White Salmon CityLAB Board
A G E N D A
May 24, 2022 – 6:00 PM
Via Zoom Teleconference
Meeting ID: 867 1454 3888 Passcode: 836039

Call in Numbers:

669-900-6833	**929-205-6099**	**301-715-8592**
346-248-7799	**253-215-8782**	**312-626-6799**

Call to Order/Roll Call

Public Comment

Discussion and Action Items

1. Status Updates
   - A. Klickitat PUD Presentation Update (Including discussion of questions) - Jan Brending
   - B. ZAP (EV Car Share) Grant Update - Kalama Reuter
   - C. City-owned Electric Vehicles Research Update - Kate Bennett
   - D. Climate Action Plan RFP Update - Kate Bennett
   - D. CityLAB Webpage Update - Peter Fink
   - E. Park Electric Vehicles Research Update - Peter Fink
   - F. Standard CityLAB Project/Code Review Questions Update - Jim Ransier
2. NW Natural Presentation Recap and Follow-up Discussion
3. Columbia River Gorge National Scenic Area Climate Change Action Plan

Adjournment

File Attachments for Item:

2. Status Updates

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C. City-owned Electric Vehicles Research Update - Kate Bennett

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F. Standard CityLAB Project/Code Review Questions Update - Jim Ransier

Proposed Final KPUD Questions

1. If discloseable, what businesses consume the most electricity within the city limits?
2. What is keeping us from transitioning fully to hydro or other existing renewable energy? Intermittency? Insufficient production or competition from other consumer utilities? I.e. could we simply start purchasing more hydropower from the BPA and less fossil fuel generated electricity? When is the two year contract up for re-negotiation? Does a transition plan exist?
3. What kind of advanced metering infrastructure does PUD have currently, and is implementation of additional AMI something PUD is planning for?
    a. Is the answer to the above impacted by changes in our city's energy consumption due to:
        i. Conservation and efficiency changes made by consumers?
        ii. Electrification: transitioning from natural gas heating, transitioning from combustion vehicles to electric vehicles and EV charging infrastructure?
        iii. Increasing population?
4. What potential is offered by residential solar? What is the cost-benefit potential of commercial or community solar? Will KPUD promote community solar?
5. Is our transmission grid ready for electrification? What aspects of our grid infrastructure need to be addressed in the coming years?
6. Considering the answers to questions above, is it feasible and how long would it take for all homes and businesses to transition from natural gas to fully electric? (Consider this more from a KPUD capacity standpoint. If you also feel able to answer you might consider it from the purchasing capacity of residences for electric infrastructure, appliances, etc.)
7. Should we be burying our power lines to reduce wildfire risk? What hurdles do we face and what other downsides might there be from doing so?
8. Poorly maintained transmission and distribution infrastructure can be high risk in wildfire-prone areas of the US. What kind of projects is PUD undertaking to reduce wildfire risks? (Monitoring infrastructure, SCADA systems, condition monitoring, etc?)
9. Is the KPUD investigating short or long-term energy storage?
10. What are funding gaps that may restrict the KPUD from taking on other initiatives?
11. How many new jobs would be needed/could be created to meet the need generated by changes discussed above. Is there a qualified workforce or training programs here in our region to produce the needed workforce?
12. Hydropower projects can have significant negative impacts on habitats and cultural resources. A Low Impact Hydropower certification from the Low Impact Hydropower

Institute demonstrates a commitment to reducing these negative impacts. Is that something PUD would consider?

13. Does PUD offer a utility bill assistance program to any specific socio-economic groups?

14. Does PUD offer any community efficiency programs or weatherization programs?

15. WA House Bill 1814 would expand equitable access to the benefits of renewable energy to low income, tribal and public agencies through community solar projects. Do you foresee any of these for KPUD?

16. House Bill 1490 would have established access to home energy as a basic need and an essential resource that should be available in full dignity without uncertainty about affordability and threats of disconnection. It would have created a mechanism for low income and disabled household electricity financing in rural communities and moratoriums on winter shutoffs. How do you currently handle inability to pay? Do you see benefits to a program like this? Do you provide low-income weatherization assistance?

17. KPUD has been a proponent of energy conservation and energy efficiency. As climate issues become more urgent, will actions with the greatest benefit to slowing climate change - like installing heat pumps, induction cooktops, and solar - receive more incentives?

18. Air conditioning loads and heat island effect will increase with rising temperatures. AC loads can be greatly diminished by siting, landscaping and building type. Will KPUD promote solutions to decrease air conditioning loads?

19. No sector is as important as transportation to achieving decarbonization. What are the KPUD's plans to make it easier for people to install car charging stations at home?

20. Distributed energy generation with batteries is part of being a resilient city. Will distributed energy, like solar, be promoted by KPUD?

21. Is KPUD doing a one-for-one exchange for solar net metering?

22. The H.W. Hill RNG Project in Roosevelt sounds great – energy from garbage. It is upcycled from a waste product, but it is still methane, a potent greenhouse gas. Does KPUD think this is a long-term solution? What about the gas pipeline leaks that make natural gas a big greenhouse gas offender?

23. Pumped water storage can fill in when wind and solar aren't available, but many environmental groups (including Columbia Riverkeeper) and tribal groups say it will be harmful to river and wildlife health. What is the KPUD's short answer to these environmental concerns?

24. Briefly, what is the plan to put the Clean Energy Transformation Act (CETA) which commits Washington to an electric supply free of greenhouse gas emissions by 2045, into action? Are we on track?

25. International Dark-Sky Association believes that at least 30 percent of all outdoor lighting in the United States is wasted due to unshielded light on streets and in parking lots. Changing street lighting to LEDs has brought savings and energy efficiency. The ill effects of blue rich white light (BRWL) are known - BRWL causes more glare and sky glow. LEDs save money, but has KPUD considered the following for new or retrofitted public lighting?
    a. Cut-off shades in residential areas to direct light where it is needed and reduce glare?
    b. 3000K or less to minimize blue emission?
    c. Encouraging dimmed or part-time lighting to reduce ill effects on habitat?
    d. A reduced rate for dimmed or part-time lighting?
    e. Locating light sources closer to the ground to reduce wasted light?

Possible DEI Questions (courtesy of the City of Renton)

Set Outcomes

- What does CityLab policy/program analysis seek to accomplish? Will it reduce disparities or discrimination? Will it advance equity and inclusion?

Identify and Involve Stakeholders

- Which social identity groups may be most affected by and concerned with the policy/ program being analyzed? Have stakeholders from different social identity groups – especially those most adversely impacted – been informed, meaningfully involved and authentically represented in this analysis? Who is missing and how can they be engaged?

Determine Benefit and/or Burden

- Gather and analyze data: Which social identity groups are currently most advantaged and most disadvantaged by the policy/program this analysis seeks to address? How are they affected differently? What quantitative and qualitative evidence of inequity exists? What evidence is missing or needed?
- Examining the Causes: What factors may be producing and perpetuating inequities associated with this policy/program? How did the inequities arise? Are they expanding or narrowing? Does this analysis address root causes? If not, how could it?

Advance Opportunity or Minimize Harm

- Advance Opportunity: What positive impacts on equity and inclusion, if any, could result from this policy/program? Which social identity groups could benefit?
- Minimize Harm: What adverse impacts or unintended consequences could result from this policy? How could adverse impacts be prevented or minimized? Are there better ways to reduce disparities and advance opportunity?
- What action will be taken to prevent or minimize adverse impact?

Evaluate, Raise Equity Awareness, Be Accountable

- What are the success indicators and progress benchmarks? How will impacts be documented and evaluated? How will the level, diversity and quality of ongoing stakeholder engagement be assessed? How will unresolved issues be documented?

Possible Climate Crisis & Resilience Questions

- Does this proposal account for low or zero emission options? If yes, how? If no, could it?
- Does this program or policy improve the city and/or resident's energy independence?
- Does this program or policy reduce climate change impacts, such as wildfires, drought, etc.?
- Is this a project, program or facility that will require "fixes" or "upgrades" later (from an energy/water/waste efficiency perspective)?

- Have we examined or identified the potential long-term savings for upgrading/building this program to LEED Silver or EnergyStar certified standards?

[Jim: Adding these headers below, it was helpful for the DEI questions to see how Renton did this and maybe we can use the same structure for our questions?]

Set Outcomes

- X

Identify and Involve Stakeholders

- X

Determine Benefit and/or Burden

- X

Advance Opportunity or Minimize Harm

- X

Evaluate, Raise Equity Awareness, Be Accountable

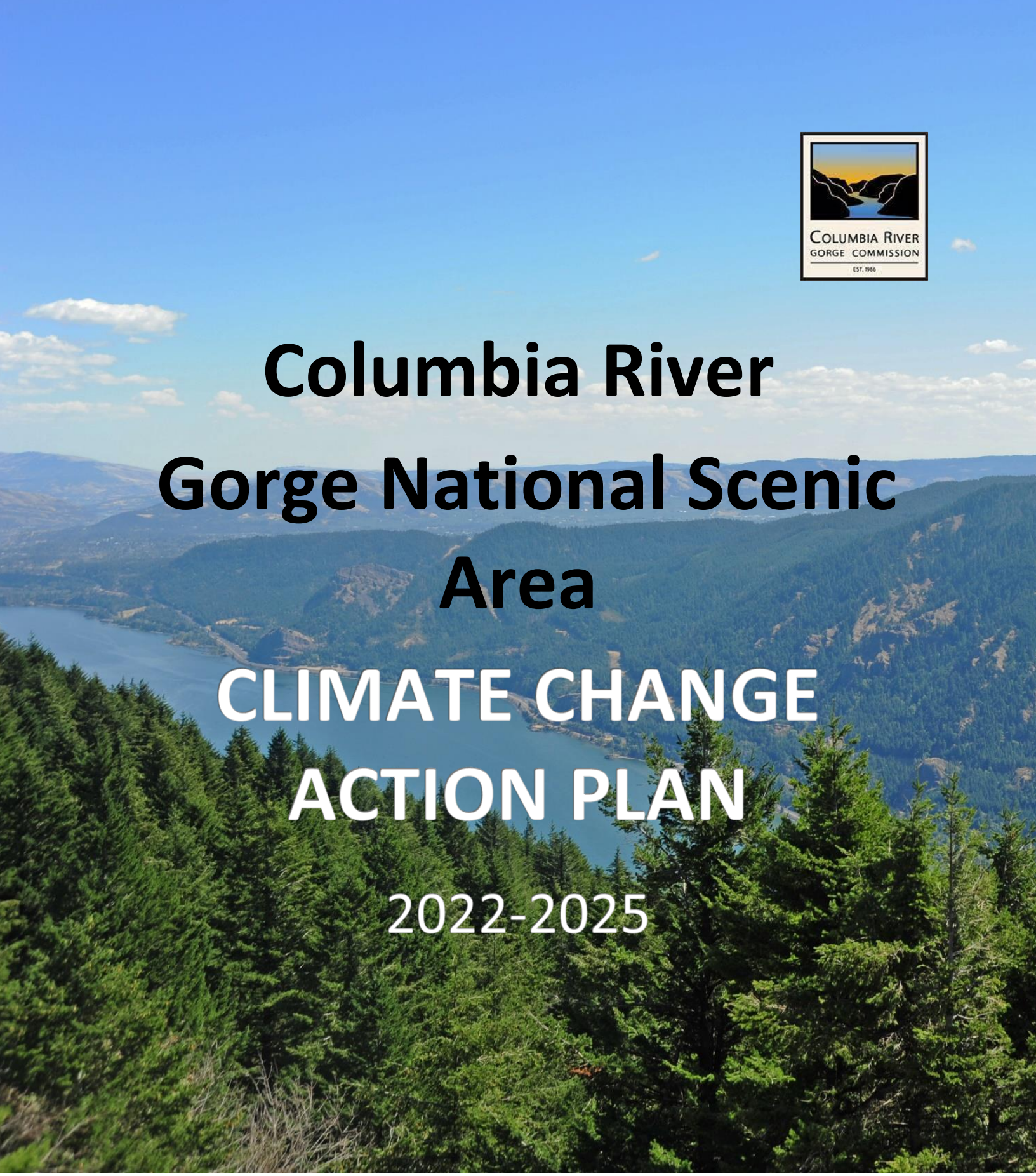
- X

Report Back

- X

File Attachments for Item:

4. Columbia River Gorge National Scenic Area Climate Change Action Plan 2022-2025



Columbia River Gorge National Scenic Area

CLIMATE CHANGE ACTION PLAN

2022-2025

Draft for Public Comment

April 27, 2022 Version

Executive Summary

This Executive Summary provides an overview of the Gorge Commission's Draft Climate Change Action Plan (CCAP), a guide to climate change action in the Columbia River Gorge National Scenic Area. It is an "at-a-glance" summary of the Commission's climate change goals, strategies, and anticipated outcomes that are described in more detail in the comprehensive plan that follows.

Purpose of the Action Plan

Climate change is the most sweeping and urgent threat facing land and resource managers today. In the Columbia River Gorge National Scenic Area—an incredibly dynamic and biodiverse landscape—tribes, agencies, local governments, and communities are taking action to build resilience in our natural and built systems to cope with climate change (adaptation) and to reduce greenhouse gas emissions (mitigation).

The Commission developed this Climate Change Action Plan to identify our greatest needs and opportunities to build resilience and reduce emissions, and to guide our ongoing climate work.

This Action Plan builds upon several important milestones:

1986	National Scenic Area Act
1991	Management Plan and Land Use Designations for the NSA
2018	Wozniak Report on climate change impacts to the NSA
2021	Draft USDA Forest Service Climate Change Vulnerability Assessment for the Columbia River Gorge National Scenic Area, Mt. Hood, and Willamette National Forests
2022	Revised Management Plan with climate change policies
2022	Gorge Commission's Climate Change Action Plan

Photo by Peter Marbach

Key Climate Change Impacts and Opportunities in the NSA

Based on local climate change vulnerability assessments completed for this region, we expect these changing conditions to impact natural and human systems in the NSA:

- Rising air and water temperatures: Warmer and drier conditions impact aquatic and terrestrial habitats, with more extreme heat events in summer months.
- Hydrological changes: Overall snowpack and summer stream flows will decrease, with winter flows becoming more flashy, causing flooding and habitat changes.
- Increased wildfire: The risk of more frequent, high-severity, and larger wildfires has increased in recent years, threatening scenic, natural, cultural, and recreation values, as well as human health, local economies, and carbon stores.

These impacts are not experienced by all people and places equally. Climate change disproportionately affects communities of color, Tribal communities, rural communities, and those who rely upon natural-resource based economies. The Commission has a responsibility to engage with individuals and communities that have historically been excluded from land use planning decisions in this region.

This Action Plan identifies opportunities to adapt to climate change impacts and also reduce the sources of greenhouse gas emissions that contribute to climate change. Two overarching objectives guide our climate work:

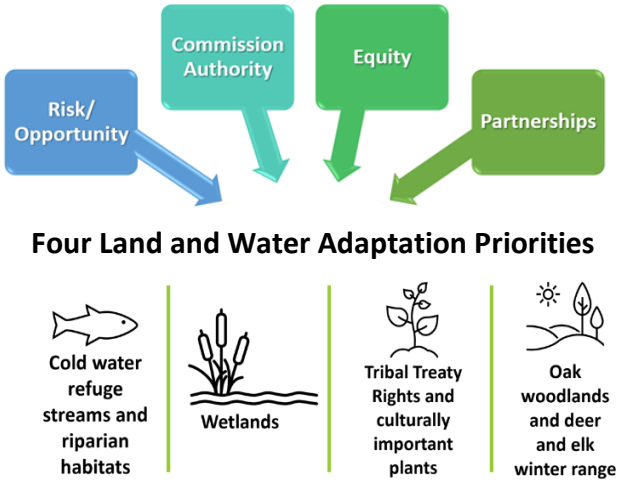
Objective 1: Build resilience and adapt to climate change by protecting resilient lands and addressing the most pressing impacts on natural, scenic, cultural, and recreation resources and to the economic vitality of NSA communities.

Objective 2: Mitigate climate change by reducing greenhouse gas (GHG) emissions and protecting and enhancing carbon storage in the NSA.

How the Action Plan Advances Climate Adaptation and Mitigation

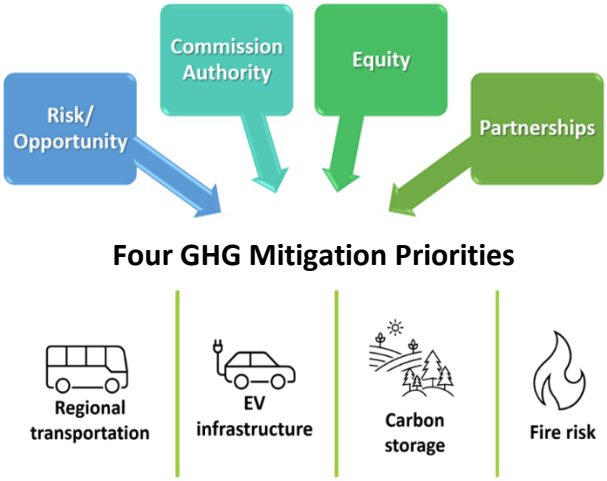
Objective 1:
Adapt to Impacts

We ranked climate vulnerability and risk for over 30 values and resources in the NSA. From among these, **four land and water adaptation priorities** rose to the top. These are based on Commission approved criteria: opportunity to improve condition or risk of inaction, Commission's role and authority in affecting the resource, equity implications for historically excluded or climate-vulnerable people, and opportunities for partnerships to advance and strengthen our efforts.



Objective 2:
Mitigate GHG emissions

We identified options to reduce the sources or enhance the sinks of greenhouse gases in the NSA. Transportation is by far the largest contributor to GHG emissions in this landscape. Land-based carbon storage and sequestration offer a smaller, yet still significant contribution (9-14% of Oregon and Washington's state reduction goals according to recent publications). Reducing fire risk is also an opportunity to prevent or reduce carbon emissions. We established **four GHG mitigation priorities**, based on Commission approved criteria.



This Action Plan highlights two additional climate priorities that were identified at the outset of this process: (1) resilient lands that support many species, habitats, and human communities and (2) equity in community engagement and climate action outcomes.

For each of these adaptation and mitigation priorities, we developed goals, strategies, actions, and metrics to track our progress. The NSA's Vital Sign Indicators (VSI) long-term monitoring program is integral to our evaluation approach. These are summarized below and described in more detail in Parts III and IV of the Action Plan.

Objective 1: Adapt to Impacts - Land and Water Adaptation Priorities

The following pages summarize goals, strategies, expected outcomes, and progress measures to achieve Objective 1: Adapt to Impacts. **Part III** lists each priority action the Commission intends to accomplish.

Cold Water Refuge Streams and Riparian Habitats

Desired Condition

Stream habitats support fish and wildlife

Rising steam temperatures and winter floods threaten native aquatic species, including salmon and steelhead that are critically important to Columbia River Treaty Tribes. Cold water refuge (CWR) habitats are limited on the lower Columbia River with 98% of total CWR volume located in 12 primary tributaries. Ten of these 12 CWR streams are in the NSA.

For more about streams and riparian habitats, see the **vulnerability snapshot** on page 13. Priority actions are listed in **Part III** on page 49.

Goals for Cold Water Refuge Streams and Riparian Habitats

1. By 2030, based on VSI monitoring and with partner input, the Commission has set goals for summer baseflows and winter high flows (these may crossover with wetlands goals).

2. By 2030, summertime water temperature on NSA CWR streams remain under or are trending towards federal/state standards for cold water refuge habitats.

Strategy 1: Improve stream temperatures and riparian vegetation.

Action Outcomes:

- Policies create options for permit-exempt or streamlined enhancement.
- Updated buffer policies improve stream and riparian conditions.
- Partnership with EPA and others advances habitat goals in the Columbia River CWR Plan.

Strategy 2: Generate decision support tools to evaluate actions and set future actions.

Action Outcomes:

- Stream flow, temperature, and salmonid habitat quality data inform decisions to better protect stream and riparian habitat.

How will we measure success?

We will track our actions by the number of stream miles restored and acres of stream habitat enhancement projects supported, as well as Commission policy decisions to protect stream habitat. Vital Sign Indicators monitoring will track temperature and flow of CWR streams. We are working to define goals for stream flows to provide sufficient water in summer months and to protect redds from scouring during winter floods.

Wetlands and Wetland Species

Desired Condition

Wetlands absorb climate impacts, support plants and wildlife

Drying conditions threaten and add stress to wetland habitats and associated species. Rare and culturally important plants that are most affected by climate change in the NSA are those associated with wetlands and waterfall spray areas.

For more about impacts to wetlands, see the **vulnerability snapshot** on page 14. Priority actions are in **Part III** on page 51.

Goals for Wetlands

1. By 2025, baseline extent and condition for wetlands are established and support implementation of the Management Plan's goal of no wetland loss.

2. By 2030, wetland extent and function are increasing. Based on VSI information, more detailed goals can be set at this time with targets for wetlands acreage and condition.

Strategy 1: Accelerate wetland restoration and enhancement.	**Strategy 2:** Develop policies to strengthen protections for wetlands and wetland species.	**Strategy 3:** Generate decision support tools to guide future policy.
Action Outcomes: - Policies create options for permit-exempt or streamlined enhancement. - Partner projects enhance wetlands.	**Action Outcomes:** - Policy updates improve wetland buffers. - Best practices guidance protects wetland habitat.	**Action Outcomes:** - Baseline data on wetland extent and condition inform decision making and help prioritize wetlands for enhancement.

How will we measure success?

We will track our actions by the number and acres of wetland enhancement projects supported, as well as Commission policy decisions to improve wetlands. Vital Sign Indicators monitoring will measure the extent and condition of NSA wetlands. We will refine our goals as our understanding of wetland status and trends improve.

Tribal Treaty Rights and Culturally Important Plants

[We are working on this section with Tribes during the comment period.] Sovereign Tribes in this region are leading numerous climate change initiatives on reservation lands and across the landscape. The Commission is learning about Indigenous priorities for climate change action and how our efforts can contribute to treaty-reserved rights. CCAP actions protect and enhance culturally important plants and Tribal access to plant populations. They strengthen our ability to work directly with Treaty Tribes to identify additional shared climate objectives.

Read more about culturally important plants in the **vulnerability snapshot** on page 22. Priority actions are described in **Part III** on page 53.

Goals for Tribal Treaty Rights and Culturally Important Plants

1. By 2025, the Commission has clear objectives and policy approaches for First Foods protection and access, created with the Columbia River Treaty Tribes.

2. By 2030, populations of culturally important plants are protected from development and enhanced through stewardship.

Strategy 1: Build knowledge and options for protecting culturally important plants.	**Strategy 2:** Consult with Treaty Tribes to identify policy needs to protect culturally important plants and First Foods.	**Strategy 3:** Support Treaty Tribes in their work to restore access for traditional gathering.
Action Outcomes: - Objectives co-created with Tribes for supporting Treaty Rights.	**Action Outcomes:** - Policy updates ensure that culturally important plants are protected through development reviews.	**Action Outcomes:** - Baseline information on culturally important plants helps prioritize areas for protection and restored access.

How will we measure success?

As we define measures of success with the Columbia River Treaty Tribes, the Commission will track the number of permitted or voluntary projects benefitting culturally important plants or improving access for Tribal members to gather and steward plants.

Oregon White Oak Woodlands and Deer and Elk Winter Range

Oregon white oak woodlands are one of the most biodiverse and climate-resilient ecosystems in the NSA. Oaks are drought-hearty and fire-adapted; they are expected to expand in range under future conditions. At the same time, oak woodlands are one of the fastest changing systems as a result of development and fragmentation, invasive species, historical fire suppression leading to conifer encroachment, and other land uses. Oak and pine-oak make up much of the deer and elk winter range in the NSA.

Read more about oak woodlands and winter range in the **vulnerability snapshots** on pages 16-17. Oak and winter range priority actions are described in **Part III** on page 55.

Goals for Oregon White Oak and Deer and Elk Winter Range

1. By 2025, critical corridors for oak woodlands and deer habitat connectivity are identified and policy options are provided to the Commission. Through work with East Cascades Oak Partnership (ECOP), comprehensive oak habitat maps are available.

2. By 2030, there is no net loss of oak woodland acres or function in the NSA.

Strategy 1: Develop policy and compensatory mitigation standards to protect oak habitat and maintain or restore connectivity.	**Strategy 2:** Develop policy and compensatory mitigation standards to protect winter range and maintain or restore connectivity.	**Strategy 3:** Develop decision support tools to inform policy updates and Management Plan implementation.
Action Outcomes: - Policy updates protect oaks and accelerate oak enhancement. - Partnerships improve Management Plan implementation.	**Action Outcomes:** - Policy updates protect and enhance wildlife corridors in oak woodlands.	**Action Outcomes:** - Baseline data on oak extent and condition inform policies and decision making. - Planners can assess oak condition and function.

How will we measure success?

We will track our actions by the number of policy decisions and the acreage conserved or enhanced through development reviews. Through VSI and with ECOP, we will measure oak extent and work to develop oak condition assessment tools.

Climate Resilient Lands

Desired Condition

Climate resilient landscapes remain intact

Intact landscapes provide ecosystem functions that will be even more important in a changing climate, like groundwater recharge, surface water filtration, biodiversity, and more. We have identified areas that are expected to fare well, "climate resilient lands," based on local data about physical and biological characteristics and development. By prioritizing lands that can support native plants and wildlife into the future, we also allow species room to move when resources are scarce, and for some species to shift their ranges over time.

This topic is listed in the Action Plan as an **overall approach** to achieving the Commission's climate change objectives. It supports the eight priorities by ensuring that functioning natural landscapes are available in the future to support adaptation to impacts, while maintaining carbon storage opportunities.

Climate resilient lands priority actions are described in **Part III** on page 47.

Goal for Climate Resilient Lands

By 2040, 70% of the most climate resilient lands in the NSA are protected by policies or conservation status (e.g., easements, designations, public ownership, etc.).

Strategy: Protect natural landscapes, connectivity, and ecosystem functions.

Action Outcomes:

- Policy updates protect climate resilient lands into the future.
- Commission priorities support conservation action by other parties (e.g., land trusts, state and federal agencies, etc.)

How will we measure success?

Climate resilient lands will be measured with spatial data in coordination with local conservation partners.

Objective 2: Mitigate Greenhouse Gas (GHG) Emissions - Mitigation Priorities

The following pages summarize goals, strategies, expected outcomes, and progress measures to achieve Objective 2: Mitigate GHG emissions. Part III provides additional detail about each of the actions the Commission intends to accomplish.

Regional Transportation

Desired Condition

Single passenger car trips are reduced

Transportation is the largest source of GHG emissions in the Northwest, particularly in the Gorge, where industrial and residential development are limited. The Commission has a unique role as a regional planning body in a complex, multi-jurisdictional area with high visitation. Addressing transportation emissions through planning and policies has multiple co-benefits for equity and resource protection.

Read more about regional transportation as a **mitigation opportunity** on page 34. Priority actions are described in **Part III** on page 56.

Goals for Regional Transportation to Reduce Single Occupancy Vehicle Miles

1. By 2025, the number of gas-powered single occupancy vehicle trips across the Gorge decreases from 2022 level. This goal will be supported by transit, shuttle, and parking solutions.
2. From 2022-2025, transit ridership increases each year.

Strategy 1: Leverage and build partnerships to reduce transportation-related emissions.	Strategy 2: Reduce congestion and improve traffic efficiency.	Strategy 3: Promote regional connected bike/pedestrian/multi-modal transportation.
Action Outcomes: - Regional partners collaborate, bringing solutions, funding, and resources to the Gorge.	**Action Outcomes:** - Collaboration and implementation of regional plans relieve congestion on I-84 and SR-14.	**Action Outcomes:** - Recreation developments increase multimodal connections.

How will we measure success?

We will track our actions in collaboration with partners responsible for transportation (ODOT and WSDOT, recreation site managers, and transit operators). Measuring success will require partnership with those who can estimate emissions.

EV Infrastructure

Desired Condition

EV charging supports a just transition from fossil fuels

Transportation emissions are far and away the largest source of GHG emissions in the Gorge, and in Oregon and Washington. Nationally and globally, a transition away from fossil fuels is a key climate mitigation strategy. Several decision-support tools and funding sources are ramping up now to rapidly increase charging in the region.

Read more about EV infrastructure as a **mitigation opportunity** on page 37. EV priority actions are described in **Part III** on page 58.

Goals for EV Infrastructure

1. By 2025, public direct current (DC) fast charging is available at least every 25 miles along I-84 or SR-14, and 50% of Urban Areas have public Level 2 or DC fast charging stations.

2. By 2025, the Gorge has a strategy for the desired locations and types of charging stations, and partnerships in place to implement them by 2030.

Strategy 1: Urge inclusive and proactive regional EV planning.

Action Outcomes:

- Increased funding and a strategy for the locations and types of charging facilities advance EV infrastructure in the Gorge.
- Pilot projects and innovation reduce fossil fuel and hydroelectric power draw from EVs.

Strategy 2: Support incentives and reduce barriers to EV charging stations.

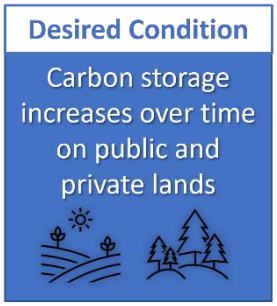
Action Outcomes:

- Policy updates and partnerships accelerate EV infrastructure in the Gorge.

How will we measure success?

We will track the number of charging stations using public data such as PlugShare and the Alternative Fuels Data Center.

Carbon Storage



Carbon storage is an important component of climate change mitigation, particularly in Northwest forests. This relates directly to another priority, reducing fire risk, addressed on the next page. Carbon is stored in plants, roots, and soils on all natural and working lands, including those climate resilient lands described earlier. Actions contributing to related adaptation priorities will help protect carbon storage while we are in an information-gathering and goal-setting stage for carbon storage actions and targets specific to different land cover types and habitats.

Read more about forest carbon storage as a **mitigation opportunity** on page 39. Carbon storage priority actions are described in **Part III** on page 59.

Goal for Carbon Storage

By 2030, the Commission has measurable, time-bound goals for enhancing carbon storage on natural and working lands, with associated strategies and actions.

Strategy 1: Develop policy and mitigation standards to retain and enhance carbon storage in forests.	Strategy 2: Generate decision support tools.	Strategy 3: Promote practices that store carbon in soils, plants, and wetlands.
Action Outcomes: - Policy updates accelerate forest health and maintain carbon storage.	**Action Outcomes:** - Data-driven goals enhance carbon storage on natural and working lands.	**Action Outcomes:** - Private lands stewardship improves carbon storage.

How will we measure success?

As we develop baseline information about current and potential carbon storage of different land cover types and habitats, we will measure success by extent of lands protected and enhanced. Our initial focus will be on forested lands as a land-based carbon storage opportunity in the NSA.

Fire Risk

Desired Condition

Wildfire risk is reduced

Western states have seen exponential increases in the length of fire seasons and the size and frequency of fires in recent years. In the NSA, nearly all lands are considered to be in the wildland-urban interface where human developments are at elevated risk. The Eagle Creek Fire of 2017 demonstrated some of the multi-facited implications of large, severe fires, including smoke and health impacts, immediate and sustained economic impacts, and the challenges of enforcing closures of recreation areas that were unsafe post-fire. The Gorge Commission recently joined the Washington Fire Adapted Communities Learning Network and will leverage state and national resources to advance our work. Read more about fire risk as a **mitigation opportunity** on page 41. Priority actions are in **Part III** on page 61.

Goals for Fire Risk

1. By 2025, combined efforts on public and private lands in the NSA result in at least 2,200 acres of fuels reduction treatments. Fuels reduction includes thinning encroached or overstocked stands and prescribed burning. With support from the Fire Adapted Communities Learning Network and multiple partners, the Commission will set long-term acreage targets based on forest types, LUDs, and other considerations.
2. By 2030, the NSA is home to at least 6 Fire Adapted Communities.

Strategy 1: Reduce fire risk on private lands.	**Strategy 2:** Coordinate with partners to advance forest health and reduce fire risk across all lands.	**Strategy 3:** Develop decision support tools to inform policy updates and plan implementation.
Action Outcomes: - Policy updates accelerate private forest health projects. - More landowners employ Firewise principles.	**Action Outcomes:** - Partnerships accelerate forest health treatments and improve outcomes of forest practices. - Forest closure procedures reduce fire risk.	**Action Outcomes:** - Comprehensive tracking of wildfire and fuels treatments helps prioritize policies and restoration work to reduce fire risk across the NSA.

How will we measure success?

We will coordinate with agencies to estimate progress toward the goal of reduced fire risk and to refine goals for future years. Fuels reduction tracking is supported by VSI.

Equity and Inclusive Climate Action Work

As we prioritize the natural systems upon which we depend, we also prioritize our communities and strengthening the relationships that make us resilient together. Equity and inclusive community engagement are priorities that apply across both Objectives in the Action Plan.

An important principle throughout the Action Plan is to engage, learn from, and work on behalf of all people who are affected by climate change in the NSA, including those who have been historically excluded from land use planning decisions in the region. We have established goals, strategies, actions, and progress measures to guide us in these initial years of climate change action. Priority actions for inclusive climate work are in **Part III** on page 47.

Initial Goal for Inclusive Climate Action Work

By 2025, the Commission has completed a comprehensive Diversity, Equity, and Inclusion Plan with specific, measurable, and timebound goals to advance climate equity.

Strategy: Engage diverse communities and partners to plan for climate change and implement adaptation and mitigation actions.

Action Outcomes:

- Policy and operational changes improve outcomes for people who are most vulnerable to climate change.
- Communication and collaboration with youth, Tribal Councils, Latino/Hispanic and Spanish speaking community members, and other immigrant communities in the NSA advance adaptation and mitigation actions.

How will we measure success?

While we work toward detailed equity strategies and actions, we will track progress toward inclusivity through public engagement activities that meet the needs of diverse community members, new relationships, and Commission participation in DEI learning opportunities.

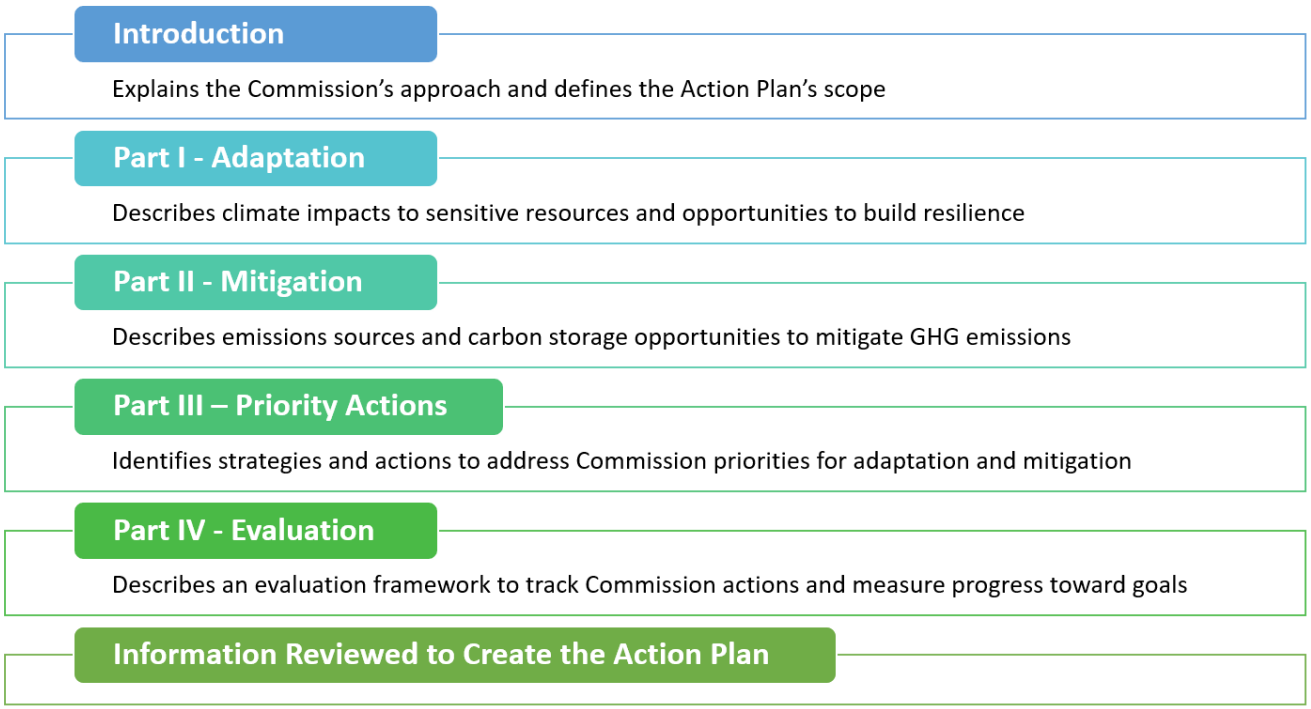
opportunity to promote equity

Throughout the CCAP, you will see this icon to indicate an **opportunity to promote equity**. This icon simply helps to highlight a few of the clearest connections between the Commission's work or influence and equity outcomes. Among the topics with the greatest potential for improving equity outcomes are: Tribal Treaty Rights and culturally important plants, nature-based tourism, agricultural uses and products, and regional transportation.

How to Stay Engaged with the Climate Change Action Plan

You can find the latest on the Commission's Climate Change Action Plan on our website: http://www.gorgecommission.org/initiatives/climate-change.

Here's how the Climate Change Action Plan is organized:



60-Day Public Comment Period

We welcome comments on this draft plan by email at **ClimateAction@gorgecommission.org** **from May 5 through July 5, 2022**. You can also use this email to contact Commission staff if you would like to partner with us in implementing this plan and improving it in the future. Written comments may be submitted by mail to: Columbia River Gorge Commission, RE: Climate Change Action Plan, P.O. Box 730, White Salmon, WA 98672.

The Commission meets via Zoom on the second Tuesday of every month. All meetings are open to the public.

Table of Contents

Land Acknowledgement and Support of Tribal Treaty Rights

The Gorge Commission acknowledges and honors that the Columbia River Gorge National Scenic Area is located within the ancestral territories of Indigenous peoples who have protected these lands and waters since time immemorial. We also honor the sovereignty and role of the four Columbia River Treaty Tribes in taking care of these lands and waters today—the Confederated Tribes of Warm Springs, the Confederated Bands and Tribes of the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, and the Nez Perce Tribe.

Photo by Peter Marbach

We thank members and staff from each of the Treaty Tribes who have offered insights and ideas on climate change and Tribal sovereignty from holistic perspectives. Water, wildlife, plants, and natural systems have been resilient for millennia, in part through intentional stewardship by Indigenous people. Colonization and western development have created current conditions. The continued systemic suppression of Indigenous land practices exacerbates climate change impacts on lands and waters in this region.

The Gorge Commission is committed to supporting and implementing the priorities and initiatives that the four Columbia River Treaty Tribes are taking on reservation lands, on ceded lands, and beyond. A few of the strategies we seek to support through work with Treaty Tribes include provisioning access to lands and resources, managing water and floods with natural and created wetlands, and managing fuels, plants, and wildlife with fire.

Letter from the Columbia River Gorge Commission

Climate change is one of the defining challenges of this decade for society, as it will affect every sector of the economy, every corner of society, and every public policy to varying degrees.

Therefore, it came as no surprise that when updating the National Scenic Area Management Plan, climate change was identified as the most significant threat to the future health of the National Scenic Area (NSA) and that to varying degrees climate change was already impacting parts of the NSA as evidenced by:

- Increased severity and frequency of wildfires,
- Increased vulnerability of culturally important resources, and
- Changes in water flow and temperature.

The development of this Climate Change Action Plan provides both a framework and guide for the Commission's journey, with appropriate government and community support, to build resilience within the NSA and region.

Recognized for its scenic, cultural, natural, and recreational values locally, regionally, nationally, and internationally, we need to protect the area not just for future generations, but also for the health of local economies, ecosystems, and cultural connections that are dependent upon the NSA.

This will involve making changes in how the NSA is managed so the area is more resilient to the threat of increased temperatures, changing rainfall patterns, and greater climate variability.

Addressing the multitude of physical impacts and transitional risks of climate change is not something the Commission can do alone: it requires a sustained effort from all of us. To be successful, all individuals, Treaty Tribes, organizations, and governments that have an interest in the NSA must act strategically and together to immediately take steps that will help the NSA natural systems, communities, and economies to adapt.

This is of critical significance as research has already indicated that apart from physical impacts to natural resources, those that rely upon our natural resources for economic and traditional activities, such as tourism, fishing, and agriculture, as well as communities of color and low to moderate income individuals, are likely to be adversely impacted as society transitions to a net zero emissions environment.

More importantly, as society moves along its pathway to net zero emissions, such actions need to be institutionalized into the daily way we all go about our lives as the effects of climate change are likely to be experienced for decades.

As new science and learnings from our actions become available, it will be necessary to periodically review and update the Climate Change Action Plan. Our Vital Sign Indicators program will play a key role in this by alerting us to how successful our actions are in building resiliency or whether there is need to chart a different course of action to maintain the universal values of the NSA for everyone.

Sincerely,

Robin Grimwade, Commission Chair

Pah-tu Pitt, Commission Vice Chair

Acknowledgements

Commissioners

Robin Grimwade, Chair, Clark County Appointee
Pah-tu Pitt, Vice Chair, WA Governor Appointee
Sondra Clark, Klickitat County Appointee
Tamara Kaufman, Skamania County Appointee
Robert Liberty, Multnomah County Appointee
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Bowen Blair (term ended April 2021)
Janet Wainwright (term ended March 2021)
Dan Ericksen (term ended February 2021)
Lynn Burditt (term ended December 2020)

Photo by Peter Marbach

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We are grateful to each member of the Review Committee who offered time, expertise, and energy to this effort. We look forward to working with you to implement the Climate Change Action Plan.

Review Committee and Technical Advisors

Dan Bell, Friends of the Columbia Gorge Land Trust
Catherine Corbett, Lower Columbia Estuary Partnership
Lindsay Cornelius, Columbia Land Trust and East Cascades Oak Partnership
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Steve Waste, US Geological Survey
Seth White, Columbia River Inter-Tribal Fish Commission

Many others offered review and ideas throughout the process–thank you.

Additional Review and Support

Glenn Ahrens, Oregon State University Extension
Jennifer Bayer, Pacific Northwest Aquatic Monitoring Partnership
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Mary Brazell, Oregon Department of Transportation
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Andrew Spaeth, Hood River and Wasco County Forest Collaboratives
Thomas Tall Bull, Nez Perce Tribe
Cindy Thieman, Hood River Watershed Group
Jonathan Tallman, Yakama Nation Forestry
Tova Tillinghast, Underwood Conservation District
Sue Van Leuven, Washington Department of Fish and Wildlife
Shannon Walker, Rivian
Owen Wozniak, Land Trust Alliance
A.J. Zelada, League of American Bicyclists, Friends of the Historic Columbia River Highway, Multnomah County Bicycle & Pedestrian Advisory Committee
And many others

Key Abbreviations and Definitions

Key Abbreviations

EPA: Environmental Protection Agency

EVs: Electric vehicles are vehicles that derive all or part of their power from electricity.

GHG: Greenhouse gases are heat-trapping gases that warm the atmosphere, such as carbon dioxide, methane, and nitrous oxide.

IPCC: Intergovernmental Panel on Climate Change

MTCO2e: Metric tons of carbon dioxide equivalent is a common unit of measurement for greenhouse gases that includes consideration of major greenhouse gases, including carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O).

NSA: Columbia River Gorge National Scenic Area

VMT: Vehicle miles traveled is a metric used in transportation planning to measure the cumulative miles traveled by all vehicles in a geographic region over a given time period.

Key Definitions

Adaptation: In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate (IPCC).

Adaptive Capacity: The ability of a system, population, or resource to adjust to, or moderate, potential damages caused by climate-related hazards to preserve or enhance functionality.

Agritourism: Visiting a working farm or any agricultural, horticultural, or agribusiness operation for enjoyment, education, or active involvement in the activities of the farm or operation (e.g., u-pick, farm tours, wine tasting, etc.).

Equity: Acknowledges that not all people, or all communities, are starting from the same place due to historic and current systems of oppression. Equity is the effort to provide different levels of support based on an individual's or group's needs to achieve fairness in outcomes. Equity actionably empowers communities most affected by systemic oppression and requires the redistribution of resources, power, and opportunity to those communities (State of Oregon, Office of the Governor).

Climate Equity: Ensuring that the people and communities who are least culpable in the warming of the planet, and most vulnerable to the impacts of climate change, do not suffer disproportionately as a result of historical injustice and disinvestment (Resources Legacy Fund, Climate Justice Working Group).

Enhancement: A human activity that improves one or more ecological functions of an existing sensitive area.

Green infrastructure: An approach to water management that emphasizes conservation and protects local watersheds by filtering runoff.

Hazards: Events or occurrences that have the potential to cause harm to people, assets, services, or ecosystems.

Integrated Pest Management (IPM): The careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage pest populations. IPM keeps pesticides and other interventions to levels that are economically justified and minimizes risks to human health and the environment. IPM can also be used to manage invasive species.

Invasive species: Non-native plant or animal species that out-compete or displace native species, causing economic, environmental, or human harm.

Low Impact Development (LID): Systems and practices that use or mimic natural processes that result in the infiltration, evapotranspiration, or use of stormwater in order to protect water quality and associated aquatic habitat (EPA).

Mitigation: A human intervention to reduce the sources or enhance the sinks of greenhouse gases (IPCC).

Natural Climate Solutions: Conservation, restoration, and improved land management actions that increase carbon storage and/or avoid greenhouse gas emissions in forests, wetlands, grasslands, and agricultural lands.

Regenerative agriculture: Farming and grazing practices that, among other benefits, mitigate climate change by rebuilding soil organic matter and restoring degraded soil biodiversity, reducing atmospheric carbon, and improving the water cycle.

Resilience: The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity of self-organization, and the capacity to adapt to stress and change (IPCC).

Risk: The potential for adverse consequences for human or ecological systems, recognizing the diversity of values and objectives associated with such systems. In the context of climate change, risks can arise from potential impacts of climate change as well as human responses to climate change (IPCC).

Sensitivity: The degree to which a system, population, or resource is affected by climate impacts or changing climate conditions.

Vulnerability: The predisposition or tendency of an asset to be adversely affected by hazards.

Need for Climate Action in the National Scenic Area

Urgency and Importance

Climate change poses wide-reaching, rapidly progressing impacts on the people, land, water, and resources of the Columbia River Gorge. The latest Intergovernmental Panel on Climate Change (IPCC) report released in 2020 emphasizes the role of land and land use in climate change, noting the obvious, yet fundamental truth: "Land provides the principal basis for human livelihoods and well-being, including the supply of food, freshwater and multiple other ecosystem services, as well as biodiversity."

The Columbia River Gorge Commission (Commission) has the authority and imperative to manage land and land uses in the National Scenic Area (NSA) for the protection of scenic, natural, cultural, and recreation resources, and Gorge economies, in the face of accelerating climate change. The Commission is addressing climate change because we have an important regional role to play in a unique and treasured place, where coordinated actions across jurisdiction are necessary.

The National Scenic Area Act identifies two purposes:

To establish a national scenic area to protect and provide for the enhancement of the scenic, cultural, recreational, and natural resources of the Columbia River Gorge; and

To protect and support the economy of the Columbia River Gorge area by encouraging growth to occur in existing urban areas and by allowing future economic development in a manner that is consistent with the first purpose.

Columbia River Gorge National Scenic Area Landscape Context

The NSA spans 252,000 acres along 80 miles of the Columbia River in north-central Oregon and south-central Washington. Although a compact geographic area, the NSA contains both vertical and east-west gradients that support a diversity of flora, fauna, and human cultures. Stewards of the Gorge include the Tribes who have lived in this area for millennia, government entities that manage lands and resources, families and individuals who work the land to produce forest and agricultural products, and dozens of organizations and agencies inside and around the NSA with diverse interests and responsibilities. Resources, people, and economies flow across boundaries in this unique landscape.

The National Scenic Area Act formed the Columbia River Gorge Commission as an interstate compact with Oregon and Washington to co-manage the NSA with the USDA Forest Service. This governance structure provides the Commission with unique land use authorities to protect and enhance scenic, cultural, natural, and recreation resources. In the face of a changing climate, the Commission must address climate change impacts to the resources it is charged with protecting in order to achieve its mandate.

The Management Plan for the Columbia River Gorge National Scenic Area

The Management Plan for the Columbia River Gorge National Scenic Area establishes goals and policies for resource protection in the NSA. Provisions in the Management Plan provide strong protections for ecosystems and biodiversity, acknowledging threats from land uses and development. However, the original Management Plan did not acknowledge climate change or the magnitude and speed of climate change impacts to NSA resources and communities.

In 2020, the Commission and USDA Forest Service completed its decennial review and revision of the Management Plan. Throughout the process, members of the public of all ages from across the Gorge and various organizations urged the Commission to develop climate change policies. Recognizing the need to explicitly address climate change in the revised Management Plan, the Commission added a new climate change chapter that prioritizes building climate change resiliency in the NSA and reducing greenhouse gas emissions in the region.

The Climate Change Action Plan (CCAP) generates actions that result in Management Plan policy changes; implementation guidance and best management practices; partnerships and support for other efforts; and long-term monitoring and information sharing at a regional level.

In addition to the Management Plan, this CCAP supplements other federal, state, local, and Tribal plans and incorporates emerging information from new plans to the greatest extent possible. A list of related plans is included in "Other Climate Change Plans for the Gorge Region" at the end of this document.

We heard from you!
These public comments on Gorge 2020 shape the CCAP:

Ecosystems: Protect and enhance wetlands, ponds, lakes, water quality and quantity, riparian vegetation, cold water habitat, upland vegetation, and open space.

Fish and wildlife: Protect climate sensitive salmon, lamprey, western pond turtles, and pika.

Transportation: Establish a common regional vision for integrated transportation throughout the Gorge. Focus on equitable transit and relieving congestion. Integrate climate goals with regional safety, connectivity, livability/workability, and pollution reduction goals.

Agriculture: Share knowledge and encourage farm practices that reduce synthetic chemicals, store carbon, promote soil health, and enhance native grasses and riparian plants.

Record-breaking Conditions are Becoming the Norm

The Fourth National Climate Assessment reported that conditions in the Pacific Northwest during 2015 were likely to become a "new normal" for the region. Extremes that summer included average temperatures 3.4°F above normal, drought declarations in 24 counties, and a record-breaking fire season with 1.6 million acres burned. Winter temperatures were 6.2°F above normal, with snowpack at the lowest recorded levels for the region. These factors affected Tribal fishing and salmon populations, farmers and irrigation, recreation opportunities, and much more (Wozniak 2018).

Ice storms and landslides in Skamania County during February 2017, along with several other extreme weather events that month, prompted Washington Governor Jay Inslee to request federal emergency funds from then President Trump (Inslee 2017).

In late summer 2017, the Eagle Creek Fire burned 50,000 acres in Oregon, and windborne embers ignited across the river in Washington. Due to weather conditions and rugged terrain, the fire burned for 3 months before firefighters achieved containment (Travel Oregon 2018).

During the summer of 2021, the Pacific Northwest experienced unprecedented heat waves. Health authorities in Oregon and Washington estimated a death toll of at least 200 people by mid-July from heat effects. Those most affected included farm workers and other laborers, the elderly, and those with underlying health conditions.

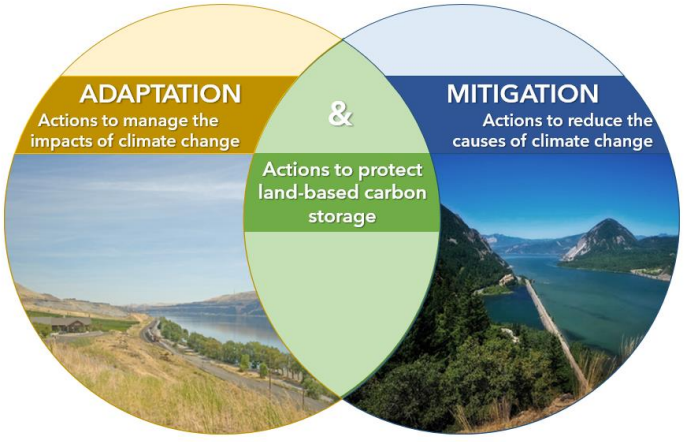
These extremes help to focus our attention on the urgency and dangers of climate change. Equally important are gradual and not-so-gradual **climate-related trends.** Here are just a few:

- Water temperatures are rising in the Columbia River, and Chinook and sockeye salmon runs are trending earlier year after year.
- Changing and narrowing plant bloom times and earlier spring green-up are affecting rare and culturally important plants, agricultural crops, and wildlife.
- Conditions increasingly favor non-native, invasive species, especially grassland plants and aquatic species.
- Drying conditions, along with development in the wildland-urban interface, mean that much of the Gorge is at high fire risk.
- Gradual shifts in vegetation and water features affect scenic resources, as described by Landscape Setting descriptions in the Management Plan.
- Increasing visitation and local recreation use, along with longer shoulder seasons, raise the potential for disturbance and degradation of climate sensitive habitats and species.
- Continuing fragmentation of intact natural landscapes from human development and activity add stress to climate sensitive species.

CCAP Objectives and Scope

The CCAP takes an integrated approach to building **resilience** in the face of climate change. Both adaptation and mitigation actions are needed.

Resilience is "the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity of self-organization, and the capacity to adapt to stress and change."



Adaptation and mitigation are important components of the CCAP

The Commission and Forest Service share a commitment to building climate resilience for the scenic, natural, cultural, and recreation resources we protect and enhance. As a regional entity, the Commission can also support local communities and the larger area in building resilience to the impacts of climate change while addressing the drivers of climate change.

Two overarching objectives guide our climate work:

Objective 1: Build resilience and adapt to climate change by protecting resilient lands and addressing the most pressing impacts on natural, scenic, cultural, and recreation resources and to the economic vitality of NSA communities.

Objective 2: Mitigate climate change by reducing greenhouse gas (GHG) emissions and protecting and enhancing carbon storage in the NSA.

The CCAP gives direction to staff and Commissioners to implement priority adaptation and mitigation actions through 2025. It also provides foundational information about the impacts that climate change has on the scenic, natural, cultural, and recreation resources and values in the National Scenic Area and reflects our best understanding of the wide array of adaptation and mitigation activities we can work toward in the future. The CCAP is intended to be revisited often, updated as needed, and maintained as a "living document" and management tool.

Equity in Climate Adaptation and Mitigation

The worst effects of climate change are disproportionately experienced by communities of color, Tribal communities, rural communities, and those who rely upon natural-resource economies (State of Oregon Climate Equity Blueprint 2021). Many of these communities historically have been excluded from land use decisions in the region. We begin to address these historical and on-going inequities by exploring actions that would proactively engage voices we do not hear often in our agency, including BIPOC residents, workers, and visitors.

Staff has focused this first phase of developing a CCAP on learning and listening to understand ways we can intentionally address the impacts our actions have on all people who value the NSA or are affected by the Commission's decisions. Through our agency-wide Diversity, Equity, and Inclusion (DEI) initiative, we are actively seeking to educate ourselves, build relationships and foster communication with community members, and expand our perspectives about the work we do and how we can better serve the people who live in and visit the NSA. Social and economic resilience are important outcomes we hope to achieve through climate change action planning, informed by our DEI efforts.

Throughout the CCAP, you will see this icon to indicate an **opportunity to promote equity**. Equity is an important consideration for all areas of climate change efforts. This icon simply helps to highlight a few of the clearest connections between the Commission's work or influence and equity outcomes. Among the topics with the greatest potential for improving equity outcomes are: Tribal Treaty Rights and culturally important plants, nature-based tourism, agricultural uses and products, and regional transportation, including transit.

Tribal Sovereignty and Leadership in Climate Adaptation

Recognizing the sovereignty of Tribal nations and the reserved Treaty Rights of the four Columbia River Treaty Tribes includes working toward the climate change priorities of those who have lived sustainably with the land for thousands of years, guided by deep commitment to steward the water, land, plants, and animals that sustain human life. Indigenous people are often deeply experiencing the impacts of climate change and have important knowledge about ecological and community resilience. We look to their knowledge and adaptation strategies to inform our actions and are pursuing government-to-government opportunities to work with Treaty Tribes on climate change action. Throughout the action plan, we identify opportunities to uphold Tribal Treaty rights as a key priority and emphasis for climate change action.

Integrating New Information and Adjusting Priorities: Vital Sign Indicators Program

Primarily through the Vital Sign Indicators (VSI) program, and by partnering with others to integrate science and monitoring into our decision making, the Commission will continue learning, implementing climate actions, and evaluating our impact. In partnership with the USDA Forest Service, the Commission employs the VSI program to evaluate the long-term health of scenic, natural, cultural, and recreation resources, and local economies, of the National Scenic Area. Vital Sign Indicators are high-level measures that guide assessment of progress toward Management Plan goals. Building on the original 2009 VSI effort, the Commission and Forest Service are currently working with partners on a comprehensive VSI update. VSI supports CCAP actions in these ways:

- Filling key information gaps about water resources, rare species, and priority habitats.
- Tracking changes so that we know when we are moving toward or away from desired conditions and establishing thresholds for a change in action.
- Learning about the impacts of climate change on resources and communities.
- Assessing the effectiveness of our climate change actions.

Examples of climate-focused Vital Sign Indicators include temperature and flow in streams providing cold water refuge habitat for migrating salmon and steelhead and distribution of wildfire and fuels reduction treatments on National Forest System lands in the NSA. The CCAP is designed to be regularly updated to incorporate new information and to reassess priorities to address emerging concerns. The Commission intends to re-set priority actions for staff and Commissioners every 2-5 years, as we check in on our progress and evaluate outcomes.

Part IV of the CCAP describes how we will track progress and adapt the action plan to address evolving needs and opportunities. More details on how Vital Sign Indicators connect with CCAP actions are included here.

Source: www.critfc.org

Monitoring Partnerships

Work is underway with the EPA, WA Department of Ecology, OR Department of Environmental Quality, USDA Forest Service, Columbia River Inter-Tribal Fish Commission, and other partners to create a Cold Water Refuges monitoring network across the National Scenic Area. Together, the Gorge Commission and partners can use stream temperature and flow data to inform a variety of habitat protection strategies including stream restoration, land use policy, and voluntary landowner stream enhancement projects.

Structure of the CCAP and How to Use the Action Plan

The CCAP is organized in four sections:

Part I synthesizes information from several sources to describe how vulnerable and adaptive key resources in the NSA are to climate change.

Part II explores opportunities and options for mitigating climate change by reducing greenhouse gas emissions and storing carbon.

Part III identifies specific priority actions that staff and Commissioners intend to pursue from 2022-2025, based on established criteria. It also includes potential future actions that can be pursued as capacity and funding allow, or as priorities shift in the future.

Part IV provides a framework for tracking progress and ensuring that new information is regularly incorporated into the CCAP to inform future priorities.

PART I: Climate Change Adaptation in the National Scenic Area

Draft for Public Comment

April 27, 2022 Version

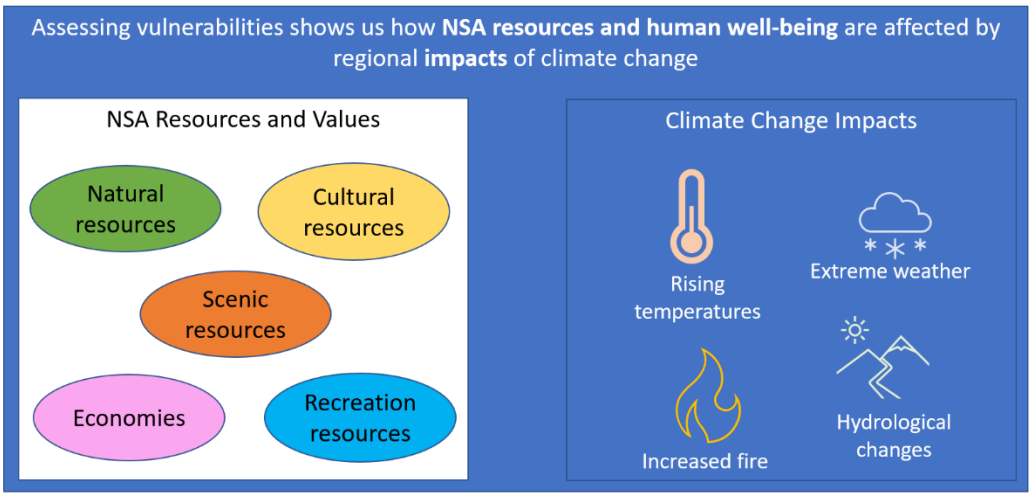
A. Climate Change Adaptation in the National Scenic Area

The National Scenic Area is home to incredible biodiversity, cultural diversity, and diversity in land uses and activities. Objective 1 of the CCAP is to address the most pressing impacts of climate change on natural, scenic, cultural, and recreation resources and on the economic vitality of NSA communities. We began by assessing climate change vulnerabilities for the resources and values protected in the National Scenic Area. Described on the next page, these include **ecosystems and natural resources** and aspects of **human well-being** that rely upon natural resources (e.g., cultures, natural resource economies, and recreation). Resources and values in the CCAP reflect the Commission's responsibilities and Management Plan goals.

Economic impacts from climate change are far reaching and interconnected with many protected resources and land uses in the NSA. In this section, these impacts are addressed within the context of specific topics below including Tribal Treaty Rights and culturally important plants; nature-based tourism; agricultural uses and products; and forestry and forest products.

Resources and Values Reviewed for Climate Change Adaptation

The table on the following page highlights the resources and values we considered in our assessment of climate change vulnerabilities, reflecting the two purposes of the NSA Act and the Management Plan. The vulnerability snapshots in the next section describe only those resources with medium, high, or very high rankings. Snapshots are one of the key criteria we used to select climate change adaptation priority topics and actions with greatest potential impact, in **Part III** of the CCAP.



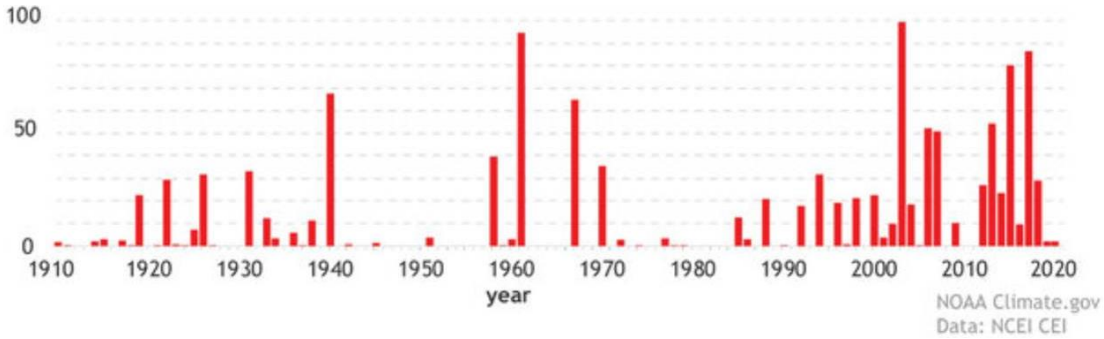
Approach to assessing climate change adaptation needs and opportunities in the NSA

Ecosystems and Natural Resources
Priority Habitats protected by the Management Plan • Water-related habitats: Riparian/streams, wetlands • Forests: Aspen, old-growth, Oregon white oak woodlands, coniferous forests • Other terrestrial habitats: Grasslands, shrub-steppe, dunes, winter range for deer and elk • Habitat sites and features: Caves, snags and logs, talus, cliffs
Other natural resources protected in the Management Plan • Rare and endemic plants • Fish species requiring cold water refuge habitat • Sensitive wildlife species: Western pond turtle, pika
Human Well-Being
Cultural Resources (see also natural resources) • Tribal Treaty Rights including culturally important plants • Cultural sites: Historic and archaeological sites • Cultural traditions and ways of life
Scenic Resources • Air quality and haze • Scenic views from Key Viewing Areas
Recreation Resources • Recreation opportunities, access, experience: warm-weather activities, snow-based activities, wildlife-based activities, water activities, forest products and traditional gathering • Recreation infrastructure
Other key assets and values affected by climate change • Nature-based tourism • Public and private infrastructure • Agricultural uses and products • Forest uses and forest products • Livability and workability (particularly related to heat)

Major Climate Stressors in the Region Requiring Adaptation

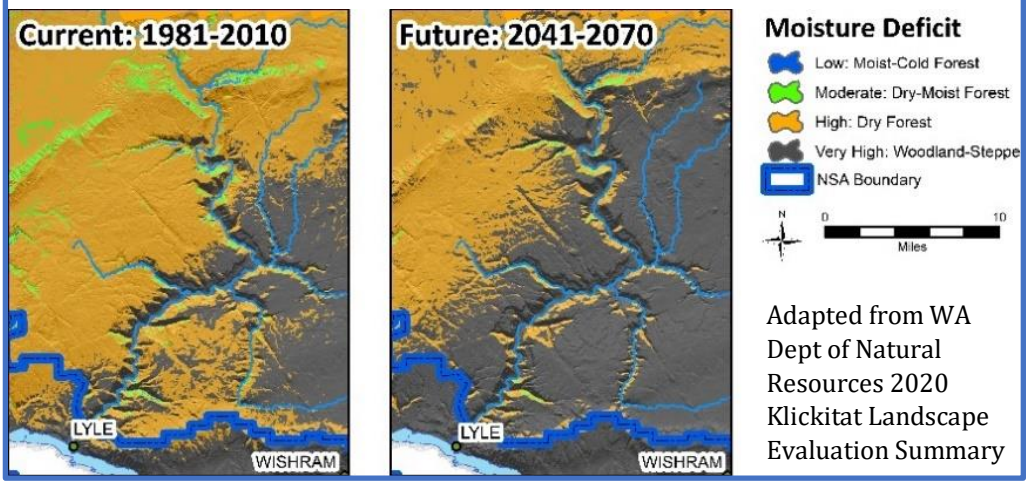
Rising air and water temperatures

Percent area of OR, WA, and ID having extremely hot daytime high temperatures



Frequent and sustained drought

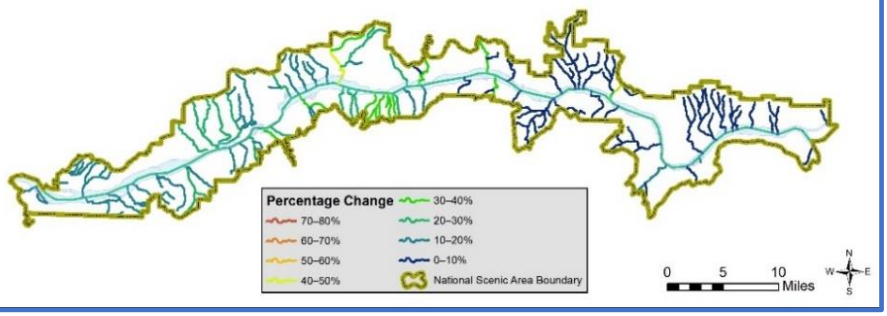
Current (left) and Future (right) Moisture Stress Levels



Adapted from WA Dept of Natural Resources 2020 Klickitat Landscape Evaluation Summary

Reduced and flashier stream flows

Percentage Decrease in Mean Summer Flow Between Historical and Predictions for 2080



Vulnerability Assessment Methods

For each resource or value, we describe sensitivity to climate changes, and the adaptive capacity, or ability to handle climate changes. (Note: For readability, gold color text, rather than bright yellow shown in the graphic below, is used for "Medium" ratings throughout this section.)

Step 1: Assign a qualitative sensitivity score

Sensitivity is the degree to which a system, population, or resource is affected by climate impacts or changing climate conditions. Examples:

High: *Complete failure of resource or habitat function*

Medium: *Diminished health or function of resource*

Low: *Little to no impact*

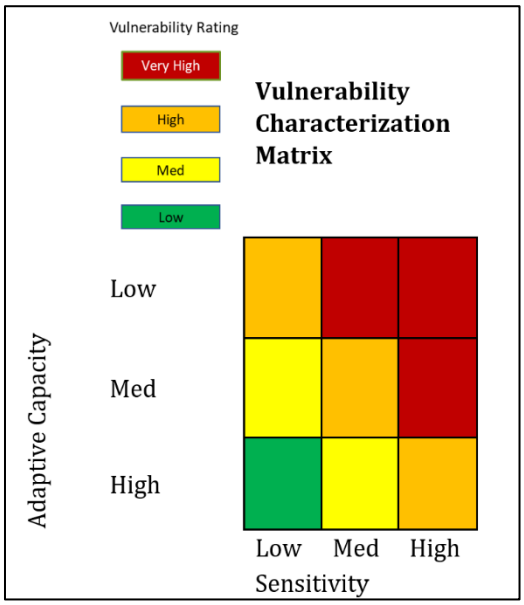
Step 2: Assign a qualitative adaptive capacity score

Adaptive Capacity is the ability of a system, population, or resource to adjust to, or moderate, potential damages caused by climate-related impacts to preserve or enhance functionality.

Low: *Are there barriers that prohibit adaptation? Is the rate of climate change expected to be greater than the pace of adaptation?*

Medium: *Are there sufficient efforts underway to address climate impacts on this resource?*

High: *Can the resource accommodate changes naturally?*



Step 3: Determine the vulnerability using the matrix

Vulnerability is the predisposition or tendency of an asset to be adversely affected by impacts. To assess vulnerability to climate change, we ranked sensitivity and adaptive capacity of protected resources and values in the NSA. Vulnerability is the combination of sensitivity and adaptive capacity from **Very High** to **Low**.

B. Climate Change Vulnerability Snapshots

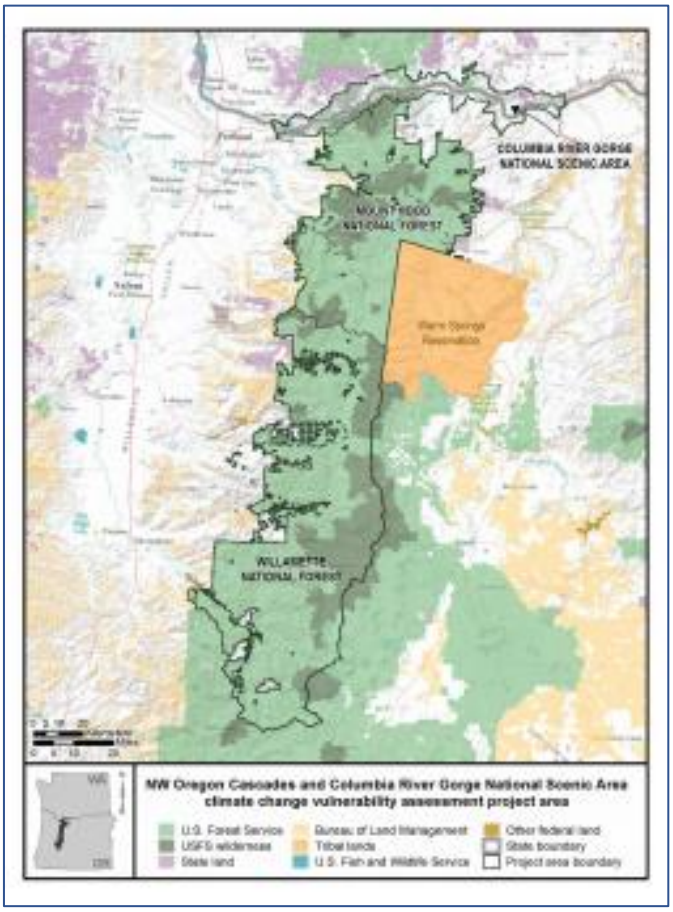
The rankings and narratives below are "snapshots" of resource vulnerabilities, based on sensitivity and adaptive capacity. This section focuses on resources and values with high climate change vulnerability rankings; it does not describe all resources we reviewed. Some of the descriptions include non-climate stressors that exacerbate sensitivity to climate change impacts or hinder natural adaptation to those impacts. Economic impacts are considered throughout, and are specifically addressed for Tribal Treaty Rights and culturally important plants; nature-based tourism; agricultural uses and products; and forestry and forest products.

Vulnerability Data

Snapshots incorporate findings of the **Forest Service climate change vulnerability assessment for the Columbia River Gorge National Scenic Area, Mt. Hood National Forest, and Willamette National Forest** (Halofsky et al. *in press*).

This assessment uses the RCP 8.5 emission scenario (high emissions, "business as usual") to model climate change effects on vegetation, water resources, recreation, fish and wildlife, infrastructure, and ecosystem services.

Additional data and information sources are cited in the snapshots.



Climate Adaptation Emphasis Areas

Each snapshot includes a "Climate Adaptation Emphasis" section, summarizing the approaches the Commission will take to protect and enhance climate sensitive resources. These are the basis for more detailed strategies and actions described in Part III.

Ecosystems and Natural Resources

This section includes climate vulnerability snapshots for the main ecosystems and natural resources reviewed for the action plan.

Cold water refuge streams and riparian habitats

Sensitivity: High | Adaptive Capacity: Low | Vulnerability: Very High

Stream and riparian function is affected by reduced snowpack, warming air temperatures, drought, and flooding. Climate change will result in warmer water temperatures, altered hydrology, higher evapotransporation, and drier soils. Drought tolerant conifers may replace riparian hardwoods that provide unique habitat for insects, migratory birds, and other species.

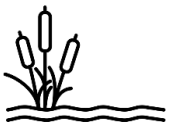
Several native fish species are highly sensitive during mid-July through mid-September when Lower Columbia River temperatures often exceed 20°C (68°F). Disease, stress, and decreased spawning success are more prevalent at warmer temperatures and fish survival requires a certain temperature range (e.g., steelhead begin to use cold water refuge at 19°C (66°F) or higher; Chinook at 20-21°C (68-70°F)). The pace of temperature change is likely faster than species' abilities to adapt. There are extensive salmon recovery efforts and an increasing focus on cold water refuge habitat work in this stretch of the Columbia River. Cold water refuge habitats are limited and many of the most critical for the mainstem are located in the NSA.

Climate change will result in altered timing and magnitude of streamflow, including reduced summer baseflows and increased frequency and magnitude of winter flooding. These changes impact aquatic life in several ways including reduced habitat quality and quantity in summer, and increased scouring of salmon redds with more severe floods in winter. Detrimental effects of winter flooding will be exacerbated by increased frequency and magnitude of wildfires, also expected with climate change. Soil erosion from burned areas will affect water quality.

Algal blooms are increasing as temperatures rise, endangering fish, wildlife, pets, and people.

Non-climate stressors that contribute to a Very High vulnerability ranking include dams and water diversions, as well as water quality changes from pollutants and sedimentation. Columbia River tributaries in the eastern Gorge are located in agricultural and residential area and, according to EPA, are most at risk to becoming too warm for native fish.

Climate adaptation emphasis: Build resilience by protecting and enhancing streams, water quantity and quality, and riparian vegetation, particularly along tributaries providing fish habitat and cold water refuge along the Columbia. Build partnerships with the state and federal agencies responsible for monitoring and meeting new Total Maximum Daily Load (TMDL) standards for temperature on cold water refuge primary tributaries. Support implementation of EPA Columbia River Cold Water Refuges Plan.



Wetlands and wetland species

Sensitivity: High | Adaptive Capacity: Low | Vulnerability: Very High

Wetlands and wetland-associated species are sensitive to hydrological changes, including reduced precipitation and increased drought. Adaptation is limited, particularly for isolated surface water wetlands that are dependent on overland flows. Groundwater and surface water wetlands are affected by water diversions and withdrawal, as well as reductions to overland flows.

Invasive terrestrial and aquatic species affect wetland function and native biodiversity. Wetland-associated rare plants and culturally important plants are among the most vulnerable plants to climate change impacts (Fertig 2021; Review Committee input). More information is needed on wetland condition and wetland change in the National Scenic Area.

Climate adaptation emphasis: Fill information gaps about wetlands in the NSA. Work with the Forest Service and other land managers to promote wetland enhancement and restoration, including overland flow. Develop guidance or proposed Management Plan updates to achieve the goal of no wetland loss, in cooperation with Gorge counties. Help educate Gorge planners about wetland species and best practices.

Grasslands/Prairies

Sensitivity: Med-High | Adaptive Capacity: Medium | Vulnerability: High

Grasslands in Oregon and Washington are sensitive to drought and warming air temperatures, hydrologic shifts, and changing fire dynamics. The consequences of these changes include conversion to invasive grasses like *Ventenata dubia* (wiregrass), with shallow roots that contribute to soil erosion. Studies show that wiregrass is likely to outcompete cheatgrass, a problematic invasive in other areas, under climate change conditions (Harvey et al. 2020).

Grassland bird populations are in decline and grassland habitats are among the most threatened nationwide from non-climate stressors including wind, solar, and other development, and habitat fragmentation. In the NSA, the greatest potential for new development and new land divisions occurs in the eastern Gorge in grasslands and scablands.

Many invasive species are more competitive in warming environments or under more frequent fire regimes and can be considered climate-related stressors. Invasive species can also be non-climate stressors in cases where human caused disturbances promote the spread or proliferation of weeds (grading, new roads, some grazing practices, etc.).

Grasslands store significant carbon in soils and vegetation and may be more reliable for long-term carbon storage than forests under specific climate change conditions (Dass 2018).

Climate adaptation emphasis: Learn more about soil condition, carbon storage capacity, and invasive grasses in the Gorge. Evaluate Management Plan policies to require or support natural climate solutions in the eastern Gorge. Promote or encourage restoration of native plant communities.

Oregon white oak woodlands

Sensitivity: Medium | Adaptive Capacity: Medium | Vulnerability: Med-High

Oregon white oak habitats provide for high biodiversity (ECOP). Some of the areas predicted to be most resilient in the face of climate change, due to their biophysical diversity and intactness, are located in the central and eastern gorge oak systems (The Nature Conservancy). This makes them important areas to protect into the future.

Oak systems are drought-tolerant and may benefit from increased fire frequency if other non-climate stressors are reduced and active management and restoration is increased.

However, Oregon white oak habitat and oak-dependent wildlife are not secure in the face of climate change impacts, given their reduced extent and fragmentation driven by non-climate stressors (land development, conifer encroachment, invasive species, and recreation). Dispersal will become more difficult for oak-associated species. Additionally, species such as Western gray squirrel (listed threatened in the state of Washington), woodpeckers, and rare butterfly species may be especially sensitive to habitat changes.

In the NSA, oak woodlands and mixed pine-oak provide much of the winter range habitat for deer and elk (see next page). These two resources are closely related and are addressed with combined goals, strategies, and actions in Part III.

Climate adaptation emphasis: Coordinate with East Cascades Oak Partnership to advance work on best management practices, oak condition monitoring, restoration, permanent conservation, policy tools, etc. Maintain connectivity and look to tighten policies to prevent fragmentation. Investigate and promote incentives for agricultural practices that protect and enhance Oregon white oak. Promote restoration and forest health enhancement of native oak communities.

Winter range for deer and elk

Sensitivity: Med-High | Adaptive Capacity: Medium | Vulnerability: High

Climate stress from drought and extreme winters will affect deer and elk during the taxing winter months, when they are feeding primarily on woody shrubs. Herds follow the green-up to access forage in springtime; in many cases the longer growing season will increase the availability of green plants.

Compounded with habitat loss and fragmentation, disease, and invasive species (see grasslands and Oregon white oak above), big game populations are likely to shift their ranges and be reduced in number. These shifts will have socioeconomic effects on First Foods and Tribal culture, wildlife management, hunting opportunities, wildlife viewing, and sense of place.

In the NSA, oak woodlands and mixed pine-oak provides much of the winter range habitat. These two resources are closely related and are addressed with combined goals, strategies, and actions in Part III.

Climate adaptation emphasis: Evaluate the effectiveness of current Management Plan protections for winter range. In concert with work on oak woodlands habitats, engage state wildlife agencies and East Cascades Oak Partnership to prioritize winter range habitat areas for protection. Draft Management Plan policies, such as limiting new cultivation, to maintain key winter range areas.

Coniferous forests

Sensitivity: Medium | Adaptive Capacity: Medium | Vulnerability: Med-High

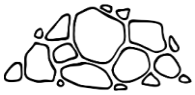
Forests in the gorge include moist westside forests dominated by Douglas fir and western hemlock; dry fir-dominated forests; dry pine; and Oregon white oak woodlands. A limited amount of cold subalpine forests is found at higher elevations. Forests in the gorge provide biodiversity and many First Foods. More information is needed to predict and adapt to changes in the ranges and persistence of forest First Foods. Maintaining and increasing Tribal access to these forest resources aligns with Traditional Uses, described above, and indigenous land management practices enhance forest First Foods.

Increased air temperatures, drought, and reduced snowpack will impact coniferous forests in the National Scenic Area. Douglas fir will continue to dominate western forests, with drought-intolerant species, like western hemlock, declining. In drier forest types, ponderosa pine is likely to do well. Drought-related tree mortality may shift forests to woodlands or shrublands on dry sites, and invasive grasses are likely to increase in the understory. Drought periods have been longer and more frequent in recent years throughout the West. Forests under drought stress are experiencing more frequent and severe infestations of native and nonnative insects and diseases.

Abrupt shifts from forest to non-forest types are predicted for many western forests, following severe fire (Serra-Diaz et al. 2018). The NSA, considered entirely a wildland-urban interface area (WUI), is managed by multiple fire response agencies for complete fire suppression to protect people and property. Nonetheless, conditions in the steep and windy gorge can lead fires to spread rapidly, as seen in the 2017 Eagle Creek Fire. Native understory vegetation and soils are vulnerable to high-intensity fire and post-fire flooding, and invasive grasses are increasing in western forests under climate change conditions. Soil loss and sedimentation in streams is a concern for forest streams.

Overall, coniferous forests are predicted to persist, with changes in species composition and structure described above. However, when we consider increasing fire activity as a climate change hazard, coniferous forests are at high risk for conversion to non-forest and invasive species. See the discussion beginning on page 30 of climate change risk rankings.

Climate adaptation emphasis: Engage and encourage state agencies to incorporate climate change strategies into forest practices, forestry programs, and funding. Consider creating forest practices policy recommendations. Focus on reducing wildfire risk by limiting new development in forests and by providing guidelines and reducing permitting barriers for forest resilience treatments (thinning, burning, etc.). Pursue Gorge-wide Fire Adapted Communities initiatives.



Talus

Sensitivity: High | Adaptive Capacity: Low | Vulnerability: Very High

Talus slopes are limited and fairly isolated from one another in the NSA. Climate change impacts include thermal and moisture stress from rising air temperatures. Talus-dwelling species with specialized temperature and habitat needs, like the Larch Mountain salamander and American pika, are particularly sensitive to these changes. The moss layer covering talus slopes and multi-story forest canopy cover help to maintain microclimates. Talus slopes often occur in or near recreation hot spots, where they can be subject to trampling or disturbance. Other non-climate stressors include timber harvest, mining, and development.

The vast majority of recent pika observations occur on USFS or other public lands, primarily in Open Space or SMA Forest designations. There are discrete areas of pika habitat that are in mixed public and private ownership and GMA Forest Land Use Designations where rock quarries, utilities, and timber lands dominate current development.

Climate adaptation emphasis: Work with researchers and agencies to identify opportunities to regulate or manage recreation and new mining activity in talus. Learn from studies underway about effective management interventions to offset climate impacts to wildlife, including retaining canopy cover over talus patch edges. Consider policy changes to limit mining in talus.

Human Well-Being

This section includes climate vulnerability snapshots for each of the main protected resources and values reviewed for the action plan that contribute to human well-being in the NSA.

Scenic resources

Sensitivity: Medium | Adaptive Capacity: Medium | Vulnerability: Medium-High

There are two primary ways the Commission and U.S. Forest Service protect scenic resources in the NSA. The first is by maintaining views from **Key Viewing Areas** (KVAs), ensuring that human development is either not easily seen or does not "catch your eye" and distract from the natural landscape. We protect scenic views by minimizing the amount of human development (buildings, roads, mines, etc.) that is visible from KVAs and by requiring design standards for building colors, materials, and dimensions. Development must be screened topographically or with drought-tolerant trees and shrubs. With these safeguards in place, climate change is not likely to influence the way that *new development* affects scenic resources.

The second approach to scenic resources protection considers the physical, biological, and human elements of scenery. **Landscape Settings** are used to describe the NSA – each setting has unique visual, ecological, and cultural characteristics. For example, the oak-pine woodland Landscape Setting is defined by dominant tree species (Oregon white oak or mixed oak-conifer) punctuated with open grassy meadows, agricultural uses and rural developments. Landscape Settings describe how fire shapes each area, the wildlife species that inhabit each area, and the types of water bodies one might see.

Landscape Settings protect and enhance rural character AND natural habitats:

The ecosystem vulnerabilities in the first part of this chapter contribute to scenic changes, as do the human elements described in this second half. Landscape settings are maintained in part by protecting and enhancing cultural, natural, and recreation resources that define each setting.

To measure scenic integrity, the USDA Forest Service is modeling intactness of Landscape Settings as part of VSI. With this tool, we can track whether areas are moving toward or away from the desired conditions described in Landscape Settings. What will policy makers do with this integrity information? We can identify areas of concern, where conditions are moving away from Landscape Settings in terms of vegetation and habitats, ecological processes, development, and land uses. We can also identify areas of opportunity to enhance scenery toward desired Landscape Settings. These areas may require updated land use policies to protect scenic resources in a changing climate. The Management Plan specifies a policy for reevaluating landscape settings during Plan Review, so there is a process in place to address updated information.

Climate Adaptation Emphasis: Upon completion of the Scenic Integrity model, evaluate how Landscape Settings can be used to evaluate and protect scenic resources, and whether other methods of climate change adaptation to protect scenery could be useful.

Tribal Treaty Rights and culturally important plants

opportunity to promote equity

Sensitivity: High | Adaptive Capacity: Low | Vulnerability: Very High

Climate change affects the availability (timing and locations) of culturally important foods, medicines, and practices. Resource availability affects traditional practices of fishing, hunting, gathering, trading, and ceremonies at the individual and community level. The Oregon Climate Assessment (2021) describes that "connections with traditional familial sites, homelands, and spaces, including burial grounds and sacred sites that generally are not disclosed outside the tribes, remain vital and sacred aspects of Tribal identities. These connections and, often Tribe- and location-specific hunting, gathering, and cultural practices, are essential to each Tribe's well-being and to Tribal members' senses of place and self." Reduced access and land development exacerbate climate change impacts on these traditions and on cultural, spiritual, and economic well-being.

Traditional foods provide "physical health and well-being; sustenance; medicines for physical, spiritual, and mental health; ceremonies; community; and economic prosperity" (Dalton and Fleishman 2021). Many First Food plants are associated with wetlands, wet meadows, seeps, and riparian areas. Some members of the Review Committee suggest considering these water features to be on-the-ground indicators that First Foods might be present. Studies show that the most climate vulnerable rare and endemic plants in the gorge are those associated with wetlands and waterfall spray zones (DNR). Cliff plants also have limited opportunity to shift their ranges as conditions change.

Plants in the NSA are sensitive to hydrologic changes (earlier runoff and drought), warming temperatures, frost events, and sun scorch. These impacts are expected to result in range shifts, reduced populations and increased invasive species, and changes in the timing of green-up and flowering. These changes affect how Tribal members use and steward plants and traditional gathering sites.

Tribal members and agency staff we have spoken with emphasize the importance of access to land for gathering traditional foods, particularly those not found on reservation lands.

Climate adaptation emphasis: Build knowledge base and work with Tribes to develop options for enhancing culturally important plants. Examine Management Plan mechanisms to recognize and protect culturally important plant associations and species. Promote access and First Foods stewardship for Tribal members on public and private lands in the NSA. Support the Tribes in their work to restore access to areas for gathering and managing traditional plants.

Recreation resources

Recreation is an important value in the NSA, protected by the National Scenic Area Act and allowed by the Management Plan in most land use designations. While the Plan guides the development of new recreation sites, amenities, and uses, the on-going administration and visitor management of recreation sites is largely up to recreation managers.

An emphasis for the Commission's CCAP is to ensure that recreation sites and recreation developments contribute to a resilient Gorge, and to emissions reduction and carbon storage, where appropriate. The U.S. Forest Service, Oregon State Parks, Washington State Parks, Army Corps of Engineers, U.S. Fish & Wildlife Service, land trusts, and various other private and public entities are key partners in providing sustainable recreation opportunities for the public. The Commission is dedicated to supporting these entities in their climate change resilience endeavors, and to engaging transportation agencies and municipalities in resolving traffic and safety concerns related to recreation.

Recreation opportunities and their vulnerabilities to climate impacts vary throughout the Gorge and throughout the year:

Snow-based Recreation

Sensitivity: High | Adaptive Capacity: Medium | Vulnerability: Very High

Snow sports in the NSA (e.g., cross-country skiing and snowshoeing) are highly sensitive to warmer air temperatures and a shift from snow to rain during the winter months. Reduced snow-based recreation opportunities are expected, with developed sites potentially able to create snow. Outside the NSA, nearby ski resorts will decline or be forced to diversify, impacting Gorge businesses dependent on winter recreation tourism. Recreationists will need to choose different locations where snow-based recreation is possible or choose alternative activities. While recreationists and managers are capable of shifting their activities in response to impacts, there will be costs associated with these shifts and snow-based recreation opportunities will be diminished.

Warm-weather Recreation

Sensitivity: Low | Adaptive Capacity: Medium-High | Vulnerability: Low-Medium

Also of concern to the Commission and land managers is the increase in warm weather recreation (hiking, biking, naturEViewing, etc), and extended "shoulder season" visitation. Increased recreation and tourism in the region is a growing concern for many reasons, including site capacity, traffic and parking, safety and emergency response demands, impacts to tribal fishing sites, and impacts to sensitive natural areas. Closely related is the growing population, particularly in urban centers near the Gorge. Climate impacts will increase the costs of maintenance for recreation infrastructure due to increased flooding, landslides, fires, invasive species, and resource sensitivity. Wildfire can degrade scenery, reduce access, and affect how visitors are distributed. Post-fire recovery efforts require a huge investment of funds and capacity of land management agencies. Managers will face new challenges when closures increase visitation

pressure in surrounding areas, and in making decisions about sustainable trail design and maintenance.

Other recreation and parks activities, many of which contribute to local heritage values:

Wildlife based activities – Hunting, fishing, viewing, photography, etc. depends on the distribution, abundance, and population health of various species. Effects will vary by location and by species. The Commission's work to protect and enhance natural resources will in part support wildlife-based recreation.

Water based activities – Rafting, kayaking, wind sports, floating, swimming, etc. will likely see similar challenges as warm-weather activities described above. Recreation sites with water features, such as waterfalls and rivers, already tend to see heavy, concentrated use. Lower streamflow and reservoir levels can decrease demand, and interact with temperature and land use to cause algal blooms.

Forest product gathering or traditional gathering activities – These will also experience many of the effects described for warm-weather recreation above. Plants will be affected by increased degree days, increased drought stress, longer growing season, and invasive species competition. Vulnerability snapshots for forests, woodlands, grasslands, wetlands, and culturally important plants provide more detailed information about plant vulnerabilities.

Climate adaptation emphasis: Consider policies and programs to increase low impact development/green infrastructure solutions to manage storm water and flooding, improve water infiltration and filtering, and promote native and drought-tolerant vegetation. Maintain and strengthen working relationships with recreation providers to build climate adaptation capacity across the Gorge. Encourage the U.S. Forest Service to proactively coordinate to facilitate public lands closures in times of high fire danger.

Mitigation emphasis: Continue improving transportation solutions at recreation sites to relieve congestion; promote transit and reduce overall passenger vehicle trips; increase bike/pedestrian options and connectivity; support future EV opportunities; and encourage city-recreation partnerships that benefit local communities and economies. See Part II of the CCAP.

Nature based tourism

opportunity to promote equity

Sensitivity: Med-High | **Adaptive Capacity:** Med-High | **Vulnerability:** Med-High

Tourism is closely tied to recreation (above) and the condition of scenic, cultural, and natural resources and landscapes that draw people to the gorge. Climate impacts to tourism will include all of those visitation factors described for recreation (temperatures, air quality, highway closures, public lands access, and snowfall). Climate affects to water bodies and wildlife abundance may also affect the amount of visitation in some areas.

Further, the immediate and long-term effects of wildfire have demonstrated devastating effects on small businesses that must close during emergencies and that rely on visitation business. Travel Oregon evaluated tourism impacts from the 2017 fire season, when the Eagle Creek fire burned nearly 47,000 acres in the gorge. They wrote, "businesses reported that smoke was the most prominent problem, followed by customer perceptions regarding fire-related discomfort; road closures and evacuations were also notable concerns. Lodging, food and beverage were most affected, then retail, according to business survey respondents" (Travel Oregon 2018).

Agricultural tourism is growing in the Gorge and is an important strategy options for farmers to diversify and adapt their businesses to a changing climate. The effects described above apply to farms and farm businesses as well.

Climate adaptation emphasis: Remain engaged with the Columbia Gorge Tourism Alliance and the Interagency Recreation Team. Continue working with Gorge counties on ag-related tourism policies. Support local agencies in emergency response and recovery, as appropriate (as an example, the Gorge Commission and Forest Service worked with the National Forest Foundation to establish a restoration fund for the Eagle Creek Fire area).

Agricultural uses and products

opportunity to promote equity

Sensitivity: Medium | Adaptive Capacity: Medium | Vulnerability: Med-High

Agricultural uses and products are sensitive to gradual and extreme weather changes including higher temperatures, shifting hydrology, freeze and heat stress events, and fires. The average growing season for some crops will be extended, although crop damage from temperature extremes will be less predictable and more costly to crop yields. Under warming conditions, insect pest activity and reproduction increase. Pollinator abundance and overall biodiversity will affect productivity. These aspects of ecosystem health can influence the agritourism "draw" to farms.

Workable hours are decreasing, as heat creates unsafe conditions for outdoor physical labor. Many producers are adapting schedules and upgrading worker buildings to deal with hotter conditions. Federal and state safety policies protect farm workers from heat related illness or death.

In the NSA, pear, apple, and cherry orchards make up the largest acreage of agricultural lands. Vineyards are the fastest growing new agricultural use, steadily increasing each year in the past decade in Klickitat County. Wine grapes offer high potential for crop diversification (Wolkovich et al. 2017), however they are sensitive to new and increasing pests.

Livestock grazing occurs on some private and public lands in the NSA. Opportunities for the Commission to influence grazing practices are limited, though partnerships with local Conservation Districts and collaboratives like the East Cascades Oak Partnership can help connect producers to technical and financial resources. Rangelands and pasture lands will experience the stressors described above for grasslands and understories of forests and oak woodlands. Ranchers may consider placing artificial water sources, supplemental feeding, and moving livestock throughout the year to locations with mild weather and good forage.

Water conservation strategies, frost mitigations, and shifting to hardier crop or livestock varieties are some adaptation strategies producers can use. Incentives and technical assistance programs may offer support to offset landowner operational costs and sustainable practices may be more cost-effective in the long term. Non-climate impacts that contribute to the vulnerability ranking include a growing demand for wine, cider, and farm-related tourism, and regional and global economic pressures.

Climate adaptation emphasis: Encourage and reduce regulatory barriers to water conservation, regenerative agriculture practices, integrated pest management, and other strategies that build soil health and biodiversity. Consider best management practices or requirements for new agricultural uses. Address impacts from agriculture to protected resources described in this snapshot, particularly water resources and Oregon white oak. Build opportunities for agriculture to provide carbon storage.

Forestry and forest products

Sensitivity: Medium | Adaptive Capacity: Medium | Vulnerability: High

Drought may lead to reduced timber yield. While timber production is not a dominant use in NSA, there are significant commercial and private timber lands in the western and central Gorge. Industries reliant on timber from outside the NSA may experience the economic impact of increased supply costs.

Fuels reduction and forest health projects could increase resilience in forests, while providing timber harvest or biomass and biochar products in some places. Trees have some adaptive capacity to shift in elevation or in species composition over time, with more drought tolerant species increasing as others decrease. Improvements to forestry techniques and technologies may support adaptation. Hotter, drier conditions could result in some reductions in overall forested land cover. As described above for coniferous forests, increased fire risk and severity could reduce timber lands. Global changes in supply and demand for timber influence local and regional prices and the viability of restoration and biomass efforts.

Climate adaptation emphasis: Through Management Plan policies and implementation, ensure forested lands remain in forest cover. Promote community wildfire risk reduction, learning more about stewardship actions that the Management Plan and non-regulatory programs can support. Work with Forest Service, state agencies, and others to implement shared goals for forest health and restoration in the NSA.

Public roads

Sensitivity: Med-High **| Adaptive Capacity:** Med-High **| Vulnerability:** Med-High

The transportation network in the NSA is a critical local and regional asset. The freeways and bridges enable commuting traffic for the many residents who live in one county or state and work in another. They provide recreation access from across Oregon, Washington, and beyond, and provide for commerce from across the country. Multimodal transportation opportunities are growing. The Columbia River itself is a critical regional transportation and trade connection, and the road network provides access to the river for fishing, boating, and other uses.

Roads and other public infrastructure in the NSA are sensitive to the effects of extreme weather events such as flooding and landslides from rain-on-snow events or post-fire rains; freeze events; and high winds. Maintenance and emergency repair needs will increase for roadways, particularly the main ingress and egress arteries of I-84, SR-14, and the Historic Columbia River Highway. Oregon was declared a national disaster area for damage by extreme storms, floods, landslides in four of the five last years (OHA 2020). While adaptive capacity is considered high, adaptation will be limited by capacity and funds.

Climate adaptation emphasis: Consider programmatic or coordinated permits for anticipated road clearing and repair across multiple counties. Support USFS, transportation partners, and fish and wildlife managers in efforts to identify and prioritize road and culvert upgrades.

Cultural sites

Sensitivity: Medium | Adaptive Capacity: Med-High | Vulnerability: Medium-High

Both archaeological and historic sites are sensitive to damage from floods, wildfires, and extreme weather. Built structures and rock art are among the features most sensitive to damage and loss from these events (UCS 2014). Landowners and land managers can document and strive to protect cultural sites from damage with flood control methods and fuels reduction. There are social and cultural losses associated with damage to sites, as well as impacts to local economies from reduced visitation when sites are damaged or closed to the public. Multnomah Falls Lodge is an example of local impact and costs of repair following the Eagle Creek Fire.

As compared to other places in the United States, the NSA has strong provisions to protect cultural sites during climate-related emergencies including fires and landslides.

Climate adaptation emphasis: Encourage proactive protections for archaeological and historic sites, including fire risk reduction. Encourage inventory efforts for cultural sites, similar to the 2005 roadside survey of properties with buildings potentially eligible for historic designations.

C. Climate Change Hazards and Risks

Vulnerability snapshots describe the stressors that influence key resources and how well they can adapt on their own. Risk assessment focuses on the potential for losses to occur as a result of prolonged or acute stress from climate change hazards.

Summary of risk rankings

In the National Scenic Area, our "assets" are the resources and values that we protect, enhance, and support. Climate change "hazards" are events or occurrences that have the potential to cause harm to people, assets, services, or ecosystems.

How we rank relative risks

The **Probability of Loss** is the likelihood that a system, population, or resource will not persist given climate impacts or changing climate conditions. For this assessment, probability is simply ranked on a scale from **Low** to **High**.

> **Low**: *The hazards are unlikely to affect the asset.*
>
> **Medium**: *The hazards may or may not affect the asset.*
>
> **High**: *The hazards are likely to affect the asset.*

The **Magnitude of Loss** is the extent of the disruption to a system, population, or resource if it occurs, or the costs (financial or otherwise) of consequences from the event or impact. Magnitude is ranked on a scale from **Low** to **High**.

> **Low**: *The hazards would cause minimal disruption to the services or function of the asset or would require minimal cost to restore services or function of the asset.*
>
> **Medium**: *The hazards would cause moderate disruption to the services or function of the asset or would require some costs to restore the services or function of the asset.*
>
> **High**: *The hazards would cause substantial disruption to the services or function of the asset, or would require large amounts of money, time, or other resources to restore the services or function of the asset.*

The **Risk Ranking** is the combination of probability and magnitude of loss, and can range from from **Very High** to **Low**.

Example Risk Ranking: Public Roads and Bridges

Transportation is addressed at length in **Part II** - Mitigation Opportunities, and it is also a critical asset that is impacted by climate change hazards.

Vulnerability Ranking: Med-High

Probability of Loss: **High**
Magnitude of Loss: **Medium**
Risk Ranking: Very High

Rationale: Gorge roads are seeing more frequent and severe damage, roadblocks, closures, and public safety concerns due to climate change.

Summary of Risks Asset-hazard pairs ranking high in risk, described by probability and magnitude	
Asset (resource or value)	**Climate hazards potentially resulting in loss**
Cold water refuge streams	High water temperatures
Native fish species	High water temperatures Invasive aquatic species
Aquatic habitat	Water quantity and quality change
Wetlands and obligate species	Dry periods (reduced runoff and flow) Drought and warming
Native upland grasses and rare plants	Uncharacteristic fire Conversion to invasive plant species Drought
Coniferous forests	Fire Invasive species
Cliff plants	Heat and drought
Talus habitats	Drying out and warming air temperatures
Archaeological and historic sites	Fire, flooding and inundation
Roads, access and road safety	Flooding, landslides, freezing and winds
Nature-based tourism	Fire and related closures Poor air quality days

The risk assessment framing highlights critical climate change hazards in the NSA—drought and extreme heat, wildfire, invasive species (often expanding post-fire), and flooding—posing the greatest potential losses of climate vulnerable resources if we do nothing. Examining risk brings out the most immediate needs for action, as well as greatest opportunities to influence resilience to hazards.

Drought is affecting over 90% of the Pacific Northwest, and 2021 is the warmest June-August recorded in Oregon (NIDIS – drought.gov). Addressing heat-related hazards is an important component of a resilience focus on water and stream temperatures and agriculture.

Fire seasons in the Pacific Northwest have been increasingly damaging and challenging to manage. According to the Northwest Interagency Coordination Center, by July 31, 2020, 23 large fires had burned about 40,000 acres in the region. As of July 31, 2021, 50 large fires burned more than 800,000 acres. Adaptation actions support ecological and community resilience to fire and post-fire erosion. Fire also shapes mitigation actions because it threatens the carbon storage benefits of forests, agricultural lands, grasslands, and wetlands.

Invasive plant and wildlife species affect both land and water resources in the Gorge. Important examples: nonnative aquatic plants and animals and nonnative wiregrass. **Native pests** are also becoming more ubiquitous under favorable conditions. Important examples: native deer ticks and native bark beetles.

PART II: Climate Change Mitigation in the National Scenic Area

Draft for Public Comment

April 27, 2022 Version

A. Need for Mitigation and the Commission's Role

Now that we've examined the impacts of climate change and the ways in which the Commission can address climate change vulnerabilities, **Part II** describes opportunities to mitigate greenhouse gas emissions in the region.

> ***Mitigation*** *includes actions that reduce the sources or enhance the sinks of greenhouse gases (GHGs)*

According to the IPCC's sixth climate change assessment, unless there are immediate, rapid, and large-scale reductions in greenhouse gas emissions, limiting warming to close to 1.5°C or even 2°C will be beyond reach.

Under all emissions scenarios the IPCC assessment considered, global surface temperature will continue to increase until at least the mid-century. Achieving net zero GHG emissions by 2050 is the only scenario that could limit the average increase in temperature to 1.5°C or 2°C projected out to 2100.

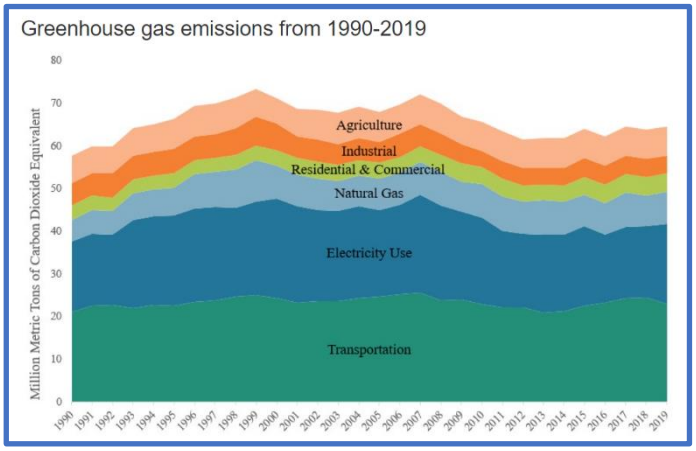
State and local leaders in the Pacific Northwest are setting targets for emissions reduction:

- Governor Brown's Executive Order 20-04 directs Oregon to reach at least 45% below 1990 emissions levels by 2035 and at least 80% below 1990 levels by 2050;
- Washington's legislature aims to reduce emissions at least 25% below 1990 levels by 2035, and the Department of Ecology recommends 40% below 1990 levels by 2035. The Climate Commitment Act, signed May 2021, requires a "cap and invest" carbon trading program by 2023;
- Hood River County plans to replace 30%, 50%, and 80% of power generated from fossil fuels with clean, renewable energy in buildings, water systems, and transportation by 2030, 2040, and 2050 respectively as compared with 2016 levels.
- Mosier, Oregon and White Salmon, Washington passed resolutions in 2021 to reduce municipal emissions by at least 45% by 2030 and to net zero by 2050.

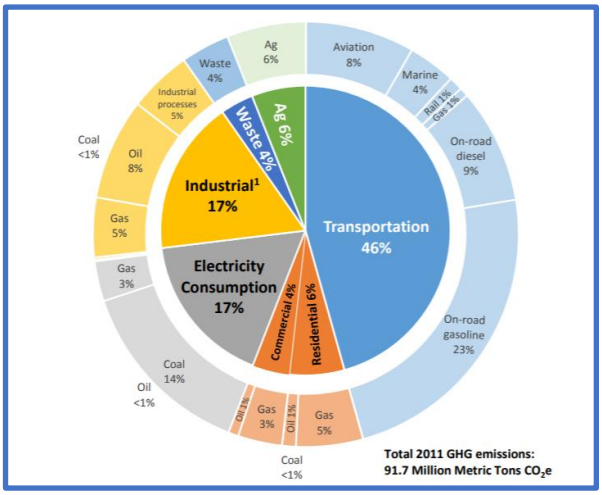
As a regional land use planning agency, the Commission has influence over land use and development surrounding urban centers, as well as land and resource protections that include natural areas and working lands. Although the Commission does not regulate GHG's, the Commission can support actions that reduce GHG levels in the NSA.

Sources of GHG emissions

For the National Scenic Area, we can draw conclusions from Oregon and Washington data about the relative sources of GHGs. Figures below illustrate emissions inventories for Washington (2014) and Oregon (2020). Each state concludes the greatest contributions come from transportation and electricity.



Oregon sector-based greenhouse gas emissions inventory (2020)
https://www.oregon.gov/deq/aq/programs/Pages/GHG-Inventory.aspx



Washington greenhouse gas emissions inventory establishing Carbon Emissions Reduction Task Force (2014)

An informal inventory of emissions for the Gorge was provided to the Commission in 2020. It shows that in the NSA, where industrial and residential development are limited, transportation contributes an even greater proportion of GHG emissions.

B. Climate Change Mitigation Opportunity Areas

1. Mitigation Opportunity: Reducing Transportation-related Emissions

The Commission recognizes the importance of regional transportation to our mission to protect and enhance NSA resources while supporting economic development in Urban Areas. Coordinated transportation planning benefits scenic character, recreation and multi-modal travel, natural and cultural resource protection, and economies at various scales. Transportation also affects air quality, health, equity, and access to services.

What does it mean to support the reduction of transportation-related emissions? Key elements are to reduce vehicle miles traveled (VMT), number of trips, and number of single-passenger gas-powered vehicles on roads.

Regional transportation, including transit

opportunity to promote equity

Land use planning and vehicle miles traveled

Managing growth and development at least conceptually prevents additional emissions from vehicles accessing new developed destinations. The Management Plan's limitations on land conversion in the NSA mean that increased traffic to new development will be very small relative to the projected increases in populations located in NSA Urban Areas and outside the NSA. The Management Plan also guides Columbia River Bridge replacements and modifications, calling for bicycle and pedestrian lanes on the future Hood River Bridge and Bridge of the Gods. In these ways, the Management Plan helps limit new emissions and encourages alternative transportation.

According to U.S. Census Bureau information for 2018, 30% of NSA residents have a primary job located 50 or more miles from their homes. The number of people who both live and work in the NSA (10,366) is about the same as those who commute from inside to outside the boundary (10,400), and to the number who commute from outside the boundary to their primary job inside the NSA (10,700) (OnTheMap 2018 data). VMTs and trips are affected by a number of economic factors including job opportunities, housing prices, and housing availability.

The Management Plan contains several policies that relate to these issues of housing and transportation. Policies require consideration of equity impacts and greenhouse gas emissions when evaluating applications to revise Urban Area boundaries. The Management Plan also includes policies relating to accessory dwelling units for short- or long-term occupancy, and Land Use Designations that could influence housing equity and availability. The magnitude of potential influence on housing production and VMTs from land use changes outside of Urban Areas is uncertain.

Recreation and congestion

Tourism and local recreation in the NSA are important opportunities to reduce trips and congestion, as the vast majority of tourists access the Gorge by driving. The Management Plan places limits on parking, precluding recreation sites from "building their way out" of crowding issues.

Permit systems, like those at Multnomah Falls and Dog Mountain trailhead, incentivize transit by capping the number of single passenger vehicles and providing shuttle options. Collaborative efforts to reduce congestion along the Historic Columbia Highway include placing flaggers at busy parking areas to help with traffic flow, reducing idling. These solutions have been created and managed by partners, outside the Management Plan and consistent with its policies.

Transit co-benefits

Transit hubs can also have an economic benefit by bringing visitors or locals to parking areas where they may spend time and money at local businesses. Connecting these Urban Area transit hubs with bicycle and pedestrian paths further reduces the need to drive for short trips or

recreation. The revised Management Plan requires and encourages transit accommodations at recreation sites, based on their level of use.

The Mid-Columbia Economic Development District (MCEDD) partners with others to improve transit in five counties, four of which are in the NSA. Transit **co-benefits** include equity, access to services, affordable commute options, mobility, and more.

CCAP mitigation emphasis: Leverage and generate regional partnerships to reduce transportation-related emissions. Utilize policies and implementation measures to promote regional transportation/transit projects that reduce GHG, VMT, and promote equity. Participate in regional transportation planning efforts addressing topics including but not limited to:

- Transit to reduce the overall number of vehicles on the road,
- Congestion relief and traffic efficiency to reduce idling,
- Connected bike/pedestrian/other multi-modal and alternative transportation,
- Connections between recreation opportunities and Urban Areas/cities, and
- Drawing attention to the Gorge as a region of opportunity for concerted transportation planning, while helping partners prepare to bring transportation funding to the region.

Electric vehicle infrastructure

Fewer vehicles and cleaner vehicles

To reach state energy goals, both Oregon and Washington are transitioning to electric vehicles (EVs). Washington is adopting building codes for EV infrastructure at new residential buildings and providing tax incentives for EV purchases. Oregon completed a transportation electrification infrastructure needs analysis to describe necessary infrastructure statewide. Recreation providers and cities we have spoken with voiced interest in a regional conversation and mapping effort to discuss desired future EV infrastructure. Just as transit hubs can provide economic benefits, electric charging stations can be thoughtfully placed to encourage visitation to businesses and services.

It is important to consider that electric vehicles do not reduce commutes, traffic, or congestion unless paired with transit, bike and pedestrian paths for local trips, and other strategies. This is particularly important in the NSA where traffic congestion at recreation sites is a major concern and where visitation pressure rises year after year. Electric buses and e-bikes are opportunities many partners are exploring.

Implications of Electric-Powered Transportation

By some estimates, a transition to 80% electric vehicles will result in a 10-15% increase in electricity use, with new peak demand challenges. While the Pacific Northwest offers abundant renewable energy, much of the existing power grid relies on hydroelectric dams. Members of Tribal Nations from the Klamath River in California to Chile are advocating to the United Nations against reliance on hydroelectric dams to reach energy goals, citing myriad environmental and cultural consequences of dams and the significant emissions created by methane degassing in reservoirs (Harrison et al. 2021). Hydroelectric power is often characterized as "cheap and renewable," while Indigenous people bear profound and ongoing costs as a result of hydropower's impacts to rivers, fish, and wildlife.

Renewable energy innovation holds promise. For example, Hillsboro, Oregon is employing a new retrofit technology to harness heat energy from existing underground water delivery systems, offsetting the increased energy demand from EV. Coupling EV stations with solar power arrays could also help to offset the use of hydropower.

Some of the local efforts to increase transit and electric vehicles include:

- Gorge TransLink Alliance provides collaboration on both sides of the Columbia River to improve transit services to local rural communities.
- Mid-Columbia Economic Development District convenes regional transportation stakeholders, including the Commission, to develop regional priorities and strategies.
- Columbia Area Transit provides services for locals and visitors.
- Congestion studies in Oregon (I-84) and Washington (SR-14) are resulting in recommendations and pilot projects to improve safety and traffic flows.
- Forth, Sustainable Northwest, Bonneville Environmental Foundation, and Wy'East Resource Conservation and Development Area Council, Inc. are piloting electric tractors in the Dufur area.
- The Clean Rural Shared Electric Mobility (CRuSE) Project is a three-year program funded by the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy's Vehicle Technologies Office to demonstrate a financially sustainable model for plug-in electric vehicle carsharing in rural communities.
- The Dalles is one of 10 communities participating in an Oregon pilot for EV car-shares co-located with affordable housing.
- Several state, federal, and private funding sources are becoming available to support more projects and programs in the Gorge.

CCAP mitigation emphasis: Utilize policies and implementation measures to promote EV infrastructure. Leverage and generate partnerships to pilot and build EV charging, rideshares, and transit. Promote inclusive, proactive planning for EV infrastructure and opportunities. Support innovative methods to reduce or offset electricity demand.

2. Mitigation Opportunity: Reducing Agency Emissions

While the Commission's direct carbon footprint is small in comparison to these other opportunity areas, we have a chance to walk the talk of climate change mitigation and show our earnest commitment. Simple tools exist to calculate, report, and reduce our footprint. The State of Washington has reporting tools to support biennial agency accounts that might be the best option. The Commission reported its emissions to Washington prior to 2016. Now, only larger state agencies are required to report every two years on their progress toward a goal to reduce overall emissions to 521,000 metric tons, or 15% below 2005 levels, by 2030. A 2021 Department of Ecology report estimates that greenhouse gas emissions from state agencies account for about 1% of Washington's emissions.

CCAP mitigation emphasis: Track and reduce the Gorge Commission's agency carbon emissions.

3. Mitigation Opportunity: Protecting and Enhancing Carbon Storage in Forests, Grasslands, Agricultural Lands, and Wetlands

The NSA is rich in natural and working lands that provide opportunities for carbon storage, improved practices to reduce emissions, and avoided emissions that would occur if those lands were converted to other uses. In the U.S., forests are a net carbon sink, storing 14% of total annual carbon emissions (or 11.5% of total GHG emissions), according to the Forest Service (Domke et al. 2021). Climate change affects the amount of carbon stored below and above ground in NSA forests in two ways: ecosystem function changes such as growth rate and species composition variations, and major disturbance events such as the 2017 Eagle Creek Fire.

Non-climate factors affecting carbon storage include land use change, timber harvest and forest management, and agricultural practices. These represent opportunity areas for potential Management Plan policies and voluntary, incentive-based approaches.

Carbon storage in habitats and working lands

Studies and reports produced for Oregon and Washington explore a whole suite of opportunities to store carbon in natural systems and working lands in the Pacific Northwest. Two assessments indicate the greatest opportunity to increase carbon storage is through forest management (Graves et al. 2020; Robertson et al. 2021). Cropland improvements offered important carbon storage gains by reducing nitrogen fertilizer use, cover cropping, mulching, and other practices. Grasslands and rangelands are also a sustainable carbon store in a drying future that can be managed for carbon enhancement (Dass et al. 2018).

Some of the local efforts to increase carbon storage include:

- Agricultural producers are building soils and soil health using cover cropping, compost and mulch, biochar (burning plant material to create carbon rich soil amendments that also store water), and other techniques.
- Natural Resources Conservation Service offers annual funding for different conservation actions, including improving soil health and biodiversity (BMPs for bees).
- Local conservation districts and Oregon and Washington university extension offices connect farmers to funding and technical assistance.
- Columbia Gorge Community College is developing the Ag Tech Education Alliance to strengthen sustainable farming in the Gorge.

Researchers from The Nature Conservancy and the University of Washington calculated the potential for a suite of Natural Climate Solution (NCS) pathways to reduce Washington's net emissions under three implementation scenarios. The study found that NCS could reduce annual emissions accounting for 4% to 9% of the state's net zero goal by 2050. Oregon Governor Kate Brown set research-based targets for Oregon to sequester an additional 9.5 MMTCO2e by 2050.

There are a few applicable models for estimating and tracking carbon. Regional and local estimates are largely based upon Forest Inventory and Analysis plot data collected across all National Forest System lands. The state of Oregon is supplementing these locations with identical plots on state-owned forests.

Through the VSI initiative, we're building a data foundation for setting goals or targets and tracking progress toward meeting these carbon-focused goals, should the Commission decide to create them. Proposed actions for mitigation describe creating a detailed land cover dataset for the NSA and options to build on that data to model carbon contributions and changes in carbon storage over time. TerraCount is one scenario planning tool used in Merced County, CA that could provide a template for the NSA.

Fire risk

While wildfire is an important ecological function in Gorge ecosystems, we have seen an increase in the number and severity of fires in recent years. Increasing fire risk threatens human health and safety, property and security, as well as scenic, cultural, natural, and recreation resources protected in the NSA. Severe fire can convert forest systems to more open ecosystems or to an invasive-dominated vegetation type. For these reasons, managing forests and other landscapes for reduced fire risk is a common priority in the region and a shared priority for reaching the Commission's adaptation and mitigation goals.

The Forest Service estimates that above-ground carbon loss from forest restoration and fuels reduction efforts (thinning and prescribed burning) is short-term and promotes long-term tree growth, while protecting lands from severe wildfires. Reduced tree cover under warmer, drier conditions results in vegetation types that store less carbon. In grasslands, where the majority of carbon storage is retained in deep soils and plant roots, conversion to invasive grasses and soil erosion post-fire can also reduce carbon below and above ground.

The NSA is an ideal place to foster **Fire Adapted Communities**. Several Gorge communities have developed community wildfire protection plans. The Dalles and Wasco County are establishing a joint climate change task force. The Commission is building relationships with local practitioners and community organizations, as well as regional, state, and nationwide networks to help address the many facets of fire adaptation for forests and communities.

Elements of a Fire Adapted Community

CCAP mitigation emphasis: Retain and enhance carbon stores in forests, grasslands, agricultural lands, and wetlands in part by:

- Protecting natural and working lands that store carbon,
- Reducing the risk of large or severe wildfire,
- Promoting practices on all lands that build healthy soils, restore or enhance vegetative cover, and improve water quality (a co-benefit), and
- Learning more about the carbon storage contributions of different lands and land management practices.

Additional resources

Natural and Working Lands Proposal developed by Oregon's Global Warming Commission 2021.

Community wildfire risk, including demographic information on vulnerable populations by county: https://wildfirerisk.org/explore/.

Online portal estimating potential for reforestation to increase carbon storage and sequestration: https://www.reforestationhub.org/

Baseline Assessment of Forest Carbon Storage in the Pacific Northwest (2015): https://www.fs.fed.us/climatechange/documents/PacificNorthwestRegionCarbonAssessment.pdf

EV readiness resources for the Peninsula region (WA-centric): https://www.prtpo.org/ev-resources

PART III: Commission Priority Strategies and Actions

Draft for Public Comment

April 27, 2022 Version

A. Overview

This section builds on the vulnerability snapshots and mitigation opportunities described in **Parts I and II**, highlighting recommended priorities for Commission climate action.

Priority actions are guided by the Commission's two overarching CCAP objectives:

Objective 1: Build resilience and adapt to climate change by protecting resilient lands and addressing the most pressing impacts on natural, scenic, cultural, and recreation resources and to the economic vitality of NSA communities.

Objective 2: Mitigate climate change by reducing greenhouse gas (GHG) emissions and by protecting and enhancing carbon storage in the NSA.

Together with the USDA Forest Service National Scenic Area Office, the Commission uses regulation (the Management Plan and approved county ordinances), education and landowner outreach, and strategic partnerships to protect and enhance scenic, natural, cultural, and recreation resources, and support economic vitality, within the NSA. The CCAP is written in close coordination with the USDA Forest Service, and some actions will support or elevate work they are leading. In this way, the CCAP reflects the shared responsibilities of these two agencies, while focusing on the Commission's distinct management responsibilities.

B. Prioritization Criteria

The list of potential actions to adapt to and mitigate the causes of climate change is extensive. To prioritize topics from among this list, the Commission approved criteria for both adaptation and mitigation, highlighted below.

In addition to priority actions, potential future actions are included on pages 63-66 for a number of purposes: document a fuller range of potential actions identified through the CCAP process to date, provide a suite of management options to inform future CCAP updates, and share ideas for action with our partners that we could accomplish together with additional funding and resources.

Commission criteria for setting **adaptation priorities**

- Climate change vulnerability and risk rankings
- Commission's ability to influence resilience
- Existing partnership opportunities
- Impacts on historically excluded groups and communities
- Vital Sign Indicators program priorities
- Rareness - endemic species or resources that exist only in the Gorge

Commission criteria for setting **mitigation priorities**

- High GHG emissions or storage
- Commission's ability to affect GHG emissions and carbon storage
- Existing partnership opportunities
- Impacts on historically excluded groups and communities
- VSI program priorities

C. Prioritization Results: Adaptation and Mitigation Priority Topics

This table highlights how topics met Commission criteria for adaptation and mitigation priorities.

CCAP Adaptation and Mitigation Priorities							
Climate Change Topic green - adaptation orange - mitigation	Criteria for Climate Change Action Priority Topics						
	High Vulnerability and Risk (adaptation only)	High Relative GHG Contribution (mitigation only)	Commission Potential Impact	VSI Priority (as of 2021)	Existing Opportunity	Impacts Historically Excluded or Vulnerable Individuals	Rare or Unique to Gorge
Cold water refuge streams and riparian habitat	●	n/a	●	●	●	●	●
Wetlands	●	n/a	●	●	●	●	
Tribal Treaty Right, including culturally important plants	●	n/a	●	●	●	●	●
Oregon white oak and winter range	●	n/a	●	●	●	●	
Regional transportation, including transit	n/a	●	●		●	●	●
Electric vehicle infrastructure	n/a	●			●		
Carbon storage in habitats and working lands	n/a	●	●		●		
Fire risk	n/a	●	●	●	●	●	

Two additional topics, **coniferous forests** and **prairies/grasslands**, also met most of the criteria and are addressed through related priority actions for climate resilient lands, fire risk, and carbon storage. **Healthy soils** and **water quality** are addressed throughout different topics, and specifically highlighted in the carbon storage section. Additional specific actions benefitting coniferous forests, grasslands, soils, and water quality are described in Potential Future Actions beginning on page 63.

To achieve our climate change goals for these priority topics, there are near- and long-term actions, as well as low- and high-investment actions. The Commission established additional criteria to help priortize immediate actions for 2022-2025:

- Potential to inform Management Plan improvements
- Feasibility of achieving the action, given current resources
- Serves historically excluded groups or communities

Priority actions for 2022-2025 are described in the following section.

D. Priority Actions

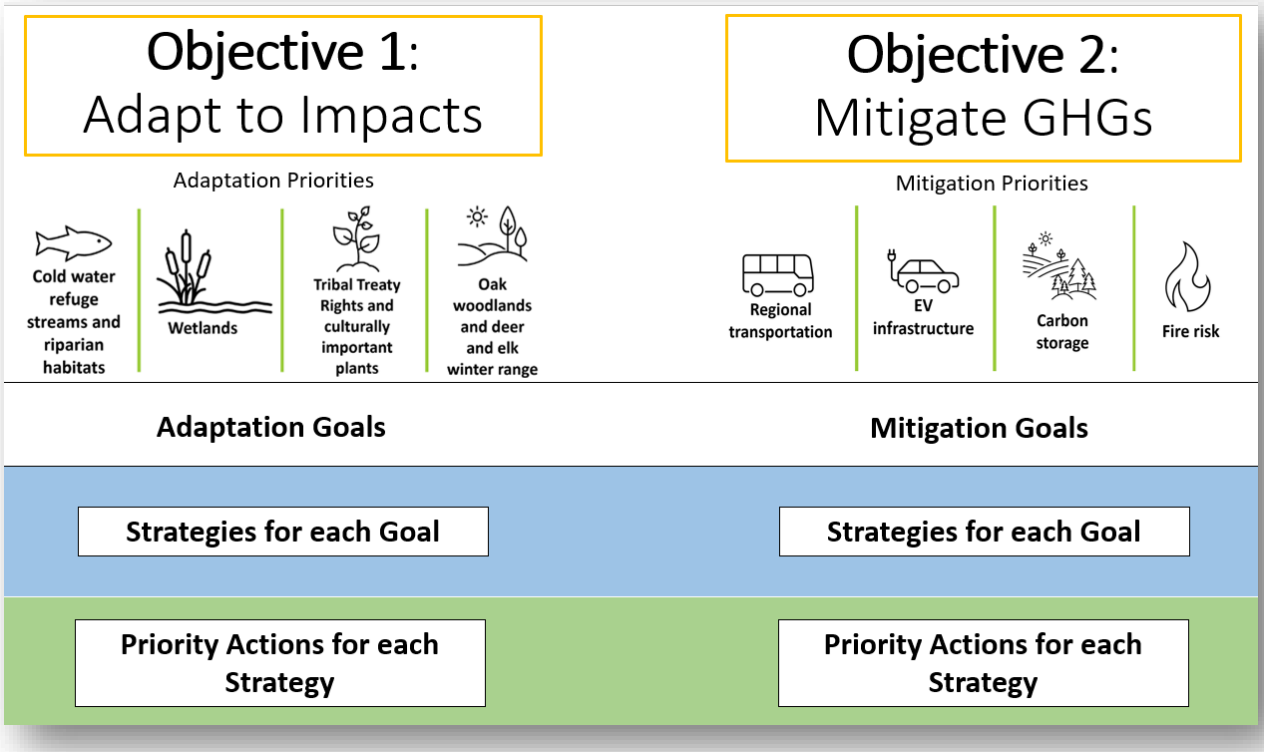
This section describes goals, strategies, and actions to advance work on the Commission's climate change priority topics. First, we highlight a few overarching goals for how we approach our climate work. Next, we focus on specific goals for adaptation and mitigation priorities, detailed in the flow chart below.

Goals are based on the information we have at hand today and may need to be refined in future years. To the extent possible, they are measurable and time-bound.

Strategies in the CCAP tend to be longer-term and higher level in nature than the actions that follow. These strategies are intended to guide the Commission's climate work for years to come.

Actions are generally short-term (to be completed by 2025), though some require significant additional resources or on-going programs to accomplish.

Part IV provides the evaluation framework, describing measures of success and how we will track our progress.



Flow chart for the Climate Change Action Plan. The Plan has two overarching objectives: Adaptation and Mitigation, each with priority topics for immediate action. Each priority has corresponding goals, strategies, and actions.

1. Overall Climate Action Approach

Below are three foundational goals, and associated strategies and actions, that apply across our climate action efforts. These focus on protecting climate resilient lands, engaging with diverse communities, and integrating climate change within Commission operations and work planning.

Climate resilient lands

Goal for resilient lands: By 2040, 70% of climate resilient lands are protected by land use policies and land use designations.

Current work supporting this priority: Through VSI, we are building a complete land cover dataset to fill information gaps about priority habitats. We have mapped climate resilient areas (using The Nature Conservancy data and discussions with local land trusts) and their overlap with open space designations and protected lands. Staff also compiled spatial data as part of Gorge2020 to describe land cover change in Oregon white oak and winter range for deer and elk.

The NSA and Management Plan are set up to protect natural and working lands, sensitive species and habitats, water resources, cultural sites and Tribal Treaty rights, scenic views, and nature-based recreation. There are several tools in the plan, including open space designations, large minimum parcel sizes, low-density development, and prohibitions on industrial development, that protect habitats and species.

Strategy: Protect climate resilient landscapes, connectivity, and ecosystem functions.

Priority Actions

- Develop policy recommendations to Commission for designation or land use policy updates that protect high climate resilient areas. Consider scenic values as well as ecological integrity in setting priorities.
- Update Management Plan to create options for permit-exempt or streamlined resource enhancement projects (streams, wetlands, soils, forests, etc.) on climate resilient lands. Evaluate feasibility of awarding small grants, through the Gorge Commission's designated fund, to entities taking proactive restoration efforts. Request additional funding to support habitat enhancement projects, including cultural resources review capacity.

Inclusive climate change work

Goal for inclusive climate change work: By 2025, the Commission has completed a Diversity, Equity, and Inclusion Plan with specific, measurable, and timebound goals to advance climate equity.

Climate change affects all communities, and we are eager to listen to and learn from diverse voices in our work on climate change. The Commission is currently developing a Diversity, Equity, and Inclusion framework, convening listening sessions, and connecting with community leaders.

Additional resources will be needed to facilitate and improve engagement with diverse individuals and partners.

Strategy: Engage diverse communities and partners to plan for climate change and implement adaptation and mitigation actions.

Priority Actions

- Establish a forum for regular input from diverse perspectives to the Commission's climate work. Include youth participants.
- Present CCAP to Tribal Councils and invite continued coordination so that the plan, our actions, and future versions of the plan serve Tribal priorities for climate change adaptation and mitigation.
- Continue working with The Next Door to understand and be responsive to the interests and needs of Latino/Hispanic and Spanish-speaking communities in the Gorge.
- Through DEI and VSI efforts, listen to others and learn about climate change effects on gorge resources and communities. Explore opportunities to share stories, oral histories, and qualitative information in ways that respect confidentiality and Tribal data sovereignty. Develop interactive web-based tools, such as story maps and indicator dashboards, to share information about climate change work in the NSA.
- Incorporate recommendations from the Oregon Climate Equity Blueprint. Through DEI work, better define who is most "climate vulnerable" in the Gorge and in what ways, to inform future actions.

Integrating climate into CRGC operations and budget planning

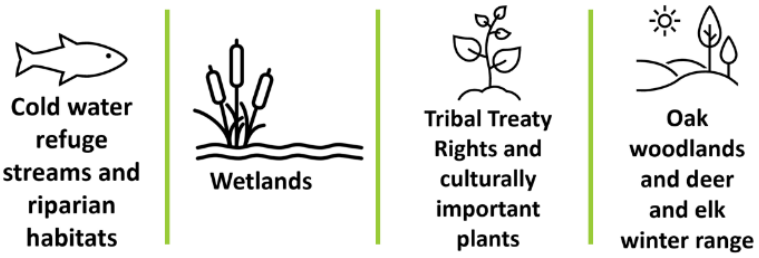
Strategy: Integrate climate change with agency operations and work planning, especially where the CCAP advances the Commission's other strategic priorities.

Priority Action

- Track and regularly share legislative news and funding at state and federal levels connecting to Commission climate change priorities. Encourage Commission discussions of legislative priorities for climate change work.
- Continue to address climate change through the agency Risk Register, a tool that evaluates various risks to our mission and day-to-day operations. Where the CCAP identifies how resources are threatened by climate change, the Risk Register identifies how climate change threatens the Commission's ability to meet the two purposes of the National Scenic Area Act.

2. Objective 1 – Land and Water Adaptation Priorities

This section describes goals, strategies, and actions for each of the four land and water adaptation priority topics:



Cold water refuge streams and riparian habitats

Goals for streams:

1. By 2030, based on VSI monitoring and with partner input, the Commission has set goals for summer baseflows and winter high flows (these may crossover with wetlands goals).

2. By 2030, summertime water temperatures on NSA CWR streams continue to meet or are trending towards federal/state standards for cold water refuge habitats.

Current work supporting this priority: The recent Management Plan update increasing stream buffers on cold water refuge streams is now codified in NSA county ordinances. The Commission recently approved stream temperature and flow indicators for cold water refuge (CWR) salmon and steelhead habitat as part of the VSI program. Staff are working with EPA, Oregon Department of Environmental Quality, WA Department of Ecology, USGS, and others to monitor temperature and flow on ten CWR tributaries in the NSA.

Strategy 1: Improve stream temperatures and riparian vegetation.

Priority Actions:

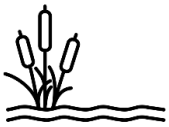
- Update Management Plan policies to reduce permitting barriers for stream enhancement projects (e.g. create options for permit-exempt or streamlined enhancement).
- Update Management Plan policies to incentivize or require riparian vegetation enhancement when development is proposed near streams.
- Update Management Plan policies to increase stream buffers.
- Re-define enhancement in the Management Plan and build in clearer path to resource enhancement.
- Identify opportunities for the Commission to advance the WA salmon strategy through focused meetings with Governor Inslee's staff.

- Support projects that implement the EPA Cold Water Refuges Plan with letters of support or technical assistance. Examples include CRITFC's and Tribes' sediment removal at tributary mouths to improve confluences and USDA Forest Service and Lower Columbia Estuary Project pool projects.

Strategy 2: Generate decision support tools to evaluate actions and guide future actions.

Priority Actions:

- Monitor stream temperature and flow, in coordination with EPA, DEQ, Ecology, USGS, and others to monitor stream temperature and flow on ten CWR tributaries in the CRGNSA through the VSI program.
- Support aquatic ecosystem health monitoring and research efforts, such as benthic macroinvertebrate sampling, to inform policy updates and best management practices for CWR habitat.



Wetlands and wetland species

Goals for wetlands:

1. By 2025, baseline extent and condition for wetlands are established and support implementation of the Management Plan's goal of no wetland loss.

2. By 2030, wetland extent and function are increasing. Based on VSI information, more detailed goals can be set at this time with targets for wetlands acreage and condition.

Current work supporting this priority: The Commission approved wetlands indicators for the VSI program. Staff are developing a wetland land cover spatial data layer that will be used to set targets and track change over time.

Strategy 1: Accelerate wetland enhancement and restoration.

Priority Actions:

- Update Management Plan to incentivize and reduce barriers to wetland enhancement (e.g. create options for permit-exempt or streamlined enhancement).
- Support wetland enhancements that restore connections between surface and groundwater and those that provide habitat for native wildlife. Provide letters of support and technical assistance.

Strategy 2: Develop guidance or proposed Management Plan updates to protect wetlands and wetland species, in cooperation with NSA counties.

Priority Actions:

- Revise GMA wetlands portion of Management Plan to achieve the goal of no wetland loss. Consider establishing a wider buffer for certain types of review uses that could lead to sedimentation.
- Create best management guidance for western pond turtle (completed in 2021), blackberry/other invasive plants, etc. These should be used by landowners to design projects and by counties determining conditions of approval.
- Compile and share resources to help agricultural producers implement conservation practices. Consider incorporating best practices in the Management Plan, recognizing rights of farmers protected in the Act and the need for flexibility of operations.
- Make field visits with interested county planners to wetlands in the gorge to learn about best practices, landowners' permitting experiences, etc. Visit Friends of the Gorge Land Trust western pond turtle sites.

Strategy 3: Generate decision support tools to guide future wetland policies in the NSA.

Priority Actions:

- Map and track wetlands extent and land cover change through VSI, with USDA Forest Service and other partners.
- Create a priority list of wetland projects, with USFS, Tribes, and appropriate agencies to identify priority areas for wetland improvements. These projects could be implemented by partners and/or as required mitigation for infrastructure projects that disturb wetlands.

Tribal Treaty Rights and culturally important plants

Goals for Treaty Rights and culturally important plants:

1. By 2025, the Commission has clear objectives and policy approaches for First Foods protection and access created with the Columbia River Treaty Tribes.

2. By 2030, populations of culturally important plants are protected from development and enhanced through stewardship.

Current work supporting this priority: Through our work on CCAP and VSI, we've begun learning from each of the four Columbia River Treaty Tribes about their immediate priorities for Treaty Rights and climate change resilience. Staff are currently working with the USFS CRGNSA Heritage Program Manager on letters of invitation to Treaty Tribe staffs to learn more about how we can support their climate change priorities, including culturally important plants, cold water refuge streams, and First Foods.

Strategy 1: Coordinate with Treaty Tribes to build knowledge of culturally important plants and options for protection and enhancement.

Priority Actions:

- Invite Columbia River Treaty Tribes to work collaboratively on the CCAP; formally invite staff (in-progress) and present the Action Plan to Tribal Councils.
- Improve habitat map data through VSI. Build knowledge of areas likely to have culturally important plants (e.g., wetlands and native grasslands), while respecting confidential site- and species-specific information.
- Encourage plant surveys on public lands, private lands adjacent to public lands, and large private parcels that could accommodate Tribal access in the future (with willing landowners). Review recent report for First Foods survey at the Sandy River Delta.
- If Tribes are supportive, develop predictive models to prioritize survey locations and landowner outreach efforts. Washington DNR may have capacity and has expressed interest, particularly for plants that are also tracked by the Heritage Program.
- Complete staff trainings and educational opportunities to empower staff to work on behalf of Treaty Tribe interests on high-profile planning projects such as the Hood River Bridge replacement. Share resources with the Gorge Planners network.

Strategy 2: Consult with Treaty Tribes to identify Management Plan policy changes or guidance to protect culturally important plants and First Foods.

Priority Actions:

- Consider Management Plan updates to allow or provide plant surveys near wetlands or other areas likely to support culturally important plants. Focus on options that leverage volunteers, citizen science, or agency capacity to minimize costs to landowners.
- Complete a list of plants and plant material sources, working with Tribal botanists, Forest Service, and others. Add this to the Building in the Scenic Area Handbook and share widely with landowners.
- Continue to improve effectiveness of notice and comment procedures. This may include adding key contacts to notice lists, or strengthening policies for consultation in the Management Plan.

Strategy 3: Support Treaty Tribes in their work to restore access for traditional gathering and managing of First Foods on public and private lands in the NSA.

Priority Actions:

- Consider Management Plan language or policies to promote Tribal access agreements.
- Promote incentive programs and voluntary efforts to increase access to private lands for gathering traditional plants, hunting, etc. Explore models such as the Farm Bill Voluntary Public Access and Habitat Incentive and access agreements for state-owned lands. Raise awareness and help build relationships with land trusts and other partners.

Oregon white oak woodlands and winter range for deer and elk

Goals for oak woodlands:

1. By 2025, critical corridors for oak woodlands and deer habitat connectivity are identified and policy options are provided to the Commission. Through work with East Cascades Oak Partnership (ECOP), comprehensive oak habitat maps are available.

2. By 2030, there is no net loss of oak woodland acres or function in the NSA.

Current work supporting this priority: The Commission approved Oregon white oak indicators for the VSI program in 2021. Using a modeled oak distribution map developed by East Cascades Oak Partnership, staff are continuing to work on a comprehensive oak land cover spatial data layer that will be used to track change over time. As part of Gorge2020, staff also compiled spatial data to describe land cover change in winter range for deer and elk. We've completed initial evaluations to determine how these two priority habitats overlap with areas of high climate resilience and NSA open space designations.

Strategy 1: Develop policy and compensatory mitigation standards to protect Oregon white oak habitat and maintain or restore connectivity.

Priority Actions:

- Develop policies, in coordination with East Cascades Partnership and others, to maintain oak connectivity and prevent fragmentation.
- Investigate and promote incentives for agricultural practices that protect and enhance Oregon white oak.
- Incentivize forest health enhancement of native oak communities. Develop guidelines and reduce permitting barriers for oak restoration or resilience treatments.

Strategy 2: Develop policies and compensatory mitigation standards to protect winter range habitat and maintain or restore connectivity.

Priority Actions:

- Consider Management Plan policies, such as limiting new cultivation, to maintain key winter range areas.
- In concert with work on oak woodland habitat, map priority winter range habitat areas and consider open space designations or other protection. Engage state wildlife agencies and East Cascades Oak Partnership in this effort.

Strategy 3: Develop decision support tools to inform policy updates and plan implementation.

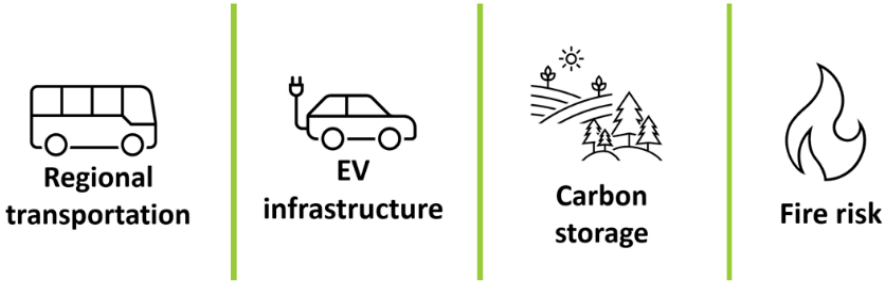
Priority Actions:

- Map and track oak habitat extent and land cover change through VSI.

- Work with East Cascades Oak Partnership to develop tools to assess current condition in various oak system types (e.g., savannah and woodland) and learn more about potential future structure and function of these habitats.
    - Identify existing oak wildlife habitat corridors that are important to maintain.
    - Work to define and measure habitat function.

3. Objective 2 – GHG Mitigation Priorities

This section describes goals, strategies, and actions for each of the four mitigation priority topics:



Regional transportation, including transit

Goals for regional transportation: [Note: We are actively seeking input from partners on these goals and how we will measure success.]

1. By 2025, the number of gas-powered single occupancy vehicle trips across the gorge decreases from 2022 levels. This goal will be supported by transit, shuttle, and parking solutions.

2. From 2022-2025, transit ridership increases each year.

Current work supporting this priority: The Commission is actively participating in Mid-Columbia Economic Development District's collaborative regional transportation planning for its economic development strategy. We are also building relationships with partners who can help us advance transportation goals.

Strategy 1: Leverage and build regional partnerships to reduce transportation-related emissions.

Priority Actions:

- Encourage and actively participate in transportation convenings across the Gorge, including the Gorge Regional Transit Strategy.
- In all Commission policy work, consider implications for transportation and commutes. Bronin et al. (2021) provides some policy suggestions.
- Support Urban Areas and rural towns in developing walkable neighborhoods and complete streets.

- Celebrate and share information about partner projects where transit or electric vehicle infrastructure benefits recreation and economic development.

Strategy 2: Reduce congestion and improve traffic efficiency.

Priority Actions:

- Work with the Gorge Congestion Forum to support Historic Columbia River Highway congestion mitigation study recommendations that are appropriate for the Commission.
- Work with the Forest Service to support the strategies in the SR 14 Dog Mountain Congestion and Safety Study.

Strategy 3: Help to bring transportation funding to the region.

Priority Actions:

- Educate Oregon and Washington legislators about the unique needs, opportunities, and accomplishments in the Gorge. Support local partners in preparing to secure state and federal funds.
- Engage with legislators to elevate the gorge as a region in need of concerted transit and transportation planning and funding at state and federal levels.
- If new legislation and funding support a regional transportation authority, request a seat for the Commission.

Strategy 4: Promote regional connected bike/pedestrian/other multi-modal and alternative transportation.

Priority Actions:

- Review RIC language and consider changes. Items to consider: requiring parking management along major travel corridors; changing standard from an allowed number of spaces to an allowed square footage of improved surface for transportation infrastructure; and accommodating transit and EV access and charging at RIC 3 and 4 parking areas.

Electric vehicle infrastructure

Goals for EV infrastructure:

1. By 2025, public direct current (DC) fast charging is available at least every 25 miles along I-84 or SR-14, and 50% of Urban Areas have public Level 2 or DC fast charging stations.

2. By 2025, the gorge has a strategy for the desired locations and types of charging stations, and partnerships in place to implement them by 2030.

Current work supporting this priority: We are building relationships with government and private sector partners to help bring innovative pilot projects to the gorge and prepare to secure newly available funds.

Strategy 1: Urge inclusive and proactive regional planning efforts to advance EV infrastructure opportunities in the NSA.

Priority Actions:

- Express support to Urban Areas to develop electric vehicle infrastructure to provide connectivity across the gorge. Emphasize multiple benefits for economic vitality, recreation, and equity. Provide letters of support and connect individuals working on EV.
- Engage with recreation site managers and private industry to create opportunities for recreation sites to provide electric charging infrastructure.
- Invite Transportation Electrification Infrastructure Needs Analysis (TEINA) team to share results of the needs assessment.
- Encourage or require solar or other energy sources and efficiencies to alleviate reliance on hydropower through work with private and public partners. Support pilot projects and innovation.

Strategy 2: Support incentives and reduce barriers to EV charging station development.

Priority Action:

- Consider an expedited review use for EV charging stations at recreation sites.

Carbon storage in habitats and working lands

Goal for carbon storage:

By 2030, the Commission has measurable, time-bound goals for enhancing carbon storage on natural and working lands, with associated strategies and actions.

Current work supporting this priority: Work is underway to develop a detailed land cover data layer for VSI which also serves as a first step in exploring options to measure carbon storage across priority habitats and working lands in the NSA. The Commission is also currently working within our formal partnership agreement with Underwood Conservation District to enhance carbon storage on working lands, while also encouraging counties to inform residents about their local soil and water conservation districts, who provide technical and financial assistance.

Strategy 1: Develop policy and mitigation standards to retain and enhance carbon storage in forests.

Priority Actions:

- Review and provide policy guidance to interpret the revised Management Plan climate change chapter policy that states: "For conversion [of forest lands] to agriculture or recreation, the Management Plan should require full mitigation."
- Review and revise as needed Management Plan policies to allow forest enhancement projects that are consistent with the NSA Act and resource protection policies in the plan. (See also Fire Risk actions.)
- Evaluate how the recent Management Plan change to prohibit new dwellings on Commercial Forest and Large Woodland properties impacts carbon storage and fire risk. Determine if additional plan changes are needed to maintain forested lands.

Strategy 2: Generate decision support tools that estimate carbon storage contributions of different land cover types and land management practices.

Priority Action:

- Map and assess relative carbon storage contributions of different habitats considering changes in land use, vegetation, wildfire, and invasive species. Seek additional funding to support this.

Strategy 3: Work with partners to promote practices on all lands that build healthy soils, restore or enhance vegetative cover, and improve water quality.

Priority Actions:

- Support wetland and riparian area projects that improve carbon storage throughout the year. (See strategies for streams and wetlands.)

- Contribute to the actions described in the Natural and Working Lands Proposal developed by Oregon Global Warming Commission.
- Encourage conservation practices on agricultural lands including cover cropping, mulching, and no-till practices.
- Connect landowners, especially ag producers, to conservation districts and other organizations providing financial and technical assistance for enhancing soil carbon and reforestation efforts.
- Support the Forest Service and other partners in reducing unauthorized trails and soil disturbances that cause soil erosion.

Fire risk

Goals for fire risk:

1. By 2025, combined efforts on public and private lands in the NSA result in at least 2,200 acres of fuels reduction treatments. Fuels reduction includes thinning encroached or overstocked stands and prescribed burning. With support from the Fire Adapted Communities Learning Network and multiple partners, the Commission will set long-term acreage targets based on forest types, LUDs, and other considerations.

2. By 2030, the NSA is home to 6 Fire Adapted Communities.

Current work on this priority: During Gorge2020, the Commission improved policies to reduce the risk of fire in forested systems. New residential development is no longer allowed on properties within Commercial Forest or Large Woodland Land Use Designations in the GMA. In and near forests, new development must meet fire protection measures that were updated through Gorge2020. We are now updating, with the USDA Forest Service, the Building in the Scenic Area Handbook to help landowners achieve scenic standards while improving fire safety. The Commission also approved wildfire indicators for the VSI program to track where fire is occurring and where fuels reduction work is implemented across the landscape.

Strategy 1: Reduce fire risk on private lands.

Priority Actions:

- Update Management Plan to reduce permitting barriers to forest resilience treatments that reduce fire risk (e.g., thinning, burning, defensible space, etc.).
- Share resources and incentives with landowners and gorge county planners. Encourage landowners to access grant funds and programs for small forest projects and Firewise activities.

Strategy 2: Coordinate with partners to advance work that improves forest health and reduces fire risk across all lands.

Priority Actions:

- Engage urban areas, landowners, and resource managers to identify regional needs and opportunities to build resilience. Contribute to a Fire Adapted Communities (FAC) regional self-assessment and explore interest in establishing more Fire Adapted Communities in the NSA.
- Coordinate with Oregon Department of Forestry and Washington Department of Natural Resources on climate change efforts that we can mutually support through annual agency coordination meetings (began in 2021). Provide letters to ODF and DNR (possibly also to Oregon and Washington) detailing Commission and USDA Forest Service priorities for

forested lands in the NSA, including scenic and cultural resources; natural resources (e.g., shade cover for streams and talus); and recreation resources.

- Support regional and community events that build awareness of and support for forest health resilience work.
- Encourage USFS to proactively engage counties and other partners to create a path for future forest closures under agreed upon circumstances, including coordinating capacity to enforce closures.

Strategy 3: Develop decision support tools to inform policy updates and plan implementation.

Priority Actions:

- Track wildfire occurrence and fuels reduction treatments through VSI.
- Join the FAC learning network of diverse agencies, organizations, and communities across WA and report key learnings on relevant policies, best management practices, and community outreach strategies periodically to the Commission.
- Review future development potential under Management Plan policies in areas at high fire risk (based on existing information from state and federal partners).

E. Potential Future Actions

Climate change affects every aspect of land and resource management in the NSA. We do not limit ourselves to the priority actions in Section C; rather, these are high-impact actions we can be accountable for accomplishing in 2022-2025 as resources allow. The Commission will be seeking additional funding and staff capacity to be able to implement the CCAP. The following section of the Action Plan provides later steps for these current priorities, as well as actions that tee up future priorities by filling information gaps and building partnerships. This list serves multiple purposes:

- Documents a wider range of potential actions identified through the CCAP process to date,
- Provides additional areas of focus and management options to inform future CCAP updates,
- Identifies regional priorities that can help bring funding to the NSA, and
- Offers ideas our partners may choose to support with additional funding and resources.

1. Overall Climate Action Approach

Inclusive climate change work

Strategy: Engage diverse communities and partners to plan for climate change and implement adaptation and mitigation actions.

To further this strategy, the Commission will build relationships with community leaders and non-governmental organizations to expand engagement. The Commission may create a formal role for community climate advisors or a citizens' committee.

We will also continue working with cities, counties, and Oregon Department of Land Conservation and Development to identify needs and opportunities for coordinated resiliency planning for climate hazards and emergencies.

Staff capacity and budget

Strategy: Build agency capacity and funding for CCAP work, especially where it advances the Commission's other strategic priorities.

To further this strategy, the Commission may choose to hire a facilitation team to engage the broader public in setting and achieving climate change goals. We are currently working with OSU Extension on a funding proposal to pilot a climate stewards program in the Gorge that would accelerate implementation of this action plan.

2. Adaptation

Overall adaptation actions

Strategy 1: Support invasive species management and monitoring.

Strategy 2: Identify locations of water quality concerns and develop policies and practices to limit water pollution, warming, and sedimentation.

One action to support this strategy could be to work with agricultural landowners and partners to improve soil and water health. The Commission could also review stormwater and drainage code, green infrastructure standards that could apply to projects with a grading component, or large scale, or public, projects. This could lead to BMPs and/or Management Plan updates. Examples include:

- Minimize impervious surface; break up pavement or use permeable paving options.
- Enhance native plants, including pollinators.
- Increase shade trees in the eastern gorge with spacing between canopies to minimize fire risk.
- Add specific requirements for road projects to improve water quality.

Priority Habitats and sensitive species

The Management Plan lists several Priority Habitats that we evaluated as part of vulnerabilities and risks described in Part I of this action plan. The CCAP does not include specific actions for some of these with very limited extent (e.g. aspen and dunes) or fine spatial distribution (e.g. logs and snags). Management Plan Priority Habitats:

- Riparian areas
- Talus
- Grasslands/prairies
- Old-growth forests
- Oregon white oak woodlands
- Shrub-steppe
- Dunes
- Logs and Snags
- Aspen
- Caves
- Cliffs

Strategy: Protect resilient habitats and provide opportunities for climate sensitive species to adapt.

To advance this strategy, the Commission would work with the USDA Forest Service and other partners to map and prioritize areas for conservation, restoration, and/or preservation. This information supports entities who acquire conservation lands and informs the Management Plan. VSI plays an important role in prioritization and evaluation over time.

Another option for action is to develop prescriptive habitat mitigation requirements for priority habitats, and establish a mitigation bank option for off-site mitigation under specific circumstances.

For talus, the Commission and Forest Service are exploring a simple pilot monitoring effort as part of VSI. The Commission may decide to adopt policies to protect talus from warming (e.g. buffers to maintain shading tree canopy cover) and from land uses such as rock mining.

Scenic resources

Strategy: Evaluate scenic integrity today and plan for a changing future.

The Forest Service is currently evaluating scenic integrity for the entire NSA. This will inform our understanding of how well Landscape Settings and Land Use Designations established in the Management Plan are doing and can inform how they may change in the future. The next step is to review the results of that work, when it is complete.

Cultural resources

Strategy 1: Protect cultural sites from climate change impacts.

An initial first step would be to support the USDA Forest Service to inventory and evaluate cultural sites for needs specific to climate change, including potential to protect sites against fire, flood, landslide, and other damage. This would require funding. More broadly, sustainable funding for heritage work in the NSA would support our climate initiative and many other aspects of the agency's work.

Strategy 2: Support Treaty Tribes in their work to restore access for traditional gathering and managing of First Foods on public and private lands in the NSA.

To support this strategy, the Commission and Forest Service can explore opportunities to facilitate range shifts or expansion for the limited populations of huckleberry found in the NSA.

Recreation resources

Strategy: Ensure climate change informs recreation resource management.

This strategy requires us to recognize compounding effects of climate change and increasing demand, especially in climate sensitive areas like water resources. The Comission could encourage cross-jurisdictional collaboration to manage people more adaptively, through continued active participation in Columbia Gorge Tourism Alliance, Interagency Recreation Team, and other avenues. VSI monitoring will inform work on this strategy.

Nature-based tourism

Strategy: Build resilience among climate sensitive economies.

The Commission can support small businesses and recreation managers in preparing for and responding to climate-related disasters.

Public roads

Strategy: Proactively prepare for increased road washouts and landslides.

To support this strategy, the Commission would further coordinate with USDA Forest Service, who has been inventorying roads needing upgrades, and use available online data to identify culverts needing improvement to address future flooding and impacts to fish habitat. We could also work with USDA Forest Service, WSDOT, and ODOT to identify preferred locations for spoils disposal sites throughout the gorge.

3. Mitigation

Agency GHG emissions

Strategy: Reduce emissions from Gorge Commission agency operations.

In previous years, the Commission reported emissions to the state of Washington. Staff would review prior reports to establish a baseline, set targets, track emissions, and report emission reductions.

Development and building standards to limit new emissions

Strategy: Reduce energy emissions associated with development permitted with the Management Plan.

To support this strategy, the Commission would review model ordinances and consider adding building efficiency standards to the Management Plan. These could include size limits to reduce heating and cooling and efficient design standards for new public buildings. The Building in the Scenic Area Handbook is a resource that could be updated to help landowners design for energy efficiency. There could also be opportunities for the Commission to attract and promote green infrastructure designers and sustainable builders to innovate in the gorge.

PART IV: Tracking Progress and Measures of Success

Draft for Public Comment

April 27, 2022 Version

A. Framework for Evaluating and Updating the CCAP

The CCAP framework is designed to be adaptive. In developing the CCAP document, we have incorporated prior Commission work, recent publications, expert and partner input, and initial learning from the Vital Sign Indicators (VSI) program. As we begin implementing the actions identified in the CCAP, we may be producing recommended Management Plan revisions, implementation guidelines, best management practices, and new or strengthened partnerships. As VSI findings are reported and public engagement proceeds, the Commission will revisit the CCAP and determine what is needed to integrate new information.

The graphic below illustrates the main steps in an ongoing climate action cycle.

Evaluating CCAP Progress

The Commission will track and evaluate the CCAP at multiple levels and in close coordination with the VSI program.

Updating the Action Plan

Options to update and adapt the CCAP include:

- Updating priority actions to reflect accomplished actions and new priority actions;
- Updating other sections of the plan and revising priority areas for future action; and
- Completing companion assessments or plans to supplement the CCAP (an example could be a carbon storage inventory).

B. Measuring Success

This section describes Land and Water Adaptation Priorities for action and how we will evaluate progress and ultimate success. (Note: Similar summary tables for GHG Mitigation Priorities will be included in the Final CCAP.)

Goals are based on the information we have on hand today and may need to be refined in future years. To the extent possible, they are measurable and time-bound.

Strategies tend to be longer-term and higher level in nature than the actions that follow. These strategies are intended to guide the Commission's climate work for years to come.

Actions are generally short-term (to be completed by 2025), though some require significant resources or on-going programs to accomplish.

Activity measures track progress on specific priority actions and action outcomes.

Long-term measures of success are primarily **Vital Sign Indicators**, those high-level measures that help us understand the status and trends of protected resources affected by CCAP actions (e.g., priority habitats, recreation experiences, and scenic views).

Priority: Cold Water Refuge Streams and Riparian Habitats				
Goals	**Strategies**	**Actions**	**Activity measures**	**Long-term measures of success**
1. By 2040, summertime water temperature on NSA CWR streams remain under or are trending towards federal/state standards for cold water habitats. 2. By 2030, based upon VSI monitoring and with partner input, the Commission has set goals for summer baseflows and winter high flows.	<u>Strategy 1</u> Improve stream temperatures and flow	• Update plan policies • Provide support to enhancement projects • Implement EPA CWR Plan and WA Salmon Strategy	• Number of enhancements or stream miles enhanced • Number of policy decisions to benefit streams	• Stream temperature (VSI) • Stream flow (VSI)
	<u>Strategy 2</u> Generate decision support tools to evaluate actions and support future actions	• Establish, carry out, and report on monitoring		

Priority: Wetlands and Wetland Species				
Goals	**Strategies**	**Actions**	**Activity measures**	**Long-term measures of success**
1. By 2025, baseline extent and condition for wetlands is established and supports implementation of the Management Plan's goal of no wetland loss. 2. By 2030, wetland extent and function are increasing. Based on VSI information, more detailed goals can be set at this time with targets for wetlands acreage and condition.	<u>Strategy 1</u> Accelerate wetland enhancement and restoration	• Update plan policies • Provide support to enhancement projects	• Number or acres of enhancements • Number of policy decisions to benefit wetlands	• Wetland extent and distribution; Land cover change (VSI)
	<u>Strategy 2</u> Update policies and improve implementation	• Update wetlands provisions • Share resources with landowners and planners		
	<u>Strategy 3</u> Generate decision support tools	• Map and assess wetland condition • Set priorities for compensatory mitigation or restoration		

Priority: Tribal Treaty Rights, including Culturally Important Plants				
Goals	**Strategies**	**Actions**	**Activity measures**	**Long-term measures of success**
1. By 2025, the Commission has clear objectives and policy approaches for First Foods protection and access created with Tribes. 2. By 2030, populations of culturally important plants are protected from development and enhanced through stewardship.	<u>Strategy 1</u> Build knowledge and options for protecting culturally important plants	• Formally invite Tribes to engage in NSA climate action • Improve information through VSI, plant surveys, ethnographic studies • Educate and encourage Commission staff to support Treaty Rights in project development	Number of permitted or voluntary projects benefitting culturally important plants or improving access for Tribal members to gather and steward plants	To be determined with Tribes
	<u>Strategy 2</u> Consult with Treaty Tribes to identify policy needs to protect culturally important	• Review and improve Plan provisions requiring plant surveys and notification to Tribes • Generate implementation tools like culturally important plant lists and sources of native seed		
	<u>Strategy 3</u> Support Treaty Tribes in their work to restore access for traditional gathering	• Consider Plan updates to promote Tribal access agreements • Promote incentives		

Priority: Oregon Oak Woodlands and Winter Range for Deer and Elk				
Goals	**Strategies**	**Actions**	**Activity measures**	**Long-term measures of success**
1. By 2025, critical corridors for oak woodlands and deer habitat connectivity are identified and policy options are provided to the Commission. Through work with East Cascades Oak Partnership (ECOP), comprehensive oak habitat maps are available. 2. By 2030, there is no net loss of oak woodland acres or function in the NSA.	<u>Strategy 1</u> Develop policy and compensatory mitigation standards to protect Oregon white oak habitat and maintain or restore connectivity.	• Develop policies, in coordination with partners • Investigate and promote incentives for agricultural conservation practices • Incentivize forest health enhancements • Develop guidelines and reduce permitting barriers for oak restoration or resilience treatments	• Number of policy decisions affecting oaks • Number of acres conserved or enhanced through development review decisions	• Oak extent and distribution; land cover change (TBD based on funding) • Oak condition (tools to assess condition are in development with partners)
	<u>Strategy 2</u> Develop policy and compensatory mitigation standards to protect winter range and maintain or restore connectivity.	• Consider Management Plan policies, such as limiting new cultivation, to maintain key winter range areas • Map priority winter range habitat areas and consider open space designations or other protection		
	<u>Strategy 3</u> Develop decision support tools to inform policy updates and plan implementation.	• Map and track oak habitat extent and land cover change • With East Cascades Oak Partnership, develop tools to assess oak condition		

C. A Path to Resilient Landscapes and Communities

The Columbia River Gorge Commission has been working on behalf of a sustainable Gorge since it was established by the National Scenic Area Act. Through its land use designations and resource protection provisions, the original Management Plan had many landscape resilience measures already in place before our understanding of climate change impacts was as widespread as it is today. Yet that foundation is not enough to sustain a resilient Gorge in a rapidly changing climate.

This Action Plan creates a deeper, more intentional process for addressing climate change than the Commission has ever had before. It creates a stepwise path to thoughtfully build our capacity to influence climate adaptation and mitigation over time, expand our knowledge base, strengthen our policy levers, and advance common goals through partnerships.

The Action Plan is our guide as we work with others to sustain a thriving, resilient National Scenic Area for future generations.

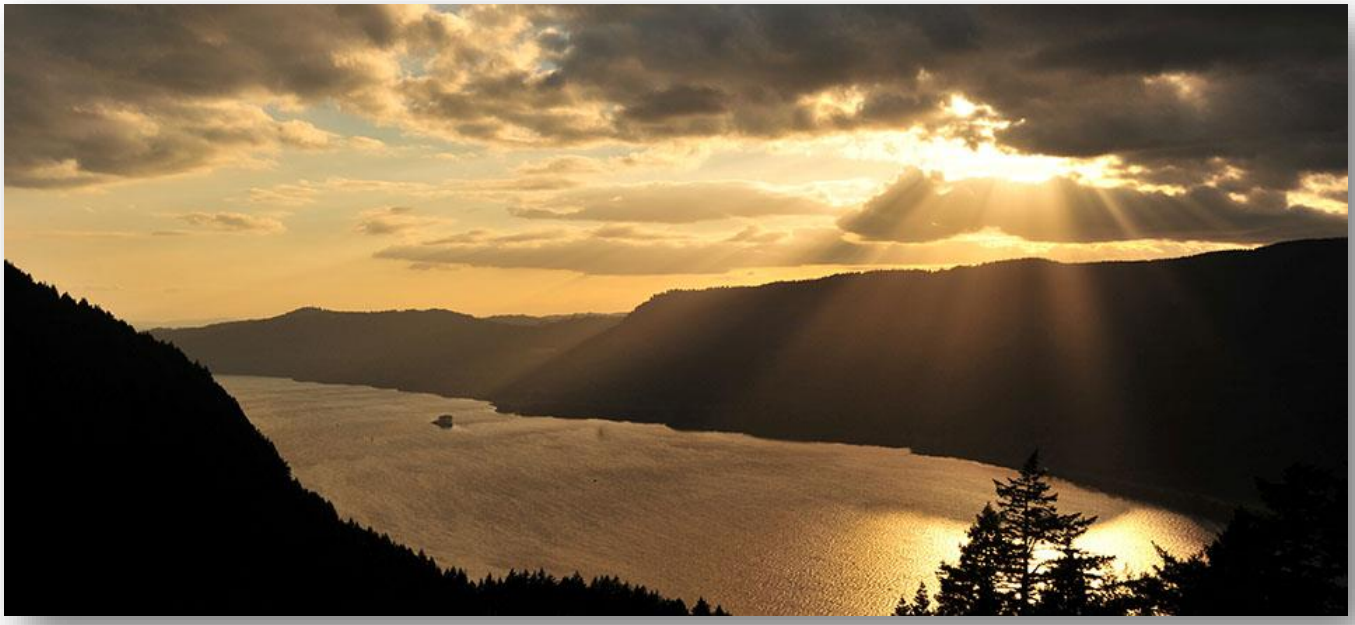


Photo by Peter Marbach

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Other Climate Change Plans for the Gorge Region

This Action Plan supplements and incorporates information from federal, state, local, Tribal, and other plans for the Columbia River Gorge region, including:

Confederated Tribes of the Umatilla Indian Reservation Climate Change Vulnerability Assessment (2017) and Adaptation Plan (2021) https://ctuir.org/departments/natural-resources/climate-adaptation/ctuir-climate-adaptation-plan-revised-final-drafts/

Hood River County Energy Plan (2018) https://www.mcedd.org/wp-content/uploads/2019/04/Hood-River-Energy-Plan_6-18-18.pdf

MCEDD Draft Columbia Gorge Economic Development Strategy (2022) https://www.mcedd.org/wp-content/uploads/2021/12/2022-2027-Columbia-Gorge-CEDS_draft.pdf

Oregon Department of Forestry Climate Change and Carbon Plan (2021) https://www.oregon.gov/odf/forestbenefits/Documents/odf-climate-change-and-carbon-plan-draft.pdf

Oregon Global Warming Commission Biennial Report to the Legislature (2020) https://static1.squarespace.com/static/59c554e0f09ca40655ea6eb0/t/5fe137fac70e3835b6e8f58e/1608595458463/2020-OGWC-Biennial-Report-Legislature.pdf

Oregon Climate Change Adaptation Framework (2021) https://www.oregon.gov/lcd/CL/Documents/2021_CLIMATE_CHANGE_ADAPTATION_FRAMEWORKandBlueprint.pdf

Oregon Department of Transportation Electric Infrastructure Needs Assessment (2021) https://www.oregon.gov/odot/Programs/Documents/Climate%20Office/TEINA_Final_Report_June282021.pdf

Historic Columbia River Highway Congestion and Transportation Safety Improvement Plan (2019) https://www.oregon.gov/odot/projects/pages/project-details.aspx?project=HHCP

State of Oregon Climate Equity Blueprint (2021) https://www.oregon.gov/lcd/CL/Documents/2021_Jan_Climate-Equity-Blueprint.pdf

USDA Action Plan for Climate Adaptation and Resilience (Oct 2021) https://www.sustainability.gov/pdfs/usda-2021-cap.pdf

Washington State Inventory of Emissions and on-going reporting https://ecology.wa.gov/Air-Climate/Climate-change/Tracking-greenhouse-gases/GHG-inventories

Yakama Nation Climate Change Action Plan (2021) https://yakamafish-nsn.gov/sites/default/files/YakamaNationCAP_Approved_Final_3_2021.pdf