



DEPARTMENT OF
ECOLOGY
State of Washington

Washington State Climate Resilience Strategy

September 2024 | Olympia, Washington





Publication Information

Washington State Department of Ecology
Olympia, Washington
September 2024, Publication 24-01-006

This document is available on the Department of Ecology's website at:
<https://apps.ecology.wa.gov/publications/summarypages/2401006.html>



Washington's Climate Commitment Act (CCA) funds the Washington State Climate Resilience Strategy. The CCA supports climate action efforts by using 'Cap-and-Invest' dollars to reduce climate pollution, create jobs, and improve public health. (The cap-and-invest program requires polluters to pay for releasing greenhouse gas emissions over a certain amount). You can find information about the CCA at www.climate.wa.gov.



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보다 자세한 정보를 원하거나 통역이 필요하다면 Jimmy Kralj 씨에게 연락하십시오 564-233-1961.

Для получения дополнительной информации, пожалуйста, звоните Jimmy Kralj по телефону 564-233-1961 и попросите устного переводчика.

Acknowledgements

A dedicated team of individuals from across state government developed the Climate Resilience Strategy with the guidance of our partners. We thank the many people who played a role:

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Thanks to the Front and Centered staff who convened representatives from overburdened communities to provide feedback and guidance as we developed the strategy.

We also thank dozens of state agency staff who helped us develop the strategy's action proposals.

Finally, many thanks to the individuals and organizations across Washington that provided feedback on our work and shared their vision for a more climate resilient state. 🇺🇸

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In brief:
Washington's
approach to
climate resilience

A letter from the team that developed this strategy

Climate change is a problem for today — not tomorrow. Extreme heat, wildfires and smoke, drought, flooding, and coastal hazards are more common and getting worse due to climate change.

And it has consequences for all parts of Washington’s economy, environment, infrastructure, and communities, especially our state’s most vulnerable populations. As our state continues to lead the way in reducing greenhouse gas emissions — the root cause of climate change — we must also reduce the risks presented by climate change impacts and prepare our state for a more equitable and resilient future.

Over the past year, we worked to prepare a path for Washington’s communities, infrastructure, and natural and working lands to address these risks with input from Tribes, local governments, and other partners. Our agencies identified a common set of goals and a shared vision for a climate resilient Washington.

In this climate resilience strategy, we propose a set of impactful actions to help us achieve these goals and prepare for these impacts. These actions identify initial steps that state government can take to address the greatest needs and opportunities we heard from our partners. They reflect the range of climate risks and challenges facing our state, and we designed them to mirror the priorities of Tribes, local governments, and other partners working to prepare for climate change. Every four years, we will update the strategy and adapt our approach to meet new challenges and emerging needs.

While the challenge is great, we know our efforts can make a difference. These actions will leverage the existing work of our agencies that supports climate resilience. They will also strengthen our role in setting regulations, supporting local partnerships, sharing guidance, and providing resources and incentives for on-the-ground action.

Staff from 10 agencies and the University of Washington Climate Impacts Group developed this strategy. The Department of Ecology led this team.

Overtopping and road damage in Whatcom County caused by severe weather, December 2018. Credit: Washington National Guard





Wildfire smoke from the Cedar Creek Fire, July 2021. Credit: Department of Ecology

We urgently need these solutions and they will demand collaboration among agencies and our partners across Washington. Much of the work we proposed through this strategy will require additional support and action from the Legislature. As our agencies work to implement these actions, track our progress, and make adjustments, we invite you to support and partner with us in this historic, urgent mission to make our state more resilient to climate change. Over the coming years, we will *learn more*, and we will need to *do more* to meet the scale of this challenge.

This strategy is the start. We must do the rest together.

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What is 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.

For natural systems, increasing climate resilience involves restoring and increasing the health, function, and integrity of our ecosystems and improving their ability to absorb and recover from climate-affected disturbances.

For communities, increasing climate resilience means enhancing their ability to understand, prevent, adapt, and recover from climate impacts to people and infrastructure.



How is this work supported in Washington?

Many state and federal sources currently fund agency efforts to build climate resilience. Through the state budget process, the Legislature and Governor make decisions on funding sources and amounts to implement specific programs and initiatives. At the state level, these sources include the general fund, bonds, and dedicated accounts such as the Natural Climate Solutions Account, which is funded by revenue from the Climate Commitment Act.

Credit: State Conservation Commission

What this report is about

We have developed **eight climate resilience strategies that Washington can implement** to better prepare communities, infrastructure, and natural and working lands across the state for climate change impacts.

These eight strategies direct state agency work only; these strategies don't direct the work of Tribes, local governments, organizations or businesses outside of state government. Each strategy outlines actions that state agencies will take to build climate resilience. These actions can either be implemented using existing authority and resources, or are accompanied by requests to the Governor and Legislature for new authority and funding.

Each strategy is the culmination of hundreds of hours researching climate issues, listening to community members, talking to scientific experts, collaborating with agencies and outside partners, and consulting the most up-to-date climate science that is available today.

Why create a state strategy?

Over the past several decades, climate change has increased the severity of wildfires, heatwaves, droughts, and floods across Washington. Combined with slower moving impacts such as sea level rise, ocean acidification, and the loss of mountain snowpack, this has presented risks and challenges to communities, infrastructure, and natural and working lands across Washington.

Every region of our state has been affected by climate change.

Every region of our state has been affected by climate change. Over time, these impacts will accelerate, increasing threats to our state's economy, our environment, and the health and well-being of our communities. The effects of climate change especially impact communities with environmental justice concerns including Tribes, people of color, low-income individuals, and other vulnerable or overburdened populations.

As a result of long histories of unfair policies and practices, these communities already face many – and often interconnected – social, health, and environmental challenges. Because these communities have been denied access to important social services and other support, they may not have the right resources to adapt to changing conditions.

While Washington leads transformative efforts to reduce greenhouse gas emissions and prevent future climate change, climate change is already harming our state. We need to better coordinate efforts across state agencies to prepare for climate change impacts and reduce its harm. Recognizing this need, the Legislature directed the Department of Ecology and partner agencies to update the state's Climate Resilience Strategy by Sept. 30, 2024.

This strategy identifies actions we can take to address our highest priority climate risks. It also improves the coordination and efficiency of state agencies' climate change response efforts, aligns state-level work with Tribal and local priorities, and prioritizes environmental justice. Finally, the strategy helps agencies center climate change adaptation in their work. By using the best available science and planning for projected future conditions, we can ensure our natural and built environments meet the needs of people and ecosystems across the state for years to come.

Vision and goals for a climate resilient Washington



Our vision

State agencies are equipped to prepare for, respond to, and recover from current and projected climate impacts in an integrated, strategic, equitable, and durable manner. This effort will increase the resilience of Washington’s communities, infrastructure, natural systems, and working lands. State agencies will partner to create, support, and implement policies and actions that:

- Reduce risks.
- Promote safe, healthy, and vibrant communities.
- Lessen vulnerabilities.
- Advance environmental justice.
- Deliver more equitable outcomes.

Goals



Communities

Foster healthy, safe, equitable, and economically vibrant communities that can effectively and proactively reduce and manage their greatest climate change risks and vulnerabilities.



Infrastructure

Advance and modify infrastructure that supports natural systems, considers the needs of vulnerable communities, and provides consistent, safe, and reliable services that withstand disruptions and risks from climate impacts.



Natural and working lands

Protect, restore, and manage natural systems and working lands so they provide continued and enhanced ecological, cultural, social, and economic benefits under climate impacts.



Governance

Develop efficient and lasting processes and structures across governments that ensure our strategic alignment, collaboration, transparency, and accountability with each other. These processes will help us adapt and be flexible as we implement the Climate Resilience Strategy.

Washington's eight climate resilience strategies

Please note: These strategies are not in any significant order.

Icon key:



Reduced water availability and drought



Marine and coastal changes



Flooding



Extreme heat



Wildfire and smoke

Resilience strategies	Actions we must take
<p>1. Coordinate how to best implement the strategy across state agencies.</p> <p>Improves our resiliency to withstand:</p> 	<ul style="list-style-type: none"> Establish a group that coordinates and implements the state's resilience strategy and associated funding requests
<p>2. Plan for, respond to, and recover from climate-driven hazards and emergencies.</p> <p>Improves our resiliency to withstand:</p> 	<ul style="list-style-type: none"> Help communities prepare for and respond to extreme heat events and wildfire smoke Minimize wildfire risks in high-risk areas Collaborate across agencies to address the increased risks to people, wildlife, and agriculture from emerging <ul style="list-style-type: none"> pests pathogens disease Provide communities with technical advice and guidance to support climate-driven hazard and emergency planning Examine agency rules, policies, and codes for vulnerabilities in how the state addresses projected climate-driven hazards
<p>3. Support Tribes, local governments, and communities with technical assistance, guidance, and best practices.</p> <p>Improves our resiliency to withstand:</p> 	<ul style="list-style-type: none"> Support local planning and accelerate implementation of nature-based solutions for shorelines, floodplains, and coastal areas Build local-level resilience capacity in overburdened and underserved communities

Resilience strategies

Actions we must take

4. Support the vitality and viability of working lands through research, technical assistance, and incentives.

Improves our resiliency to withstand:



- Promote agricultural viability
- Explore novel market opportunities to support climate risk reduction efforts

5. Reduce existing sources of pollution that exacerbate climate impacts.

Improves our resiliency to withstand:



- Reduce smoke pollution through regulations and community outreach
- Reduce water pollution

6. Implement innovative water conservation and management initiatives to ensure reliable and sufficient water for people, farms, ecosystems, wildlife, and fish.

Improves our resiliency to withstand:



- Prepare for water availability changes and implement projects in multi-benefit, large-scale water plans
- Improve the resilience and efficiency of water use and infrastructure
- Improve water management by collecting, using, and standardizing shared water data across agencies

7. Plan and invest in infrastructure and state assets to minimize vulnerability to climate impacts, maintain levels of service, improve performance and condition, increase equity, and promote nature-based solutions.

Improves our resiliency to withstand:



- Improve the resilience of state assets
- Maintain energy security and reliability under changing climate conditions
- Use climate projections to inform infrastructure funding and management
- Strengthen the resilience of transportation networks

8. Improve land management and restoration practices to help ecosystems, habitats, and species adapt to changing conditions.

Improves our resiliency to withstand:



- Strengthen climate-informed species and habitat management
- Prevent the worst effects of climate change on the Puget Sound ecosystem
- Support large-scale, interagency habitat planning and connectivity

Expected climate impacts in Washington

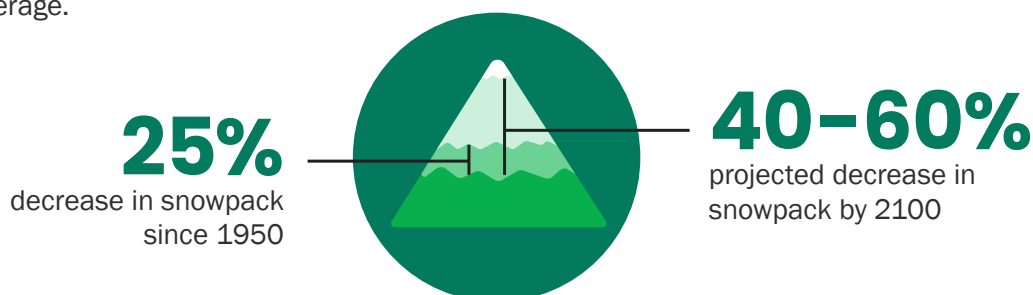
Given our state's large size and diverse geography, Washington is threatened by an array of climate change impacts. The following is a list of the most common hazards.



Reduced water availability and drought

Statewide change

Droughts are already occurring and will be more common in the future. Snowmelt is an important source of water in spring and early summer. In the Cascades, spring snowpack has declined by about 25% since 1950¹. By the end of the century, Washington's spring snowpack is projected to decrease by about 40-60%^{2,3}, on average. Late summer streamflow is more influenced by summer precipitation. By the end of the century, late summer streamflow is projected to decline by 7-14%^{2,3}, on average.



Regional changes

Snowpack will decrease substantially, with the greatest declines near the current snowline. Late summer streamflow is projected to decrease for most of Washington, with the greatest decreases in the Cascade and Olympic mountains. An exception is the Columbia Plateau, where projections show no change or a slight increase.

Associated risks

Decreased water available for communities, ecosystems, wildlife, agriculture, and recreation. Lower river flows will likely result in warmer water temperatures, which could harm salmon and other cold-water fish.



Groundwater availability

Statewide change

We don't know how groundwater may change with warming. Changes in precipitation intensity and the amount and timing of snowmelt could affect the rate of groundwater recharge. However, the largest effects on groundwater are likely associated with changes in water demand, by both people and ecosystems. We need more research to better understand past and future changes in groundwater.

Regional changes

Groundwater changes are likely greatest in dry areas with a high reliance on groundwater.

Associated risks

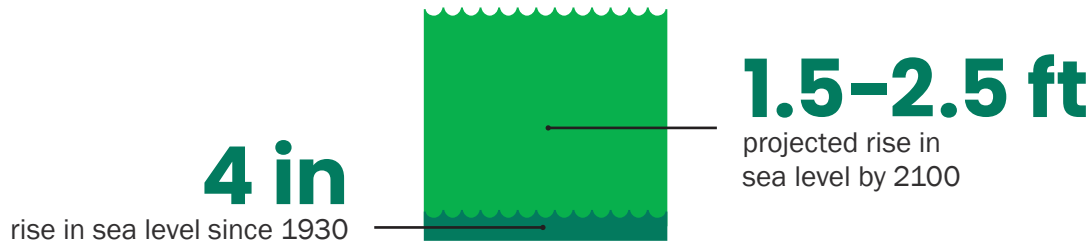
Groundwater is an important source of water for communities, ecosystems, and agriculture, particularly in summer.



Marine and coastal changes: Sea level rise

Statewide change

Sea level rise is already occurring and is projected to accelerate. Sea level rose by over 4 inches from 1934–2023 at Friday Harbor⁴; this represents the average change for all the state’s coastlines. We project the rate of sea level rise to accelerate for all coastal areas of the state, with an estimated rise of about 1.5–2.5 ft, on average, from 2000 to 2100.⁵



Regional changes

Rates of sea level rise will be greater in the Puget Sound region compared to parts of the Pacific coast and Strait of Juan de Fuca where geologic factors are causing land to rise.

Associated risks

Coastal flooding of communities and infrastructure and the loss of habitats that depend on certain tidal levels.

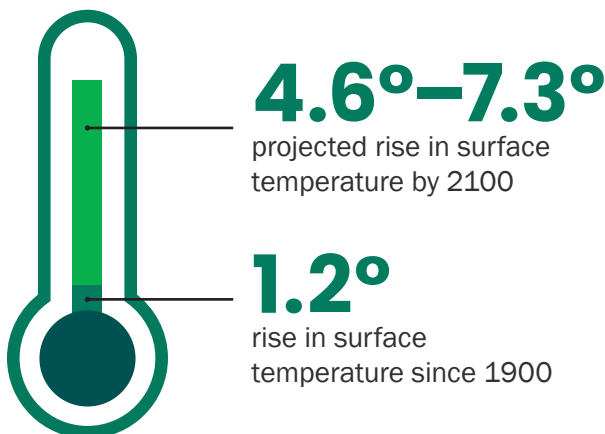


Marine and coastal changes: Ocean conditions

Statewide change

Climate change has also led to changes in ocean conditions for Washington. Carbon dioxide is absorbed from the air into our oceans. This causes ocean acidification. Climate change is also warming ocean temperatures and decreasing the amount of oxygen the ocean can hold. Combined, these changes to ocean conditions have significant impacts for animals and ecosystems.

Washington’s coastal sea surface temperatures have warmed approximately 1.2°F since 1900. The northern California Current, which includes Washington’s coast, is projected to warm by an additional 4.6°–7.3°F by 2100.⁶



Regional changes

Higher temperatures, more corrosive waters and less oxygen will impact coastal ocean and marine ecosystems across all parts of Washington.

Associated risks

Increased frequency and intensity of marine heatwaves and added stress on marine wildlife including culturally and economically important species such as shellfish, crabs, and salmon. Reduced opportunities for shellfish harvest due to harmful algal blooms.



Flooding

Statewide change

Floods are projected to become larger and more frequent. On snow-influenced rivers, declining snowpack will lead to larger floods as storm events bring more rain and less snow. Heavier precipitation events will also contribute to flooding increases. Models project that the biggest daily precipitation events each winter will bring 22% more precipitation, on average, by the end of the century.⁷ Similarly, the 2-year river flood is projected to bring 14-15% more water, on average, by 2100 compared to the end of the last century.⁸



22%

heavier extreme precipitation by 2100

Regional changes

The greatest increases in extreme precipitation are projected for western Washington, particularly the western slopes of the Olympic and Cascade mountains.

Associated risks

Increased flooding for communities and infrastructure, disrupting services and transportation. Damages to ecosystems and fish habitat. Risks to human life.

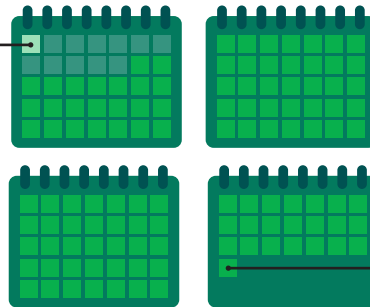


Extreme heat

Statewide change

Warming will bring hotter days. By the end of this century, different regions in Washington are projected to have between 11 and 127 hot days* each year, compared to about 1 day, on average, in the past.⁹

1
hot day in
past years



11-127

hot days each year by 2100
depending on location

Regional changes

Eastern Washington is generally much hotter than western Washington, especially the Columbia Plateau. Looking forward, models project big increases in hot days everywhere. The biggest increases are projected for the northern portions of Puget Sound, most of the Pacific coast, and the northeast corner of Washington.

Associated risks

Increased public health emergencies, increased air pollutants like ozone, risks to human life, and heat stress on plants, livestock, and wildlife.

* A "hot day" is one where the daily high temperature is in the top 1% of past high temperatures for June through August

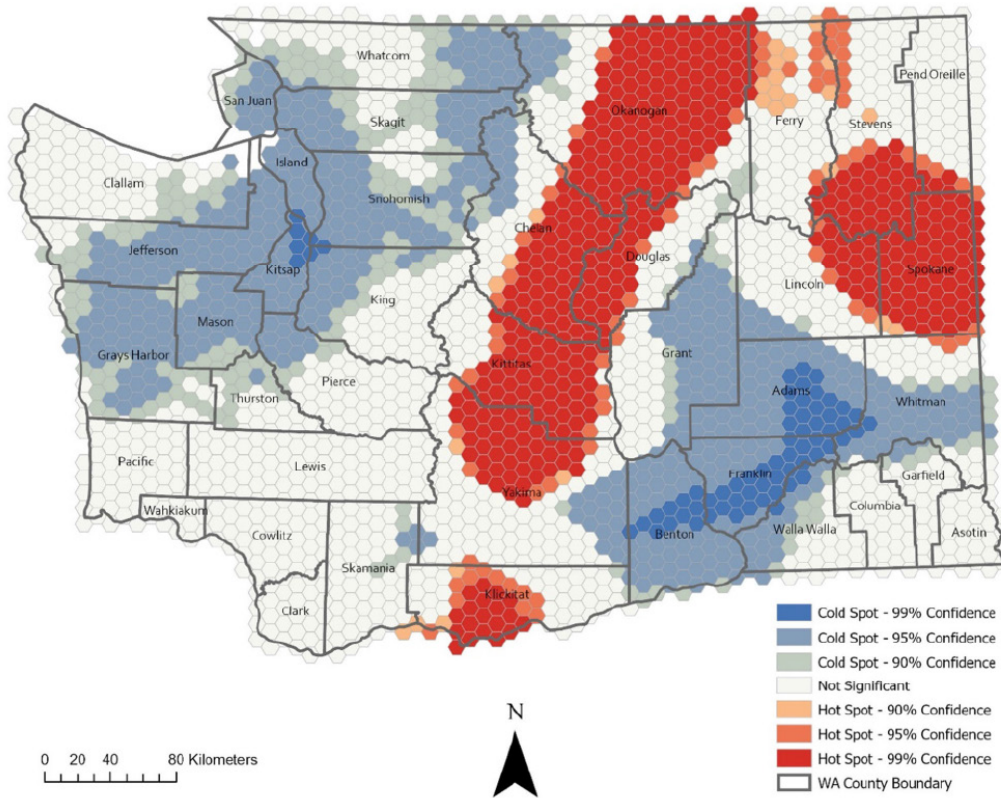


Wildfire and smoke

Statewide change

The likelihood of wildfire conditions is projected to increase for most of the state due to summer drying associated with snowpack loss and projected declines in summer precipitation.

Wildfire smoke was more common over the last decade, compared to the decade before. This increasing wildfire smoke has worsened air quality and led to more instances of unhealthy air for people and communities. There are no projections for future changes in wildfire smoke.



Wildfire hot spots and cold spots based on wildfire activity between 1970 and 2020. Hot spots were determined by counting the number of wildfire incidents within a 29-mile radius of each hexagon cell and comparing that number with the average for the state. Areas with counts we are 99% sure to be significantly higher than the state average are the deepest red color and are most prone to large fires in the future. *Credit: Washington State Enhanced Hazard Mitigation Plan, 2023*

Regional changes

Wildfire conditions are projected to become more likely in the central Cascade Mountains, southwestern Washington, and northeast Washington. The one exception is the Columbia Plateau, where wildfire conditions are projected to become less likely, due to a combination of slight increases in annual precipitation and projected changes in vegetation.

Associated risks

Property, infrastructure, and habitats in fire-prone areas are vulnerable to damage or loss. Wildfire smoke worsens air quality and affects respiratory health. After fires, flooding risks increase and water quality declines.



How we engaged Washington in this strategy

Engagement with individuals, communities, and organizations across the state was an essential part of developing this strategy.

Over the past several months, we have led outreach efforts to Tribes, overburdened communities, vulnerable populations, local governments, nongovernmental organizations, and public and private businesses. The comments and feedback we received guided our work so we could address the highest priority needs around climate impacts.



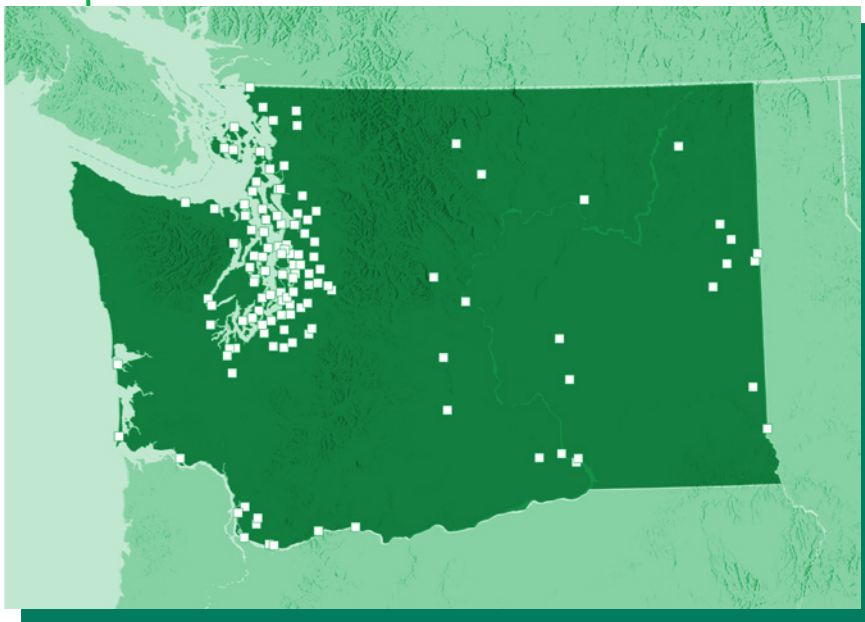
We held listening sessions

Hosted three early engagement listening sessions with over 180 total participants.



We surveyed Washingtonians

Over 700 people from all regions in Washington shared the greatest climate risks and challenges facing their communities.



Map showing the cities and towns from which people responded to our survey. The online survey was open from Nov. 14, 2023, to Jan. 12, 2024.



We engaged with Tribes

Directly engaged with Tribal leaders and staff, and used forums such as the Governor’s Office of Indian Affairs, Affiliated Tribes of Northwest Indians, Pacific Northwest Tribal Climate Roundtable, and the Puget Sound Partnership Tribal Co-Management Council to gather insight.



We reviewed environmental justice documents

We reviewed and summarized 11 reports and publications focused on environmental justice that community-based organizations from across Washington produced.



We hosted an early review of proposed actions for Tribes and overburdened and vulnerable communities

We hosted Tribal-specific listening sessions and partnered with Front and Centered to convene representatives from overburdened communities and vulnerable populations. With these groups, we reviewed and gathered feedback on the proposed actions before we released the public comment draft.



We held a public comment period

Held a 30-day public comment period, collected 38 written comments, and hosted three virtual listening sessions with over 100 participants.

How will we know we are making a difference?

We have created metrics and indicators to understand if and how our work is building climate resilience for Washington. As part of this, we've made outcome indicators to track progress towards achieving our goals for communities, infrastructure, natural and working lands, and governance.

These outcome indicators listed below represent what we hope to see in a future climate resilient Washington as it relates to each of our goals. Over time, as we measure progress implementing our actions, we will use these indicators to report on how our efforts are helping us achieve our goals.

Communities



All communities are less exposed to, more prepared for, and able to recover from climate-related hazards in a way that reduces health disparities and systemic inequities.



Government services, especially public health systems, are prepared for climate impacts and provide continuity of services during extreme weather and emerging events.



Washington's economy is thriving, and industries are adapting to a changing climate in a sustainable way.

Infrastructure



Risk to existing and new infrastructure from climate-related hazards is reduced.



Resilient infrastructure reliably and equitably serves all communities.

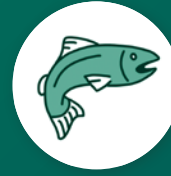


Nature-based solutions are incorporated into infrastructure planning, modifications or removals when appropriate.

Natural and working lands



Sufficient high-quality water exists and is adaptively managed and enhanced.



Restored and resilient species and habitat exist and are connected across the landscape.



Ecosystem processes are restored on natural lands sufficiently to accommodate changes in the climate and provide resilience.



Washington's agricultural heritage and farmlands are preserved, adaptively managed and enhanced.



Economic benefits derived from natural systems and working lands are adaptively managed and enhanced.

Governance



Communities trust that the Washington state government is preparing for and adapting to climate change.



The state's shared vision for climate resilience is supported through alignment of policies, programs, and decision-making among agencies.



A durable governance structure supports an efficient and lasting process to make Washington climate resilient.

Additional process-related indicators have been developed to help us understand how the actions included in this strategy are contributing to these overall goals. We've developed a preliminary list of data sources and ways to measure these indicators which we will continue to refine. For more details on our indicators, see Appendix D and Appendix I.

Additional details about metrics and accountability can be found later in this report on page 82.

What's next?

Ecology and partner agencies will start implementing the actions in this strategy, as funding allows. Most of the new proposed actions require the Legislature to authorize new funding. Agencies' proposed budget requests for Fiscal Years 2025-2027 reflect the initial investments needed to support the climate resilience strategy (see details in Appendix D).

Ongoing outreach and engagement

We will continue communicating and engaging with Tribes, local governments, and other partners across the state to support implementation of the strategy and the actions proposed by agencies. Ongoing involvement and feedback of these partners is critical to ensuring our actions are complementary and aligned with local needs and priorities. Support for these efforts will require ongoing investments from the Legislature and commitment of state agencies.

Measure and report on progress and future strategy updates

Ecology will publish the first progress report by Sept. 30, 2025, and every two years after that. We will update the entire strategy every four years, with the first update coming in 2028.

Agencies will further refine the metrics we use to measure our progress and define additional outcome metrics (see Appendix D for the metrics we will use to track progress of our proposed actions). We will also create a set of initial measurements that will help set a baseline to evaluate trends over time. Agencies will incorporate tools for measuring and sharing information, as needed.

A Whatcom Conservation District farm planner shows photos and maps to farmers on their land during a site visit
Credit: Whatcom Conservation District



Explore additional needs

We will consider and evaluate additional suggestions for future areas of work under the strategy. The topics below were suggestions received during our public comment period. Our agencies will continue to explore ways to address the important issues raised by individuals and organizations.

Increase support for Tribes and local governments

Tribes and local governments are directly affected by climate impacts and rely on state government for support as they prepare for these impacts. The proposed actions in this strategy will help support our partners' efforts. As we implement this strategy, agencies will consider ways to further support Tribes and local governments. This includes speeding up how quickly they can access disaster assistance funding, providing support for implementing new rules and policies, and granting resources to support infrastructure upgrades. We will continue to evaluate and explore additional needs, gaps in funding, and how state agencies can support our partners.

Improve beaver management

Beavers play an important role in ecosystem resilience through water retention and habitat improvement. However, they also present conflicts for people and land use. The Department of Fish and Wildlife recognizes these challenges and will consider ways to restore beavers in areas where the landscape and human use are suitable and manage populations in unsuitable locations. The agency will research and explore opportunities to develop guidelines that will help partners clarify this distinction and reduce conflicts between beavers and people. This will be informed by current efforts, such as the Department's Beaver Habitat Management Guidelines that are currently under development. Once completed, these guidelines will improve our understanding of the role beavers play in habitat restoration efforts.

Find solutions to reduced water availability

Climate change will lead to dramatic changes in water availability across all parts of Washington. The state has taken steps to prepare and plan for these impacts in some watersheds, but planning is geographically inconsistent. This leaves many watersheds vulnerable to climate change impacts. We must rethink our state's approach to water management and water supply development, draw on lessons learned from successful integrated water resources planning, and consider how to apply these principles statewide so we can address the increasing pressure on our state's water resources. The actions in this strategy are important and complementary steps that must accompany future work to meet our water resources needs. We will continue to foster dialogue among our agencies and with the wide range of affected parties on the array of new solutions needed.



Low water levels on the Cle Elum Lake reservoir.
Credit: Department of Ecology



Flooding in Sumas, WA after atmospheric rivers impacted northwestern Washington in December 2021.
Credit: AP Photo/Elaine Thompson

Explore voluntary acquisition programs to support flood management

A key component of reducing flooding risks is moving people and buildings out of harm's way. A useful tool to support flood management efforts is the voluntary buyout of flood-prone properties and structures to eliminate their risk of being flooded. However, voluntarily acquiring property can be time consuming and challenging, especially across different local jurisdictions. A coordinated, statewide approach to supporting voluntary buyouts could potentially reduce burdens on local flood managers and ensure the state makes equitable decisions for affected individuals and communities. To implement this, agencies will research efforts in other states, explore options with interested parties, and consider how and whether we could do this in Washington.

Support economic recovery

Climate-driven hazards also impact businesses and local economies. The actions included in this strategy and existing agency work will help support individuals and communities after climate-driven hazards take place. Some of our actions also focus on helping highly exposed sectors of our economy, like agriculture, adapt to climate change and reduce their risks. Beyond this, agencies will consider opportunities for how they can further support businesses affected by climate change impacts.

In depth: Washington's climate resilience strategies and actions

The following information provides a high-level summary of work proposed by state agencies. For additional details about the specific actions that state agencies propose, please see Appendix B.



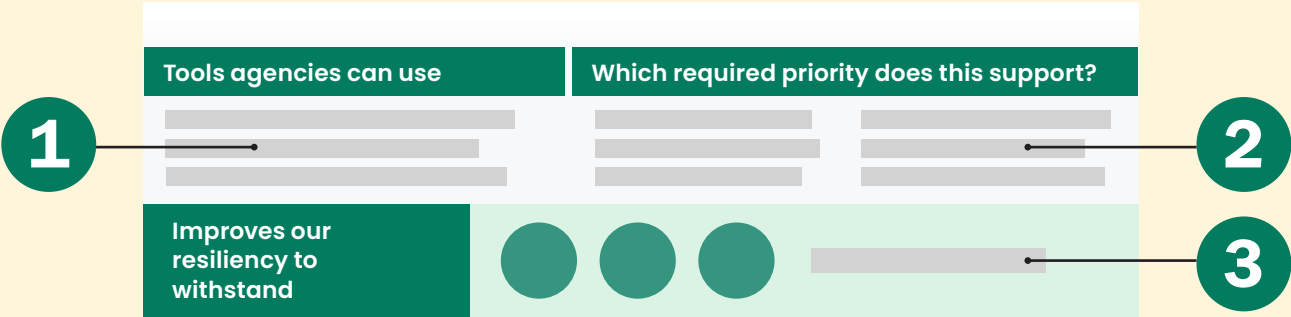
How we broke down each strategy

In the following pages, the actions proposed by our agencies are listed in tables for each strategy. Use this reference as a guide to understand how we've presented information about our actions including the tools agencies can use to implement them, resilience priorities they support, and the climate impacts they address.

We assigned agencies to lead our actions

We've assigned an agency or group of agencies to lead each action in the strategy. Agencies submitted action proposals only when:

- They had existing resources to implement, or
- They were committed to prepare proposals for budget requests to the Governor or develop agency request legislation.



1 Understand the tools agencies can use

This section represents the types of work that state agencies use to carry out actions and programs to promote climate resilience. Here are the tools agencies can use:

Policies, plans, and procedures

We can implement laws or rules, and use agency policies, plans, and processes to foster climate-resilient decisions.

Data and technical information

We can collect and distribute data, technical information, and guidance to inform climate preparedness and decision making.

Community partnerships

We can use resources, support, and guidance to advance community-led resilience policies and planning. This includes efforts to support:

- Community level planning (e.g., local plans, ordinances, or land use regulations).
- Local funding initiatives.
- Private landowners as they adapt to climate change (e.g., agriculture and forestry).

State asset management

We can manage state-owned infrastructure and lands to mitigate climate risks and build resilience.

Resilience initiatives and projects

We can tap into funding, grant programs, and directly implement initiatives, projects, and on-the-ground actions that address specific climate risks.

2

Know our required priorities

The law guiding this work outlines several priorities that informed our strategy development. These include:

- Prioritize human health
- Protect overburdened/vulnerable communities
- Advance natural solutions and restore habitat
- Reduce greenhouse gas emissions
- Reduce stressors that exacerbate climate impacts
- Minimize specific impacts to:
 - Improve drought resilience
 - Reduce flood risk
 - Improve forest health
 - Foster and support how 'built environments' (where and how people live and work) impact communities and natural environments
 - Maintain Puget Sound health (climate impacts to Puget Sound)
 - Manage unique geographic risks

3

Get familiar with the icons

We list one or more of the following icons in each strategy below. They represent the top climate hazards facing Washington and how the strategy will improve our resiliency against each item:



Reduced water availability and drought



Marine and coastal changes



Flooding



Extreme heat



Wildfire and smoke

Strategy 1: Coordinate how to best implement the strategy across state agencies.

The law requires Ecology to recommend a process and structure for coordinating our state's work on climate resilience. Our agencies recommend establishing a group (made up of 10 agencies) that coordinates and implements this strategy and our associated funding requests. This group will be made up of agency staff, dedicated Ecology support staff, and the directors of the 10 agencies.

This governance structure will help the state strategically align, collaborate, remain accountable, and be transparent about its actions and work. This group will also support ongoing consultation and engagement with Tribes, overburdened and vulnerable communities, and other partners.

Current work that supports this strategy

University of Washington Climate Impacts Group: Data and technical guidance

University of Washington Climate Impacts Group provides valuable technical and scientific support that enables state agencies to better understand, prepare for, and respond to climate impacts with science-based decisions. Agencies use this data and information to identify the greatest risks and vulnerabilities. Agencies also use this to guide actions that reduce risks and support climate adaptation for communities, infrastructure, and natural and working lands across Washington.

Department of Ecology: Coordinate federal climate-related funding opportunities with other agencies

Recent federal laws such as the Inflation Reduction Act and Bipartisan Infrastructure Law brought an influx of federal grants and resources to support climate resilience work at the state and local level. In response, the Legislature directed Ecology to lead an interagency effort to identify strategic funding priorities and coordinate the state's response to these federal grant opportunities. The goal is to identify shared priorities for climate resilience funding and maximize the funding we secure to support resilience projects and initiatives in Washington.

Currently, this group is coordinating its work with the Department of Commerce and the Governor's Office to streamline access to federal grant and tax incentive information. This will improve information sharing and accessibility for community-based organizations, local governments, Tribes, and other entities. Funding will also provide technical assistance for grant seekers. This will help us improve how we coordinate our response to federal funding opportunities.

New strategy actions

Establish a group that coordinates and implements the state’s resilience strategy and associated funding requests

This action will establish a group (made up of 10 agencies) that coordinates and implements the state’s resilience strategy and its funding.

Under this group, the Department of Ecology will coordinate meetings and lead engagement with Tribes, local governments, overburdened communities and vulnerable populations, non-governmental organizations, and other partners around strategy implementation.

The group will tailor engagement efforts to the unique needs of different communities. As much as possible, agencies will work together to coordinate engagement and reduce burdens placed on communities. Engagement efforts will use ongoing assemblies and topic-based forums to facilitate dialogue between state agencies and partners. Efforts will also include funding to support participation and reduce barriers for engagement with overburdened communities and vulnerable populations.

The group will engage with Tribes through existing forums and groups such as the Governor’s Office of Indian Affairs State-Tribal Climate Roundtables and tribal organizations. Ecology will welcome individual meetings with Tribes, and we invite government-to-government consultation on the strategy at any time.

Summary

The group will consist of:


- A coordinating council of agency leaders and a representative from the Governor’s office or Office of Financial Management
- A staff-level coordinating committee of agency staff
- A dedicated set of core staff at Ecology to support strategy implementation, tracking, and reporting
- An engagement mechanism with a particular focus on tribes, overburdened communities, and vulnerable populations, including funding to reduce barriers to engagement.

This requires new staffing and funding a dedicated core staff team at Ecology to track, report, and update the strategy.

This action also includes proposed climate resilience capacity at partner agencies, as needed.

Agency actions

Interagency action led by the Department of Ecology

Tools agencies can use	Which required priority does this support?
Policies, plans, or procedures.	All
Improves our resiliency to withstand these hazards	 Multiple hazards

Strategy 2: Plan for, respond to, and recover from climate-driven hazards and emergencies.

Shifting precipitation patterns have resulted in more intense floods. Drier summers have led to larger wildfires, smokier skies, and droughts. And heatwaves have lasted longer and become hotter. A changing climate spurs the spread of existing and new pathogens, pests and diseases. These climate-driven hazards and emergencies have and will continue to threaten the health and wellbeing of our communities, the reliability of our infrastructure, and the viability of natural and working lands across Washington.

Current work that supports this strategy

Department of Ecology: Flood hazard management

Ecology works with communities across the state through the Floodplains by Design program. This program works to provide technical assistance, grants, and coordination to reduce flood risks, protect lives and property, and enhance and restore habitat and ecosystem services that floodplains provide. Below is one example of work funded by Floodplains by Design.

In 2023, the program approved \$10.4 million for the second phase of the Quillayute River Historic Oxbow Project. This will restore natural river processes throughout the Quillayute River watershed on Washington's Olympic Peninsula.

The Historic Oxbow project will reconnect 105 acres of floodplain and restore an oxbow — a U-shaped bend in the river. This will reduce the risk of flooding to the Tribal village of La Push and protect infrastructure valued at over \$31 million. The Floodplains by Design project will reduce erosion, improve floodplain function, and better connect ground and surface waters to reliably improve the availability of water for fish and other wildlife. Reconnecting the historic oxbow will protect the cultural center of the Quileute Tribe and improve recreational access to Olympic National Park, Tribal lands, and the river. The project will also restore nearly five stream miles of habitat for 23 distinct salmon runs, preserving one of the last best fishing rivers outside of Alaska.



The footprint of the historic Quillayute River oxbow, which currently exists as groundwater-fed ponds.
Credit: Nicole Rasmussen



During major storms, Centralia’s China Creek often flooded portions of the city. Now improved to reduce flood damage and enhance fish habitat, the creek is a major feature of the city’s new Agnew Mill Pond Park that includes a 0.9-mile walking trail. *Credit: City of Centralia*

Department of Ecology: Office of Chehalis Basin

Ecology also works to support large-scale flood planning efforts. One example is the Chehalis Basin Strategy. The Chehalis Basin Strategy is a network of partners and projects dedicated to protecting communities from major flood damage, restoring critical habitat for salmon and aquatic life, and ensuring the basin is safe and prosperous for people, fish and wildlife for generations to come.

The Chehalis Basin Strategy has reduced flood risks in Centralia’s China Creek. During small, high intensity storms, China Creek is prone to flood locally. However, China Creek floods businesses, homes and streets in Centralia during catastrophic storms and floods.

Using state funding, Centralia invested in a project to reduce flood-related damages and restore habitat for salmon and other aquatic species in China Creek. Starting in 2019, Centralia created a new floodplain in the creek’s upper reaches to slow down and store stormwater runoff. Now when it rains, China Creek stores stormwater upstream, which reduces floodwaters in downtown Centralia. The city also planted trees along the creek to create a more complex stream channel for salmon and other fish and wildlife species. Then, in 2022, Centralia created a new flood control area, carved flow basins, re-engineered several existing ponds, and installed log jams near downtown. The city also put in several pieces of flood control infrastructure to further limit flood damages.

These efforts reduced flood-related damage, opened fish passage, and created better salmon spawning habitat. In addition, Centralia also opened a 38-acre undeveloped wetland open space area close to its downtown. The property includes a section of China Creek, mature riparian vegetation, and an almost mile-long walking trail.



Aftermath of the Babb Road Fire (Sept. 2020) in Malden, WA. Credit: Emergency Management Division, Public Assistance program

Emergency Management Division: Enhanced hazard mitigation planning and emergency operations

The Emergency Management Division (EMD) coordinates the state's response to emergency hazards including climate-driven ones such as wildfires, floods, and heat waves. [The Washington State Enhanced Hazard Mitigation Plan](#) guides this work. The plan describes the many hazards facing the state, identifies risks and vulnerabilities, and outlines action recommendations to protect communities, infrastructure, and state resources. EMD also leads the state's Comprehensive Emergency Management Plan which guides response operations at the State Emergency Operations Center.

On Sept. 7, 2020, as wildfires burned across the state, the EMD activated the State Emergency Operations Center at Camp Murray (near Tacoma). Smoke diminished air quality everywhere for days. And Interstates 90 and 82 were temporarily shut down due to smoke and dust (kicked up by hurricane-force winds) contributing to multiple car crashes. The road closures stymied evacuation efforts in Okanogan, Spokane, and Whitman Counties, and power outages occurred across the state. In western Washington, wildfires threatened several homes and temporarily closed SR-410 and SR-167 near Sumner, forcing school closures for the following day. By the end of the week, fires destroyed more than 120 homes across the state, and a 1-year-old died. In just a few days' time, roughly 500,000 acres burned, which is more acreage than what usually burns in an entire season.

The Emergency Operations Center was critical at that time and continues to be for other climate-driven emergencies. It provides a central location to collect information and share it with authorities and the public. The state can use this information to issue warnings, share critical instructions to government personnel and the public, and help prioritize state resources for emergency response. EMD also uses these situations to determine critical resilience needs, identify mitigation actions, and establish resilience priorities.

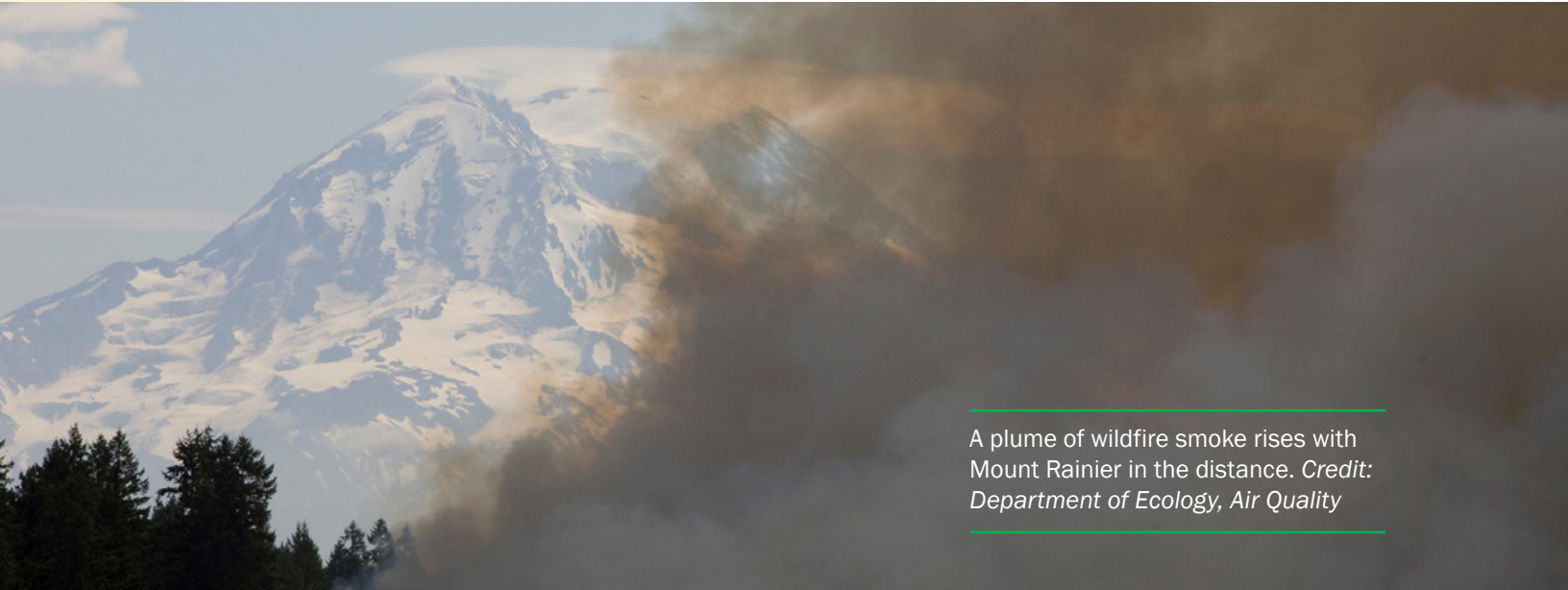
Prepare for wildfire, smoke, and heat

Climate change impacts from wildfire, smoke, and heat are unique because they often occur at the same time and impact significant portions — or sometimes the entirety — of the state. As these events increase in frequency and severity, state agencies have advanced how they can help individuals and communities across Washington.

Programs such as Wildfire Ready Neighbors, led by the **Department of Natural Resources**, provides free assessments of wildfire risk to over 6,300 households, raises awareness about available resources, and connects individuals with contractors who can make improvements to their residential structures. This includes conducting Spanish-language workshops and home assessments in collaboration with local partners such as the Latino Community Fund of Washington and Community for the Advancement of Family Education (CAFÉ).

The **Department of Health** developed tools and resources for communities to reduce wildfire smoke exposure and minimize health risks. This includes recommending actions that reduce exposures ranging from reducing outdoor physical activity to reducing wildfire smoke in indoor environments. The agency designed three toolkits to support [local decision-makers](#), [people caring for children and youth](#), and [the general public](#). The [Wildfire Smoke Guidance for Canceling Outdoor Events or Activities and Closing Schools](#) provides guidance and a process for how to assess indoor air quality. The Department of Health also uses funding from the Climate Commitment Act for Outdoor Worker Safety Grants that provide cooling supplies directly to workers.

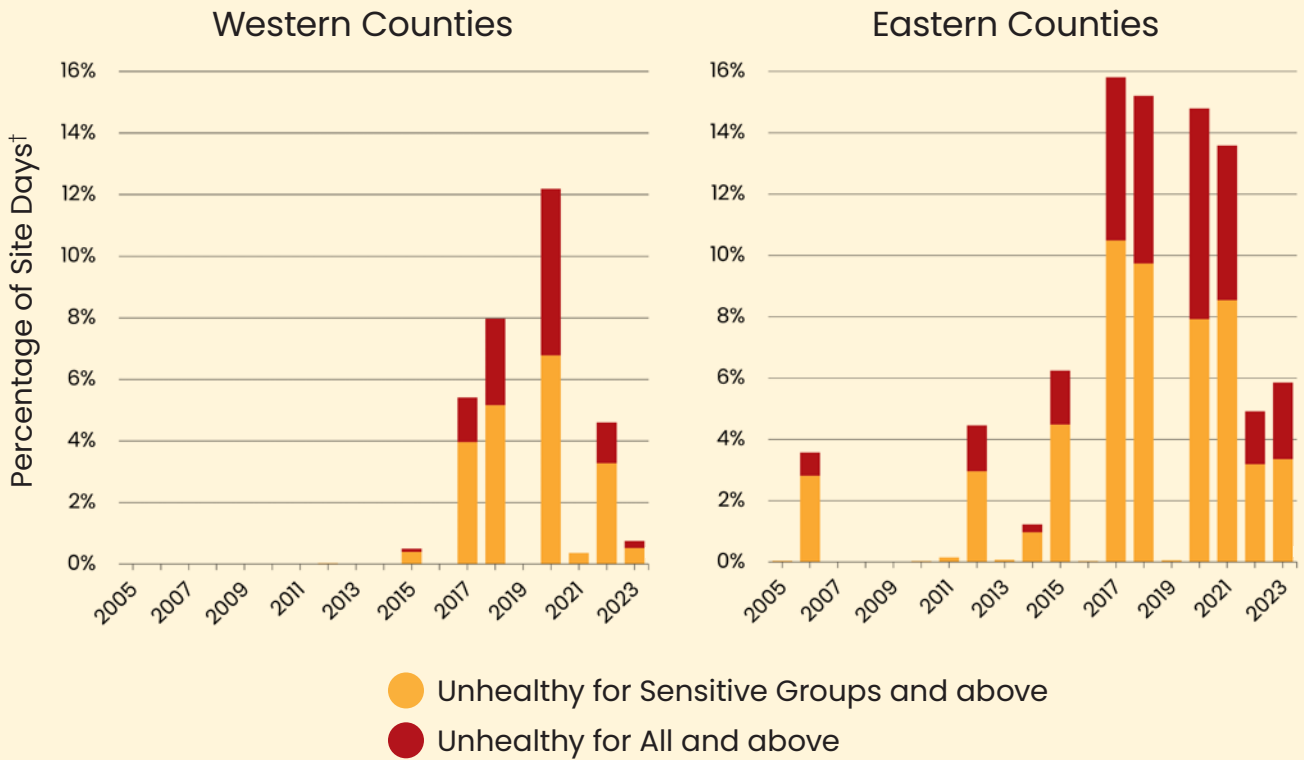
Other agencies, such as **Labor and Industries**, used rules and regulations to protect individuals from extreme heat and wildfire smoke. In 2023, the agency adopted new and stronger heat and wildfire smoke exposure rules for the nearly 400,000 Washingtonians that work outdoors in agriculture, forestry, construction, roofing, landscaping, and other industries. For extreme heat, these rules require cool-down rest periods, shade, and cool water as well as medical care when workers show signs of heat-related illness. For smoke, these rules require air quality monitoring, exposure controls including respirators, emergency response measures for workers experiencing smoke exposure symptoms, and creating smoke response plans and trainings.



A plume of wildfire smoke rises with Mount Rainier in the distance. *Credit: Department of Ecology, Air Quality*

Wildfire smoke has led to more days with bad air quality* across the state.¹⁰

Increased wildfire smoke has degraded air quality across Washington, especially in the last several years. This graph shows the percentage of site days with air quality ratings at ‘Unhealthy for Sensitive Groups and above’ and ‘Unhealthy for All and above’ as a result of wildfire smoke. “Site Days” are the total number of days air quality monitoring sites exceeded specified air quality thresholds. We count days multiple times when multiple sites exceeded specified air quality thresholds – for example, if three air quality monitoring sites all exceed a specified threshold on a single day, we record that as three site days.



* [Air quality thresholds for PM2.5](#) were last updated by the U.S. Environmental Protection Agency in 2024 and used to evaluate all data, regardless of the year it was collected.

† “Site Days” are presented as a percentage to account for increases in air quality monitoring sites over time.

New strategy actions

Help communities prepare for and respond to extreme heat events and wildfire smoke

Summary

Wildfire smoke and extreme heat events can impact nearly all corners of the state with significant risks for many individuals, communities, and ecosystems. These events often happen at the same time. Our priority is preparing for these events and saving lives.

Although heat and wildfire smoke are two distinct hazards, we've grouped them together here because the challenges they present for individuals and communities are similar. And addressing heat and wildfire smoke require similar responses.

Agency actions

The Department of Health will coordinate these actions with multiple agencies (Action 2A and 2B). The focus is saving lives from extreme heat and reducing exposure to wildfire smoke through state grants, technical expertise, and community partnerships.

Tools agencies can use

- Community partnerships
- Resilience initiatives and projects
- Policies, plans, or procedures

Which required priority does this support?

- Human health
- Protect overburdened and vulnerable communities

Improves our resiliency to withstand



Extreme heat, wildfire and smoke

Minimize wildfire risks in high-risk areas

Summary

As temperatures rise and droughts increase due to climate change, wildfire risk will increase across the state. Communities already at risk will be even more vulnerable in coming years. These actions focus state efforts on preparing for and responding to wildfire risks.

Agency actions

The Emergency Management Division will create a state-funded grant program to reduce wildfire risks to the ‘built environment’ (where and how people live and work) for local jurisdictions (Action 2C).

The Department of Transportation will reduce wildfire hazards along roadsides by expanding vegetation management and planting fire-resistant native plants (Action 2D).

The Department of Natural Resources will lead a coordinated effort across agencies to focus on post-fire recovery. This will support communities with recovery coordination and hazard assessments (Action 2E).

Tools agencies can use

- Policies, plans, or procedures
- Resilience initiatives and projects

Which required priority does this support?

- Human health
- Protect overburdened and vulnerable communities

Improves our
resiliency to withstand



Wildfire and smoke

Collaborate across agencies to address the increased risks to people, wildlife, and agriculture from emerging pests, pathogens, and disease

Summary

Warmer temperatures and changing environmental conditions increase the potential for the spread of new and emerging diseases, pests, and pathogens into the state. This risk will require a coordinated effort across agencies to monitor conditions across ecosystems, the agricultural sector, and public health networks.

Agency actions

The Departments of Health, Agriculture, Fish and Wildlife, and Ecology will work to identify the top response needs for this issue (Action 2F).

The Department of Agriculture will provide technical support and outreach to facilitate a new animal composting infrastructure in the state. This gives farmers a viable, alternative way to appropriately dispose of dead animals and organic waste after natural disasters and disease outbreaks (Action 2G).

Tools agencies can use

- Policies, plans, or procedures
- Resilience initiatives and projects

Which required priority does this support?

- Greenhouse gas emissions and co-benefits
- Human health

Improves our
resiliency to withstand



Multiple hazards

Provide communities with technical advice and guidance to support climate-driven hazard and emergency planning

Summary

As climate-driven hazards become more intense, frequent, and severe, state agencies will face increasing demands to support hazard and emergency planning efforts locally. These actions seek to improve the quality and types of data that we can use to support hazard mitigation planning, and better coordinate the state’s response to climate-driven emergency events.

Agency actions

The Emergency Management Division will significantly expand its capacity by hiring additional staff to improve climate-related hazard analysis, hazard mitigation planning, and local jurisdiction support (Action 2H).

The Emergency Management Division will also partner with other agencies to develop a standard method to collaborate with agencies on natural hazard analysis using the Washington Geoportal 2.0. (WaTech developed this GIS program in 2023) (Action 2I).

The Department of Agriculture will expand its current efforts and establish a permanent funding pathway for emergency food distribution. This will help the agency more rapidly distribute food to communities impacted by fire, flood, extreme heat, drought, and other climate and public health emergencies (Action 2J).

Tools agencies can use

- Policies, plans, or procedures
- Data and technical information

Which required priority does this support?

- Protect overburdened and vulnerable communities
- Flood risk mitigation
- Drought resilience
- Puget Sound health

Improves our
resiliency to withstand



Multiple hazards

Examine agency rules, policies, and codes for vulnerabilities in how the state addresses projected climate-driven hazards

Summary

Under this action, agencies will work together to identify vulnerabilities in existing rules and regulations concerning climate impacts. While these important tools can support the resilience of communities, infrastructure, and natural and working lands, they aren't always effective against increasingly severe climate impacts. For example, during the 2021 heat dome event, the state rules and regulations we followed for proper shellfish harvest didn't sufficiently protect human health. The record-shattering high temperatures we saw were unimaginable when rules and regulations were first developed. We need to make sure these tools account for the climate impacts we might expect.

Agency actions

The Emergency Management Division and Department of Ecology will collaborate with multiple agencies to identify policies, regulations, and codes that need to change so we can better address potential failure points and respond to climate impacts (Action 2K).

Tools agencies can use

- Policies, plans, or procedures

Which required priority does this support?

- Drought resilience
- Flood risk mitigation
- Built environment
- Puget Sound health
- Human health

Improves our
resiliency to withstand



Multiple hazards

Strategy 3: Support Tribes, local governments, and communities with technical assistance, guidance, and best practices.

As climate change impacts intensify, Tribes and local governments will face increased urgency and need to prepare for these impacts and improve the resilience of their communities, infrastructure, and natural and working lands.

Climate impacts will present new risks in communities while exacerbating current risks. In coastal communities, for example, infrastructure and property already at risk of coastal flooding and storm surge will experience these impacts at a greater frequency and intensity. Meanwhile, infrastructure and property currently further away from the water will get exposed to these risks as sea levels rise. Challenges like these will increase the need to plan for, respond to, and recover from climate impacts. This is particularly true for communities that experience systemic social and economic inequities.

Through its role as a regulator, funder, and source of technical guidance, state government is well positioned to help communities address these challenges. As regulators, agencies oversee the rules and policies that set the requirements, standards, and procedures for resilience planning at the local level. As funders, agencies provide resources to support planning, design, and implementing projects and initiatives to reduce climate impacts. State agencies also provide valuable technical expertise and guidance, and can partner with communities to navigate these complexities and find solutions.

Current work that supports this strategy

Department of Commerce: Growth Management Act and comprehensive plans

The Growth Management Act (GMA) directs local jurisdictions to develop comprehensive plans that guide land-use decisions. A 2023 law required certain local jurisdictions to incorporate a climate element with resilience and greenhouse gas emissions reduction elements in their plans.

To this end, Commerce developed planning guidance to help local jurisdictions develop a climate element, meet the law's requirements, and select climate goals and policies. Commerce also developed a database of more than 200 model goals and policies that cities and counties can adapt and prioritize to meet their communities' unique needs.

To build engagement with communities, Commerce is pilot-testing a grant for community-based organizations. This grant would help vulnerable populations and overburdened communities participate in the plan updates. Commerce is awarding about \$2 million in public participation grants to community-based organizations between 2023 and 2025, and additional funding is anticipated.

The agency is also developing greenhouse gas emissions inventories for 11 of the state's largest and fastest-growing counties, and distributing about \$30 million in grants between 2023 and 2025 to help local jurisdictions develop and implement their climate elements. This work will ensure that Washington's cities and counties are preparing for how climate change will impact communities, infrastructure, and natural and working lands.



State and federal agency staff discuss a coastal hazards resilience project on the Willapa Bay shoreline. *Credit: Chelsey Martin, Department of Transportation*

Department of Ecology: Shoreline Master programs and sea level rise

Ecology will soon update its Shoreline Master Program Guidelines and require local governments to account for sea level rise in their Shoreline Master Programs. These programs are local land use policies that manage how jurisdictions develop shorelines, protect the environment and maintain public access. This update means local governments will adopt policies that address sea level rise and storm severity on communities, property, shoreline natural resources, and the environment.

Supporting regional efforts to build climate resilience

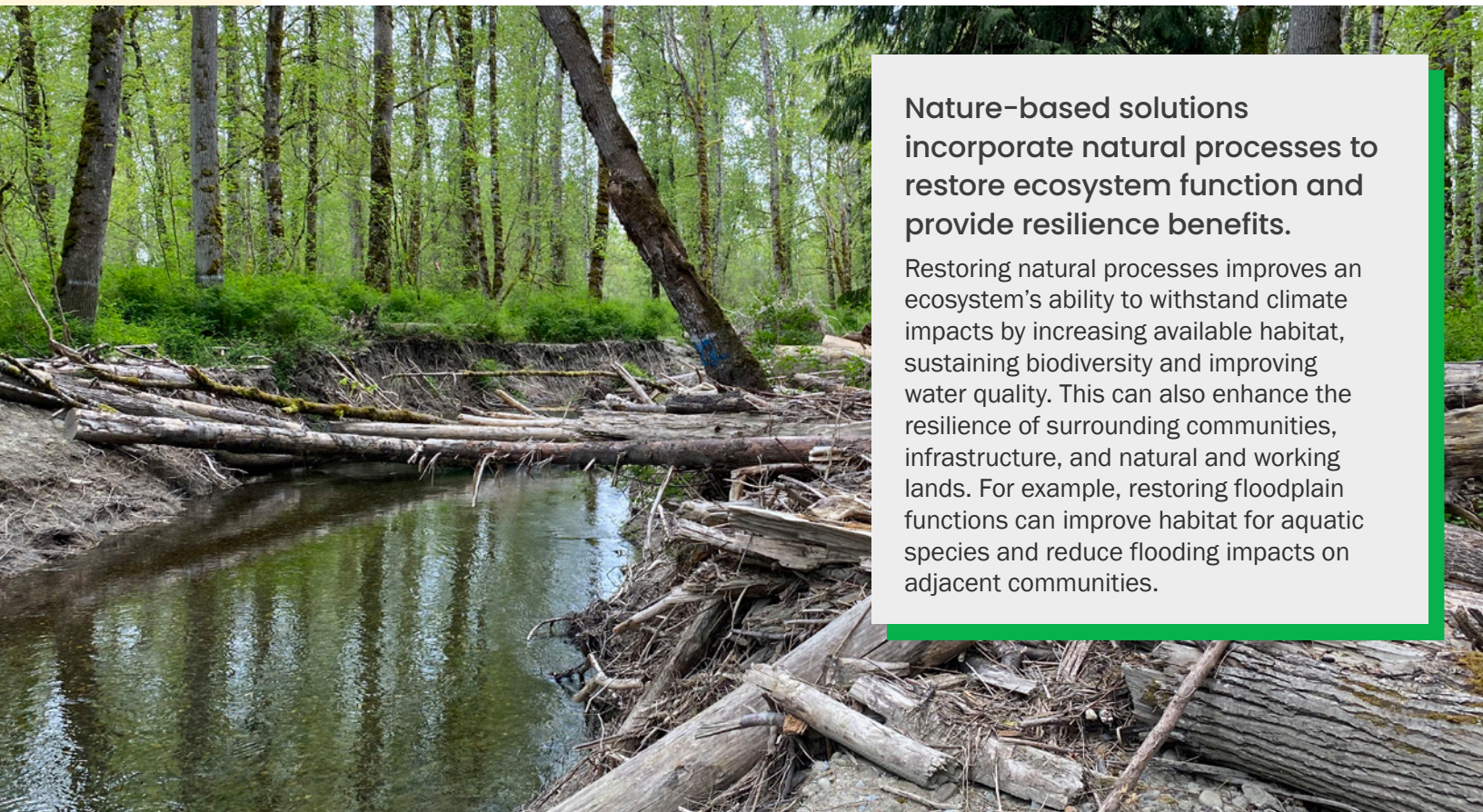
State agencies advanced several efforts to support community partnerships and climate resilience planning across similar scales.

On Washington's Pacific coast, **Ecology** established the Coastal Hazards Organizational Resilience Team (COHORT) to support coastal communities as they address the growing severity of climate-driven hazards such as flooding, erosion, sea level rise, and landslides. Local governments and Tribes identified limited local capacity as a major barrier to build long-term resilience. This is particularly true in small, underserved, and geographically isolated communities. The COHORT is a partnership among Ecology, Washington Sea Grant, the Emergency Management Division, and Washington State University Extension. It will establish a unified, cohesive, and equitable approach to resilience planning and implementation on Washington's coast.

The **Puget Sound Partnership** supported regional climate planning efforts in 2020 through funding to the North Olympic Development Council, a regional nonprofit economic development district for Clallam and Jefferson Counties. The council used the funding to help Tribes, local governments, and communities establish regional goals and climate action plans. These integrate with comprehensive and shoreline master plans and other regional climate adaptation and development efforts. Specific work includes a climate change planning toolkit and local climate adaptation plans for the Jamestown S’Klallam Tribe, Clallam County, and cities of Port Angeles and Port Townsend.

Other efforts, such as the **Puget Sound Partnership’s** Strategic Funding Team connects Tribes and local partners with funding. This helps accelerate Puget Sound ecosystem protection, salmon recovery, and climate resiliency. The team provides technical assistance, supports grant application development, and connects partners across geographies to reduce barriers and position applicants to acquire funding for initiatives. These support the Puget Sound Action Agenda and Salmon Recovery Plan. The team recently launched the Puget Sound Recovery Acceleration Funding Tool, which collects and shares information about national, state, and regional funding opportunities in a central location. The U.S. Environmental Protection Agency (EPA) currently funds this through September 2027. The state will need additional funding to extend these services after that time.

The Fall City Floodplain Restoration project in King County. This project created a side channel where floodwaters can flow. This protects nearby roads and farms while enhancing salmon habitat. *Credit: Puget Sound Partnership*



Nature-based solutions incorporate natural processes to restore ecosystem function and provide resilience benefits.

Restoring natural processes improves an ecosystem’s ability to withstand climate impacts by increasing available habitat, sustaining biodiversity and improving water quality. This can also enhance the resilience of surrounding communities, infrastructure, and natural and working lands. For example, restoring floodplain functions can improve habitat for aquatic species and reduce flooding impacts on adjacent communities.

New strategy actions

Support local planning and accelerate implementation of nature-based solutions for shorelines, floodplains, and coastal areas

Summary

Ecology proposes two actions to increase planning support and technical assistance for Tribes, local governments, and communities. This will help them prepare for and respond to climate impacts in shoreline, floodplain, and coastal areas of Washington. These capacity-building actions will also identify vulnerabilities and implement nature-based solutions.

Agency actions

Ecology will explore ways to improve regulatory processes, expand staff capacity, and identify information needs. This will help partners restore ecosystems that can provide climate resilient benefits (Action 3A).

Ecology will also expand its capacity to better support local governments as they plan and prepare for climate hazards before they occur. We will do this by offering increased technical assistance, supporting project applicants with permits, updating mapping and geospatial tools, and giving guidance (Action 3B).

Tools agencies can use

- Policies, plans, or procedures
- Data and technical information

Which required priority does this support?

- Natural solutions
- Restore habitat
- Reduce stressors that exacerbate climate impacts
- Protect overburdened/vulnerable communities

Improves our resiliency to withstand



Marine and coastal changes, flooding

Build local-level resilience capacity in overburdened and underserved communities

Summary

Overburdened and underserved communities often experience climate impacts more severely and at higher rates than others. Since these communities often don't get access to important social services and other support, they may not have sufficient resources to reduce their exposure and adapt to changing conditions.

Agency actions

The Emergency Management Division will fund a portion of local match requirements for Washington jurisdictions, federally recognized Tribes, and special-purpose districts that meet federal criteria for small, impoverished communities (Action 3C).

The State Conservation Commission will increase investments in the programs and initiatives that conservation districts lead. This will provide communities with information, technical assistance, and financial support while increasing their resilience to climate-driven hazards (Action 3D).

An interagency effort led by Commerce, Ecology, Health, the Puget Sound Partnership, and Emergency Management Division would support communities as they develop Climate Resilience Hubs. Agencies would offer technical guidance, policy recommendations, and funding guidance (Action 3E).

Tools agencies can use

- Community partnerships
- Data and technical information
- Resilience initiatives and projects

Which required priority does this support?

- Protect overburdened/vulnerable communities
- Prioritizes human health
- Address the risks in each geographic region of the state

Improves our resiliency to withstand



Multiple hazards

Strategy 4: Support the vitality and viability of working lands through research, technical assistance, and incentives.


Washington's working lands provide an array of goods, services, and economic opportunities. Working lands include agricultural lands, forests, shellfish farms and aquaculture facilities, fisheries, and other sectors that rely on Washington's natural resources.

Rich soils, diverse climates, and large-scale irrigation infrastructure make Washington one of the most productive forested and agricultural regions in the world. Washington's working farms and forests are global, producing over 300 different commodities and adding over \$10 billion to the state economy. Washington forests account for 25% of U.S. log and lumber exports and 9% of the nation's paper products, with innovative wood product sectors expanding yearly.¹¹ These activities are critical to urban and rural communities, providing food security, nutrition, and thriving livelihoods in Washington and beyond.

Climate change is already impacting working lands in Washington. Altered precipitation and temperature patterns have increased the incidence of extreme weather events such as flood, fire, heat, and drought. These have led to new challenges with invasive pests, diseases, and weeds, worker health and safety, and declining water quality and quantity. The actions below seek to support individuals, communities, and industries that rely on these working lands to better prepare for and adapt to changing climate conditions.

A group of Palouse wheat farmers discuss the benefits of using soil health building practices while standing in a field of cover crops. *Credit: Leslie Michel, Department of Agriculture*





Wheat stubble remains in the field after harvest to promote soil water and nutrient retention and to prevent erosion. *Credit: Leslie Michel, Department of Agriculture*

Current work that supports this strategy

Department of Agriculture: Washington soil health initiative and climate resilience planning

Improving soil health is essential for increasing agricultural climate resilience. As part of the Washington Soil Health Initiative, the Department of Agriculture launched the Soil Health Ambassador program to improve soil health by connecting growers, fostering peer-to-peer learning, and celebrating farmers committed to soil health.

“Growers who are better connected to those using soil health practices are more likely to adopt them.”

Growers are a primary source of information for one another, and knowledge exchange requires long-term relationships built on trust and mutual respect. Peer-to-peer learning is especially important when producers transition to using new soil health practices, such as growing cover crops (plants that protect the soil) or reducing tillage (how often farmers overturn the soil). Successfully implementing these practices often requires region- and crop-specific knowledge, start-up capital, and specialized equipment. Peer-to-peer networks are a proven strategy for overcoming these barriers and building resilience to climate impacts. Growers who are better connected to those using soil health practices are more likely to adopt them.

As part of the program, a [video and article](#) highlights farm leaders and their soil health practices and the participants get a stipend for their continued willingness to serve as a mentor for other interested producers.

Beyond soil health, the Department of Agriculture, in partnership with Washington State University, is developing a Climate Resilience Plan for Washington agriculture to further support growers with climate adaptation practices. This plan will use the latest science on agricultural resilience, engage with stakeholders on their climate-related concerns, identify vulnerabilities in the state’s agricultural sector, and propose action opportunities to help fill gaps and build resilience. The planning process will be completed in early 2025.

State Conservation Commission: Natural resource resilience through voluntary conservation

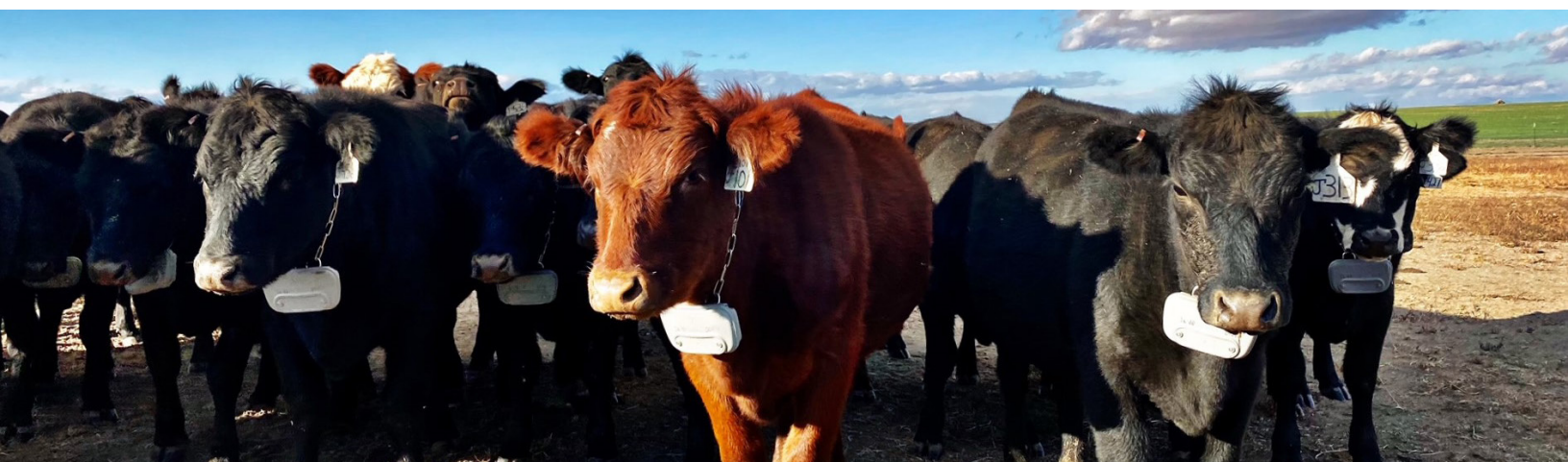
The State Conservation Commission offers a portfolio of voluntary incentive programs that focus on natural resources. These pull from the extensive technical and local expertise of Washington’s 45 conservation districts to provide land stewards with technical and financial assistance.

Wildfires in 2020 burned hundreds of miles of fencing across north central Washington, highly impacting the ranching community and the wildlife habitat that they steward. These fires created insurmountable replacement costs. Foster Creek and Okanogan conservation districts provided farmers with quick and effective technical assistance and incentives to install wildlife compatible fencing. From 2021 to 2023, these conservation districts helped landowners and land managers replace 30 miles of fence, retrofit five miles, and remove five miles.

The funding covered 100% percent of the costs associated with updating and installing wildlife-friendly fencing, helping with wildfire recovery for producers while improving compatibility with local wildlife. Four producers volunteered to install and participate in a trial for virtual fencing to sustainably manage grazing over 40,000 acres of rangeland. This is where livestock wear electric collars so they can move from one area to another with the push of button. This new kind of fencing creates a more regenerative approach to land management. This work was supported by the Washington Shrubsteppe Restoration and Resiliency Initiative in partnership with the Departments of Fish and Wildlife and Natural Resources.



Wildlife-friendly fencing is one of the strategies employed by conservation districts and other partners as part of the Washington Shrubsteppe Restoration and Resiliency Initiative. This fencing has smooth wire on top and bottom allowing for safe passage for local wildlife while keeping grazing herds secured. *Credit: Foster Creek Conservation District*



Virtual fencing, a new technology supported by Washington’s conservation districts, enables farmers to set virtual boundaries using GPS collars and reception towers – allowing them to control livestock without physical fences. This system is especially useful in post-fire environments, when farmers can quickly re-establish boundaries to keep livestock away from recently burned areas. *Credit: Foster Creek Conservation District*

Implementing Washington's Ocean Acidification Action Plan

Oceans absorb carbon dioxide emissions from the atmosphere. This has made them more corrosive. This changing ocean chemistry is called ocean acidification. It makes conditions difficult for some marine animals to form their shells and affects the behavior of other animals, such as salmon.

Ocean acidification has significantly impacted the state's shellfish resources. In the late 2000s, commercial growers experienced massive numbers of baby oysters that died due to ocean acidification. Ocean acidification also impacted recreational shellfish harvests and poses significant threats to the cultural traditions of Washington's coastal Tribes that rely on shellfish. It also poses threats to marine ecosystems more broadly through impacts to small-shelled animals that form the basis of the food chain, threatening other species such as crabs and salmon.¹²

In 2012, Washington led the nation by developing the first comprehensive plan to tackle ocean acidification and formed the Marine Resources Advisory Council to guide the plan.

Washington has invested in the scientific understanding of ocean acidification, taken actions to help our shellfish industry be more resilient, advanced restoration and protection of species and habitats, and reduced pollution sources that cause ocean acidification. Washington's leadership has advanced collaborations within our state, across our region and nation and even internationally through co-founding the [Ocean Acidification Alliance](#). More recently, state agencies, Tribes, federal agencies and others helped form the [Olympic Coast Ocean Acidification Sentinel Site](#). These efforts build support for the actions we need to minimize ocean acidification impacts on coastal communities and our marine ecosystems.

Recreational razor clam dig in Ocean Shores. *Credit: Jimmy Kralj, Department of Ecology*



New strategy actions

Promote agricultural viability

Summary

State agencies can support the agricultural industry and community by giving technical advice and guidance on the best way to manage climate impacts. Agencies such as the Washington State Department of Agriculture and the State Conservation Commission have extensive support networks within these communities and serve as trusted sources of information. Both agencies also work together to support producers and the agricultural community. These actions will expand this work and make Washington agriculture more resilient to climate impacts.

Agency actions

The State Conservation Commission will advance agricultural viability work by increasing resources and staff capacity in its Office of Farmland Preservation, and its Disaster Assistance program (Action 4A).

The Department of Agriculture will expand funding for direct-to-producer incentive payments. These support climate resilience and public benefits such as infrastructure improvements, soil health, technology upgrades, and habitat enhancement (Action 4B).

The State Conservation Commission will incorporate additional climate resilience components into existing voluntary incentive programs and expand resources for these programs. These programs provide climate resilience benefits and public benefits (Action 4B).

Together, the State Conservation Commission and the Department of Agriculture will continue to create comprehensive, science-based resources and opportunities for Washington producers. This will include place- and context-based solutions for growers by connecting producers with the latest science and knowledge for implementing climate resilient on-farm conservation practices (Action 4C).

Tools agencies can use

- Community partnerships
- Resilience initiatives and projects

Which required priority does this support?

- Greenhouse gas emissions and co-benefits
- Advance natural solutions
- Data and technical information
- Drought resilience

Improves our resiliency to withstand



Multiple hazards

Explore novel market opportunities to support climate risk reduction efforts

Summary

Risk reduction activities such as forest thinning minimize wildfire risk and generate products that can be directly used for commercial purposes. However, these same activities also leave behind other products (branches and treetops) without commercial uses. Disposal strategies such as ‘open burning’ degrade air quality and increase carbon emissions while leaving this material in the forest can exacerbate wildfire risks. We need novel solutions to identify market opportunities to best process this material.

Agency actions

The Department of Commerce will expand state resources and seek federal support to advance this research. We hope to find economically viable uses for biomass from forest and rangeland projects (Action 4D).

Tools agencies can use

- Data and technical information
- Resilience initiatives and projects

Which required priority does this support?

- Greenhouse gas emissions and co-benefits
- Advance natural solutions

Improves our resiliency to withstand



Wildfire and smoke

Strategy 5: Reduce existing sources of pollution that exacerbate climate impacts.

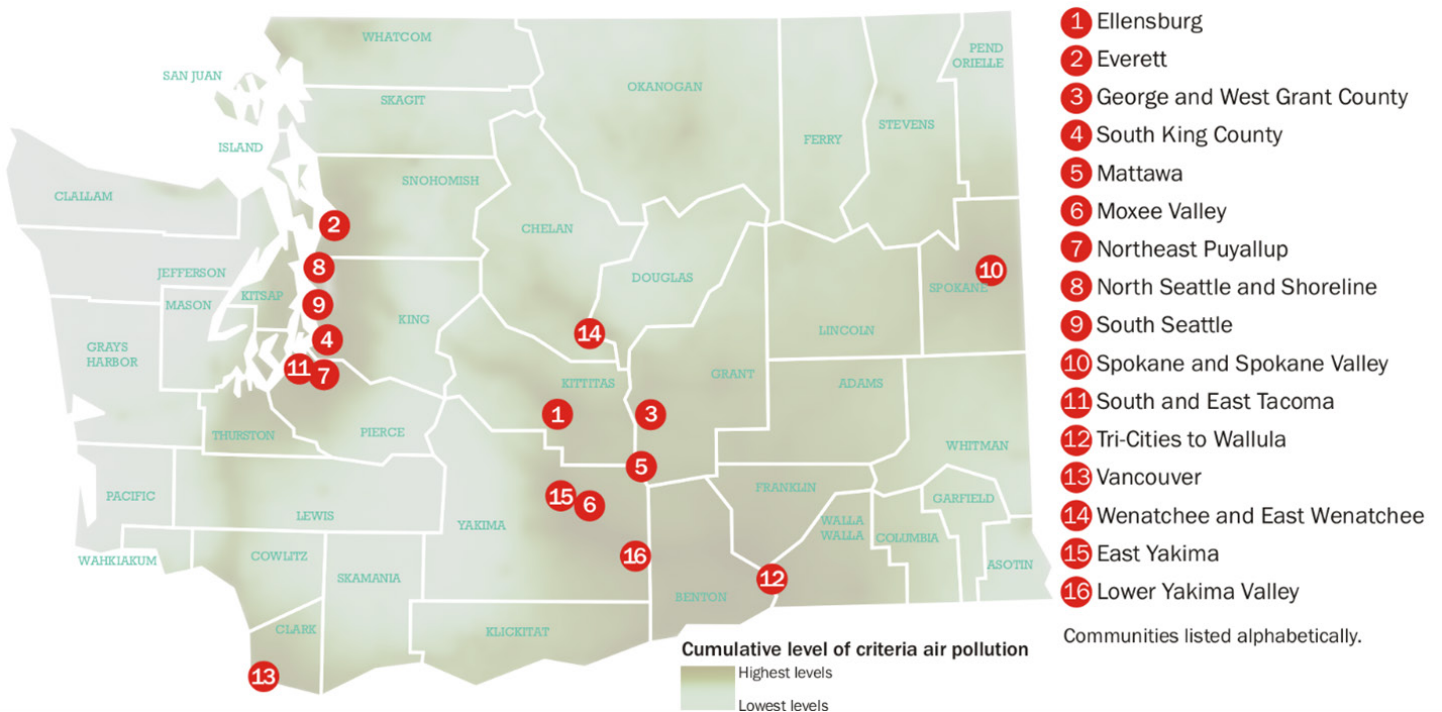
Climate change worsens existing challenges that communities already face, particularly overburdened and vulnerable communities. By reducing pollution sources, we can lower people’s overall exposure and decrease greenhouse gas emissions. Additionally, deploying solutions helps communities transition to cleaner technologies.

Current work that supports this strategy

Department of Ecology: Improving air quality in overburdened and highly impacted communities

Washington’s landmark Climate Commitment Act contains air quality and environmental justice provisions that require Ecology to reduce air pollution in highly impacted, “overburdened” communities. To start, Ecology completed an extensive scientific study to identify where this work should focus. In March 2023, Ecology announced 16 areas across the state that are overburdened by health, social, economic, and environmental inequities *and* highly impacted by criteria air pollution. The 16 areas contain multiple towns, communities, and neighborhoods. They represent more than 1.2 million people, or about 15.5% of the Washington population.

The map below shows the 16 areas. [This website](#) shows exact community boundaries, describes the air pollution that affects each area, and lists the tools we used to identify them.



This list is intended for the purposes outlined in the [environmental justice review](#) section of the Climate Commitment Act.



Ecology outreach specialists engage with community members at a Latino Eco Fair in Yakima, June 2024. *Credit: Department of Ecology*

As part of this work Ecology is expanding the Washington air monitoring network to gather more localized air quality data. We are engaging with communities, Tribes, and the Washington Environmental Justice Council as we add more regulatory monitors and air sensors. To date, we've installed more than 20 additional monitors and sensors. Ecology plans to add at least another 30 over the coming year.

Additionally, Ecology is developing strategies to reduce air pollution in the 16 areas. In August 2024, a new \$10-million grant opportunity became available for these communities, as well as Tribes that choose to participate in this work. Ecology will engage in rulemaking to implement stronger protections for community air quality. Meanwhile, Ecology is tracking air quality, greenhouse gas emissions, and health impacts across the 16 areas and we must report our findings every two years. We published our first report in December 2023.



State Conservation Commission: Mitigating air quality hazards in Okanogan County

Poor air quality is a primary concern among residents of Okanogan County — from wildfire activity during summer months and outdoor burning during other parts of the year. To help mitigate these impacts, the State Conservation Commission (through the Okanogan Conservation District) worked with community members and partners to reduce fuel loads in and around communities, and offered alternatives to outdoor burning.

The Okanogan Conservation District supported 115 individual wildfire risk assessments on properties as well as six community-wide assessments, in addition to community meetings and two short films. To reduce fuel loads, the district held 18 events for community members to process vegetation through wood chippers, issued landfill vouchers for vegetation disposal, and provided five mulchers for residential use.

Okanogan Conservation District partnered with the Washington State Department of Natural Resources on the Fire Adapted Community pilot project and presented wildfire resiliency efforts to communities, including home-risk assessments. *Credit: Okanogan Conservation District*

Okanogan Conservation District collaborated with partners and utilized grant funding to reduce fuel loads and offer alternatives to burning for residents and communities. This effort included issuing landfill vouchers for vegetation disposal as an alternative to burning. *Credit: Okanogan Conservation District*





Wet field conditions in Snohomish County after December 2023 flooding.
Credit: Liz Whitefield, Department of Agriculture

Department of Health: Building climate resiliency for dairy farms and shellfish growers

Protecting the public's health often means looking upstream to prevent risks before they cause illness and disease. To ensure that shellfish are safe to eat, the Department of Health Shellfish Strategic Initiative (using Puget Sound Geographic Program funds from the U.S. Environmental Protection Agency) is working to reduce bacteria, such as fecal coliform, from impacting shellfish growing areas in Puget Sound. One strategy involves a partnership with the Washington State Department of Agriculture Dairy Nutrient Management program, as well as the Whatcom Clean Water program, Clean Samish Initiative and Stillaguamish Pollution Identification and Control program. These grants have supported partners' efforts to keep bacteria from fecal matter out of Puget Sound since 2014, with many successes.

However, climate change driven shifts in precipitation patterns will make this work more challenging. More intense rainfall and flooding could increase transport of soil, manure, fecal coliform bacteria and other pathogens into waterways and Puget Sound. This has consequences for water quality and the safety of shellfish harvests. Improving water quality and shellfish harvests in the future will require livestock producers to plan for changing precipitation patterns and make real-time management decisions that prevent fecal pollution from reaching shellfish growing areas.

To help agricultural producers prepare, the Washington State Department of Agriculture Dairy Nutrient Management program is working with Whatcom, Skagit, and Snohomish Conservation Districts to improve nutrient management planning, develop adaptive management strategies, and educate and build flood preparedness on livestock farms to support clean water. The project equips manure managers and landowners in shellfish priority watersheds with long-term planning solutions, management practices, and resources to improve water quality and maintain the safety of shellfish harvests.



Improvements in water quality upstream lead to a cleaner Puget Sound and safer shellfish harvest. Oysters, like these from Samish Bay, and other shellfish are one of Washington's culturally and economically important foods.
Credit: Clara Hard, Department of Health

Department of Ecology: Addressing water pollution

When pollution — from excess nutrients and activities that raise water temperatures — flows into our waterways it can lead to many impacts that make it harder for fish and other animals to survive. Under the federal Clean Water Act and state laws, Ecology’s water quality program is required to identify and regulate sources of pollution to help keep our water clean. Ecology also funds a variety of clean water projects, including updates to wastewater treatment plants to reduce nutrient pollution and projects in partnership with local organizations to restore riparian habitat. This restoration work prevents pollution from going into the water and provides shade along rivers and streams to keep them cool. Building resiliency into our watersheds and improving our infrastructure is especially important, as climate change is also contributing to impacts on our waters and the ecosystems they support.

“Building resiliency into our watersheds and improving our infrastructure is especially important”

New strategy actions

Reduce smoke pollution through regulations and community outreach

Summary

Climate impacts such as increased wildfire smoke will lead to reduced air quality. This will put communities with already poor air quality at greater risk of health impacts. By reducing existing sources of air pollution within our control, we reduce the overall burdens of climate impacts for individuals and communities.

Agency actions

Ecology will increase funding for its Wood Smoke Reduction Grant program. This will help communities improve local air quality and be better prepared for periods of wildfire smoke (Action 5A).

Tools agencies can use

- Policies, plans, and procedures

Which required priority does this support?

- Greenhouse gas emissions
- Human health
- Protect overburdened/vulnerable communities

Improves our resiliency to withstand



Wildfire and smoke

Reduce water pollution

Summary

Climate change will lead to shifts in precipitation across the state, including more rainfall in western parts of Washington. This will lead to increased runoff and reduced water quality as pollution enters our waters. Efforts to limit water pollution where we can will help make our waters more resilient to climate impacts.

Agency actions

Ecology will advance two actions to support water quality:

- Increase funding for municipalities to reduce nutrient impacts from wastewater treatment facilities in Puget Sound (Action 5B).
- Expand support for funding and incentives to promote healthy riparian buffers on private lands to reduce water quality impacts (Action 5C).

Tools agencies can use

- Policies, plans, and procedures

Which required priority does this support?

- Puget Sound health
- Human health
- Built environment resilience

Improves our resiliency
to withstand



Reduced water availability and drought,
flooding

Strategy 6: Implement innovative water conservation and management initiatives to ensure reliable and sufficient water for people, farms, ecosystems, wildlife, and fish.

Climate change will continue to drive significant changes to water availability in Washington. Historically, Washington's mountains received substantial snowfall, which provided a steady and reliable supply of water as it melted over the summer months. However, climate projections show we will receive less snowfall and that more precipitation will fall as rain in the future. This rainfall will quickly move through the landscape, reducing water availability in the drier summer months. This means more frequent and intense droughts across the state with impacts to communities, ecosystems and wildlife, and agriculture.

Now and in the coming years, state agencies will face increasing demands to support people, farms, and fish. We will need to prepare for changes in water availability and implement innovative projects, initiatives, and policies to address these challenges.

Current work that supports this strategy

Department of Ecology: Preparing for drought emergencies and long-term water availability

Ecology monitors statewide water supply conditions, incentivizes drought planning and preparedness, and declares drought emergencies when water supplies meet certain thresholds that create undue hardships for water users or the environment. The agency declared drought emergencies in 2015, 2019, 2021, 2022, 2023, and most recently in spring 2024, in all or parts of the state. Emergency drought declarations promote community awareness of water scarcity, prompt responsive actions, and expedite agency-led efforts. This includes issuing permits and dispersing grant funding to mitigate hardships to water users and the environment.

Beyond emergency events, Ecology also supports long-term, locally supported water management efforts such as the Yakima Basin Integrated Plan. The plan is a 30-plus-year, multi-agency strategy to secure water for communities, farms, and fish, and is a national leader in collaborative, innovative water supply solutions. Without its investments, recent droughts would have created even greater hardships for Washington communities.

The Yakama Nation, Bureau of Reclamation, Department of Fish and Wildlife, and Ecology recently celebrated completing the plan's first major undertaking, the \$220 million Cle Elum juvenile fish passage project. The project features a first-in-the-nation helix structure that allows fish through the Cle Elum Dam and downstream into the Cle Elum River.

Over time, it will increase sockeye return fivefold, from 20,000 to 100,000 into the basin each year — a major step to restore salmon runs. Expanding access to more spawning habitat and cooler waters upstream through projects like this will help salmon weather the increasing challenges brought by climate change.

None of this was possible without the leadership of the Yakama Nation, which spent years reintroducing sockeye. This milestone is the culmination of the Nation’s efforts and responsible stewardship of natural resources. Shortly after the juvenile passage was completed, partners broke ground on an upstream adult passage structure at the same location, which will begin operations in 2026 or 2027.

This historic progress closes out the first phase of the plan and sets the stage for its next 10 years of challenges and opportunities. As a consistent partner in the Yakima Basin, Ecology is committed to protect water for current and future generations of fish, farms, and communities.

“Expanding access to more spawning habitat and cooler waters upstream through projects like this will help salmon weather the increasing challenges brought by climate change.”



Yakima Basin Integrated Plan partners break ground on the upstream adult fish collection facility at Cle Elum Dam July 24, 2024. Pictured: Bureau of Reclamation PNW Regional Director Jennifer Carrington, Ecology Director Laura Watson, Governor Jay Inslee, Interior Secretary Deb Haaland, Yakama Nation Chairman Gerald Lewis, Roza Irrigation District Board Member Ric Valicoff, Leon Louis (Lower Similkameen Indian Band, Syilx Nation), Department of Agriculture Director Derek Sandison, Department of Fish and Wildlife Commissioner Steve Parker. *Credit: Yakima Basin Integrated Plan*



Clallam Conservation District's open ditch-to-pipe conversion projects save water for endangered salmon in the Dungeness River and enhance the viability of agriculture on the Sequim Prairie for future generations.
Credit: Joe Holtrop, Clallam Conservation District

State Conservation Commission: Irrigation Efficiencies Grant program

Working with conservation districts, the State Conservation Commission's Irrigation Efficiencies Grants program provides funding and other incentives to irrigators and water purveyors. This funding goes to projects and initiatives that conserve water and improve overall irrigation efficiency.

In collaboration with the White Salmon Irrigation District and other partners, the State Conservation Commission supported the Underwood Conservation District to complete the White Salmon Irrigation Fish Passage and Pipeline Project in fall 2019. This project improves stream habitat and corrects the fish passage barrier that the diversion dam poses for the native wild salmon and steelhead that use Buck Creek. At the same time, it pipes nearly two miles of aging irrigation delivery infrastructure.

The previous diversion dam configuration posed a barrier to migrating fish, cutting off access to nearly 1.2 miles of quality spawning and rearing habitat upstream. This design has a rotating drum to sweep fish into cascading bypass pools, returning them safely to the stream. A paddle wheel system turns the drum without the need for electricity. Several settling pools before the screen allow leaves and other debris to settle out before reaching the screen.

This project converted 8,000 feet of earthen ditch and leaking pipe to a new on-demand pipeline providing efficient delivery of water to local irrigators. This saves more than 2 cubic feet per second of water and up to 750-acre feet of water every year for instream fish habitat in the lower two miles of Buck Creek. In the face of increasing water supply challenges from climate change, projects like this increase the efficiency and reliability of the water we need for irrigation. It also makes more water available in the stream to protect fish and improves habitat access for fish.

New strategy actions

Prepare for water availability changes and implement projects in multi-benefit, large-scale water plans

Summary

Projects that coordinate efforts across tribes, state agencies, local governments, and other stakeholders are especially useful. They help us develop multi-benefit outcomes for all water users, ecosystems, wildlife, and fish.

Agency actions

Ecology will advance two efforts:

- Establish a permanent funding path for its newly created drought planning and preparedness grant program (Action 6A).
- Implement prioritized long-term and short-term recommendations from the Walla Walla 2050 Strategic Plan. This will improve water supply reliability and streamflows (Action 6B).

The Department of Fish and Wildlife will increase staff capacity in its Energy and Major Projects Division to ensure on-going, year-round drought coordination capacity (Action 6C).

Tools agencies can use

- Resilience initiatives and projects
- Policies, plans, and procedures

Which required priority does this support?

- Drought resilience

Improves our resiliency to withstand



Reduced water availability and drought

Improve the resilience and efficiency of water use and infrastructure

Summary

Water conservation and improved efficiency are useful tools to protect water resources under reduced water availability. The actions below outline steps agencies can take to improve infrastructure, provide incentives, and bring partners together to help advance conservation and efficiency initiatives.

Public water systems face increased challenges ensuring safe and reliable drinking water because of climate change. Drought, fire, power outages, flooding, landslides, pathogens, and other hazards can temporarily or permanently disrupt drinking water service by damaging infrastructure and affecting drinking water sources.

Agency actions

The Department of Ecology will amend the reclaimed water rule. This will define standards for compensation of impairment to state administered instream flows. This action could provide a way to permit new reclaimed water facilities that discharge to fresh water (Action 6D).

The Department of Health will update drinking water system planning regulations and create a new guidebook. This guide will include climate resilience planning, suggestions, and an assessment of climate hazards and emergency response planning efforts for drinking water systems (Action 6E).

The Departments of Agriculture, Ecology, and the State Conservation Commission will pursue various actions to improve irrigation efficiencies (Action 6F):

- The State Conservation Commission will expand the capacity and reach of the Irrigation Efficiencies Grant program and other voluntary incentive conservation programs.
- The Department of Agriculture will make irrigation efficiency technology an eligible project type under its direct-to-producer incentive program.
- Ecology will seek incentives for producers to convert gravity irrigation systems to more efficient pump-based systems.
- Ecology will expand its capacity to actively manage and monitor water use to promote compliance and a broader understanding of resource use.

Tools agencies can use

- Resilience initiatives and projects
- Policies, plans, and procedures

Which required priority does this support?

- Drought resilience
- Built environment
- Human health

Improves our resiliency
to withstand



Reduced water availability and drought

Improve water management by collecting, using, and standardizing shared water data across agencies

Summary

We need reliable and accurate data to support water management activities. Multiple agencies rely on an array of water data to guide decision making and regulations. These actions seek to coordinate efforts so we better understand available water data resources and identify ways to improve collaboration, data sharing, and consistency across state agencies.

Agency actions

Ecology will fund new data collection and analyze the water supply changes projected because of climate change, focusing on Puget Sound and Western Washington watersheds (Action 6G).

Ecology and Fish and Wildlife will deepen the state’s understanding of groundwater and surface water through research studies, which includes looking at the effectiveness of Managed Aquifer Recharge (MAR) projects (Action 6G).

An interagency action that Ecology leads will convene a multi-agency technical advisory team to develop a long-term, statewide strategy for water resource data (Action 6H).

Tools agencies can use

- Data and technical information
- Policies, plans, and procedures

Which required priority does this support?

- Drought resilience
- Puget Sound health

Improves our resiliency to withstand



Reduced water availability and drought

Strategy 7: Plan and invest in infrastructure and state assets to minimize vulnerability to climate impacts, maintain levels of service, improve performance and condition, increase equity, and promote nature-based solutions.

The energy grid, transportation systems, communication networks, and public utilities provide essential services for communities across Washington. As climate change impacts accelerate, the services that the state's existing infrastructure provides are at risk in the short and long term. State agencies must also consider how new infrastructure can account for projected climate impacts while balancing the needs of communities and natural systems.

Climate change will require new and alternative ways to manage public infrastructure and its services. Approaches that have worked in the past may be insufficient to meet future needs and current infrastructure may hinder opportunities to improve equity for overburdened communities and to restore habitat and natural processes.

These challenges require a coordinated state government response to ensure the reliable distribution of services to communities that face increasingly severe climate impacts. To build resilience more holistically, we must equitably design infrastructure to withstand future conditions. Responses may also include retrofits or removals of infrastructure depending upon its location and exposure to climate impacts.

Current work that supports this strategy

Departments of Ecology, Fish and Wildlife, and Transportation: Improving resilience for Washington's coastal communities

Washington's coastal communities face many climate-driven challenges including sea level rise, increased erosion, and more intense storms.

In 2024, Ecology was awarded \$73.5 million dollars to advance a portfolio of climate resilience projects through the Climate Resilience Regional Challenge supported by the National Oceanic and Atmospheric Administration. Funded work will support a variety of projects along the coast and improve the capacity of coastal tribes and communities to adapt to meet current and future climate threats and challenges. Shovel-ready projects will progress in three regions; North Puget Sound (\$21.7 million), North Olympic Peninsula (\$24 million) and along the Pacific coast (\$15 million).



Ecology team with Coastal Zone Management Program partners and local project leads at a restoration project site in North Cove, WA. This nature based resilience and restoration project is funded through the Coastal Climate Resilience Partnership. *Credit: Henry Bell, Department of Ecology*

The award will also fund a grant program for coastal Tribes (\$3.9 million), a fellowship program (\$3.6) and development of career pathways (\$1.26 million), all with a coastal and climate resilience focus. Together, this work will build economic, environmental, and community resilience to coastal and climate hazards while centering Tribes and communities that have been underserved and underrepresented.

Ecology was also awarded \$850,000 from the National Fish and Wildlife Foundation to build resilience for communities, habitat, and infrastructure on Washington's coast. Funded work will be led by an interagency partnership that includes the Departments of Ecology, Fish and Wildlife, and Transportation, as well as Washington Sea Grant. The Department of Transportation will build upon its 2011 Climate Impacts Vulnerability Assessment using new data and tools. This includes local sea level rise projections. These projections will help us develop a resilience framework and prioritization tool that integrates multi-benefit outcomes for infrastructure, the environment, and community well-being.

Department of Health: Preparing public water systems for climate change

Public water systems face increased challenges ensuring safe and reliable drinking water. Drought, fire, power outages, flooding, landslides, algae blooms, and other climate-sensitive hazards can temporarily or permanently disrupt drinking water service by damaging infrastructure and affecting drinking water sources.

The Department of Health Office of Drinking Water provides water system engineering guidance to minimize hazards. This includes integrating climate constraints, contingency planning, and funding to support infrastructure improvements to drinking water systems. Other funding sources provide technical assistance to smaller public water systems in underserved communities. This helps support capital investments to improve their system and infrastructure resilience. The Department of Health will soon publish a collection of success stories to promote other water systems adopting resilience strategies like these.

Department of Transportation: Fish passage structures and resilience co-benefits

Since 1991, the Department of Transportation (WSDOT) improved fish passage and expanded habitat access statewide by removing barriers such as culverts. Since 2013, much of this work focused on restoring fish passage in the western part of the state because of a federal court injunction. As of June 2024, the state has corrected 146 injunction barriers on state highways, improving access to over 570 miles of habitat. WSDOT often partners and coordinates with local governments, utilities, Tribes, private landowners, watershed enhancement groups and other entities in this work (such as the Brian Abbott Fish Barrier Removal Board and Salmon Recovery Funding Board). WSDOT has made progress but it needs significant investments to comply with the injunction, to correct high priority fish passage barriers statewide, and to replace deficient or structurally failing culverts.

While the purpose of these projects is to remove barriers and expand fish habitat access, they provide numerous resilience benefits for other ecosystem processes and surrounding communities. Properly designed stream crossings reduce flooding risks and ensure people can pass roads safely during severe storms and flood events.



Before and after images of a fish passage project on Chico Creek at State Route 3 in Kitsap County. Projects like this one replace deficient culverts and restore access to valuable habitat for salmon, while improving climate resilience. *Credit: Department of Transportation*

Fish passage design carefully considers today's climate as well as future climate changes. These projects are built to handle increased stream flow and coastal flooding that come with increased heavy winter rains due to climate change. The Department of Transportation uses climate science and tools available through University of Washington's Climate Impacts Group and the Department of Fish and Wildlife to evaluate how climate change influences water crossing designs.

In 2019, the Department of Transportation added climate resilience guidance to their Hydraulic Manual. The Department of Transportation will continue to use the best available science to update technical guidance that designs new highway water crossing structures to be resilient to future climate conditions. This applies to expected sea level rise and increases in rainfall and stream flows.

State Parks: Climate adaptation risk assessment toolkit

The Washington State Parks and Recreation Commission oversees a wide array of assets and infrastructure in more than 125 parks that comprise the state park system. Distributed across a wide geographic range, these get exposed to a broad range of climate risks. Climate change presents significant impacts on recreational opportunities for individuals and communities. State Parks is developing a climate adaptation risk and economic assessment toolkit to help the agency make decisions related to adaptation planning. This toolkit will consider risk exposure, resource significance, and other socio-economic factors to help support prioritization efforts and improve the overall resilience of the system's infrastructure and assets to climate impacts.

Department of Transportation: Updating stormwater systems

Existing transportation infrastructure relies on stormwater drainage systems that were designed to move water quickly off roadways. As we better understand the challenges presented by stormwater and the pollution and chemicals it contains, we must prioritize efforts to reduce stormwater flows. This is especially important since climate change will lead to more frequent and intense rainfall which will contribute to increased stormwater.

The Department of Transportation is investing in stormwater treatment and flow control facilities to retrofit existing transportation infrastructure and reduce the impacts of stormwater on surrounding water quality. The Department has developed a prioritization approach to help guide efforts across Washington. This work takes into account environmental justice considerations for surrounding communities and tribal treaty rights. The Department uses infrastructure like infiltration ponds, dispersions, biofiltration, and other techniques to slow the flow of stormwater and reduce impacts from pollution.

Bioretention gardens at a stormwater project site in Point Defiance. *Credit: Department of Ecology*



New strategy actions

Improve the resilience of state assets

Summary

State agencies maintain and operate many assets that provide critical services such as buildings, state-owned vehicles and vessels, transportation infrastructure, and hatcheries as well as flood control and pollution monitoring infrastructure. Each of these are vulnerable to climate impacts.

Agency actions

Agencies will update their asset management plans and assess their physical asset inventories. This will address expected future climate impacts on a wide range of state-owned facilities and other assets. As one example, the Department of Transportation will develop risk-based management plans to address climate risks to roads and other transportation infrastructure (Action 7A).

Additionally, the Department of Corrections will mitigate heat impacts through infrastructure upgrades in select facilities and will conduct a systemwide resilience planning effort for Corrections' facilities (Action 7A).

Tools agencies can use

- Management of state assets

Which required priority does this support?

- Protect overburdened and vulnerable communities
- Drought resilience
- Flood risk mitigation
- Built environment resilience

Improves our resiliency to withstand



Multiple hazards

Maintain energy security and reliability under changing climate conditions

Summary

Energy security and distributing energy services reliably is always a priority, but especially so before, during, and after climate-driven hazards and emergency events.

Agency actions

The Department of Commerce will develop a framework for energy climate resilience and infrastructure security. It will identify vulnerabilities in the state's energy system and potential disruptions, including those from climate-driven hazards (Action 7B).

Tools agencies can use

- Management of state assets
- Policies, plans, and procedures

Which required priority does this support?

- Built environment resilience
- Protect overburdened and vulnerable communities

Improves our resiliency to withstand



Multiple hazards

Use climate projections to inform infrastructure funding and management

Summary

Agencies plan for expected conditions under climate change to ensure that state funded infrastructure and the services it provides can meet the needs of people and communities.

Agency actions

Ecology will update stormwater models to incorporate projected precipitation patterns and account for climate impacts (Action 7C).

The Departments of Commerce, Ecology, Transportation, and Health will work together to develop guidance and resources that incorporate climate considerations in how the state funds critical infrastructure (in state capital and transportation projects) (Action 7D).

Tools agencies can use

- Data and technical information
- Policies, plans, and procedures
- Resilience initiatives and projects

Which required priority does this support?

- Human health
- Puget Sound health
- Management of state assets
- Built environment resilience
- Advance natural solutions

Improves our resiliency to withstand



Multiple hazards

Strengthen the resilience of transportation networks

Summary

Transportation networks and systems provide essential services for all people and communities in Washington. Given their importance, climate-driven disruptions to these systems can significantly impact communities across the state.

Agency actions

The Department of Transportation will advance two efforts:

- Through the Cascadia Program, create a multimodal master plan for mobility in the Interstate 5 corridor that specifically addresses climate considerations. This includes emergency routes and threats from flooding and landslides (Action 7E).
- Develop a Transportation Resilience Improvement Plan the agency can submit to the Federal Highway Administration (Action 7F).

Tools agencies can use

- Community connections
- Policies, plans, and procedures
- Resilience initiatives and projects

Which required priority does this support?

- Greenhouse gas emissions
- Advance natural solutions
- Protect overburdened and vulnerable communities
- Management of state assets
- Built environment resilience

Improves our resiliency to withstand



Multiple hazards

Strategy 8: Improve land management and restoration practices to help ecosystems, habitats, and species adapt to changing conditions.

The effects of climate change will dramatically impact ecosystems, habitats, and fish and wildlife populations. Sea level rise will constrain nearshore habitat, changes in precipitation will lead to decreased streamflow, and increasing heat waves and wildfire events will threaten forest health. These impacts will also have wide-reaching effects for individuals and communities that rely on ecosystems and wildlife for cultural practices, subsistence, and recreational opportunities.

Current work that supports this strategy

Department of Fish and Wildlife: Monitoring stream temperatures for salmon resilience

The Washington Department of Fish and Wildlife collaborates with coastal tribes and salmon recovery practitioners, as well as other local, state, and federal organizations on an extensive study of stream temperatures in watersheds of Washington's Pacific coast.

The purpose is to develop maps of river temperatures known as "thermalscapes." This will help us understand warming patterns across multiple watersheds and important environmental factors that influence these patterns. This project also leverages climate change models to predict stream temperatures later this century (2080s) and helps researchers strategize about how to conserve, protect, and restore important cold water fish habitat.

The Washington Coast Thermalscape Model includes a network of average August stream temperatures. This was created using millions of observations from 564 monitoring locations across Washington's Pacific coast. August is typically when stream temperatures are at their warmest and most stressful for fish. The agency's initial observations in water temperatures across coastal rivers during August saw a slight increase since the study began in 2014. We expect water temperatures to gradually increase even more as the century goes on. These temperature increases are not uniform; some areas will warm faster than others based on a variety of environmental factors.

This work will help state agencies and partners prioritize habitat protection in streams that will remain cool into the future, and restoration efforts for streams that we expect to warm more significantly than others. This tool already supported climate resilience efforts in the Coast Salmon Partnership and Chehalis Basin Strategy.¹³



Coho swimming upstream to spawn.
Credit: Bureau of Land Management



The first step in salmon recovery is at the local level through the committed work of citizens, Tribes, governments, and interested groups. *Credit: Puget Sound Partnership*

Puget Sound Partnership: Action Agenda

The Puget Sound Partnership leads and coordinates efforts to restore and protect Puget Sound by advancing ecosystem recovery efforts that balance the needs of people, wildlife, and the environment. This work is guided by the Action Agenda, which outlines shared goals and priorities for Puget Sound recovery. The Action Agenda outlines actions we need to achieve recovery goals, guide funding decisions, and measure implementation progress.

The 2022–2026 Action Agenda includes three specific strategies related to climate change mitigation and adaptation. Each strategy also contains implementation considerations for how a changing climate will impact or inform various actions.

The Partnership leads three major science and monitoring efforts in the region:

- The Partnership’s Science Work Plan guides over \$4 million dollars in research investments that fill decision-critical gaps in knowledge. This includes how climate change will affect multiple elements of the social-ecological landscape.
- The Partnership’s Alternative Future Scenarios initiative assesses the impacts of climate change and other factors like population growth to the Puget Sound ecosystem. Scenarios explore how planning efforts might vary across a range of possible future conditions. Scenarios strengthen recovery strategies by planning for uncertainty and communicating implications.
- The Puget Sound Ecosystem Monitoring program is a collaborative network of subject matter experts from many monitoring organizations and different parts of the region. Together, they generate, organize, synthesize, and communicate scientific information across political and organizational boundaries. This tracks ecosystem conditions that directly address management and science questions critical to Puget Sound recovery.

Department of Natural Resources: Expanding tree cover in Washington’s urban communities

Trees provide many climate resilience benefits to people, communities, and public health. During heat waves, communities with adequate tree canopy cover are as much as 14 degrees cooler compared to areas with fewer trees. However, nearly 80% of Washington’s urban neighborhoods — home to over 5 million people — lack sufficient tree cover. And lower-income communities and communities of color often live in neighborhoods with more concrete and asphalt, and too few trees.

Through its Urban and Community Forestry Grant program, the Department is providing technical, educational, and financial support to plant and sustain trees and urban forests in communities across the state. In 2024, the Department awarded over \$8 million — 14 times more than the previous single year record — to 40 communities. Partners will use these resources to enhance the health of existing trees and plant new trees.¹⁴

Of these grants, more than \$1.3 million was awarded to improve tree equity in Tacoma where the average tree canopy coverage is about 20%, short of the 30% goal set in the city’s comprehensive plan. This funding will support a collaborative effort to plant street trees along walking routes near schools and help Metro Parks Tacoma draft an urban forest management plan.

Funding recipients got to join the Washington State Tree Equity Collaborative, which expands and fortifies neighborhood tree canopy cover by engaging cities, community organizations and stakeholders across the state.

The WA Tree Equity Collaborative hosted their first learning lab on May 7th, 2024 at the City of Tacoma’s urban forestry nursery. The learning lab is focused on achieving tree equity through partnerships and collaboration
Credit: Department of Natural Resources

“Nearly 80% of Washington’s urban neighborhoods lack sufficient tree cover”





WDFW scientists assess the effectiveness of a beaver dam analog in enhancing climate resilience in Washington’s stream and riparian ecosystems. Beaver-related restoration projects, like this one, are designed to reduce summer water temperatures, increase water flows, and create diverse habitats that support species of conservation concern, such as trout, salmon, and amphibians, while also mitigating the impacts of high-flow events and wildfires. *Credit: Department of Fish and Wildlife*

Department of Fish and Wildlife: Beaver Dam Analogs

Beaver Dam Analogs (BDAs) are simple, artificial structures that mimic the form and function of natural beaver dams. The historical fill and drainage of wetlands, the simplification of stream channels, and the significant declines in beaver populations drastically reduced habitats with slow moving water. These habitats provide multiple benefits, including streamflow regulation and support for species such as salmon, birds, and other wildlife. By installing BDAs, the Department of Fish and Wildlife aims to restore and enhance the quality and quantity of these vital habitats. This will directly benefit streamflow and support native fish and other aquatic species.

Installing BDAs is a strategic approach to climate resilience. Research conducted across the western United States showed that BDAs can effectively store water and recharge groundwater aquifers, which is essential for maintaining streamflow during dry periods and reducing the impacts of droughts. Moreover, BDAs may play a crucial role in reducing high water temperatures, which provides benefits for temperature-sensitive species such as salmon.

In the Chehalis Basin, the Department of Fish and Wildlife (in partnership with the Wild Fish Conservancy) is constructing and monitoring BDAs in select streams. This collaboration will gather detailed data on BDA benefits, particularly their climate resilience effectiveness.

Efforts to improve riparian habitat

Healthy riparian habitat — the vegetated areas along rivers and streams — are important for clean, cold water that salmon and other species need. As climate change warms stream temperatures, efforts to protect, improve, and restore riparian habitat are even more critical. Several agencies improve riparian habitat through complementary efforts using voluntary and regulatory approaches. This includes using a wide range of riparian grant and easement programs, analyzing data and technical information on riparian health, and using laws and regulations that protect and manage water quality, wetlands, and shorelines. You can find a detailed summary in [this report](#).

The Governor’s office convened a Riparian Taskforce to develop recommendations from stakeholders, Tribes, and agencies on how to further protect and restore riparian habitat and ensure salmon and steelhead recovery. An interim report and [recommendations](#) were published in June 2024.

Recent investments in riparian restoration include:

- \$25 million from the Legislature for the State Conservation Commission to implement a voluntary riparian grant program. This will fund the protection and restoration of critical riparian management zones.
- \$25 million from the Legislature for the Recreation and Conservation Office to enhance salmon recovery by protecting and restoring fully functioning riparian ecosystems.
- \$30 million from a federal grant for the Department of Ecology to partner with the State Conservation Commission and Bonneville Environmental Foundation. This will increase the restoration of climate resilient riparian systems along Puget Sound rivers, including piloting innovative approaches to increase landowner participation.

New riparian plantings along Hangman Creek, a major tributary of the Spokane River.
Credit: Department of Ecology, Water Quality Program



New strategy actions

Strengthen climate-informed species and habitat management

Summary

State agencies play a significant role guiding and directing habitat and species management across Washington. These actions seek to improve rules, regulations, and procedures by incorporating expected climate impacts.

Agency actions

The Department of Fish and Wildlife will advance five initiatives:

- Update agency design guidance to incorporate climate considerations and make sure habitat restoration considers climate change (Action 8A).
- Increase forage fish monitoring and support measuring sea surface and sea bottom temperature. This will inform the agency on species distribution and habitat suitability models (Action 8B).
- Evaluate how fish populations will be affected by climate change and use this information to inform the management of fisheries (Action 8C).
- Develop a climate change vulnerability assessment of all agency-managed hatchery facilities (Action 8D).
- Restore fish passage and access to cool-water habitat for salmon on the North Fork Toutle River (Action 8E).

The Department of Natural Resources will advance implementing the actions identified in the Statewide Kelp Forest and Eelgrass Meadow Health and Conservation Plan (Action 8F).

Tools agencies can use

- Plans, policies, and procedures
- Data and technical information
- Resilience initiatives and projects

Which required priority does this support?

- Advance natural solutions
- Puget Sound health

Improves our resiliency to withstand



Multiple hazards

Prevent the worst effects of climate change on the Puget Sound ecosystem

Summary

The Puget Sound ecosystem is home to a wide range of habitats and wildlife that encompasses some of the state’s largest population centers. These actions outline the ways the Puget Sound Partnership will incorporate climate resilience into its work.

Agency actions

The Puget Sound Partnership will seek full funding of the Puget Sound Acquisition and Restoration program (Action 8G), and implement the regional chapter of the Puget Sound Salmon Recovery Plan and the 2024 Salmon Recovery Plan addendum (Action 8H).

Tools agencies can use

- Plans, policies, and procedures
- Data and technical information

Which required priority does this support?

- Advance natural solutions
- Puget Sound health

Improves our resiliency to withstand



Marine and coastal changes, flooding

Support large-scale, interagency habitat planning and connectivity

Summary

Climate change has wide ranging effects on landscapes and ecosystems. Building ecosystem resilience requires collaborative partnerships that benefit wildlife and human communities.

Agency actions

An interagency action led by the Departments of Fish and Wildlife, Natural Resources, and State Conservation Commission will expand personnel and resource capacity to the Washington Shrubsteppe Restoration and Resiliency Initiative. This will strategically restore habitat both before and after wildfire events (Action 8I).

The Departments of Fish and Wildlife and Transportation will increase staff capacity, resources, and technical information to better protect and manage wildlife corridors to increase habitat connectivity (Action 8J).

The Department of Natural Resources will develop a comprehensive strategy to support forest recovery following wildfire events (Action 8K).

The Department of Natural Resources will expand capacity to implement its Watershed Resilience Program (Action 8L)

Tools agencies can use

- Policies, plans, and procedures
- Resilience initiatives and projects

Which required priority does this support?

- Drought resilience, advance natural solutions

Improves our resiliency to withstand



Reduced water availability and drought, extreme heat, wildfire and smoke

Additional recommendations

The actions within this strategy will contribute to improved resilience against climate impacts for communities, infrastructure, and natural and working lands. But climate resilience is a broad topic with many contributing factors beyond the scope of this strategy and outside the purview of any one state agency.

We included more recommendations below that represent broad policy areas that are critical in helping us reach our vision of a more climate resilient Washington.

The strategy's actions relate to these topics in some ways, but the strategy's actions are not intended to be comprehensive. Rather, they address the highest priority climate issues facing Washington now. Over time, agencies will adapt and grow their approach to building climate resilience. However, the recommendations listed here will always be relevant and demand attention from our state's leaders.

Recommendation 1: Meet statutory requirements for greenhouse gas emissions reduction

Preventing future climate change is the best way to reduce future climate impacts. Washington is a national leader in greenhouse gas emissions reduction with an array of innovative and ambitious policies, programs, and initiatives to reduce emissions 95% compared to 1990 levels by 2050.

Reducing greenhouse gas emissions quickly, in line with state limits, and with the best available science will prevent future climate impacts and is the way forward. We recommend decision-makers continue to implement policies like these that reduce emissions. This work is essential and complementary to the proposed climate resilience actions in this strategy.

Recommendation 2: Promote social and economic justice and equity

A range of social and economic factors contribute to how well individuals and communities prepare for, respond to, and withstand climate change impacts. This includes confronting long-standing structural inequities in our systems such as poverty and racism, and issues such as a lack of affordable housing and educational opportunities. While these larger and complex societal needs are not the strategy's focus, we recommend agencies meaningfully implement the Healthy Environment for All Act and that decision makers continue to advance policies that address social and economic inequality.

Recommendation 3: Support workforce development

Climate impacts will bring major changes to the way businesses, industries, and other sectors operate. For example, the agricultural sector will face challenges from increasing temperatures, emerging pests and diseases, and changes to the crops we can grow in Washington. To help meet these needs, the state should continue to invest in programs that expand workforce capacity and support training programs to help industries adapt to changing conditions. The Washington Climate Corps Network is a good example of a state program that bridges climate needs and workforce development.



How the strategies meet legal requirements

The Legislature required that the Climate Resilience Strategy be guided by a set of climate resilience principles (RCW 70A.05). These include prioritizing actions that:



Reduce greenhouse gas emissions

Limiting future climate change and preventing climate impacts is an essential component of climate resilience. We specifically prioritized actions that have additional benefits in lowering emissions or storing carbon, such as planting trees, improving soil health, or reducing other sources of greenhouse gasses.



Restore natural ecosystem processes, restore habitat, and reduce pollution and other threats

We prioritized actions that provided multiple benefits beyond just those associated with climate resilience. Many actions provide multiple benefits that support ecosystems, wildlife, and natural systems.

Functioning natural systems can buffer the impacts of climate change, increase biodiversity, and recover more quickly from threats such as storms, floods, and drought. For example, floodplain projects that restore side-channels and enhance riparian areas help floodplains store more water during flood events. This protects people and communities while improving fish and wildlife habitat.



Address specific issues of concern

Climate change broadly affects communities, infrastructure, and natural and working lands. However, some impacts will affect the health and wellbeing of people and environments more than others. These include drought, flooding, wildfire, forest health, extreme heat and urban heat islands, impacts of the built environment on the natural environment, Puget Sound health, and impacts to outdoor recreation – we address all these in the strategy.



Promote and protect human health

Human health and wellbeing are sensitive to climate impacts, particularly for overburdened and vulnerable communities that already face health disparities. As we developed the strategy, we prioritized actions that address and reduce climate risks to human health.



Provide more equitable outcomes for overburdened communities and vulnerable populations

Climate change impacts disproportionately affect people of color, low-income communities, and those with health disparities.¹⁵ As we developed actions for the strategy, state agencies:

- **Sought early input from overburdened communities on actions.** Before we released the draft for public comment, Ecology supported engagement efforts with Tribes as well as overburdened communities and vulnerable populations to review the actions agencies proposed. This helped agencies incorporate their input and recommendations in the draft before it was formally released. You can find details from these and other engagement events in Appendix C.
- **Prioritized actions that benefit overburdened and underserved communities.** The Emergency Management Division proposed an action that would cover federal match requirements for overburdened communities with limited financial resources. Other work includes agencies offering communities technical assistance to build climate resilience hubs. These hubs will provide spaces with cool and clean air for vulnerable populations during extreme heat and wildfire smoke. We included other examples in this document.
- **Engaged overburdened communities in how to implement the strategy.** The strategy includes a governance structure the state can use to support strategy implementation, progress reports, and updates. This includes processes that consult and involve overburdened and underserved communities in the dialogue around climate resilience priorities. The state proposes to dedicate resources that help build the capacity of overburdened communities and support their engagement through forums such as climate assemblies. We need engagement and outreach staff to create, build, and sustain relationships with these individuals and organizations so we can identify their needs and priorities.



Consider flexible and adaptive approaches to prepare for uncertain climate impacts

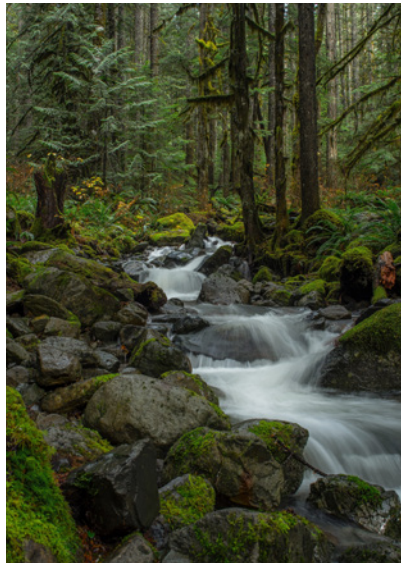
Our understanding of specific climate change events and situations, particularly those far in the future, is uncertain. That's why this strategy includes a robust framework to report action progress, evaluate outcomes, and determine whether this work contributes to the identified strategy goals. We will use this information to support future strategy updates where agencies can adapt their approaches and meet the highest priority needs to build climate resilience across the state.



Address risks in each geographic region of Washington

Washington is a large state with a diverse geography, and the impacts of climate change will look different in different parts of the state. Agencies identified actions that address these unique climate impacts across Washington. Several actions account for unique regional differences under broad climate impacts. For example, responses to extreme heat will look different in urban areas compared to rural ones since people in rural communities are more broadly dispersed and can't easily access shared community spaces for cooling.

Other actions focus on specific locations and regions such as Ecology's proposed work to implement actions in the Walla Walla Water 2050 management plan and improve water supply and streamflows in the basin. Other interagency work, such as the Washington Shrubsteppe Restoration and Resiliency Initiative, seeks to coordinate state agency efforts to restore habitat, reduce fire risk, and improve ecosystem resilience in central Washington.



How we will measure the strategy's progress

A key feature of the state's strategy is how we measure our progress and hold agencies accountable. It's also important to create a transparent resilience planning process that will clearly connect our investments to climate resilience outcomes.

We assigned agencies to lead our actions

We've assigned an agency or group of agencies to lead each action in the strategy. Agencies submitted action proposals only when:

- They had existing resources to implement, or
- They were committed to prepare proposals for budget requests to the Governor or develop agency request legislation.

We will submit progress reports and updates

To further support accountability and implementation, the law requires Ecology to submit progress reports on strategy implementation every two years beginning in 2025 ([RCW 70A.05.020](#)). The law also requires Ecology and partners to update the entire strategy every four years. These reporting and update cycles will ensure that agencies are making progress towards climate resilience goals and reflecting top community needs over time.

We will use a new framework to measure our progress

We partnered with the University of Washington Climate Impacts Group to create a robust way to measure our progress.

This measurement framework will track and measure our:

- Capacity to enable actions.
- Processes to implement resilience actions.
- Outcomes of climate resilience efforts.

What does the new framework look like?

Measuring climate resilience is a complex process. That means there is no one-size-fits-all approach. However, best practices include using *indicators* and *metrics* to understand if our strategies are working. For this framework, we care about **three types of indicators** and **two types of metrics**.

Indicators are signs that we're making progress:

- Capacity indicators: *Do we have the resources we need to do this work?* (report every 2 years)
- Process Indicators: *What is being done, spent, and how?* (report every 2 years)
- Outcome indicators: *Are we getting the climate resilient Washington we want?* (report every 4 years)

For the full collection of indicators, please see Appendix I.

Metrics are how we track or measure our indicators:

- Qualitative metric: *What stories or narratives show our progress and success?*
- Quantitative metric: *What specific things can we measure?*

For this strategy, we've created 10 standardized metrics to measure our process indicators. These will be used to measure the progress of our actions. Some actions will track one of these metrics, while others will track multiple. This approach allows us to be clear in the way we report our progress and flexible to meet the wide-range of topics addressed through the strategy's actions.

These 10 metrics track:

1. Collaborating partners.
2. Full-time employees working on climate resilience.
3. Resilience policies, plans, or procedures that coordinate with multiple agencies.
4. People engaged.
5. Dollars distributed to address climate resilience.
6. Plans or assessments completed to understand and manage climate risks.
7. Projects implemented to reduce climate risks.
8. New studies or monitoring programs to inform climate resilience decision-making.
9. Resources to support community climate resilience needs.
10. Relevant state policies and rules updated or created to incorporate climate considerations or guidance.

In addition to these metrics developed to track the progress of our actions, we have developed metrics to track capacity indicators (do we have the resources we need to do this work?), and outcome indicators (are our goals for climate resilience being achieved?). Additional details about the metrics that will be used to track capacity, process, and outcome indicators can be found in Appendix D.

Together, these measurements keep agencies accountable, justify our investments, set a baseline for the work, and create a roadmap to connect each action back to the overall climate resilience goals. Most of all, these will show how certain actions help move the needle on our goals.

We will adapt the measures as we learn more about them. We intentionally designed this approach to complement, but not reproduce, existing metrics and data our agencies already measure related to climate resilience (e.g. socio-economic and health disparities, human wellbeing, habitat loss, conservation, and greenhouse gas accounting).



Background and context

Who do these actions apply to?

This strategy focuses on what state agencies can do to better prepare communities, infrastructure, and natural and working lands for climate change impacts. This strategy identifies work that Washington state agencies are already doing and new work they propose to carry out over the coming years. This strategy does not direct the work of Tribal, local, or federal jurisdictions and agencies nor individuals. However, the actions complement the priorities of Tribal and local governments as well as Washington communities.

How we developed this strategy

Ecology led the effort to develop this strategy with nine other state agencies. Each of the following agencies selected representatives to serve on the team that developed this strategy:

- Department of Ecology
- Department of Agriculture
- Department of Commerce
- Emergency Management Division
- Department of Fish and Wildlife
- Department of Health
- Department of Natural Resources
- Puget Sound Partnership
- State Conservation Commission
- Department of Transportation

We started developing the strategy in September 2023 with the first monthly meeting of agency staff. The group reviewed the strategy requirements under state law ([RCW70A.05](#)), discussed the success and challenges of past climate resilience planning processes, and identified a shared vision and goals. Then, the group collected information to summarize the ongoing work of state agencies that contributes to climate resilience (see Appendix E and F), identified gaps and needs, and developed preliminary strategies and actions. This process also considered other state strategies and planning documents that address related topics to help inform action development (Appendix G). At the same time, Ecology led outreach and engagement efforts with individuals, organizations, and communities across the state to inform this work (see Appendix C). Agency staff used this information to refine the strategy.

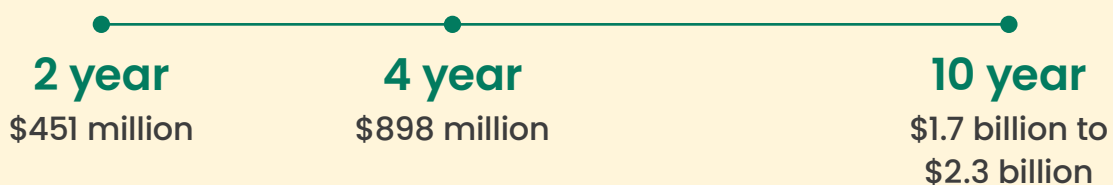


How we will fund this work

Many climate resilience efforts led by the state are funded through the Climate Commitment Act and the Natural Climate Solutions Account in the state treasury. In 2023-2025, over \$462 million was appropriated by the Legislature from this account to support climate resilience efforts. This includes many of the examples of current work that are presented in the strategy.

As the law requires, Ecology compiled the total funding requested by agencies and estimated cost for implementing these new actions (see Appendix D). These estimates do not reflect the full cost of building climate resilience for Washington. These costs also do not include climate preparation and adaptation efforts by local or Tribal governments. Many of the actions proposed by state agencies reflect the first steps for state agencies; the true costs of responding to climate impacts for Washington is much higher. We know the costs for implementing the state's strategy may go up over time as agencies learn more about what actions work and what else is needed.

The following are what we estimate it will cost to implement the strategy and its actions:



Methodology:

2- and 4-year requests: These totals were calculated directly from budget requests that agencies have developed to implement the actions identified in the strategy. The 2-year request is for the upcoming 2025-2027 biennium and the 4-year request is for the 2027-2029 biennium. These budget requests must be approved by the Governor and Legislature to support action implementation.

10-year request: The 10-year request represents a projection of expected costs to implement the strategy through the 2033-2035 biennium. The following methods were used to develop this range of estimates:

- Costs were projected for ongoing actions only, not one-time actions.
- Agencies provided information about actions for which they anticipate increases or decreases in the amount of funding needed beyond the 2027-2029 biennium. This is what led to the range associated with the 10-year estimate.
- Ecology assigned an increase/decrease factor to the 2027-2029 biennium request:
 - Where costs were expected to decrease, the 2027-2029 biennium request was multiplied by 0.5.
 - Where costs were expected increase modestly, the 2027-2029 biennium request was multiplied by 1.10 or 1.25 (depending on details provided by agency partners).
 - Where costs were expected to increase significantly, the 2027-2029 biennium request was multiplied by 1.5.
- These increased or decreased request amounts applied beginning in the 2029-2031 biennium.
- For actions where cost increases or decrease were not expected, the 2027-2029 biennium request was carried forward through subsequent biennia.
- Capital budget requests are typically made as ‘one time’ asks, however, in practice these requests are frequently repeated across multiple biennia. For this estimate, following agency guidance, we assumed that most capital budget requests will be asked for again in subsequent biennia and carried the requested amount into future biennia.
- Requests from the 2025-2027, 2027-2029, 2029-2031, 2031-2033, and 2033-2035 biennia were added together and summed across all actions to develop the 10-year request estimate.
- For purposes of this estimate, we did not account for increases in salary or benefits.
- We also assumed that all money requested will be spent and we did not account for re-appropriations.

How the University of Washington Climate Impacts Group supported this strategy

The group served as an independent scientific and technical advisor on climate impacts in Washington. University of Washington Climate Impacts Group (UW CIG) staff helped us make sense of the latest climate information for Washington from regional, national, and international scientific reports. They provided information on the status and trends of climate impacts, key impacts relevant to Washington, projected future conditions, and the geographic distribution of these changes, which are summarized in Appendix A.

The group helped us identify effective adaptation strategies and recommended approaches to measure effectiveness. You can visit the section on Accountability, Implementation, and Measuring Progress for more details on the indicators and metrics developed for this process and Appendix D to see how these apply to our proposed actions. The state law required UW CIG to provide a report to the Legislature on this topic, which we included in Appendix H.

The group will support our access to climate data and information in a central location. This included identifying the shared climate information gaps and needs of state agencies and prioritizing what information, resources, and services UW CIG can provide to state agencies. This will be an ongoing role for them to help us build our capacity and knowledge and help us use the most relevant and accurate scientific information. While this work will focus on the needs of state agencies, other groups and individuals including Tribes and local governments will be able to access this information.

We will coordinate our efforts to secure federal climate-related funding

Given the recent surge of federal funding available to support climate resilience work from federal laws (such as the Inflation Reduction Act and Bipartisan Infrastructure Law), the Legislature directed Ecology to work with the Office of Financial Management and other agencies to coordinate the state's response to these federal funding opportunities. The goal was to identify federal resources to support action implementation, identify opportunities for agencies to collaborate on grant applications, and maximize the amount of funding we can use to support these initiatives.

This group began meeting in January 2024 and consists primarily of agency staff responsible for tracking and coordinating federal funding initiatives within their respective agencies. This group helped develop this strategy by assessing successes and challenges in securing federal funding for climate resilience, developing a plan to improve cross-agency coordination, and strategizing how to communicate federal funding opportunities to external partners.

We will continue to explore and advocate for additional revolving funds to capitalize on available federal funds. We will also work to make the funds accessible and equitable. Two fund sources that Washington currently uses to further our state's commitment to climate resilience are:

- The Clean Water State Revolving Fund (CWSRF): this provides loans to qualified landowners to repair or replace failing on-site sewage systems.
- The Drinking Water State Revolving Fund (DWSRF): this offers funds to drinking water systems for infrastructure improvements.

Together, this work will help secure additional resources to support strategy implementation. 

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