- Net emissions and/or sequestration from agriculture, forestry, and other land use activities.
- The Consultant should propose options (e.g., identify possible methods and data sources) for including these components in the inventory, along with estimated time and cost associated with such options.

## Data Collection

The Consultant will collect data necessary for developing the GHG inventory. _____ will review the Consultant's data needs and provide assistance in locating data owned by _____. The Consultant will lead collection of data from utilities and other entities; _____will assist where possible. The Consultant will identify and review any energy and/or GHG analysis conducted by entities that have a footprint in _____. _____ is open to considering the Consultant's use of innovative data collection approaches for community sectors, such as crowdsourcing or surveys, including for consumption-based emissions estimates.

## Data analysis

Based on the agreed upon methodology, the Consultant will calculate baseline energy usage and emissions for [municipal operations and/or the community]. Analysis must be done using non-proprietary methods and all assumptions, calculations, data sources, and key contacts must be made available to_____ at a minimum, the analysis will calculate emissions in each municipal operations and community category as well as combined emissions.

## GHG emissions report

In consultation with_____, Consultant will recommend frameworks for presenting and reporting GHG emissions data in accordance with [Insert the Protocol you wish the consultant to follow, if you have a preference]. The Consultant will prepare a report that textually and graphically presents the GHG inventory and identifies emissions over which _____ may have significant influence [as well as additional communitywide emissions]. When possible, _____will provide content, such as photographs and quotations. The report will identify top-priority sources of GHG emissions for which reduction strategies could be developed in later phases of _____'s climate change planning process.

## Training and tracking hand-off

In addition to providing base year GHG emissions, this effort is intended to supply_____ with the means to update the GHG inventory on an ongoing basis. The Consultant will provide_____ with the information and materials necessary to replicate the GHG emissions calculations used for the base year GHG inventory, track progress, and generate reports. The Consultant will provide_____ with an electronic version of the base year analysis. The Consultant will hold training sessions (no less than [insert number]) for _____ staff to learn how to update the inventory.

## Project management

_____ [or the Office of_____] will oversee the work of the Consultant. [The Sustainability Task Force will serve in an advisory capacity, as its members are charged with providing advice and/or

recommendations to the city council or city staff, as appropriate, related to the City's GHG emission reduction targets]. During the project, the Consultant will be available for XX meetings to provide project status updates to and answer questions from_____ [and the Sustainability Task Force].

## 2.4 Specifications and Requirements

A. Consultant Capabilities

_____ is seeking a Consultant who has experience conducting similar GHG analyses for other municipalities. Consideration will be given to the Consultant's ability to demonstrate knowledge transfer to municipal clients in terms of their success in updating initial GHG inventories. _____ is seeking to capitalize on our community's great interest in climate by engaging stakeholders with a thoughtful, creative, and understandable GHG emissions report. The Consultant should be capable of producing both sound analysis and high-quality reporting materials. The scope of services for this RFP does not include the development of GHG reduction strategies, as this will be a principal activity in the upcoming climate change planning process; however, Consultants with experience in GHG reduction strategy are encouraged to demonstrate in their proposals how their approach to the baseline inventory and projections may provide advantages in future phases of the climate change planning process.

## B. Existing Data

_____ will provide the Consultant with reports and data, including the following:

[Insert a list of the data sources expect to be made available for consultants. This could include things such as municipally owned vehicles and their fuel consumption, jurisdictional buildings and their square footage, and relevant land use and zoning data that might be relevant for a community-scale inventory]

## 3. PROCUREMENT PROCESS

General information: [Insert jurisdiction's legal requirements and expectations regarding costs born by consultants, public disclosure, and other processes set by the contracting jurisdiction]

## 4. Schedule

Anticipated schedule. The selection process is anticipated to proceed as follows and is subject to change: [Insert your schedule for submittal review, interviews if necessary, and final selection]

Notification. _____will notify appropriate firms of changes in RFP and Notice of Selection

Addenda. [Insert a description of the process for informing consultants of changes to the RFP]

Negotiations [Insert the process for negotiating cost and pricing, billing process, and establishment of the SOW and project schedule]

Cost and Pricing Data [Insert requested information related to Consultant firm's salaries, overhead, markups and billing rates]

Insurance requirements of the selected Consultant [Insert insurance requirements]]

## 5. Evaluation and Selection Criteria

[Insert the jurisdiction's process for evaluating and interviewing applicants]

## 6. Documentation

[Insert the jurisdiction's requirements regarding the format, length, and components of the application required, including the letter of interest and statement of qualifications]

## APPENDIX: AGREEMENT FOR PROFESSIONAL SERVICES

[Insert the jurisdiction's agreement language here, including insurance requirements]

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# G. Summary Report: Climate Resilience Pilot Program

*(Prepared by Cascadia Consulting Group Inc. on April 28, 2023)*

# Executive Summary

## Project Background

The Washington Department of Commerce (Commerce) contracted with Cascadia Consulting Group (Cascadia) and BERK Consulting (BERK) to test and evaluate the resilience sub-element guidance through a climate pilot program (pilot program). The pilot program was designed to guide three jurisdictions — Port Angeles, Pullman, and Woodland — through the resilience guidance to demonstrate proof-of-concept and identify ways to improve the resilience guidance and its companion tools. The consultant team used findings and key takeaways of the pilot program to develop recommendations for improving the usability and effectiveness of the resilience guidance and its companion tools, as well as the overall process of resilience sub-element integration. Commerce subsequently added bracketed and italicized "Editor's notes" throughout this summary report to indicate how the state agency addressed the consultant team's recommendations in the final climate element planning guidance published in 2023.

## Evaluation Approach

The pilot program team (project team) — which consisted of Commerce, Cascadia, and BERK — developed and administered pre-pilot and post-pilot program surveys to each of the pilot jurisdictions to capture feedback about the usability of the resilience guidance and understand how each jurisdiction's capacity and staffing constraints impacted their ability to integrate the resilience sub-element during the pilot program. Following the pilot program, the project team conducted semi-structured interviews with each jurisdiction to dive deeper into survey responses and learn more about their reflections on the process and recommendations to improve the resilience guidance. The project team also utilized regular team check-in notes documenting real-time modifications for each jurisdiction's needs and lessons learned throughout the course of the pilot program to inform evaluation findings.

## Key Takeaways

The project team identified a few key areas for improvements to the step-by-step resilience guidance and resilience sub-element integration process:

- Overall, the resilience guidance and its companion tools were clear, accessible, and user-friendly.
    - The resilience guidance workbook would benefit from inclusion of real pilot program examples throughout the step-specific tabs. [*Editor's note: Commerce integrated pilot city examples into the workbook to show other jurisdictions how they could complete guidance tasks and fill in workbook tables.*]
- Jurisdictions should supplement county-level climate impact data collected via the University of Washington Climate Impacts Group's (CIG) web-based companion tool (webtool) with more granular, localized climate data. [*Editor's note: Commerce revised Section 3, Task 1.2 of the planning guidance, instructing jurisdictions to start by reading summarized climate information from statewide or regional reports (linked above) and their local hazard mitigation plan to understand assets' current exposure and vulnerability. In addition to linking to UW CIG's how-to guide for using its CMRW webtool, this revised task links to other resources with localized climate data.*

- The model climate element should include a foundational project planning framework that includes an organizational assessment and instructions and templates for developing a project team and process, with suggested interim goals and timeframe considerations. [*Editor's note: Commerce revised the planning guidance to have a standalone section (Section 2) that instructs jurisdictions how to form a project team and planning process for developing and adopting a climate element over roughly 18-24 months. The companion workbook (Tasks 2.1 and 2.2) provides template tables for listing project team members and community stakeholders.*]

- Integrating the resilience sub-element into comprehensive planning would be significantly more difficult for jurisdictions, if not impossible, without additional capacity and/or climate expertise and support. This is particularly the case for smaller, capacity-constrained jurisdictions, as well as jurisdictions that do not have a robust history of climate planning or are in the early stages of that process. [*Editor's note: Commerce revised Section 3, Task 2.2 to better explain the tradeoffs of pursing each of the planning and policy-development pathways, factoring in time, budget, and staff capacity. We underscore that a jurisdiction may want to seek outside funding and technical assistance (e.g., from a consultant) to complete a vulnerability and risk assessment.*]
    - Commerce should consider additional support mechanisms for providing technical support to smaller, capacity-constrained jurisdictions, including development of training webinars and workshops, hotline support, and additional grant funding opportunities that allow for additional technical assistance. [*Editor's note: This recommendation validates the purpose of the pilot program and supports Commerce's plans for providing future assistance, including grants and technical assistance.*]
- Additional resources that would be useful for successful resilience sub-element integration include:
    - Climate change and impact factsheets that are clear and accessible to the public and lay persons to increase community awareness, buy-in, and understanding around value and need for climate consideration integration into city and countywide planning processes. [*Editor's note: In the full planning guidance and its companion online resources list, we link to such information (e.g., Commerce and MRSC climate planning portals, APA climate planning guides). This recommendation also supports Commerce's plans for providing future assistance to local jurisdictions.*]
- Recorded tutorials that demonstrate the use of the resilience guidance, web-based companion tool, and workbook. [*Editor's note: This recommendation echoes feedback we've received from Front and Centered. As Commerce and its partners (e.g., UW CIG, MRSC) develop print and video tools, we will integrate them into this document's companion Resources list.*]

# Introduction

In response to Washington's 2021 budget [Section 129 (126)],[45] Commerce developed the model climate element planning guidance, a detailed framework designed to help counties and cities address climate change issues within comprehensive plans.[46] The guidance is comprised of two parts, the GHG reduction sub-element and resilience sub-element, which are intended to guide counties and cities in the development and implementation of plans, goals, and policies that address both building resilience and mitigating emissions.

45 The model element is described in the 2021 budget [Section 129 (126)] and must be completed by June 2023.
46 The 2023 adoption of E2SHB1181 makes climate integration mandatory for jurisdictions planning under the Growth Management Act.

# Pilot Program Overview and Goals

To test the integration of the resilience sub-element into comprehensive planning, Commerce contracted with Cascadia and BERK to evaluate the usability and effectiveness of its resilience guidance and companion tools and resources. Commerce and the consultant team strategically selected three pilot jurisdictions — Port Angeles, Pullman, and Woodland — to help demonstrate and evaluate the resilience guidance and process.

The resilience guidance and companion tools are designed to help jurisdictions identify and address natural hazards exacerbated by climate change, including landslides, floods, droughts, wildfires, and other impacts stemming from relevant climate change drivers (e.g., changes to temperature, precipitation, and sea levels) through policy and goal development. The companion tools include a county-level webtool[47] to help identify expected changes in the climate and related natural hazards, as well as the climate element workbook (workbook) designed to help jurisdictions track and document findings and key decisions throughout the process.

The evaluation approach, objectives, and results are discussed in the subsequent sections of the report.

## Pilot Jurisdiction Recruitment

The recruitment phase of the pilot program occurred in August and September of 2022. To select three Washington jurisdictions for the pilot program, cities were initially evaluated against a set of individual criteria. Individual criteria and rationale are presented in Table 1.

### Table 1. Individual criteria for pilot jurisdiction selection

| Criteria | Rationale |
|---|---|
| Not located within the ten most populous counties. | Evaluate ability of smaller, potentially resource-constrained jurisdictions to integrate the resilience sub-element |
| Comprehensive plan update deadline is near-term. | Prioritize support for jurisdictions with upcoming deadlines |
| Planning staff capacity is moderate or high. | Ensure sufficient capacity to effectively participate in the pilot program |

Those jurisdictions that passed the initial set of criteria were then evaluated against a second set of group criteria. The project team selected group criteria to ensure pilot jurisdictions are geographically and demographically varied, with:

- Varied population representation of vulnerable groups including Black, Indigenous, and people of color (BIPOC) and low-income communities, elderly persons, and those with chronic health conditions or disabilities.

47 See University of Washington Climate Impacts Group's web-based companion tool, Climate Mapping For A Resilient Washington, available: https://cig-wa-climate.nkn.uidaho.edu/.

- Diversity of climate impacts and exposures including wildfire risk, sea level rise and coastal flooding, riverine flooding, extreme heat and drought, and/or reduced snowpack and streamflow.

The project team used an excel database to evaluate a total of 40 qualifying jurisdictions based on the selection criteria and arrive at five top-ranked jurisdictions. After inquiring with planning department leads, two of the top-ranked jurisdictions declined to participate due to limited staff capacity. The City of Port Angeles, City of Pullman, and City of Woodland elected to participate in the pilot program.

Table 2 illustrates selection criteria for each of the three jurisdictions. To learn more about the selection and recruitment process, refer to Jurisdiction Selection Memo found in the "**Pilot Project Materials** section of the report.

### Table 2: Key criteria for selecting the three pilot jurisdictions

| Pilot Jurisdiction Selection Criteria | Pullman | Port Angeles | Woodland |
|---|---|---|---|
| Population | 32,827 | 20,134 | 6,540 |
| Comprehensive plan periodic review deadline | 2027 | 2025 | 2026 |
| County | Whitman County | Clallam County | Cowlitz County |
| Geographic region | Southeast | Northwest | Southwest |
| Demographic notes[48] | Mid-size jurisdiction, 33.6% poverty rate 29.3% people of color | Mid-size jurisdiction, 11.5% poverty rate, 18.6% people of color | Small-mid-size, 7.4% poverty rate, 27.5% people of color |
| Potential climate impacts and vulnerabilities | Riverine flooding, wildfires and smoke, extreme heat | Sea level rise, wildfire smoke, extreme heat, water scarcity | Wildfires and smoke, extreme heat, water scarcity, riverine flooding |

## Pilot Program Process

In October of 2022, the project team began the resilience guidance implementation phase of the pilot program by holding project kick-off meetings with each of the three pilot jurisdictions. Key objectives of the kick-off meetings were as follows:

[48] US Census Bureau Quick Facts 2021

- Share overview and goals of the pilot program.
- Clarify jurisdiction roles in participating in the pilot program.
- Review steps in the resilience guidance and develop planning process for the pilot program.

Throughout the course of the resilience guidance implementation phase of the pilot project (October 2022 - February 2023), the project team worked with pilot jurisdictions to implement each step of the resilience guidance. The project team utilized the companion workbook to guide the implementation of each step. Each step and associated tasks of the resilience guidance have a corresponding tab with instructions and templates for capturing findings and decisions.

Table 3 gives an overview of the overall pilot program timeline, including timing of each resilience guidance step and a description of how it was implemented.

## Table 3: Description and timeline of implementation for each step of resilience guidance

| Steps | Timeline | Description of step implementation |
|---|---|---|
| Step 1: Develop planning process | October 2022 | Step 1 guided the setup of the resilience guidance pilot process. Each jurisdiction selected up to two staff leads to partner with the project team in pilot program participation. The jurisdiction co-leads and project team established a program timeline, communication platforms, and bi-weekly check-ins meetings. The project team managed the project timeline, led agenda development, and provided meeting notes with actions items for each check-in. With project team guidance, jurisdiction co-leads developed goals and guiding principles to help define pilot project outcomes. |
| Step 2: Explore climate impacts | November-December 2022 | Step 2 provided the pilot cities time to explore anticipated changes in the climate and associated hazards by utilizing CIG's webtool for each jurisdiction at the county-level scale. The project team reviewed trends under the high emissions scenario for the early, mid, and late century and used their climate expertise to interpret the climate projections and findings. Jurisdiction co-leads helped contextualize climate impacts for their local jurisdictions, in terms of on-the-ground environmental conditions, lived experience of staff and community members regarding hazard and climate events, and prior planning efforts to address those impacts. |
| Step 3: Audit plans and policies | November-December 2022 | Step 3 was used to identify existing plans with climate resilience goals and policies from each jurisdiction and determine whether to pursue a risk and vulnerability assessment (RVA) in step 4. The project team led the existing plan audit, with jurisdiction co-leads reviewing the audit results for gaps. Due to the ambitious timeline pursued for the purpose of this pilot, the consultant team and pilot jurisdictions were unable to seek additional funding and partners or develop a robust engagement strategy. |
| Step 4: Assess vulnerability and risk | December 2022 - January 2023 | Jurisdictions that decided to pursue a vulnerability and risk assessment (VRA) in Step 3 focused on one climate hazard and a set of critical assets impacted by that hazard. Commerce, with support from the consultant team, led the VRAs by helping jurisdictional staff members characterize and assess the sensitivity, adaptive capacity, vulnerability, and risk of each asset-hazard pair. The VRA helped the jurisdictions to identify assets with the highest relative risks and to tailor climate policies for their comprehensive plan. |

| Steps | Timeline | Description of step implementation |
|---|---|---|
| Step 5: Choose pathway to adapt and/or adopt goals and policies | January - February 2023 | Step 5 was used to develop draft goals and policies for integration into comprehensive plans. Each jurisdiction's process differed depending on their history of climate planning and whether they had existing policies that address climate priorities. Overall, all three chose to integrate some existing policies from other city planning efforts and adopt policies from Commerce's Menu of Measures. The project team compiled a draft list of goals and policies and cross-walked each policy for potential co-benefits, such as air quality improvement, emissions reductions, and equity benefits. Jurisdiction co-leads reviewed and edited draft goals and policies. The project team assisted co-leads in presenting draft goals and policies forward to Planning Commissions and the public for initial feedback. |
| Step 6: Integrate goals and policies | February 2023 | In the final step, the project team integrated feedback from each jurisdiction's Planning Commission to revise draft goals and policies. Once finalized, each jurisdiction will decide where it intends to integrate its climate resilience goals and policies in its comprehensive plan. Based on City Council direction, each jurisdiction may choose to list all of its climate element goals and policies into one climate chapter or may choose to integrate them into several chapters/elements (Land Use, Housing, Transportation, etc.). |

## Pilot Program Evaluation Approach

Using the following objectives to guide evaluation, the project team assessed jurisdictions before, after, and throughout the course of the pilot program:

- Evaluation Objective 1: Demonstrate integration of the resilience sub-element into comprehensive plans within three small-medium sized cities that represent a diversity of climate, geographical, and planning contexts.
- Evaluation Objective 2: Improve the usability and effectiveness of the six steps of the resilience guidance.
- Evaluation Objective 3: Understand the impact (if any) of the pilot program process and project team support on improving the ability of the pilot cities to integrate climate into comprehensive planning.

The findings and key takeaways gleaned from assessment of objective outcomes were used to prepare recommendations to improve the (1) resilience guidance and its associated companion tools, and (2) the overall process for integrating the resilience sub-element into comprehensive planning.

## Evaluation Sources

The project team elicited input and reflections from the jurisdiction co-leads during the initial stages of the pilot program, throughout each step of the resilience guidance implementation, and at the end of the pilot program. Feedback from jurisdictions was captured through the following efforts:

- Pre-pilot and post-pilot program survey administered to jurisdiction co-leads in the early stages of the pilot program (November 2022) and at the close of the pilot program (February-March 2023).
    - The objective of the surveys were to (1) elicit feedback on usability of the resilience guidance and associated tools and opportunities for improvement and (2) understand the expertise and capacity of each jurisdiction to implement the resilience guidance.
- Bi-weekly check-ins throughout the pilot program with jurisdiction co-leads.

- The consultant team took detailed check-in notes, flagging real-time process modifications for jurisdiction needs and ad-hoc input for future refinements.

- Semi-structured interviews with jurisdiction co-leads at program close-out (March 2023).
    - The objective of the interviews was to unpack post-pilot results through supplemental questions to better understand survey responses.

In addition to pilot jurisdiction feedback, the project team relied on detailed notes and reflections captured during bi-weekly project team check-ins to further inform the pilot program assessment and develop recommendations for improvement. During bi-weekly check-ins, the consultant team logged notes on implementation of each resilience guidance step, detailing challenges, strengths, real-time modifications, and potential changes and refinements for future applications.

Survey results and program close-out interview guide can be viewed in the "**Pilot Project Materials**" section of the report.

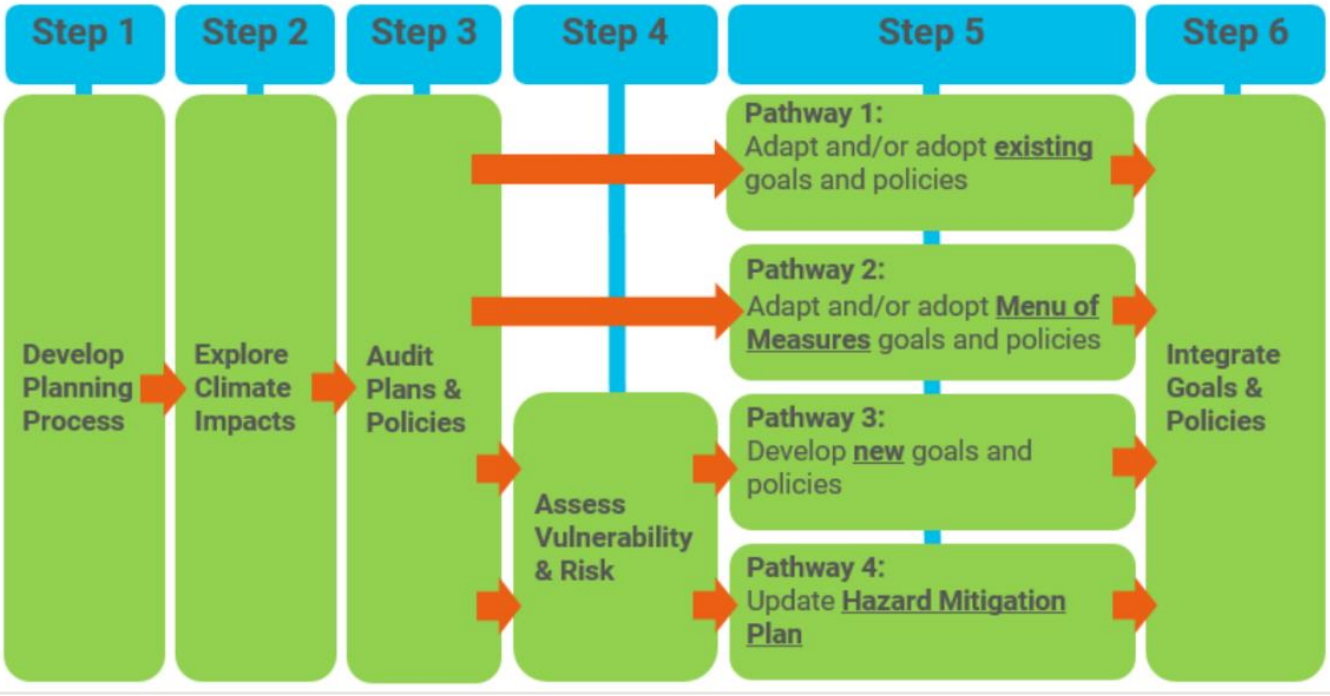
# Results

The outcomes and efficacy of the pilot program were evaluated using the three overarching goals of the program. Demonstrated outcomes, findings, and recommendations for each goal are discussed in the sections below.

## Demonstrate Integration of the Resilience Sub-Element

To demonstrate the integration of the resilience sub-element into comprehensive planning, the project team worked with the three pilot jurisdictions in testing the planning framework laid out in the resilience guidance. The project team largely adhered to six steps outlined in Figure 1 but made key decisions to omit or curtail some sub-steps due timeframe and jurisdictional capacity constraints. Due to these constraints, the project team led the primary execution of resilience guidance steps and relied on jurisdiction co-leads to partially implement specific sub-steps, review outputs, and confirm key decisions. Implications of the expedited pilot program timeframe are discussed further in the "Study Limitations" section of the report.

## Figure 1. Original resilience sub-element steps and pathways (as tested by the pilot cities)[49]




All three jurisdictions successfully applied the resilience guidance to develop draft resilience policies that address climate risks and impacts to their cities and are poised to integrate the resilience sub-element into their comprehensive plans, pending City Council approval. Key outcomes include identification of priority climate impacts and hazards, a light-touch assessment of vulnerability and risk, review of existing local plans and policies for climate resilience considerations and gaps in local planning, and draft climate resilience policies for comprehensive plan integration.

Table 4 shows a summary of the work completed with each pilot jurisdiction in each step of the resilience guidance.

[49] Following in the pilot test, Commerce revised this graphic to reflect changes to the planning guidance. Such revisions include moving the first step of the resilience sub-element (Step 1: Develop Planning Process) to Section 2 of the broader guidance.

## Table 4: Resilience guidance outcomes and key decisions across pilot jurisdictions

| Resilience Guidance Step | Pullman | Port Angeles | Woodland |
|---|---|---|---|
| Step 1: Develop planning process | Co-leads: RJ Lott, Community Development Director and Ariel Medeiros, Assistant Planner<br>Additional representation: Mike Heston, Fire Chief<br><br>Key Stakeholders[50]: Citizen Climate Lobby, Planning Commission, and WSU contacts<br><br>Guiding principles: To be innovative, a champion of climate work, and incorporate a variety of City departments in climate work | Co-leads: Ben Braudrick, Senior Planner, Resilience Planning Lead and Zachary Trevino, Implementation Planning Lead<br><br>Key stakeholders: North Olympic Development Council, Port Angeles and surrounding communities, Climate Action Planning Group, Wastewater Department, Stormwater Department, Solid Waste Department, Chamber of Commerce, private landowners, downtown businesses, sub-Committees for climate on the Planning Commission<br><br>Guiding principles: Integrate climate resilience throughout the comprehensive plan, with a focus on hazard mitigation, demonstrate commitment to the pilot program, use the results of this work to update land-use maps and other City goals | Co-leads: Travis Goddard, Community Development Director, Deputy Clerk/Treasurer, Public Records Officer; David Lukaczer, Associate Planner<br><br>Key stakeholders: Planning Commission, School District contacts, Port of Woodland, PacifiCorp, Cowlitz-Wahkiakum COG, Cowlitz Sheriff-Emergency Management, Clark-Cowlitz Fire Rescue, Cowlitz Consolidated Dike District<br><br>Guiding principles: City staff and Council education on climate impacts, incorporate climate into local decision making |
| Step 2: Explore climate impacts | Priority impacts: Extreme heat, extreme precipitation and flooding, drought, wildfire | Priority impacts: Extreme heat, extreme precipitation and flooding, drought, wildfire, sea level rise | Priority impacts: Extreme heat, extreme precipitation and flooding, drought, wildfire |

[50] Key stakeholders identified by jurisdiction co-leads for future involvement in the process.

| Resilience Guidance Step | Pullman | Port Angeles | Woodland |
|---|---|---|---|
| Step 3: Audit plans and policies | Reviewed existing plans: City of Pullman Comprehensive Plan (2021), Whitman County Hazard mitigation Plan (2020), RTPO Regional Transit Plan (2019-2023), Public Works Stormwater (2022), Pullman Draft Bicycle Plan (2022) | Reviewed existing plans: City of Port Angeles Comprehensive Plan (2019), City of Port Angeles Climate Resiliency Plan (2022), Port Angeles Capital Facilities and Transportation Improvement Plan (2023-2028), Port Angeles Shoreline Master Plan (2021), NODC Disaster Resiliency Planning (2022) | Reviewed existing plans: City of Woodland Comprehensive Plan (2016), Cowlitz County Hazard mitigation Plan/Emergency Management (2019), Cowlitz Comprehensive Plan (2017), City of Woodland Shoreline Master Plan (2021), City of Woodland Sewer Plan (2017) |
| Step 4: Assess vulnerability and risk | Conducted VRA for extreme heat hazard | Conducted VRA for sea level rise on segment of downtown/waterfront area | Did not pursue VRA due to time constraints. |
| Step 5: Pursue pathways | Drafted 44 resilience policies Modified 18 existing policies to include climate and VRA considerations. Supplemented climate gaps with 26 new policies from Menu of Measures, project team expertise, and Planning Commission feedback. | Drafted 42 resilience policies. policies. Modified 19 existing policies to include climate and VRA considerations. Supplemented gaps with 23 new policies from the Climate Resiliency Plan, Menu of Measures, project team expertise, and Planning Commission feedback. | Drafted 39 resilience policies. policies Modified three existing policies to include climate impact considerations. Supplemented gaps with 36 new policies from Menu of Measures, project team expertise, and Planning Commission feedback. |
| Step 6: Integrate goals and policies | Leads will complete this step after continued review of draft policies with Planning Commission and public and Council approval in 2023. | Leads will complete this step after continued review of draft policies with Planning Commission and public and Council approval in 2025. | Leads will complete this step after continued review of draft policies with Planning Commission and public and Council approval in 2023. |

## Takeaways

- Jurisdictions with more robust climate planning histories and dedicated climate and/or sustainability staff will be better equipped to use the resilience guidance to integrate climate into comprehensive planning.

- Port Angeles, which has an adopted Climate Resilience Plan, more in-house climate expertise, and a community that is generally supportive and well-versed on the topic of climate change required less support from the project team. The existing policy audit and draft policy development processes were significantly more streamlined, as the project team was able to utilize more of the City's existing, tailored climate policies and adapt policies in more a strategic manner.
- The other two pilot jurisdictions — Woodland and Pullman — have less robust local climate planning histories. As such, co-leads consistently indicated they had less capacity and expertise to integrate climate into comprehensive planning. These jurisdictions required more support from the project team throughout the pilot program, particularly in development of new draft policies and identification of climate priorities.

Jurisdictions with less support from city stakeholders and the community around addressing climate change will face added barriers in creating buy-in and will need to consider additional approaches, support, and resources for the engagement process.

Woodland co-leads indicated their community members were unfamiliar with climate change and somewhat unsupportive of addressing climate change issues. To facilitate buy-in from the community, co-leads identified the need for additional support around community engagement efforts, including the use of easily accessible collateral with messaging about the importance of climate change with a clear connection to climate impacts and lived experiences.

Co-leads for the City of Pullman, which has a community that is somewhat familiar and supportive of addressing climate change, also identified the need for engagement approaches that connect the goals of this process to real community experiences with recent climate events (heat dome events, recent wildfires, etc.).

## Process Outcomes by Jurisdiction

### Pullman

The City of Pullman is located within Whitman County in southeastern Washington. A mid-size city with a population of 32,827, Pullman is home to Washington State University (WSU) and is known as an agricultural center. Pullman's population is 71% non-Hispanic white and has a relatively high poverty rate (35.4%), which is partially due to its large student population.

The City is early in its climate planning efforts, but is seeing increased enthusiasm and interest for such efforts from the community. The City recently updated its Comprehensive Plan (2021) and plans to make updates to integrate climate resilience policies in 2023.

The project team needed to arrive at a draft list of climate resilience policies for comprehensive plan integration. They met with Pullman co-leads and Community Development and Fire Department staff for an initial kick-off planning meeting and then on a bi-weekly basis to implement each step of the resilience guidance to accomplish this. The kick-off meeting and the first several check-ins were dedicated to Step 1, developing the overall planning process of the pilot program. Tasks 1.3 (scope a budget and schedule first three steps) and 1.4 (develop a public-engagement strategy) were significantly reduced in scope due to the expedited timeframe of the project. [*Editor's note: Following the pilot testing of the resilience sub-element, Commerce moved what had been the resilience sub-element's Step 1 (Develop Planning Process) into the full planning guidance's Section 2. The revision makes forming a project team and engagement strategy precede the resilience and GHG reduction sub-elements (Sections 3 and 4) and provides additional guidance for jurisdictions.*]

To implement Step 2 (Explore Climate Impacts), the project team identified the following climate change drivers and associated impacts as the most relevant to the City using the webtool:

- 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.

Pullman has already experienced impacts, and climate projections suggest that climate change drivers will continue to worsen these impacts. Table 4 presents mid- and late-century climate projections for Whitman County. These climate change impacts lead to negative effects on public health, agriculture, food supply, as well as infrastructure damage to transportation systems, homes, and buildings.

## Table 5. Climate projections for Whitman County[51]

| | Climate Impact | 2040-50 | 2080 |
|---|---|---|---|
|  | Average summer temperature Jun-Aug | ↑6.6°F increase | ↑11.5°F increase |
| | Number of hot days (humidex over 90 degrees) | ↑32.8 days | ↑57.2 days |
|  | Total late summer precipitation July-Sept | ↑0.7% increase | ↓1.6% decrease |
| | Total annual precipitation | ↑10.2% increase | ↑14.5% increase |
| | Intensity of extreme rain events (change in the magnitude of 2-year storms) | ↑13% increase | ↑20% increase |
| | Precipitation intensity projected change in a 25-year, 1 hour rain event | ↑21% increase | ↑29% increase |
| | Precipitation drought (likelihood of a year with summer precipitation below 75% of historical normal) | 19% | 27% |
|  | Percent change in April 1 snowpack | ↓100% decrease | ↓100% decrease |
|  | Peak streamflow | ↑22.4% increase | ↑47.5% increase |

51 Washington County Climate Projections (uidaho.edu)

| | Climate Impact | 2040-50 | 2080 |
|---|---|---|---|
|  | Change in high fire danger days | ↑11 days | N/A |

These local climate hazards will affect the City's plans 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 extreme events (e.g., public services and business continuity, transit availability, emergency services and evacuation, building and recovery). These hazards can also affect the health and wellbeing of sensitive populations (e.g., older persons, young children, persons with pre-existing conditions).

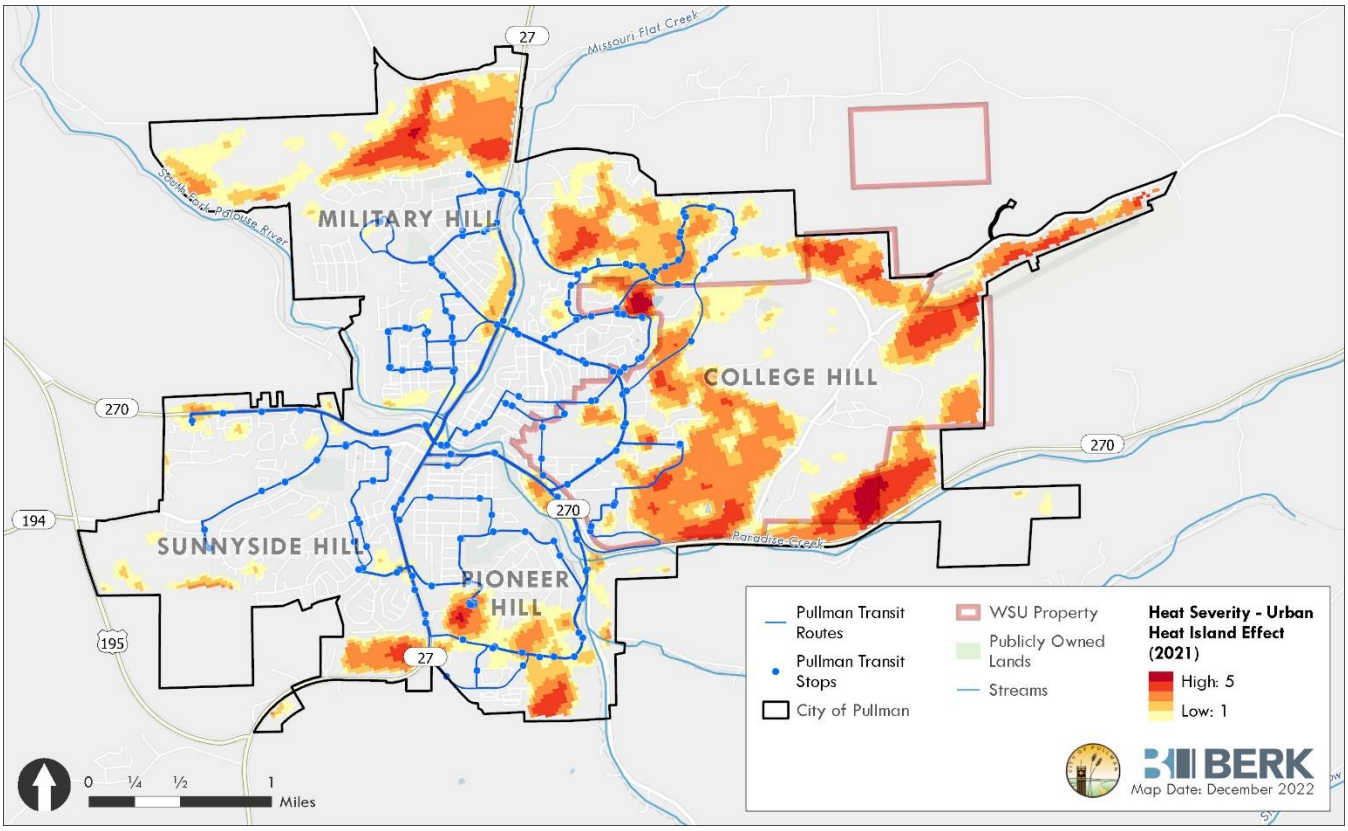
In Step 3 (Audit Plans & Policies), the project team and Pullman co-leads worked together to perform an audit of existing plans and policies to identify relevant goals, policies and strategies that support communitywide resilience across the 11 comprehensive planning sectors. The audit focused on the following plans:

- City of Pullman Stormwater Management Program Plan 2022
- City of Pullman Draft Bicycle and Pedestrian Master Plan 2022 (in progress)
- City of Pullman Comprehensive Plan 2021
- Whitman County Hazard Mitigation Plan 2020
- Palouse RTPO Coordinated Public Transit- Human Services Transportation Plan 2018

In Step 4 (Assess Vulnerability & Risk), Pullman co-leads worked closely with the project team to evaluate heat severity risk in Pullman and how increased temperatures may impact transportation access and need. Figure 2 shows where areas of Pullman are hotter than the average temperature for Pullman as a whole and considered information sources such as impervious areas and tree canopy coverage.

Figure 2 shows that neighborhoods east and north of Washington State University (WSU) experience more severe extreme heat, and are also not well served by transit, a mode that those with less mobility may require (e.g., elderly, people without cars). The project team refined draft goals and policies to reflect the preliminary vulnerability and risk assessment findings and focus on urban forest management, building and site design for passive cooling, and other strategies.

## Figure 2: Extreme Heat Risk and Transit Routes and Stops – Pullman




**Sources:** BERK, Pullman, Commerce.

In Step 5 (Pursue Pathways), the project team utilized the Menu of Measures, drafted by Commerce and its partners, to fill in any climate gaps that were revealed from the policy audit and drafted 44 preliminary climate resilience goals and policies, including amendments to existing goals and policies and new goals and policies. The policy 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. To review the full list of draft policies, refer to the Pullman Discussion Guide developed for the February 2023 Planning Commission meeting, which is found in the "**Pilot Project Materials**" section of the report.

The project team and Pullman co-leads presented the draft list of policies to the Pullman's Planning Commission for an initial review in February 2023 as an interim sub-step in Step 6 (Integrate Goals & Policies). The goal of the meeting was to provide an overview of the approach for integrating the climate model element, with specific focus on the resilience sub-element, into the city's comprehensive planning process and review the draft policy list. Using the feedback captured at the meeting, including identification of priority policies and proposed edits, the project team updated the draft list of policies.

Only a handful of policies were discussed at the meeting but, this meeting marked the first step in a lengthy process to refine the draft policy list. The City will take the following steps to integrate the final climate and resilience policies into the Comprehensive Plan Update in 2023:

- Policy amendments are discussed and refined at Planning Commission meetings as needed.

- Recommendations are presented to City Council by the Planning Commission.
- Amendments are presented to City Council for adoption.
- Amendments are integrated into the Comprehensive Plan, if adopted by Council.

The project team developed a concise factsheet about the City's participation in the pilot program and intended next steps for continued use throughout the comprehensive planning process.

## Port Angeles

The City of Port Angeles-population of 20,134 is located in Clallam County in northwestern Washington. Port Angeles represents a mid-size and rapidly growing jurisdiction that has made significant progress in climate planning. The City is currently in the first phase of implementing its recently adopted Climate Resiliency Plan. Recognizing the importance of holistic climate integration across city and county planning, the City is eager to integrate climate resilience considerations into its comprehensive plan update in 2025.

The project team needed to arrive at a draft list of climate resilience policies for comprehensive plan integration. They met with Port Angeles co-leads for an initial kick-off planning meeting and then on a bi-weekly basis to implement each step of the resilience guidance. The kick-off meeting and the first several check-ins were dedicated to Step 1, developing the overall planning process of the pilot program. Due to the expedited timeframe of the project the Tasks 1.3 (scope a budget and schedule first three steps) and 1.4 (develop a public-engagement strategy) were significantly reduced in scope.

Using the webtool in Step 2 (Explore Climate Impacts), the project team identified following climate change drivers and associated impacts as the most relevant to the region and county:

- 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.
- Rising Sea Level: Sea level rise increasing coastal flooding, erosion, and decreasing water quality.

Port Angeles has already experienced impacts, and climate projections suggest that climate change drivers will continue to worsen these impacts. Table 6 presents mid- and late-century climate projections for Clallam County. These climate change drivers lead to negative impacts on public health, agriculture, food supply, as well as infrastructure damage to transportation systems, homes, and buildings.

### Table 6. Climate projections for Clallam County[52]

| | Climate Impact | 2040-50 | 2080 |
|---|---|---|---|
|  | Average summer temperature Jun-Aug | ↑5.5°F increase | ↑9.2°F increase |
| | Number of hot days (humidex over 90 degrees) | ↑11.9 days | ↑30.8 days |

52 Washington County Climate Projections (uidaho.edu)

| | Climate Impact | 2040-50 | 2080 |
|---|---|---|---|
| | Total late summer precipitation July-Sept | ↓10.6% decrease | ↓16.2% decrease |
| | Total annual precipitation | ↑2.8% increase | ↑2.9% increase |
| | Intensity of extreme rain events (change in the magnitude of 2-year storms) | ↑8% increase | ↑14% increase |
| | Precipitation intensity projected change in a 25-year, 1 hour rain event | ↑9% increase | ↑18% increase |
| | Precipitation drought (likelihood of a year with summer precipitation below 75% of historical normal) | 25% | 33% |
| | Percent change in April 1 snowpack | ↓76% decrease | ↓93% decrease |
| | Peak Streamflow | ↑22.7% increase | ↑18.8% increase |
| | Change in high fire danger days | ↑10 days | N/A |
| | Likely sea level rise (50% likelihood) | 0.5 feet | 1.7ft |

These local climate hazards will affect the City's plans 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 extreme events (e.g., public services and business continuity, transit availability, emergency services and evacuation, building and recovery). These hazards can also affect the health and wellbeing of sensitive populations (e.g., older persons, young children, persons with pre-existing conditions).

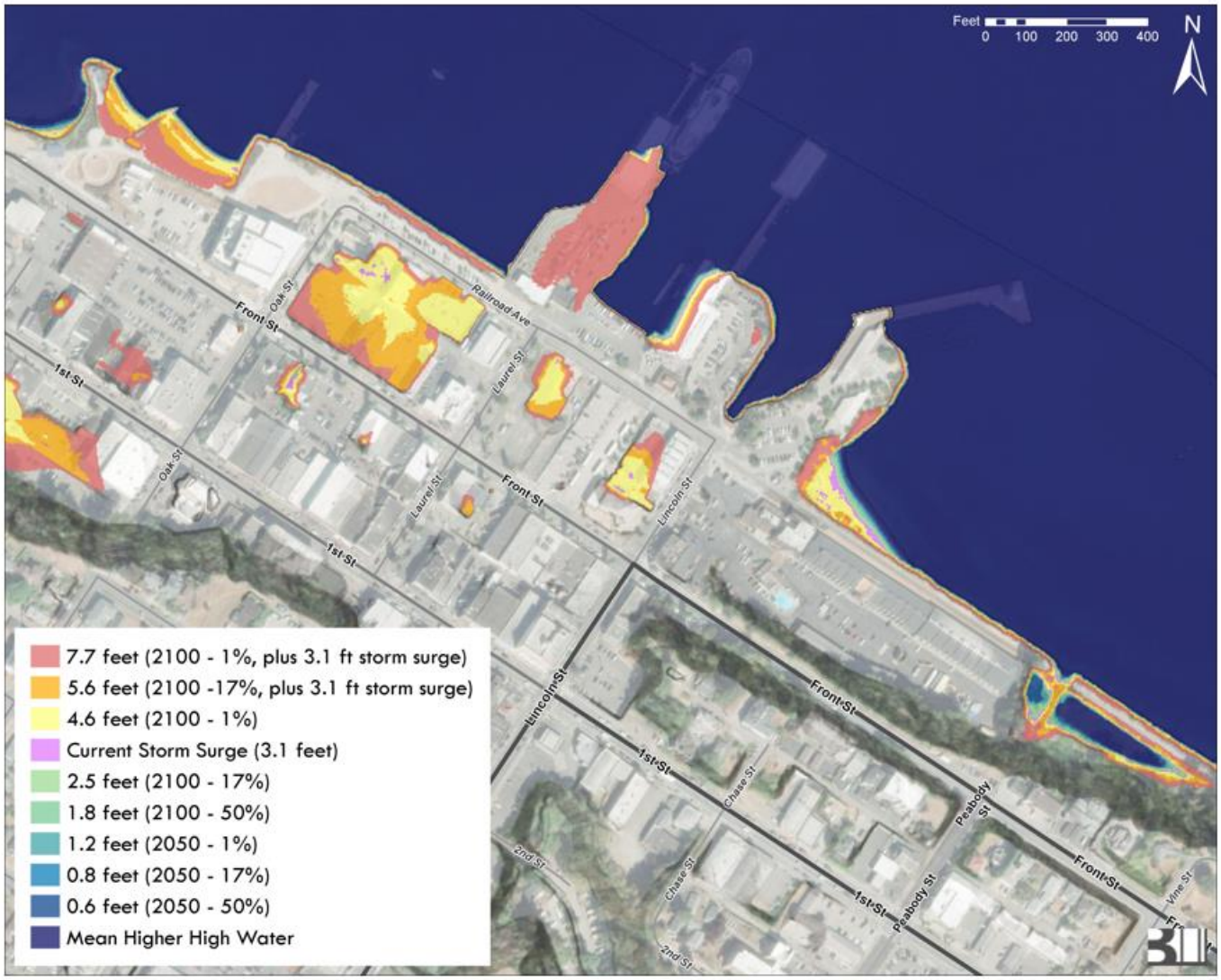
In Step 3 (Audit Plans & Policies), the project team and Port Angeles co-leads worked together to perform an audit of existing plans and policies to identify relevant goals, policies and strategies that support communitywide resilience across the 11 comprehensive planning sectors. The audit focused on these plans:

- North Olympic Peninsula Resource Conservations & Development Council (NODC): Natural Disaster Resiliency Planning
- City of Port Angeles Capital Facilities & Transportation Improvement Plan 2023-2028
- City of Port Angeles Climate Resiliency Plan 2022
- City of Port Angeles Comprehensive Plan 2019
- City of Port Angeles Shoreline Master Program 2021

In Step 4 (Assess Vulnerability & Risk), Port Angeles co-leads worked with the project team to evaluate and assess vulnerability and risk of a portion of the Port Angeles waterfront assets to sea level rise. The team assessed the potential for exposure, sensitivity, and the adaptive capacity of the city to climate change-exacerbated sea level rise.

The map below, which incorporates climate modeling used in the webtool, shows how rising sea levels could exacerbate the impacts of coastal flooding in downtown Port Angeles over the 21st century. This will increase risks for important, vulnerable assets such as the transit center, ferry terminal, wharf, and coastal parks. The project team recommended goals and policies that directly addressed these vulnerability and risk assessment findings, including retrofitting and protecting critical and high-risk facilities at the waterfront.

## Figure 3: Projected Sea Level Rise – Downtown Port Angeles




**Sources:** BERK, Cascadia, Port Angeles, Clallam County.

In Step 5 (Pursue Pathways), the project team utilized Commerce's Menu of Measures to fill in any climate gaps that were revealed from the policy audit and drafted 42 preliminary climate resilience goals and policies, including amendments to existing goals and policies and new goals and policies. The policy 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. To review the full list of draft policies, refer to the Port Angeles Discussion Guide developed for the February 2023 Planning Commission meeting, which is found in the "**Pilot Project Materials**" section of the report.

The project team and Port Angeles co-leads presented the draft list of policies to the Port Angeles Planning Commission and members of the community for an initial review in February 2023. This was an interim task in Step 6 (Integrate Goals & Policies), The goal of the meeting was to provide an overview of the approach for integrating the climate model element, with specific focus on the resilience sub-element, into the City's comprehensive planning process and review the draft policy list. Using the feedback captured at the meeting, including identification of priority policies and proposed edits, the project team updated the draft list of policies.

This was the first step in a lengthy process to refine the draft policy list. The City will take the following steps to integrate the final climate and resilience policies into the Comprehensive Plan Update in 2025:

- April 2023 – Submit notice to the WA State Department of Commerce of intent to adopt Comprehensive Plan & development regulation amendments.
- May 2023 – Bring proposal of Climate Resiliency Comprehensive Plan integration to the Planning Commission for consideration and follow with a public comment period.
- June 2023 – Bring proposal of Climate Resiliency Comprehensive Plan Integration to City Council following the Planning Commission's recommendations to consider adoption.
- 2023-2024 – Implement Comprehensive Plan policies incorporating climate resilience.
- 2025 – Update the Comprehensive Plan in accordance with the Growth Management Act.
- June 2025 – Adopt Comprehensive Plan update in accordance with the Growth Management Act Periodic Update schedule.

The project team developed a concise factsheet about the City's participation in the pilot program and intended next steps for continued use throughout the comprehensive planning process.

## Woodland

The City of Woodland is located within Cowlitz County in southwestern Washington. With a population of 6,540, Woodland represents a small Washington jurisdiction. The City has a 74% poverty rate and 27.5% of the population identify as people of color. While continuing to focus on industrial and commercial development and growth, the City is committed to incorporating environmental considerations into communitywide planning efforts that reflect growing stakeholder and community interests.

To arrive at a draft list of climate resilience policies for comprehensive plan integration, the project team met with Woodland co-leads for an initial kick-off planning meeting and then on a bi-weekly basis to implement each step of the resilience guidance. The kick-off meeting and the first several check-ins were dedicated to Step 1, developing the overall planning process of the pilot program. Due to the expedited timeframe of the project the Tasks 1.3 (scope a budget and schedule first three steps) and 1.4 (develop a public-engagement strategy) were significantly reduced in scope.

Using the webtool in Step 2, the project team identified following climate change drivers and associated impacts as the most relevant to the region and county:

- 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.

Woodland has already experienced impacts and climate projections suggest that climate change drivers will continue to worsen these impacts. Table 8 presents mid- and late-century climate projections for Cowlitz County. These climate change drivers lead to negative impacts on public health, agriculture, food supply, as well as infrastructure damage to transportation systems, homes, and buildings.

## Table 7. Climate projections for Cowlitz County[53]

| | Climate Impact | 2040-50 | 2080 |
|---|---|---|---|
|  | Average Summer Temperature Jun-Aug | ↑5.9°F increase | ↑9.6°F increase |
| | Number of hot days (humidex over 90 degrees) | ↑27.7 days | ↑51.9 days |
|  | Total Late Summer Precipitation July-Sept | ↓10.6% decrease | ↓16.2% decrease |
| | Total annual precipitation | ↓25.4% decrease | ↓24.6% decrease |
| | Intensity of extreme rain events (change in the magnitude of 2-year storms) | ↑4.7% increase | ↑4.5% increase |
| | Precipitation Intensity Projected change in a 25-year, 1 hour rain event | ↑13% increase | ↑13% increase |
| | Precipitation drought (likelihood of a year with summer precipitation below 75% of historical normal) | ↑16% increase | ↑14% increase |
|  | Percent change in April 1 snowpack | ↓95% decrease | ↓100% decrease |
|  | Peak Streamflow | ↑35.7% increase | ↑45.5% increase |
|  | Change in high fire danger days | ↑7 days | N/A |

53 Washington County Climate Projections (uidaho.edu)

These local climate hazards will affect the City's plans 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 extreme events (e.g., public services and business continuity, transit availability, emergency services and evacuation, building and recovery). These hazards can also affect the health and wellbeing of sensitive populations (e.g., older persons, young children, persons with pre-existing conditions).

In Step 3, the project team and Woodland co-leads worked together to perform an audit of existing plans and policies to identify relevant goals, policies, and strategies that support communitywide resilience across the 11 comprehensive planning sectors. 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.

Woodland co-leads decided to omit the vulnerability and risk assessment due to lack of capacity and adequate time (Step 4).

In Step 5 (Pursue Pathways), the project team utilized the Menu of Measures to fill in any climate gaps that were revealed from the existing policy audit and drafted 39 preliminary climate resilience goals and policies, including amendments to existing goals and policies and new goals and policies. The policy 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. To review the full list of draft policies, refer to the Woodland Discussion Guide developed for the February 2023 Planning Commission meeting, which is found in the "**Pilot Project Materials**" section of the report.

The project team and Woodland co-leads presented the draft list of policies to the Pullman's Planning Commission for an initial review in February 2023 as an interim task in Step 6 (Integrate Goals & Policies). The goal of the meeting was to provide an overview of the approach for integrating the climate model element, with specific focus on the resilience sub-element, into the city's comprehensive planning process and review the draft policy list. Using the feedback captured at the meeting, including identification of priority policies and proposed edits, the project team updated the draft list of policies.

The City will take the following steps to integrate the final climate and resilience policies into the Comprehensive Plan Update in 2023:

- April 2023 – host an open house and a public hearing to continue discussing incorporation of draft climate resilience element into the 2023 update.
- Identify and prioritize key goals and policies from the draft climate resilience element based on outreach with the community and elected officials.
- Pass the draft climate resilience element through the Planning Commission
- Advance the climate resilience element to the City Council as part of the City's 2023 Comprehensive Plan and undergo Commerce review.

- December 2023 – Bring the final version of the climate resilience amendment to City Council for adoption.

The project team also developed a concise factsheet about Woodland's participation in the pilot program for continued use throughout the city's comprehensive planning process. See Port Angeles Factsheet [*final section of Appendix G*].

## Improve the Resilience Guidance

The project team evaluated the usability and effectiveness of the six steps of the resilience guidance by using pre- and post-pilot surveys, semi-structured interviews, and ongoing team check-in notes. The intention of this evaluation was to better understand accessibility, clarity, and efficacy of the resilience guidance steps and companion workbook and webtool. This evaluation informed the development of recommendations for improving the various components of the guidance.

Key recommendations are summarized below, followed by a table of detailed findings and additional opportunities for improvement associated with each step of resilience guidance and companion tools.

### Recommendation #1

Include guidance for jurisdictions to supplement use of CIG's webtool (step 2) with additional climate information that is more locally relevant, when available, adding an example of climate data points and projections to communicate magnitude of change beyond a general trend. Step 2 guidance should also include examples of hazard indicators to prioritize and provide a clear explanation around which climate scenario to use and why. Some potential resources that can supplement the webtool analysis are in Table 8. [*Editor's note: See "Key Takeaways" section above for how Commerce addressed this recommendation in its revised planning guidance and companion resources. Additionally, the revised planning guidance links to the three resources listed in the table below; and the* Resources *at Appendix E includes additional ones.*]

#### Table 8. Additional climate change resources and tools.

| Source | Description |
|---|---|
| Washington Tracking Network, Washington State Department of Health | This climate projection data includes projections for precipitation change, extreme heat days (days over the 99th percentile for temperature), cooling degree days, and heating degree days to the census tract level. |
| Washington State Sea Level Rise Visualization Tool | Sea level rise projections for 171 locations along Washington's coastline. |
| Climate and Economic Justice Screening Tool | Interactive map and data sets that indicate burden across multiple categories, including climate change burden, at the census tract level. |

## Recommendation #2

Create climate-focused engagement collateral, such as climate change 101 factsheets, that communicate how future climate change will impact local jurisdictions. Include messaging around how climate impacts – including wildfire and wildfire smoke, sea level rise, increased precipitation, extreme heat, and reduced snowpack – are expected to exacerbate existing hazards and the cascading implications for existing and new city infrastructure, natural systems, and the health and safety of the community. Engagement collateral could include case studies and data points around recent regional and local climate-related extreme events. The project team developed factsheets for each pilot jurisdiction that can serve as a model for development of similar collateral. Factsheets for each pilot jurisdiction can be viewed in the "**Pilot Project Materials** section of the report. This recommendation is intended to help jurisdictions educate city staff, stakeholders, and the public about climate change impacts and create buy-in for integrating climate change into comprehensive planning (Steps 5 and 6). [*Editor's note: See "Key Takeaways" section above for how Commerce addressed this recommendation in its revised planning guidance and companion resources.]*

## Recommendation #3

Adjust the sequence of several tasks, so that the vulnerability and risk assessment (Step 4) is better integrated with the explore climate impacts step (Step 2). Although jurisdictions noted that the CMRW webtool was critical for initial identification and prioritization of climate change impacts, conducting a VRA after a policy audit (Step 3) was challenging. Conducting a policy audit (Step 3) may be more valuable after completing some of the VRA's initial tasks, such as assessing the exposure of local assets and the consequences of hazards. [*Editor's note: Based on the consultants' recommendation and other stakeholder feedback, Commerce shifted several of the VRA's initial tasks to what was formerly Step 2 (Explore Climate Impacts). These tasks (now listed as Section 3, Tasks 1.1-1.3) include creating asset-hazard pairs and using the UW CIG's CMRW webtool. Commerce also added a new task (1.4: Identify Priority Climate Hazards), which asks jurisdictions to decide which climate hazards they might need to address in their comprehensive plan.*]

## Other Opportunities for Improvement

Table 9 provides an overview of detailed findings and additional opportunities for improvement associated with each step of the resilience guidance.

### Table 9: Summary of detailed findings and opportunities for improvements associated with each step of the resilience guidance

[*Editor's note: Commerce incorporated recommendations from the table below into the revised planning guidance.*]

| Step | Findings | Opportunities for Improvement |
|---|---|---|
| Step 1: Develop planning process | Co-leads rated this step clear and easy to use (4 or 5 out of 5 in a Likert scale[54]) on both pre- and post- pilot surveys.<br><br>With two co-leads per jurisdiction, the pilot cities relied heavily on the project team for general program management, setting interim deadlines, meeting management, and tracking deliverables.<br><br>Due to the condensed timeframe of the pilot program, the program lacked robust City staff and community engagement. | Add a detailed timeline template with suggested timeframes for each step. Prompt project leads to review the steps and workbook in full at this planning stage to gain a holistic understanding of how the steps build onto one another. |
| Step 2: Explore climate impacts | Co-leads rated this step clear and easy to use (4 or 5 out of 5) in both pre- and post- pilot surveys.<br><br>Most co-leads rated this step easy (4 or 5 out of 5) to complete without consultant support in the post- pilot surveys.<br>One co-lead ranked his ability to complete this step without consultant support as moderate (3 out of 5).<br><br>The webtool was easy to use and effective for summarizing climate data into a general hazard trend at the county scale and presenting the data in different formats. However, the webtool does not account for nuance within the city and local observations.<br><br>Jurisdiction co-leads found it very helpful to have the support of the project team in demonstrating the tool and applying the climate trends and findings to real world implications for their communities. | Include instructions to limit audit to five plans/documents.<br><br>Provide links to resources and data tools that provide more granular and/or city-level climate data.<br><br>Include link to webtool tutorial video or workshop that demonstrates how to use the tool and apply the findings to local contexts. |

[54]For pre- and post-survey ranking questions, a Likert scale was used, with 1 being most difficult/unclear and 5 being easiest/most clear.

| Step | Findings | Opportunities for Improvement |
|---|---|---|
| Step 3: Audit plans and policies | Co-leads rated this step clear and easy to use (4 or 5 out of 5) in both pre- and post- pilot surveys.<br><br>The resilience guidance instructions were overall useful for this step but lacked clear guidance on how to prioritize plans and policies for the audit.<br><br>This is both a critical and time-consuming step of the process. While only one co-lead ranked his ability to complete this step without consultant support as moderate (3 out of 5), with the rest indicting it would be easy (4 or 5), follow up interviews with co-leads revealed and this would have been challenging to execute without additional capacity and some climate expertise. | Include clearer direction on how to determine priorities to focus the policy audit and how many policies to audit (20-40).<br><br>Provide examples of several audited policies from different types of planning documents.<br><br>Clearly indicate in the guidance how this step feeds into step 5, choosing a pathway to adapt and/or adopt goals/policies. Emphasize that the audit results will lead to either retaining existing goals/policies, amending existing goals/policies, adding goals/policies, or a combination. |
| Step 4: Assess vulnerability and risk | Two co-leads who completed this step indicated it was clear and easy to use (4 or 5), while one indicated it was moderate (3).<br><br>Two co-leads indicated it would have easy to complete this step with consultant support (4 or 5), while one indicated it would be moderate (3).<br><br>Jurisdiction co-leads found the checklist in Tab 3.2 of the workbook to be useful for determining whether to proceed to the VRA step.<br><br>Some jurisdiction co-leads indicated the VRA should follow the exploration of climate impacts step and precede the policy audit. Understanding city vulnerabilities would allow project leads to focus policy audit on relevant policies.<br><br>Smaller jurisdictions would not have the in-house expertise to complete this step without substantial technical expertise, particularly conducting GIS analysis to assess vulnerability and risk of city assets. | Include additional guidance, instructions, and resources for selecting appropriate indicators and developing simple rulesets to qualitatively assess these components or vulnerability and risk should be made available.<br><br>Using pilot jurisdictions as case studies, include examples of climate indicators used to assess asset-hazard pairs in VRA workbook tabs.<br><br>The workbook tabs associated with the VRA step should be decoupled and live as stand-alone tabs for each task. Alternatively, include more instruction explaining grouped tabs. |

| Step | Findings | Opportunities for Improvement |
|---|---|---|
| Step 5: Choose pathway to adapt and/or adopt goals and policies | Co-leads rated this step clear and easy to use (4 or 5) on both pre- and post- pilot surveys.<br><br>Jurisdiction co-leads found it challenging to understand the pros and cons associated with each integration approach -- integrating policies into a single climate element or across multiple elements.<br><br>Co-leads indicated that this step would have been difficult to execute without the project team's support. | Include clearer guidance around each integration approach (single climate element vs. dispersed across multiple elements), with examples or a summary of pros and cons associated with approach. |
| Step 6: Integrate goals and policies | Co-leads rated this step clear and easy to use (4 or 5) on both pre- and post- pilot surveys.<br><br>Two co-leads indicated it would have easy to complete this step with consultant support (4 or 5), while one indicated it would be moderate (3). | Include a "draft step 6 tab" within the workbook to capture the first iteration of the draft policies that will go to the Planning Commission and public for input. Once draft policies have been presented to the Planning Commission and public for feedback edits can be made to the goals and policies to reflect their feedback in the "final step 6 tab." |

# Understand Impact of Project Team and Process on Pilot Program Success

**An important goal of the pilot program was to understand how the overall program structure and project team support impacted the success of the pilot jurisdictions in using the resilience guidance to integrate climate into their comprehensive planning.**

## Findings

The survey responses and follow-up interviews with jurisdiction co-leads revealed that both the resilience guidance and the support from the project team were critical to implementation of the resilience sub-element. While overall clear and useful, the resilience guidance alone would have made it challenging, if not impossible, for these jurisdiction co-leads to complete this process, especially within a condensed timeline. Staff time and capacity were the most significant limiting factors for jurisdictions to complete this process; however, insufficient in-house climate expertise posed another barrier to successful implementation for several of the steps in the process. According to post-pilot data, two of three pilot jurisdictions felt they had some current in-house expertise to complete this process, while the third indicated they had sufficient expertise.

Follow up interviews revealed greater insight into where project team capacity was most useful, key barriers to completing this process, and additional resources needed to bolster their ability to successfully complete this process. These insights were used to develop recommendations that address how best to provide support for jurisdictions that face barriers related to staff capacity and/or in-house climate expertise for

integrating the model climate element. Recommendations are noted in the "Improve the Resilience Guidance" Section of the summary report.

## Key successes of pilot:

"The TA team was critical – we would have floundered and be lost without the TA team."

"Key to success of this guidance is educating the planner, so that person has a set of talking points in response to community skepticism."

"Coming into the work with CAP work already being done made it a lot easier – already had the buy-in and engagement work done."

"Project team support for Planning Commission meeting and use of Poll Everywhere [to solicit feedback] was great."

"The support from the project team was huge — the clarity when talking to the planning commission and city council."

"The TA was critical to make this happen. Not sure how many planners out here in their 40s and 50s would know how to approach this project. Maybe taught now, but not something he was trained in."

The guidance puts it [ability to integrate climate into comprehensive planning] at a 6/10 in feasibility, with the TA it's a 10. Without either the tool or TA, it's a 0 or 1.

## Barriers/Challenges:

"Community knowledge and attitude is mixed. There's a strong understanding of how climate affects people's daily lives, but also a strong sense of mistrust when we discuss the science and modeling."

"Gap is in the area of urgency and optimistic. Climate needs to be integrated holistically and that's what we're doing here [with this pilot program]."

"The accelerated timeline added to the challenge. Would have been less challenging with a longer timeline."

"Unsure if we could do the GIS component internally (mostly because of time)."

## Additional resources needed for success:

"Technical support for data gathering and modelling may be useful. For data-driven actions, compiling adequate supporting information could get complex and time-consuming. Aid in identifying resources and data sources for use in developing justification for specific actions would be valuable when needed. This Pilot Program will certainly be a massive help in boosting staff capabilities."

"Having someone from Commerce come to talk about why having this integration is impactful and useful to our community."

"Climate Impacts 101 Factsheet, video tutorials [with digestible messaging climate hazards and how to plan for them], Commerce TA via email or mentor line."

"Resources for when you realize there's another layer of the work that you don't understand. Could look like a hotline or on-call resource/consultant that you can reach out."

# Conclusion

## Study Limitations

The expedited timeframe of the pilot program impacted the overall implementation and execution of the resilience sub-element integration process. Multiple sub-steps were intentionally omitted due to timing considerations, including planning a robust engagement process with city departments, stakeholders, and the communities of each pilot jurisdiction. This is a critical step in this process that requires 9-12 months to adequately execute. The project team included a significantly truncated version of this process in order to demonstrate a portion of this step.

The optional vulnerability and risk assessment (Step 4) is a technical, time-consuming, and capacity-intensive step. As such, the project team supported interested pilot jurisdictions in conducting a light-touch vulnerability and risk assessment, focusing on one specific climate hazard and a narrow list of assets. One pilot jurisdiction opted out of participating in the light-touch VRA due to internal capacity constraints. While limited in scope, the light-touch VRA conducted with two pilot jurisdictions demonstrated how this step may be implemented and revealed valuable takeaways for refinement.

Due to the expedited timeline of the pilot program, the pilot jurisdiction co-leads were not able to take on a significant leadership role in execution of steps, as originally intended. As a result, the project team led much of the work, while the jurisdiction co-leads provided review and direction where needed to ensure pilot program completion by the contracted deadline date (April 30, 2023). If jurisdiction co-leads were able to take on a bigger leadership role in the execution of the resilience steps, this may have resulted in richer findings for resilience guidance and process improvements.

# Pilot Project Materials

Climate Pilot Program Jurisdiction Selection Memo

**Planning Commission Guidance Documents**

- Pullman
- Port Angeles
- Woodland

**Jurisdictional factsheets**

- Pullman
- Port Angeles
- Woodland

**Pilot Program surveys and interview guide**

- Pre-pilot survey results
- Post-pilot survey results
- Program Close-out Interview Guide

# H. Examples of Guiding Principles for Climate Planning

## Example 1: Spokane Sustainability Action Plan guiding principles (2021 draft)

- We seek to provide future generations with a quality of life equal to or better than the quality of life we now are experiencing.
- We seek to bring people and stakeholders together to co-create solutions and move our jurisdiction towards resilience in the face of climate change.
- We believe climate strategies must address historic inequalities and environmental injustices. We will work to undo environmentally racist actions and systems.
- We believe that equitable inclusion is imperative in sustainability planning, therefore we will engage the jurisdiction often and through diverse formats of communication.
- We believe that all people in Spokane should benefit from environmental programs and policies, not just a wealthy few.
- In a time of uncertainty, we seek to help prepare our jurisdiction for the challenges to come. We seek to protect the right of all members of our jurisdiction, human and other than human, to a healthy environment.
- We believe that every action we take must be evaluated for its impact on the climate.
- We believe urgent action is required!

## Example 2: King County Strategic Climate Action Plan guiding principles (2020)

- Act with urgency and intention.
- Lead with racial justice and equity.
- Respond to community needs and priorities.
- Use and develop best available science.
- Seek systemic solutions.
- Build partnerships.
- Lead through local action.
- Prioritize health and co-benefits.
- Be transparent and accountable.

## Example 3: Thurston Climate Adaptation Plan guiding principles (2018)

- Think in terms of multiple generations and connected built and natural systems, as well as view local and regional decisions through the lens of social, economic, and environmental sustainability.
- Increase resilience through achievable, flexible — and, where possible, measurable and replicable — adaptation strategies and actions that will help the region prepare for and cope with climate change impacts.
- Be responsive to immediate and long-term climate impacts — both emergencies and opportunities.
- Identify and leverage climate change adaptation strategies and actions with GHG reduction co-benefits, such as reducing, capturing, and storing greenhouse gas emissions.
- Utilize sound scientific research, scenarios modeling, economic analysis, and other tools to analyze regional and local climate change vulnerabilities, risks, and solutions.

- Incorporate and complement work produced by others, including the Natural Hazards Mitigation Plan for the Thurston Region, Sustainable Thurston, Thurston Thrives, and Olympia sea-level rise analyses.
- Consider the impacts of climate change adaptation recommendations on the region's economy, environment, and society; this includes all urban and rural communities — especially vulnerable residents — and the ecosystem benefits provided by natural systems.
- Recognize and strive to protect local indigenous tribes' jurisdiction health and well-being, including natural resources security and self-determination.
- Seek broad jurisdiction input, as well as educate residents about climate change and inspire them to take action.

# I. Multicriteria Analysis Examples

The following multicriteria analysis methods are provided for comparison purposes and to provide further context for additional criteria that your jurisdiction could decide to include to prioritize the climate element goals and policies. These examples show a range of criteria that were utilized by the Stillaguamish Tribes, FEMA, Thurston County, and the City of Vancouver.

## Stillaguamish Tribe

The following set of criteria was included in the Stillaguamish Tribe Climate Adaptation Plan (2017), which was prepared in collaboration with the Stillaguamish Tribe, WA Department of Natural Resources, and the University of Washington Climate Impacts Group. Their plan included the following criteria for evaluating climate measures:

- **Effectiveness**. The expected ability of the action to help reduce the impacts of climate change on habitats and species;
- **Benefits to Priority Species**. The expected ability of the action to benefit one or more priority species;
- **Feasibility**. The Tribe's ability to carry out this work over the next five years, or to otherwise address barriers that could limit implementation (For example: organizational, technical, policy, legal, fiscal barriers);
- **Urgency**. The action's ability to address impacts that are already, or will soon be, affecting habitats and species important to the Stillaguamish Tribe;
- **Expected risk(s)**. This means the potential for negative consequences that are associated with an action; and
- **Readiness to implement**. The choices within this category included actionable, almost ready and not ready.

## FEMA's STAPLEE Method

The STAPLEE method is a multicriteria analysis framework developed by FEMA and enables users to apply a consistent analysis to the range of policy options they are considering adopting and implementing. STAPLEE refers to seven evaluation criteria: Social, Technical, Administrative, Political, Legal, Economic, and Environmental. The basic STAPLEE framework does not assign priority or weight to any of the criteria, but the framework could be adapted to do so.

The STAPLEE method assesses the feasibility of potential hazard mitigation and climate adaptation policies, and the framework leaves room for addressing equity. STAPLEE could also be adapted to provide quantitative values (and weighting) to the qualitative answers to its standard questions. The following example is adapted from a framework used by the city of Muscatine, Iowa:

- Social: The public must support the overall implementation strategy and specific mitigation actions and the mitigation actions are evaluated in terms of community acceptance. Considerations:
    - Community Acceptance: Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?
    - Effect on Segment of Population: Will the proposed action adversely affect one segment of the population? Could the benefits and burdens of the policy could be distributed fairly?

- Technical: It is important to determine if the proposed action is technically feasible, will help to reduce losses in the long term, and has minimal secondary impacts. This category evaluates whether the alternative action is a whole or partial solution, or not a solution at all. Considerations:
    - Feasibility: How effective is the action in avoiding or reducing future losses (resilience) and mitigation? Does the action solve the problem or only a symptom? Will the action create more problems than it solves or other impacts?
- Administrative: This category examines the anticipated staffing, funding, and maintenance requirements for the mitigation actions to determine if the jurisdiction has the personnel and administrative capabilities to implement the actions or whether outside help will be necessary. Considerations:
    - Staffing: Does the jurisdiction have the capability (staff, technical experts, and training) to implement the action?
    - Funding allocated: Does the jurisdiction have the funding to implement the action, or can it readily be obtained? Can it be accomplished in a timely manner?
    - Maintenance/Operations: Can the community provide the necessary maintenance?
- Political: This considers the level of political support for the mitigation activities and programs. Considerations:
    - Political Support: Is there political support to implement and maintain this action? Have political leaders participated in the planning process so far?
    - Local Champion or Plan Proponent (respected community member): Is there a local champion willing to help see the action to completion?
    - Public Support (stakeholders): Is there enough public support to ensure the success of the action? Have all the stakeholders been offered an opportunity to participate in the planning process?
- Legal: Whether the jurisdiction has the legal authority to implement the actions, or whether the jurisdiction must pass new laws or regulations, is important in determining how the mitigation action can be best carried out. Considerations:
    - State Authority: Does the state have authority to implement the action?
    - Existing Local Authority: Are proper laws, ordinances, and resolutions in place to implement the actions?
    - Potential Legal Challenge: Is there a technical, scientific, or legal basis for the mitigation action (i.e. does the mitigation action “fit” the hazard setting)? Are there any potential legal consequences? Is the action likely to be challenged by stakeholders who might be negatively affected?
- Economic: Economic considerations must include evaluation of the present economic base and projected growth. Cost-effective mitigation actions that can be funded in current or up-coming budget cycles are more likely to be implemented than actions requiring general obligation bonds or other instruments that would incur long-term debt to a community. Considerations:
    - Benefit of Action: What benefits will the action provide?
    - Cost of Action: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be places on the tax base or local economy to implement this action?
    - Contributes to Economic Goals: Does the action contribute to other community economic goals, such as capital improvements or economic development?

- Outside Funding Required: Are there currently sources of funds that can be used to implement the action? What proposed actions should be considered by be "tabled" for implementation until outside sources of funding are available?

- Environmental: Impact on the environment is an important consideration because of public desire and need for sustainable and environmentally healthy communities. Also, statutory considerations, such as the National Environmental Policy Act (NEPA), need to be kept in mind when using federal funds. Considerations:

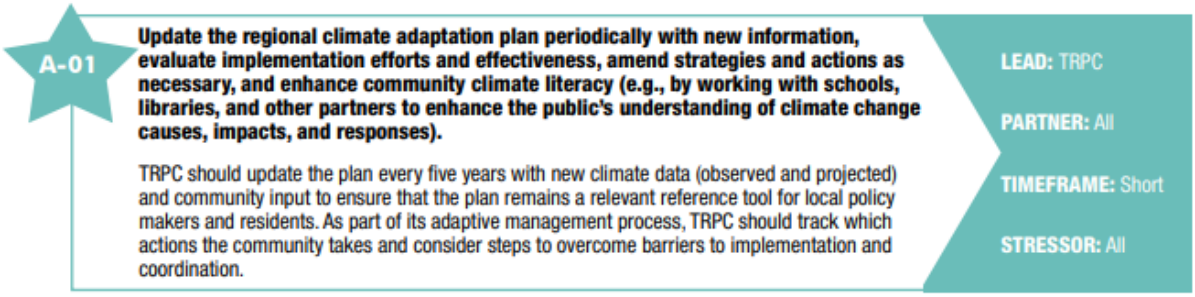
    - Affects Land/Water Bodies: How will this action affect land/water?
    - Affects Endangered Species: How will this action affect Endangered Species?
    - Affects Hazardous Materials and Waste Sites: How will this action affect Hazardous Materials and waste sites?
    - Consistent with Community's Environmental Goals: Is this action consistent with community environmental goals?
    - Consistent with Federal Laws: Is the action consistent with federal laws?

## Thurston County

In development of the Thurston Climate Adaption Plan, the project team and advisory board assigned negative and positive values to the criteria, although the final actions that were published in the report did not include the numerical scores. They evaluated each criterion within the range of high, medium, or low. Their criteria included:

- **Magnitude**: How many risks does this action take?
- **Effectiveness**: Is this action a long-term solution? To what degree would this action reduce the risks? Is this action already being taken?
- **Side Effects**: Would this action have negative effects on other goals? Would this action have positive effects on other goals?
- **Equity**: Would the costs and benefits of this action be shared fairly?

*Excerpt from Thurston Climate Adaptation Plan (2018)*




## Vancouver, WA

In the Vancouver's Climate Action Framework, they include strategies, actions, and metrics for tracking progress of their climate goals. Their project team and collaborators assigned numerical values to their initial list of measures, which, similar to Thurston County, was not included as a value in their final framework plan. Their framework will achieve 80% of the city's climate goals, with the hope that as technology evolves, they will be able to add more specific actions to fully achieve them. Their final evaluation criteria are based on estimated dollar values. Their criteria included:

- **Estimated emission reductions**: They modeled estimated emissions reductions for key actions in the buildings & energy, transportation & land use, and natural systems focus areas. The identified actions were selected because they were of interest to members of the stakeholder advisory group, and were able to reliably be modeled with available data.
- **Timeframe**: Near term; Mid-term, Long term, and ongoing.
- **Costs to the city**: This refers to the estimated cost to the City of Vancouver.
- **Costs to the community**: This refers to estimated costs incurred by partners and stakeholders such as C-TRAN, Clark PUD, NW Natural, and others.
- **Costs of inaction**: This is an equity measurement, as it is an estimate of the social cost of carbon of $84 for the year 2025 (in 2020 dollars), which is midway between 2020 and the interim target of 2030, as based on the Washington Utilities & Transportation Commission (UTC).

To arrive at their priority rating, the measures were organized by the combined costs from highest to lowest per capita **net present value**[55] community costs.

## Recommendations from University Capstone Project

Western Washington University urban planning students volunteered as part of a capstone project (term January to June 2022) to provide a recommendation to the Climate Team on a preferred prioritization method. The students considered the STAPLEE method and Vancouver's draft climate action plan, which has evolved since their review, and is now titled "Climate Action Framework (November 2022)". The metrics in the final framework have changed from the version that the students reviewed. With this in mind, the students recommended that Commerce adapt the Vancouver draft method, adding criteria and modifying the criteria weighting. The following is an excerpt from the WWU students' project:

### Prioritization Method

In addition to modifying the weights, we recommend that the scores used to rate each of the criteria be expanded from a 1-5 scale to a 2-10 scale. The larger numbers [Table 3] help to show greater distinctions between the measures.

### Gaps in Vancouver's Climate Roadmap

1. The Environmental Impact criterion does not include clear language specific to environmental impacts. We believe it is important to differentiate social impacts and impacts to the ecosystem when prioritizing measures to have a comprehensive judgement on human-nature pared systems as the framework for prioritization.

2. Additionally, it is unclear what "level of city control" means in the Feasibility criterion. We believe an unclear definition leaves room for political pressure in the subsequent policy process, and therefore needs to be explicitly defined and attributed.

[55] "Net present value" is calculated using a 3% discount rate. Negative numbers are cost savings.

### Proposed Criteria Modifications

Heavily inspired by FEMA's STAPLEE method, we propose adding the following sub criteria to Vancouver's Feasibility criterion and splitting the Impact criterion into two:

Feasibility: Administrative Capabilities: Does the jurisdiction have the appropriate staffing and funding to implement the climate measure? Does it have appropriate funding for maintenance? With the following sub criteria (where very low is scored a 2 and very high is a 10):

***Table 3.*** *Vancouver evaluation steps Summary*

| Criteria | Original Weight | Revised Weight | Definition |
|---|---|---|---|
| *Environmental Impact | 0.25 | 0.25 | How does it improve the environment? |
| *Social Impact | Combined with above | 0.1 | How does it improve public services? |
| *Time | | 0.05 | How fast can it be installed and how fast will results be seen? The faster the process the higher the number. |
| Cost | 0.15 | 0.1 | How much does it cost for the community and other resources? |
| Community support | 0.1 | 0.05 | How easy will it be to be accepted by the community? |
| Feasibility | 0.1 | 0.15 | How realistic is it for the city to implement these measures? |
| Equity | 0.2 | 0.1 | How does it help vulnerable and overburdened populations? |

- Very low—inadequate staff and funding to implement and maintain climate measure. (2)
- Low—not enough staff, funding plausible but not likely, high maintenance cost. (4)
- Moderate—climate measure maintenance requires outside funding, but staffing is sufficient. (6)
- High—enough staff, funding possible through levy, little-to-no maintenance required. (8)
- Very High—appropriate and existing staff, funding liquidity and/or already allocated. (10)

Environmental Impact: long- and short-term impacts to land and water, endangered species, HAZMAT and waste sites. With the following sub criteria (where very low is a 10 and very high is 2):

- Very low—climate measure has no known short- or long-term impacts on the environment. (10)
- Low—climate measure has no known long-term impacts but some short-term impacts on the environment. (8)
- Moderate—climate measure's negative impacts on the environment are minimal and can be reversed with existing science and technology. (6)
- High—climate measure has short-term negative impacts on the environment. (4)
- Very high—climate measure has long term negative impacts on the environment. (2)

Social Impact: Long- and short-term impacts to social groups, with a focus on disadvantaged and vulnerable groups. With the following sub criteria (where very high is scored a 2 and very low is a 10):

- Very low—climate measure has no known short- or long-term impacts on social groups. (10)
- Low—climate measure has no known long-term impacts but some short-term impacts on social groups. (8)
- Moderate—climate measure's negative impacts on social groups are minimal and can be reversed with existing science and technology. (6)
- High—climate measure has short-term worsening of inequity and disproportionately affects vulnerable groups. (4)
- Very high—climate measure has long term worsening of inequity and disproportionately affects vulnerable groups. (2)

# J. Summary: Handbook for Analyzing Greenhouse Gas Emission Reductions

The California Air Pollution Control Officers Association prepared the "Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities and Advancing Health and Equity" to provide a common platform of information and tools for evaluating greenhouse gas reduction measures, climate vulnerabilities and promoting equity to support sustainable, resilient, and equitable land use planning and project design.

They prepared the handbook in collaboration with academia, agencies, community organizations and leaders, local governments, non-governmental organizations, and technical experts. The quantification methods, tools, and recommendations provided in this handbook were developed based on the latest science and literature available at the time of publication.

This (500+ page) handbook should be viewed as a planning resource. It provides strategies, tools, and analytical methods to facilitate integrated and resilient decision making, despite potential future planning uncertainty. The Handbook should be used to assist in the development of climate change public policy.

The following graphics from their handbook depict specific GHG reduction measures (from California) and provides instruction on how to evaluate/calculate their potential for reducing emissions.

The complete handbook is contained in this link: https://www.airquality.org/ClimateChange.

# T-1. Increase Residential Density

## GHG Mitigation Potential

30%

Up to 30.0% of GHG emissions from project VMT in the study area

## Co-Benefits (icon key on pg. 32)

## Climate Resilience

Increased density can put people closer to resources they may need to access during an extreme weather event. Increased density can also shorten commutes, decreasing the amount of time people are on the road and exposed to hazards such as extreme heat or flooding.

## Health and Equity Considerations

Neighborhoods should include different types of housing to support a variety of household sizes, age ranges, and incomes.

## Measure Description

This measure accounts for the VMT reduction achieved by a project that is designed with a higher density of dwelling units (du) compared to the average residential density in the U.S. Increased densities affect the distance people travel and provide greater options for the mode of travel they choose. Increasing residential density results in shorter and fewer trips by single-occupancy vehicles and thus a reduction in GHG emissions. This measure is best quantified when applied to larger developments and developments where the density is somewhat similar to the surrounding area due to the underlying research being founded in data from the neighborhood level.

## Subsector

Land Use

## Locational Context

Urban, suburban

## Scale of Application

Project/Site

## Implementation Requirements

This measure is most accurately quantified when applied to larger developments and/or developments where the density is somewhat similar to the surrounding neighborhood.

## Cost Considerations

Depending on the location, increasing residential density may increase housing and development costs. However, the costs of providing public services, such as health care, education, policing, and transit, are generally lower in more dense areas where things are closer together. Infrastructure that provides drinking water and electricity also operates more efficiently when the service and transmission area is reduced. Local governments may provide approval streamlining benefits or financial incentives for infill and high-density residential projects.

## Expanded Mitigation Options

When paired with Measure T-2, *Increase Job Density*, the cumulative densification from these measures can result in a highly walkable and bikeable area, yielding increased co-benefits in VMT reductions, improved public health, and social equity.

*Subsector Maximum*

($\sum A_{max_{T\text{-}1 \text{ through } T\text{-}3}} \leq 65\%$) This measure is in the Land Use subsector. This subcategory includes Measures T-1 through T-3. The VMT reduction from the combined implementation of all measures within this subsector is capped at 65 percent.

## Example GHG Reduction Quantification

The user reduces VMT by increasing the residential density of the project study area. In this example, the project's residential density would be 15 du per acre (B), which would reduce GHG emissions from project VMT by 14.2 percent.

$$A = \frac{15 \frac{du}{ac} - 9.1 \frac{du}{ac}}{9.1 \frac{du}{ac}} \times -0.22 = -14.2\%$$

## Quantified Co-Benefits

*Improved Local Air Quality*

The percent reduction in GHG emissions (A) would be the same as the percent reduction in $NO_x$, CO, $NO_2$, $SO_2$, and PM. Reductions in ROG emissions can be calculated by multiplying the percent reduction in GHG emissions (A) by an adjustment factor of 87 percent. See *Adjusting VMT Reductions to Emission Reductions* above for further discussion.

*Energy and Fuel Savings*

The percent reduction in vehicle fuel consumption would be the same as the percent reduction in GHG emissions (A).

*VMT Reductions*

The percent reduction in VMT would be the same as the percent reduction in GHG emissions (A).

### Sources


- Ewing, R., K. Bartholomew, S. Winkelman, J. Walters, and D. Chen. 2007. *Growing Cooler: The Evidence on Urban Development and Climate Change*. October. Available: https://www.nrdc.org/sites/default/files/cit_07092401a.pdf. Accessed: January 2021.
- Stevens, M. 2016. Does Compact Development Make People Drive Less? *Journal of the American Planning Association* 83:1(7–18), DOI: 10.1080/01944363.2016.1240044. November. Available: https://www.researchgate.net/publication/309890412_Does_Compact_Development_Make_People_Drive_Less. Accessed: January 2021.

# K. Glossary of Terms

**The following terms are found throughout the guidance and within the Menu of Measures.**

| Term | Definition | Source |
|---|---|---|
| Acidification | Ocean acidification refers to a reduction in the pH of the ocean over an extended period of time, caused primarily by uptake of carbon dioxide (CO2) from the atmosphere. | National Oceanic and Atmospheric Administration (NOAA) |
| Active Transportation | Active Transportation is a human-scale and often human-powered means of travel to get from one place to another. | Washington State Department of Transportation |
| Adaptation | The process of adjusting to new (climate) conditions in order to reduce risks to valued assets. | U.S. Climate Resilience Toolkit https://toolkit.climate.gov/ |
| Adaptive capacity | The ability of a person, asset, or system to adjust to a hazard, take advantage of new opportunities, or cope with change. | U.S. Climate Resilience Toolkit / |
| Agroecology | It seeks to optimize the interactions between plants, animals, humans and the environment while also addressing the need for socially equitable food systems within which people can exercise choice over what they eat and how and where it is produced. | Food and Agriculture Organization of the United Nations |
| Assets | People, resources, ecosystems, infrastructure, and the services they provide. Assets are the tangible and intangible things people or communities value. | U.S. Climate Resilience Toolkit |
| Biofuel Infrastructure | The term biofuels usually applies to liquid fuels and blending components produced from biomass materials. Infrastructure includes facilities that generate, transport, and distribute energy. | U.S Energy Information Administration<br><br>FEMA |
| Carbon footprint | A carbon footprint is the total amount of greenhouse gases (including carbon dioxide and methane) that are generated by our actions. | The Nature Conservancy |
| Carbon Sequestration | Carbon sequestration is the process of capturing and storing atmospheric carbon dioxide. It is one method of reducing the amount of carbon dioxide in the atmosphere with the goal of reducing global climate change. | The USGS |

| Term | Definition | Source |
|---|---|---|
| Centers for Disease Control and Prevention (CDC) | Centers for Disease and Control (CDC) is tasked with protecting the nation from health, safety and security threats, both foreign and within the U.S. Whether diseases start at home or abroad, are chronic or acute, curable or preventable, human error or deliberate attack, CDC fights disease and supports communities and citizens to do the same. | https://www.cdc.gov/ |
| Climate Assessment Certification | The Climate Change Adaptation Certification (CCAC) Tool is for use during regulatory or procedural review processes being carried out as a matter of regular, ongoing community business. The CCAC should be applied to any decision that uses public funds, has a life cycle of greater than five years and can impact public good. | EcoAdapt<br><br>Foresight Partners Consulting |
| Climate | Climate in the usual weather of a place. | National Aeronautics and Space Administration (NASA) |
| Climate resilience | The ongoing process of anticipating, preparing for, and adapting to changes in climate and minimizing negative impacts to our natural systems, infrastructure, and communities | RCW 70A.65.010 |
| Climate stressor | A condition, event, or trend related to climate variability and change that can exacerbate hazards. | U.S. Climate Resilience Toolkit |
| Co-benefits | The ancillary or additional benefits of policies that are implemented with a primary goal, such as climate change mitigation — acknowledging that most policies designed to reduce greenhouse gas emissions also have other, often at least equally important, benefits (e.g., energy savings, economic benefits, air quality benefits, public health benefits). Also referred to as "multiple benefits." | U.S. Environmental Protection Agency (EPA) |
| Community Wildfire Protection (Plan) | A Community Wildfire Protection Plan (CWPP) is a comprehensive wildfire safety plan developed by the local citizens and state and federal agencies. | Washington Department of Natural Resources |
| Commute-trip-reduction (CTR) | Washington state's laws relating to commute trip reduction (CTR law) were adopted in 1991 and incorporated into the Washington Clean Air Act as RCW 70.94.521 through 70.94.551. The intent of the CTR law is to reduce automobile-related air pollution, traffic congestion, and energy use through employer based programs that encourage the use of alternatives to the single occupant vehicle traveling during peak traffic periods for the commute trip. | Washington State Legislature |

| Term | Definition | Source |
|---|---|---|
| Concurrency (Regulatory) | (Regulatory) Concurrency, requires jurisdictions or a developer to provide any transportation improvements or programs required to reduce demand and meet an established transportation level-of-service within six years of the completion of a development. | RCW 36.70A.070 (6)(b) |
| Consequence | A subsequent result (usually negative) that follows from damage to or loss of an asset. Quantifying potential consequences is an important part of determining risk. | U.S. Climate Resilience Toolkit |
| Critical Infrastructure | Systems and assets, whether physical or virtual, so vital that the incapacity or destruction of such may have a debilitating impact on the security, economy, public health or safety, environment, or any combination of these matters, across any local, state, tribal and federal jurisdiction. | FEMA |
| Defensible Space | Defensible space is the area around a building in which vegetation, debris, and other types of combustible fuels have been treated, cleared, or reduced to slow the spread of fire to and from the building. | Federal Emergency Management Agency |
| Department of Ecology (ECY) | The Department of Ecology (ECY) works to protect, preserve, and enhance Washington's environment for current and future generations. They strive to protect and sustain healthy land, air, water, and climate in harmony with a strong economy. | Washington State Department of Ecology |
| Department of Health (DOH) | The Department of Health works to protect and improve the health of all people in Washington state. | Washington State Department of Health |
| Department of Natural Resources (DNR) | Washington State Department of Natural Resources (DNR) protects our state's heritage of natural resources by sustainably managing millions of acres of state lands in forests, under the sea and across agricultural plains. Manage, sustain, and protect the health and productivity of Washington's lands and waters to meet the needs of present and future generations. | Washington State Department of Natural Resources |
| Ecosystem services | Ecosystem services are the benefits that humans receive from nature. These benefits underpin almost every aspect of human well-being, including our food and water, security, health, and economy. | U.S. Environmental Protection Agency |
| Electric Vehicle (EV) | An EV is defined as a vehicle that can be powered by an electric motor that draws electricity from a battery and is capable of being charged from an external source. | U.S. Department of Energy |

| Term | Definition | Source |
|---|---|---|
| Environmental Equity | Describes a country, or world, in which no single group or community faces disadvantages in dealing with environmental hazards, disasters, or pollution. No one should need extreme wealth or political connections to protect the well-being of their families and communities. Environmental equity is considered a basic human right. | Mobilize Green |
| Environmental Justice | The fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. | Washington State's Environmental Justice Task Force |
| Environmental Protection Agency (EPA) | The mission of EPA is to protect human health and the environment. EPA works to ensure that Americans have clean air, land and water; that chemicals in the marketplace are reviewed for safety, and to reduce other environmental risks. They are responsible for ensuring that contaminated lands and toxic sites are cleaned up by potentially responsible parties and revitalized. Environmental stewardship is integral to U.S. policies concerning natural resources, human health, economic growth, energy, transportation, agriculture, industry, and international trade, and these factors are similarly considered in establishing environmental policy. The EPA attempts to make information sufficient to effectively participate in managing human health and environmental risks readily available to the public. | U.S. Environmental Protection Agency |
| Exposure | The presence of people, assets, and ecosystems in places where they could be adversely affected by hazards | U.S. Climate Resilience Toolkit |
| Externalities | A side effect or consequence of an industrial or commercial activity that affects other parties without this being reflected in the cost of the goods or services involved, such as the pollination of surrounding crops by bees kept for honey. | Oxford Languages Dictionary |
| Extreme heat | Extreme heat is defined as summertime temperatures that are much hotter and/or humid than average. | Centers for Disease Control and Prevention (CDC) |
| Federal Emergency Management Agency (FEMA) | The Federal Emergency Management Agency (FEMA) has 10 regional offices located across the country and work to ensure that America is equipped to prepare for and respond to disasters. FEMA's mission is helping people before, during and after disasters. | FEMA |

| Term | Definition | Source |
|---|---|---|
| Frontline community | Frontline community members are people who experience the first and worst consequences of climate change. Such residents' health and livelihoods are often highly vulnerable to climate-exacerbated hazards and economic disruptions, and their communities often lack basic support infrastructure and suffer disproportionately from the compounding impacts of pollution, discrimination, racism, and poverty. | Washington State Department of Commerce |
| Geographic Information System (GIS) | A Geographic Information System (GIS) is a computer system that analyzes and displays geographically referenced information. It uses data that is attached to a unique location. | U.S. Geological Survey (USGS) |
| Gray infrastructure | Gray infrastructure is traditional stormwater infrastructure in the built environment such as gutters, drains, pipes, and retention basins. | U.S. Environmental Protection Agency (EPA) |
| Green infrastructure | Green infrastructure filters and absorbs stormwater where it falls. | U.S. Environmental Protection Agency |
| Greenbelt | A general term that refers to natural, undeveloped, and/or agricultural lands that surround urban areas. | Greenbelt Alliance |
| Greenhouse gas (GHG) | Greenhouse gases, such as carbon dioxide, methane, nitrous oxide, and certain synthetic chemicals, trap some of the Earth's outgoing energy, thus retaining heat in the atmosphere. | U.S. Environmental Protection Agency |
| GHG emission reduction (climate GHG reduction) | Actions taken to reduce or eliminate the emissions of greenhouse gases (present and future) in order to reduce the rate and extent of climate change damage. It may also be referred to as greenhouse gas emissions GHG reduction. | Washington State Department of Commerce |
| Growth Management Act (GMA) | The Growth Management Act (Chapter 36.70A RCW) is a series of state statutes, first adopted in 1990, that requires fast-growing cities and counties to develop a comprehensive plan to manage their population growth. | Municipal Research and Services Center |
| Hazard | An event or condition that may cause injury, illness, or death to people or damage to assets | U.S. Climate Resilience Toolkit |
| Hazard GHG reduction | Any sustainable action that reduces or eliminates long-term risk to people and property from future disasters. | FEMA |
| Impacts | In the context of this guidance document, impacts means the effects on natural and human systems that result from hazards. Evaluating potential impacts is a critical step in assessing vulnerability. | U.S. Climate Resilience Toolkit |

| Term | Definition | Source |
|---|---|---|
| Indicator | A sign that shows you what something is like or how a situation is changing. | Oxford Leaners Dictionaries |
| Intergovernmental Panel on Climate Change (IPCC) | The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change. | The Intergovernmental Panel on Climate Change |
| Inundation | Inundation is the total water level that occurs on normally dry ground as a result of the storm tide, and is expressed in terms of height of water, in feet, above ground level. | National Oceanic and Atmospheric Administration (NOAA) |
| Low Impact Development (LID) | The term low-impact development (LID) refers to systems and practices that use or mimic natural processes that result in the infiltration, evapotranspiration or use of stormwater in order to protect water quality and associated aquatic habitat. | U.S. Environmental Protection Agency |
| Magnitude | The measure of consequences — for example, high, medium, or low — for an asset that is impacted by a climate-exacerbated hazard. | U.S. Climate Resilience Toolkit |
| Managed Retreat | Voluntary movement and transition of people and ecosystems away from vulnerable coastal areas. | Georgetown Climate Center |
| Mobility Hub | A mobility hub is a recognizable place with options for different and connected transport modes, such as scooters, e-bikes, and electric car charging stations, supplemented with enhanced facilities to both attract and benefit the traveler. | WA Department of Commerce |
| Multimodal | Multimodal is a transportation term. Multimodal transportation includes public transportation, rail and waterways, bicycle and pedestrian. Multimodal access supports the needs of all users whether they choose to walk, bike, use transit or drive. It means more connections and more choices. | WA State Department of Transportation https://wsdot.wa.gov/engineering-standards/planning-guidance/multimodal-accessibility |
| Multimodal Concurrency | A planning concurrency process that incorporates considerations for all modes of transportation including, but not limited to transit, automobile, bicycle and pedestrian as well as benefits of transportation demand management. The focus of multimodal concurrency is within long-range planning processes and typically has a longer time horizon requirement. This allows a jurisdiction or developer to meet multimodal levels-of-service (LOS) requirements in local and regional long-range planning efforts. | PSRC and City of Bellevue Multimodal Concurrency Pilot Project (2009). http://leg.wa.gov/JTC/Meetings/Documents/Agendas/2009Agendas/JTC070709/MultimodalConcurrencyReport.pdf(2009). |

| Term | Definition | Source |
|---|---|---|
| Municipal Research and Services Center (MRSC) | The Municipal Research and Services Center (MRSC) is a nonprofit organization that helps local governments across Washington state better serve their communities by providing legal and policy guidance on any topic. | Municipal Research and Services Center |
| National Fire Protection Association (NFPA) | The National Fire Protection Association (NFPA) is a nonprofit organization, devoted to eliminating death, injury, property and economic loss due to fire, electrical and related hazards. | National Fire Protection Association (NFPA) |
| National Oceanic and Atmospheric Administration (NOAA) | National Oceanic and Atmospheric Administration (NOAA) is an agency that enriches life through science. Their reach goes from the surface of the sun to the depths of the ocean floor. | National Oceanic and Atmospheric Administration (NOAA) |
| Net-Zero | Refers to a state in which the greenhouse gases going into the atmosphere are balanced by removal out of the atmosphere. | Net Zero Climate |
| Non-climate stressor | A change or trend unrelated to climate that can exacerbate hazards. | U.S. Climate Resilience Toolkit |
| Onsite Non-potable Water System (ONWA) | Non-potable water is water that does not meet the standards for drinking purposes of the State or local authority having jurisdiction, or water that meets the quality standards prescribed by the U.S. Environmental Protection Agency's National Primary Drinking Water Regulations. Onsite non-potable water systems (ONWS) capture and treat water sources generated from within or surrounding a building, such as wastewater, greywater, stormwater, or roof collected rainwater. The treated water is then reused onsite or locally. | Washington State Department of Health<br><br>United States Environmental Protection Agency |
| Overburdened Community | A geographic area where vulnerable populations face combined, multiple environmental harms and health impacts, and includes, but is not limited to, highly impacted communities as defined in RCW 19.405.020. Communities that will disproportionately suffer from compounding environmental impacts and will be most impacted by natural hazards due to climate change. | RCW36.70A.030 |
| Passive Survivability | A building ability to maintain critical life-support conditions in the event of extended loss of power or water; or in the event of extraordinary heat spells, storms, or other extreme events. | University of California at Berkeley Center for the Built Environment |
| Probability | The likelihood of hazard events occurring. Probabilities have traditionally been determined from the historic frequency of events. With changing climate and the introduction of non-climate stressors, the probability of hazard events also changes. | U.S. Climate Resilience Toolkit |

| Term | Definition | Source |
|---|---|---|
| Projections | Potential future climate conditions calculated by computer-based models of the Earth system. Projections are based on sets of assumptions about the future (scenarios) that may or may not be realized. | U.S. Climate Resilience Toolkit |
| Recreation and Conservation Office (ROC) | The Recreation and Conservation Office (RCO) is a small state agency that manages grant programs to create outdoor recreation opportunities, protect the best of the state's wildlife habitat and working farms and forests, and help return salmon and orcas from near extinction. | Washington State Recreation and Conservation Office |
| Regenerative Agriculture | A land management philosophy that involves farming and ranching in harmony with nature. Regenerative agriculture prioritizes climate, ecosystems, water quality, people's health, and relationships within and across ecosystems, and fair pay and racial equity for farmers. The idea includes networks of entities who grow, enhance, exchange, distribute, and consume goods and services—instead of a linear supply chain. | Natural Resources Defense Council |
| Risk | The potential for negative consequences where something of value is at stake. In the context of the assessment of climate impacts, the term risk is often used to refer to the potential for adverse consequences of a climate-related hazard. Risk can be assessed by multiplying the probability of a hazard by the magnitude of the negative consequence or loss. | U.S. Climate Resilience Toolkit |
| Sensitivity | The degree to which a system, population, or resource is or might be affected by hazards. | U.S. Climate Resilience Toolkit |
| Shoreline Management Act (SMA) | The Shoreline Management Act (SMA) requires all counties and most towns and cities with shorelines to develop and implement Shoreline Master Programs. The law also defines our role in reviewing and approving local programs. The SMA was passed by the Washington Legislature in 1971 and adopted by voters in 1972. Its overarching goal is "to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." | Washington State Department of Ecology |
| Shrubsteppe | The shrubsteppe is an arid ecosystem found in Eastern Washington and other western states. | Washington State Department of Fish and Wildlife |
| Single Occupancy Vehicle (SOV) | A single occupancy vehicle commute is a trip to or from a daily destination (usually work) by an individual alone in a car, truck or van. | NWA Regional Planning Commission |
| Snowpack | A mass of snow on the ground (commonly in mountainous areas) that is compressed and hardened by its own weight. | U.S. Environmental Protection Agency (EPA) |

| Term | Definition | Source |
|---|---|---|
| State Environmental Policy Act (SEPA) | The State Environmental Policy Act (SEPA) process identifies and analyzes environmental impacts associated with governmental decisions. These decisions may be related to issuing permits for private projects, constructing public facilities, or adopting regulations, policies, and plans. | Washington State Department of Ecology |
| Transfer of Development Rights (TDR) | Transfer of Development Rights (TDR) is a market-based mechanism that encourages the voluntary transfer of growth from places where a community would like to see less development (referred to a sending areas) to places where a community would like to see more development (referred to as receiving areas.) | Washington State Department of Commerce |
| Travel Demand Management (TDM) | Transportation demand management (TDM), or simply demand management, is defined a set of strategies aimed at maximizing traveler choices. Managing demand is about providing travelers, regardless of whether they drive alone, with travel choices, such as work location, route, time of travel and mode. In the broadest sense, demand management is defined as providing travelers with effective choices to improve travel reliability. | U.S. Department of Transportation: Federal Highway Administration |
| Uncertainty | A state of incomplete knowledge. Uncertainty about future climate arises from the complexity of the climate system and the ability of models to represent it, as well as the inability to predict the decisions that society will make. | U.S. Climate Resilience Toolkit |
| United States Department of Agriculture (USDA) | The USDA provides leadership on food, agriculture, natural resources, rural development, nutrition, and related issues based on public policy, the best available science, and effective management. | U.S Department of Agriculture |
| United States Forest Service (USFS) | The US Forest Service leads in the protection, use, research, and stewardship of natural and cultural resources within our federal forests and grasslands. Their mission is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. | U.S Department of Agriculture Forest Service |
| Urban Growth Area (UGA) | Each county that is required or chooses to plan under RCW 36.70A.040 shall designate an urban growth area or areas within which urban growth shall be encouraged and outside of which growth can occur only if it is not urban in nature. Each city that is located in such a county shall be included within an urban growth area. An urban growth area may include more than a single city. An urban growth area may include territory that is located outside of a city only if such territory already is characterized by urban growth whether or not the urban growth area includes a city, or is adjacent to territory already characterized by urban growth, or is a designated new fully contained community as defined by RCW 36.70A.350. | RCW 36.70A.110 |

| Term | Definition | Source |
|---|---|---|
| Vehicle Miles Traveled (VMT) | Vehicle miles traveled (VMT) per capita is calculated as the total annual miles of vehicle travel divided by the total population in a state or in an urbanized area. | U.S Department of Transportation |
| Vulnerability | The propensity or predisposition of assets to be adversely affected by hazards. Vulnerability encompasses exposure, sensitivity, potential impacts, and adaptive capacity. | U.S. Climate Resilience Toolkit |
| Washington Department of Fish and Wildlife (WDFW) | The Washington Department of Fish and Wildlife is dedicated to preserving, protecting, and perpetuating the state's fish, wildlife, and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities. | Washington State Department of Fish and Wildlife |
| Washington Department of Transportation (WSDOT) | WSDOT provides safe, reliable and cost-effective transportation options to improve communities and economic vitality for people and businesses. | Washington State Department of Transportation |
| Washington Environmental Health Disparities (WA EHD) | The Washington Environmental Health Disparities Map is an interactive mapping tool that compares communities across our state for environmental health disparities. | Washington State Department of Health |
| Weather | Weather is the changes we see and feel outside from day to day. | National Aeronautics and Space Administration (NASA) |
| Wild-Urban Interface (WUI) | The wildland urban interface (WUI) is the area where homes are built near or among lands prone to wildland fire. | Washington State Department of Natural Resources |
| World Climate Research Programme (WCRP) | The World Climate Research Programme (WCRP) coordinates and facilitates international climate research to develop, share, and apply the climate knowledge that contributes to societal well-being | World Climate Research Programme |