

DRAFT



Resilience Attributes for Oregon Land and Water Design Workshop Participant Materials

Design Workshop | March 10-12, 2026

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This memo is meant as food for thought for the March 10-12, 2026, attribute definition workshop. The information is not exhaustive, and there is definitely room for improvement. Ideally, this memo is quickly replaced by a draft set of attributes. We are asking participants to come with their vision of attributes for resilient land and water, and we hope that reading this memo will help prepare for a great discussion of attributes. More information is available on the [project's webpage](#).

1. Context

On October 21, 2025, Oregon Governor Tina Kotek issued [Executive Order No. 25-26](#) (EO), titled *Directing State Agencies to Take Urgent Action to Promote the Resilience of our Communities and Natural and Working Lands and Waters*. Included in Section I of the EO, *Foster Resilient Lands, Waters, and Communities*, the Oregon Watershed Enhancement Board (OWEB) and Oregon Department of Fish and Wildlife (ODFW; hereafter, lead agencies) were directed to use existing plans and strategies and the best available science to:

- Define key resilience attributes for land and waters;
- Identify characteristics of lands and waters that are able to deliver multiple benefits that are likely to persist under future climate conditions;
- Support focused actions that promote restoration, enhancement, or reconnection of lands and waters;
- Determine baseline conditions against which progress will be measured; and
- Collaborate closely with the Natural and Working Lands Program.

Table 1.0. Workshop Goal

The goal of the workshop will be to land on a small set of attributes for Oregon’s lands and waters that can become the north star for agency investment and action into the future. Resilience is a pursuit; it is not a state that is achieved and walked away from. Defining the attributes for resilient land and waters is the first step in what will be a coordinated and sustained effort among Oregon’s natural resource agencies to promote resilience of natural and working lands. Participants in the design workshop will bring their knowledge and experience to assist the state agencies in creating a shared vision for natural resource resilience in Oregon.

This memo is intended to provide some context on what others have worked on before we gather in March 2026. There are different ways of approaching the definition of attributes, example attributes, and considerations for the practical application of attributes to improve the stewardship of land and waters.

Table 1.1. Definition of Resilience

Resilience Definitions As stated in Executive Order 25-26, “The Oregon State Legislature established a definition of climate resilience in House Bill 3409 (2023) as ‘the capability to anticipate, prepare for, respond to and recover from significant climate-related threats while minimizing damage to social wellbeing, the economy and ecosystem functions.’”

People and nature have always relied on each other. People are integral parts of ecosystems, and ecosystems provide the essentials that people, fish, and wildlife need to thrive. People are stewards of land and water. There are a number of ongoing efforts to define strategies for resilience (e.g., in buildings, in the economy, for human health). This effort starts with the ecological resilience of land and water: Knowing that people always live in relationship with nature, whether they harvest first foods, make a living from agriculture or forestland, recreate outdoors, or live in an urban area and are still affected by watershed management practices many miles away. The concept of resilience necessitates a deep understanding that:

- Systems change, and the goal of resilience is not to preserve things exactly as they are at a point in time, but to protect the *ability* of lands and waters to continue to provide essential functions even as they change;
- Ecosystems in Oregon are at risk of loss due to a number of factors: long-term drought, catastrophic wildfire, invasive species and diseases, sea level rise, destructive flood events, habitat loss, and other impacts. And we know this risk is accelerating.
- Resilience requires balancing the capacities to cope with, adapt to, and/or transform in response to these risks and changes;
- Investing in resilience today mitigates future impacts and reduces costs tomorrow;
- How people harvest and grow food, drink and use water, live on the land, and steward nature can shape how ecosystems respond to disturbances like flood or fire, changes in precipitation, and temperature. Conversely, ecosystem resilience to those disturbances can shape people's ability to harvest, grow, use, live on, and steward Oregon's natural resources.
- How decisions are made about lands and water are important, too, and
- No matter how complex or unique our social and ecological systems are, there are a limited number of attributes that are truly central to track and manage for in the pursuit of resilience.

Figure 1.0. Reasons for Considering Climate Resilient Land and Waters

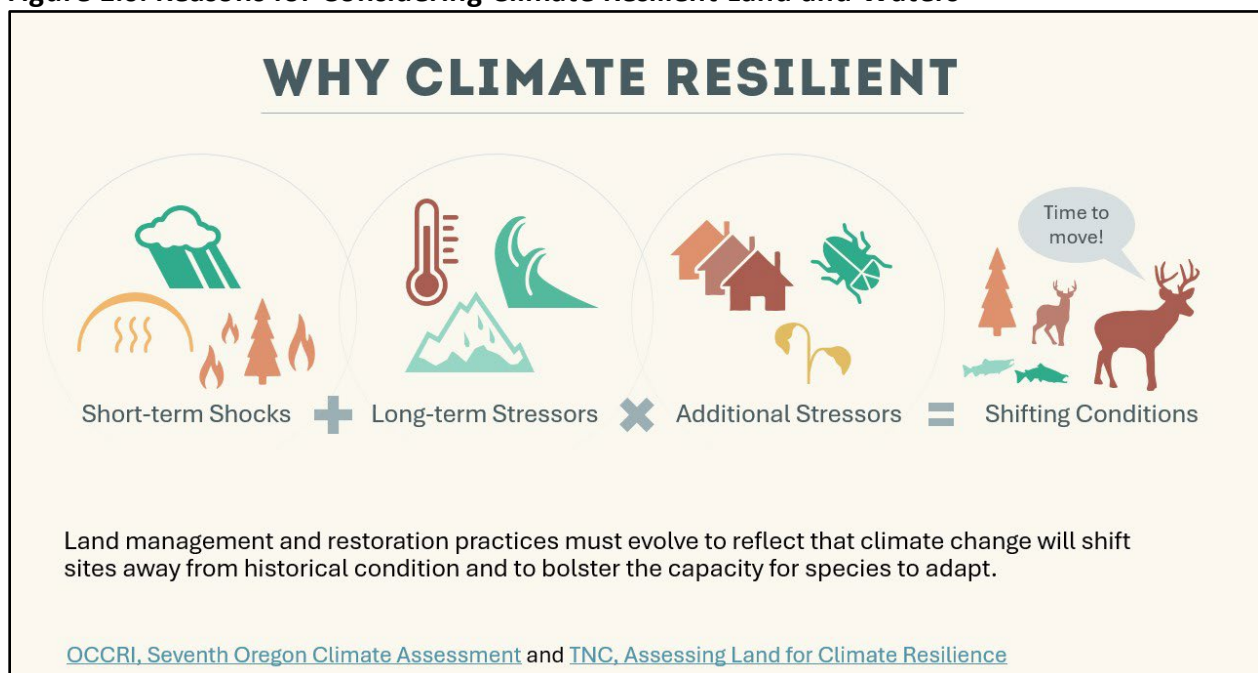


Table 1.2. Key Oregon Plans and Strategies

• Oregon State Wildlife Action Plan (formerly the Oregon Conservation Strategy), 2016 (2026 revision pending), ODFW: An overarching state strategy for conserving fish and wildlife. It provides a shared set of priorities for addressing Oregon's conservation needs. Includes the Oregon Wildlife Corridor Action Plan (2024), which addresses wildlife and habitat connectivity. • Oregon's Integrated Water Resources Strategy, 2025, OWRD: Oregon's IWRS provides a statewide inter-agency framework for better understanding and meeting Oregon's instream and out-of-stream water needs. Oregon's Water Resources Commission adopted the first

IWRS in 2012 and the second in 2017. Oregon Revised Statute (536.220) was updated in 2023 to require that the IWRS be updated every 8 years.

- [Oregon's 20-Year Landscape Resiliency Strategy](#), 2023, ODF: Department of Forestry led plan to coordinate federal, local, and state partners, and leverage investment opportunities within priority geographies to achieve landscape-scale resilience and wildfire risk reduction.
- Other plans include: [Climate Equity Blueprint](#) (OHA, 2021); [Climate Change and Social Resilience](#) (OHA, 2020); [Plan for a Resilient Oregon](#) (Governor's Office, 2026); [Climate Adaptation & Resilience Roadmap](#) (ODOT, 2022); [State Agency Climate Change Adaptation Framework](#) (DLCD and other agencies, 2021); and [Total Maximum Daily Loads or Clean Water Plans](#) (DEQ, various years).

2. Design Workshop Participant Guidelines

Governor Kotek's Executive Order No. 25-26, along with Oregon's existing plans and experience, recognizes the diverse expertise of Tribes, scientists, people who make a living from the land or water, and many others. We ask that, regardless of your background or expertise, you approach this collaborative process with curiosity, openness, a questioning of assumptions, and a shared pursuit of helping people and nature thrive together.

In implementing the Executive Order, Oregon agencies want a range of knowledge systems to help define resilience attributes. There will be four ways that people can inform attributes:

- Anyone is invited to share their vision for resilience attributes (at the workshop's beginning on March 10 and other feedback opportunities in the next few months);
- A special invitation to Oregon Tribes to inform resilience attributes (on March 11 and into the next few months);
- Content experts advising agencies on resilience attributes (March 10-12); and
- Interagency conversations on draft attributes in March and April.

For the content experts invited to the workshop, the lead agencies and Oregon Consensus invited participants who represent a diversity of expertise across different forms of knowledge; familiarity with Oregon's working forests, range, and farms; a deep understanding of the terrestrial, aquatic, and ocean ecosystems in Oregon; and/or experience building similar resilience attributes in neighboring states and nationally. We ask both the workshop participants and people observing to:

- Remain curious—ask questions to understand, reflect on the knowledge people are offering;
- WAIT—For extroverts in the room, “Why am I talking”? Try to make room for others to talk too. For introverts, “Why am I not talking?” You have important things to say, we want to hear from you;
- Remember that we are not seeking perfection, and we are trying to be practical... but that doesn't mean we can't dream a little at the same time; and
- Appreciate that we could be anywhere today, but we get to be here—together. Try to be present. The workshop works best when people are active and constantly listening.

3. General Considerations for Attributes

There are some considerations for workshop participants to keep in mind.

- The first phase of this work needs to be completed in May 2026. That’s fast. It means we can define attributes, but likely not all the indicators and metrics needed to operationalize those attributes.
- We don’t want to get into the weeds, but we don’t want to stay at 10,000 feet. Fort Rock is at about 4,700 feet—that’s about the right elevation to be at. For example, “river connectivity” is an important attribute of climate resilience, and the “# of fish passage barriers” is one potential metric toward this attribute. We might want to define an indicator for the “river connectivity” attribute as “adequate connectivity between cold water refugia or other core instream habitat for fish-bearing streams”.
- The goal of the workshop will be to land on a small set of recommended attributes for state agencies to consider, and, where we can, develop indicators for those attributes. The workshop will not get into metrics. If we find ourselves contemplating numbers, we have tread too far down the path of identifying metrics, and we should pull ourselves back up to the higher elevation of attributes and indicators (see Table 3.0).
- No matter how complex or unique our social and ecological systems are, there are a limited number of attributes that are truly central to track and manage for in the pursuit of resilience.
- There is limited (or no) additional state budget for expanding agencies’ climate resilience efforts or creating new systems for tracking accomplishments. Don’t let that constrain what we can imagine for the future, but use that reality as we think about what agencies can do now with existing resources, and what we set aside for the next steps.

Table 3.0 Working definitions for attributes, indicators, and metrics

For this workshop, we plan to use some of the following definitions. We can refine these as needed.

An **attribute** is a broad characteristic or quality of land or water that contributes to climate resilience (e.g., “connected aquatic and terrestrial habitat” or “ability to flood and recover”). Attributes help articulate big-picture goals for resilience.

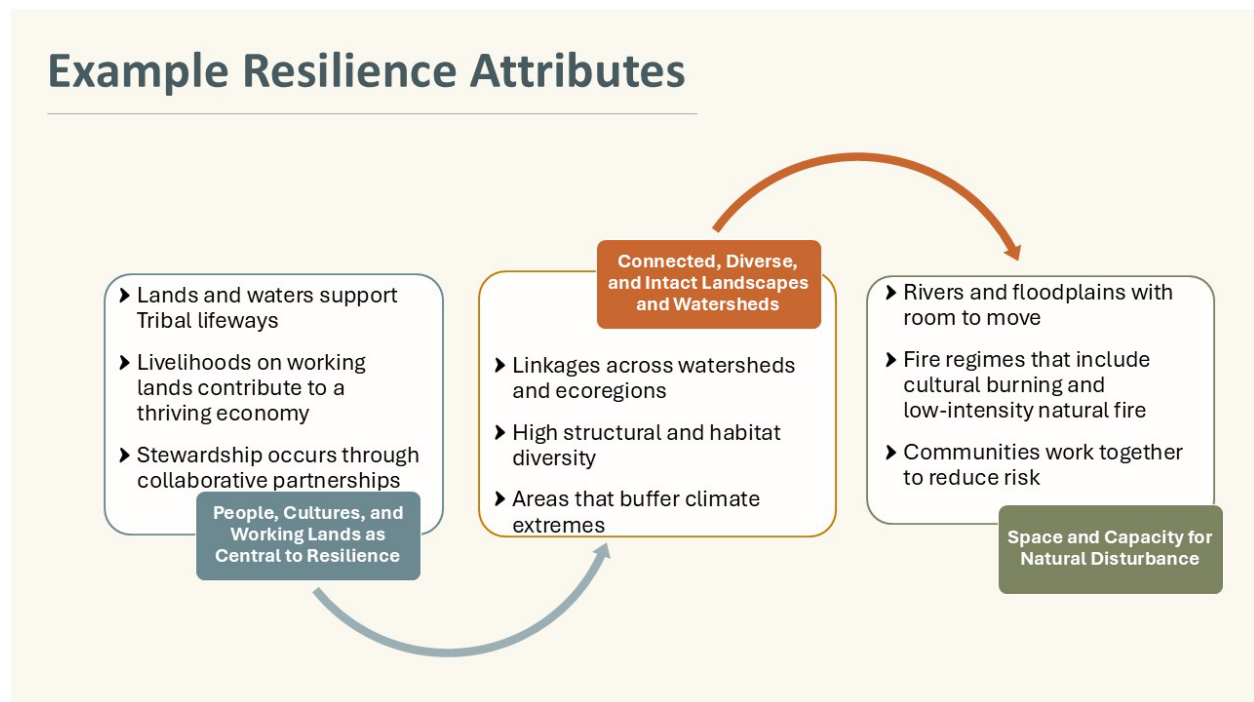
An **indicator** is a specific observable feature or condition that signals progress toward an attribute. Indicators provide a way to measure whether an attribute is improving or declining (e.g., habitat connectivity: “habitats are reconnected through removal of barriers (e.g., fencing, installation of wildlife crossing structures”), or flood resilience: “extent of floodplain restoration in priority watersheds”).

A **metric** is the actual numeric value or unit used to track an indicator over time. Metrics enable monitoring and comparison and can be quantitative or qualitative (e.g., habitats are reconnected: # miles of fencing removed in a given area, % decrease in wildlife road mortality by X year, documented successful movement of wildlife into key areas following barrier removal); or extent of floodplain restoration: (e.g., “1,200 acres restored in 2024”). Metrics are the numbers reported for a particular indicator.

4. Summary of Themes and Attributes across Resilience Frameworks

The example frameworks identified by the lead agencies (**Appendix A**) illustrate many ways to describe climate-resilient landscapes. Figure 4.0 provides a visual example of how a theme helps organize several potential attributes.

Figure 4.0 Example Resilience Attributes



The list below of themes and attributes pulled from existing strategies and plans is not exhaustive, and we welcome additional examples. Together, these themes start to describe the ecological, cultural, and community conditions that allow Oregon’s lands, waters, and people to adapt and thrive in a changing climate. They are provided here as food for thought.

1. People, Cultures, and Working Lands as Central to Resilience: Many frameworks emphasize that resilience is not only ecological—it is also cultural, social, and economic. People and working lands are part of the landscape, and their well-being and stewardship capacity directly shape climate resilience. Attributes include:

- Lands and waters that continue to support food, medicine, cultural practices, Tribal lifeways, and identity.
- Working lands that support a vibrant economy and way of life for present and future generations.
- Communities with strong social connections, equitable access to resources, and the capacity to steward land and water.
- Collaborative, place-based relationships and adaptive management that strengthen long-term resilience.

2. Connected Landscapes and Watersheds: Connectivity is a foundational ecological attribute that enables movement, adaptation, and long-term resilience. Attributes include:

- Linkages across watersheds, ecoregions, and between uplands, riparian areas, wetlands, and aquatic systems.
- Wildlife passage across roads and barriers, and natural corridors that follow climatic gradients.
- Access to short-term refugia (e.g., cold-water pockets) and long-term pathways for species migration and gene flow.

3. Diversity of Habitats, Species, and Geophysical Settings: Diverse landscapes provide the ecological options needed for adaptation. Attributes include:

- A range of soil types, elevations, geologies, and microclimates that support varied habitats.
- High structural and habitat diversity across forests, rangelands, wetlands, and nearshore systems.
- Conservation of representative geophysical settings and management of invasive species to maintain native diversity.

4. Space and Capacity for Natural Disturbance: Resilient systems can absorb, adapt to, and recover from disturbance without collapsing. Attributes include:

- Rivers and floodplains with room to move, store water, and reduce exposure of people and assets.
- Fire regimes that include cultural burning and low-intensity natural fire.
- Landscapes with flexibility, sediment, vegetation, and redundancy that prevent catastrophic failure under stress.
- Communities that work together to reduce the risk of catastrophic fire and flood.

5. Intact, High-Functioning Ecosystems: Large, connected, and relatively undisturbed ecosystems provide strongholds for biodiversity and climate adaptation. Attributes include:

- Intact habitat cores from headwaters to estuaries, with healthy flow regimes and cold-water refugia.
- Groundwater-dependent ecosystems, wetlands, tidal wetlands, eelgrass beds, and nearshore habitats with room for upslope migration.
- Structurally diverse forests and other habitats that support species persistence and dispersal.

6. Soil Health, Hydrologic Function, and Geomorphic Stability: Healthy soils and stable landforms underpin water resilience, carbon storage, and long-term ecosystem function. Attributes include:

- Carbon-rich soils with strong water-holding capacity.
- Agricultural practices that improve soil health and drought resilience.
- Hydrologic systems that store, slow, and release water over time.
- Stable geomorphic features that maintain function under changing conditions.

7. Climate Buffering and Microclimates: Some places naturally moderate climate extremes and help species persist longer as conditions shift. Attributes include:

- Cold-water streams, shaded riparian zones, groundwater inputs, and other thermal refugia.

- Microclimates that slow ecological turnover and provide strongholds for current and future diversity.
- Areas that buffer temperature, moisture, or wind extremes.

8. Attributes as Interconnected and Iterative

Across all frameworks, attributes are not isolated traits. They are ecological processes, cultural relationships, and adaptive capacities that interact across time, space, and community. Some Tribal frameworks describe these relationships as cycles rather than linear characteristics—emphasizing reciprocity, continuity, and the interconnectedness of people and nature.

5. Conclusion

This memo is meant as food for thought for the March 10-12, 2026, attribute definition workshop. The information is not exhaustive, and there is definitely room for improvement. Ideally, this memo is quickly replaced by a draft set of attributes. Use it to come up with your own ideas, jot down what you like and don't like, come with questions, and thanks for taking the time to help define attributes of resilience for Oregon land and waters.

Appendix A: Attribute Frameworks Explored

A.1. The Nature Conservancy's Center for Resilient Conservation Science

- The framework is called [“Conserving Nature’s Stage,”](#) which looks at the “conditions that allow nature to move, adapt, and thrive in a changing world.”
- This framework is useful because it represents over two decades of work and considers the unique ecoregions of the Pacific Northwest.
- The framework is based on the idea that the biota (flora and fauna) need the landscape (aka, stage) to survive and thrive. By identifying the characteristics of landscapes that support thriving plants and animals, TNC can then look for landscapes and/or parcels of landscapes to protect and conserve.
- This framework emphasizes connectivity, not only looking within regions of the United States and ecoregions, but the tools help identify connections across ecoregions and geographies.
- The [Resilient Land Mapping Tool](#) and [Resilient River Mapping Tool](#) are the results of decades of research to map lands and waters across the US.
- Attributes are:
 - Geophysical: soil order, slope, elevation

A.2. Synthesis of Pacific Northwest and West Coast Tribal Frameworks

- Tribal plans emphasize that resilience is not resistance to change, but the capacity of lands, waters, and communities to continue providing food, culture, identity, and life under changing conditions. It is also the capacity of the people to adapt to changing conditions.
- This framework is useful because it offers a non-Western perspective on resilience.
- The plans do not frame resiliency as a set of attributes, rather resilience is ecological processes, cultural relationships, and adaptive capacity.
- The Confederated Tribes of the Umatilla Indian Reservation have articulated an Uplands Vision and a River Vision that include “Touchstones” which might be similar to attributes:
 - [Uplands](#): Soil Stability; Hydrological Function; Landscape Pattern; Biotic Integrity
 - [Rivers](#): Water and Water Quality; Geomorphology; Connectivity among habitats and across the river network; Riverine biotic community; Riparian vegetation
- Tribal plans also emphasize connectivity, but from a systems perspective rather than an attributes perspective. Cyclical versus linear?
- Attributes (the plans do not describe them as such; ChatGPT found implicit characteristics) include
 - Intact, connected watersheds (ridge-to-reef/headwaters-to-estuary)
 - Functioning estuaries, nearshore, and tidal wetlands
 - Structurally diverse forests and culturally stewarded fire landscapes
 - Cold-water refugia and groundwater-supported system (springs, seeps, wetlands)
- A synthesis of the following Tribes and tribal organization plans:
 - Confederated Tribes of the Umatilla Indian Reservation
 - Swinomish Indian Tribal Community
 - Tulalip Tribes
 - Jamestown S’Klallam Tribe
 - Lummi Nation
 - Quinalt Indian Nation

A.3. Maine Climate Council

- 2019 legislation created the Maine Climate Council. The Council, with six working groups and a subcommittee, created a four-year action plan, [Maine Won't Wait](#), to address climate change in Maine. The plan has four goals:
 - Reduce Maine's Greenhouse Gas Emissions
 - Avoid the Impacts and Costs of Inaction
 - Foster Economic Opportunity and Prosperity
 - Advance Equity through Maine's Climate Response
- In October 2024, Maine started a \$69 million climate resilience grant, funded through the National Oceanic and Atmospheric Administration's Climate Resilience Regional Challenge.
- Created a State Resilience Office (SRO) which "works to grow the ability of communities and the state to prepare for and thrive within a changing climate."
- Office of Policy Innovation and the Future/ Community Resilience Partnership

A.4. Local Government Plans

- King County, Washington's [Strategic Climate Action Plan](#) defines a "Clean Air, Water, and Healthy Ecosystems" objective. The objective discusses protecting and restoring high-value forest and farmland; more robust tree canopy in heat islands; improved stormwater management and water conservation; protected floodplains to reduce flood risk; promoting habitat connectivity for salmon recovery; protecting shorelines and minimizing economic impacts of sea level rise.
- The City of Portland, Metro Regional Government, Lane County, and other local governments in Oregon have also defined local climate action plans, natural hazard mitigation plans, and other strategies that point to resilience attributes for lands and waters.