

NORTH OLYMPIC PENINSULA RESOURCE CONSERVATION & DEVELOPMENT COUNCIL

Climate Action Toolkit

A resource for local governments and Tribes to implement strategies for regional climate change resilience



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TABLE OF CONTENTS

Introduction	2
Regional Climate Change Impacts.....	3
How to Use This Toolkit.....	7
Transportation & Land Use	9
Table of Top Actions.....	9
Decision-making Tools.....	11
Sample Codes, Regulations, and Plans.....	13
Resources.....	15
Energy & Housing.....	18
Table of Top Actions.....	18
Decision-making Tools.....	20
Sample Codes, Regulations, and Plans.....	21
Resources.....	23
Water Supply & Infrastructure.....	25
Table of Top Actions.....	25
Decision-making Tools.....	27
Sample Codes, Regulations and Plans.....	29
Resources.....	31
Climate Integration Checklist	34
Customizable Collateral.....	39
One-Pager Template.....	39
Social Media Post Template	39
Appendix.....	41



INTRODUCTION

The North Olympic Peninsula Resource Conservation & Development Council (NODC) Climate Action Toolkit was created to support local governments, Tribes, and Nongovernmental Organizations (NGOs) across the North Olympic Peninsula in (1) integrating climate change adaptation and mitigation strategies throughout their decision-making processes, and (2) helping jurisdictions plan for climate action implementation.

Building off NODC's earlier effort to create a Climate Change Preparedness Plan for the North Olympic Peninsula (2015), the toolkit development process brought together local governments, Tribes, and other stakeholders to prepare for climate change. Through a series of region-wide strategy meetings, stakeholders identified regional climate impacts, priorities, and top climate strategies and actions. The summary report of the meeting series outcomes and key takeaways can be found here: <https://www.noprkd.org/climate-action-toolkit/summary-report>

Regional priorities and strategies were consolidated into these overarching topic areas:

- **Transportation and Land Use**
- **Energy and Housing**
- **Water Supply and Infrastructure**

For each of these three topic areas, the toolkit offers examples of top strategies and actions, decision-making tools and checklists, sample codes and regulations, and local resources for implementation.



REGIONAL CLIMATE CHANGE IMPACTS

Across the Northwest, observed temperatures have warmed nearly 2°F on average over the last century ([May et al. 2018](#)). Climate projections for communities in the North Olympic Peninsula predict higher temperatures and changes to precipitation. As shown in Table 1 and Table 2, the region is expected to see higher annual average temperatures, with higher temperature increases during the summer months, and more days with average temperatures above 86°F. Projected regional warming will lead to more freeze-free days and reduced snowpack, which will result in changes to the hydrologic basin conditions, moving more of the Olympic Peninsula's watersheds from a mixed rain and snow dominated system to a largely rain dominated system by 2100 ([WSDOT Climate Impacts Vulnerability Assessment](#)). Reduced snowpack will also result in less water availability for streams during the late summer months, affecting salmon habitat, water quality, and streamflow.

Table 2 shows projected changes in annual precipitation across the region. While climate models predict less rainfall in the summer months, they also show that we can expect more precipitation during the winter months. Increased winter precipitation, along with more precipitation falling as rain rather than snow, means that riverine flooding may occur more frequently in the future.

Coastal flooding from higher sea level is another anticipated climate impact on the North Olympic Peninsula (see Table 3). Drawing on [the 2018 Assessment of Projected Sea Level Rise for Washington State](#), the Climate Impacts Group developed an [interactive sea level rise data visualization tool](#) that presents anticipated likelihoods of sea level rise rates across Washington State.

For a more comprehensive overview of regional climate impacts across the North Olympic Peninsula, see the [2015 NODC Climate Preparedness Plan for the North Olympic Peninsula](#), which includes information about sea level rise, changes to rivers and hydrologic systems, and other regional climate impacts in more detail.

Table 1. Climate Impacts to Jefferson and Clallam Counties

Climate Impact (Source: NODC Climate Preparedness Plan 2015*)	2050-2074		2075-2099	
	Jefferson County	Clallam County	Jefferson County	Clallam County
Average monthly max temperature in August	+8°F	+6°F	+10°F	+9°F
Average monthly max temperature in January	+5°F	+6°F	+7°F	+9°F
Change in temperatures are relative to 1950-1999 and use the higher emissions scenario RCP 8.5).				

* The projections in this table come from the 2015 Climate Change Preparedness Plan for the North Olympic Peninsula (see [Appendix](#)).

Table 2. Climate Impacts to North Olympic Peninsula Tribal Lands

Climate Impact (Source: CIG Tribal Climate Tool*)	2040-2069				2070-2099			
	Makah Indian Tribe (Clallam)	Lower Elwha Tribal Community	Port Gamble Band of S'Klallam Indians	Jamestown S'Klallam Tribe	Makah Indian Tribe (Clallam)	Lower Elwha Tribal Community	Port Gamble Band of S'Klallam Indians	Jamestown S'Klallam Tribe
Annual Average Temperature (Historical 1990 48.9°F)	+4.8°F	+5°F	+5°F	+5.1°F	+7.9°F	+8.3°F	+8.3°F	+8.4°F
Average Daily Summer Max Temperature (Historical 67.9°F)	+5.7°F	+6.1°F	+6.3°F	+6.3°F	+9.3°F	+10.0°F	+10.1°F	+10.1°F
Average number of days with daily max temp above 86°F (Historical 1.4 days)	+4.8 days	+4.1 days	+5.7 days	+4.9 days	+13.8 days	+11.6 days	+13.8 days	+13.2 days

	2040-2069				2070-2099			
Climate Impact (Source: CIG Tribal Climate Tool*)	Makah Indian Tribe (Clallam)	Lower Elwha Tribal Community	Port Gamble Band of S'Klallam Indians	Jamestown S'Klallam Tribe	Makah Indian Tribe (Clallam)	Lower Elwha Tribal Community	Port Gamble Band of S'Klallam Indians	Jamestown S'Klallam Tribe
Freeze Free Days (Historical 323.7)	+29.8 days	+23.4 days	+58.0 days	+56.0 days	+36.3 days	+28.4 days	+89.3 days	+88.6 days
Annual Precipitation (Historical 95.3 in)	+5.4 inches	+1.4 inches	+4.9 inches	+3.3 inches	+8.5 inches	+2.3 inches	+8.2 inches	+5.7 inches
Total precipitation from October to March (Historical 74.5 in)	+5.7 inches	+1.5 inches	+5.3 inches	+3.7 inches	+9.9 inches	+2.7 inches	+9.4 inches	+6.7 inches
Total precipitation from April to September (Historical 20.8)	-0.5 inches	-0.2 inches	-0.6 inches	-0.5 inches	-1.4 inches	-0.4 inches	-1.2 inches	-1.0 inches

* The projections on this table come from the Climate Toolbox and Climate Impacts Group Tribal Climate Tool and use the RCP 8.5 high emissions scenario, accessed on July 6, 2022 (see [Appendix](#)).

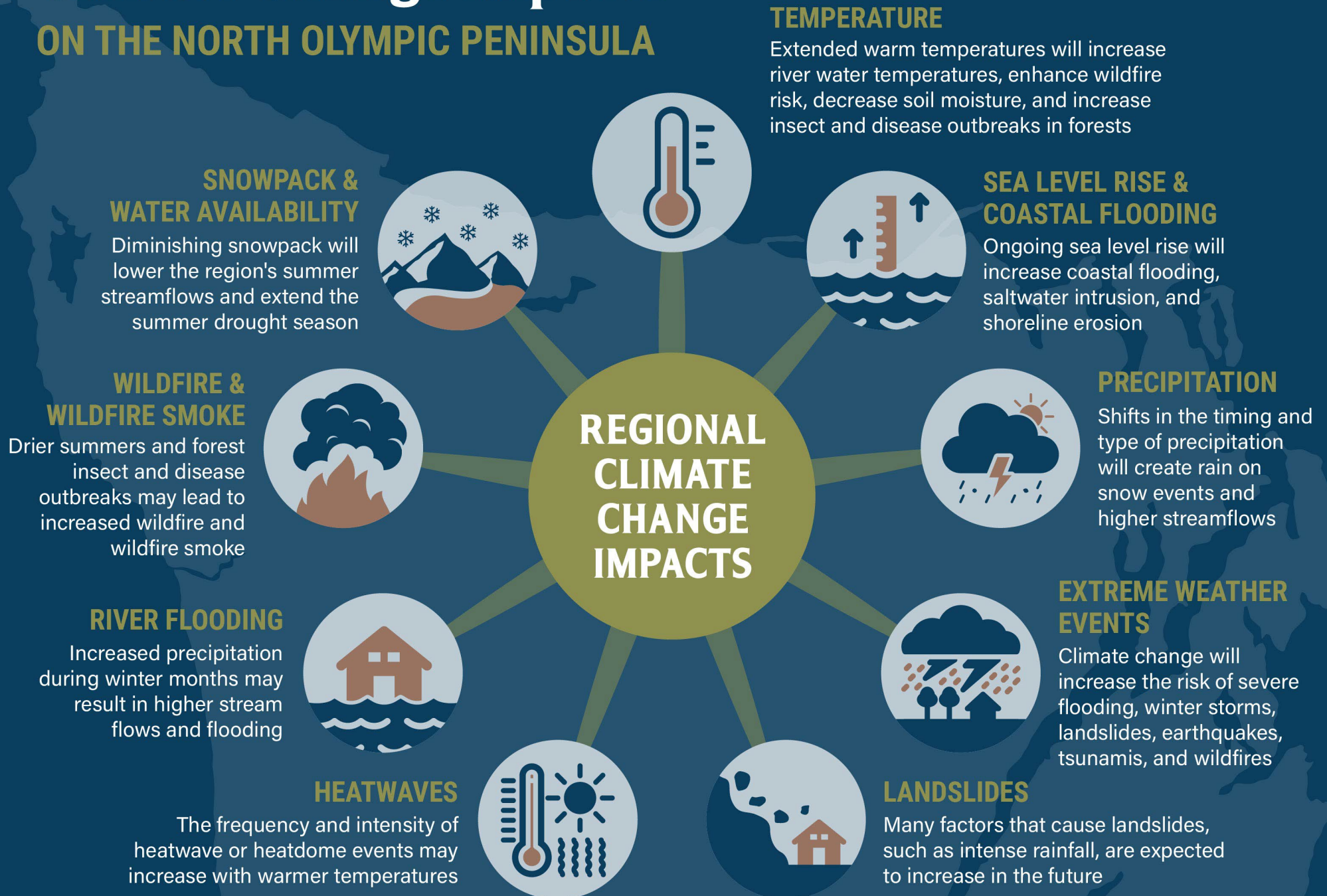
Table 3. Sea Level Rise Projections Across the North Olympic Peninsula

SEA LEVEL RISE* <i>Probability that mean sea level will reach or exceed feet at a given year</i>	Neah Bay <i>Clallam County</i>	Clallam Bay/Seki <i>Clallam County</i>	Port Angeles <i>Clallam County</i>	Port Townsend <i>Jefferson County</i>
	50% chance of ≥ 0.3 feet (2050) and ≥ 1.3 feet (2100)	50% chance of ≥ 0.3 feet (2050) and ≥ 1.3 feet (2100)	50% chance of ≥ 0.6 feet (2050) and ≥ 1.3 feet (2100)	50% chance of ≥ 0.9 feet (2050) and ≥ 2.4 feet (2100)
	5% chance of ≥ 0.7 feet (2050) and ≥ 2.7 feet (2100)	5% chance of ≥ 0.7 feet (2050) and ≥ 2.7 feet (2100)	5% chance of ≥ 0.9 feet (2050) and ≥ 3.3 feet (2100)	5% chance of ≥ 1.2 feet (2050) and ≥ 3.9 feet (2100)

* The projections on this table come from the 2015 Climate Change Preparedness Plan for North Olympic Peninsula (see [Appendix](#)).

Climate Change Impacts

ON THE NORTH OLYMPIC PENINSULA



HOW TO USE THIS TOOLKIT

This toolkit is categorized by the following topic areas:

- **Transportation & Land Use** focuses on implementing projects that support transportation resiliency and emissions reduction opportunities.
- **Energy & Housing** focuses on increasing energy independence and resiliency, as well as implementing energy efficiency and conservation programs.
- **Water Supply & Infrastructure** focuses on managing water availability, usage, conservation, quality, and stormwater infrastructure.

Each topic includes the following to support local governments in working toward climate resiliency goals:

- **Table of Top Recommended Actions:** These actions are a combination of high-impact or foundational actions that local jurisdictions can take. These actions are not meant to be comprehensive and were informed by best practices from local climate action plans across the North Olympic Peninsula and similar rural communities.
- **Decision-making Tools:** This list includes various decision-making tools to aid local governments in policy and process development. The toolkit provides an external link and brief description of each tool and how it can serve in decision-making.
- **Sample Codes, Regulations, Ordinances, and Other Plans:** While each jurisdiction has its own templates and processes for code and ordinance drafting and updates, this section provides relevant example codes and policies from North Olympic Peninsula jurisdictions and other rural jurisdictions. These example codes can be a reference for local jurisdictions as they develop their own codes and regulations to address and adapt to climate change.
- **Resources:** These are resources on specific topics for local governments to use as they implement policies and actions to address climate change.

In addition to these resources, the toolkit includes a comprehensive **Climate Integration Checklist** for local jurisdictions to reference and assess whether a policy, project, or investment adequately considers climate change impacts and drives climate resiliency goals. There are also **customizable collateral materials** available for download.

This is the static version of the web toolkit available on the NODC website. The online version of this toolkit is available here:

www.noprcd.org/climate-action-toolkit

TRANSPORTATION & LAND USE



TRANSPORTATION & LAND USE

Introduction

Transportation is the largest source of greenhouse gas emissions for the North Olympic Peninsula and many rural areas. As such, governments across the North Olympic Peninsula are looking to incorporate strategies to reduce vehicle miles traveled via public transportation investments, development changes, and increased electric vehicle (EV) usage.

Furthermore, climate change will impact many of the region's critical transportation routes, particularly those located in coastal, flooding, and landslide prone areas. Making climate-smart land use decisions such as minimizing development in areas most vulnerable to climate change and designing walkable, dense communities can lower the region's carbon footprint and improve community resilience.

Table of Top Actions

The table below incorporates key actions informed by best practices and other climate action and adaptation plans (see [Appendix](#)). Each jurisdiction is different in its needs and capacity; therefore, the following table reflects a combination of hyper-local and regionwide adaptation and mitigation actions.

Action	Typical agencies or departments to implement	Adaptation or Mitigation	Climate change benefit
Institute on-demand transportation and carpooling programs to reduce the number of single-occupancy trips	Transit agencies	Adaptation and Mitigation	Reduces transportation-related emissions. Diversifying transit options for residents can also support adaptation goals.
Electrify the government fleet and work with school districts and transit agencies to electrify their fleets	Procurement and purchasing departments	Mitigation	Reduces government fleet-related emissions.

Action	Typical agencies or departments to implement	Adaptation or Mitigation	Climate change benefit
Incentivize teleworking, carpooling, public transit (through benefits like pre-tax transit passes), and alternative transportation for government employees	Human Resources	Mitigation	Reduces Scope 3 emissions related to employee commuting.
Build EV charging infrastructure and assess opportunities to implement shuttle services in tourism hotspots	Transit agencies, Planning, Community Development	Mitigation	Reduces transportation-related emissions, especially from visitors and tourists. Also increases electrification infrastructure.
Increase public transportation options, especially to health facilities and other primary services	Transit agencies	Adaptation and Mitigation	Increases access to key services that provide resilience benefits while reducing Vehicle Miles Traveled (VMT).
Amend local land-use policies that prioritize walkability and multi-modal transportation	Planning, Community Development	Adaptation and Mitigation	Multi-modal transit options increase community adaptive capacity and resiliency.
Adopt codes that prioritize development in the Urban Growth Area (UGA) and reduce the sprawl and density outside the UGA	Planning, Community Development	Adaptation and Mitigation	Creates mitigation benefits (e.g., less need to drive) and adaptation benefits (e.g., minimizing wildland-urban interface [WUI] area, less exposure of infrastructure to climate risks).
Adopt codes incentivizing electric vehicles and infrastructure	Planning, Community Development	Mitigation	Reduces transportation related GHG emissions.

Decision-making Tools

The table below provides a list of interactive, online tools jurisdictions can use to assess climate change impacts on their community and make decisions on climate change needs and strategies related to Transportation & Land Use.

Tool	Tool Description	Why the tool is important	Link to tool (links up to date as of August 2022)
Washington State Department of Transportation: Data Portal	A web tool showing roadway, traffic, and crash data as well as GIS maps and data layers for state routes and public roads.	Provides data on up-to-date roadway conditions.	Transportation Data Portal
FEMA: National Flood Hazard Layer Viewer	Interactive map that determines if infrastructure, or future projects, are in floodplains.	Determines the flood risk of key infrastructure assets based on current conditions.	FEMA: National Flood Hazard Layer Viewer
FEMA: Resilience Analysis and Planning Tool	GIS web map that examines the interplay of census data, infrastructure locations, and hazards, including real-time weather forecasts, historic disasters, and estimated annualized frequency of hazard risk.	Builds community maps to inform preparedness, response, and recovery strategies to extreme events.	Resilience Analysis and Planning Tool
Washington Department of Ecology: Coastal Atlas	Interactive map with layers for shorelines, ocean resources, policies and regulations, and land cover.	Focuses on counties or cities to locate marine infrastructure and ecosystems.	Coastal Atlas

Tool	Tool Description	Why the tool is important	Link to tool (links up to date as of August 2022)
The Nature Conservancy: The Resilient Land Mapping Tool	Interactive map that defines resilient and connected lands across the continental U.S. by providing scores for climate change resilience, landscape connectedness, and landscape diversity for both points and areas at a town-parcel scale.	Provides information on biodiversity, connectedness, and resilient lands all in one place.	Resilient Land Mapping Tool
NOAA: C-Cap Land Cover Atlas	Online data viewer that allows users to observe changes in regional land cover over a selected range of time between 1996 and 2011.	Summarizes general trends (e.g., changes in forest cover and developed land), and lets users focus on specific changes of interest (e.g., changes in estuarine areas and marshlands). Users can also create summary reports and data tables that can be used to aid decision-making processes.	C-Cap Land Cover Atlas
Washington State Department of Transportation: Online Map Center	Interactive map applications, geospatial data layers, and printable maps in PDF format.	Provides transportation-related data and information such as infrastructure resilience assessments, infrastructure inventories, usage levels and more.	Online Map Center
EPA: Motor Vehicle Emissions Simulator (MOVES3)	Model that estimates emissions for mobile sources at the national, county, and project levels for criteria air pollutants, greenhouse gases, and air toxics.	Provides quantitative analysis of operational air quality, greenhouse gas emissions, and energy.	MOVES3



Sample Codes, Regulations, and Plans

Codes and Regulations

- [**Electric Vehicle Infrastructure: A Guide for Local Governments in Washington State:**](#) WA Department of Commerce and Puget Sound Regional Council's 2010 report that details model ordinances, model development regulations, and guidance related to EV infrastructure and batteries per RCW 47.80.090 and 43.31.970.
- [**Walla Walla: EV Infrastructure Ordinance:**](#) An ordinance to provide guidance around EV charging station placement and installation for the travelling public, residents in residential dwellings, and customers and employees in commercial and industrial spaces.
- [**Seattle Commuter Benefit Ordinance:**](#) An ordinance requiring businesses with 20 or more employees to offer employees the opportunity to make a monthly pre-tax payroll deduction for transit or vanpool expenses in order to encourage commuters to use transit options other than single occupancy vehicles, thus reducing traffic congestion and carbon emissions.
- [**Essential Smart Growth Fixes for Rural Planning, Zoning, and Development Codes:**](#) Suite of policy options that can help rural communities ensure that development is fiscally sound, environmentally responsible, and socially equitable while preserving rural character. Topics include fiscal impact analysis, commercial development, wastewater infrastructure, rural roads, and efficient development patterns.

Plans

- [**WSDOT Electric Vehicle Action Plan \(2015-2020\):**](#) The Washington State Department of Transportation recommendations for 13 action items to increase the adoption of plug-in electric vehicles in Washington.
- [**Peninsula Regional Transportation Planning Organization \(PRTPO\): Coordinated Public Transit-Human Services Transportation Plan:**](#) A planning tool to help the PRTPO identify public transportation needs and to provide recommendations to benefit those individuals who depend on public transportation services.
- [**WSDOT Guidance for Considering Climate Change in Planning:**](#) A guide to help plan for sustainable multimodal transportation systems while considering climate change impacts.



Studies & Reports

- [**Creating a Resilient Transportation Network in Skagit County: Using Flood Studies to Inform Transportation Asset Management Report:**](#) A study conducted by WSDOT to develop options for improving the resiliency of transportation facilities and systems to climate change and/or extreme weather events.
- [**Peninsula RTPO: Peninsula Regional Non-Motorized Connectivity Study:**](#) A study that brings together existing information on regional non-motorized facility connectivity into a comprehensive map with consistent definitions and identification of non-motorized facility types, gaps, and options to close the gaps.
- [**WSDOT'S Climate Impacts Vulnerability Report:**](#) A statewide assessment of climate vulnerability of state-owned transportation assets.
- [**Using Smart Growth Strategies to Foster Economic Development:**](#) A policy toolkit developed by Kelso, Washington and the EPA addressing land use, transportation, health, and economic and workforce development policies that will help steer infill development and redevelopment to existing communities, creating a diversified economic base.
- [**Transportation Research Board's Transit Cooperative Research Program Synthesis 94:**](#) Innovative Rural Transit Services highlights transit and rural intercity bus service responses to changing rural community transportation needs. The report includes an emphasis on the innovative and/or entrepreneurial spirit, the innovator, and the conditions required for innovation.

Resources

The table below offers resources to *implement* Transportation & Land Use strategies and actions other jurisdictions have adopted and includes potential funding opportunities.

Resource	Description
Mobility	
Guidebook: Managing Operating Costs for Rural and Small Urban Public Transit Systems	A resource for rural and small urban transit agency managers for predicting and managing operational costs.
Rural Opportunities to Use Transportation for Economic Success (ROUTES): Initiative	An initiative to address disparities in rural transportation infrastructure and priorities to meet transportation goals of safety, mobility, and economic competitiveness through user-friendly tools, information, DOT resources, and providing technical assistance.
Recreation	
Outdoor Recreation Economy	Reports and information about how an outdoor recreation economy can revitalize community, protect air and water quality, create jobs, and support economic growth.
Land Use Planning	
EPA: Community Port Collaboration Toolkit	Training materials, worksheets, and activities developed to help communities and ports develop collaboration skills and to enhance understanding of stakeholders' priorities and challenges associated with port-related activities.
Coastal Adaptation Toolkit: Sea-Level Rise and Coastal Land Use	Planning, regulatory, and spending tools for adaptation for governments and policymakers to help manage the complexity of adaption for sea level rise (SLR). The purpose is to help state and local planners identify potential responses after they have assessed their jurisdictions' risks and vulnerabilities to SLR.
Framework for Creating a Smart Growth Economic Development Strategy	Step-by-step guide for small and mid-sized cities—particularly those that have limited population growth, areas of disinvestment, and/or a struggling economy—to build a place-based economic development strategy.
Wildland-Urban Interface (WUI) Change 1990-2010	Maps showing how the WUI has changed over the past three decades in the U.S. to support land use policies and decision-making.

Resource	Description
Electric Vehicles	
Peninsula Regional Transit Planning Organization: EV Readiness Resource Page	A working resource page subject to frequent changes. Users can learn about the Peninsula EV Infrastructure Exchange Group and contribute resources.
Charging Forward: Toolkit for Planning and Funding Rural Electric Mobility Infrastructure	A one-stop resource to help rural communities scope, plan, and fund EV charging infrastructure. This toolkit is intended for a variety of rural stakeholders, including states, local communities, Tribes, transportation providers, nonprofits, businesses, and individuals.
Funding Opportunities	
Washington State Department of Transportation: Regional Mobility Grants	Supports local efforts to improve connectivity between counties and regional population centers as well as to reduce transportation delay. This program includes four eligible project types: vehicle and equipment purchases, capital construction, operations, and transportation demand management.
Washington State Department of Transportation: Rural Mobility	Supports rural and small urban areas. Grant recipients use these funds to purchase or enhance vehicles and facilities as well as support operations.
Transportation Demand Management Grants	Supports local jurisdictions to reduce greenhouse gas emissions and keep the busiest commute routes flowing. Local jurisdictions work with employers, who develop and manage their own programs based on locally adopted goals.
Washington State Department of Transportation: Consolidated Grants	Provides funds for public transportation improvements within and between rural communities, transportation services between cities, purchases of new buses and equipment, and transportation services for seniors and people with disabilities.
Move Ahead Washington: Public Transportation Grant Programs	A state transportation funding package that provides \$3 billion for public transportation over the next 16 years. Move Ahead Washington funding will add support to existing programs and lead to the development of new programs.
Community Facilities Direct Loan & Grant Program in Washington	Supports essential community facilities in rural areas. An essential community facility is defined as a facility that provides an essential service to the local community for the orderly development of the community in a primarily rural area, and does not include private, commercial, or business undertakings.
U.S. Department of Transportation: Rural Surface Transportation Grant	Supports projects to improve and expand the surface transportation infrastructure in rural areas to increase connectivity, improve the safety and reliability of the movement of people and freight, and generate regional economic growth and improve quality of life.

ENERGY & HOUSING



ENERGY & HOUSING

Introduction

As the population of the North Olympic Peninsula and other rural areas continues to grow, so does energy consumption and demand. If the system demand exceeds supply, the voltage in local power lines can drop and cause brownouts and electricity outages. The risk of power outage is highest during the winter months and is expected to increase in the summer as temperatures rise, increased heating and cooling needs place additional stress on the energy grid, and during extreme weather events.

Jurisdictions can help alleviate the strain on the energy grid by offering resources and programs for energy-efficient appliances, energy conservation, and weatherization. As climate change continues to increase the risks of natural disasters, regional energy resilience and independence will be critical for maintaining electricity and vital services to residents in the event main energy sources fail.

Table of Top Actions

The table below incorporates key actions informed by best practices and other climate action and adaptation plans (see [Appendix](#)). Each jurisdiction is different in its needs and capacity; therefore, the following table reflects a combination of hyper-local and regionwide adaptation and mitigation actions.

Detailed action description	Typical agencies or departments to implement	Adaptation or Mitigation	Climate change benefit
Adopt building energy codes requiring energy efficiency in new construction and reducing reliance on fossil fuels for heating.	Planning and Community Development, Department of Commerce	Adaptation and Mitigation	Reduces emissions and risk of energy demand exceeding energy supply, especially during energy-intensive days (e.g., extreme hot or cold days).

Detailed action description	Typical agencies or departments to implement	Adaptation or Mitigation	Climate change benefit
Assess existing opportunities for energy efficiency improvements in government-owned buildings, including energy efficient appliances, smart technologies, and renewable energy	Operations, Department of Energy	Adaptation and Mitigation	Reduces emissions and risk of energy demand exceeding energy supply, especially during energy-intensive days (e.g., extreme hot or cold days).
Create green incentive programs for residential and commercial development	Public utilities	Mitigation	Decreases reliance on fossil fuel energy sources to reduce emissions.
Promote local PUD energy efficiency and conservation incentives and rebates for energy efficient appliances and smart technologies	Public utilities, Department of Commerce	Mitigation	Decreases emissions and offers equity benefits by providing financial incentives, which can help transition to energy efficient appliances and technologies for lower-income households.
Create a weatherization assistance program for residences and businesses	Department of Energy, Health Services, Department of Commerce	Adaptation and Mitigation	Prepares residents for more extreme weather and can also reduce energy usage and demand.
Incentivize community solar installations	Department of Energy, Planning and Community Development	Adaptation	Alongside building microgrids and equipping buildings with battery backups, community solar can help make communities more resilient, especially if the power grid is damaged.
Incorporate smart grid technology and practices such as metering, storage, and distribution within government facilities	Operations, Procurement and purchasing, Department of Energy	Mitigation	Establish a baseline of energy usage within government facilities and helps with future emission reduction goals.

Decision-making Tools

The table below provides a list of interactive, online tools jurisdictions can use to assess climate change impacts on their community and make decisions on climate change needs and strategies related to Energy & Housing.

Tool	Tool Description	Why the tool is important	Link to tool (links up to date as of August 2022)
US Energy Information Administration: U.S. Energy Atlas	Energy demand and consumption statistics that can be used to help inform local jurisdiction on energy trends.	Tracks energy demand and consumption trends, which can justify energy efficiency upgrades, electrification, or demand-responsive policies.	Independent Statistics and Analysis
Clallam and Jefferson County: Outage Map	Observations of energy trends throughout the Peninsula (demand, outages, efficiency, etc.).	Identifies communities across Clallam and Jefferson counties with higher rates of power outages and can inform prioritization of energy resiliency investments.	Map Viewer
World Population Review: Washington State	Population data available at the county and city level.	Helps planners better understand population trends and dynamics—and associated energy demand changes—of rural counties.	Population of Counties in Washington (2022)
Department of Energy: City Energy: From Data to Decisions	Case studies for energy analysis and planning projects.	Provides several different citywide energy projects that demonstrate ways analysis can be used to make energy decisions.	City Energy: From Data to Decisions
State and Local Planning for Energy (SLOPE) Platform	Includes two tools: one that compares future energy and emissions scenarios and one that provides interactive maps and charts of jurisdictions' energy use.	Provides energy data and scenarios to help better understand the impacts of different energy strategies and support data-driven decision-making.	https://maps.nrel.gov/slope/



Sample Codes, Regulations, and Plans

Codes and Regulations

- [Port Angeles Ordinance No. 3688](#): An ordinance amending portions of the Port Angeles municipal code to increase residential building capacity within certain zones of the city.
- [Port Angeles Ordinance No. 3679](#): An ordinance amending sections of Chapter 13.12 of the Port Angeles municipal code relating to electric utility rates.
- [Port Townsend Code 16.08.170](#): Provisions for flood hazard reduction requiring new residential and nonresidential construction elevated at least two feet above base flood elevation.
- [Clallam County Code: 33.45](#): Policy and energy development codes for energy generation, terminal, and transmission facilities.
- [Clallam County Code: 35.15.570](#): Regulations for how renewable energy systems are implemented, developed, and constructed.
- [Jefferson County Code: 18.20.410](#): Developments and standards implemented to ensure that broader communities and more regional areas are being served by utilities.
- [King County Green Building and Sustainable Development Ordinance](#): An ordinance requiring the use of green buildings and sustainable practices across sectors such as environmental protection, climate change initiatives, and stewardship of resource lands.
- [City of Seattle Municipal Code 25.06.020](#): Regulations for development in special flood hazard areas and flood-prone areas.
- [Wisconsin Act 141](#): Requirements for renewable energy purchase goals for several agencies with an overall guideline that renewable energy account for 10% of state energy purchases by 2008 and then 20% by 2012.

Plans

- [Shoreline Management Act - Washington State Department of Ecology](#): Mandates that all Washington counties with shoreline adhere to the policies and regulations laid out in the Shoreline Masters Programs to prevent harm while developing the state's shoreline

Studies and Reports



- [Government Leading By Example \(GLBE\) Program Lava Hot Springs Idaho](#): The Idaho Office of Energy and Mineral Resources utilized the GLBE program to better weatherize and insulate their fire station and upgraded to more energy efficient lighting in City Hall

Resources

The table below offers resources to *implement* the Energy & Housing strategies and actions other jurisdictions have adopted and includes potential funding opportunities.

Resource	Description
Energy Resiliency and Efficiency Programs	
Department of Energy: Indian Energy Policy and Programs	Provides energy resiliency assistance to tribal communities.
Bonneville Power Administration: Hydropower and Climate Change Research	Fact sheet providing data and studies conducted by Bonneville Power Administration relating hydropower and climate resiliency.
Cities Leading through Energy Analysis and Planning	Examples of how data analysis can be utilized to inform strategic energy decisions at the local government level.
Energy Resources for State, Local, and Tribal Governments	Strategies and programs for state, local and tribal governments.
EPA: Tool Finder for local government clean energy initiatives	Tools that can measure clean energy impacts.
EPA: Local Climate and Energy Program	Assists local governments with reducing air emissions with cost effective strategies.
Building Weatherization	
Windham Regional Commission: Weatherizing Town Buildings	Case study on how local governments can use weatherization strategies and retrofits to reduce the energy demand of their county buildings.
Funding Opportunities	
Department of Energy: Water Power Funding Opportunities	Supports hydropower and marine energy technology improvements.
Renewables Advancing Community Energy Resilience (RACER) funding opportunity	Supports projects that enable communities to use community solar.

WATER SUPPLY & INFRASTRUCTURE



WATER SUPPLY & INFRASTRUCTURE

Introduction

Climate change related shifts in precipitation, snowpack, and streamflow can alter the future supply and availability of water resources, as well as increase the need for improved water infrastructure to avoid stormwater pollution. Actions and implementation resources in this topic area are focused on water conservation and collection, stormwater management, and monitoring to create a more sustainable and resilient water supply for the North Olympic Peninsula and other rural areas facing similar challenges.

Table of Top Actions

The table below incorporates key actions informed by best practices and other climate action and adaptation plans (see [Appendix](#)). Each jurisdiction is different in its needs and capacity; therefore, the following table reflects a combination of hyper-local and regionwide adaptation and mitigation actions.

Action	Typical agencies or departments to implement	Adaptation or Mitigation	Climate change benefit
Invest in rain harvesting technology to collect non-potable water and infrastructure to infiltrate stormwater runoff into the ground	Parks, Facilities, Operations, Public Works	Adaptation	Improves water quality and creates more resilient waterways.
Create a rainwater harvesting and Low Impact Development program and incentives for residents	Parks, Public Works	Adaptation	Provides alternatives if water supply is low or at risk. Low impact development can act as a natural filtration mechanism and serve as a local flood buffer.
Promote household water conservation through rebates for water-efficient appliances, and provide education and outreach	Public Works	Adaptation	Improves water conservation.

Action	Typical agencies or departments to implement	Adaptation or Mitigation	Climate change benefit
Adopt regulations on Low Impact Development in new construction	Parks, Facilities, Operations, Public Works	Adaptation	Creates more resilient infrastructure and mitigates potential risks (e.g., flooding).
Adopt regulations requiring water-efficient appliances in government buildings	Facilities, Operations	Mitigation	Reduces water consumption and wastewater, which decreases emissions related to wastewater facilities.
Understand future projections for water availability in agricultural areas and educate farmers about water conservation and irrigation efficiency	Public Works, University consortiums	Adaptation	Supports local decision-makers in implementing water conservation strategies.
Identify water monitoring needs and enhance water supply monitoring	Public Works, Parks, and Water Utilities	Adaptation	Prepares cities and/or utilities to respond to potential future water supply issues.

Decision-making Tools

The table below provides a list of interactive, online tools jurisdictions can use to assess climate change impacts on their community and make decisions on climate change needs and strategies related to Water Supply & Availability.

Tool	Tool Description	Why the tool is important	Link to tool (links up to date as of August 2022)
USGS: WaterWatch	Realtime displays of maps, graphs, and tables describing real-time, recent, and past streamflow conditions for the U.S. updated on an hourly basis; highlights locations where flooding and droughts are occurring.	Shows where extreme hydrologic events (flooding, droughts) are occurring in real time and how current streamflow levels compare to historic streamflows.	USGS WaterWatch: Streamflow conditions
WestWide Drought Tracker	Local, fine-scale drought monitoring with data sets, drought indices, and maps that are updated monthly.	Shows drought conditions and water-level data at a localized scale.	WestWide Drought Tracker
National Stormwater Calculator	Estimations for the annual amount of rainwater and frequency of runoff from a specific site using green infrastructure as low impact development controls.	Designed for use by anyone, including site developers, landscape architects, urban planners, and homeowners interested in reducing runoff from a property.	National Stormwater Calculator
NOAA: Coastal County Snapshots	County level visualization tools including charts and maps of various “snapshots” including flood and sea level rise exposure.	Breaks down complex, county-level information related to coastal resilience to ensure future safety, a healthy environment, and a vibrant economy.	NOAA: Coastal County Snapshots
Advanced hydrologic predication service river forecasts	Interactive map that provides river forecasts, long-range river flood risks, and precipitation data at the national, state, and regional levels.	Shows trends in precipitation and flooding.	NOAA & National Weather Service: Water

Tool	Tool Description	Why the tool is important	Link to tool (links up to date as of August 2022)
Snow Today: National Snow and Ice Data Center	Snapshots and interpretations of snow conditions in near-real time across the Western United States, told with a unique combination of satellite data and surface observations.	Identifies where snow is present, where it has recently snowed, how much water is in the snow, and how snow compares to historical trends.	Snow Today Article: NSIDC Reports
Aqueduct Water Risk Atlas	Open-source, peer reviewed data and map of water risks such as floods, droughts and stress on a global to city specific scale.	Shows current and future water risk indicators (water stress, seasonal variability, water supply and demand) globally and on a local scale. The interactive map allows user to pick time frames and scenarios (optimistic, business-as-usual, and pessimistic) when viewing future prediction.	Aqueduct Water Risk Atlas
USDA: Water Supply Forecasts	A series of interactive maps, graphs, charts, and reports about water supply forecasts.	Provides monitoring information related to snowpack, streamflow, and drought conditions that can help managers plan for forecasted water availability.	USDA: Water Supply Forecasts
UW Climate Impacts Group: Projected Changes in Extreme Precipitation	A web tool to visualize projected changes in heavy rainfall events across the Pacific Northwest as a function of decade, duration, and return interval (frequency).	Allows for customization based on geographic location, as well as options to download graphics and data.	Projected Changes in Extreme Precipitation



Sample Codes, Regulations and Plans

Codes and Regulations

- [Jefferson County Development Standards](#): Development codes related to water supplies, sewage disposal, and stormwater management.
- [Jefferson County Rainwater Collection Policy Statement](#): Policy regarding use of rainwater collection systems for proof of meeting water adequacy requirements for a building permit.
- [Clallam County Stormwater Management Code](#): Stormwater management code with minimum requirements for stormwater management and guidance on addressing illicit non stormwater discharges and illegal connections to public stormwater drainage systems.
- [City of Bellingham Composting Toilets Policy](#): Code allowing composting toilets in any habitable building unless prohibited by regulations not enforced by the City of Bellingham.
- [Groundwater Code, RCW 90.44.050](#): Requirements for water users to obtain authorization in the form of a water right permit or certificate from the Department of Ecology before withdrawing groundwater.
- [Greywater Reuse for Subsurface Irrigation](#): Washington State legislation that provides building owners with simple, cost-effective options for reusing greywater for subsurface irrigation and associated requirements.
- [Washington State EPA Water Quality Standards Regulations](#): Washington State water quality standards in effect for the Clean Water Act.
- [WAC 173-308-193](#): Permitting management and exemptions for septage from composting toilets in Washington State.
- [King County Board of Health Onsite Sewage Code 13.52](#): King County Codes for alternative on-site sewage methods, including holding tanks, composting and incineration toilets, etc.

Plans

- [Port Angeles Stormwater Management Plan](#): Strategic guide to managing stormwater and surface water in Port Angeles.
- [Sequim Stormwater Management Plan](#): Strategic guide to managing stormwater and surface water in Sequim.
- [Washington State Department of Ecology Stormwater manuals](#): Stormwater manuals that provide permit implementation and management guidance, including a Stormwater Management Manual for Western Washington.



- [Washington State Department of Ecology Water Quality Standards:](#) Water quality standards for groundwater and surface water in Washington.
- [Florida Rural Water Association New Water System Start-Up Checklist:](#) New water system start-up checklist that covers technical, managerial, and financial capacity.

Resources

The table below offers resources to *implement* the Water Supply & Infrastructure strategies and actions other jurisdictions have adopted and includes potential funding opportunities.

Resource	Description
Water Quality & Availability	
Low Impact Development technical guide	Manual for stormwater managers and site designers that provides guidance for specific practices (i.e., flow reduction and water quality treatment credits that are applicable to the Puget Sound region) and to aid managers and designers to make informed decisions when adapting low impact development applications in their jurisdictions.
Center for Disease Control: Rural Water Supplies and Water-Quality Issues	Information about water supplies and water quality issues in rural communities.
US Department of Agriculture: Rural Development Water & Environmental Programs	Technical assistance and funding for rural water projects.
Jefferson County: Water Quality Monitoring	Resources and information on water quality monitoring, pollution identification & correction (PIC), and spills and water quality concerns.
Sewer & Septic Systems	
Jefferson County: Sewer and Septic Information and Resources	List of community drain fields, sewer services, and information on septic permits or inspections.
Jefferson County: Septic System Program	Educational, advisory, and permitting services for septic system owners and certifications for septic system installers.
Recode: Draft Plumbing Code for Composting and Urine Diversion Toilets	Sample code language and information related to composting toilets.

Resource	Description
Stormwater	
City of Port Angeles: Green Infrastructure Rebate	Rebates for new development or redevelopment projects that result in less than 5,000 square feet of new or replaced hard surfaces and implement two or more of the following: permeable pavement, compost-amended soils in all distributed areas not covered by new improvements, rain gardens.
Washington State Department of Ecology: Stormwater Permits	Information about stormwater monitoring permits and guidance.
Stormwater 101 Guide	Guide to Washington State stormwater management.
Washington State Department of Health: Water Conserving On-Site Wastewater Treatment Systems Guide	Recommended standards and guidance for performance, application, design, and operations and maintenance for water-conserving wastewater treatment systems, including composting, incinerating, vault, and pit toilets, as well as greywater systems.
Funding Opportunities	
Washington State Department of Ecology: Water Quality Grants and Loans	Provides information and resources for water quality-related funding opportunities.
Washington State Department of Ecology: Grants and Loans Map	Map that displays information about funded water quality projects and other Ecology-funded projects throughout the state.
EPA: Funding Sources for Small and Rural Wastewater Systems	EPA and non-EPA funding sources for small and rural community wastewater systems.
EPA: Effective Funding Frameworks for Water Infrastructure	Supports planning and designing water infrastructure planning.
Bipartisan Infrastructure Law Rural Playbook	Information on the “what, where, and how” to apply for federal infrastructure dollars.
EPA: Financial Technical Assistance and Tools for Water Infrastructure	Federal technical and financial assistance programs that include funding opportunities for rural areas.

The background of the slide is a photograph of a lush, moss-covered forest. The tree trunks are heavily encrusted with green moss, and long, thin strands of moss hang from the branches, creating a dense, textured appearance. The lighting is soft and dappled, suggesting a deep forest environment. On the left side of the image, there is a vertical bar composed of four overlapping geometric shapes in shades of olive green, terracotta, blue-grey, and dark grey. The title text is centered over the mossy forest background.

CLIMATE INTEGRATION CHECKLIST

CLIMATE INTEGRATION CHECKLIST

The following table serves as a checklist of considerations to assess whether projects and plans adequately address climate change impacts and risks. These checklist items help ensure local governments integrate climate change adaptation and mitigation considerations and actions into new projects.

This checklist is adapted from the *Climate Change Adaptation Certification Tool: Moving Communities from Planning to Implementation* and *Climate Change Adaptation Through Local Comprehensive Planning: Guidance for Puget Sound Communities* (see [Appendix](#)).

Climate Change Impact	Does your project design consider or include the following?			
	General	Transportation & Land Use	Housing & Energy	Water Supply & Infrastructure
Heavy Precipitation	<input type="checkbox"/> Vulnerability to erosion or landslides (e.g., siting, landslide mitigation structures) <input type="checkbox"/> Integrity of nearby slopes <input type="checkbox"/> Impacts of development or investment on or near a slope	<input type="checkbox"/> Proximity to mapped flood zones <input type="checkbox"/> Location within a wildland-urban interface boundary or vulnerability to wildfire	<input type="checkbox"/> Reliability of power supply and other utilities <input type="checkbox"/> Design standards avoid vulnerability to flooding and erosion, and include increased maintenance <input type="checkbox"/> New development and remodels include Low Impact Development	<input type="checkbox"/> Proper sizing of stormwater infrastructure to treat and accommodate greater flows and run-off <input type="checkbox"/> Diversion or impoundment of surface water <input type="checkbox"/> Potential changes in future water supply <input type="checkbox"/> Reliability of sanitary sewers or community/private septic systems <input type="checkbox"/> Impacts of snowpack volume, melt time, and melt rates downstream <input type="checkbox"/> Impacts of drought and increased water demand



Climate Change Impact	Does your project design consider or include the following?			
	General	Transportation & Land Use	Housing & Energy	Water Supply & Infrastructure
				<input type="checkbox"/> Culverts, bridges, retaining walls, or other structures within a riparian area to convey water or prevent flooding
Warmer Temperatures	<input type="checkbox"/> Maintenance budget for repairs and replacements for heat-induced damage <input type="checkbox"/> Habitat creation, restoration, or enhancement that can adapt to changes in current temperature levels <input type="checkbox"/> New vegetation provides shade cover and includes drought-tolerant plants	<input type="checkbox"/> Public transportation infrastructure includes adequate shade and cover <input type="checkbox"/> Impacts from heat island effect	<input type="checkbox"/> Impact to energy demand due to warmer temperatures <input type="checkbox"/> New development or remodels are built to accommodate increased temperatures and include energy-efficient cooling systems <input type="checkbox"/> Increased maintenance and repair budgets to accommodate thermal stress	<input type="checkbox"/> Impacts to snowpack volume and stream flows on water availability <input type="checkbox"/> Effect on nearby water quality
Sea Level Rise	<input type="checkbox"/> Stability of the shoreline <input type="checkbox"/> Potential impacts on tidal ecosystem(s)	<input type="checkbox"/> Proximity to the coastal flood zone <input type="checkbox"/> Stability of roadways <input type="checkbox"/> Potential effects to docks or harbors	<input type="checkbox"/> Impacts of new residential property construction in coastal zone	<input type="checkbox"/> Potential impacts on groundwater that may suffer from saltwater intrusion <input type="checkbox"/> Reliability of sanitary sewer system



Climate Change Impact	Does your project design consider or include the following?			
	General	Transportation & Land Use	Housing & Energy	Water Supply & Infrastructure
Population and Demographic Changes	<input type="checkbox"/> Potential effects of population increase or decrease on various systems (e.g., energy, transportation, food, housing) <input type="checkbox"/> Potential effects of future climate migrants	<input type="checkbox"/> Adequate infrastructure to meet needs for increased transportation use <input type="checkbox"/> Transportation systems are designed to include major services such as health facilities <input type="checkbox"/> New development is dense, mixed-use, and does not contribute to sprawl		
Greenhouse Gas Emissions	<input type="checkbox"/> Potential impacts on air quality	<input type="checkbox"/> Effect on the number of cars on the road and idling times <input type="checkbox"/> Access to alternative transportation options <input type="checkbox"/> Dependence on renewable energy sources instead of fossil fuels <input type="checkbox"/> Need for electric vehicle infrastructure <input type="checkbox"/> Use of dense and compact development patterns <input type="checkbox"/> Construction impacts on GHG emissions	<input type="checkbox"/> New development and remodels include energy-efficient appliances and construction	



Climate Change Impact	Does your project design consider or include the following?			
	General	Transportation & Land Use	Housing & Energy	Water Supply & Infrastructure
Other	<input type="checkbox"/> Effects on availability of open space and natural areas <input type="checkbox"/> Effects on nearby wildlife and habitat			

CUSTOMIZABLE COLLATERAL



CUSTOMIZABLE COLLATERAL

How To Use These Materials

An important component of implementing climate change action is sharing information and resources with residents, businesses, and tourists. Governments can customize these one-pagers and social media posts in Microsoft Word and Microsoft PowerPoint to quickly and easily call attention to engagement opportunities and events, resources, programs, government updates, and more. Click on the links below to download the file packages, which include the template and instructions for use.

One-Pager Template

- Customizable One-Pager File Package: <https://www.noprcd.org/climate-action-toolkit/customizable-collateral>

Social Media Post Template

- Customizable Social Media Post File Package: <https://www.noprcd.org/climate-action-toolkit/customizable-collateral>

APPENDIX



APPENDIX

Climate Resources

- [Climate Change Preparedness Plan for the North Olympic Peninsula](#)
- [Jefferson County, Washington: Forests and Trees Greenhouse Gas Inventory for 2001 – 2016 and Next Steps](#)
- [Adapting to Climate Change at Olympic National Forest and Olympic National Park](#)
- [North Olympic Peninsula Climate Resiliency Maps](#)
- [University of Washington Climate Impacts Group: Tribal Climate Tool](#)
- [The Climate Toolbox](#)
- [2018 Assessment of Projected Sea Level Rise for Washington State](#)
- [University of Washington Climate Impacts Group: Climate Change Impacts and Adaptation in Washington State: Technical Summaries for Decision Makers](#)
- [Washington State Department of Transportation: Climate Impacts Vulnerability Assessment](#)
- [University of Washington Climate Impacts Group: Climate-Related Migration to the Pacific Northwest](#)

Climate Plans

- [Clallam County Climate Action Plan](#)
- [Jefferson County 2020 Greenhouse Gas Community Emissions Reduction Opportunities](#)
- [Port Angeles Climate Resiliency Plan](#)
- [Port Townsend/Jefferson County Climate Action Plan](#)

Other Climate Toolkits and Resources

- [King County Climate Action Toolkit](#)
- [BC Climate Action Toolkit](#)



- [EPA Local Climate Action Framework: A Step-by-Step Implementation Guide](#)
- [Preparing For Climate Change: An Implementation Guide for Local Governments in British Columbia](#)

Climate Checklists

- [Climate Change Adaptation Certification Tool: Moving Communities from Planning to Implementation](#)
- [Climate Change Adaptation through Local Comprehensive Planning: Guidance for Puget Sound Communities](#)