

Final Climate Change Addendum to the 2016 Ashland Forest Plan

Approved by Ashland City Council in April 2023

I. Introduction

The 2016 Ashland Forest Plan ([AFP](#)) contained a chapter on climate change, but it was general in nature and limited by uncertainty as to the impact climate change would have on the approximately 1,200 acres of forest lands managed by the City of Ashland and Ashland Parks and Recreation Commission (APRC). The increased research and rapid rate of climate change induced impacts on Ashland's forest lands over the past six years have added considerably to the Forest Lands Commission's (FLC, now a management advisory committee) understanding of the urgent need to address climate change impacts through recommendations to the Ashland City Council for planning direction and management actions over the next 25 years. Current drought and temperature-related changes to vegetation on municipal forest lands warrant an improved and more comprehensive analysis of climate-adaptive planning and management beyond what was addressed in the AFP. Adaptive management is a key overarching strategy addressed throughout this addendum to assess both new and changing resource conditions and land management goals, as well as those that remain unchanged at this time.

Specific examples of necessary adaptive management updates in planning direction and management actions that this addendum will add to the AFP include:

- Shifting from the restoration paradigm that guided previous forest planning and management to an enhanced adaptive management strategy that incorporates new science and technology to effectively address climate change-induced forest land conditions that are likely without historic reference.
- Utilize existing data from attribute tables and encourage contractors to both review data and update it as appropriate.
- Maintaining and promoting refugia conditions and stand characteristics to buffer against climate change impacts to allow diverse habitats to persist. Develop a finer scale approach to refugia¹ delineation, where appropriate.
- Enhance a variable mosaic of forest structure conditions and fuel loads. For example, creating openings in the forest canopy to reduce potential crown or ground fire intensity from continuous tree canopies or surface fuels. Growing shade intolerant and fire tolerant species would be balanced with higher tree densities and fuel loading in other areas such as riparian areas.
- Managing to promote and maintain healthy, functional, and productive soil conditions. This addendum will add soils as a stand-alone chapter with equal standing with other resources addressed in the AFP.
- Planning for increasing frequency and intensity of extreme precipitation events that could negatively impact soils and aquatic resources, resulting in the loss of ecosystem services in Ashland's built environment including road systems, trails, infrastructure, and other downstream assets and values.

¹ Refugia: Locations that experience less severe or less frequent disturbances than the surrounding landscape.

- Anticipating and proactively treating tree mortality events to reduce excessive fuel accumulations. Additionally, implementing a rapid response for the strategic and timely removal of dead and dying trees will reduce overall costs of treatment, enhance public safety, and contribute to the local timber supply (only as a by-product of ecosystem management).
- Mitigating the increasing impact of habitat loss on wildlife populations from wildfire, weather pattern changes, insects and disease outbreaks, and pressures from recreational use on city forest lands because of climate change while considering adjacent land ownerships.
- Monitoring, evaluation, and regulation of recreation resource users to protect ecosystems from the additive stressors of climate change and to protect the recreation resource itself.
- Improving coordination and partnerships between various city departments, APRC, the Rogue River-Siskiyou National Forest, neighboring communities, volunteer and advocacy organizations, and various stakeholder groups.

II. Ashland Forest Plan Climate Change Addendum Development

The FLC has a long history, dating back to the mid-1990s, of public engagement and the development of professional and implementable planning and management documents listed below:

- [City Forestlands Restoration Phase II \(2004\)](#)
- [Coordination and contribution to the Ashland Forest Resiliency Community Alternative on U.S. Forest Service lands in the Ashland Watershed under the Ashland Forest Resiliency Stewardship project \(2004\)](#)
- [City Forestlands Restoration Phase III for the City's Winburn parcel \(2009\)](#)
- [Ashland Forest Plan \(2016\)](#)

To create this addendum to the AFP for climate change-specific adaptive management recommendations on City and APRC forest lands, the FLC took the following steps to research, author, review, and prepare this document for presentation to the City Council:

- Consultant Marty Main of Small Woodland Services, Inc. compiled and presented an [extensive literature review](#) of predicted climate change impacts on vegetation, wildfire behavior, soils, hydrology, wildlife, recreation, and carbon storage to the FLC, within the context of 25 years of past management. Main suggested changes to the AFP based on his assessment of existing research compared to policy and science in the 2016 Ashland Forest Plan.
 - Forest Lands Committee members reviewed and discussed each recommendation to determine if a change to the AFP was needed or if current direction in the AFP was sufficient.
 - Planning direction and management actions to adapt or change are described in this addendum.
 - A public review period of the draft addendum occurred prior to finalization and presentation to the City Council.
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III. Ashland Forest Plan Climate Change Addendum

This section describes recommendations by the FLC for changes to planning direction and management actions for the city's forest lands and resources. Unless otherwise stated, guidance in the [2016 AFP](#) (www.ashland.or.us/forestplan) remains in effect.

A. Vegetation

- Increase individual tree and stand-level resilience and diversity of Plant Association Groups (PAGs) more tolerant of climate-induced high-severity disturbance and predicted future conditions.
- Identify unique vegetation types that are currently under stress and implement management strategies to maintain them within a refugia framework. Promote refugia to buffer against climate change impacts and to allow at-risk species to persist and expand.
- Emphasize fuel treatments adjacent to refugia to minimize risk of high severity fire in refugia.
- Consider adding deferred or untreated units to the refugia framework.
- Rate the refugia potential of units based on temperatures, moisture, aspect, and site productivity. Consider refugia subtypes to rate units across multiple refugia categories. Develop a finer scale approach to refugia ratings and delineation.
- Modify silvicultural prescriptions to produce a more variable structural mosaic including more open forests to reduce density-related tree stress and mortality. Emphasize uneven-aged stand structure to encourage vigor in multiple crown classes and seral stages, without compromising hardwood development and ground shading.
- Prioritize pre-emptive treatment of vulnerable and mortality-prone sites to avoid outbreak-level mortality using [Main's risk rating system](#).
- Increase scope and intensity of fuels reduction treatments on and adjacent to AFP parcels for more wildfire management effectiveness, (as referred to in the [Potential Operational Delineations \(PODs\) analysis](#)) during predicted increasing higher-severity wildfire disturbances. Emphasize area-wide treatments taking advantage of control features over linear treatments (fuel breaks) to maximize suppression success and footprint of climate-adapted forests.
- Identify and reduce potential vectors for invasive species. Aggressively monitor, inventory, and manage invasive species using an integrated pest management approach.
- Use prescribed burning to reduce stand density, increase heterogeneity of vertical and horizontal stand structure and fuel loading, and promote tree species and individuals better adapted to predicted climate change and the resulting disturbance regimes.
- When updating the AFP and for future project documents:
 - Define and discuss the term refugia.
 - Define and discuss the term pyrosilviculture.
 - Define and discuss the PODs rating system.
 - Update existing plant list.

B. Soils

- Add a stand-alone soils chapter to the AFP during the next update.
 - Reduce erosion potential by maintaining higher root-holding capacity on sites vulnerable to excessive erosion through increased occupancy of vegetation.
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- On sites vulnerable to erosion, consider alternative management such as radial thinning only around vigorous retention trees, thinning in strips across the contour, and creating small openings (< 1 acre).
- Manage for endemic, rather than outbreak, levels of tree mortality to maintain sufficient amounts of Coarse Woody Material (CWM) for soil health while avoiding an excess of snags and CWM which may result in long duration fires.
- Increase protection and enhancement of below-ground soil functions and processes, particularly for enhancement of water and carbon retention.
- Reduce the likelihood of slope failure and landslides by applying site-specific management strategies in areas designated as landslide hazards by the State of Oregon.
- Increase the scale and intensity of prescribed underburning to decrease possibility of soil loss from high-severity fire. Reduce the likelihood of erosion by implementing mosaic burns to retain unburned patches and minimize large areas of bare soil exposure.
- Increase the creation and retention of partially burned CWM and biochar through light underburning.
- Define and discuss biochar when updating the AFP.

C. Carbon Sequestration and Storage

- Consider carbon sequestration and storage as a resource to be managed.
- Develop CWM budgets based on management priorities and PAGs.
- Assign two CWM budgets for PAGs within riparian areas: (1) streamside moist PAG and (2) upland dry PAG.
- Explore options to generate revenue from carbon sequestration and storage while recognizing that lower elevation dry forests are predicted to lose carbon as vegetation type shifts. Carbon storage is more appropriate in the wettest Plant Association Groups in riparian areas and the Winburn Parcel.
- Though the Ashland Climate Energy Action Plan calls for carbon neutrality, we recognize that this may not be possible on City forestlands, where goals of community wildfire safety and maintaining forested ecosystems intact are higher priorities.

D. Hydrology

- Monitor changes in stream condition classes and focus management on perennial and intermittent streams. Update inventory if climate change causes alterations to stream condition classes.
 - Evaluate, upgrade, and maintain forest road system (7 lane miles) in partnership with U.S. Forest Service. Improve drainage systems and increase culvert sizes where needed in anticipation of likely increase in peak flows. Minimize sediment discharge from roads and ditches into the hydrologic network.
 - Create and maintain more canopy openings for longer retention of snow at the ground surface, where appropriate.
 - Manage organic matter amounts, specifically CWM and biochar, to increase water holding capacity.
 - The combination of the projected extension of the dry season and the fire season, and more extreme precipitation events during the wet season with higher peak flows, presents an urgent need for adaptive management in Riparian Management Areas (RMA).
 - Target stands for thinning and promote more shade intolerant species higher in hydrologic
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- networks (regardless of elevation) in intermittent and ephemeral portions of streams.
- Utilize RMAs as corridors connecting mid- and late-seral habitats across all land ownerships.
- FLC recommends that APRC designate the Ashland Ponds parcel as anadromous fish critical habitat to manage for salmon and steelhead spawning and rearing habitat.
- Manage for terrestrial and aquatic RMA communities, based on PAGs and stream class.
- Prioritize the reduction of fuel continuity adjacent to major riparian areas (especially along Ashland Creek) to discourage high-severity disturbance from occurring within RMAs.

E. Wildlife

- All management actions, including refugia enhancement, will consider vulnerable and at-risk species and their habitat as identified by federal and/or state agencies such as coho salmon and pacific fisher.
- Increase public awareness of wildlife moving into the city to seek water sources during the dry season. Establish and maintain water sources away from the city to reduce human/wildlife conflicts.
- Maintain landscape level habitat connectivity as ranges shift by implementing broader landscape level analysis and partnerships with adjacent landowners, especially along RMAs connecting with cooler aspects.
- Reduce pressures on wildlife species from additive sources other than climate change.

F. Recreation

- Protect recreation resources from the additive stressors of climate change.
 - Establish and codify the relationship between FLC and APRC to further define roles and responsibilities for planning direction and management actions. Specifically, develop procedures for FLC to maintain AFP consistency and provide advisory input to APRC when modifications or additions to the city trail network is proposed.
 - Increase public awareness of potential human-caused high-severity disturbance that can be exacerbated by climate change in order to protect amenity values, user experience, public safety, and access.
 - Recommend that city emergency evacuation plans are updated to include trail users in the watershed.
 - With higher predicted summer temperatures, expect increased demand for recreational use of city lands in cooler locations and along RMAs. In other areas, higher summer temperatures may modify the amount, timing, or seasonality of some recreation uses.
 - Improve user awareness of:
 - climate change
 - wildfire safety
 - potential ignition sources
 - forest management objectives
 - trail etiquette
 - invasive species
 - reducing negative resource impacts
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- Through partnerships, manage recreation to reduce negative impacts to vulnerable species, climate refugia integrity, and forest lands stressed by climate change.
 - Increase monitoring, inventory, and management of invasive species introduced by recreation, especially along trails and parking areas.
 - Plan for increased maintenance of access roads, parking areas, trails, and other recreational infrastructure due to more frequent and intense extreme precipitation events and increased use during the wet season.
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