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U.S. DEPARTMENT OF AGRICULTURE

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Amendments to Land Management Plans to Address Old-Growth Forests Across the National Forest System

Draft Environmental Impact Statement

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Cover Photo: Large, old fir trees and snags on the Siuslaw National Forest, 2017. Photo Credit: photographer unknown.

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Amendments to Land Management Plans to Address Old-growth forests Across the National Forest System
DRAFT
Environmental Impact Statement
Numerous Counties, States and Jurisdictions

Lead Agency: **USDA Forest Service**

Cooperating Agencies: The agency continues to work with agencies that have expressed interest in cooperating agency status and is in the process of formalizing these agreements.

Responsible Official: **Thomas J. Vilsack, Secretary of Agriculture**
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Abstract: Section 2(c)(ii) of Executive Order 14072 directed the Department of Agriculture to develop policies to institutionalize climate-smart management and conservation strategies that address threats to mature and old-growth forests on Federal lands. To allow for the management flexibility necessary to address varied ecological conditions found across the National Forest System of the U.S. Forest Service, the Department has determined that amending land management plans is the most judicious approach. This EIS describes the proposed action (Modified Proposed Action, Alternative 2 – also the preferred action) and the action alternatives (More Restrictive, Alternative 3; Less Restrictive, Alternative 4), as well as communicates the affected environmental and potential impacts associated with the proposed amendment of 122 land management plans.

It is important that reviewers provide their comments at such times and in such a way that they are useful to the Agency's preparation of the EIS. Therefore, comments should be provided prior to the close of the comment period and should clearly articulate the reviewer's concerns and contentions. The submission of timely and specific comments can affect a reviewer's ability to participate in subsequent administrative review or judicial review. Comments received in response to this solicitation, including names and addresses of those who comment, will be part of the public record for this proposed action. Comments submitted anonymously will be accepted and considered; however, anonymous comments will not provide the respondent with standing to participate in subsequent administrative or judicial reviews. Comments that are not submitted via the methods described below or prior to the close of the comment period will not be prioritized for consideration and response; however, they will be included in the project record.

Send Comments to: **Online (preferred) via a webform:**
https://cara.fs2c.usda.gov/Public//CommentInput?Project=65356

Hardcopy letters must be submitted to:
Director, Ecosystem Management Coordination
201 14th Street SW, Mailstop 1108
Washington, DC 20250–1124

Date Comments Must Be Received By: **September 20, 2024**

Skip to Table of Contents

Summary

Introduction

The United States Department of Agriculture, Forest Service proposes to amend Land Management Plans throughout the National Forest System to develop a consistent management framework for conserving, stewarding, recruiting and monitoring old-growth forests. The intent of this amendment is to foster the long-term resilience of old-growth forests and their contributions to ecological integrity across the National Forest System. The area affected by the proposal includes the administrative units identified in Appendix C, Comparison of Current Management of Old-Growth to Amendment for the Draft EIS.

The National Forest System (NFS), which is comprised of over 193 million acres, spans every forest type in the United States – from subtropical pine forests in Florida to the temperate rainforest in Southeast Alaska and every forest type in between. These forests all have unique stand and disturbance histories and include forests that do not have true old-growth phases. The Forest Service manages the NFS to sustain the multiple use of its renewable resources while maintaining the long-term health and productivity of the land. Resources are managed through a combination of approaches and concepts for the benefit of human communities and natural resources. Land management plans guide sustainable, integrated resource management of the resources within the plan area in the context of the broader landscape, giving due consideration to the relative values of the various resources in particular areas (36 CFR 219.1(b)).

In order to fulfill the goals of EO 14072 Section 2(c)(iii) (discussed in more detail below) to develop policies to institutionalize climate-smart management and conservation strategies that address threats to mature and old-growth forests on Federal lands, and to achieve the protection envisioned in Section 23001(a)(4) of the Inflation Reduction Act (IRA) ($50,000,000 for the protection of old-growth forests on National Forest System land), amending land management plans is the most judicious approach.

The modified proposed action would create consistency by ensuring the majority of land management plans for units that contain old-growth forests have management direction for the stewardship of existing and recruitment of future old-growth forest that they are resilient over time. At the same time, the proposed amendment recognizes that there is no single management prescription or definition that applies to all of the forest types across the National Forest System. Old-growth characteristics differ by ecosystem and species. Similarly, threats to old-growth forests differ in different regions and geographies. For these reasons, the plan amendment does not propose a single national old-growth definition. Instead, it directs the application of plan components based on local definitions, or regional definitions where the underlying plan is incomplete.

Further flexibility is provided through the local development of the *Adaptive Strategy for Old-Growth Forest Conservation* (discussed in more detail in the proposed action and action alternatives), as well as line officers having the discretion to amend or revise land management plans in the future to further tailor old-growth direction in the plan as best available science, which includes Indigenous knowledge, continues to evolve and inform management of old-growth forests.

The proposed amendment is not intended to recruit all successional stages towards mature and old-growth: an approach which elevates older forests to the exclusion of other successional stages would

present a challenge to maintaining or restoring the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan area, to include structure, function, composition, and connectivity that accounts for more than just the old-growth stage. (36 CFR 219.8(a)(1)). The intent of this amendment is to foster the long-term resilience of old-growth forests and their contributions to ecological integrity across the National Forest System.

The proposed amendment recognizes the importance of proactive stewardship in order to protect old-growth forests from threats, including to reduce wildfire risk and allow for the restoration of beneficial fire in fire-adapted ecosystems, consistent with the Forest Service's Wildfire Crisis Strategy.

What Is Old-Growth Forest?

The *Mature and Old-Growth Forests: Definition, Identification, and Initial Inventory on Lands Managed by the Forest Service and Bureau of Land Management* technical report (FS-1215a) defines the old-growth narrative framework as follows:

> Old-growth forests are dynamic systems distinguished by old trees and related structural attributes. Old-growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics, which may include tree size, accumulations of large dead woody material, number of canopy layers, species composition, and ecosystem function (USDA Forest Service 1989).
>
> In addition to their ecological attributes, old-growth forests are distinguished by their ecosystem services and social, cultural, and economic values. Old-growth forests have place-based meanings tied to cultural identity and heritage; local economies and ways of life; traditional and subsistence uses; aesthetic, spiritual, and recreational experiences; and Tribal and Indigenous histories, cultures, and practices. Dialogue with stakeholders and Tribal Nations and integration of local and Indigenous Knowledge with evolving scientific understanding are critical in identifying and stewarding old-growth forests. (p. 5)

The technical report (link above) also explains how working definitions for old-growth (found in Appendix 1 in FS-1215a) were developed for the purpose of conducting the initial inventory. The objective of the old-growth inventory report was to provide a consistent, national-scale estimate of old-growth forest extent across all National Forest System and Bureau of Land Management lands. To do so, the national inventory estimates were based on Forest Inventory and Analysis (FIA) plot data – a peer-reviewed and widely accepted sampling protocol. Using FIA data allowed the national inventory to provide a measure of uncertainty in the estimates. The national inventory team worked with Forest Service regional staff to determine how to apply regional definition criteria to FIA field-plot data for this initial national-scale inventory. And, wherever possible, the national inventory applied existing regional criteria (citations in Table 6.1); in some cases, the regional criteria were adjusted to accommodate use of the FIA data. These working definitions informed the draft environmental impact statement and will also be utilized for the forthcoming old-growth monitoring.

Old-growth forests throughout the National Forest System are defined by the nine Forest Service administrative regions for differing vegetation types, as well as in some individual land management plans. Regional old-growth criteria rely on structural characteristics and include an attribute that captures the abundance of large trees – specifically, minimum live trees per acre of a minimum size and/or minimum basal area of live trees. Many regional criteria also set a minimum stand age or tree

age, and some include standing snags or downed wood. Each region recognizes important ecological variation by defining unique old-growth criteria for different vegetation types.

Regional and individual land management plan old-growth definitions exhibit broad variation in criteria and these differ among forest types and for the same forest type across regions or individual units. Old-growth forest criteria differ geographically for the same forest type because of fundamental differences in developmental processes between forests. Today's old-growth forests are the outcome of ecosystem development and aging. The pattern of aging differs based on forest type, site productivity, and disturbance regime. Site productivity is influenced by soil conditions, precipitation amount and variability, length of growing season, and disturbance history. Each of these factors influence the characteristic pattern of forest development and interact with one another, resulting in multiple patterns of forest development (aging) and tree growth, even within a forest type.

Hence, the variety of criteria reflects dramatic differences in the forest structure expected among old-growth types. The regional criteria to identify old-growth forests across North America reflect the application of extensive scientific investigation. These criteria echo the methodical synthesis of extensive field measurements and summary of plot data published in over a dozen scientific reports.

Old-growth definitions in land management plans can range from a qualitative definition that describes common old-growth features, to a definition with some criteria for stand age or diameter of a trunk or bole of a standing tree at diameter at breast height (DBH), or to a complete set of criteria that allows for reliable identification of old-growth on the landscape. There are also plans with old-growth plan components that do not have a definition or criteria for old-growth in the text of the LMP but rather in the supporting LMP analysis documents. Some plans do not refer to old-growth, but instead refer to "old forest" or "late successional stage" – concepts that intersect or overlap with old-growth, but that are not always interchangeable.

The Ecological Impacts Analysis Report provides additional discussion on defining old-growth forest and further explanation of the definitions used for EIS analysis and definitions that would be applied during implementation.

How is the Quality of Old-Growth Forests Considered?

While old-growth forests are often defined by size and age amongst other criteria, quality of the old-growth forests is also fundamentally important. High quality old-growth forests develop a complex stand structure that contains a diverse array of plant and animal communities, including many that are rare or absent in younger forests. Such diversity plays a key role in maintaining ecosystem function and resilience, which is a key component of ecological integrity and helps prevent the establishment and expansion of non-native invasive species. Proactive stewardship – a major objective of the old-growth amendment – aims, in part, to improve the quality of old-growth forests to ensure long-term persistence on the landscape.

Why is the USDA Forest Service Proposing this Amendment?

On April 22, 2022, President Biden issued Executive Order 14072 *Strengthening the Nation's Forests, Communities, and Local Economies*. Section 2 of the Executive Order (EO) recognizes the distinctive role that Federal forest lands play in sustaining ecological, social, and economic benefits throughout the nation and calls particular attention to the importance of mature and old-growth forests on Federal lands for their role in contributing to nature-based climate solutions by storing large amounts of carbon and increasing biodiversity, mitigating wildfire risks, enhancing climate

resilience, enabling subsistence and cultural uses, providing outdoor recreational opportunities, and promoting sustainable local economic development. Later in 2022, Congress passed the Inflation Reduction Act, wherein they included section 23001(a)(4), providing for "$50,000,000 for the protection of old-growth forests on National Forest System land…"

Section 2(b) of the April 2022 EO directed the Department to inventory mature and old-growth forests on National Forest System lands, which the Forest Service published in April 2024 (*Mature and Old-Growth Forests: Definition, Identification, and Initial Inventory on Lands Managed by the Forest Service and Bureau of Land Management*). The initial inventory was conducted by applying working definitions of old-growth and mature forest conditions for over 200 regional vegetation types to Forest Inventory and Analysis field plot data. Definitions and inventories have been established for forests exhibiting old-growth conditions, but mature forest conditions had not previously been ecologically defined in a consistent manner at a national scale. This initial inventory resulted in the Forest Service identifying an estimated 24.7 million acres of old-growth forests and 68.1 million acres of mature forest conditions, representing 17 and 47 percent, respectively, of the 144.3 million acres of forested National Forest System lands.

Section 2(c)(ii) of the EO directed the Department, following completion of the initial inventory, to analyze threats to inventoried mature and old-growth forests on National Forest System lands, including threats from wildfires and climate change. Like the inventory, the initial threat analysis was national in scale and presents an initial compilation and summation of threats associated with wildfire, fire exclusion, insects and disease, extreme weather, climate and temperature, drought, tree cutting, roads, land use allocation, and wildland urban interface. In the analysis, the term "threat" indicated a change in forest structure resulting in a reclassification of the forest condition but not necessarily a loss of ecological function and integrity.

The *Mature and Old-Growth Forests: Analysis of Threats on Lands Managed by the Forest Service and Bureau of Land Management* report, which was published in June 2024, indicates several key findings that informed this proposed action. The analysis found that mortality from wildfires is currently the leading threat to mature and old-growth forests, followed by insects and disease. The analysis also found that tree cutting is now a relatively minor threat compared to climate amplified disturbances such as wildfire, insects, and disease. However, past management practices, including timber harvest and fire suppression, contributed to current vulnerabilities in the distribution, abundance, and resilience of old-growth forest characteristics. The amount and distribution of mature forests across the National Forest System suggest that many of these lands have the inherent capability to sustain old-growth forests into the future.

Section 2(c)(iii) of the EO directed the Department to develop policies, with robust opportunity for public comment, to institutionalize climate-smart management and conservation strategies that address threats to mature and old-growth forests on Federal lands. On December 20, 2023, the U.S. Department of Agriculture published a Notice of Intent (NOI) in the Federal Register to amend land management plans (LMP) for units of the National Forest System to add consistent direction to conserve and steward existing – and recruit future – old-growth forests and to monitor their condition across planning areas of the National Forest System. This proposed amendment is intended to create a consistent framework for managing old-growth forests with sufficient distribution, abundance, and ecological integrity (composition, structure, function, connectivity) to be persistent over the long term, in the context of climate amplified stressors.

The preliminary purpose and need and proposed action described in the NOI were informed by public feedback received on the Climate Resilience Advance Notice of Proposed Rulemaking

(ANPR) the Forest Service initiated in April 2023 (88 FR 24497). The ANPR gave the public an opportunity to provide input on how the Forest Service should respond to the changing climate through forest management activities and possibly future policies.

The Forest Service received 92,000 comments in response to the ANPR, representing nearly 500,000 respondents. Many responses included feedback on the appropriate conservation and management of mature and old-growth forests, reflecting a diversity of perspectives. In developing the preliminary proposed action, the Department identified some potential areas of agreement. A list of these agreements can be found in Chapter 1, Section 1.3.

Publication of the Notice of Intent initiated the scoping period for this Draft Environmental Impact Statement (EIS). Scoping comments were accepted through February 2, 2024. Approximately 7,300 comment letters were received. Appendix A, Scoping Summary for the Draft EIS includes a summary of comments received.

Are All Areas of Mature Forest Proposed to be Managed for Future Old-Growth?

As discussed in the *Mature and Old-Growth Forests: Definition, Identification, and Initial Inventory on Lands Managed by the Forest Service and Bureau of Land Management*, mature forests comprise approximately 47 percent of forested acres. The goal is not to manage all mature forest as future old-growth forest. Not all mature forest occurs in areas that will persist as mature forest or that can sustain succession towards old-growth forest. Past management – such as fire suppression, previous vegetation management, and/or reforestation – and natural succession or regeneration may have created mature forest or species distribution/composition that does not support desired ecological functions and conditions. Additionally, many of these acres are managed for multiple uses and provide necessary terrestrial habitat features that differ from those found in old-growth forests. For these reasons, mature forest is not being included in conjunction with old-growth (e.g. "old-growth and mature forest") for all aspects of the amendment. However, the amendment does place an emphasis on identifying and prioritizing areas of mature forest to be managed for future old-growth forest, particularly in the Modified Proposed Action (Alternative 2). Specific direction to identify priority areas for the recruitment of future old-growth forest – including from mature forest – is included in the Modified Proposed Action as part of the *Adaptive Strategy for Old-Growth Forest Conservation* (Management Approach 1.b) and in a guideline that applies to management of those areas (Guideline 3).

What is the Purpose and Need for This Amendment?

With consideration of the *Mature and Old-Growth Forests: Definition, Identification, and Initial Inventory on Lands Managed by the Forest Service and Bureau of Land Management* technical report, the *Mature and Old-Growth Forests: Analysis of Threats on Lands Managed by the Forest Service and Bureau of Land Management* report, comments received on the Climate Resilience ANPR (88 FR 24497) and during the scoping period for the Notice of Intent to prepare and Environmental Impact Statement (see Appendix A, Scoping Summary for the Draft EIS), and an analysis of existing land management plan direction for old-growth management and conservation, the Department finds that reaffirming – at a national scale – the commitment to maintaining and developing old-growth forests across the National Forest System is prudent, warranted, and best advanced at this time via amendment of land management plans.

The purpose of the proposed action is to:

- Foster ecologically focused management across the National Forest System by maintaining and developing old-growth forests while improving and expanding their abundance and distribution and protecting them from the increasing threats posed by climate change, wildfire, insects and disease, encroachment pressures from urban development, and other potential stressors, within the context of the National Forest System's multiple-use mandate.
- Establish a clear role for Indigenous Knowledge and tribal leadership in the proactive stewardship and furtherance of old-growth forests on National Forest System lands.
- Facilitate the development of geographically informed adaptive strategies for old-growth forest conservation to support the effective implementation of this amendment and enable co-stewardship with Tribes and Alaska Native Corporations and collaboration with States, local governments, industry partners, and public stakeholders.
- Establish a national monitoring framework to track trends and distribution patterns of old-growth forests for inventory, evaluation, assessment, and adaptive management purposes.

The need for change is to:

- Demonstrate compliance with Executive Order 14072 to institutionalize climate-smart management and conservation strategies that address threats to mature and old-growth forests on Federal lands;
- Respond to the clear congressional intent outlined in section 23001(a)(4) of the Inflation Reduction Act; and
- Create a consistent framework to manage for the long-term persistence, distribution, and recruitment of old-growth forests across the National Forest System (NFS) in light of the interacting biophysical and social factors that threaten the persistence of older forests on NFS lands across the Nation.

The proposed plan components and direction focus on providing consistency for interrelated topic areas, including:

- Improving the retention and recruitment of old-growth forests;
- Improving durability, resilience, and resistance to fire, insects, and disease within old-growth forests across the National Forest System and addressing concerns about future durability, distribution, and redundancy of old-growth forests;
- Strengthening the capacity of existing and future old-growth forests to adapt to the ongoing effects of climate change and future environments;
- Recognizing the role of proactive stewardship in supporting the resilience of old-growth forests and characteristics over time;
- Incorporating Indigenous Knowledge into planning, project design, and implementation to achieve old-growth forest management goals and furthering Forest Service trust responsibilities with Tribes and Alaska Native Corporations;
- Developing geographically informed adaptive management strategies for the retention of existing and recruitment of future old-growth forests, taking into account relevant local information through consultation with Tribes and collaboration with state, county, and local governments, partners. industry and public stakeholders; and
- Establishing a national old-growth monitoring framework.

What Decisions Will be Made as Part of This Amendment?

The responsible official (Secretary of Agriculture) shall review the proposed action, alternatives, and the environmental consequences to determine:

- Whether and how to amend National Forest System land management plans; and
- Which part(s) of the substantive requirements (219.8 through 219.11) are directly related to the proposed action, and how to apply them. (These are the requirements likely to be directly related to the amendment based on the purpose or the effects (beneficial or adverse) of the amendment (36 CFR 219.13(b)(5)). (Additional discussion on how substantive requirements were considered can be found in Chapter 1, Section 1.9.1.)

Criteria for the decision will include addressing the purpose and need for the amendment, consideration of issues/concerns and recommendations, and consistency with relevant legal mandates.

The proposed action represents concurrent plan-level changes that will have programmatic effects. Since a land management plan (LMP) does not compel any action and is not a budget-forcing document, it is not possible at this time to detail the specific actions or effects that will occur during the lifetime of an LMP. However, an LMP does provide some details about the general management direction, and so programmatic effects may be determined in accordance with CEQ guidance.

The proposed action also sets forth goals, management approaches, and monitoring requirements that describe courses of action to achieve the desired conditions and objectives of the LMP. These are described in the planning regulations as "other plan content" (36 CFR 219.7(f)).

The proposed action also sets forth standards and guidelines that provide constraints for decision-making at the project-level.

See Chapter 1, Section 1.6 for additional information on the decision-making process.

What Issues Drove the Alternatives and Analysis?

The Forest Service identified the following concerns/issues that drove alternative development, to include modifications to the proposed action from what was initially described in the Notice of Intent:

- Whether the national-level approach to amending over 120 land management plans appropriately considers place-based information/knowledge and current land management direction that already addresses old-growth forest management.
- What would be the impacts from Standard 3 in the modified proposed action that restricts proactive stewardship in old-growth forests for the purpose of timber production.
- Whether current standards and guidelines provide enough restrictions to protect current and future old-growth forests from future timber harvest.

How Were Issues or Situations Unique to Certain Areas Considered?

Extensive review of scoping comments was conducted to understand and address issues and concerns. Additionally, roundtable discussions were hosted by the National Forest System (NFS) Deputy Chief and Deputy Undersecretary of Natural Resources and Environment and held with state and local governments, industry, forest users, and others.

Cooperating agencies have been invited to attend bi-monthly meetings, which began in May 2024, and are scheduled through the release of the Record of Decision. The intent of these meetings is to provide coordination, communication, and the exchange of ideas and information between the Forest Service and the Cooperator pursuant to the National Environmental Policy Act and in preparation of National Old Growth Amendment (under the 2012 Planning Rule). Approximately 100 state and local governments have expressed interest as a cooperating agency and have representatives attending these meetings.

The NFS Deputy Chief and other national-level agency leaders held engagements with Regional Foresters, Regional Staff Directors, and Forest/Grassland Supervisors to better understand the impacts of the proposed amendment on program and project management. Interdisciplinary team members assigned to this effort also held numerous discussions with various regional and forest/grassland subject matter experts to better understand the implications of some of the language/terminology proposed in the Notice of Intent for plan components/content and how this would be interpreted and applied when proposing and implementing activities on the ground. Finally, the NFS Deputy Chief conducted reviews of projects proposing activities in old-growth forest. Information gleaned from these reviews also helped inform modifications to the proposed action.

See Table 1 in Chapter 2 under Alternative 2 – Modified Proposed Action (specifically the column titled *Intent; Clarifications; What Changed*) for context on meaningful changes made to the proposed plan components/content, as informed by feedback from scoping and these various engagements and discussions.

How Were Indigenous Knowledge and Tribal Input Considered?

The notification of the opportunity to consult, along with a summary analysis on the old-growth amendment, were sent to Tribal and Alaska Native Corporation leaders via email on February 23, 2024. Tribal forums introducing the old-growth amendment were held on March 27, 2024 and May 22, 2024. A third forum is tentatively planned for July 2024 after publication of the DEIS.

To date, the agency has received two requests for government-to-government consultation. These consultation sessions are currently being scheduled. In addition to the two requests for government-to-government consultation, one Tribe and two Tribal organizations requested consultation and cooperating agency status. A Memorandum of Understanding is being drafted for the Tribe's consideration, and the agency is still discussing the terms of Cooperating Agency status with Tribal organizations. A number of Tribes also submitted comments on the scoping notice.

Some region-level employees, interdisciplinary team members, and various agency and USDA leaders have also relayed feedback on behalf of Tribes they are engaging with and for which the old-growth amendment has been a topic of discussion.

Recurring themes from the Tribal forums and feedback include the need to build in more time for effective consultation, funding for Tribal participation, revitalization of cultural burning, management for biodiversity, no single species or age class is preferred, and that Indigenous Knowledge is highly complex – requiring in-depth conversations to better understand Tribal relationships with the land.

See Table 1 in Chapter 2 under Alternative 2 – Modified Proposed Action (specifically the column titled *Intent; Clarifications; What Changed*) for context on meaningful changes made to the

proposed plan components/content, as informed by feedback from scoping and these various engagements and discussions.

Opportunities for consultation and collaboration will remain available until the publication of the Final Environmental Impact Statement. The agency is co-hosting regional collaborative Tribal roundtables about old-growth in partnership with Oregon State University. The agency is also collaborating with the Bureau of Land Management to co-host Mature and Old-growth input sessions with Tribal leaders and representatives being key invitees. The agency will continue to evaluate how to reflect and incorporate Tribal interests, values and priorities in this amendment.

This EIS may contain Indigenous Knowledge or other information shared by Tribal members under the principles of free, prior, informed consent, from what is currently available in a publicly-published format. Tribal knowledge and data sovereignty rights are respected, and any Indigenous Knowledge cited in this document is owned by the individual or author and can be rescinded or withdrawn at any time. Additional discussion on Indigenous Knowledge can be found in the SocioEcon and Cultural Impacts Analysis Report, Section 9.

What Alternatives Were Considered?

Alternative 1 - No Action Alternative

The No Action Alternative provides a baseline comparison for how old-growth forest direction in land management plans would change. Under the no action alternative, current land management plan (LMP) content would continue to guide management of old-growth. No changes would be made to old-growth related plan components unless done so at the unit-level during plan revision or through programmatic or project-specific plan amendments. This plan-by-plan revision or amendment approach would not provide a consistent framework for managing old-growth across the National Forest System.

Alternative 2 – Modified Proposed Action (Preferred Alternative)

The Notice of Intent to prepare an Environmental Impact Statement proposed amending all LMPs identically. In response to comments that some LMPs may not need to be amended given forested conditions in the planning area or may not need to be amended to the full extent given recent amendments/revisions, the agency did a detailed review of existing LMP content and forested conditions on grasslands to determine a more strategic, plan-specific amendment approach. See Appendix C, Comparison of Current Management of Old-Growth to Amendment for the Draft EIS for a discussion of the process used to conduct this review and reach determinations for how various plans would be exempted or amended.

Six grassland LMPs and one National Forest LMP are being exempted from the amendment based on determinations that the planning areas governed by the LMPs contain limited forested acres and do not warrant an amendment of this scope and scale. For those grasslands that do not have a LMP specific to the grassland (i.e. the grassland is incorporated under a LMP for a national forest), the grassland will be subject to the amendment that applies to the national forest LMP. See Appendix C (link above) for a list of the LMPs exempted from the amendment and additional explanation of how these LMPs were identified.

For LMPs being amended, the following would be added to each LMP: statement of distinctive roles and contributions, goal, management approach, desired conditions, objectives, standards, guidelines,

and plan monitoring requirements (listed below). See Appendix C (link above) for a list of the LMPs that will receive the full amendment.

See Table 1 in Chapter 2 under Alternative 2 – Modified Proposed Action for plan components/content proposed as part of this alternative. The proposed plan components and other plan content in the Modified Proposed Action are included in the first column. To help inform public feedback, the second column in the table describes the agency's intent and identifies what changed between the scoping notice and this proposed action.

This is the preferred alternative.

Alternative 3 – More Restrictive Standards for Old-Growth

Alternative 3 responds to recommendations to restrict all commercial timber harvest in old-growth forests to provide further protections for old-growth forests. This would not prohibit other vegetation management actions from occurring; however, the removal of commercial timber harvest as a management tool could impact the ability to use other tools. For example, prescribed fire may be precluded if there is no ability to thin and remove larger vegetation.

The following refers to the standards as described in Alternative 2.

Standard 3 would be updated to read as*: Proactive stewardship in old-growth forests shall not result in commercial timber harvest.*

Alternative 4 – Less Restrictive Standards for Old-Growth

Alternative 4 responds to recommendations to allow timber production to be a primary driver for vegetation management in old-growth forests.

The following refers to the standards as described in Alternative 2.

Standards 2.a and 2.b, and 3 would be dropped entirely.

What Major Conclusions Were Made Based on the Analysis?

Ecology

All action alternatives contain the same desired conditions, guidelines, objectives, management approaches and monitoring requirements. This suite of plan components, along with other plan content common to all action alternatives, is designed to encourage management actions that maintain or restore the structure, function, and composition of old-growth forests, reduce vulnerability to disturbance, contribute to the promotion of ecological integrity, and increase climate resilience. This will enhance the resiliency and adaptability of old-growth and foster its occurrence, stability, and connectivity. As such, all action alternatives will support ecosystem integrity and ecosystem services associated with old-growth forests such as biodiversity, carbon storage and stability, and water quality.

The difference between action alternatives are the standards, which influence the rate and manner of obtaining the desired conditions. Regardless of the standards, desired conditions are binding on projects and the shared desired conditions among the action alternatives mediates effects of differences between the standards in the alternatives. The primary ecological differences among

action alternatives are based on their anticipated impact on the rate of achieving desired conditions. The following conclusions were made for the action alternatives:

- **Alternative 2:** This alternative prohibits proactive stewardship in old-growth forests for the purpose of timber production (NOGA-FW-STD-03 as described for this alternative). This standard, along with NOGA-FW-STD-02a, ensures that the sole purpose of proactive stewardship will be to promote the composition, structure, pattern, or ecological processes necessary for old-growth forests to be resilient and adaptable to stressors and likely future environments. This alternative, within the scope and scale of the amendment, is intended to further land management plans toward ecological integrity for old-growth forests and is anticipated to have a net-positive effect on the extent of old-growth forests and upon associated species, habitats, and ecosystem services. Given the combination of NOGA-FW-STD-03 and the preservation of all management tools that could help implement proactive stewardship activities, including commercial timber harvest, Alternative 2 is anticipated to lead to the achievement of desired conditions at the fastest rate.

- **Alternative 3:** This alternative prohibits commercial timber harvest in old-growth for proactive stewardship (NOGA-FW-STD-03 as described for this alternative). From an ecological perspective, the anticipated negative effects of reducing the rate of proactive stewardship by limiting vegetation management tools – and thereby accepting avoidable loss of old-growth – likely outweighs any potential benefits of ensuring that commercial timber harvest does not negatively influence old-growth management decisions. The alternative is likely to be less effective at achieving desired outcomes under the old-growth amendment because it would limit ecologically necessary proactive stewardship activities governed by NOGA-FW-STD-2a. Consequently, the rate of restoration of old-growth will be slowest under this alternative because the agency's ability to restore old-growth resiliency and achieve desired conditions would be more limited with the removal of commercial harvest as a management tool.

- **Alternative 4:** This is considered the least restrictive with regards to timber production and timber harvest as the only standard it retains is NOGA-FW-STD-1. By omitting NOGA-FW-STD-2a, NOGA-FW-STD-2b, NOGA-FW-STD-2c and NOGA-FW-STD-3, vegetation management in old-growth may be for purposes other than proactive stewardship. However, the plan components common to all action alternatives – including desired conditions, objectives, and guidelines in addition to required monitoring elements and management approaches – would still guide old-growth management towards greater ecological integrity. As such, the rate of progress towards desired conditions under this alternative would likely be second fastest only to Alternative 2 because all management tools are available, but not all vegetation management in old-growth is necessarily optimized for proactive stewardship purposes.

Species

Endangered Species Act (ESA): During Spring 2024, the Forest Service initiated conversations with U.S. Fish and Wildlife Service and National Marine Fisheries Service concerning ESA compliance for the old-Growth amendment. After a series of technical assistance meetings, the three agencies determined Section 7 consultation was not warranted for the old-growth amendment at this time. The agencies determined that reasonable certainty of effects to species does not exist because of the national scale and programmatic nature of the old-growth amendment. The Forest Service

commits to Section 7 consultation for any future old-growth conservation actions where impacts to listed species would occur.

Sensitive Species and Species of Conservation Concern: The old-growth amendment represents a programmatic decision that guides future management. It neither compels nor authorizes any on-the-ground type of action. The proposed old-growth amendment encourages units to plan and implement projects (subject to funding) that would be supportive of ecological stewardship of old-growth. As such, the old-growth amendment could have indirect effects to species that occur in old-growth supportive habitat types. Direct impacts stemming from projects implementing the amendment would be analyzed at the project level.

For these species it was determined that the impact of the old-growth amendment would be "May Impact Individuals or Habitat" (MIIH). Use of this determination indicates that the proposed amendment will not cause a trend towards federal listing under ESA, nor cause a loss of viability in the planning area. For species that occur in old-growth supportive habitat, impacts of the amendment are likely to be negligible or beneficial. For species occurring outside old-growth supportive habitat, the impacts of the amendment are likely to be negligible as the amendment does not change management of other seral stages. Early seral stages would continue to be created through natural disturbance (e.g. wildfire). Other seral stages, such as mature, may be managed for recruitment to future old-growth but this is not anticipated to lead to a noticeable reduction of habitat given the scale at which mature forest and other stages exist across the National Forest System.

Tribal Rights and Interests

Honoring Tribal sovereignty, the trust responsibility, Treaty Rights, and compliance with Federal regulations pertaining to federally-recognized Tribes is required for all Forest Service activities that have the potential to affect Treaty resources, Tribal access to Treaty resources, areas of Tribal importance, or sacred sites and this would not change under any action alternatives. All action alternatives promote proactive stewardship in old-growth forests on National Forest System lands. In areas where these types of activities are currently rare, all action alternatives have the potential to cause effects to Treaty Resources, areas of Tribal importance, sacred sites, and cultural keystone species associated with old-growth forests when implemented at the unit level. The amendment does not authorize any specific projects or work on the ground; consultation will be required under all alternatives at the project level to determine the potential for adverse effects from ground-disturbing activities in old-growth forests.

Compared to the no-action alternative, all action alternatives are anticipated to result in more beneficial effects for Tribal interests on National Forest System lands because they include plan components that direct units to incorporate Indigenous Knowledge as an equal with Western science in the management of old-growth forests; develop an *Adaptive Strategy for Old-Growth Forest Conservation* in consultation with Tribes and Alaska Native Corporations; determine old-growth based on unit- or regional-level definitions; perform proactive stewardship to promote resilient old-growth forests, including associated culturally significant species or values; and initiate at least one co-stewardship project with interested Tribes within two years of the record of decision.

Social, Cultural and Economic Conditions

Under all alternatives, the amendment contributes to social and economic sustainability through provision of multiple uses in the areas surrounding NFS lands. Alternative 3 contributions to social and economic sustainability may be less than the other alternatives because less restoration related

economic activity would contribute to rural well-being without funding for restoration through commercial timber sales. In addition, Alternative 3 would not provide the level of ecosystem services associated with the improved ecosystem integrity of the other alternatives.

Additional considerations were given to the following resource and program areas:

Cultural and Historic Resources: Under all action alternatives, the amendment represents a statement of policy and change in management direction that will inform future projects, but the amendment itself does not authorize any specific projects or work on the ground with the potential to cause effects to historic properties. When individual Forest Service units begin planning projects to implement work on the ground as guided in this amendment, those projects with specific actions will trigger a Section 106 review as part of the environmental analysis process.

Ecosystem Services: All plan components in the action alternatives are intended to conserve the characteristics and functions of old-growth forests that provide a variety of ecosystem services and associated values for people. Because ecosystem services are a function of ecosystem integrity, and all action alternatives provide for ecological integrity of old-growth forests, all action alternatives are expected to contribute to a range of old-growth forest ecosystem services. Between alternatives, those that provide for the most resilience in old-growth forests are expected to be most beneficial for contributions to ecosystem services.

Lands Special Uses and Landownership Adjustments: Under all the alternatives, current Lands special use authorizations would not be affected since the alternatives allow for reasonable actions that would ensure the safety and reliability of operations or activities. Landownership adjustment mandatory conveyances would, by their nature, also be insulated from old-growth restrictions. New special use proposals and discretionary landownership adjustments would require consideration for compliance with the old-growth amendment if approved. In cases where a project-level plan amendment would be needed for activities or the discretionary landownership adjustment would not align with the *Adaptive Strategy for Old-Growth Forest Conservation*, the responsible official may decide to forego the activities or landownership adjustment altogether, which could have potential consequences for Lands special uses.

Mineral and Energy Resources: The potential for spatial overlap between mineral and energy resources and old-growth forest is minimal due to the small percentage of NFS lands currently known to be occupied by both resources. However, mineral operations could occur in old-growth forests as the proposed old-growth amendment is subject to valid existing rights for use and occupancy and the proposed old-growth amendment does not change the mineral status of the lands (i.e., does not propose a mineral withdrawal). There could be potential effects to the management and development of mineral and energy resources and there could be measurable effects to individual units of old-growth forests from minerals management. However, these effects are reduced by the agency's ability to apply environmental protection measures (design features and mitigation measures) and collaborate with mineral proponents on project design to ensure compliance with all laws, regulations, and policy.

Rangelands and Grazing: Livestock grazing and rangeland management approaches are designed and analyzed at the project level. Authorized livestock grazing and associated rangeland management activities must be designed and implemented in a manner that is consistent with the applicable plan components of the relevant land management plan. The old-growth amendment is not anticipated to adjust plan components associated with existing relevant land management plans to a degree that would impact existing and/or future grazing and/or livestock use permits. Therefore,

there are no anticipated impacts to livestock grazing opportunities on National Forest System lands, nor impacts to the economic and social well-being of permittee holders.

Recreation and Recreation Special Uses: Old-growth forests overlap with many recreation assets and settings and valid authorizations for occupancy and use. All alternatives allow for continued management of nearly all existing recreation sites, facilities, and assets; continuation of existing special use authorizations; and implementation of activities that have already been analyzed and approved without additional planning and analysis. All new recreation developments (developed recreation, roads, trails, special uses, and ski areas) will be designed and analyzed at the project level. Projects which are in areas characterized by old-growth forest may need to survey the project area for old-growth, and associated survey burdens may be incurred by the forest or project proponents. In instances where the activities are not compliant with NOGA-FW-STD-02b and deviations in NOGA-FW-STD-02c do not apply, a project-level plan amendment may be necessary for the project to proceed. In some cases, the deciding official may decide not to pursue a project-level plan amendment and forego the project altogether, with potential consequences for recreation and loss of economic benefits.

Timber: The proposed old-growth amendment does not change lands suitable for timber production. Old-growth forests will remain forested lands as a part of this amendment process. The amendment also does not propose special designation status (e.g. roadless, a new management area in the land management plan etc.) for old-growth forests. While the amendment proposes constraints on the purpose of vegetation management activities in old-growth forests, it is recognized these are dynamic systems and areas that currently meet the definition (and associated criteria) of old-growth could no longer meet the definition/criteria in the future – for example, due to natural disturbance (e.g. wildfire, insect and disease). Should this occur, these areas would no longer be subject to the old-growth amendment. The amendment also does not change Allowable Sale Quantity (ASQ) or Projected Timber Sale Quantity (PTSQ) because the projected timber sale quantity includes volume from timber harvest for any purpose from all lands in the plan area based on expected harvests that would be consistent with the plan components.

Nationally, the timber industry is unlikely to be impacted by the amendment, although regional impacts may occur. Forest industry in the U.S. shifted away from old-growth logging and milling in the 1990s in all U.S. regions other than Alaska. The timber industry adjusted to steep declines in Forest Service harvest in the 1990s by retooling to mill smaller diameter trees and shifting to timber sourced from state and private lands. The lack of large log milling may hinder restoration and other vegetation management activities to improve ecological conditions in or near old-growth forests, creating some uncertainty whether the lack of capacity for large log milling may exacerbate ecological risk identified in the *Mature and Old-Growth Forests: Analysis of Threats on Lands Managed by the Forest Service and Bureau of Land Management* report.

The old-growth amendment is unlikely to create a shortfall in the national supply of timber but may increase pressure to harvest additional Forest Service acres. The majority of wood consumed in the United States originates from state and private lands and imports (Johnston et al. 2023). As of 2019, only 3 percent of national timber consumption originated from Forest Service lands. In addition, based on FIA remeasurement analysis, areas of old-growth where tree cutting occurred was only 4.7 percent of the total tree cutting across all Forest Service lands from 2000 to 2020. Thus, because the old-growth amendment is unlikely to have major effects on timber supplied from the National Forest System, no effects are expected on traditional timber industry jobs in logging, wood product manufacturing, and pulp production.

How Can Feedback be Provided on the Draft EIS?

Submit Comments Online (preferred) or Hardcopy. Comments must be submitted online through the Comment Analysis and Response Application (CARA) (preferred) or hardcopy.

- **Online through CARA (preferred):** Submit comments via webform at https://cara.fs2c.usda.gov/Public//CommentInput?Project=65356.
- **Hardcopy** letters must be submitted to:

  Director, Ecosystem Management Coordination
  201 14th Street SW, Mailstop 1108
  Washington, DC 20250–1124

Comments must be submitted by **September 20, 2024**.

As online through CARA and hardcopy are the two platforms for accepting comments, comments submitted outside these methods will not be prioritized for consideration and response; however, they will be included in the project record. Also see How to Submit Comments on the Draft EIS for further tips on how to submit comments that are most helpful to the agency and Department.

The agency will continue to conduct consultation and engagement with interested Tribes on the proposed action, and how the amendment can reflect and incorporate Tribal values, interests, and priorities. The agency will also continue to engage in regular meetings with interested State and local government representatives (including county and conservation district representatives) and will engage with cooperating agencies.

When Will the Final EIS be Published and How Will Notice be Provided?

The goal is to publish the final EIS in the winter of 2024. A Notice of Availability will be published in the Federal Register. Additionally, notice will be provided via email to those who provided comments during the Draft EIS comment period or the earlier scoping period.

When is a Decision Anticipated?

Plans amendments proposed by the Secretary of Agriculture are not subject to the pre-decisional administrative review procedures set forth in 36 CFR 219 Subpart B. A decision by the Secretary constitutes the final administrative determination of the U.S. Department of Agriculture (36 CFR 219.51(b)).

The Secretary of Agriculture could make a decision as early as 30 days after publication of the notice of availability in the Federal Register for the Final EIS (40 CFR 1506.11(b)(2)). The plan amendment would be effective 30 days after publication of notice of its approval in the Record of Decision (36 CFR 219.17(a)(2)). Notice of the availability of the Record of Decision will be provided to interested or affected parties as soon as practical after signing (36 CFR 220.5(g)).

Contents

List of Tables

List of Figures

1. Chapter 1. Purpose of and Need for Action

1.1. Introduction

The Forest Service has prepared this environmental impact statement in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This environmental impact statement discloses the effects that would result from the proposed plan amendments and alternatives.

The proposed action would amend most existing Forest Service Land Management Plans (LMPs) developed in accordance with the National Forest Management Act (NFMA) (an amendment to the Resources Planning Act (RPA)) and the associated regulations at 36 CFR 219. The current planning regulations (or planning rule) were revised in 2012 and later amended in 2016, for subsequent planning efforts. Additional guidance on revising or amending LMPs is in Forest Service Manual 1920 and Forest Service Handbook 1909.12.

1.2. Supporting Documentation

This environmental impact statement hereby incorporates by reference, in whole, the Ecological Impacts Analysis Report and the SocioEcon and Cultural Impacts Analysis Report.

1.3. Background and Public Involvement

On April 22, 2022, President Biden issued Executive Order 14072 *Strengthening the Nation's Forests, Communities, and Local Economies*. Section 2 of the Executive Order (EO) recognizes the distinctive role that Federal forest lands play in sustaining ecological, social, and economic benefits throughout the nation and calls particular attention to the importance of mature and old-growth forests on Federal lands for their role in contributing to nature-based climate solutions by storing large amounts of carbon and increasing biodiversity, mitigating wildfire risks, enhancing climate resilience, enabling subsistence and cultural uses, providing outdoor recreational opportunities, and promoting sustainable local economic development. Later in 2022, Congress passed the Inflation Reduction Act, wherein they included section 23001(a)(4), providing for "$50,000,000 for the protection of old-growth forests on National Forest System land…"

Section 2(b) of the April 2022 EO directed the Department to inventory mature and old-growth forests on National Forest System lands, which the Forest Service published in April 2023 (revised in April 2024) (*Mature and Old-Growth Forests: Definition, Identification, and Initial Inventory on Lands Managed by the Forest Service and Bureau of Land Management*). The initial inventory was conducted by applying working definitions of old-growth and mature forest conditions for over 200 regional vegetation types to Forest Inventory and Analysis field plot data. Definitions and inventories have been established for forests exhibiting old-growth conditions, but mature forest conditions had not previously been ecologically defined in a consistent manner at a national scale. This initial inventory resulted in the Forest Service identifying an estimated 24.7 million acres of old-growth forests and 68.1 million acres of mature forest conditions, representing 17 and 47 percent, respectively, of the 144.3 million acres of forested National Forest System lands.

Section 2(c)(ii) of the EO directed the Department, following completion of the initial inventory, to analyze threats to inventoried mature and old-growth forests on National Forest System lands, including threats from wildfires and climate change. Like the inventory, the initial threat analysis

was national in scale and presents an initial compilation and summation of threats associated with wildfire, fire exclusion, insects and disease, extreme weather, climate and temperature, drought, tree cutting, roads, land use allocation, and wildland urban interface. In the analysis, the term "threat" indicated a change in forest structure resulting in a reclassification of the forest condition but not necessarily a loss of ecological function and integrity.

The *Mature and Old-Growth Forests: Analysis of Threats on Lands Managed by the Forest Service and Bureau of Land Management* report, which was published in June 2024, indicates several key findings that informed this proposed action. The analysis found that mortality from wildfires is currently the leading threat to mature and old-growth forests, followed by insects and disease. The analysis also found that tree cutting is now a relatively minor threat compared to climate amplified disturbances such as wildfire, insects, and disease. However, past management practices, including timber harvest and fire suppression, contributed to current vulnerabilities in the distribution, abundance, and resilience of old-growth forest characteristics. The amount and distribution of mature forests across the National Forest System suggest that many of these lands have the inherent capability to sustain old-growth forests into the future.

Section 2(c)(iii) of the EO directed the Department to develop policies, with robust opportunity for public comment, to institutionalize climate-smart management and conservation strategies that address threats to mature and old-growth forests on Federal lands. On December 20, 2023, the U.S. Department of Agriculture published a Notice of Intent (NOI) in the Federal Register to amend land management plans (LMP) for units of the National Forest System to add consistent direction to conserve and steward existing – and recruit future – old-growth forests and to monitor their condition across planning areas of the National Forest System. This proposed amendment is intended to create a consistent framework for managing old-growth forests with sufficient distribution, abundance, and ecological integrity (composition, structure, function, connectivity) to be persistent over the long term, in the context of climate amplified stressors.

The preliminary purpose and need and proposed action described in the NOI were informed by public feedback received on the Climate Resilience Advance Notice of Proposed Rulemaking (ANPR) the Forest Service initiated in April 2023 (88 FR 24497). The ANPR gave the public an opportunity to provide input on how the Forest Service should respond to the changing climate through forest management activities and possibly future policies.

The Forest Service received 92,000 comments in response to the ANPR, representing nearly 500,000 respondents. Many responses included feedback on the appropriate conservation and management of mature and old-growth forests, reflecting a diversity of perspectives. In developing the preliminary proposed action, the Department identified some potential areas of agreement, including:

1. Land management plans, the forest planning process, and National Forest Management Act implementing regulations (36 CFR 219 "planning regulations") provide useful and durable mechanisms and frameworks for the furtherance of mature and old-growth conservation and management objectives.

2. Old-growth forests have distinct, unique, and special ecological, cultural, and social values and contribute to ecological integrity. There is value in the long-term presence and resilience of old-growth forests on the National Forest System.

3. Old-growth forests exist in a dynamic landscape, and changes in the distribution and abundance of old-growth forests related to disturbance and climate amplified stressors,

including mortality from persistent drought, rapidly changing wildfire disturbance regimes, insects and disease, and encroachment pressures from urban development are likely to occur.

4. There is concern over climate amplified disturbance impacts that pose a threat to the persistence of old-growth forests on the National Forest System lands, and an understanding that current management practices may benefit from consistent direction to reduce vulnerabilities and increase resilience to stressors.

5. There are differences in threats and conditions in different regions and ecosystems across the National Forest System that will require additional consultation with Tribes and Alaska Native Corporations and place-based collaboration to develop geographically informed adaptive management strategies. For example, in July 2023, the Secretary of Agriculture appointed a Federal Advisory Committee to provide insight for development of a climate informed amendment for the national forests of the Northwest Forest Plan.

6. Management must be science-based, including Indigenous Knowledge as a source of best-available scientific information.

7. Management direction should enable co-stewardship and recognize the importance of trust responsibilities, treaty rights, and cultural, religious, and other tribal interests and eco-cultural practices associated with old-growth forests.

8. Consistent and effective monitoring of current and future old-growth forests over time would better inform adaptive management.

9. Good examples of proactive stewardship and management direction and monitoring can be drawn from recent Tribal co-stewardship agreements, Collaborative Forest Landscape Restoration Partnership projects, land management plans, and implementation of other programs.

10. Nationally consistent direction for conserving, stewarding and recruiting old-growth forests is connected to and should complement related Forest Service policy and direction, including the Wildfire Crisis Strategy and Climate Adaptation Plan.

Publication of the Notice of Intent initiated the scoping period for this Draft Environmental Impact Statement (EIS). Scoping comments were accepted through February 2, 2024. Approximately 7,300 comment letters were received. Appendix A, Scoping Summary for the Draft EIS includes a summary of comments received.

1.4. Scope and Scale of Proposed Action

The Secretary of Agriculture is the responsible official and has determined that the scope of this proposed action is to add plan components to Forest Service Land Management Plans (LMP) to address old-growth conditions. After detailed inspection of existing LMP content, it was determined that not all LMPs would be revised in the same manner. See Alternative 2 – Modified Proposed Action for discussion of the categories LMPs were placed in based on existing plan content or forested conditions and the level of revision that will be applied.

Temporally, it is anticipated that all amended LMPs will be subsequently revised prior to 2040, when a comprehensive analysis of ecosystems, ecosystem services, and multiple uses can be addressed.

Geographically, the scope of this proposed action applies only to areas meeting regional definitions and associated criteria of old-growth forest.

This proposed action intends to provide a consistent framework for managing old-growth forests across the National Forest System (NFS).

1.5. What is Old Growth?

The *Mature and Old-Growth Forests: Definition, Identification, and Initial Inventory on Lands Managed by the Forest Service and Bureau of Land Management* technical report (FS-1215a) defines the old-growth narrative framework as follows:

> Old-growth forests are dynamic systems distinguished by old trees and related structural attributes. Old-growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics, which may include tree size, accumulations of large dead woody material, number of canopy layers, species composition, and ecosystem function (USDA Forest Service 1989).
>
> In addition to their ecological attributes, old-growth forests are distinguished by their ecosystem services and social, cultural, and economic values. Old-growth forests have place-based meanings tied to cultural identity and heritage; local economies and ways of life; traditional and subsistence uses; aesthetic, spiritual, and recreational experiences; and Tribal and Indigenous histories, cultures, and practices. Dialogue with stakeholders and Tribal Nations and integration of local and Indigenous Knowledge with evolving scientific understanding are critical in identifying and stewarding old-growth forests. (p. 5)

The technical report (link above) also explains how working definitions for old-growth (found in Appendix 1 in FS-1215a) were developed for the purpose of conducting the initial inventory. The objective of the old-growth inventory report was to provide a consistent, national-scale estimate of old-growth forest extent across all National Forest System and Bureau of Land Management lands. To do so, the national inventory estimates were based on Forest Inventory and Analysis (FIA) plot data – a peer-reviewed and widely accepted sampling protocol. Using FIA data allowed the national inventory to provide a measure of uncertainty in the estimates. The national inventory team worked with Forest Service regional staff to determine how to apply regional definition criteria to FIA field-plot data for this initial national-scale inventory. And, wherever possible, the national inventory applied existing regional criteria (citations in Table 6.1); in some cases, the regional criteria were adjusted to accommodate use of the FIA data. These working definitions informed the draft environmental impact statement and will also be utilized for the forthcoming old-growth monitoring.

Old-growth forests throughout the National Forest System are defined by the nine Forest Service administrative regions for differing vegetation types, as well as in some individual land management plans. Regional old-growth criteria rely on structural characteristics and include an attribute that captures the abundance of large trees – specifically, minimum live trees per acre of a minimum size and/or minimum basal area of live trees. Many regional criteria also set a minimum stand age or tree age, and some include standing snags or downed wood. Each region recognizes important ecological variation by defining unique old-growth criteria for different vegetation types.

Regional and individual land management plan old-growth definitions exhibit broad variation in criteria and these differ among forest types and for the same forest type across regions or individual units. Old-growth forest criteria differ geographically for the same forest type because of

fundamental differences in developmental processes between forests. Today's old-growth forests are the outcome of ecosystem development and aging. The pattern of aging differs based on forest type, site productivity, and disturbance regime. Site productivity is influenced by soil conditions, precipitation amount and variability, length of growing season, and disturbance history. Each of these factors influence the characteristic pattern of forest development and interact with one another, resulting in multiple patterns of forest development (aging) and tree growth, even within a forest type.

Hence, the variety of criteria reflects dramatic differences in the forest structure expected among old-growth types. The regional criteria to identify old-growth forests across North America reflect the application of extensive scientific investigation. These criteria echo the methodical synthesis of extensive field measurements and summary of plot data published in over a dozen scientific reports.

Old-growth definitions in land management plans can range from a qualitative definition that describes common old-growth features, to a definition with some criteria for stand age or diameter of a trunk or bole of a standing tree at diameter at breast height (DBH), or to a complete set of criteria that allows for reliable identification of old-growth on the landscape. There are also plans with old-growth plan components that do not have a definition or criteria for old-growth in the text of the LMP but rather in the supporting LMP analysis documents. Some plans do not refer to old-growth, but instead refer to "old forest" or "late successional stage" – concepts that intersect or overlap with old-growth, but that are not always interchangeable.

The Ecological Impacts Analysis Report provides additional discussion on defining old-growth forest and further explanation of the definitions used for EIS analysis and definitions that would be applied during implementation.

1.6. Applicability of Plan Amendments and Staged Decision-making

In accordance with the planning rule, there are two stages of NEPA decision-making for projects and activities within NFS lands. As shown in the following diagram, the Secretary of the U.S. Department of Agriculture will first decide how to amend land management plans (LMPs) to institutionalize climate-smart management and conservation strategies that address threats to mature and old growth forests on National Forest System lands. The Forest Service will than make decisions on projects and management activities that conserve old-growth forests.

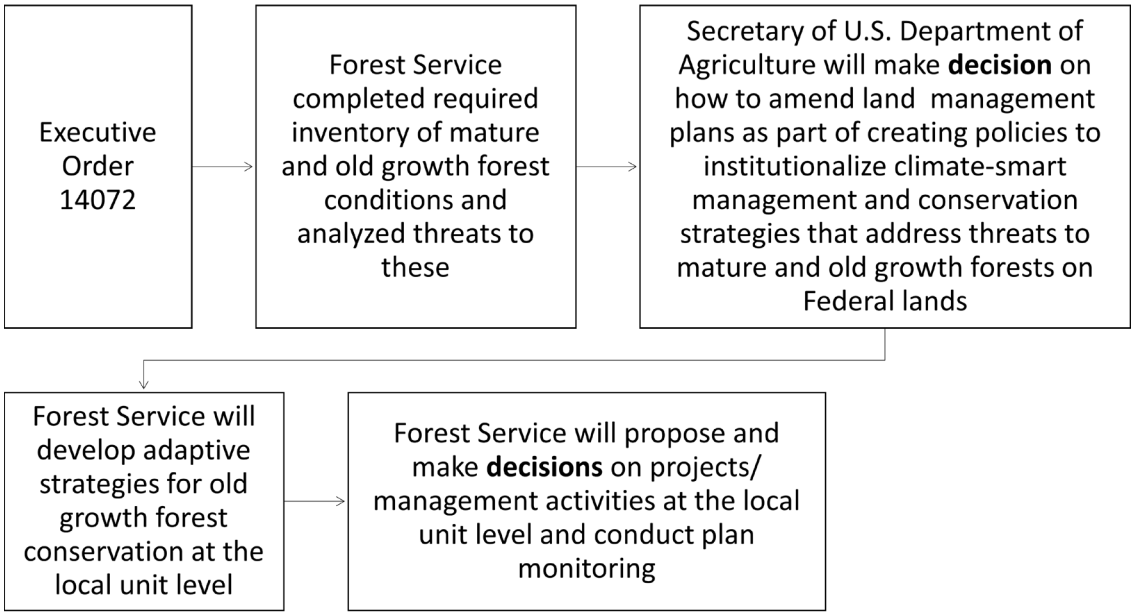

Figure 1: Chronology of the decision-making process

1.6.1. Amendment Stage of Decision-making

For the proposed amendment (informed by the analysis in this EIS), the responsible official (Secretary of Agriculture) shall review the proposed action, alternatives, and the environmental consequences to determine:

- Whether and how to amend National Forest System land management plans; and
- Which part(s) of the substantive requirements (219.8 through 219.11) are directly related to the proposed action, and how to apply them. (These are the requirements likely to be directly related to the amendment based on the purpose or the effects (beneficial or adverse) of the amendment (36 CFR 219.13(b)(5)).

Criteria for the decision will include addressing the purpose and need for the amendment, consideration of issues/concerns and recommendations, and consistency with relevant legal mandates.

The proposed action represents concurrent plan-level changes with potential programmatic effects. Since a LMP does not compel any action and is not a budget-forcing document, it is not possible at this time to detail all the specific actions or effects that may occur during the lifetime of an LMP. However, an LMP does provide some insights about the general management direction, and so programmatic effects may be assessed in accordance with CEQ guidelines.

The proposed action also sets forth goals, management approaches, and monitoring requirements that describe courses of action to achieve the desired conditions and objectives of the LMP. These are described in the planning regulations as "other plan content" (36 CFR 219.7(f)).

The proposed action also sets forth standards and guidelines that provide constraints for decision-making at the project-level.

1.6.2. Second Stage of Decision-making

The second stage of NEPA decision-making is a project-level decision and is not addressed through this analysis. Specific management actions will be proposed and separate analysis will disclose the effects of the proposal. Every Forest Service project or activity must be consistent with the LMP, although project-specific amendments are permitted in accordance with the planning regulations (36 CFR 219.15(c)).

1.7. Purpose and Need for Action

With consideration of the *Mature and Old-Growth Forests: Definition, Identification, and Initial Inventory on Lands Managed by the Forest Service and Bureau of Land Management* technical report, the *Mature and Old-Growth Forests: Analysis of Threats on Lands Managed by the Forest Service and Bureau of Land Management* report, comments received on the Climate Resilience ANPR (88 FR 24497) and during the scoping period for the Notice of Intent to prepare and Environmental Impact Statement (see Appendix A, Scoping Summary for the Draft EIS), and an analysis of existing land management plan direction for old-growth management and conservation, the Department finds that reaffirming – at a national scale – the commitment to maintaining and developing old-growth forests across the National Forest System is prudent, warranted, and best advanced at this time via amendment of land management plans.

The purpose of the proposed action is to:

- Foster ecologically focused management across the National Forest System by maintaining and developing old-growth forests while improving and expanding their abundance and distribution and protecting them from the increasing threats posed by climate change, wildfire, insects and disease, encroachment pressures from urban development, and other potential stressors, within the context of the National Forest System's multiple-use mandate.
- Establish a clear role for Indigenous Knowledge and Tribal leadership in the proactive stewardship and furtherance of old-growth forests on National Forest System lands.
- Facilitate the development of geographically informed adaptive strategies for old-growth forest conservation to support the effective implementation of this amendment and enable co-stewardship with Tribes and Alaska Native Corporations and collaboration with States, local governments, industry partners, and public stakeholders.
- Establish a national monitoring framework to track trends and distribution patterns of old-growth forests for inventory, evaluation, assessment, and adaptive management purposes.

The need for change is to:

- Demonstrate compliance with Executive Order 14072 to institutionalize climate-smart management and conservation strategies that address threats to mature and old-growth forests on Federal lands;
- Respond to the clear congressional intent outlined in section 23001(a)(4) of the Inflation Reduction Act; and
- Create a consistent framework to manage for the long-term persistence, distribution, and recruitment of old-growth forests across the National Forest System (NFS) in light of the interacting biophysical and social factors that threaten the persistence of older forests on NFS lands across the Nation.

The proposed plan components and direction focus on providing consistency for interrelated topic areas, including:

- Improving the retention and recruitment of old-growth forests;
- Improving durability, resilience, and resistance to fire, insects, and disease within old-growth forests across the National Forest System and addressing concerns about future durability, distribution, and redundancy of old-growth forests;
- Strengthening the capacity of existing and future old-growth forests to adapt to the ongoing effects of climate change and future environments;
- Recognizing the role of proactive stewardship in supporting the resilience of old-growth forests and characteristics over time;
- Incorporating Indigenous Knowledge into planning, project design, and implementation to achieve old-growth forest management goals and furthering Forest Service trust responsibilities with Tribes and Alaska Native Corporations;
- Developing geographically informed adaptive management strategies for the retention of existing and recruitment of future old-growth forests, taking into account relevant local information through consultation with Tribes and collaboration with state, county, and local governments, partners. industry and public stakeholders; and
- Establishing a national old-growth monitoring framework.

1.8. Proposed Action

The U.S. Department of Agriculture is proposing to amend land management plans to establish a consistent framework for old-growth forests across the National Forest System. The proposed amendment establishes national intent to foster the long-term resilience of old-growth forests and their contributions to ecological integrity and ecosystem services across the National Forest System.

The proposal is not intended to replace existing direction in LMP but rather to add language that provides consistency across LMPs. If existing LMP direction provides more restrictive constraints on actions that may affect existing or potential old-growth forests, those more restrictive constraints would govern.

1.9. Governing Regulations for the Amendment of Land Management Plans

The proposed action is subject to regulations at 36 CFR 219, also known as the 2012 Planning Rule. In addition, Forest Service Manual 1920 and Forest Service Handbook 1909.12 provide further policy reflected in agency-wide directives for land management planning. In accordance with 36 CFR 219.51(b), this proposed action is not be subject to the pre-decisional administrative review regulations, also known as objections, (36 CFR 219, Subpart B) as the Secretary of Agriculture shall serve as the responsible official.

The planning rule requires determination of which specific substantive requirements (36 CFR 219.8-219.11) are directly related to the plan direction being added, modified, or removed by the amendment and apply such requirement(s) within the scope and scale of the amendment (36 CFR 219.13(b)(5)). Determination of the directly related substantive requirements is based on the purpose for the amendment and the effects, whether beneficial or adverse, of the amendment (36 CFR

219.13(b)(5)(i)). The responsible official has the discretion to determine the timing, scope, and scale of the amendment (36 CFR 219.13(a)) and is not required to apply any substantive requirements that are not directly related to the amendment (36 CFR 219.13(b)(5)). Nearly any substantive requirement may be identified as indirectly related, as that is the nature of ecosystem processes.

1.9.1. Substantive Requirements Consideration

Below are those substantive requirements which the responsible official has determined to be *directly* related to the proposed action (Modified Proposed Action, Alternative 2). The responsible official's determination of the directly related substantive requirements for the proposed amendment is *not* based on adverse effects as there is no indication the proposed action will result in substantial adverse effects or the substantial lessening of protections for a particular resource (36 CFR 219.13(a)(5)(ii)). Rather, the determination is based on the purpose of the proposed action and anticipated beneficial effects. Should the proposed action change because of public comment and/or new information not previously analyzed, the responsible official will re-evaluate the substantive requirements to determine accuracy.

1. 36 CFR 219.8(a)(1)—Terrestrial and aquatic ecosystem integrity (including associated analytical considerations in 219.8(a)(1) (i through vi). *(Purpose and beneficial effects)*
2. 36 CFR 219.8(a)(1 and 2)—Watershed integrity, water quality, and soils. *(Purpose and beneficial effects)*
3. 36 CFR 219.8(a)(3)—Riparian areas. *(Beneficial effects)*
4. 36 CFR 219.8(b)—Social and economic sustainability, including the analytical requirements of 219.8(b)(1 through 6). *(Purpose and beneficial effects)*
5. 39 CFR 219.9(a)(2) Ecosystem diversity. *(Purpose and beneficial effects)*
6. 36 CFR 219.9(b) Ecological conditions for species (including threatened, endangered, proposed or candidate species and potential species-of-conservation-concern). *(Purpose and beneficial effects)*
7. 36 CFR 219.10(a) Ecosystem services and multiple use (including analytical requirements 1 through 10). *(Beneficial effects)*
8. 36 CFR 219.10(b)(1)(i) Recreation settings, opportunities, access, and scenic character. *(Beneficial effects)*
9. 36 CFR 219.10(b)(1)(ii) Cultural and historic resources. *(Beneficial effects)*
10. 36 CFR 219.10(b)(1)(iii) Areas of tribal importance. *(Purpose and beneficial effects)*

1.10. Issues

Issues serve to highlight effects or unintended consequences that may occur from the proposed action or alternatives, giving opportunities during the analysis to reduce adverse effects and compare trade-offs for the decisionmaker and public to understand. Issues were identified through initial comments on the ANPR and during scoping. Significant issues were defined as those directly or indirectly caused by implementing the proposed action, may involve potentially significant effects, and could be meaningfully and reasonably evaluated and addressed within the scope of this proposal. Alternatives were developed around those significant issues that involved unresolved conflicts concerning alternative uses of available resources (40 CFR 1500.2(e)).

The Forest Service identified the following concerns/issues that drove alternative development, to include modifications to the proposed action from what was initially described in the Notice of Intent:

- Whether the national-level approach to amending over 120 land management plans appropriately considers place-based information/knowledge and current land management direction that already addresses old-growth forest management.
- What would be the impacts from Standard 3 in the modified proposed action that restricts proactive stewardship in old-growth forests for the purpose of timber production.
- Whether current standards and guidelines provide enough restrictions to protect current and future old-growth forests from future timber harvest.

1.11. Other Related Efforts

1.11.1. Plan Amendments and Revisions

While the Forest Service is engaged in developing the proposed action, additional land management planning activities continue to occur throughout the agency. Such activities include the revision of existing land management plans, as well other multi-unit programmatic amendments such as the Northwest Forest Plan Amendment in Regions 5 and 6. These ancillary planning activities are expected to be complete over the coming months to years will not affect the proposed action or decision to be made here. These other planning activities will continue their existing path forward and will receive this updated plan component language at the completion of this planning effort. This proposed action will serve as a baseline across all land management plans with respect to the management of old growth forests. Individual planning units may amend or revise their LMP to further refine management objectives for old growth forests.

1.11.2. Wildfire Crisis Strategy

The Forest Service's Wildfire Crisis Strategy calls for reducing wildfire risk through strategic all-lands, all-hands, science-based action that focuses on the most at-risk landscapes. Under this strategy, the agency and partners are increasing the pace and scale of forest restoration treatments to begin to reduce wildfire risk to communities, critical infrastructure, and natural resources.

1.11.3. Silviculture Directives

The Forest Service recently published Technical Guidance for Standardized Silvicultural Prescriptions for Managing of Old-Growth Forests. The guidance provides in-depth direction on silvicultural prescriptions prepared to maintain or restore ecological integrity and resilience of old-growth forests on National Forest System lands in the face of current and future disturbances and climate change. It includes two appendices: Best Management Practices and example silviculture prescription. The guidance includes potential questions to help guide the development of effectiveness monitoring and evaluation of old growth treatments at the project-level, which will support adaptive management of old-growth forests. The guidance complements the National Old Growth Amendment by providing a tool that will be used by field resource managers working at the project level to implement the amendment's objective of fostering resiliency of old-growth forests across national forests.

1.11.4. Monitoring Directives

The Forest Service will soon be issuing a new chapter and direction in Forest Service Manual 2000-National Forest Resource Management, Chapter 2040-National Forest System Monitoring. The chapter provides direction for all types of monitoring activities across the National Forest System (NFS) to track resource conditions and inform evidence-based decision-making and adaptive management. Chapter 2040 is expected to ensure that monitoring activities use accurate, reliable, and relevant science and Indigenous Knowledge and engage in partnerships. To support progress toward these requirements, responsibilities outlined in the NFS Monitoring policy anticipate the Forest Service's Ecosystem Management Coordination directorate leading a collaborative effort to develop optional-use common monitoring questions and corresponding nationally produced monitoring indicator evaluations. These requirements and responsibilities will provide the foundation of the monitoring program that supports each *Adaptive Strategy for Old Growth Forest Conservation*. By providing resources that use nationally available datasets to evaluate monitoring indicators, along with finer scale data collected collaboratively, National Old Growth Amendment monitoring will deliver the information needed to evaluate progress and determine needs.

1.11.5. Amending Forest Service Policy to Include Indigenous Knowledge as Best Available Scientific Information

The White House Council on Environmental Quality and the Office of Science and Technology Policy jointly issued *Guidance for Federal Departments and Agencies on Indigenous Knowledge* in November 2022. This guidance defines the term 'Indigenous Knowledge' (IK) and instructs that "[a]gencies should recognize and, as appropriate, apply Indigenous Knowledge in decision making, research, and policies." Immediate revisions to Forest Service land management planning regulations and directives are warranted in response to this guidance and have since taken place.

The Forest Service already instructs responsible officials to solicit and consider traditional, cultural, and technical knowledge from Tribes and Indigenous People during land management planning projects. 36 CFR 219.3, .4(a)(3). This direction was cited as a positive example in the 2022 White House guidance. *See* p. 19, n. 65. However, the planning rule uses the term 'Native Knowledge' to describe this concept rather than IK. The White House guidance, which benefited from a recent and robust Tribal consultation process, notes that different Tribal communities and individuals have different vernacular preferences but generally endorse 'IK' as the most current and appropriate term for Federal agencies to use. The Forest Service has since issued a Final Rule (89 FR 37135), published in the Federal Register on May 6, 2024 to amend the language from "Native Knowledge" to "Indigenous Knowledge", as well as updated the definition (36 CFR 219.19) to reflect that of the CEQ Guidance.

The White House guidance also encourages agencies to "…include Indigenous Knowledge as an aspect of best available science," and to evaluate current policies for opportunities to identify Indigenous Knowledge more explicitly as a valid a source of BASI. The 2012 Planning Rule requires responsible officials to identify and apply best available scientific information (BASI) to inform the land management planning process and associated decisions. 36 CFR 219.3. The responsible official is required to identify and explain what they considered BASI. This determination is based on an assessment of the information's accuracy, reliability, and relevance. FSH 1909.12, Ch.07.12. The Planning directives enumerate several sources of scientific information that may be considered BASI. This list includes peer reviewed articles, expert opinion, and "data or information from public and governmental participation."

Current Forest Service policies authorize responsible officials to consider IK and other information received from Tribes and Indigenous People as BASI. Scientific information from these sources is implicitly included under the phrases "expert opinion" and "observational data" in subclause (b) and "information from governmental participation" in subclause (e). FSH 1909.12, Ch. 07.13. This latter category includes information contributed by Tribes and/or Indigenous People through routine engagement, formal government-to-government consultation, and/or Cooperating Agency status. However, neither IK nor information/data from Tribes and Indigenous People are mentioned explicitly in this section. Forest Service policy (FSH 1909.12, Zero Code, 07.13) has since been amended to specifically enumerate IK in the list of examples of BASI. This updated policy went into effect on May 13, 2024.

1.11.6. Coordination with Other Planning Efforts

The 2012 Planning Rule (36 CFR 219.4(b)) requires the Forest Service to coordinate land management planning activities with federally recognized Indian Tribes, Alaska Native Corporations, other Federal agencies, and State and local governments. Regular discussions with these groups have been ongoing and will continue throughout the remainder of the process. Many changes were made to the proposed action in response to input from these entities.

Tribal input has been captured through Tribal Forums, roundtables, workshops; and opportunities for Tribal consultation are available at the local, regional, and national level. The Forest Service is conducting bi-weekly meetings for entities interested in seeking Cooperating Agency status and has provided each organization the opportunity to sign a Memorandum of Understanding to document this status. The Forest Service has requested that each Cooperating Agency provide applicable planning documents or policies related to forest management and any information regarding specific areas of conflict between their plan or policy and the proposed National Old Growth Amendment, and suggestions to address those conflicts.

The major topics of coordination include compatibility with fire planning; compatibility with access, including county roads and facilities; compatibility with State wildlife action plans, and compatibility with social and economic sustainability goals. After considering these topics, the proposed action includes desired conditions that incorporate fire, insects and diseases, and weather disturbances in the consideration of proactive stewardship of old growth; and exceptions to constraints on vegetation management to allow for local considerations or where developments have a relatively small footprint.

In the course of coordinating with other public planning efforts the Forest Service will consider ways the proposed old-growth amendment could contribute to common objectives, address impacts, resolve or reduce conflicts, and contribute to compatibility between Forest Service and other agencies' plans.

2. Chapter 2. Alternatives, Including the Proposed Action

2.1. Introduction

This chapter describes and compares the alternatives considered for the National Old Growth Plan Amendments. It includes a description of each alternative considered. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Some of the information used to compare the alternatives is based upon the design of the alternative and some of the information is based upon the environmental, social, and economic effects of implementing each alternative.

2.1.1. Summary of Submitted Alternatives

Appendix A, Scoping Summary for the Draft EIS includes a summary of submitted alternatives, to include recommended modifications to the proposed action.

2.2. Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Scoping comments received in response to the Proposed Action described in the Notice of Intent, as well as feedback received through numerous internal and external engagement sessions, provided suggestions for alternative methods for achieving the purpose and need. Some of these alternatives were considered but dismissed from detailed consideration for reasons summarized below. Many recommendations were also carried forward in the modifications to the proposed action (as now described under Alternative 2 below); therefore, they are not discussed as alternatives considered but dismissed.

2.2.1. Establish Old-Growth Designated Areas

There were suggestions to create or manage old-growth areas that would be managed similar to Inventoried Roadless Areas. There was a similar suggestion to not allow management of any kind in old-growth forests.

As discussed in the Management Considerations and Challenges section of the *Mature and Old-Growth Forests: Analysis of Threats on Lands Managed by the Forest Service and Bureau of Land Management* report, changes in mature and old-growth forests were examined by land use designations – with Wilderness Areas, Inventoried Roadless Areas and National Monuments being combined and referred to as “reserved”. After comparing increases and decreases of mature and old-growth forests within and outside of reserved areas, the results suggest that strictly reserving mature and old-growth forests may not always ensure that it is protected from future losses. While some areas of old-growth forest make sense to manage as National Monuments (e.g The Giant Sequoia National Monument) or as defined areas with specific management direction in the land management plan (e.g. Ross Creek Cedars Scenic Area on the Kootenai National Forest or the Gaudineer Scenic Area on the Monongahela National Forest), old-growth forests are dynamic systems and the intent is

not to manage all of these areas in the same manner. For these reasons, this alternative was not carried forward for detailed analysis.

2.2.2. Extend the Amendment to Include Mature Forest

There were suggestions to include mature forest along with old-growth forest (i.e. "old-growth and mature forest"). Mature forest comprises approximately 47 percent of forested acres. The goal is not to manage all mature forest as future old-growth forest. Not all mature forest occurs in areas that will persist as mature forest or that can sustain succession towards old-growth forest. Past management – such as fire suppression, previous vegetation management and/or reforestation – and natural succession or regeneration may have created mature forest or species distribution/composition that does not support desired ecological functions and conditions. Additionally, many of these acres are managed for multiple uses and provide necessary terrestrial habitat features that differ from those found in old-growth forest. For these reasons, mature forest is not being included in conjunction with old-growth forest for all aspects of the amendment; however, emphasis on identifying and prioritizing areas to be managed for future old-growth forest, which includes mature forest, is included in Management Approach 1.b and Guideline 3.

2.2.3. Exempt Recently Revised/Currently Being Revised LMPs

There were suggestions to exempt land management plans (LMPs) that have been recently revised or are currently going through revision under the 2012 Planning Rule. Rather than considering this as a separate alternative, this approach was included with the modified proposed action. As discussed under Alternative 2 below, the agency did a detailed review of existing LMP components/content to determine if a more strategic, plan-specific amendment approach should be taken. This review included those LMPs that were recently amended or revised. While some LMPs that were recently revised/amended may already include much of the direction set forth in, they are not being exempted from the amendment. The proposed components/content will be included for all plans (except for the grasslands that are exempted; see Appendix C, Comparison of Current Management of Old-Growth to Amendment for the Draft EIS) in order to provide a consistent management framework for old-growth forests across the National Forest System.

2.3. Alternatives Considered in Detail

The Forest Service developed four alternatives, including the No Action and Modified Proposed Action alternatives, in response to issues raised by the public.

2.3.1. Categories of Plan Components in the Alternatives

In accordance with the 2012 planning regulations, each alternative contains plan language for old-growth conditions within one or more of the following categories of plan components: In the proposed action, these plan components apply to the entire "plan area", which is defined as National Forest System lands covered by a plan (36 CFR 219.19).

The plan component categories are:

Goals - Goals are broad statements of intent, other than desired conditions, usually related to process or interaction with the public. Goals are expressed in broad, general terms, but do not include completion dates.

Desired Conditions - A desired condition is a description of specific social, economic, and/or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be directed. Desired conditions must be described in terms that are specific enough to allow progress toward their achievement to be determined, but do not include completion dates.

Objectives - An objective is a concise, measurable, and time-specific statement of a desired rate of progress toward a desired condition or conditions. Objectives should be based on reasonably foreseeable budgets.

Standards - A standard is a mandatory constraint on project and activity decision-making, established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

Guidelines - A guideline is a constraint on project and activity decision-making that allows for departure from its terms, so long as the purpose of the guideline is met. (§219.15(d)(3)). Guidelines are established to help achieve or maintain a desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

Suitability of Lands - Specific lands within a plan area will be identified as suitable for various multiple uses or activities based on the desired conditions applicable to those lands. (Note: None of the alternatives are changing suitability of lands at this time, but rather imposing additional requirements for uses such as timber production through the other categories of plan components.)

The 2012 planning regulations require each Forest Service project within National Forest System lands to be consistent with the applicable plan in the following ways:

> (1) **Goals, desired conditions, and objectives.** The project or activity contributes to the maintenance or attainment of one or more goals, desired conditions, or objectives, or does not foreclose the opportunity to maintain or achieve any goals, desired conditions, or objectives, over the long term.
>
> (2) **Standards**. The project or activity complies with applicable standards.
>
> (3) **Guidelines**. The project or activity: (i) Complies with applicable guidelines as set out in the plan; or (ii) Is designed in a way that is as effective in achieving the purpose of the applicable guidelines (§219.7(e)(1)(iv)).
>
> (4) **Suitability**. A project or activity would occur in an area: (i) That the plan identifies as suitable for that type of project or activity; or (ii) For which the plan is silent with respect to its suitability for that type of project or activity.

In addition to projects, any resource plans (for example, travel management plans) developed by the Forest Service that apply to the resources or land areas within the planning area must be consistent with the plan components.

The above definitions of plan component categories are a requirement of the 2012 planning regulations. The previous 1982 planning regulations did not have these categories, and the content of plans under those regulations have evolved over time.

For all covered plans, the additional language from this amendment will be effective and subject to the implementation requirements of the 2012 rule. Meanwhile, the remainder of these plans – if developed pursuant to the 1982 planning regulations – will remain subject to implementation requirements associated with the existing plan. This means that project consistency requirements will vary depending upon whether the relevant plan component being assessed was installed under the 1982 or 2012 planning regulations.

2.3.2. Misconceptions Regarding the Proposed Amendment

The following is meant to provide clarification on some misconceptions as they have been communicated during scoping and engagements with interested parties.

- **None of the alternatives create "designated areas" of old-growth forest.** See discussion under Alternatives Considered but Eliminated from Detailed Study for rationale regarding old-growth forest designated areas and why this is not being proposed or considered as part of an action alternative.

- **The Modified Proposed Action (Alternative 2) and the Less Restrictive Alternative (Alternative 4) do not contradict the Wildfire Crisis Strategy.** There is no intent for these alternatives to contradict or preclude progress on the Wildfire Crisis Strategy. Language has been added to Standard 2.a.i in the Modified Proposed Action to clarify that management actions are permitted – and encouraged – for the reduction of hazardous fuels to reduce the risk of loss of old-growth forests to uncharacteristic wildfire, and to facilitate the return of appropriate fire disturbance regimes and conditions. Additionally, the exceptions in 2.c.i in the Modified Proposed Action were expanded to include municipal watersheds and protection of critical infrastructure. Clarification was also added regarding the Wildland Urban Interface (WUI) definition to be applied.

  It should be noted that the More Restrictive Alternative (Alternative 3) also includes these same components (2.a.i and 2.c.i) from the Modified Proposed Action (Alternative 2); however, Standard 3 in Alternative 3 removes the use of commercial timber harvest as a management tool for proactive stewardship, which could impact the ability to achieve ecologically driven desired conditions in areas that meet the definition and associated criteria for old-growth forests. The deviation in 2.c.i. could be used to reduce hazardous fuels and achieve wildfire risk management objectives in areas meeting the definition/criteria for old-growth forest.

  For Alternative 4, Standards 2.a and 2.c would be removed, providing greater flexibility for management actions in old-growth forests, which can include actions needed to achieve hazardous fuel reduction and other wildfire risk management objectives in areas that meet the definition and associated criteria for old-growth forests.

- **None of the alternatives require all areas currently meeting the definition (and associated criteria) of old-growth forest to be retained as such.** Standard 2.a allows vegetation management to occur in areas currently meeting the definition (and associated criteria) of old-growth forest for the purposes of proactive stewardship. (See the Glossary for definition of *vegetation management and proactive stewardship* as these terms apply for the purposes of the proposed amendment and associated analysis.) There is no requirement that these areas continue to meet the definition of old-growth when managed for the purpose of proactive stewardship; however, the project-level analysis will need to demonstrate that the

proactive stewardship promotes one or more of the conditions and/or characteristics listed in 2.a.i-xii. This is intentional as some vegetation management needed to achieve management objectives (e.g. hazardous fuels reduction, resilience to insect and disease, species composition, etc.) could result in an area no longer meeting the definition of old-growth immediately following vegetation management being completed but could result in the area being more resilient and adaptable to stressors and likely future environments – allowing the area to continue succession back towards old-growth forest.

Standard 2.b provides direction that the cutting or removal of trees in old-growth forest is permitted when (1) incidental to the implementation of a management activity not otherwise prohibited by the plan, and (2) the area continues to meet the definition and associated criteria for old-growth forest after the incidental tree cutting or removal. Management activities in old-growth forest that could include incidental tree cutting or removal not associated with proactive stewardship include, but are not limited to, trail construction or maintenance, or installation or maintenance of developed recreation sites or other infrastructure or energy developments. Exceptions to Standard 2.a and Standard 2.b are provided in Standard 2.c. Should incidental cutting or removal of trees need to occur for reasons other than those listed in the exceptions (or for management activities that may otherwise be prohibited by the plan) or to the extent an area would no longer continue to meet the definition of old-growth, responsible officials would have the discretion to forego the management activity altogether or complete a project-level plan amendment allowing for the management activity to continue.

2.3.3. Alternative 1 - No Action

The No Action Alternative provides a baseline comparison for how old-growth forest direction in land management plans would change. Under the no action alternative, current land management plan (LMP) content would continue to guide management of old growth. No changes would be made to old-growth related plan components unless done so at the unit-level during plan revision or through programmatic or project-specific plan amendments. This plan-by-plan revision or amendment approach would not provide a consistent framework for managing old-growth across the National Forest System.

2.3.4. Alternative 2 - Modified Proposed Action (Preferred Alternative)

The Notice of Intent to prepare an Environmental Impact Statement proposed amending all LMPs identically. In response to comments that some LMPs may not need amended given forested conditions in the planning area or may not need amended to the full extent given recent amendments/revisions, the agency did a detailed review of existing LMP content and forested conditions on grasslands to determine a more strategic, plan-specific amendment approach. See Appendix C, Comparison of Current Management of Old-Growth to Amendment for the Draft EIS for a discussion of the process used to conduct this review and reach determinations for how various plans would be exempted or amended.

Six grassland LMPs and one National Forest LMP are being exempted from the amendment based on determinations that the planning area governed by the LMPs contains limited forested acres and does not warrant an amendment of this scope and scale. For those grasslands that do not have a LMP specific to the grassland (i.e. the grassland is incorporated under a LMP for a national forest), the grassland will be subject to the amendment that applies to the national forest LMP. See Appendix C

(link above) for a list of the LMPs exempted from the amendment and additional explanation of how these LMPs were identified.

For LMPs being amended, the following would be added to each LMP: statement of distinctive roles and contributions, goal, management approach, desired conditions, objectives, standards, guidelines, and plan monitoring requirements (listed below). See Appendix C (link above) for a list of the LMPs that will receive the full amendment.

Consideration was given to only partially amending some LMPs if they already contained components that were functionally meeting the intent of proposed plan components and content. An initial review was conducted to compare current plan content to the proposed plan components/content described in the NOI. This initial review indicated that some plans could be partially amended and still provide a consistent framework for managing old-growth forests. However, the proposed plan components/content continued to be modified in response to concerns and recommendations made during scoping and other opportunities for internal and external audiences to provide feedback. When a second review was conducted to compare current plan content to the modified proposed plan components/content (as described in this Draft EIS), it was determined that all LMPs should receive the full amendment (except for those that are exempted, as previously discussed).

Appendix B, State, Forest and Region Crosswalk for the Draft EIS provides helpful information for understanding spatial distribution and location of the national forests and grasslands. There are nine Forest Service regions. The regions are broad geographic areas, usually including several states, encompassing 155 National Forests and 20 National Grasslands. Note that some national forests and national grasslands are combined into administrative units for management, which can also include a land management plan that covers multiple units.

Proposed Plan Components and Content to Amend Land Management Plans

36 CFR 219.7(e) and (f) contains general descriptions of the plan components and other plan content described below. See Table 1 for plan components/content proposed as part of this amendment.

Table 1. Proposed Plan Components/Content for Modified Proposed Action (Alternative 2; Preferred Alternative)

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Statement of Distinctive Roles and Contributions **(NOGA-FW-DRC)**	The National Forest System plays a distinctive and key role in providing the nation with benefits related to national forests and grasslands within the broader landscape, including old-growth forests. Old-growth forests are dynamic systems distinguished by old trees and related structural attributes. Old-growth forest typically differs from other stages of stand development in a variety of characteristics, including the presence of old trees, variability in canopy structure, patchiness, and development pathways depending on disturbance regimes and resulting patterns. The structure, composition, and characteristics of old-growth forests is highly ecosystem and place-based. What constitutes old-growth forest is informed by best available science, which includes Indigenous Knowledge. Old-growth forests support ecological integrity and contribute to distinctive ecosystem services—such as long-term storage of carbon, increased biodiversity, improved watershed health, and social, cultural, and economic values. Old-growth forests have place-based meanings tied to cultural identity and heritage; local economies and ways of life; traditional and subsistence uses; aesthetic, spiritual, and recreational experiences; and Tribal and Indigenous histories, cultures, and practices. Tribal and Indigenous practices have maintained resilient forest structure and composition of forests that harbor high structural and compositional diversity, with particular emphasis on understory plants and fire-dependent wildlife habitat.	**Intent:** Provides overarching context for the ecological, cultural and socioeconomic values of old-growth forests and the ecosystem services they provide. **What Changed:** Removed sentences that described what old-growth forest might look like in different places. Added "Characteristics" [*The structure, composition, and* ***characteristics*** *of old-growth forests*…]. Revised language describing importance of old-growth forests in Tribal and Indigenous cultures and practices and recognizing the long history of Indigenous stewardship.

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Goal 1 (NOGA-FW-GOAL-01)	Interpretation and implementation of the old-growth amendment is grounded in recognition and respect for tribal sovereignty, treaties, Indigenous Knowledge and the ethic of reciprocity and responsibility to future generations. Implementation of the old-growth amendment enables co-stewardship, including for cultural burning, prescribed fire, and other activities, and occurs in consultation with Tribes and Alaska Native Corporations to fulfill treaty obligations and general trust responsibilities.	**Intent:** Goals consist of broad statements of intent usually related to process or interaction with the public. Goals are optional plan components to include in a land management plan (LMP); however, once included they are not optional to follow. Including this goal as part of the proposed amendment is intended to foster tribal inclusion in the interpretation and implementation of all aspects of the old-growth amendment, and to create consistent expectations for land managers to prioritize and enable co-stewardship when implementing this amendment. **Clarification:** The goal empowers Tribes to interact with implementation of the old-growth amendment on their terms. Tribes are not compelled to provide input or participate in implementation of the amendment if they choose not to do so. While this goal is not meant to amend non-old-growth aspects of associated land management plans, this does not preclude Forest Service personnel from applying the spirit and intent of this goal to other land management endeavors. **What Changed:** Added language to clarify this goal applies for interpretation and implementation “of the old-growth amendment”.

Management Approach 1.a **(NOGA-FW-MA-01a)** *Adaptive Strategy for Old-Growth Forest Conservation*	Develop and adhere to an *Adaptive Strategy for Old-Growth Forest Conservation* to accomplish the following: i. Effectively incorporate place-based Indigenous Knowledge and other forms of Best Available Scientific Information as equals to inform and prioritize planning and decision-making for the conservation and recruitment of old-growth forests through proactive stewardship. ii. Ground-truth the accuracy of applied old-growth forest definitions. iii. Provide geographically relevant information about threats, stressors, and management opportunities relevant to the ecosystem of the plan area to facilitate effective implementation. iv. Identify tribal priorities and opportunities to support cultural, medicinal, food, and ceremonial values, practices and uses. v. Identify and prioritize areas for the recruitment, retention and promotion of old-growth forests, based on: ecological integrity, inherent capability, threats, stressors, and opportunities relevant to the plan area in order to provide for the long-term resilience of old-growth forests conditions within the plan area. vi. Engage in climate adaptation using explicit resistance, resilience, or transition approaches to address climate risks and achieve desired conditions, or otherwise intentionally accept alternative climate-driven outcomes. vii. Identify a program of work and partnerships that can support effective delivery of the plan monitoring requirements to inform adaptive management. viii. Recognize the role of other successional stages that are important for ecological integrity. *(Added alphanumeric bullets for easier reference.)*	**Intent**: Management approaches and strategies are optional plan content to include in a land management plan (LMP); however, once included they are not optional to follow. Including a management approach as part of the proposed amendment allows for strategic management of old-growth forest and future old-growth that is driven by ecosystem and place-based considerations and informed by local knowledge and best available science, which includes Indigenous Knowledge. Including this management approach recognizes that creating a nationally consistent framework for the stewardship and recruitment of old-growth forests must be complemented by geographically relevant strategies, informed through consultation with Tribes and in collaboration with State, county, and local governments, industry, non-profit, academic and other partners. **Clarification:** If some of the information for 1.a is already documented elsewhere (e.g. LMP, outyear program of work, etc.), that information can be incorporated by reference into the *Adaptive Strategy*. This management approach recognizes that existing strategies, agreements or projects – including State Forest Action Plans, Shared Stewardship Agreements, Good Neighbor Authority and Tribal Forest Protection Act agreements, Collaborative Forest Landscape Restoration Program and Joint Chiefs' Restoration Partnership Program projects, and other local collaborative agreements – can and should inform the development of Adaptive Strategies for Old-Growth, including through 1.a.iii. **What Changed:** *Added:* • In i., clarification that Indigenous Knowledge is a form of best available scientific information; • New ii., to ground-truth old-growth forest definitions; • New iv., to provide clear opportunities to incorporate tribal priorities and values into the strategy, including for culturally significant food and medicine sources associated with old-growth stands and understory plants; • In v., the terms "ecological integrity, inherent capability" and "in order to provide for the long-term resilience of old-growth forest conditions within the plan area"; and

Plan Component/ Content	**Language for Modified Proposed Action**	**Intent; Clarifications** *(if needed)*; **What Changed** *(NOI to DEIS, if anything)*
		• In vi., "Resistance, resilience or transition approaches" and "intentionally accept alternative climate driven-outcomes". • New viii, to recognize the role of successional stages other than old-growth that are important for ecological integrity within the geography covered by the strategy; *Removed:* • Bullet stating to identify criteria to use to indicate where plan components will apply. (See ii. regarding ground truthing of old-growth forest definitions and Standard 1 regarding old-growth definitions/criteria to be used.) • Bullet regarding establishing target milestones. • Language regarding development of additional climate informed management approaches as this should occur as part of developing this *Adaptive Strategy*, not separately.

Management Approach 1.b **(NOGA-FW-MA-01b)** *Adaptive Strategy for Old-Growth Forest Conservation*	Identify areas that have the inherent capability to sustain future old-growth forest (i.e. areas of likely climate or fire refugia) over time and prioritize them for proactive stewardship for one or more of the following purposes: i. To provide for long-term resilience; ii. To reduce fire hazard, spread or severity, or the spread of potential insect or disease outbreaks; iii. To provide landscape-level redundancy and representation of old-growth forests; iv. To enhance landscape and patch connectivity where old-growth patches are isolated; v. To recruit and promote the development of future old-growth forests where current conditions in mature forest are likely to achieve the old-growth forest definitions and associated criteria in the shortest timeframe possible; vi. To retain and promote the development of old-growth forests in watersheds, firesheds, or other relevant landscape units where amounts and distributions of existing old-growth forests lack resilience and adaptability to stressors and likely future environments; vii. To restore or enhance attributes identified as culturally significant; or viii. To promote climate adapted species assemblages in areas where changing climatic conditions are likely to alter current conditions and change species assemblages over time. *(Added alphanumeric bullets for easier reference.)*	**Intent:** This section of the management approach is focused on identifying and prioritizing areas to recruit and develop future old-growth forest. Considering areas for future old-growth ensures recruitment of additional old-growth forests over time. *(Also see overall intent of management approaches/strategies, as described for Management Approach 1.a)* **Clarification:** This does not mean all acres/areas are intended to be managed to trend towards old-growth forest. Mature/late seral stage forests would be the primary focus where those areas are trending towards old-growth forest and have the inherent capability to sustain future old-growth, taking into consideration likely future environments and those areas that provide likely climate or fire refugia. If a land management plan has already identified management or geographic areas that meet this intent, that information – or information from similar efforts that is already documented elsewhere – can be incorporated by reference into the *Adaptive Strategy*. **What Changed:** Management Approach 1.b was previously a Guideline in the version of the proposed action published in the Notice of Intent. The way this component was written did not read like a Guideline (as defined in 36 CFR 219.7(d)(iv)). Identifying and prioritizing areas to be managed for the recruitment and development of future old-growth forests is more appropriately considered as part of developing the *Adaptive Strategy* (see intent for Management Approach 1.a) rather than as a Guideline to be complied with during project development. A new Guideline was added (now Guideline 1) that supports Management Approach 1.b., focusing on management of areas that have been prioritized for future old-growth recruitment. See intent discussion under Guideline 1. The language in the beginning paragraph regarding “inherent capability to sustain old-growth” was previously included as a bullet to be considered for the purposes of management. It was determined to be more appropriate as an initial driver for identifying areas; therefore, it was removed as a bullet and added to the beginning paragraph. • Added i.; • In v., changed “retain” to “recruit”, added “future” [*development of **future** old-growth forests where current*...], added “in mature

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
		forest" [*where current conditions **in mature forest** are likely to*…], changed "meet" to "achieve; and • In vi., moved location of the word "existing".
Management Approach 1.c **(NOGA-FW-MA-01c)** *Adaptive Strategy for Old-Growth Forest Conservation*	One or more Forest Service units may create a joint *Adaptive Strategy for Old-Growth Forest Conservation*. An already existing strategy or other document may also be used if it meets this intent and contains, or is amended to contain, all substantive elements described for Management Approach 1(a) and 1(b).	**Intent:** Allows for development of adaptive strategies across planning unit boundaries where it makes sense to do so ecologically and organizationally. This section also allows units to use or build off of already existing strategies or other documents, to avoid duplication and enable building on existing knowledge, relationships, and collaborative agreements. *(Also see overall intent of management approaches/strategies, as described for Management Approach 1.a)* **Clarification:** If units have already completed and documented some of the steps in Management Approach 1.a. and/or 1.b (i.e. may have identified old-growth forest or future old-growth areas as part of recent plan revision/amendment processes, Collaborative Forest Landscape Restoration Program planning, other collaborative processes etc.), those documents may be updated or the information incorporated by reference into the *Adaptive Strategy*. **What Changed:** Clarified one or more "Forest Service" units. Added language to clarify that already existing strategies/documents to be used must also contain all substantive elements for Management Approach 1.a and 1.b.

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Management Approach 1.d **(NOGA-FW-MA-01d)** *Adaptive Strategy for Old-Growth Forest Conservation*	Include the *Adaptive Strategy for Old-Growth Forest Conservation* as an appendix to either the broader scale monitoring strategy or the biennial monitoring report, see 36 CFR 219.12. Units should use this strategy to inform priorities. The strategy may be periodically updated (36 CFR 219.13(c)) to reflect new information and monitoring results.	**Intent:** Ties the *Adaptive Strategy* to monitoring efforts, requires transparent reporting, and emphasizes the use of the Strategy to inform unit priorities and support adaptive management. *(Also see overall intent of management approaches/strategies, as described for Management Approach 1.a)* **What Changed:** Now 1.d instead of 1.c (as it was numbered in the Notice of Intent).
Desired Condition 1 **(NOGA-FW-DC-01)**	Old-growth forests occur in amounts and levels of representativeness, redundancy, and connectivity such that conditions are resilient and adaptable to stressors and likely future environments.	**Intent:** A desired condition is a description of specific social, economic, and/or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be directed. Desired conditions must be described in terms that are specific enough to allow progress toward their achievement to be determined, but do not include completion dates. The terms “amount”, “representativeness”, “redundancy”, and “connectivity” are intended to drive measurable progress toward achievement of the desired condition and are consistent with planning rule requirements for ecological sustainability and ecosystem integrity. This desired condition is intended to create consistent plan direction for units to manage for the resilience of old-growth forests over time. **What Changed:** Combined former Desired Conditions 1 and 2 (as they were described in the Notice of Intent) and simplified the language used to better convey intent.
Desired Condition 2 **(NOGA-FW-DC-02)**	Old-growth forests persist in areas that have the inherent capability to sustain old-growth forests over time.	**Intent:** Emphasize the importance of the ability of current old-growth forest to persist in those areas that do have the inherent capability (e.g. areas of climate or fire refugia) to sustain these conditions over time, while also recognizing that not all areas have this inherent capability. *(Also see overall intent of desired conditions, as described for Desired Condition 1.)* **What Changed:** This is a new desired condition that replaces the former Desired Condition 2 (as described in the Notice of Intent) that was combined with Desired Condition 1.

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Desired Condition 3 **(NOGA-FW-DC-03)**	The long-term abundance, distribution, and resilience of old-growth forests within the plan area contribute to ecosystem services across the National Forest System, including but not limited to long-term stability of forest carbon, clean water and soil stabilization, plant and animal habitat, spiritual and cultural heritage values and education, and recreational and tourism experiences.	**Intent:** Recognizes the many ecosystem services provided by old-growth forests. *(Also see overall intent of desired conditions, as described for Desired Condition 1.)* **What Changed:** This desired condition was expanded to recognize the variety of ecosystem services provided by old-growth forests in addition to long-term stability of forest carbon, as carbon was the sole focus of this Desired Condition as it was described in the Notice of Intent.
Desired Condition 4 **(NOGA-FW-DC-04)**	Old-growth forests contribute to the ecological integrity of terrestrial and aquatic ecosystems within the plan area, in concert with other successional stages that are also necessary for ecological integrity.	**Intent:** Recognizes the contributions of old-growth forests to ecological integrity, as well as the role and importance of other successional stages (in addition to old-growth) that also contribute to ecological integrity. *(Also see overall intent of desired conditions, as described for Desired Condition 1.)* **What Changed:** Updated to tie ecological integrity to terrestrial and aquatic ecosystems and added language regarding "other successional stages".
Objective 1 **(NOGA-FW-OBJ-01)**	Within 2 years of the old-growth amendment record of decision, in consultation with Tribes and Alaska Native Corporations and in collaboration with interested States, local governments, industry and non-governmental partners, and public stakeholders, create or adopt an *Adaptive Strategy for Old-Growth Forest Conservation* based on geographically relevant data and information for the purpose of furthering old-growth forest desired conditions.	**Intent:** Objectives are concise, measurable, and time-specific statements of a desired rate of progress toward a desired condition or conditions. This objective clarifies expectations for developing an *Adaptive Strategy* at the unit level and sets a timeline for completing this necessary step. Importantly, the process for developing or adopting an Adaptive Strategy requires engaging with Tribal, state, county and local governments, along with partners and stakeholders. This approach recognizes the importance of complementing a national framework with more specific, place-based strategies for implementation based on geographically relevant conditions, threats and stressors, and relationships. **What Changed:** This language was previously included as part of the Management Approach but is more appropriately included as an Objective. Clarified "Within 2 years of the old-growth amendment record of decision".

Plan Component/ Content	**Language for Modified Proposed Action**	**Intent; Clarifications** *(if needed)*; **What Changed** *(NOI to DEIS, if anything)*
Objective 2 (NOGA-FW-OBJ-02)	Within one year of completing the *Adaptive Strategy for Old-Growth Forest Conservation Strategy*, integrate priorities identified in the *Strategy* into the unit's outyear program of work and initiate at least three proactive stewardship projects/activities in the planning area to contribute to the achievement of old-growth forest desired conditions.	**Intent:** Connects priorities identified in the *Adaptive Strategy* to development of a unit's outyear program of work to ensure integration of the *Strategy* at the project level. Also clarifies expectations for implementing management actions that achieve or trend towards desired conditions for old-growth forests. *(Also see overall intent of objectives, as described for Objective 1.)* **Clarification:** See the Glossary for a definition of "proactive stewardship". **What Changed:** This is a new objective (not included in the Notice of Intent).
Objective 3 **(NOGA-FW-OBJ-03)**	Within two years of completing the *Adaptive Strategy for Old-Growth Forest Conservation Strategy,* initiate at least one co-stewardship project with interested Tribes for the purpose of proactive stewardship.	**Intent:** Connects the *Adaptive Strategy* to co-stewardship projects being developed with Tribes. This objective ties to Goal 1, Management Approach 1.a and Desired Condition 3 and clarifies expectations for enabling Tribal stewardship of old-growth forests. *(Also see overall intent of objectives, as described for Objective 1.)* **Clarification:** See the Glossary for a definition of "co-stewardship". **What Changed:** This is a new objective (not included in the Notice of Intent).
Objective 4 **(NOGA-FW-OBJ-04)**	Within ten years of the *Adaptive Strategy for Old-Growth Forest Conservation* being completed, forest ecosystems within the plan area will exhibit a measurable, increasing trend towards appropriate amounts, representativeness, redundancy, and connectivity of old-growth forest that are resilient and adaptable to stressors and likely future environments.	**Intent:** Establishes a desired rate of progress toward achieving desired conditions. *(Also see overall intent of objectives, as described for Objective 1.)* **What Changed:** This was previously Objective 1, as described in the Notice of Intent (NOI). Language was updated to be more expansive ("forest ecosystems" rather than "at least one landscape") and focuses on "amounts, representativeness, redundancy and connectivity" (ties to Desired Condition 1) as these are more measurable than "retention, recruitment, and proactive stewardship" (language used in the NOI).

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Standard 1 **(NOGA-FW-STD-01)**	Old-growth forests will be determined using definitions and associated criteria established in the land management plan. Where these definitions and associated criteria are found to be incomplete (i.e. only address some but not all ecosystems found in the planning area for which old-growth forest does or may exist) or are non-existent in the plan, the planning unit's corresponding regional old-growth forest definitions and associated criteria, or successor regional definitions and criteria, will be applied in part when these are incomplete or in full when non-existent.	**Intent:** A standard is a mandatory constraint on project and activity decision-making and is established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements. The intent of this standard is to clearly establish the old-growth forest definitions and associated criteria that will be used to determine where old-growth plan components/content proposed as part of this amendment will apply (i.e. where old-growth forests occur). The intent is also to clarify how existing definitions and associated criteria in land management plans (or the supporting plan environmental analysis and/or decision documents) will apply and/or be supplemented if needed, or what definitions and associated criteria will apply if none currently exists in land management plans (or the supporting plan environmental analysis and/or decision documents). **Clarification:** The term “or successor regional definitions and criteria” recognizes that regional old-growth criteria may change over time based on updated best available scientific information, including Indigenous Knowledge. Old-growth definitions and associated criteria are typically developed and managed at a regional silviculture program (or other similar program) level. **What Changed:** This is a new standard (not included in the Notice of Intent [NOI]). The version of Standard 1 that was originally included in the NOI was removed as it was found to be redundant in stating the intent of Standard 2.a, but in a reverse manner (“must not degrade” versus “may only be for the purpose of”).

Standard 2.a **(NOGA-FW-STD-02a)**	Where conditions meet the definitions and associated criteria of old-growth forest, vegetation management may only be for the purpose of proactive stewardship. For the purposes of this standard, the term "vegetation management" includes – but is not limited to – prescribed fire, timber harvest, and other mechanical/non-mechanical treatments used to achieve specific silviculture or other management objectives (e.g. hazardous fuel reduction, wildlife habitat improvement). For the purposes of this standard, the term "proactive stewardship" refers to vegetation management that promotes the quality, composition, structure, pattern, or ecological processes necessary for old-growth forests to be resilient and adaptable to stressors and likely future environments. Proactive stewardship in old-growth forests shall promote one or more of the following: i. reduction of hazardous fuels to reduce the risk of loss of old-growth forests to uncharacteristic wildfire, and to facilitate the return of appropriate fire disturbance regimes and conditions; ii. resilience to insect and disease outbreaks that would result in the loss of old-growth conditions; iii. ecological conditions for at-risk species associated with old-growth forest, including conditions needed for the recovery of threatened and endangered species; iv. amount, density, distribution and species composition of old trees, downed logs, and standing snags appropriate for the forest ecosystem type; v. vertical and horizontal distribution of old-growth structures, including canopy structure and composition; vi. patch size characteristics, percentage or proportion of forest interior, and connectivity; vii. types, frequencies, severities, patch sizes, extent, and spatial patterns of disturbances; viii. successional pathways and stand development; ix. connectivity and the ability of old-growth obligate species to move through the area and cross into adjacent areas; x. culturally significant species or values, to include key understory species; xi. species diversity, and presence and abundance of rare or unique habitat features associated with old-growth forests; or	**Intent:** Constrain management actions to those that promote the quality, composition, structure, pattern or ecological processes necessary for old-growth forests to be resilient and adaptable to stressors and likely future environments (i.e. as influenced by climate change and in response to wildfire, insect and disease, urbanization, etc.). *(Also see overall intent of standards, as described for Standard 1.)* **Clarification:** See the Glossary for a definition of "vegetation management" and "proactive stewardship". **What Changed:** • In beginning paragraph: updated language to specify "where conditions meet the criteria for old-growth forest"; defined the terms "vegetation management" and "proactive stewardship"; added "quality"; • Added reduction of hazardous fuels language and moved this to the top of the list (now i.); • Added ii. to address resilience to "insect and disease outbreaks"; • In iv., added "species composition" and "appropriate for the forest ecosystem type"; • In v., added "and composition"; • In ix., replaced "native species" with "old-growth obligate species"; • In x., reworded to clarify culturally significant species or values includes key understory species; and • In xii., added "associated with old-growth forests".

Plan Component/ Content	**Language for Modified Proposed Action**	**Intent; Clarifications** *(if needed)*; **What Changed** *(NOI to DEIS, if anything)*
	xii. other key characteristics of ecological integrity associated with old-growth forests.	
Standard 2.b **(NOGA-FW-STD-02b)**	The cutting or removal of trees in old-growth forest for purposes other than proactive stewardship is permitted when (1) incidental to the implementation of a management activity not otherwise prohibited by the plan, and (2) the area – as defined at an ecologically appropriate scale – continues to meet the definition and associated criteria for old-growth forest after the incidental tree cutting or removal.	**Intent:** The purpose of this standard is to provide clarification that cutting or removal of trees can occur in old-growth forest for purposes other than proactive stewardship so long as it occurs within the sideboards specified in (1) and (2). For example, this would allow for trail development or maintenance. **What Changed:** This is a new standard (not included in the Notice of Intent [NOI]). Standard 2.b, as described in the NOI, is now Standard 2.c.

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Standard 2.c **(NOGA-FW-STD-02c)**	Deviation from Standard 2.a and 2.b may only be allowed if the responsible official determines that vegetation management actions or incidental tree-cutting or removal are necessary for the following reasons and includes the rationale in a decision document or supporting documentation: i. In cases where this standard would preclude achievement of wildfire risk management objectives within municipal watersheds or the wildland-urban interface (WUI) as defined in Section 101 of the Healthy Forest Restoration Act of 2003 (16 USC 6511) and its application by the local planning unit, or would prevent protection of critical infrastructure from wildfire; ii. to protect public health and safety; iii. to comply with other statutes or regulations, valid existing rights for mineral and energy resources, or authorizations of occupancy and use made prior to the old-growth amendment decision; iv. for culturally significant uses as informed by tribes or for de minimis use for local community purposes; v. in areas designated for research purposes, such as experimental forests or research natural areas; or vi. in cases where it is determined – based on best available science, which includes Indigenous Knowledge – that the direction in this standard is not relevant or beneficial to a particular species or forest ecosystem type.	**Intent:** To provide deviations to Standard 2.a and Standard 2.b to allow for vegetation management activities in old-growth for certain other multiple use and management considerations. *(Also see overall intent of standards, as described for Standard 1.)* 2.c.vi is intended to recognize that not all ecosystem types in a plan area have the ecological capacity or ecosystem potential to reach an old-growth forest development stage. Examples may include – but are not limited to – birch, aspen, jackpine and lodgepole pine when these are further characterized by physical elements, climatic regime, or natural disturbance processes. **Clarification:** The deviations mean management actions can occur for these purposes when they don't promote the conditions/characteristics listed in Standard 2.a.i-xii or comply with the sideboards described in Standard 2.b. Also see the Glossary for the definition for "vegetation management" and "proactive stewardship". **What Changed:** *(This was formerly Standard 2.b)* • Changed "Exceptions to" to "Deviation from"; • Moved the language about rationale for exceptions from the end of the list to the beginning paragraph and clarified rationale can also be included in supporting documentation for the decision document; • In i., expanded exception language to include municipal watersheds and protection of critical infrastructure. Added clarification of the WUI definition to be applied. (Also see added language to Standard 2.a.i as this ties to wildfire risk management objectives.) • In iii., added "valid existing rights for mineral and energy resources, or authorizations of occupancy and use made prior to the old-growth amendment decision"; • In iv., added "as informed by tribes or for de minimis use for local community purposes," (also see discussion for Standard 4); • Added v. to address research areas and experimental forests; • In vi., added "based on best available science, which includes Indigenous Knowledge" and added "species" along with forest ecosystem type.

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Standard 3 **(NOGA-FW-STD-03)**	Proactive stewardship in old-growth forests shall not be for the purpose of timber production as defined in 36 CFR 219.19.	**Intent:** To clarify that when proactive stewardship occurs in old-growth, it shall not be for the purpose of timber production. This standard, along with Standard 2a, is intended to ensure that the sole purpose of proactive stewardship will be to promote the composition, structure, pattern, or ecological processes necessary for old-growth forests to be resilient and adaptable to stressors and likely future environments. *(Also see overall intent of standards, as described for Standard 1.)* **Clarification:** The 2012 Planning Rule distinguishes between timber harvest for the purpose of "timber production," and timber harvest for other multiple use purposes. Vegetation management, including both commercial and non-commercial timber harvest to cut and remove trees, may be necessary to achieve the conditions/characteristics listed in Standard 2.a.i-xi, serving as a tool to achieve desired conditions for old-growth forests. However, any timber harvest, including any harvest that has a commercial component, can only occur in old-growth forests where required for proactive stewardship. This standard makes clear that timber production cannot be the driver for proposing vegetation management for proactive stewardship in old-growth forests. See Glossary for definition of timber production. **What Changed:** This standard was completely reworded to increase clarity and remove obscure phrases like "for the primary purpose of growing, tending, harvesting, or regeneration of trees for economic reasons" and "ecologically appropriate harvest is permitted".

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
~~**Standard 4**~~ **DELETED**	~~Exceptions to standards 2 and 3 may be granted by the Regional Forester in Alaska if necessary to allow for implementation of the Southeast Alaska Sustainability Strategy and the rationale must be included in a decision document.~~	**What Changed:** This standard, as described in the Notice of Intent, has been deleted because the intent of the standard has been addressed in a different way in the modified proposed action. **Clarification:** With the new Standard 2.b and changes to language in Standard 2.c.iii and 2.c.iv (Standard 2.c was formerly numbered as Standard 2.b), it was determined this exception may no longer be needed. See the discussions for Standard 2.b and 2.c for further context. **Intent:** The Department and Agency remain committed to the Southeast Alaska Sustainability Strategy. The intent is that, in the limited instances where implementation of the SASS is not consistent with the definition of proactive stewardship in old-growth forests, the combined use of 2.c.iii and 2.c.iv would allow for continued implementation of the Southeast Alaska Sustainability Strategy, including for small sales for local mills, music wood, and culturally significant uses like totem poles.
Guideline 1 **(NOGA-FW-GDL-01)**	In areas that have been identified in the *Adaptive Strategy for Old-Growth Forest Conservation* as compatible with and prioritized for the development of future old-growth forest, vegetation management projects should be for the purpose of developing those conditions.	**Intent:** A guideline is a constraint on project and activity decision-making that allows for departure from its terms, so long as the purpose of the guideline is met. Guidelines are established to help achieve or maintain a desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements. The intent of this guideline is to support the recruitment and development of future old-growth forests by constraining vegetation management projects in areas that have been identified and prioritized for the recruitment and development of future old-growth forests (see Management Approach 1.b). **Clarification:** See the Glossary for a definition of "vegetation management". **What Changed:** Previous Guideline 1, as described in the Notice of Intent, was moved to Management Approach 1.b. (See discussion under Management 1.b What Changed for explanation for this change.) This is a newly worded guideline that still provides the same intent to continue trending future old-growth forest towards achieving those conditions.

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Guideline 2 **(NOGA-FW-GDL-02)**	Where there are additional land management plan components for old-growth that existed prior to the old-growth amendment and these provide more restrictive direction for old-growth forests, the more restrictive direction should be adhered to.	**Intent:** Because the old-growth amendment adds but does not remove content from existing plans, this guideline is intended to provide direction on how units should proceed when aspects of plan direction for old-growth are not in clear alignment. *(Also see overall intent of guidelines, as described for Guideline 1.)* **What Changed:** This is a new guideline (not included in the Notice of Intent).
Guideline 3 **(NOGA-FW-GDL-03)**	To preserve the cultural and historical value of old trees occurring outside of old-growth forests, vegetation management projects should retain and promote the conservation and survivability of old trees that are rare when compared to nearby forested conditions that are of a noticeable younger age class or unique in their ability to persist in the current or future environment, and are not detracting from desired species composition or ecological processes.	**Intent:** Provide for the recognition and retention of old trees that exist outside of old-growth forests that have cultural or historical value. It is also recognized there may be instances where these old trees could be detracting from desired species composition or ecological processes; therefore, there may be rationale for not retaining all old trees. *(Also see overall intent of guidelines, as described for Guideline 1.)* This guideline is not intended to apply to every old tree (subjective depending on species, ecosystem, etc.), but rather those that stand out as rare or unique when compared to those trees in surrounding younger, smaller stands or in their ability to persist over time and that have particular cultural or historical value. These may be lone trees or there may be occurrences of these trees in small groups/clumps. **Clarification:** "Old trees that are of cultural or historical value" may be referred to by various terms including, but not limited to, "elder", "legacy", "relic", or "remnant" trees. **What Changed:** This is a new guideline (not included in the Notice of Intent).

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Plan Monitoring 1 **(NOGA-FW-PM-01)**	Within two years, include the areas identified and prioritized for the retention and promotion of old-growth forests in the *Adaptive Strategy for Old-Growth Forest Conservation* in the biennial monitoring report or the broader scale monitoring strategy to be updated as conditions change.	**Intent:** Plan monitoring is required as described in 36 CFR 219.12. The intent of including plan monitoring in the amendment is to focus monitoring on the areas identified in the *Adaptive Strategy* to understand how conditions change. This requirement is also intended to ensure that there is a clear and transparent way to track where the plan components in this amendment would apply, recognizing that the system is dynamic and conditions will change over time. **Clarification:** Monitoring can track condition change that occurs as part of natural succession or disturbance, after proactive stewardship/vegetation management actions occur, or due to other uses/authorizations occurring in these areas. **What Changed:** Added language to clarify monitoring should occur for those areas identified in the *Adaptive Strategy*. The introductory paragraph to the Plan Monitoring section (as it was described in the Notice of Intent) was removed.

Plan Component/ Content	**Language for Modified Proposed Action**	**Intent; Clarifications** *(if needed)*; **What Changed** *(NOI to DEIS, if anything)*
Plan Monitoring 2 **(NOGA-FW-PM-02)**	Within the biennial monitoring evaluation report, provide monitoring questions and associated indicators to assess the resilience of old-growth forests and inform adaptive management; include regular updates on actions taken pursuant to this amendment; identify unintended consequences to other social, economic, or ecologic plan objectives; and provide updates on measurable changes in unit-level old-growth forest when new national inventory information is available.	**Intent:** Plan monitoring is required as described in 36 CFR 219.12. The intent of including plan monitoring in the amendment is to track the effectiveness of plan components in making progress towards desired conditions, and ensure monitoring is documented in the biennial monitoring report that is already completed for each planning unit. **What Changed:** Expanded language to include more than "provide regular updates on actions taken pursuant to this amendment and provide updates on measurable changes in unit-level old-growth forest conditions when new information is available" (as was described in the Notice of Intent [NOI]). Clarified the monitoring questions and indicators need to assess the "resilience of old-growth forests". "New information" was also updated to clarify this is tied to national inventory data. Plan Monitoring 3 and the subsequent questions/indicators that were described in the NOI were removed to give planning units flexibility to develop questions/indicators that are tailored to the Adaptive Strategy developed at the local level, and that complement the national old-growth monitoring program (currently under development). (See Appendix D, Adaptive Strategy for Old-Growth Conservation Framework for the Draft EIS for discussion of the *Adaptive Strategy for Old-Growth Conservation Framework;* also see the Other Related Efforts discussion in Chapter 1 regarding Monitoring Directives.)

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Statement of Distinctive Roles and Contributions **(NOGA-FW-DRC)**	The National Forest System plays a distinctive and key role in providing the nation with benefits related to national forests and grasslands within the broader landscape, including old-growth forests. Old-growth forests are dynamic systems distinguished by old trees and related structural attributes. Old-growth forest typically differs from other stages of stand development in a variety of characteristics, including the presence of old trees, variability in canopy structure, patchiness, and development pathways depending on disturbance regimes and resulting patterns. The structure, composition, and characteristics of old-growth forests is highly ecosystem and place-based. What constitutes old-growth forest is informed by best available science, which includes Indigenous Knowledge. Old-growth forests support ecological integrity and contribute to distinctive ecosystem services—such as long-term storage of carbon, increased biodiversity, improved watershed health, and social, cultural, and economic values. Old-growth forests have place-based meanings tied to cultural identity and heritage; local economies and ways of life; traditional and subsistence uses; aesthetic, spiritual, and recreational experiences; and Tribal and Indigenous histories, cultures, and practices. Tribal and Indigenous practices have maintained resilient forest structure and composition of forests that harbor high structural and compositional diversity, with particular emphasis on understory plants and fire-dependent wildlife habitat.	**Intent:** Provides overarching context for the ecological, cultural and socioeconomic values of old-growth forests and the ecosystem services they provide. **What Changed:** Removed sentences that described what old-growth forest might look like in different places. Added "Characteristics" [*The structure, composition, and **characteristics** of old-growth forests*…]. Revised language describing importance of old-growth forests in tribal and indigenous cultures and practices.

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Goal 1 (NOGA-FW-GOAL-01)	Interpretation and implementation of the old-growth amendment is grounded in recognition and respect for tribal sovereignty, treaties, Indigenous Knowledge and the ethic of reciprocity and responsibility to future generations. Implementation of the old-growth amendment enables co-stewardship, including for cultural burning, prescribed fire, and other activities, and occurs in consultation with Tribes and Alaska Native Corporations to fulfill treaty obligations and general trust responsibilities.	**Intent:** Goals consist of broad statements of intent usually related to process or interaction with the public. Goals are optional content to include in a land management plan (LMP); however, once included they are not optional to follow. Including this goal as part of the proposed amendment fosters tribal inclusion in the interpretation and implementation of all aspects of the old-growth amendment. **Clarification:** The goal empowers Tribes to interact with implementation of the old-growth amendment on their terms. Tribes are not compelled to provide input or participate in implementation of the amendment if they choose not to do so. While this goal is not meant to amend non-old-growth aspects of associated land management plans, this does not preclude Forest Service personnel from applying the spirit and intent of this goal to other land management endeavors. **What Changed:** Added language to clarify this goal applies for interpretation and implementation “of the old-growth amendment”.

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Management Approach 1.a **(NOGA-FW-MA-01a)** *Adaptive Strategy for Old-Growth Forest Conservation*	Develop and adhere to an *Adaptive Strategy for Old-Growth Forest Conservation* to accomplish the following: ix. Effectively incorporate place-based Indigenous Knowledge and other forms of Best Available Scientific Information as equals to inform and prioritize planning and decision-making for the conservation and recruitment of old-growth forests through proactive stewardship. x. Ground-truth the accuracy of applied old-growth forest definitions. xi. Provide geographically relevant information about threats, stressors, and management opportunities relevant to the ecosystem of the plan area to facilitate effective implementation. xii. Identify Tribal priorities and opportunities to support cultural, medicinal, food, and ceremonial values, practices and uses. xiii. Identify and prioritize areas for the recruitment, retention and promotion of old-growth forests, based on: ecological integrity, inherent capability, threats, stressors, and opportunities relevant to the plan area in order to provide for the long-term resilience of old-growth forests conditions within the plan area. xiv. Engage in climate adaptation using explicit resistance, resilience, or transition approaches to address climate risks and achieve desired conditions, or otherwise intentionally accept alternative climate-driven outcomes. xv. Identify a program of work and partnerships that can support effective delivery of the plan monitoring requirements to inform adaptive management. xvi. Recognize the role of other successional stages that are important for ecological integrity. *(Added alphanumeric bullets for easier reference.)*	**Intent**: Management approaches and strategies are optional plan content to include in a land management plan (LMP); however, once included they are not optional to follow. Including a management approach as part of the proposed amendment allows for strategic management of old-growth forest and future old-growth that is driven by ecosystem and place-based considerations and informed by local knowledge and best available science, which includes Indigenous Knowledge. **Clarification:** If some of the information for 1.a is already documented elsewhere (e.g. LMP, outyear program of work, etc.), that information can be incorporated by reference into the *Adaptive Strategy*. **What Changed:** *Added:* • Entire ii., iv., and viii. • In i., clarification that Indigenous Knowledge is a form of best available scientific information; • In v., the terms "ecological integrity, inherent capability" and "in order to provide for the long-term resilience of old-growth forest conditions within the plan area"; and • In vi., "Resistance, resilience or transition approaches" and "intentionally accept alternative climate driven-outcomes". *Removed:* • Bullet stating to identify criteria to use to indicate where plan components will apply. (See ii. regarding ground truthing of old-growth forest definitions and Standard 1 regarding old-growth definitions/criteria to be used.) • Bullet regarding establishing target milestones. • Language regarding development of additional climate informed management approaches as this should occur as part of developing this *Adaptive Strategy*, not separately.

Management Approach 1.b **(NOGA-FW-MA-01b)**	Identify areas that have the inherent capability to sustain future old-growth forest (i.e. areas of likely climate or fire refugia) over time and prioritize them for proactive stewardship for one or more of the following purposes: ix. To provide for long-term resilience; x. To reduce fire hazard, spread or severity, or the spread of potential insect or disease outbreaks; xi. To provide landscape-level redundancy and representation of old-growth forests; xii. To enhance landscape and patch connectivity where old-growth patches are isolated; xiii. To recruit and promote the development of future old-growth forests where current conditions in mature forest are likely to achieve the old-growth forest definitions and associated criteria in the shortest timeframe possible; xiv. To retain and promote the development of old-growth forests in watersheds, firesheds, or other relevant landscape units where amounts and distributions of existing old-growth forests lack resilience and adaptability to stressors and likely future environments; xv. To restore or enhance attributes identified as culturally significant; or xvi. To promote climate adapted species assemblages in areas where changing climatic conditions are likely to alter current conditions and change species assemblages over time. *(Added alphanumeric bullets for easier reference.)*	**Intent:** Considering areas for future old-growth ensures recruitment of additional old-growth forests over time. *(Also see overall intent of management approaches/strategies, as described for Management Approach 1.a)* **Clarification:** This does not mean all acres/areas are intended to be managed to trend towards old-growth forest. Mature/late seral stage forests would be the primary focus where those areas are trending towards old-growth forest and have the inherent capability to sustain future old-growth, taking into consideration likely future environments and those areas that provide likely climate or fire refugia. If a land management plan has already identified management or geographic areas that meet this intent, that information – or information from similar efforts that is already documented elsewhere – can be incorporated by reference into the *Adaptive Strategy*. **What Changed:** Management Approach 1.b was previously a Guideline in the version of the proposed action published in the Notice of Intent. The way this component was written did not read like a Guideline (as defined in 36 CFR 219.7(d)(iv)). Identifying and prioritizing areas to be managed for future old-growth is more appropriately considered as part of developing the *Adaptive Strategy* (see intent for Management Approach 1.a) rather than as a Guideline to be complied with during project development. A new Guideline was added (now Guideline 1) that supports Management Approach 1.b. See intent discussion under Guideline 1. The language in the beginning paragraph regarding “inherent capability to sustain old-growth” was previously included as a bullet to be considered for the purposes of management. It was determined to be more appropriate as an initial driver for identifying areas; therefore, it was removed as a bullet and added to the beginning paragraph. • Added i.; • In v., changed “retain” to “recruit”, added “future” [*development of **future** old-growth forests where current*...], added “in mature forest” [*where current conditions **in mature forest** are likely to*…], changed “meet” to “achieve; and • In vi., moved location of the word “existing”.

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Management Approach 1.c **(NOGA-FW-MA-01c)**	One or more Forest Service units may create a joint *Adaptive Strategy for Old-Growth Forest Conservation*. An already existing strategy or other document may also be used if it meets this intent and contains, or is amended to contain, all substantive elements described for Management Approach 1(a) and 1(b).	**Intent:** Allows for development of adaptive strategies across planning unit boundaries where it makes sense to do so ecologically and organizationally. *(Also see overall intent of management approaches/strategies, as described for Management Approach 1.a)* **Clarification:** If units have already completed and documented some of the steps in Management Approach 1.a. and/or 1.b (i.e. may have identified old-growth forest or future old-growth areas as part of recent plan revision/amendment processes, Collaborative Forest Landscape Restoration Program planning, other collaborative processes etc.), those documents may be updated or the information incorporated by reference into the *Adaptive Strategy*. **What Changed:** Clarified one or more "Forest Service" units. Added language to clarify that already existing strategies/documents to be used must also contain all substantive elements for Management Approach 1.a and 1.b.

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Management Approach 1.d **(NOGA-FW-MA-01d)**	Include the *Adaptive Strategy for Old-Growth Forest Conservation* as an appendix to either the broader scale monitoring strategy or the biennial monitoring report, see 36 CFR 219.12. Units should use this strategy to inform priorities. The strategy may be periodically updated (36 CFR 219.13(c)) to reflect new information and monitoring results.	**Intent:** Ties the *Adaptive Strategy* to monitoring efforts. *(Also see overall intent of management approaches/strategies, as described for Management Approach 1.a)* **What Changed:** Now 1.d instead of 1.c (as it was numbered in the Notice of Intent).
Desired Condition 1 **(NOGA-FW-DC-01)**	Old-growth forests occur in amounts and levels of representativeness, redundancy, and connectivity such that conditions are resilient and adaptable to stressors and likely future environments.	**Intent:** A desired condition is a description of specific social, economic, and/or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be directed. Desired conditions must be described in terms that are specific enough to allow progress toward their achievement to be determined, but do not include completion dates. The terms "amount", "representativeness", "redundancy", and "connectivity" are intended to drive measurable progress toward achievement of the desired condition and are consistent with planning rule requirements for ecological sustainability and ecosystem integrity. **What Changed:** Combined former Desired Conditions 1 and 2 (as they were described in the Notice of Intent) and simplified the language used to better convey intent.
Desired Condition 2 **(NOGA-FW-DC-02)**	Old-growth forests persist in areas that have the inherent capability to sustain old-growth forests over time.	**Intent:** Emphasize the importance of the ability of current old-growth forest to persist in those areas that do have the inherent capability (e.g. areas of climate or fire refugia) to sustain these conditions over time, while conversely recognizing that not all areas have this inherent capability. *(Also see overall intent of desired conditions, as described for Desired Condition 1.)* **What Changed:** This is a new desired condition that replaces the former Desired Condition 2 (as described in the Notice of Intent) that was combined with Desired Condition 1.
Desired Condition 3 **(NOGA-FW-DC-03)**	The long-term abundance, distribution, and resilience of old-growth forests within the plan area contribute to ecosystem services across the National Forest System, including but not limited to long-term stability of forest carbon, clean water and soil stabilization, plant and animal habitat, spiritual and cultural heritage values and education, and recreational and tourism experiences.	**Intent:** Recognizes the many ecosystem services provided by old-growth forests. *(Also see overall intent of desired conditions, as described for Desired Condition 1.)* **What Changed:** This desired condition was expanded to recognize the variety of ecosystem services provided by old-growth forests in addition to long-term stability of forest carbon, as carbon was the sole focus of this Desired Condition as it was described in the Notice of Intent.

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Desired Condition 4 **(NOGA-FW-DC-04)**	Old-growth forests contribute to the ecological integrity of terrestrial and aquatic ecosystems within the plan area, in concert with other successional stages that are also necessary for ecological integrity.	**Intent:** Recognizes the contributions of old-growth forests to ecological integrity, as well as recognize the role and importance of other successional stages (in addition to old-growth) that also contribute to ecological integrity. *(Also see overall intent of desired conditions, as described for Desired Condition 1.)* **What Changed:** Updated to tie ecological integrity to terrestrial and aquatic ecosystems and added language regarding "other successional stages".
Objective 1 **(NOGA-FW-OBJ-01)**	Within 2 years of the old-growth amendment record of decision, in consultation with Tribes and Alaska Native Corporations and in collaboration with interested States, local governments, industry and non-governmental partners, and public stakeholders, create or adopt an *Adaptive Strategy for Old-Growth Forest Conservation* based on geographically relevant data and information for the purpose of furthering old-growth forest desired conditions.	**Intent:** Objectives are concise, measurable, and time-specific statements of a desired rate of progress toward a desired condition or conditions. This objective clarifies expectations for developing an *Adaptive Strategy* at the unit level and sets a timeline for completing this necessary step. **What Changed:** This language was previously included as part of the Management Approach but is more appropriately included as an Objective. Clarified "Within 2 years of the old-growth amendment record of decision".
Objective 2 **(NOGA-FW-OBJ-02)**	Within one year of completing the *Adaptive Strategy for Old-Growth Forest Conservation Strategy*, integrate priorities identified in the *Strategy* into the unit's outyear program of work and initiate at least three proactive stewardship projects/activities in the planning area to contribute to the achievement of old-growth forest desired conditions.	**Intent:** Connects priorities identified in the *Adaptive Strategy* to development of a unit's outyear program of work to ensure integration of the *Strategy* at the project level. Also clarifies expectations for implementing management actions that achieve or trend towards desired conditions for old-growth forests. *(Also see overall intent of objectives, as described for Objective 1.)* **Clarification:** See the Glossary for a definition of "proactive stewardship". **What Changed:** This is a new objective (not included in the Notice of Intent).

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Objective 3 **(NOGA-FW-OBJ-03)**	Within two years of completing the *Adaptive Strategy for Old-Growth Forest Conservation Strategy,* initiate at least one co-stewardship project with interested Tribes for the purpose of proactive stewardship.	**Intent:** Connects the *Adaptive Strategy* to co-stewardship projects being developed with Tribes. This objective ties to Goal 1, Management Approach 1.a and Desired Condition 3 and clarifies expectations for including Tribes in proactive stewardship of old-growth forests. *(Also see overall intent of objectives, as described for Objective 1.)* **Clarification:** See the Glossary for a definition of "co-stewardship". **What Changed:** This is a new objective (not included in the Notice of Intent).
Objective 4 **(NOGA-FW-OBJ-04)**	Within ten years of the *Adaptive Strategy for Old-Growth Forest Conservation* being completed, forest ecosystems within the plan area will exhibit a measurable, increasing trend towards appropriate amounts, representativeness, redundancy, and connectivity of old-growth forest that are resilient and adaptable to stressors and likely future environments.	**Intent:** Establishes a desired rate of progress toward achieving desired conditions. *(Also see overall intent of objectives, as described for Objective 1.)* **What Changed:** This was previously Objective 1, as described in the Notice of Intent (NOI). Language was updated to be more expansive ("forested ecosystems" rather than "at least one landscape") and focuses on "amounts, representativeness, redundancy and connectivity" (ties to Desired Condition 1) as these are more measurable than "retention, recruitment, and proactive stewardship" (language used in the NOI).

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Standard 1 **(NOGA-FW-STD-01)**	Old-growth forests will be determined using definitions and associated criteria established in the land management plan. Where these definitions and associated criteria are found to be incomplete (i.e. only address some but not all ecosystems found in the planning area for which old-growth forest does or may exist) or are non-existent in the plan, the planning unit's corresponding regional old-growth forest definitions and associated criteria, or successor regional definitions and criteria, will be applied in part when these are incomplete or in full when non-existent.	**Intent:** A standard is a mandatory constraint on project and activity decision-making and is established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements. The intent of this standard is to clearly establish the old-growth forest definitions and associated criteria that will be used to determine where old-growth plan components/content proposed as part of this amendment will apply (i.e. where old-growth forests occur). The intent is also to clarify how existing definitions and associated criteria in land management plans (or the supporting plan environmental analysis and/or decision documents) will apply and/or be supplemented if needed, or what definitions and associated criteria will apply if none currently exists in land management plans (or the supporting plan environmental analysis and/or decision documents). **Clarification:** The term “or successor regional criteria” recognizes that regional old-growth criteria may change. Changes would occur as informed by Indigenous Knowledge and best available scientific information. Old-growth definitions and associated criteria are typically developed and managed at a regional silviculture program (or other similar program) level. **What Changed:** This is a new standard (not included in the Notice of Intent [NOI]). The version of Standard 1 that was originally included in the NOI was removed as it was found to be redundant in stating the intent of Standard 2.a, but in a reverse manner (“must not degrade” versus “for the purpose of”).

Standard 2.a **(NOGA-FW-STD-02a)**	Where conditions meet the definitions and associated criteria of old-growth forest, vegetation management may only be for the purpose of proactive stewardship. For the purposes of this standard, the term "vegetation management" includes – but is not limited to – prescribed fire, timber harvest, and other mechanical/non-mechanical treatments used to achieve specific silviculture or other management objectives (e.g. hazardous fuel reduction, wildlife habitat improvement). For the purposes of this standard, the term "proactive stewardship" refers to vegetation management that promotes the quality, composition, structure, pattern, or ecological processes necessary for old-growth forests to be resilient and adaptable to stressors and likely future environments. Proactive stewardship in old-growth forests shall promote one or more of the following: xiii. reduction of hazardous fuels to reduce the risk of loss of old-growth forests to uncharacteristic wildfire, and to facilitate the return of appropriate fire disturbance regimes and conditions; xiv. resilience to insect and disease outbreaks that would result in the loss of old-growth conditions; xv. ecological conditions for at-risk species associated with old-growth forest, including conditions needed for the recovery of threatened and endangered species; xvi. amount, density, distribution and species composition of old trees, downed logs, and standing snags appropriate for the forest ecosystem type; xvii. vertical and horizontal distribution of old-growth structures, including canopy structure and composition; xviii. patch size characteristics, percentage or proportion of forest interior, and connectivity; xix. types, frequencies, severities, patch sizes, extent, and spatial patterns of disturbances; xx. successional pathways and stand development; xxi. connectivity and the ability of old-growth obligate species to move through the area and cross into adjacent areas; xxii. culturally significant species or values, to include key understory species; xxiii. species diversity, and presence and abundance of rare or unique habitat features associated with old-growth forest; or	**Intent:** Constrain management actions to those that promote the composition, structure, pattern or ecological processes necessary for old-growth forests to be resilient and adaptable to stressors and likely future environments (i.e. as influenced by climate change and in response to wildfire, insect and disease, urbanization, etc.). *(Also see overall intent of standards, as described for Standard 1.)* **Clarification:** See the Glossary for a definition of "vegetation management" and "proactive stewardship". **What Changed:** • In beginning paragraph: updated language to specify "where conditions meet the criteria for old-growth forest"; defined the terms "vegetation management" and "proactive stewardship"; • Added reduction of hazardous fuels language and moved this to the top of the list (now i.); • Added ii; • In iv., added "species composition" and "appropriate for the forest ecosystem type"; • In v., added "and composition"; • In ix., replaced "native species" with "old-growth obligate species"; • In x., reworded to clarify culturally significant species or values includes key understory species as these are not necessarily exclusive of each other; and • In xii., added "associated with old-growth forests".

Plan Component/ Content	**Language for Modified Proposed Action**	**Intent; Clarifications** *(if needed)*; **What Changed** *(NOI to DEIS, if anything)*
	xxiv. other key characteristics of ecological integrity associated with old-growth forests.	
Standard 2.b **(NOGA-FW-STD-02b)**	The cutting or removal of trees in old-growth forest for purposes other than proactive stewardship is permitted when (1) incidental to the implementation of a management activity not otherwise prohibited by the plan, and (2) the area – as defined at an ecologically appropriate scale – continues to meet the definition and associated criteria for old-growth forest after the incidental tree cutting or removal.	**Intent:** The purpose of this standard is to provide clarification that cutting or removal of trees can occur in old-growth forest for purposes other than proactive stewardship so long as it occurs within the sideboards specified in (1) and (2). **What Changed:** This is a new standard (not included in the Notice of Intent [NOI]). Standard 2.b, as described in the NOI, is now Standard 2.c.

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Standard 2.c **(NOGA-FW-STD-02c)**	Deviation from Standard 2.a and 2.b may only be allowed if the responsible official determines that vegetation management actions or incidental tree-cutting or removal are necessary for the following reasons and includes the rationale in a decision document or supporting documentation: vii. In cases where this standard would preclude achievement of wildfire risk management objectives within municipal watersheds or the wildland-urban interface (WUI) as defined in Section 101 of the Healthy Forest Restoration Act of 2003 (16 USC 6511) and its application by the local planning unit, or would prevent protection of critical infrastructure from wildfire; viii. to protect public health and safety; ix. to comply with other statutes or regulations, valid existing rights for mineral and energy resources, or authorizations of occupancy and use made prior to the old-growth amendment decision; x. for culturally significant uses as informed by tribes or for de minimis use for local community purposes; xi. in areas designated for research purposes, such as experimental forests or research natural areas; or xii. in cases where it is determined – based on best available science, which includes Indigenous Knowledge – that the direction in this standard is not relevant or beneficial to a particular species or forest ecosystem type.	**Intent:** To provide exceptions to Standard 2.a and Standard 2.b to allow for vegetation management activities in old-growth for certain other multiple use and management considerations. *(Also see overall intent of standards, as described for Standard 1.)* 2.c.vi is intended to recognize that not all ecosystem types have the ecological capacity or ecosystem potential to achieve old-growth conditions in the plan areas. Examples may include – but are not limited to – birch, aspen, jackpine and lodgepole pine when these are further characterized by physical elements, climatic regime, or natural disturbance processes. **Clarification:** The exceptions mean management actions can occur for these purposes when they don't promote the conditions/characteristics listed in Standard 2.a.i-xi or comply with the sideboards described in Standard 2.b. Also see the Glossary for the definition for "vegetation management" and "proactive stewardship". **What Changed:** *(This was formerly Standard 2.b)* • Changed "Exceptions to" to "Deviation from"; • Moved the language about rationale for exceptions from the end of the list to the beginning paragraph and clarified rationale can also be included in supporting documentation for the decision document; • In i., expanded exception language to include municipal watersheds and protection of critical infrastructure. Added clarification of the WUI definition to be applied. (Also see added language to Standard 2.a.i as this ties to wildfire risk management objectives.) • In iii., added "valid existing rights for mineral and energy resources, or authorizations of occupancy and use made prior to the old-growth amendment decision"; • In iv., added "as informed by tribes or for de minimis use for local community purposes"; • Added v.; • In vi., added "based on best available science, which includes Indigenous Knowledge" and added "species" along with forest ecosystem type.

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Standard 3 **(NOGA-FW-STD-03)**	Proactive stewardship in old-growth forests shall not be for the purpose of timber production as defined in 36 CFR 219.19.	**Intent:** To clarify that when proactive stewardship occurs in old-growth, it shall not be for the purpose of timber production. *(Also see overall intent of standards, as described for Standard 1.)* **Clarification:** Vegetation management that cuts and removes trees may be necessary to achieve the conditions/characteristics listed in Standard 2.a.i-xi; however, timber production must be an outcome of proactive stewardship and not the driver for proposing vegetation management. See Glossary for definition of timber production. **What Changed:** This standard was completely reworded to remove obscure phrases like "for the primary purpose of growing, tending, harvesting, or regeneration of trees for economic reasons" and "ecologically appropriate harvest is permitted".
~~**Standard 4**~~ **DELETED**	~~Exceptions to standards 2 and 3 may be granted by the Regional Forester in Alaska if necessary to allow for implementation of the Southeast Alaska Sustainability Strategy and the rationale must be included in a decision document.~~	**What Changed:** This standard, as described in the Notice of Intent, has been deleted. **Clarification:** With the new Standard 2.b and changes to language in Standard 2.c.iii and 2.c.iv (Standard 2.c was formerly numbered as Standard 2.b), it was determined this exception may no longer be needed. See the discussions for Standard 2.b and 2.c for further context. **Intent:** The combined use of 2.c.iii and 2.c.iv would allow for continued implementation of the Southeast Alaska Sustainability Strategy, including for small sales for local mills, music wood, and culturally significant uses like totem poles.

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Guideline 1 **(NOGA-FW-GDL-01)**	In areas that have been identified in the *Adaptive Strategy for Old-Growth Forest Conservation* as compatible with and prioritized for the development of future old-growth forest, vegetation management projects should be for the purpose of developing those conditions.	**Intent:** A guideline is a constraint on project and activity decision-making that allows for departure from its terms, so long as the purpose of the guideline is met. Guidelines are established to help achieve or maintain a desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements. The intent of this guideline is to continue to trend areas that have been identified and prioritized for the recruitment and development of future old-growth forests (see Management Approach 1.b) towards developing those conditions when vegetation management occurs in these areas. **Clarification:** See the Glossary for a definition of "vegetation management". **What Changed:** Guideline 1 as described in the Notice of Intent was moved to Management Approach 1.b. (See discussion under Management 1.b What Changed for explanation for this change.) This is a newly worded guideline that still provides the same intent to continue trending future old-growth forest towards achieving those conditions.
Guideline 2 **(NOGA-FW-GDL-02)**	Where there are additional land management plan components for old-growth that existed prior to the old-growth amendment and these provide more restrictive direction for old-growth forests, the more restrictive direction should be adhered to.	**Intent:** Because the old-growth amendment adds but does not remove content from existing plans, this guideline is intended to provide direction on how units should proceed when aspects of plan direction for old-growth is not in clear alignment. *(Also see overall intent of guidelines, as described for Guideline 1.)* **What Changed:** This is a new guideline (not included in the Notice of Intent).

Plan Component/ Content	Language for Modified Proposed Action	Intent; Clarifications *(if needed)*; What Changed *(NOI to DEIS, if anything)*
Guideline 3 **(NOGA-FW-GDL-03)**	To preserve the cultural and historical value of old trees occurring outside of old-growth forests, vegetation management projects should retain and promote the conservation and survivability of old trees that are rare when compared to nearby forested conditions that are of a noticeable younger age class or unique in their ability to persist in the current or future environment, and are not detracting from desired species composition or ecological processes.	**Intent:** Provide for the recognition and retention of old trees that exist outside of old-growth forest that have cultural or historical value. It is also recognized there may be instances where these old trees could be detracting from desired species composition or ecological processes; therefore, there may be rationale for not retaining all old trees. *(Also see overall intent of guidelines, as described for Guideline 1.)* This guideline is not intended to apply to every old tree (subjective depending on species, ecosystem, etc.), but rather those that stand out as rare or unique when compared to those trees in surrounding younger, smaller stands or in their ability to persist over time and that have particular cultural or historical value. These may be lone trees or there may be occurrences of these trees in small groups/clumps. **Clarification:** "Old trees that are of cultural or historical value" may be referred to by various terms including, but not limited to, "elder", "legacy", "relic", or "remnant" trees. **What Changed:** This is a new guideline (not included in the Notice of Intent).
Plan Monitoring 1 **(NOGA-FW-PM-01)**	Within two years, include the areas identified and prioritized for the retention and promotion of old-growth forests in the *Adaptive Strategy for Old-Growth Forest Conservation* in the biennial monitoring report or the broader scale monitoring strategy to be updated as conditions change.	**Intent:** Plan monitoring is required as described in 36 CFR 219.12. The intent of including plan monitoring in the amendment is to focus monitoring on the areas identified in the *Adaptive Strategy* to understand how conditions change. **Clarification:** Monitoring can track condition change that occurs as part of natural succession or disturbance, after proactive stewardship/vegetation management actions occur, or due to other uses/authorizations occurring in these areas. **What Changed:** Added language to clarify monitoring should occur for those areas identified in the *Adaptive Strategy*. The introductory paragraph to the Plan Monitoring section (as it was described in the Notice of Intent) was removed.

Plan Component/ Content	**Language for Modified Proposed Action**	**Intent; Clarifications** *(if needed)*; **What Changed** *(NOI to DEIS, if anything)*
Plan Monitoring 2 **(NOGA-FW-PM-02)**	Within the biennial monitoring evaluation report, provide monitoring questions and associated indicators to assess the resilience of old-growth forests and inform adaptive management; include regular updates on actions taken pursuant to this amendment; identify unintended consequences to other social, economic, or ecologic plan objectives; and provide updates on measurable changes in unit-level old-growth forest when new national inventory information is available.	**Intent:** Plan monitoring is required as described in 36 CFR 219.12. The intent of including plan monitoring in the amendment is to ensure monitoring is documented in the biennial monitoring report that is already completed for each planning unit. **What Changed:** Expanded language to include more than "provide regular updates on actions taken pursuant to this amendment and provide updates on measurable changes in unit-level old-growth forest conditions when new information is available" (as was described in the Notice of Intent [NOI]). Clarified the monitoring questions and indicators need to assess the "resilience of old-growth forests". "New information" was also updated to clarify this is tied to national inventory data. Plan Monitoring 3 and the subsequent questions/indicators that were described in the NOI were removed to give planning units flexibility to develop questions/indicators that are tailored to the Adaptive Strategy developed at the local level. (See Appendix D, Adaptive Strategy for Old-Growth Conservation Framework for the Draft EIS for discussion of the *Adaptive Strategy for Old-Growth Conservation Framework*.)

2.3.5. Alternative 3 – More Restrictive Standards for Old-Growth

Alternative 3 responds to recommendations to restrict all commercial timber harvest in old-growth forests to provide further protections for old-growth forests. This does not prohibit other vegetation management actions from occurring; however, it is recognized that the removal of commercial timber harvest as a management tool could impact the ability to use other tools. For example, prescribed fire may be precluded if there was not an ability to thin and remove larger vegetation.

The following refers to the standards as described in Alternative 2.

Standard 3 would be updated to read as*: Proactive stewardship in old-growth forests shall not result in commercial timber harvest.*

2.3.6. Alternative 4 – Less Restrictive Standards for Old-Growth

Alternative 4 responds to recommendations to allow timber production to be a primary driver for vegetation management in old-growth forests.

The following refers to the standards as described in Alternative 2.

Standards 2.a and 2.b, and 3 would be dropped entirely.

2.3.7. Mitigation Common to All Action Alternatives

Numerous changes were made to the proposed action, as described in the Notice of Intent (and now referred to as the Modified Proposed Action, Alternative 2). Due to changes already incorporated into the proposed action, no mitigations have been identified.

2.4. Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in Table 2 focuses on how the plan components/content differ between alternatives and how plans would be strategically amended with these components/content for Alternative 2.

2.4.1. Changes Common to All Action Alternatives

All action alternatives would amend every land management plan, except those that are exempted (see Appendix C, Comparison of Current Management of Old-Growth to Amendment for the Draft EIS.), with the following plan components/content:

- Statement of Distinctive Roles & Contributions
- Goal
- Management Approach
- Desired Conditions
- Objectives
- Plan Monitoring

These plan components/content would serve to emphasize proactive stewardship in old-growth forests and mature forest that has been identified and prioritized to be managed for future old-growth, but would not constrain management actions as standards and guidelines would.

2.4.2. Changes that Would Differ Between Action Alternatives

Application of the standards and guidelines, which serve to constrain project and activity decision-making, would vary across the action alternatives. See Table 2 for a description of the differences.

Table 2: Comparison of Alternatives

No Action (Alt 1)	Modified Proposed Action (Alt 2)	More Restrictive (Alt 3)	Less Restrictive (Alt 4)
No land management plans (LMPs) would be amended. Old-growth direction, as it currently exists in LMPs, would continue to guide management actions. For those LMPs that do not currently contain old-growth direction, none would be added.	See Table 1 for the full list of plan components and content proposed for the modified proposed action. See Appendix C, Comparison of Current Management of Old-Growth to Amendment for the Draft EIS for descriptions of the change anticipated for various land management plans if the old-growth amendment were to be approved and implemented.	The following plan components, as described for the Modified Proposed Action (Alt 2), would be updated as follows: **Standard 3 would be updated to read as*:*** *Proactive stewardship in old-growth forests shall not result in commercial timber harvest.* Anticipated change for land management plans would be more noticeable for the majority of plans.	The following plan components, as described for the Modified Proposed Action (Alt 2), would be updated as follows: **Standards 2.a, 2.b, 2.c and 3 would be dropped entirely.** Anticipated change for land management plans would be similar to Alternative 2, though perhaps less noticeable, for the majority of plans.

3. Chapter 3. Affected Environment and Environmental Consequences

3.1. Introduction

The effects discussion takes into consideration all information included in the Environmental Consequences section, as well as documentation included in the project record. Pertinent specialists have reviewed the proposed activities and provided the following input regarding the degree of potential effects for the factors considered by the responsible official for significant impacts.

3.1.1. Summary of Submitted Information and Analyses

Commenters provided a range of information:

- Images, such as photographs, in support of their comments
- States and counties provided state and county-level information from their county land management plans, natural resource management plans, and Community Wildfire Protection Plans
- Scientific literature about:
    - climate change;
    - inventory, management, and threats to mature and old-growth forests;
    - wild and prescribed fire;
    - general forest management and more
- News and magazine articles and links to websites and videos about:
    - Climate change;
    - Forest management;
    - Wildfire and more
- Reference to laws and regulations, including National Environmental Policy Act, National Forest Management Act, Administrative Procedure Act, Forest Service 2012 Planning Rule, Forest Service Directives, Executive Order 14072, Federal Register notices (such as those published for other projects, rulemaking, plan amendments/revisions), etc.
- Related efforts and initiatives and previously provided comments on those efforts.
    - Climate Adaptation Strategy
    - Climate Resilience Advanced Notice of Public Rulemaking
    - Mature and Old Growth Forest Request for Information
    - Wildfire Crisis Strategy
    - *Mature and Old-Growth Forests: Definition, Identification, and Initial Inventory on Lands Managed by the Forest Service and Bureau of Land Management* technical report

    - Summary of the now published *Mature and Old-Growth Forests: Analysis of Threats on Lands Managed by the Forest Service and Bureau of Land Management* report

- Information regarding other Forest Service projects, particularly identifying projects where mature and/or old-growth forests could be impacted by proposed activities (e.g. timber harvest, road building)
- Information regarding specific Forest Plans across the country
- Case Law

This information was used to inform the agency's response, as described in Appendix A, Scoping Summary for the Draft EIS.

3.2. Affected Environment

In considering the potentially affected environment, agencies should consider, as appropriate to the specific action, the affected area (national, regional, or local) and its resources.

3.2.1. Ecology Affected Environment

The information in this section is excerpted from the Ecological Impacts Analysis Report, which is incorporated by reference as a whole for this EIS.

Introduction

A primary purpose of the 2012 Planning Rule (planning rule) is to promote the ecological integrity of national forests and grasslands and other National Forest System administrative units. Ecological integrity – a substantive requirement of the planning rule – is designed to support Ecological Sustainability (36 CFR 219.8), Diversity of Plant and Animal Communities (36 CFR 219.9), and Multiple Uses (36 CFR 219.10).

When proposing a land management plan amendment, the planning regulations (36 CFR 219), as amended, require the responsible official to identify the substantive requirements (219.8 through 219.11) of the 2012 planning rule that are directly related to the amendment based on its purpose or effects (36 CFR 219.13(b)(5)). (See the substantive requirements discussion in the Draft EIS, Section 1.9.1.) The Secretary determined that the following substantive requirements, as they relate to the Ecological Impacts Analysis, are within the scope and scale of the proposed amendment for land management plan direction for old-growth forests across the National Forest System:

- 36 CFR 219.8(a)(1)—Terrestrial and aquatic ecosystem integrity (including associated analytical considerations in 219.8(a)(1) (i through vi).
- 36 CFR 219.8(a)(1 and 2)—Watershed integrity, water quality, and soils.
- 36 CFR 219.8(a)(3)—Riparian areas.
- 39 CFR 219.9(a)(2) Ecosystem diversity.
- 36 CFR 219.9(b) Ecological conditions for species (including threatened, endangered, proposed or candidate species and potential species-of-conservation-concern). (Also see Chapter 3, sections for *Endangered Species* and *Sensitive Species*.)

The old-growth amendment is directly relevant to the requirement for ecological integrity because one of its primary purposes is "to foster the long-term resilience of old-growth forest and their *contributions to ecological integrity* across the National Forest System" (Notice of Intent, emphasis added). It's important to note that application of this requirement is tailored to the scope and scale of the amendment and that amendments may differ in their analytical processes than land management plan (LMP) revisions. Notably, LMP revisions require an assessment of ecological, economic, and social conditions, trends, and sustainability and their relationship to the LMP within the context of the broader landscape. By contrast, amendments are more targeted. They address changed conditions and/or specific circumstances needing change by adding, modifying, or removing plan components and/or changing how and where on the unit (or plan area) plan components apply. The associated analysis for amendments is therefore also targeted and limited.

The definition of an ecosystem in the Planning regulations is a spatially explicit, relatively homogeneous unit of the Earth that includes all interacting organisms and elements of the abiotic environment within its boundaries (36 CFR 219.19). Ecosystems can be distinguished at many spatial scale levels, all related to each other (Cleland et al. 1997). This can be understood by regarding them as being spatially nested. Whereas the Planning regulation applies the ecological integrity requirement to the entirety of ecosystems within plan areas, the old-growth amendment is limited to addressing one stage of stand development nested within larger forested ecosystems and the contribution of old-growth to overall ecosystem integrity and climate resilience. However, we recognize that in other contexts, old-growth forest – or even a particular stand of old-growth forest – could be recognized as an ecosystem unto itself.

The planning rule defines ecological integrity as: "The quality or condition of an ecosystem when its dominant ecological characteristics (for example, composition, structure, function and connectivity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence" (36 CFR 219.19).

Compared to historical conditions, the extent of old-growth is clearly in deficit – suggesting ecological integrity is compromised (USDA and USDI 2024b). However, those insights must be supplemented by additional factors including the loss of Indigenous influences on disturbance regimes along with changes in climatic regimes. Notably, the natural range of variation is only part of the definition of ecological integrity. By specifically capturing the ability of ecosystems to "withstand and recover from most perturbations," this definition of ecological integrity describes resilience as a fundamental component. Ecological integrity thus functions as a key component of ecological restoration and adaptation and resilience to climate change (Suding et al. 2015) and is a useful framework to guide management of terrestrial ecosystems (Carter et al. 2019).

Defining Old-growth

The regional old-growth criteria employ structural characteristics and include an attribute that captures abundance of large trees (minimum live trees per acre of a minimum size and/or minimum basal area of live trees). Many of the regional criteria also set a minimum stand age or tree age, and some definitions include standing snagss or downed wood. Each region recognizes important ecological variation by defining unique old-growth criteria for different vegetation types. Pelz et al. (2023: Table 2) provides a summary of old-growth forest structural criteria used in each region, reflecting conditions in April 2023.

In response to Executive Order 14072, the national mature and old-growth forest inventory (USDA and USDI 2024a, Pelz et al. 2023) used the old-growth forest definitions from 1989 and the regional

criteria documented in the General Technical Reports as the foundation for the first, nationally-consistent inventory of old-growth forest on all National Forest System (NFS) lands. To be nationally consistent, the inventory was constrained to using structural attributes that were available in the nationally consistent Forest Inventory and Analysis (FIA) data (Bechtold and Patterson 2005; Westfall et al. 2022). In certain cases, this necessitated making modifications to the regional old-growth criteria. In the context of this EIS, the criteria used in that national inventory will be the basis for all quantitative analysis of old-growth. See Pelz et al. (2023) and USDA and USDI (2024a) for details on methods, definitions, criteria, and estimates of old-growth forest extent on NFS lands. Also see the Ecological Impacts Analysis Report, Section 4, for more information on defining old-growth.

Ecosystem Services

Ecologically, old-growth forests provide a range of critical ecosystem services in two significant senses:

1. **Ecological Functions**: Old-growth forests contribute to carbon sequestration by storing large amounts of carbon in their biomass and soil, thereby mitigating climate change. They also enhance biodiversity by providing habitat for a wide array of species and maintaining complex ecological interactions that support ecosystem stability and resilience.
2. **Regulating Services:** These forests play a vital role in regulating water cycles and maintaining watershed health, which includes filtering water, reducing erosion, and stabilizing hydrological regimes. Additionally, they contribute to soil formation and nutrient cycling, ensuring long-term soil fertility and forest health.

See the Ecological Impacts Analysis Report for more information on ecosystem services provided by old-growth.

Biodiversity

Biodiversity is a critical ecosystem service provided by old-growth forests, which are home to a vast array of plant and animal species, including many that are rare or absent in younger forests. These forests support high levels of biodiversity due to their complex structure, with features like large trees, diverse understory vegetation, and abundant dead wood – creating a wide range of ecological niches and microhabitats (Brockerhoff et al. 2017).

Lichen diversity, for example, is significantly higher in old-growth forests. It has been extensively documented that old-growth, or at least mature, forests host significantly higher diversity and more rare lichen species compared to younger and more disturbed forests (Lesica et al. 1991; Sillett et al. 2000 McMullin and Wiersma 2019). Lichens play important roles in nutrient cycling and provide food and habitat for other species. Some species, such as *Lobaria oregana* (a canopy lichen), spread slowly to new habitats and may take centuries to recolonize a forest.

Fungi are also key components of old-growth forest biodiversity, contributing to nutrient cycling, decomposition of organic matter, and providing food for other organisms. Old-growth forests are recognized as an important reserve of fungal diversity for several fungal functional guilds, with a very large number of ectomycorrhizal species hosted in old-growth stands (Tomao et al. 2020). The diversity of fungi changes as forests age, with many species unique to old-growth stands. Maintaining high fungal diversity in old-growth forests helps sustain healthy ecosystem functioning and nutrient dynamics.

The biodiversity of old-growth forests is essential for maintaining ecosystem functioning and resilience. A diverse array of species contributes to processes like nutrient cycling, carbon sequestration, and water regulation. Old-growth forests also provide habitat for threatened and endangered species, making them biodiversity strongholds. Maintaining a mosaic of old-growth forests and forests of different ages is crucial for preserving the full spectrum of biodiversity an ecological integrity across landscapes.

Water and Watersheds

Water Quantity and Quality

Forested lands are important sources of clean water in the United States. Water is one of the most important natural resources flowing from forestlands. Nearly 80 percent of the Nation's freshwater resources originate on forested lands. National Forests are the largest source of municipal water supply in the Nation, directly serving over 60 million people in 3,400 communities in 33 states. Forested watersheds provide the highest quality and most stable water supplies of all competing land uses in North America (Caldwell et al. 2023, Brown et al. 2008, Liu et al. 2021, Murphy et al. 2020). Old-growth forests are highly retentive of nutrients. Since nutrients are retained in live vegetation, decomposing plant materials, and soils, there is less transport of nutrients in surface runoff, leading to generally higher water quality originating from old-growth forests.

Riparian Areas

Riparian areas are ecotones between terrestrial and aquatic ecosystems. They are typically defined by a variety of factors such as vegetation type, presence of groundwater or surface water, topography, and ecosystem function (Swanson et al. 1982). The age, ecological condition, and structure of riparian forests strongly influence stream ecosystem processes and the resilience of stream corridors to disturbance. Under old-growth forest conditions, large woody debris in streams creates pools and beds of stored gravel and fine sediments that are important habitat for numerous stream and stream-margin organisms (Bilby, 1981; Franklin et al., 1981) including habitat for overwinter survival of fish.

Soils

There is a wide variety of soil types across NFS lands with each one reflecting the influences of several interacting soil forming factors including parent material, climate, topography, and organism activity over time. Soils that form under forest cover have unique properties uncharacteristic of soils associated with grasslands or many soils now under cultivation. Detrital inputs from forest vegetation provide a microclimate and habitat for soil-dwelling organisms responsible for dynamic processes such as nutrient cycling among components of the forest community and the formation of soluble organic compounds from decaying detritus. Old-growth forest soils sequester significant amounts of atmospheric CO2.

Carbon

Carbon uptake and storage are essential ecosystem services our nation's forests provide (36 CFR 219.19). Old-growth forests provide a nature-based climate solution by storing large amounts of carbon over long time periods (Executive Order 14072). Carbon stewardship involves actions informed by science that provide for increased carbon uptake, storage, or stabilization in plants and soils (biogenic carbon) through ecosystem and watershed management, within the context of multiple uses and ecosystem services, and precluding the maximization of biogenic carbon at the

expense of ecosystem health or habitat. Careful stewardship of carbon uptake and its long-term storage and stability in ecosystems contributes to maintaining ecological integrity and fostering climate resilience. Consideration of carbon and its stability in old-growth forest ecosystems is essential to the Forest Service mission to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations.

Status and Trend of Old-Growth Ecosystems

In this section, we discuss the current status and trends of old-growth forests. We focus on the following key characteristics: 1) Extent; 2) Ecosystem Diversity; 3) Structure and composition; 4) Spatial Distribution; 5) Recent Change; and 6) Future Projections. See Ecological Impacts Analysis Report for additional detail on the status and trends of old-growth ecosystems.

Extent

In response to Executive Order 14072, '*Strengthening the Nation's Forests, Communities, and Local Economies*,' the USDA Forest Service conducted the Agency's first consistent inventory of old-growth forests on National Forest System lands (USDA and USDI 2024a). This national old-growth inventory relied on the forest inventory plot network collected by the Forest Inventory and Analysis (FIA) program, which is the primary source of information about the extent, condition, status, and trends of forest resources across the United States (Oswalt et al. 2019).

The national old-growth inventory estimates that there are approximately 24.7 million acres of old-growth forest on National Forest System (NFS) lands, comprising approximately 17 percent of total forested NFS lands. Notably, other recent studies offer lower estimates of old-growth forest extent than the USDA and USDI (2024a) national inventory, based on different assumptions and methodologies. For example, Barnett et al. (2023) modeled forest carbon accumulation over time using saturating, non-linear growth models and DellaSalla et al. (2022) used data derived from remotely sensed biomass, tree height, and tree density information, while the national inventory relies on forest structural criteria on FIA plots. These differences underscore the importance of clearly articulating the assumptions made and methods used when defining and inventorying old-growth forests.

The national inventory found the amount of old-growth is highly uneven both within and among NFS regions (Figure 2). For example, approximately half of all old-growth occurs in just two of the nine regions: the Pacific Northwest and Alaska Regions. As noted by Pelz et al. (2023), the inventory even underestimated the amount of old-growth in Alaska, where approximately 3.5 million acres of forested land was not included in the old-growth forest inventory due to challenges with access precluding effective application of FIA. In contrast, combined, the Southern and Eastern Regions contain only about five percent of the old-growth on NFS lands. Across regions, the extent of old-growth ranges from approximately three percent of the forested area in the Eastern Region to 27 percent of the forested area in the Pacific Northwest Region and 76 percent of the Alaska Region. Approximately 10–15 percent of forested lands in all other regions are classified as old-growth.

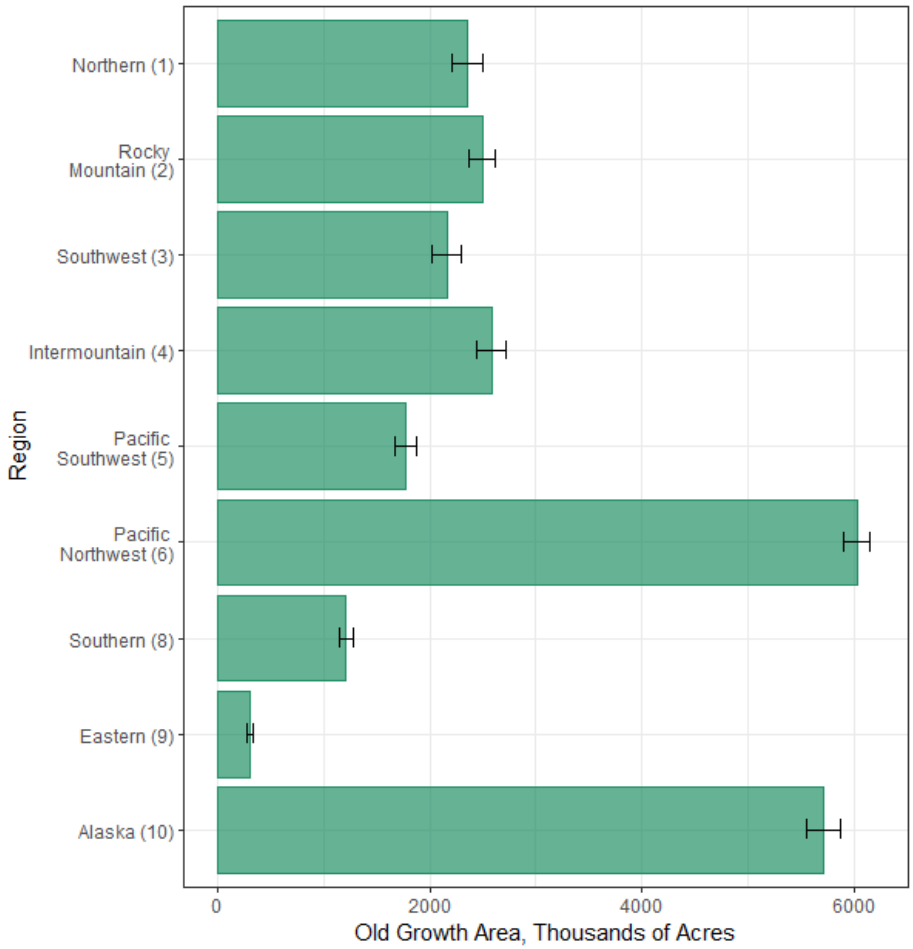

Figure 2. Estimated old-growth forest area (estimate and ±1 standard error) by Forest Service region

At the scale of individual National Forest System (NFS) units, the national inventory data indicate a wide range of old-growth abundance, ranging from 83 percent of the forested area on the Chugach National Forest to less than one percent of several forests, including the Green Mountain and White Mountain National Forests of the Eastern Region. This wide range reflects numerous factors, including the diversity in ecosystems and history of land use of what are now NFS units. Overall, for approximately half of NFS units, less than 10 percent of forested land is classified as old-growth; 38 units contain 11–20 percent old-growth; 21 units include 21–50 percent old-growth and two units, the Tongass and Chugach National Forests in Alaska, include greater than 50 percent old-growth. See Appendix 2 in the Ecological Impacts Analysis Report, which shows the estimated proportion of forested land classified as old-growth forest for each NFS unit.

Comparing the current and historical extent of an ecosystem is a common step in evaluating ecological integrity (Keith et al. 2013; Maes et al. 2020). This provides context for managing ecological systems and for identifying biodiversity values at risk when implementing forest management strategies (Wiens et al. 2012). Over the last 400 years, the extent of old-growth forests in the United States have experienced significant declines due to widespread timber harvest and land use changes (USDA and USDI 2024a, DellaSala et al. 2022). In the United States, excluding Alaska, some studies estimate that old-growth has been reduced to less than ten percent of its extent circa

1600 (Thomas et al. 1988; Spies and Franklin 1996). These studies suggest that the extent of old-growth has declined dramatically and, as such, its contribution to ecological integrity has diminished.

Ecosystem Diversity

The 2012 Planning Rule (36 CFR 219.8) emphasizes the importance of ensuring ecosystem diversity to conserve ecological integrity and biodiversity. Old-growth forests, often viewed as a single forest type, host a diverse array of plant and animal communities and develop along various pathways. Recognizing and stewarding this diversity of old-growth forests contributes to ecosystem stability, resilience, and the delivery of ecosystem services.

One of the most important distinctions of forest ecosystems, including old-growth forests, is between forests that characteristically experience frequent, low-severity fires (with return intervals of 35 years or less, on average) and infrequent-fire forests (with average intervals greater than 35 years). Based on FIA data, old-growth forest types with frequent-fire regimes comprise just over half of National Forest System (NFS) lands but include only 37 percent of the total old-growth. By contrast, approximately 67 million acres of NFS forested land are infrequent fire regimes, with approximately 23 percent classified as old-growth. Table **3** shows the proportion of each region classified as frequent versus infrequent fire regime and the proportion of the area classified as old-growth.

Table 3: Proportion of frequent-fire versus infrequent-fire land by Forest Service region

Region	Total Forest Land: Frequent Fire Regime (1,000 acres)	Total Old Growth: Frequent Fire Regime (1,000 acres)	Percent of Frequent Fire Regime as Old Growth	Total Forest Land: Infrequent Fire Regime (1,000 acres)	Total Old Growth: Infrequent Fire Regime (1,000 acres)	Percent of Infrequent Fire Regime as Old Growth
All NFS Lands	72,102	9,172	13%	67,329	15,483	23%
Northern Region	6,819	504	7%	13,841	1,992	14%
Rocky Mountain Region	6,298	1,151	18%	8,132	1,327	16%
Southwestern Region	11,003	1,474	13%	4,223	629	15%
Intermountain Region	7,079	895	13%	13,156	1,733	13%
Pacific Southwest Region	12.697	1,610	13%	1,551	82	5%
Pacific Northwest Region	10,778	2,224	21%	11,421	3,809	33%
Southern Region	13,098	1,161	9%	-	-	-

Region	Total Forest Land: Frequent Fire Regime (1,000 acres)	Total Old Growth: Frequent Fire Regime (1,000 acres)	Percent of Frequent Fire Regime as Old Growth	Total Forest Land: Infrequent Fire Regime (1,000 acres)	Total Old Growth: Infrequent Fire Regime (1,000 acres)	Percent of Infrequent Fire Regime as Old Growth
Eastern Region	4,330	152	4%	7,459	149	2%
Alaska Region	-	-	-	7,547	5,764	76%

Data source: Forest Inventory and Analysis (FIA) database, downloaded 7/25/2023. The classification of FIA plots as frequent- or infrequent-fire regime is based on the old-growth vegetation type.

To evaluate the representation of old-growth forests across different vegetation types, we utilized existing regional classifications of old-growth vegetation types, which were then applied to field plot data from FIA (USDA and USDI 2024a; Pelz et al. 2023). The national inventory identified more than 200 unique forest vegetation types across all National Forest System regions. These types were further grouped into 80 categories, each containing at least ten FIA plots to ensure robust estimates (USDA and USDI 2024a; Woodall et al. 2023). The original 200 vegetation types and subsequent groupings can be found in the national inventory (USDA and USDI 2024a: Appendix 1, Old-growth Vegetation Types). See "20240603BASIRegionalOldGrowthSummary" in the project record for detailed ecological descriptions of different types of old-growth forest. Appendix 3 of the Ecological Impacts Analysis Report shows the estimated amount of old-growth by vegetation type grouping based on FIA data.

Based on FIA data, the most common old-growth vegetation types are Mountain Hemlock and Sitka Spruce (Figure 3). Together, these two types include over three million acres of old-growth, which represents more than 70 percent of the extent of these types on National Forest System lands. Outside of Alaska, the White/Grand fir type in the Pacific Northwest and the Spruce/fir/mountain hemlock type in the Northern Region are also relatively abundant, representing approximately 1.4 million acres (26 percent of the forest type) and 1.2 million acres (17 percent of the forest type), respectively. The oak and longleaf pine forests in the Southern Region are also reasonably well represented with 822,000 acres (17 percent of the forest type) and 145,000 acres (20 percent of the forest type), respectively. Overall, approximately 30 of the 80 forest type groups contained at least 20 percent old-growth, as shown in Appendix 3 of the Ecological Impacts Analysis Report.

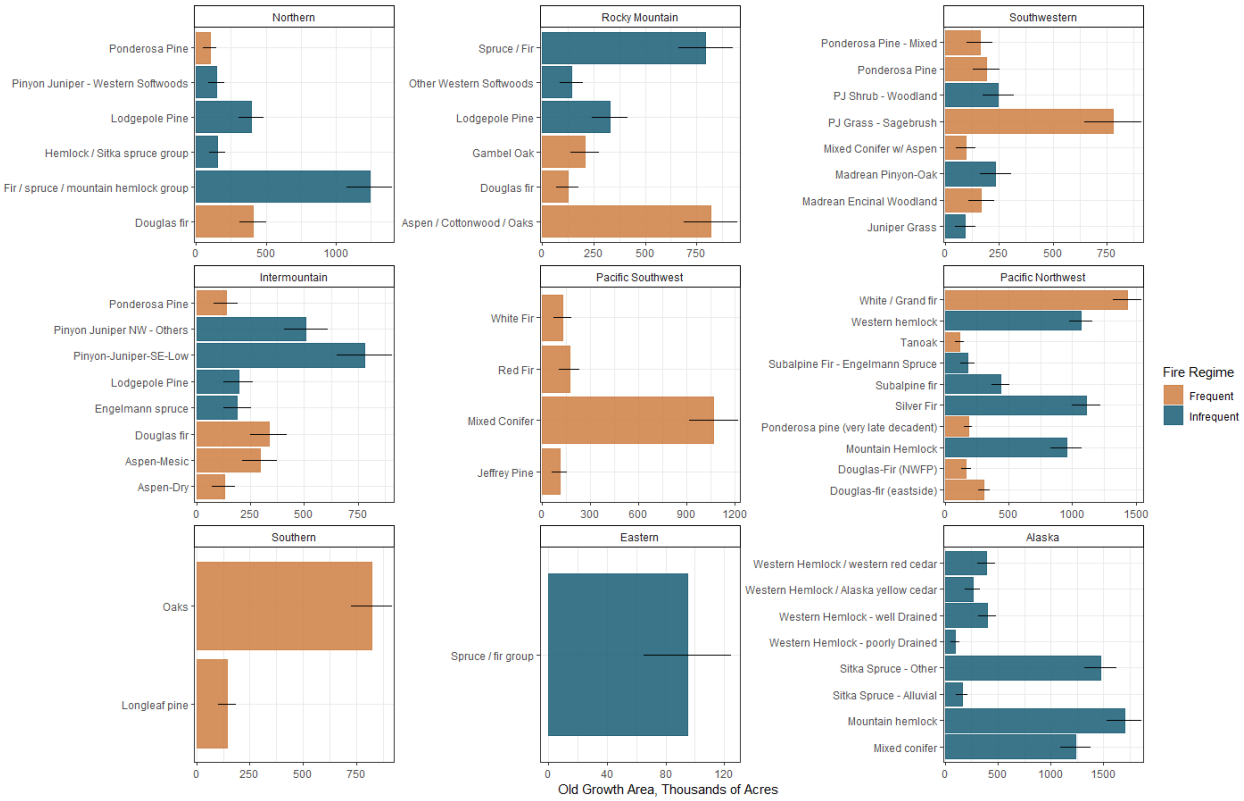

Figure 3. Thousands of acres of old-growth on National Forest System lands, by old-growth forest type grouping (see Appendix 1). Data source: FIA. Only forest types that had a total of at least 90,000 acres of old-growth are included.

By contrast, 17 of the 80 vegetation types contained five percent or less old-growth forest, based on the FIA data. Some vegetation types, such as hardwood forests in the western United States, are naturally rare and, as such, national-scale data such as FIA are unlikely to detect old-growth in these systems. For other types, such as the Northern Hardwoods of the Eastern Region, FIA identified nearly six million acres of the forest type on National Forest System lands but only 54,000 acres of old-growth, or less than one percent. Similarly, out of an estimated four million acres of conifer forests (excluding longleaf pine) in the Southern Region, less than one percent was classified as old-growth. Conserving rare ecosystems, which often contain unique and vulnerable ecological elements and are frequently of special interest to local communities, presents a particularly noteworthy opportunity for conservation efforts in the United States.

Structure and Composition

Forest structure encompasses the physical arrangement and organization of components within a forest ecosystem, including the spatial distribution of trees, canopy cover, tree height, understory vegetation, and the presence of dead wood. Species composition of ecosystems refers to the identity and relative abundance of different species present. Together, structure and composition influence various ecological processes, such as nutrient cycling, energy flow, and the provision of ecosystem services.

Most research shows that the prolonged absence of frequent low-to-moderate severity fires has led to widespread changes in the structure and composition of frequent-fire forests in North America

(Eisenburg et al. 2024, USDA and USDI 2024b, Hagmann et al. 2021, Hanberry et al. 2018). Based on LANDFIRE, in frequent-fire forests, the structure of old forests has shifted from a generally open-canopy structure that would maintain low severity fires to a closed canopy structure that is highly vulnerable to stand-replacing fires (Figure 4).

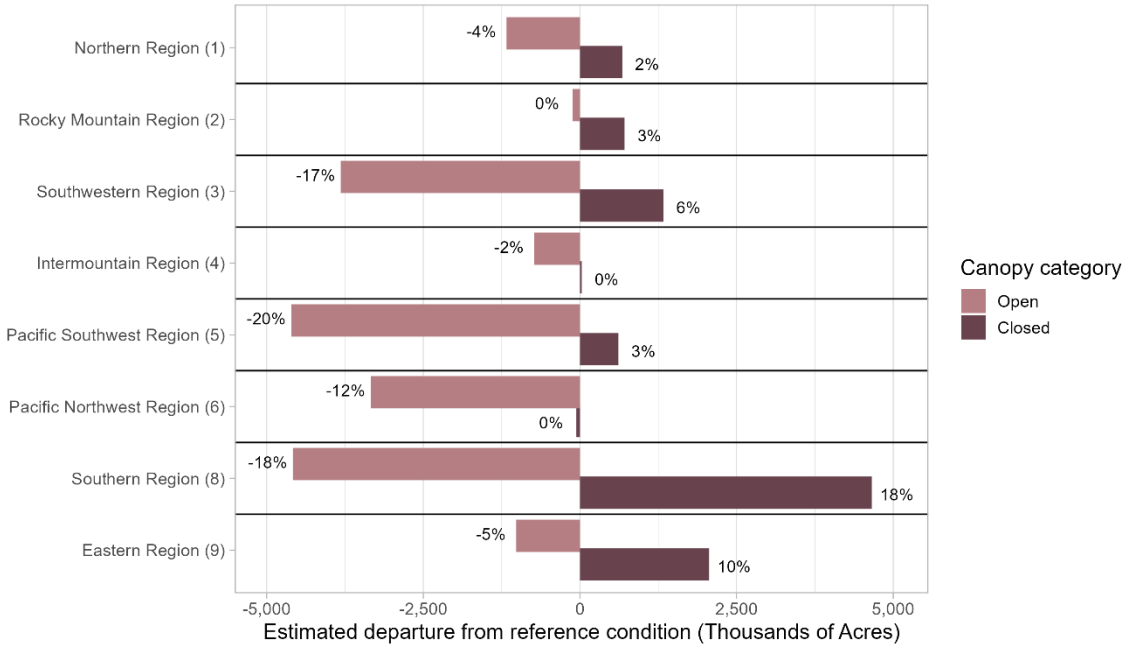

Figure 4. Estimated difference between current (2020) and pre-settlement extent of late-successional frequent-fire forest with open or closed canopy structure across National Forest System regions. Late succession forest area during the pre-settlement period is estimated from the LANDFIRE dataset by applying its estimated forest succession class proportions to the forested land area of the corresponding biophysical setting, region and canopy category.

The disruption of this frequent-fire regime has led to a decrease in fire-adapted species and an increase in shade-tolerant and fire-sensitive species. Traditional cultural burning in pine and mixed-conifer forests also promoted open canopy conditions that supported diverse understories of native grasses and herbs providing foods and medicines for people, as well as forage conditions for hunted animals (Eisenburg et al. 2024).

Structure and composition of old-growth forests in the eastern United States are threatened by mesophication, a process characterized by the transition of oak, hickory, and other frequent-fire deciduous forests to shade-tolerant, late successional species-dominated forests. This phenomenon has been exacerbated by elimination of cultural burning and the suppression of fires, leading to a shift in plant communities towards more mesic species (Abrams and Nowacki 2020, Abrams et al. 2022, Hutchinson, 2024). Hardwoods, particularly oaks (e.g., water oak and laurel oak), sweetgum, tulip-tree, black gum, and red maple, representing the current "southern mixed hardwood forest" were once rare but are now abundant (USDA and USDI 2024b, Varner et al. 2005; Ware et al. 1993). These now closed-canopy forests dramatically reduce understory biodiversity and alter structure and processes in what were historically open, grass- and pine-dominated systems. These transformations in vegetation have had cascading impacts on herbaceous diversity, vertebrates, and invertebrates throughout these regions. The ongoing mesophication in forests is expected to persist, creating a climate disequilibrium in these ecosystems (Nowacki and Abrams, 2014).

In addition to disrupted fire regimes, loss of native foundation tree species to introduced pests and pathogens has profoundly altered the structure and function of many forest ecosystems. In certain cases, nonnative pests and pathogens have been the strongest driver of change, dramatically altering forest structure and composition and key ecosystem functions (Kane et al. 2018). For example, in eastern forests the loss of eastern hemlock and American chestnut and declines in ash, elm, and beech have fundamentally altered ecosystem composition structure and related processes such as hydrology, food webs, and the transfer or energy and nutrients (Ellison et al. 2005). In the West, whitebark pine has experienced a severe population decline largely due to a fungal disease introduced from Europe. The structure and composition of high elevation forests in the West have been fundamentally altered with the loss of this long-lived, foundational species with cascading effects on ecosystem services.

At finer spatial scales, the presence of individual old trees, both within and outside of old-growth forests, represents a critical structural element that provides essential habitats for a diverse array of species and significantly contributes to carbon sequestration, biodiversity, and overall ecosystem resilience. The rarity of old trees in comparison to historical conditions, as well as their keystone ecological functions and services, highlight their conservation value (Manning et al., 2006). Large old trees exert a significant influence on the spatial distribution and abundance of various plant and animal species (Lindenmayer and Laurance, 2016) and recent studies underscore the importance of managing and conserving old trees to ensure the persistence of tree-related microhabitats, such as insect galleries and exposed sapwoods (Kozak et al., 2023). In forests prone to frequent fires, old trees have evolved characteristics such as thick, fire-resistant bark, deep root systems, complex crown architecture, high heartwood to sapwood ratios, and they provide unique habitats for wildlife (Kolb et al., 2007). The presence of old trees outside of old-growth forests, which are often biological legacies resulting from intermediate disturbances, support ecosystem processes and biodiversity (Franklin et al. 2003). However, the conservation of old trees is crucial not only for maintaining biodiversity and ecosystem functions but also for preserving cultural heritage, traditional practices, and social values. Old trees are deeply rooted in human culture, carrying various cultural and aesthetic values and symbolic significance (Liu et al. 2019). They are often referred to as heritage trees due to their natural and cultural significance, providing humans with aesthetic, symbolic, religious, and historic values (Thirumurugan et al. 2021; Blicharska and Mikusiński 2014).

Spatial Distribution

The spatial distribution of old-growth ecosystems has important implications for their ecological integrity, potential for restoration, and long-term persistence. The location and relative configuration of old-growth patches across a landscape are recognized as fundamental properties of resilience because spatial attributes influence exposure to threats and responses to disturbances (Chambers et al. 2019). Moreover, adequate spatial distribution contributes to maintaining connectivity which, in turn, influences key ecological processes, such as foraging movements, seasonal migrations, gene flow, and range shifts in response to environmental change (Bennett 1999). Appendix 4 of the Ecological Impacts Analysis Report shows the spatial distribution of old-growth forest across firesheds (areas of about 25,000 acres each) within National Forest System (NFS) units.

At finer scales, recent research has underscored how climate refugia – small areas that are relatively buffered from contemporary climate change – play a disproportionately large role in the long-term persistence of species and ecosystems (Pradhan et al. 2023, Morrelli et al. 2016). Similarly, fire refugia – areas that burn less severely or less often than the surrounding landscape – have been shown to promote persistence or expansion of old-growth forests (Krawchuk et al. 2020). Because they are less vulnerable to severe wildfire or climate change, old-growth forests located in refugia

may disproportionally sustain biodiversity, improve carbon stewardship and ecosystem functions over upcoming decades (Krawchuk et al., 2020; Morelli et al., 2020). The location of refugia is influenced by both topo-climatic factors and current vegetation, which can vary at fine geographic scales in biologically and topographically diverse landscapes.

Currently, reliable information about the location of old-growth forests relative to fire refugia across the National Forest System (NFS) is lacking. However, a cooperative effort between Forest Service NFS and R&D provides estimates of the distribution of climate refugia within NFS lands (Table 4). This analysis was based on Thorne et al. (2020) and adapted to produce results for the contiguous United States (CONUS). See the Ecological Impacts Analysis Report for more detail on methodology and results of this analysis.

Table 4. Percent of CONUS NFS lands in each climate refugia likeliness category, based on model outputs, for two future periods under the RCP 8.5 climate scenario, as well as the current extent of old-growth for each category.

Climate Refugia Likeliness Category	Mid-century (2035-2064)	Estimated area of current old-growth in mid-century refugia areas and 90% C.I. (1,000s Acres)	End of century (2070-2099)	Estimate of current old-growth in end-of-century refugia areas and 90% C.I. (1,000s Acres)
Very likely refugia	25%	5,550 (5,281 - 5,819)	4%	1,029 (904 - 1,154)
Likely refugia	25%	4,873 (4,620 - 5,127)	23%	5,315 (5,049 - 5,582)
Uncertain refugia	14%	2,482 (2,302 - 2,662)	22%	3,909 (3,686 - 4,131)
Unlikely refugia	17%	2,886 (2,698 - 3,074)	29%	4,841 (4,597 - 5,084)
Very unlikely refugia	20%	3,169 (2,978 - 3,361)	23%	3,867 (3,655 - 4,079)

Recent Change

FIA plot data were analyzed to estimate the recent net change in old-growth forest extent. This analysis used FIA plots that were measured more than once between 2000 and 2020 (measurement year and remeasurement intervals vary by state; see USDA and USDI 2024b). Figure 5 shows the results of the FIA data analysis at the national and regional scales. Nationally, the amount of old-growth has remained steady at approximately 25 million acres during the most recent FIA remeasurement cycle. However, at the regional level, there is important variation in net change of old-growth forest. Some regions, such as the Northern Region and the Intermountain Region, have seen declines of more than 400,000 acres during this period. The Pacific Northwest and Eastern Regions, on the other hand, experienced an increase of approximately 400,000 acres of old-growth. This represents approximately a seven percent increase for the Pacific Northwest Region and approximately 50 percent increase for the Eastern Region.

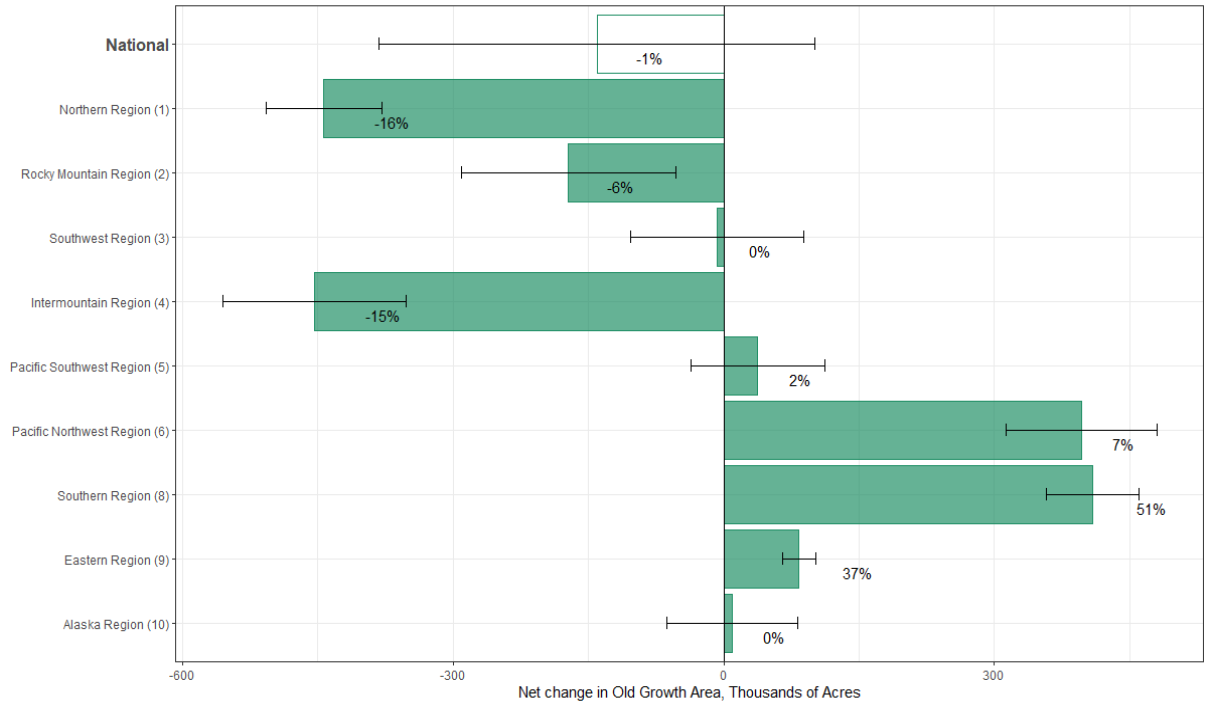

Figure 5. Net change in old-growth area. Error bars represent ±1 standard error.

To understand factors contributing to recent change in old-growth forest, methods from the *Mature and Old-Growth Forests: Analysis of Threats on Lands Managed by the Forest Service and Bureau of Land Management* report (USDA and USDI 2024b) were repeated for just NFS lands. The relative contribution of disturbance to change in the amount of old-growth varied widely across regions (Figure 6). Nationally, disturbance from fire and insect and disease were the most common disturbances in old-growth forest. An estimated 1.02 million acres of old-growth forest were disturbed by fire (approximately 60,000 acres per year). Forests that experienced low basal area loss showed net gains in old-growth forest, demonstrating that low-severity fire does not necessarily threaten old-growth. An estimated 5.1 million acres of old-growth forest were disturbed by insects and disease (both native and non-native species). In forests disturbed by insects and disease, there was a 273,000 acre decrease in old-growth forest extent. Results of the FIA re-measurement analysis showed that tree cutting was not a major threat to old-growth during the most recent remeasurement period (USDA and USDI 2024b).

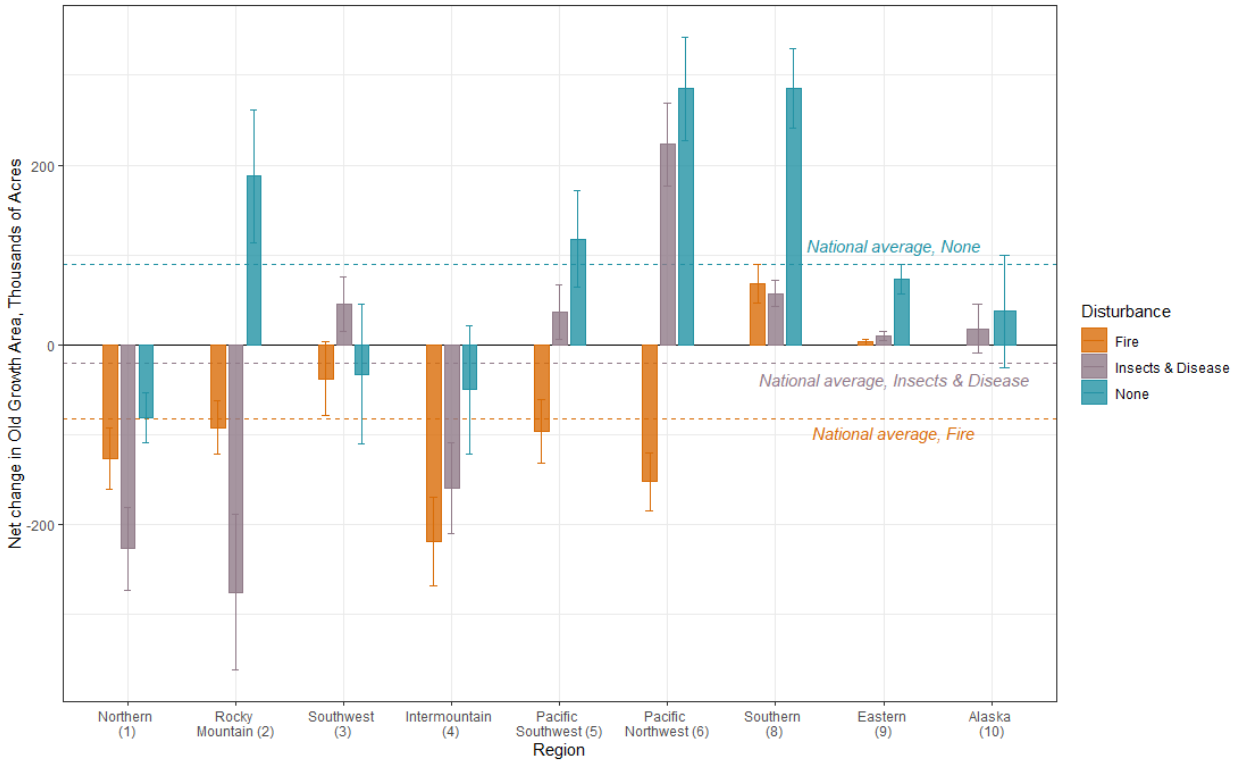

Figure 6. Relative contribution of disturbance to change in the amount of old-growth. Error bars represent a ±1 standard error.

Future Projections

For this analysis, the Forest Dynamics Model projections from the 2020 Resources Planning Act (RPA) Assessment were summarized specifically for old-growth forests on National Forest System lands across the contiguous U.S. The model is informed by climate, timber prices, human population, and income, as well as by a set of sub-models representing harvest choices, forest disturbance, growth, aging, regeneration, and forest type transitions over time. For detail about methods and assumptions underlying the Forest Dynamics Model, see the *Mature and Old-Growth Forests: Analysis of Threats on Lands Managed by the Forest Service and Bureau of Land Management* report (USDA and USDI 2024b), and Coulston et al. (2023a, b).

As Figure 7 shows, RPA projections show little net change in mature and old-growth forest area on Forest Service lands across the contiguous U.S. Losses from mature and old-growth due to disturbance are offset by growth and succession that transform younger forests into mature and old-growth. Younger, mature, and old-growth trends from these projections were consistent with the overall forest succession and aging trends projected for all forests in the contiguous U.S. in the 2020 RPA Assessment (Coulston et al. 2023). Regional differences are shown in Appendix 7 of USDA and USDI (2024b).

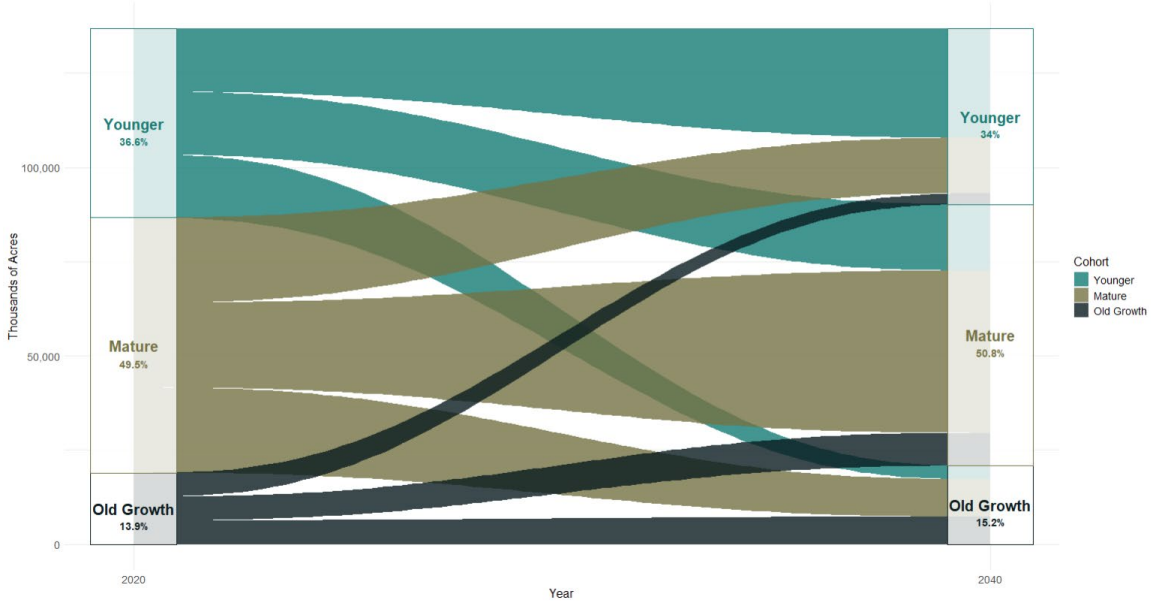

Figure 7. The modeled transition between younger, mature, and old-growth forest classes from 2020 to 2040. Percentages in the labels represent the relative proportion of each forest class compared to total forest area at the time point. Flows are colored based on the forest class in 2020.

Drivers and Stressors

In this section, we present an overview of the major natural or human-induced drivers and stressors affecting old-growth forest. Stressors are factors that may directly or indirectly degrade or impair ecosystem composition, structure, or ecological processes and negatively affect ecological integrity (36 CFR 219.19). Drivers cause change to ecological system, although they do not necessarily impair ecological integrity. In fact, some drivers are necessary to support ecosystem integrity. Some drivers may become stressors when they occur outside of their expected frequency, severity, or extent. Drivers and stressors may interact with each other to create complex effects and feedback loops and can impact social and economic sustainability as well as ecological sustainability. For example, the interaction of climate change and past forest management practices has amplified the frequency, scale and severity of disturbance events leading to more extreme wildfire and declining forest conditions (Eisenberg et al. 2024, Hessburg et al. 2021, Domke et al. 2023).

"20240603BASIRegionalOldGrowthSummary" in the project record details the major drivers and stressors for different types of old-growth. See also the Ecological Impacts Analysis Report for additional context and analysis of old-growth stressors.

Fire

Fire – whether wildfire, cultural burning, or prescribed – is a dominant ecological disturbance in many old-growth forest ecosystems. Fire can be a requirement to drive healthy ecosystems (Clark et. al. 2024, Costanza et. al. 2023) or behave as a stressor to ecosystem integrity (Hessberg et. al. 2021). Fire frequency, size, intensity, and seasonality are directly influenced by climate and weather conditions. Effects from fire depend on initial forest condition, fire severity (measure of vegetation loss or soil exposure) and size, and forest condition following the fire (USDA and USDI 2024b). In many old-growth systems, the ecological integrity of the forest depends upon fire disturbance, as the structure and function of vegetation are closely intertwined with the role of fire.

Across the nation, FIA data estimated that 1.7 million acres or 6.8 percent of old-growth forest on National Forest System lands experienced fire between 2000-2020, resulting in 0.7 million fewer acres of old-growth forest, a 2.6 percent decrease. No fires were recorded on plots in Alaska. This inventory data also shows the largest decreases in extent of old-growth disturbed by fire occurred primarily in the West in fir/spruce/mountain hemlock, Douglas-fir, lodgepole pine, ponderosa pine, California mixed conifer, pinyon/juniper, and other western softwoods FIA forest type groups. In the eastern U.S., the extent increased in these fire-disturbed old-growth forest type groups. Loblolly/shortleaf pine, oak hickory, and longleaf/slash pine forests were the most changed (USDA and USDI 2024b).

In fire-disturbed old-growth forests, 32 percent experienced low fire severity, 18 percent moderate fire, 18 percent moderately severe fire, and 33 percent severe fire (Figure 8). Forests with low severity fire showed net gains in old-growth forest acreage (7.8 percent), while there was significant net loss in old-growth forest experiencing severe fire (30.4 percent). Old-growth that experienced moderate and moderately severe fire also had net loss in acreage, 5.5 percent, and 10.8 percent respectively.

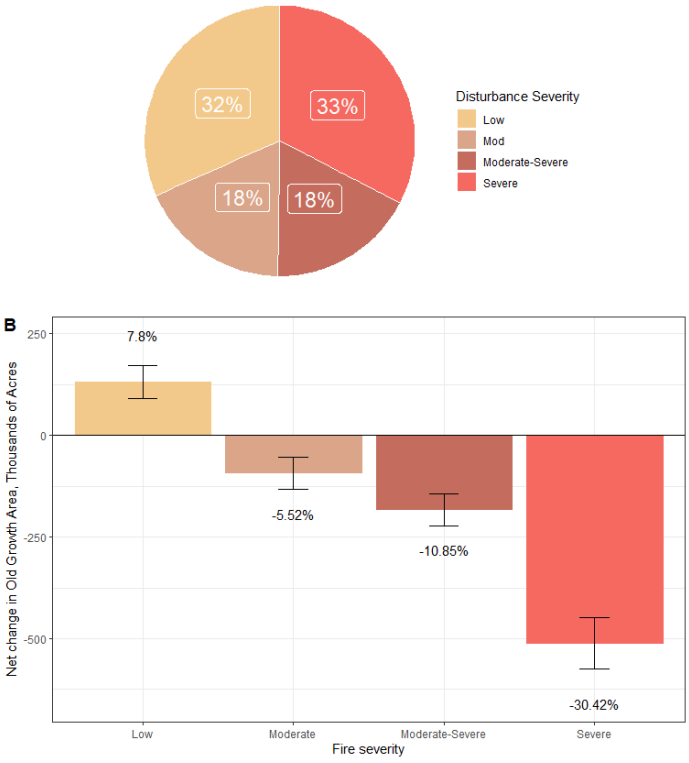

Figure 8. A) Fire severity by effects level in fire-disturbed old-growth forest. B) Net changes in area of old-growth forest that experienced fire disturbance calculated from re-measured FIA plots ±1 standard error. Percent change is calculated by acres of net change/acres of total old-growth disturbed by fire. (Severity class: Low = less than 25% basal area loss; Moderate = 25-59% basal area loss, Moderate-severe = 60-90% basal area loss, and Severe = greater than 90% basal area loss.

Fire Exposure

Nation-wide projections indicate a growing risk of exposure to moderate and high severity fire over time. Areas with moderate and high burn severity in the later part of the last century have more than

quadrupled in the last 20 years (Anderegg et. al. 2022, USDA and USDI 2024b). From 1980–1999, less than half of mature and old-growth forests had exposure to high risk. From 2000–2019, 70–80 percent were exposed. By the end of this century (2080–2099), climate change projections predict an increase in this exposure to 95–100 percent of old-growth forests (USDA and USDI 2024b).

Escalating risk of severe fire exposure over the next century means that a progressively higher proportion of old-growth forests will likely experience annual adverse effects from fire (Costanza et al. 2023). While the threat from moderate to high severity wildfire primarily occurs in the West during the early part of this century, by the end of the century, predicted climate change and increased exposure to high-risk fire expands risk of severe wildfire from the West to most of the East (Figure 3 in USDA and USDI 2024b).

Fire Exclusion

Fire exclusion began centuries ago, long before wildfire suppression policies emerged in the late 19th century (Dovetail 2021a, USDA 2024). For thousands of years, Indigenous communities in North America have used fire to intentionally manage the ecosystems they live in (Dovetail 2021a) including old-growth forest (USDA and USDI 2024b). This cultural burning serves to connect people to the landscape and transmit cultural practices, ceremony, language, and understanding of place, in addition to maintaining important habitats (Dovetail 2021a). The arrival of Europeans and disease in the 15th century killed up to 80–90 percent of the Indigenous population, displaced remaining communities, and interrupted traditional use of fire across much of the landscape (Eisenberg et. al. 2024, Dovetail 2021a, Clark et. al. 2024).

Suppression and the absence of frequent cultural burning and other Indigenous stewardship practices have led to dense forests of today that are vulnerable to drought, forest insects and diseases, and wildfires (Eisenberg et. al. 2024, Clark et. al. 2024). Attitudes towards indigenous cultural burning and fire suppression policy have shaped, and continues to shape, modern attitudes and management responses to fire and has had long-lasting cultural impacts. (Dovetail 2021b, Eisenberg et. al. 2024, Calkin et. al. 2015, Clark et. al. 2024, Peet et. al. 2018).

Results of the mature and old-growth condition assessment (MOGCA) analysis (USDA and USDI 2024b) reveal about 37 percent of old-growth forests currently have very low exposure to the threat of fire deficit, 18 percent have low exposure, 20 percent have moderate exposure, 14 percent have high exposure, and 11 percent have very high exposure. Forest types with the highest threat of fire deficit were loblolly/shortleaf pine (95 percent), oak/hickory (87 percent), ponderosa pine (68 percent), Douglas-fir (37 percent), and piñon-juniper (31 percent) (USDA and USDI 2024b).

Insects and Disease

Similar to other ecological disturbances, low to modest levels of tree-killing insects and pathogens in forests can increase ecological diversity, species diversity, and structural diversity as many organisms have evolved along with their plant hosts. However, non-native insects and disease have almost eliminated certain dominant overstory trees. No other disturbance agent has effectively eliminated forest tree species, or even genera, from forests in the United States as quickly as forest pests (Potter et. al. 2019).

Across the nation, approximately 22 percent of old-growth forest on Forest Service managed land was disturbed by insects and disease (native and non-native species) between the years 2000-2020. This represented 5.4 million acres of old-growth forest and resulted in 0.3 million acres (1.1 percent) less old-growth forest (USDA and USDI 2024b). The largest decreases in extent of old-growth

occurred in lodgepole pine forests, fir/spruce/mountain hemlock, Douglas-fir, other western softwoods forest type groups in the West, followed by oak/hickory and aspen/birch because of insects and disease disturbance. Most areas (72 percent) experienced a low severity event, i.e. low tree mortality and these areas showed a net gain in extent of old-growth. However, old-growth exhibiting moderate to severe disturbance effects (28 percent total) showed significant net loss in extent of old-growth forest. These net changes by severity are seen in Figure 9.

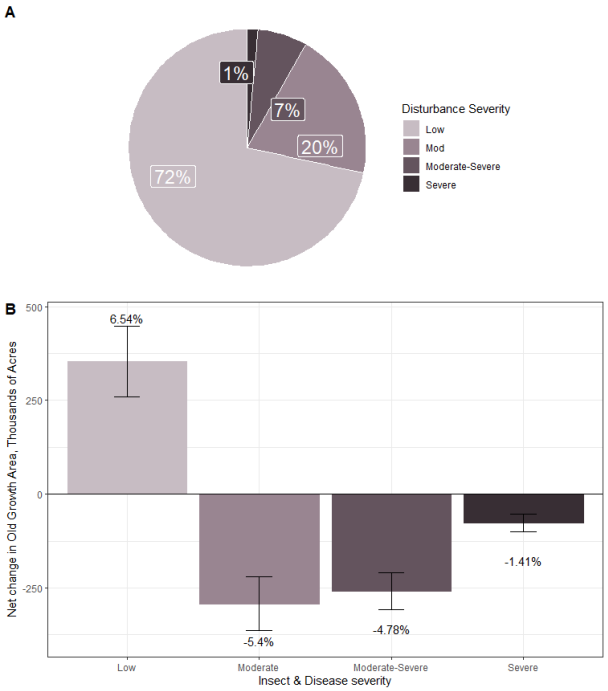

Figure 9. A) Insects and disease impacts by effects levels in insects- and fire-disturbed old-growth forest. B) Net changes in area of old-growth forest that experienced insect and disease disturbance calculated from remeasured FIA plots ±1 standard error. Percent change is calculated by acres of net change/acres of total old-growth disturbed by insects and disease. (Severity class: Low = less than 25% basal area loss; Moderate = 25-59% basal area loss, Moderate-severe = 60-90% basal area loss, and Severe = greater than 90% basal area loss).

USDA and USDI (2024b) also identified exposure to insect and disease outbreaks. For this analysis, the term exposure is defined as the magnitude or degree of change in climate or other factors a species or system is likely to experience. Results indicate about 85 percent of old-growth forests had very low exposure to insect and disease hazard, nine percent had low exposure, four percent moderate exposure, and both high and very high exposure had one percent each. Old-growth forest type groups with the highest exposure were fir/spruce/mountain hemlock, followed by Douglas-fir, and ponderosa pine (USDA and USDI 2024b).

Extreme Weather

Extreme weather events (e.g. droughts, flooding, hurricanes, tornadoes, severe thunderstorms) are occurrences of weather phenomena that fall along the periphery of historical measurements for a particular place and/or time. Extreme weather events are a natural component of forest ecosystems across the nation, typically producing disturbances in small patches and killing limited numbers of large trees. Based on FIA plot remeasurements since the start of this century, extreme weather events have not accounted for much change in the areal extent of old-growth forests (USDA and USDI

2024b). However, the frequency, intensity, duration, and/or extent of extreme weather events are increasing as well as the interactions among these disturbances (USGCRP 2018, Domke et al. 2023). The overall exposure and sensitivity to these disturbances will vary across the nation, but these increasing trends may present localized challenges as weather-related changes in old-growth forest structure and function may increase susceptibility to other threats (Vose et al. 2018).

Vegetation Management

Vegetation management can be a stressor in old-growth forests, but it can also be an important driver of restoration and positive transformation (USDA and USDI 2024b). Interactions among climate, disturbance, and vegetation have always been complex and can create or worsen threats (Loehman et al. 2020, Sample et al. 2022). Cultural burning and other indigenous stewardship have shaped these ecosystems for thousands of years (Hankins 2021). Whereas high-grade logging preferentially removed large, old trees from historically fire-maintained forests and savannas, today, ecological silviculture can be a valuable tool, alongside prescribed fire and cultural burning, to maintain and restore resiliency in old-growth (Hagmann et al. 2021, Davis et al. 2024, Hanberry et al. 2020, Eisenberg et al. 2024).

Silvicultural approaches can aid in restoring old-growth attributes by mimicking natural forest dynamics and promoting structural complexity and biodiversity (Ducey et al. 2013, Bauhaus et al. 2009). Thinning can accelerate individual tree growth, aiding in the restoration of large trees and old forest structures (Case et al. 2023). Prescribed fire and cultural burning can reintroduce fire as a natural modifier of vegetation that can help reduce vulnerability in fire-dependent old-growth forest ecosystems. (Davis et al. 2024, Hanberry et al. 2020, USDA and USDI 2024b). Vegetation management can also accelerate the restoration process and promote the development of old-growth-like characteristics (Spies et al. 2013, Bragg et al. 2008). Best available science, which includes Indigenous Knowledge, guides management approaches that will vary based on the forest type, existing condition, and site characteristics (Bragg et al. 2008, Clark et al. 2024, Loehman et al. 2020, Sample et al. 2022, USDA and USDI 2024b). Often a combination of practices may be necessary for success and repeated treatments may be important to maintain resiliency after initial activities have been completed (Reinhardt et al. 2008, Fulé et al. 2012, Stephens et al. 2012b, Kalies and Yocom Kent 2016). For example, a recent meta-analysis found overwhelming evidence that mechanical thinning combined with prescribed burning was effective at reducing subsequent wildfire severity by 72 percent compared to 27 percent reduction for thin only treatments (Figure 10).

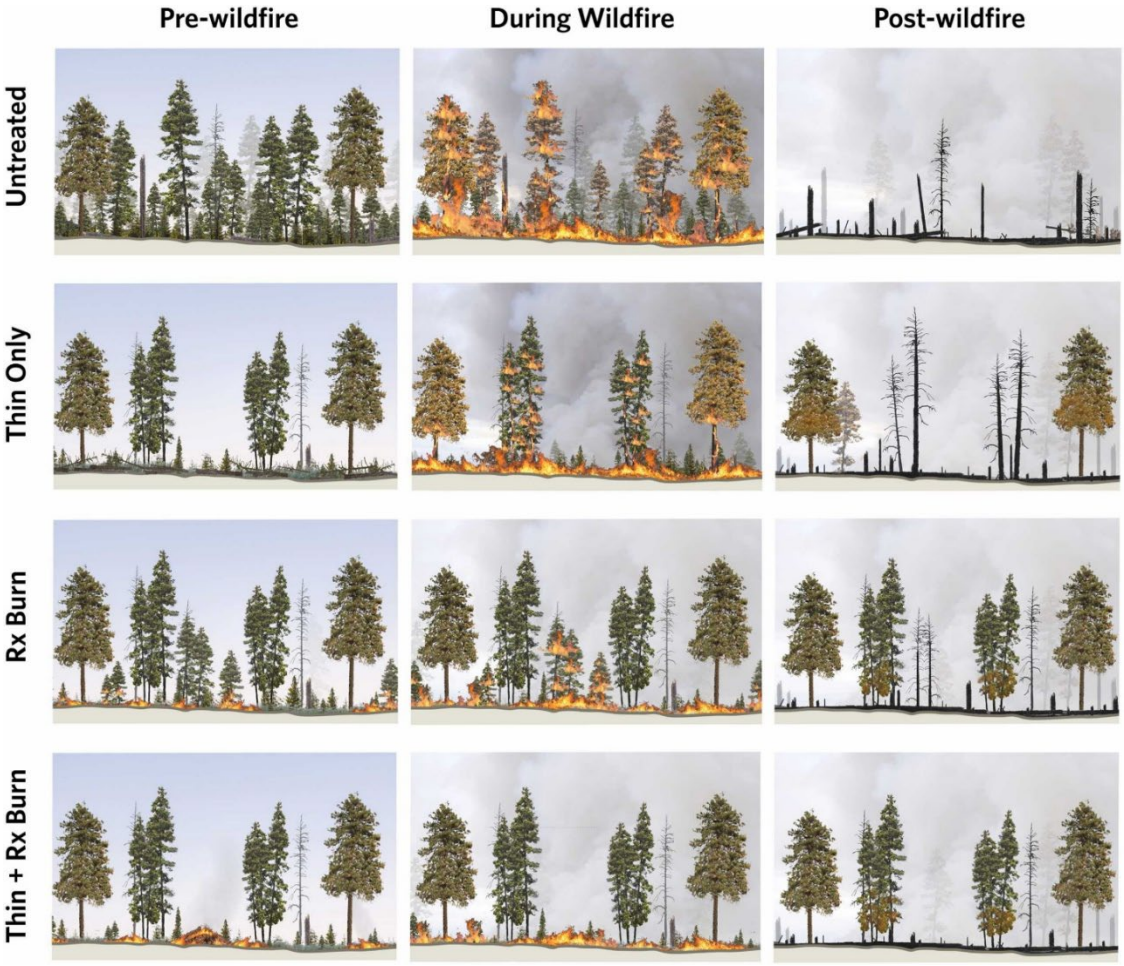

Figure 10. Diagram demonstrating potential treatment effects on forest stand structure (pre-wildfire), fire behavior (during wildfire), and fire severity (post-wildfire). Figure by Erica Sloniker, in Davis et al. 2024, reproduced with permission.

Carbon

Forest management for carbon optimization can help mitigate increasing atmospheric carbon dioxide concentrations while aligning with forest resilience and adaptability objectives (Ontl et al. 2020 and Kaarakka et al. 2021). Management actions can address vulnerabilities of forest ecosystems to climate change, past actions, chronic stressors, or other disturbances such as insect outbreaks or drought (Goodwin et al. 2020) that put sustained forest productivity at risk of decline, with consequences to carbon stewardship and stability. Many management activities like removing hazardous fuels and reducing live tree density or activities enhancing species, structural, or age-class diversity may have short-term carbon emissions but yield long-term carbon benefits through enhancing forest resiliency and therefore carbon stabilization (Krofcheck et al. 2019, Puhlick et al. 2020; Crockett et al. 2023). Carbon may also be transferred to harvested wood products (HWP) or used for energy production, while increasing longer-term forest productivity and health (Sathre and O'Connor 2010, D'Amato et al. 2011, Oliver et al. 2014).

Moving carbon stored in forests to forest products storage may result in lower net greenhouse gas (GHG) emissions relative to unmanaged forests, if carbon stored in harvested wood products (HWP), substitution effects, and forest regrowth are considered (Lippke et al. 2011; McKinley et al. 2011;

Skog et al. 2014; Dugan et al. 2018). The Intergovernmental Panel on Climate Change (IPCC) recognizes wood as a renewable resource that when sustainably managed can mitigate climate change (IPCC, 2022b). Assessing impacts of harvest on GHGs thus should include carbon storage estimates from wood products.

Succession

Old-growth forests currently face numerous threats and stressors, which are expected to be exacerbated by climate change into the future. However, analysis of FIA plot projections developed as part of the RPA Assessment projects old-growth forest extent to increase over the next five decades despite increasing disturbances, with a slowing rate of increase over each decade. While this suggests that natural ecosystem succession will yield resilient old-growth forests that are characteristic for the local site conditions, a deeper analysis of the same FIA plot data yields important nuance. There is evidence that some of the identified old-growth includes areas where long-term fire suppression has allowed some forest group types to expand from fire refugium as well as includes forests that have developed compositional and structural characteristics outside the normal fire regime. Thus, these do not represent ecological old-growth forests and instead represent uncharacteristic conditions (USDA and USDI 2024b).

Some forest group types of the eastern US have been undergoing mesophication as a result of long-term fire suppression and multiple interacting factors. For example, red maple (*Acer rubrum*) is a fire-sensitive, shade-tolerant species that has experienced a rapid spread into significant portions of the oak-pine and oak-dominated ecosystems. The high proportions of maple in conjunction with an increasing density of trees have resulted in a lack of regeneration of oak across large landscapes, putting these systems at risk of conversion to an uncharacteristic system (Nowacki and Abrams 2008; Iverson et al. 2017; Hanberry et al. 2020a; Hale and Peterson 2024). Similarly, some historical ponderosa pine (*Pinus ponderosa*) forests of the western US are experiencing an ingrowth of Douglas-fir (*Pseudotsuga menziesii*). Small diameter Douglas-fir are creating a dense understory that suppresses pine regeneration (Hessberg et al. 2016; Battaglia et al. 2018; Hanberry et al. 2020b). The high density leads to uncharacteristic fire behavior and a subsequent loss of larger old trees (USDA and USDI 2024b). If fire frequency and intensity remain high, established regeneration may not be able to develop and old-growth ponderosa pine trees that are currently serving as seed sources may be eliminated (Halofsky et al. 2018).

Climate Change

Forests in the U.S. are increasingly affected by climate changes, including warming temperatures, changing precipitation patterns, and increasing frequency and scale of some disturbances, as well as the interactions between these changing factors. Observed climate trends vary regionally and seasonally, and many of these trends are expected to continue or to become more pronounced as global temperatures increase (USGCRP 2023). Climate change can amplify and interact with many of the disturbances and stressors described in the Ecological Impacts Analysis Report; an increase in drought risk, wildfire potential, severe storms, and increasing tree mortality from insects are all expected under a range of future climates (Herring et al. 2022, USGCRP 2023). Many areas that have not yet been exposed to certain climate-related stressors and disturbances may start to experience them; for example, the eastern US may increasingly be exposed to drought and wildfire risk (USDA and USDI 2024b). Of all patterns in extreme events, increasing drought risk is particularly relevant to old-growth forests, both in its physiological effects on larger trees and its relationship to disturbances like wildfire and insect outbreaks (Yuan et al. 2019, Reed et al. 2023, Novick et al. 2024). Increased drought severity has emerged even in places where there are not

precipitation deficits because of increased atmospheric evaporative demand the imbalance between this demand and the existing water availability (Vicente-Serrano et al. 2022).

Current mature and old-growth exposure to climate-related disturbances and stressors is widespread and increased exposure is expected under future climates (USDA and USDI 2024b). Forest vulnerabilities to climate change vary widely across the U.S., and a forest's response will depend on its sensitivity to climate changes and its adaptive capacity, in addition to its exposure to a disturbance or stressor. For example, none of the common species in subalpine forests are fire tolerant, putting these forests at risk of tree mortality from increasing fire frequency and extent (USDA and USDI 2024b). In response to climate pressures, tree species may experience more stress, reductions in productivity, difficulty regenerating, reduced seedling establishment, or mortality (Brandt 2020, Hartmann et al. 2022). Regional vulnerability assessments can offer insight into how climate change is expected to affect different forest types and associated resources and ecosystem services (USDA 2024 – CCVA dashboard).

Intensifying climate change and associated disturbances are already causing noticeable changes to some ecosystems through persistent changes in species composition, structure, function, and diversity (e.g., ecological integrity) (Steffen et al. 2018, NAS 2019, Coop et al. 2020, Williams et al. 2020, Guiterman et al. 2022). For example, in the southwest there are many examples of semi-arid coniferous forests converting to non-forested ecosystems, the vast majority of which were triggered by high-severity wildfire (Guiterman et al. 2022). Many of the mature and old-growth forests in the US remain vulnerable to severe disturbance and chronic climate trends without active management for beneficial disturbance dynamics (Noel et al. 2023, Steel et al. 2023). Understanding forest vulnerability to climate change can help us prioritize areas for proactive stewardship and design adaptation actions to help maintain the values associated with old-growth forests in light of increasing climate pressures (Eisenburg et al. 2024, USGCRP 2023).

Current Management Direction for Old-Growth

Current management of old-growth is determined by plan components in land management plans (referred to as an LMP or plan), as amended, as well as other factors which can drive management, which are discussed at the end of this section. See Ecological Impacts Analysis Report for additional information on current management direction for old-growth.

Direction in land management plans

Old-growth plan direction is applicable to areas as defined in the land management plan (LMP). Old-growth definitions are commonly found in the plan's glossary, can be included in a plan component, or be defined in the LMP FEIS. Old-growth definitions can be a qualitative definition that describes common old-growth features, a definition with some criteria for stand age or DBH, or a complete set of criteria that allows for reliable identification of old-growth on the landscape. There are also plans with old-growth plan components that do not have a definition or criteria for old-growth in the text of the LMP. Some plans do not refer to old-growth, but instead refer to old forest or late successional stage, concepts that intersect, or overlap with, old-growth, but that are not always interchangeable.

A total of 123 national forest or national forest/national grassland LMPs, collectively referred to as national forest LMPs, were reviewed to determine current old-growth management direction (Table 5).

Table 5. The number of land management plans for national forests or administrative units with both national forests and national grasslands

Region	R1	R2	R3	R4	R5	R6	R8	R9	R10	Total
Number of NF LMPs	10	12	11	16	19	19	19	15	2	123

The LMPs were reviewed to determine whether plan components applied forest-wide or to specific management or geographic areas within a unit, whether the plan has a definition and/or criteria for old-growth, if the definition/criteria aligns with the region, and if the criteria are sufficient for identifying old-growth on the landscape. In addition, six national grasslands have stand-alone national grassland LMPs, which are discussed in the following section. Although the majority of national forest LMPs include plan components for management of old-growth, approximately half of the LMPS are without forest-wide desired conditions or standards (Table 6).

Table 6. Overview of old-growth management direction in national forest LMPs

Old-growth management direction	LMPs with (percent)	LMPs without (percent)
Does the LMP include any old-growth plan direction?	114 (93%)	9 (7%)
Of the LMPs with old-growth direction, are there any desired conditions?	92 (81%)	22 (19%)
Of the LMPs with desired conditions for old-growth, does the direction apply forest-wide?	51 (55%)	41 (45%)
Of the LMPs with old-growth direction, are there any standards for old-growth?	74 (65%)	40 (35%)
Of the LMPs with standards, do they apply forest-wide?	50 (68%)	24 (32%)

Old-growth Management by Region

Current management of old-growth is determined by plan components in land management plans (referred to as an LMP or plan), as amended, as well as other factors that can drive management An overview of old-growth management in current land management plans (LMPs) is included in the Ecological Impacts Analysis Report, Section 8. Appendix C, Comparison of Current Management of Old-Growth to Amendment for the Draft EIS also captures the process used to compare existing LMPs with the proposed old-growth amendment plan components/content (for the Modified Proposed Action, Alternative 2) and the subsequent development of categories to group units with similar levels of current old growth direction.

Designated Areas

Certain specific areas of National Forest System (NFS) lands contain outstanding examples of plant and animal communities, geological features, scenic grandeur, cultural, or other special attributes. Some of these areas are designated by law or may be designated administratively by executive order or through Agency planning efforts. Such “designated areas” (DAs) are managed to emphasize the specific values (e.g., recreation, geology, history, etc.) identified in the law, order, or plan that designated each area. Activities are permitted in designated areas to the extent that the activities are in harmony with the values for which each area was designated.

For purposes of the FIA inventory data, the term “reserved lands,” is defined to include the following types of designated areas: Wilderness, National Wild and Scenic Rivers, National Monuments, National Recreation Areas, and National Scenic Areas and the term “Inventoried Roadless Areas” is defined to include areas identified in state-specific roadless rules or the 2001 Roadless Rule, which

limits timber harvest and road construction on these lands. Estimates of acres of old-growth in designated areas are based on Forest Inventory and Analysis (FIA) plots that are within reserved lands or within Inventoried Roadless Area that do not overlap with reserved lands.

As indicated in Table 7, there are approximately 13.8 million acres of old-growth (56 percent of all old-growth) in the DAs described above (reserved lands and inventoried roadless areas). Of this, approximately 4.2 million acres (17% of all old-growth) are within wilderness, national wild and scenic rivers, national monuments, national recreation areas, and/or national scenic areas and 9.6 million acres (39 percent of all old-growth) are within inventoried roadless areas that do not overlap with reserved lands. Table 7 displays the inventoried old-growth area acreage by type of designated area.

Table 7. Old-growth in reserved lands and inventoried roadless areas by region. Area and 90% confidence intervals (CI) are in thousands of acres; percents are the proportion of total old-growth for each type of designated area in each region.

USFS Region	Total Acres of Old-growth (± CI)	Acres of Old-growth in Reserved Lands (± CI)	% of All Old-growth that is within Reserved Lands	Acres of Old-growth in Inventoried Roadless Areas that do not overlap with reserved lands (± CI)	% of All Old-growth that is within Inventoried Roadless Areas that do not overlap with reserved lands
Northern Region	2,496 (±188)	560 (±27)	22%	1,012 (±125)	41%
Rocky Mountain Region	2,497 (±185)	540 (±27)	22%	908 (±120)	36%
Southwestern Region	2,108 (±176)	207 (±19)	10%	326 (±74)	15%
Intermountain Region	2,659 (±198)	387 (±18)	15%	1,433 (±148)	54%
Pacific Southwest Region	1,701 (±154)	616 (±53)	36%	221 (±59)	13%
Pacific Northwest Region	6,037 (±179)	1,671 (±83)	28%	960 (±67)	16%
Southern Region	1,167 (±96)	100 (±10)	9%	167 (±40)	14%
Eastern Region	301 (±43)	50 (±9)	17%	22 (±12)	7%
Alaska Region	5,769 (±158)	39 (±0)	1%	4,561 (±173)	79%
Total	24,735 (±1,377)	4,171 (±245)	17%	9,609 (±815)	39%

What sets designated areas apart from general forest areas is the special values, attributes, or unique features for which they were designated. The relationship between management of old-growth and management of designated areas will vary depending upon the management emphasis for each area. For example, some designated areas, such as designated wilderness, restrict management activities,

with natural processes such as fire and insect and disease infestations occurring without human intervention. Management direction for designated areas may be met through the land management plan unless the authorities for the designation require a separate plan. Specific plans for designated areas must be consistent with the plan components (36 CFR 219.15(e)). There are several different ways that designated areas are included and addressed in LMPs and these primarily fall into three categories: some LMPs include brief references to monuments; some include full special area sections with a suite of plan components; and others describe overarching plan components but defer to separate designated area-specific plans.

Existing Riparian Management Direction

As described in the Water Resources section of the Affected Environment, riparian areas are interfaces between the terrestrial and aquatic environments that have distinctive characteristics, functions, and values (Gregory 1997, FSM 2526.05). These ecotones are easily disturbed and present unique considerations for forest management (Gregory 1997, Naiman et al. 2000). Riparian areas are managed under a multitude of state and federal legislations that establish appropriate management practices (Gregory 1997, Megahan and Hornbeck 2000, USDA Forest Service 2012). Forest Service policy directs that managers should "give preferential consideration to riparian-dependent resources when conflicts among land management activities occur" (FSM 2526.03). Within LMPs, riparian areas are managed differently from the surrounding landscape (FSM 2526.04b). More recent riparian management principles emphasize promoting ecological function and natural riparian forest pattern (Naiman et al. 2000). Older LMPs may lack explicit reference conditions that represent the goals of future riparian management (Gregory 1997).

Most LMPs contain more restrictive management direction for riparian areas that apply comprehensively to trees of all successional stages. For example, the PACFISH and INFISH amendments prohibit commercial timber harvest in riparian habitat conservation areas (RHCAs), and salvage and fuelwood cutting may only be used retroactively in response to a catastrophic event (USDA/USDI 1995; USDA 1995). The Northwest Forest Plan includes standards and guidelines for Riparian Reserves, which direct that prescriptions such as burning and silvicultural treatments should contribute toward attainment of Aquatic Conservation Strategy objectives. Some plans also require contextual, watershed-scale or site-specific analysis prior to resource management occurring in riparian areas. More protective management direction may also apply within select watersheds (USDA Forest Service 2018).

Restrictions or constraints on activities within riparian areas affect management of old-growth where it overlaps with those areas. Additionally, some more recent LMPs have a dynamic interaction between tree size and riparian zone management. For example, the Northwest Forest Plan matches riparian zone widths to the nature of the riparian forest condition. Boundaries for riparian management zones (RMZs) can be based on "site-potential tree heights"—the average height of trees that have attained the maximum height possible given the site conditions (Gregory 1997). Depending on the LMP, riparian forest conditions can influence the zone widths on which riparian management is based, or riparian management direction within fixed zone widths can influence riparian forest conditions.

Climate Adaptation Plan

The USDA Forest Service Climate Adaptation Plan outlines key climate risks to the agency's operations and critical adaptation actions to reduce these risks. The document notes the important ecological and cultural role that old-growth and mature forests play, and the risks to these forests

posed by climate-amplified disturbances including drought, wildfires, and insect and disease outbreaks. The adaptation actions and supporting activities outlined in the Climate Adaptation Plan can help to inform the development of adaptation strategies such as those directed under the old-growth amendment to help reduce risk and maintain valued characteristics of mature and old-growth forests on Federal lands.

Fire Policy

The USDA Forest Service Wildfire Crisis Strategy has been prompted by the increasing severity and frequency of wildfires in western U.S. forests, leading to a sense of crisis that has driven legislative and administrative actions. Recent large and destructive wildfires drawn significant public attention and catalyzed responses to address the escalating crisis. The severity of recent wildfire seasons has compelled state and federal governments to allocate budgets and prioritize policies to combat the worsening wildfire situation. The National Wildfire Cohesive Strategy underscores that extreme wildfire fire behavior poses a threat to more houses in the Wildland Urban Interface (WUI), leading to a greater emphasis on suppression and proactive vegetation management to mitigate this threat. Nationally, based on FIA data, approximately 25percent of current old-growth occurs in WUI (Figure 11). While fuel reduction treatments are implemented in the WUI with the primary purpose of aiding fire suppression and often have secondary purposes of conserving wildlife habitat and restoring historical fire regimes. There may be instances where fuels reduction efforts in the WUI do not necessarily align with maintaining ecological integrity (Stevens et al. 2016).

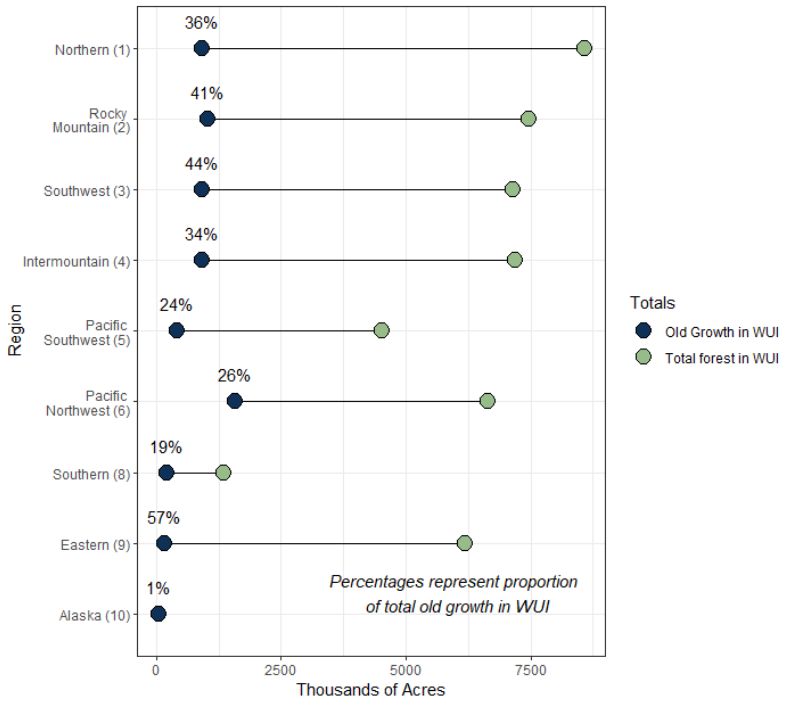

Figure 11. Percent of old-growth in WUI by Forest Service region

3.2.2. Social, Economic and Cultural Affected Environment

The following is excerpted from the SocioEcon and Cultural Impacts Analysis Report, which is incorporated by reference as a whole for this EIS.

The mission of the Forest Service is to sustain the health, diversity, and productivity of the United States' forests and grasslands to meet the needs of present and future generations. Human communities, especially those in the vicinity of national forests and grasslands, are a critical part of the context for Forest Service management. These communities influence and are influenced by the resources on National Forest System lands. National forests and grasslands contribute to communities by providing ecosystem services (ranging from clean water, carbon sequestration, and biodiversity to subsistence foods, recreation opportunities, and inspiration); multiple uses (including timber, rangelands, outdoor recreation, and other land uses); infrastructure (such as utility infrastructure, roads, and developed recreation facilities); and connections between the operations and employees of the Forest Service and people outside of the plan area (see Forest Service Handbook 1909.12, section 13.1). Social and economic conditions in the broader landscape can also affect the sustainability of resources and ecosystems within planning areas (36 CFR 219.8(a)(1)(iii)) as they shape resource pressures, values, and the social and economic feasibility of various management approaches.

The 2012 planning regulations (36 CFR 219) require land management plans to "guide management of NFS lands so that they are ecologically sustainable and contribute to social and economic sustainability; consist of ecosystems and watersheds with ecological integrity and diverse plant and animal communities; and have the capacity to provide people and communities with ecosystem services and multiple uses that provide a range of social, economic, and ecological benefits for the present and into the future." The 2012 planning rule defines social and economic sustainability as follows:

- **economic sustainability** refers to the capability of society to produce and consume or otherwise benefit from goods and services including contributions to jobs and market and nonmarket benefits; and
- **social sustainability** refers to the capability of society to support the network of relationships, traditions, culture, and activities that connect people to the land and to one another, and support vibrant communities.

When proposing a land management plan amendment, the planning regulations (36 CFR 219), as amended, require the responsible official to identify the substantive requirements (219.8 through 219.11) of the 2012 planning rule that are directly related to the amendment based on its purpose or effects (36 CFR 219.13(b)(5)). The Secretary determined that the following substantive requirements, among others, are within the scope and scale of the proposed amendment for land management plan direction for old-growth forests across the National Forest System:

- 36 CFR 219.8(b) Social and economic sustainability, including the analytical requirements of
- 219.8(b)(1 through 6).
- 36 CFR 219.10(a) Ecosystem services and multiple uses (including analytical requirements 1
- through 10).
- 36 CFR 219.10(b)(1)(i) Recreation settings, opportunities, access, and scenic character.
- 36 CFR 219.10(b)(1)(ii) Cultural and historic resources.

- 36 CFR 219.10(b)(1)(iii) Areas of tribal importance.

This analysis evaluates the relationship of old-growth forests to each of these substantive requirements. Because contributions to social and economic sustainability from National Forest System (NFS) lands account for sustainable recreation, multiple uses, ecosystem services, cultural resources, and opportunities to connect people to nature (36 CFR 219.8(b)), these considerations are presented here as an integrated discussion of social, cultural, and economic sustainability. Based on the substantive requirements above and the public participation process, this analysis addresses current conditions and potential effects to: 1) social, cultural, and economic conditions; 2) multiple uses, including timber, outdoor recreation, renewable and nonrenewable energy and mineral resources, rangelands, and lands special uses and landownership adjustments; 3) cultural and historic resources; and 4) Tribal rights and interests, including areas of Tribal importance.

Social, Cultural and Economic Conditions

Population Characteristics

To understand the population characteristics of National Forest System footprint counties, county-level data from the American Community Survey were downloaded from data.census.gov. This analysis uses 5-year estimates from the American Community Survey, which are developed from pooled survey data from 2018 through 2022. The demographics of National Forest System footprint counties were compared to the demographics of the total U.S. population (including municipalities of Puerto Rico, since some Puerto Rico municipalities contain National Forest System lands) as a reference. The 833 counties that contain or are immediately adjacent to National Forest System lands (hereafter, footprint counties) are home to an estimated 81,923,467 residents. In aggregate, the demographic characteristics of footprint counties are very similar to the demographic characteristics of the total U.S. population, with a couple of exceptions. Demographic differences between the population of footprint counties and the U.S. population are most pronounced in terms of ethnicity. While 19.4 percent of the U.S. population is Hispanic or Latino of any race, 25.5 percent of the population of footprint counties identify as Hispanic or Latino of any race. The largest difference between the racial composition of footprint counties and the U.S. population is in the percentage of people who identify as Black or African American alone: while 12.4 percent of the U.S. population is Black or African American alone, only 6.0 percent of people in footprint counties are in this category. The American Community Survey estimates displayed in Table 8 show that the poverty rate, age and sex distribution, and proportion of people with disabilities in footprint counties are each very similar to patterns in the total U.S. population.

Table 8: Demographic characteristics of National Forest System footprint counties and all U.S. Counties[1]

Demographic Characteristics	Footprint Counties Number	Footprint Counties %	All U.S. Counties[2] Number	All U.S. Counties[2] %
Total population	81,923,467	—	334,369,975	—
Race				
White (alone)	54,340,264	66.3%	219,548,855	65.7%
Black or African American (alone)	4,885,102	6.0%	41,574,960	12.4%
Asian (alone)	5,205,117	6.4%	19,119,274	5.7%
American Indian or Alaska Native (alone)	1,264,026	1.5%	2,791,497	0.8%

Demographic Characteristics	Footprint Counties Number	Footprint Counties %	All U.S. Counties[2] Number	All U.S. Counties[2] %
Native Hawaiian or Other Pacific Islander (alone)	243,250	0.3%	625,142	0.2%
Some other race (alone)	7,444,790	9.1%	20,804,859	6.2%
Two or more races	8,540,918	10.4%	29,905,388	8.9%
Ethnicity				
Hispanic or Latino (of any race)	20,882,517	25.5%	64,987,193	19.4%
Not Hispanic or Latino	61,040,950	74.5%	269,382,782	80.6%
Sex				
Male	41,060,040	50.1%	165,751,966	49.6%
Female	40,863,427	49.9%	168,618,009	50.4%
Age				
19 years and under	20,319,876	24.8%	82,907,638	24.8%
20-39 years	22,489,238	27.5%	90,464,922	27.1%
40-59 years	20,361,627	24.9%	84,273,084	25.2%
60-79 years	15,668,720	19.1%	63,769,834	19.1%
80 years and over	3,084,006	3.8%	12,954,497	3.9%
Disability				
People with disabilities[3]	10,706,436	13.3%	42,663,786	13.0%
Poverty				
Individuals in poverty[4]	10,306,206	12.9%	41,889,944	12.8%

[1]Source: The data used for this analysis are 2018-2022 5-year estimates from the American Community Survey (ACS) provided by the U.S. Census Bureau. Tables used include: DP05: ACS Demographic and Housing Estimates; B02001: Race; S0101: Age and Sex; S1810: Disability Characteristics; and S1701: Poverty Status in the Past 12 Months.

[2] To provide an appropriate reference for National Forest System footprint counties, 'All U.S. Counties' includes U.S. county equivalents and municipalities of Puerto Rico.

[3] Disability status is estimated only for the total civilian noninstitutionalized population (All U.S. counties N = 329,392,376; footprint counties N = 80,612,890).

[4] Poverty status is not estimated for all individuals (All U.S. counties N = 326,518,364; footprint counties N = 80,076,527).

Management of National Forest System lands contributes to social and economic sustainability in rural economies across the nation. As a result, rural ways-of-life are related to forest management and potentially affected by the proposed action and alternatives. The Office of Management and Budget (OMB) identifies metropolitan (metro) statistical areas as U.S. counties and county equivalents with at least one urban area of 50,000 or more, plus adjacent territory that has a high degree of social and economic integration with that core due to commuting patterns. The USDA Economic Research Service further subdivides the OMB division of counties to create three metro categories, based on the population size of the metro area of those counties, and six nonmetropolitan (nonmetro) categories, based on their degree of urbanization and adjacency to a metro area. Of the six nonmetro categories, three are characterized as rural for the purposes of this analysis:

- Counties, or equivalent, with an urban population of 5,000 to 20,000, not adjacent to a metro area

- Counties, or equivalent, with an urban population of fewer than 5,000, adjacent to a metro area
- Counties, or equivalent, with an urban population of fewer than 5,000, not adjacent to a metro area

Of the 833 counties or county equivalents that contain or are immediately adjacent to NFS lands, about half (402) are rural, based on their assignment to the three 2023 USDA ERS rural-urban continuum codes above (USDA Economic Research Service 2024). Because of their proximity to National Forest System lands and rural status, those counties may depend on the ecosystem services and multiple uses provided by National Forest System lands to a greater degree than other counties.

Attitudes, beliefs, and values

Social analysis for Forest Service actions should consider the feelings, preferences, and expectations people have for forests and their management, or their values, attitudes, and beliefs (FSH 1909.17 (33.22)). Forest values are relatively enduring beliefs people hold about forests and the good, importance, or worth of specific aspects of them (Tarrant & Hull, 2005; also see Cerveny et al., 2018 for a review). Once these values are established, they orient relationships between people and forests, shaping both attitudes (tendencies to react favorably or unfavorably to situations, conditions, people, objects, or ideas) and actions (Bengston, 2020; Cerveny et al., 2018). Values and attitudes are thus at the core of conflicts over forest management (Brown & Reed, 2000; Cerveny et al., 2018). Understanding the values held by different groups of people is essential for successful policy development, informed decision-making, and effective implementation of management actions (Bengston & Xu, 1995; Bengston, 2020).

Many different typologies have been developed to understand environmental values. Building on an established framework for forest values (Bengston and Xu, 1995), Moyer et al. (2008) developed a framework for describing the range of values specific to old-growth forests, dividing them into *material values*, which refer to tangible goods and services that meet physical needs, and *non-material values*, which are connected to the needs of the mind and soul. Material and non-material values can overlap, as some forest uses, goods, or services are valued in both material and non-material ways. For example, subsistence-based harvest of old-growth forest products may meet a physical need for food while also contributing to cultural expression and heritage.

See the SocioEcon and Cultural Impacts Analysis Report for additional discussion on material and non-material values of old-growth forests, values of forest management and values and plan amendments for old-growth.

Employment and earnings

Employment by industry for the U.S. is displayed in Table 9. In 2022, Government and the Health Care and Social Assistance sectors were the largest employers, accounting for 11.4 percent and 11.1 percent of total employment, respectively. In addition to direct employment in government, many private sector jobs are also dependent on government funding and contracts. Private sector activities dependent on government funding include road construction and health care services. The majority of new job growth in recent years (2010 to 2022) has occurred in the services related industries (U.S. Department of Commerce 2023), which include a variety of high and low-wage occupations ranging from jobs in accommodation and food services to professional and technical services.

Table 9: United States employment by industry sector

Industry Sector	2001	2005	2010	2022	Change 2010-2022
Total Employment (number of jobs)	165,522,200	172,338,400	172,901,700	212,442,000	39,540,300
Non-services related	31,411,200	30,009,000	25,621,000	29,975,500	4,354,500
Farm	3,063,000	2,656,000	2,636,000	2,567,000	-69,000
Forestry, fishing, & ag. Services	801,500	829,400	852,400	966,800	114,400
Mining (including fossil fuels)	808,400	833,600	1,269,000	1,050,200	-218,800
Construction	9,816,700	10,965,800	8,770,700	11,867,800	3,097,100
Manufacturing	16,921,600	14,724,200	12,092,900	13,523,700	1,430,800
Services related	110,960,000	118,507,400	122,608,700	158,268,500	35,659,800
Utilities	615,800	569,900	582,200	605,600	23,400
Wholesale trade	6,233,400	6,334,500	6,020,000	6,757,300	737,300
Retail trade	18,257,800	18,665,800	17,571,600	19,510,300	1,938,700
Transportation and warehousing	5,480,000	5,602,300	5,466,200	11,473,500	6,007,300
Information	4,047,800	3,562,700	3,222,600	3,861,900	639,300
Finance and insurance	7,800,600	8,199,300	9,200,400	12,982,300	3,781,900
Real estate and rental and leasing	5,548,400	7,109,100	7,691,000	11,832,200	4,141,200
Professional and technical services	10,271,800	10,922,100	11,753,800	15,978,400	4,224,600
Management of companies and enterprises	1,789,300	1,860,200	2,018,400	2,953,800	935,400
Administrative and waste services	9,603,500	10,403,500	10,397,200	13,058,300	2,661,100
Educational services	3,011,300	3,525,800	4,095,900	4,885,700	789,800
Health care and social assistance	15,253,400	16,836,300	19,081,900	23,545,500	4,463,600
Arts, entertainment, and recreation	3,165,100	3,457,300	3,786,400	4,457,300	670,900
Accommodation and food services	10,806,200	11,675,100	11,975,300	14,750,300	2,775,000
Other services, except public administration	9,075,600	9,783,500	9,745,800	11,616,100	1,870,300
Government	23,151,000	23,822,000	24,672,000	24,198,000	-474,000

Many factors drive changes in industry makeup and relative size. In some areas, the role and contribution of Forest Service lands has changed in tandem with economic shifts. For example, decreases in manufacturing and non-services related employment has been accompanied by increases in services related employment (Table 8). National Forest System lands provide natural amenities such as unique land and water features (including old-growth), mild temperatures, scenic quality, and outdoor recreation opportunities. Natural amenities have been found to influence employment changes, rural population change and the development of rural recreation and retirement destinations (Knapp and Graves 1989, Clark and Hunter 1992, Treyz et al. 1993, Mueser and Graves 1995, McGranahan 1999, Lewis et al. 2002). In addition, places with natural amenities attract skilled workers and contribute to employment (McGranahan et al. 2007). As a steward of unique natural and

cultural amenities, including old-growth forests, the National Forest System supports the attractiveness of local communities and increases national and local well-being. Additional agency roles are discussed in the multiple uses sections below and are informed by industry specific detail for each multiple use.

In addition to provided natural amenities, public uses of resources on National Forest System lands (such as grazing and forest product use) and recreation and tourism spending generate income in related industries. In this manner, National Forest System lands contribute to well-being in the surrounding rural economies. Personal income provides a measure of all sources of income (wages, investment income, retirement, etc.). High personal income may be a signal of greater job opportunities, highly skilled residents, greater economic resiliency, and well-developed infrastructure within a community while low personal income is often a reflection of the poor economic conditions and relatively few economic opportunities available within a community. Total personal income in the United States exceeded $22.7 trillion dollars in 2022. Between 1970 and 2022 total personal income grew by 49 percent (adjusted for inflation and reported in 2023 dollars) (U.S. Department of Commerce 2023b).

Employment and earnings for Forest Service regions are provided in distinct tables in an appendix to the SocioEcon and Cultural Impacts Analysis Report. During 2022, the two largest employers for eight out of the nine Forest Service regions were the Government and the Healthcare and Social Assistance sectors. The one exception was Region 4, where Government and the Accommodation and Food Services sectors were the largest employers.

The Forest Service supports employment and economic activity, in terms of gross domestic product (GDP) in national, regional, and local economies through natural resource management and by providing sustainable use of national forests and grasslands. The results of the Forest Service's recent FY 2022 economic analysis show Forest Service programs and work contributed 410,400 jobs (average of annual full-time, part-time, temporary, and seasonal) and $44.3 billion in GDP. Sixty-nine percent of the GDP contribution was associated with direct use of forest and grassland resources, including livestock grazing, mineral and energy development, forest products, and recreation visitor use (hunting, fishing, and other forms of outdoor recreation). Recreation, hunting, fishing, and wildlife viewing together sustain the majority of jobs on the national forests and grasslands. The associated visitor spending supports local businesses that provide guides, outfitting, transportation, food, lodging, and other services. Recreation visitor use supported about 177,800 jobs and contributed $15.2 billion to the Nation's GDP in 2022. Many of these jobs are supported in rural areas around national forests and grasslands where recreation-related industries are increasingly important.

Additionally, in 2022 forest products from national forests and grasslands contributed 47,200 jobs and $5.2 billion to the Nation's GDP, in large part in forestry and manufacturing sectors important to the rural workforce. The forestry sector is a crucial partner in accomplishing agency forest health and community protection goals. In addition, livestock grazing on national forests and grasslands contributed about 13,700 jobs and $598 million to the Nation's GDP, in large part supporting agriculture related sectors and private operations enabling continued cultural traditions and a sense of place valued across the Nation. Minerals and energy production from national forests and grasslands contributed about 47,600 jobs and nearly $9.4 billion to the Nation's GDP, (USDA Forest Service 2024) supporting energy and mineral related sectors and contributing to national and local energy and mineral self-reliance.

Ecosystem Services

Healthy ecosystems on National Forest System lands provide people with a wide range of goods and services that have both material and nonmaterial values (see Section 3.2.1, Ecosystem Services). For example, 22.6 million people, or 7 percent of the conterminous United States population, receive more than 50 percent of their surface drinking water supply from National Forest System lands. In 2022, there were about 159 million recreation visits to national forests and grasslands. In addition, nearly 2.9 billion board feet of wood products were harvested from national forests and grasslands, valued at $182.6 million in FY2023.

Discussion of the ecosystem services provided by old-growth forests and anticipated effects from the proposed action and alternatives is distributed across the Ecological Impacts Analysis Report and SocioEcon and Cultural Impacts Analysis Report in the following sections:

Table 10: Ecosystem Services Discussion Locations

Provisioning services	**Report Location**
Water resources	Ecological Impacts Analysis Report, 6.2
Timber	SocioEcon and Cultural Impacts Analysis Report, Section 3
Non-timber forest products	SocioEcon and Cultural Impacts Analysis Report, Section 2
Subsistence foods	SocioEcon and Cultural Impacts Analysis Report, Section 2
Minerals	SocioEcon and Cultural Impacts Analysis Report, Section 4
Rangelands	SocioEcon and Cultural Impacts Analysis Report, Section 5
Regulating services	
Carbon and Climate regulation	Ecological Impacts Analysis Report, Section 6.3
Supporting services	
Biodiversity	Ecological Impacts Analysis Report, Section 6.1
Soils	Ecological Impacts Analysis Report, Section 6.2.4
Old trees	Ecological Impacts Analysis Report, Section 7.3.1
Cultural services	
Non-material values of old-growth forests and old trees	SocioEcon and Cultural Impacts Analysis Report, Section 2
Recreational experiences and tourism opportunities	SocioEcon and Cultural Impacts Analysis Report, Section 6
Cultural heritage values	SocioEcon and Cultural Impacts Analysis Report, Section 8
Areas of Tribal importance	SocioEcon and Cultural Impacts Analysis Report, Section 9

Environmental Justice

Historically, low-income, minority, and Tribal populations have carried some of the greatest human health and environmental burdens. In 1994, Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” was issued to focus Federal attention on the environmental and human health conditions in these communities with the goal of achieving environmental justice. Executive Order 12898 and Departmental Regulation 5600-002 direct the Forest Service to identify and address, as appropriate, disproportionately and adverse

human health or environmental effects on minority and low-income populations. These policies also require, in accordance with Title VI of the Civil Rights Act of 1964, that the Forest Service ensure people are not denied access to the benefits of Agency programs, policies, and activities because of their race, color, or national origin. Executive Order 14096, "Revitalizing Our Nation's Commitment to Environmental Justice for All," issued in April 2023, reaffirmed the importance of environmental justice considerations in Federal decision-making and reiterated the requirements for consideration of environmental justice under the National Environmental Policy Act detailed in Executive Order 12898.

Environmental justice impacts tend to be highly localized geographically and typically occur close to project activities. The Council on Environmental Quality has directed that "Agencies should recognize that the question of whether agency action raises environmental justice issues is highly sensitive to the history or circumstances of a particular community or population, the particular type of environmental or human health impact, and the nature of the proposed action itself" (Council on Environmental Quality 1997). The Forest Service does not have information available at the resolution needed to determine the population characteristics, distribution of environmental burdens and benefits, or specific socioecological linkages between individual communities and National Forest System lands that contain old-growth forests. In the absence of these data, this analysis relies on the demographic characteristics of all U.S. counties containing or immediately adjacent to National Forest System lands (footprint counties) and comments submitted during scoping on the Notice of Intent to consider potential effects from the proposed action and alternatives on communities with environmental justice concerns.

Just treatment requires analyzing and addressing, where appropriate, the potential for disproportionate and adverse human health and environmental effects of Agency actions and ensuring equitable access to the environmental benefits of Agency actions. Historically, some populations, including people with low incomes or experiencing persistent poverty, people of color, and people with disabilities have experienced higher exposure or vulnerability to environmental burdens. These populations might be uniquely susceptible to impacts from a proposed action due to special vulnerabilities, unique routes of exposure, or cultural practices, including subsistence uses and access to sacred sites (FIWG & NEPA Committee, 2016). For example, individuals in poverty may be more reliant on natural resources and Federal lands for access to food, fuels, and recreation opportunities. As described in Section 2.4.1, the population characteristics of National Forest System footprint counties, including in terms of poverty and disability rates and racial composition, are very similar to the characteristics of the total U.S. population. An estimated 12.9 percent of the aggregate population of footprint counties live in poverty, and an estimated 13.3 percent live with a disability. People who identify as Hispanic or Latino (of any race) are somewhat over-represented in National Forest System footprint counties (25.5 percent in footprint counties vs. 19.4 percent in the total U.S. population). Public engagement to date has not indicated unique relationships between Hispanic or Latino individuals and old-growth forests on National Forest System lands. No other unique pathways of risk or vulnerabilities specific to other communities with environmental justice concerns or protected classes pertinent to the management of old-growth forests across all National Forest System lands have been identified.

Executive Order 14008, Tackling the Climate Crisis at Home and Abroad (2021), directed federal attention to "disadvantaged communities" and initiated the development of the Climate and Economic Justice Screening Tool (CEJST) to identify disadvantaged communities and inform equitable decision-making across the federal government. The CEJST includes indicators of burdens related to climate change, energy, health, housing, legacy pollution, transportation, water and

wastewater, and workforce development to characterize communities that are both overburdened and underserved. In 2010, the 833 National Forest System footprint counties were subdivided into a total of 17,319 census tracts, which are smaller geographic divisions of a county for which statistical data can be presented. Census tracts generally have a population size between 1,200 and 8,000 people, with an optimum size of 4,000 people. While census tracts usually cover a contiguous area, their spatial size varies widely depending on population density. Census tract boundaries are updated every 10 years, in advance of the Decennial Census. Tracts might be split in areas that have experienced substantial growth or merged in areas that have experienced population decline. Of the 17,319 census tracts located within National Forest System footprint counties, 6,615 (approximately 38 percent) are considered disadvantaged based on the CEJST. These totals do not reflect counties or county equivalents or nested census tracts that were designated after 2010.

Meaningful involvement under Executive Order 14096 requires the Forest Service to provide opportunities for early and meaningful involvement in the environmental review process by communities with environmental justice concerns potentially affected by plan amendments. Examples include, but are not limited to, providing timely opportunities for members of the public to participate, fully considering and responding to public input, and providing meaningful access to individuals with limited English proficiency, individuals with disabilities, and those who are not regular participants in Federal decision-making. See Chapter 1, Chapter 4, and Appendix A, Scoping Summary for the Draft EIS for more information on public engagement.

3.2.3. Tribal Rights and Interests Affected Environment

The following is excerpted from the SocioEcon and Cultural Impacts Analysis Report, which is incorporated by reference as a whole for this EIS.

Tribal Sovereignty

Tribal sovereignty refers to Tribes' original, inherent authority to govern themselves, their lands, and their resources. It is not a power delegated to Tribes by Congress but is instead an inherent power that has never been extinguished (Worcester v. Georgia). Because of their unique status as sovereigns, federally recognized Tribes have a direct, government-to-government relationship with the federal government (Working Group of the Memorandum of Understanding Regarding Interagency Coordination and Collaboration for the Protection of Indigenous Sacred Sites, 2024).

Tribal Nations are sovereign governments and, as governments, are vested with independent and supreme authority. Sovereign governments have the power to make their own laws, to be ruled by those laws, and to enforce those laws. Tribal sovereignty is not conditional but is absolute. The United States has a unique, legally affirmed Nation-to-Nation relationship with American Indian and Alaska Native Tribal Nations, which is recognized under the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions. The United States recognizes the right of Tribal governments to self-govern and supports Tribal sovereignty and self-determination.

However, the Supreme Court and Congress have taken the position that Indian tribes in the United States today are subject to the supreme authority of the federal government. This is known as the Plenary Power Doctrine which infers that Congress and the United States government have Plenary Power over Indians and Indian Tribes. The 2004 legal decision from United States v. Lara reinforced and reaffirmed a long line of Supreme Court cases recognizing two basic principles of inherent Tribal sovereignty. First, under the Plenary Power Doctrine, "the Constitution grants Congress broad general powers to legislate in respect to Indian tribes, powers that we have consistently described as plenary and exclusive." However, the second principle reaffirmed in this legal decision was that

"those rights not removed from tribes, as part of their inherent sovereignty remain in effect." According to the decision, "Indian tribes are unique aggregations possessing attributes of sovereignty over both their members and their territory."

Tribal sovereignty is reaffirmed in Executive Order 13175 of 2000, “Consultation and Coordination with Indian Tribal Governments.” This order recognizes tribal rights of self-government and tribal sovereignty, and affirmed and committed the Federal government to a work with Native American tribal governments on a government-to-government basis.

Tribal Trust Responsibilities

The United States has a unique, legally affirmed Nation-to-Nation relationship with American Indian and Alaska Native Tribal Nations, which is recognized under the Constitution of the United States, treaties, statutes, Executive orders, and court decisions. The United States recognizes the right of Tribal governments to self-govern and supports Tribal sovereignty and self-determination. The United States also has a unique trust relationship with and responsibility to protect and support Tribal Nations.

The general trust relationship is between the United States (including all agencies of the federal government) and Tribes, in which the government “has charged itself with moral obligations of the highest responsibility and trust” (Seminole Nation v. United States, 316 U.S. 286, 1942). The United States also has trust relationship with the Native Hawaiian Community (43 C.F.R. § 50.4). The nature of the trust relationship is defined by federal law (i.e., treaties, statutes, Executive orders, federal regulations) and can include particular duties or fiduciary obligations).

In 2021, the Secretary of Agriculture and the Secretary of the Interior (Secretaries) issued a Joint Secretarial Order on “Fulfilling the Trust Responsibility to Indian Tribes in the Stewardship of Federal Lands and Waters” (Order 3403), which states that, “In managing Federal lands and waters, the Departments are charged with the highest trust responsibility to protect Tribal interests and further the nation-to-nation relationship with Tribes. The Departments recognize and affirm that the United States’ trust and treaty obligations are an integral part of each Department’s responsibilities in managing Federal lands.”

Tribal Treaty Rights

The United States recognized tribes by treaty, Executive order, or statute; each method reserved rights in different ways. In 2021, the Forest Service signed a multi-agency “Memorandum of Understanding Regarding Interagency Coordination and Collaboration for the Protection of Tribal Treaty Rights and Reserved Rights.” The signatory agencies affirmed commitment to protect tribal treaty rights, reserved rights, and similar tribal rights to natural and cultural resources. The Parties intend to demonstrate that commitment through early consideration of treaty and reserved rights in agency decision-making and regulatory processes. The guidance document titled “Best Practices for Identifying and Protecting Tribal Treaty Rights, Reserved Rights, and Other Similar Rights in Federal Regulatory Actions and federal Decision-Making,” published in 2022, provides a detailed description of tribal treaties and their relationship to natural resources:

> Treaties are legally binding formal agreements between two or more sovereign nations and are, along with the Constitution and federal laws, the supreme law of the United States. Through these treaties, Indian Tribes ceded land and natural resources to the United States, while retaining all rights not expressly granted. The United States Supreme Court has affirmed this principle of reserved rights, explaining that treaties are ‘not a grant of rights to

> the Indians, but a grant of rights from them, a reservation of those not granted. *United States v. Winans*, 198 U.S. 371, 381 (1905).
>
> The United States Constitution's Treaty Clause, Article II, Section 2, Clause 2, authorizes the President to make Treaties, with the concurrence of two thirds of the Senate. In total, the U.S. ratified approximately 374 treaties with Native nations. These treaties were not always entered into voluntarily by Tribal Nations. The United States sometimes failed to live up to Tribal treaties as the country expanded westward across the North American continent.
>
> Tribal treaties may also reserve to Indian Tribes all rights not expressly granted to the United States. Treaties with Tribal Nations may explicitly secure rights to the Tribe, including lands, fishing and hunting rights, water rights, and goods and services such as food, education, and healthcare. In addition to expressing reservation of Tribal authority and property, Treaties also implicitly reserved Tribal rights necessary to further the purposes associated with the Treaty—often the creation of a Tribal homeland—including rights to water and other natural resources. Under the 'reserved rights doctrine,' rights not addressed by Tribal treaty provisions are presumptively reserved, so long as the rights retained are consistent with federal law and the Tribe's sovereign status; agencies should generally interpret silence in a Tribal treaty in accordance with the reserved-rights doctrine. Tribal treaties are to be interpreted as a grant of rights from Tribes, and a reservation of those rights not granted; thus, Tribes possess proprietary and use rights and sovereign control not conveyed away by the Tribal treaty or other federal law. After 1871, other legal mechanisms were utilized by the various branches of government to recognize Tribal rights, including, but not limited to, Executive orders, military decrees, federal legislation, and judicial decisions. (Best Practices for Identifying and Protecting Tribal Treaty Rights, Reserved Rights, and Other Similar Rights in Federal Regulatory Actions and federal Decision-Making 2022:6)

Indian treaties are agreements between Tribes and the United States as sovereigns. They are typically not grants of rights to Tribes but grants of rights from Tribes to the United States and a reservation of those rights not granted, ceded, or relinquished. Treaty rights are generally not waived by prior non-performance on the part of the United States. Under the U.S. Constitution, ratified treaties are the supreme law of the land, and their terms may be changed only by Congress. Treaties are substantive federal law of equal importance to other federal laws and obligations. The U.S. Constitution's Treaty Clause, Article II, Section 2, Clause 2, authorizes the President to make treaties with the concurrence of two-thirds of the Senate (Working Group of the Memorandum of Understanding Regarding Interagency Coordination and Collaboration for the Protection of Indigenous Sacred Sites, 2024.

The Supreme Court has long applied canons, or rules of interpretation, for Indian treaties. These include: (1) treaty language must be construed as the Indians would have understood it at the time of treaty negotiation; (2) doubtful or ambiguous expressions in a treaty should generally be resolved in favor of the Tribes; and (3) treaty provisions should be interpreted in light of the surrounding circumstances and history (De La Hunt, 1984). Furthermore, Congress must clearly express any intent to abrogate Indian treaty rights. Agencies should be cognizant of these canons when making decisions that impact Tribal treaty rights, reserved rights, or other similar rights (Working Group of the Memorandum of Understanding Regarding Interagency Coordination and Collaboration for the Protection of Tribal Treaty and Reserved Rights 2022).

There are also unique canons of construction in the Indian law context. "The canons of construction applicable in Indian law are rooted in the unique trust relationship between the United States and the Indians." Montana v. Blackfeet Tribe of Indians, 471 U.S. 759, 766 (1985) (citing Oneida County v.

Oneida Indian Nation, 470 U.S. 226, 247 (1985)). In interpreting statutes pertaining to Indians, they are to be "construed liberally in favor of the Indians, with ambiguous provisions interpreted to their benefit." Id. at 766.

In 2021, the Forest Service signed a multi-agency "Memorandum of Understanding Regarding Interagency Coordination and Collaboration for the Protection of Tribal Treaty Rights and Reserved Rights." The signatory agencies affirmed commitment to protect tribal treaty rights, reserved rights, and similar tribal rights to natural and cultural resources. The Parties intend to demonstrate that commitment through early consideration of treaty and reserved rights in agency decision-making and regulatory processes.

Tribal Considerations in the 2012 Final Panning Rule

The 2012 planning rule requires the Agency to work with federally recognized Indian Tribes, government-to-government, as provided in treaties and laws and consistent with executive orders, when developing, amending, or revising plans. The rule also requires consultation and participation opportunities for Alaska Native Corporations and consideration of cultural and historic resources, and areas of Tribal importance (36 CFR § 219). Further, the planning rule: 1) recognizes the responsibility of Forest Service officials to consult early with Tribal governments and to work cooperatively with them where planning issues affect Tribal interests; 2) encourages Tribal participation in National Forest System planning; and 3) states that officials will protect confidentiality regarding information given by Tribes in the planning process and may enter into agreements to do so.

The planning rule does not define areas of Tribal importance. However, Section 219.10(b)(1)(ii) of the rule requires that new plans or plan revisions must include plan components, including standards and guidelines, to provide for protection of cultural and historic resources and management of areas of Tribal importance. Forest Service land management planning also includes recognition of and requirements for ecosystem services, which are defined to include cultural heritage values (see discussion in the SocioEcon and Cultural Impacts Analysis Report). Further, it is expected that the environmental analysis that is required when developing or revising a forest plan will include consideration of potential impacts of proposed plan components on areas of tribal importance (see Forest Service Handbook 1909.12, section 13.7 and 1509.13, section 3.10.2.e.(2)). These requirements, in combination with the requirement that plan content include descriptions of a unit's roles and contributions within the broader landscape under § 219.7(e), ensure the cultural aspects of sustainability will be taken into account when developing plan components that guide unit contributions to social sustainability.

Indigenous Knowledge and Tribal Values

There is no single definition or phrase that captures Indigenous Knowledge. In recent dialog, numerous phrases (Indigenous Knowledge [IK], Indigenous Traditional Ecological Knowledge [ITEK], Traditional Ecological Knowledge [TEK], Indigenous Science [IS], or Native Science [NS]) have been used to describe knowledge that "includes Indigenous relationships to land, plants, animals, community, self, cosmos, spirit, and the creative animating processes of life (Cajete 2021:15)." In comparison, the phrase Scientific Ecological Knowledge (SEK), also known as western science, has been used to describe knowledge associated with the scientific method originating from a diverse set of disciplines (Tribal Adaptation Menu Team 2019). Indigenous Knowledge incorporates direct experience, as well as long term observations by individuals and across generations (Emery et. al. 2014).

Indigenous Knowledge is a synergy of voices that convey the ongoing accumulation of knowledge, practices, and beliefs about relationships between living beings in a specific ecosystem that is acquired by Indigenous people over hundreds or thousands of years through direct contact with the environment, handed down through generations and used for life sustaining ways (GLIFWC Climate Change Team 2023). This knowledge framework is typically expressed verbally, through languages, stories, songs, and laws. The goal of integrating IK and SEK is to provide a more holistic and culturally appropriate approach to better consider Tribal values in developing Desired Conditions, Standards, and Values. Tribal Values encompass relationships of human beings as part of the natural community, and that humans have a responsibility to respect and care for nature, both pragmatically and spiritually (Berkes 1999, Emery et. al 2014, Kimmerer 2000).

In November 2021, the Office of Science and Technology Policy and the Council on Environmental Quality issued a memorandum recognizing Indigenous Knowledge as one of the many important bodies of knowledge that contributes to the scientific, technical, social, and economic advancements of the United States, and to our collective understanding of the natural world. In November 2022, the White House released Indigenous Knowledge guidance for federal agencies titled *"Guidance for Federal Departments and Agencies on Indigenous Knowledge,"* and defined Indigenous Knowledge as a body of observations, oral and written knowledge, innovations, practices, and beliefs developed by Tribes and Indigenous Peoples through interaction and experience with the environment. In May 2024, the Department issued 36 CFR Part 219, Subpart A, revising text in §219.4(a)(3) and §219.19 to adhere to guidance set forth by the Office of Science and Technology Policy and the Council on Environmental Quality within the Executive Office of the President. The Department is changing the term Native Knowledge to Indigenous Knowledge and updating the associated definition to conform precisely with this guidance.

For the purposes of this document, Indigenous Knowledge (IK) is the single term used to refer to the entirety of this network of understandings as defined in Department rule and Office of Science and Technology Policy and Council on Environmental Quality guidance. Indigenous Knowledge is defined as "a body of observations, oral and written knowledge, innovations, practices, and beliefs developed by Tribes and Indigenous Peoples through interaction and experience with the environment. It is applied to phenomena across biological, physical, social, cultural, and spiritual systems. Indigenous Knowledge can be developed over millennia, continues to develop, and includes understanding based on evidence acquired through direct contact with the environment and long-term experiences, as well as extensive observations, lessons, and skills passed from generation to generation. Indigenous Knowledge is developed by Indigenous Peoples including, but not limited to, Tribal Nations, Native Americans, Alaska Natives, and Native Hawaiians. Each Tribe or Indigenous community has its own place-based body of knowledge that may overlap with that of other Tribes. Indigenous Knowledge is based in ethical foundations often grounded in social, spiritual, cultural, and natural systems that are frequently intertwined and inseparable, offering a holistic perspective. Indigenous Knowledge is inherently heterogeneous due to the cultural, geographic, and socioeconomic differences from which it is derived, and is shaped by the Indigenous Peoples' understanding of their history and the surrounding environment. Indigenous Knowledge is unique to each group of Indigenous Peoples and each may elect to utilize different terminology or express it in different ways. Indigenous Knowledge is deeply connected to the Indigenous Peoples holding that knowledge" (36 CFR 219.19).

This document may contain Indigenous Knowledge or other information shared by Tribal members under the principles of free, prior, informed consent, from what is currently available in a publicly-published format. Tribal knowledge and data sovereignty rights are respected, and any Indigenous

Knowledge cited in this document is owned by the individual or author and can be rescinded or withdrawn at any time.

Tribal Co-Stewardship

Co-stewardship is an umbrella term that refers broadly to collaborative or cooperative agreements between federal agencies and Tribes or Native Hawaiian Organizations with respect to their sharedu interests in the management, conservation, and protection of federal lands and waters, and associated flora, fauna, and resources. Co-stewardship can take a wide variety of forms, including, but not limited to, sharing technical expertise and Indigenous Knowledge; combining federal and Tribal or Native Hawaiian capabilities to improve resource management; integrating Tribal and Native Hawaiian knowledge, views, and experience into the public's experience of federal lands; and, where applicable, funding arrangements with Tribes including under the Indian Self-Determination and Education Assistance Act (25 U.S.C. § 5301 *et seq*.) (Working Group of the Memorandum of Understanding Regarding Interagency Coordination and Collaboration for the Protection of Indigenous Sacred Sites, 2024).

Tribal co-stewardship is focused on meaningful and continued engagement that: allows for tribal guidance in the development and implementation of management plans, rather than merely consultation on discrete issues; incorporates listening to what is important to Tribes as defined by Tribes rather than Federal agencies; engages Tribes as primary partners in planning and implementation; seeks to ensure that management decisions reflect and integrate Tribal knowledge; and is defined by the Forest/Grassland and Tribal co-stewards within their relationship.

The Forest Service Land Management Planning Desk Reference 2021: FSH 2409.19 chapter 60 provides direction for implementing stewardship end result contracting and Tribal Forest Protection Act authorities, including stewardship agreements (collectively referred to as stewardship contracting authority). This direction and procedures address the appropriate use of the stewardship and Tribal Forest Protection Act (TFPA) authority for project development, implementation, and monitoring. FSH 2409.10, Chapter 60 places an emphasis on collaboration stating that close collaboration in the development of TFPA proposals is strongly encouraged. *"Forest Service officials may provide advice and information to Indian Tribes in advance of Tribes' submitting proposals for stewardship contracts or agreements to assist Indian Tribes in developing proposals that are consistent with the criteria in the Tribal Forest Protection Act"* (FSH 2409.16, Chapter 60).

Additional formal direction for developing collaborative and cooperative co-stewardship agreements was outlined by means of the 2021 *Memorandum of Understanding Regarding Interagency Coordination and Collaboration for the Protection of Indigenous Sacred Sites*. As a Participating Agency to this MOU, the Forest Service agreed to seek to collaborate with Tribes and Native Hawaiian Organizations to ensure good stewardship of federal lands and allow Tribes and Native Hawaiian Organizations their rightful and relevant access to and use of certain public lands. Each Participating Agency also acknowledged that one way of doing this is through collaborative and cooperative co-stewardship agreements.

Guidelines for Tribal Co-Stewardship. The Forest Service Office of Tribal Relations has developed guidance for appropriate co-stewardship. First, co-stewardship should ensure that management decisions reflect and integrate special tribal expertise and traditional and historical knowledge. The objectives of the Forest Service Manual (FSM 1563) and Handbook (FSH 1509.13) include respect and consideration of traditional knowledge relevant to the management of natural and cultural resources and fair consideration of traditional ecological knowledge and sacred sites in Forest

Service decision-making. Various existing authorities further enable the Forest Service to enter grants, contracts, or cooperative agreements with Tribes for extraordinary consultation and specialized expertise, such as traditional knowledge that can be incorporated into restoration efforts. One of the key authorities provided to the Forest Service, the Tribal Forest Protection Act (TFPA), includes specific and special consideration for tribally-related factors in co-stewardship, including the cultural, traditional, and historical affiliation of the Tribe with the land, and their Indigenous Knowledge and skills.

Co-stewardship should also be based in meaningful and continued engagement that allows for tribal guidance in the development and implementation of management plans. In addition to the FSM and FSH on tribal relations and consultation, the Forest Service Land Management Planning Handbook (FSH 1909.12) further directs the Agency to assess and recognize tribal rights and areas of tribal importance as well as consideration of ways that Forest Service planning and monitoring can contribute to common objectives and reduce conflicts. Special emphasis is also given to cooperative relationships with Tribes as in Memoranda of Understanding and other agreements that incorporate the special expertise of Tribes. Forest Service precedents that use such tools already exist in, for example, MOUs on cooperative management of cultural and natural resource areas, and Tribal/Agency interdisciplinary teams that guide development and implementation of management plans and project design.

Third, co-stewardship has a foundation in Forest Service authorization to enter self-determination contracts or compacts with Tribes. The Forest Service has existing authority to enter self-determination contracts "to perform administrative, management, and other functions of programs of the Tribal Forest Protection Act of 2004" that reflect traditional and historical knowledge and special tribal expertise. The TFPA is seminal legislation that further codifies collaborative natural resource Protection Act "638" authority allows for co-stewardship of the National Forest System and lands under the jurisdiction of the Bureau of Land Management. The Tribal Forest Protection Act gives specific consideration of tribal rights, values, and knowledge in both planning and execution of land management activities. While acknowledging the interest of some Tribes to engage in co-stewardship that mirrors the self-determination and self-governance authorities of the Department of Interior (that the Forest Service currently lacks), existing Agency law and policy nonetheless allows for substantive co-stewardship, whether utilizing TFPA, Forest Service TFPA "638," Good Neighbor Authority, or other available land management authorities, as all are subject to existing Agency Manuals and Handbooks as outlined above.

Tribal Sacred Sites

Executive Order 13007, *Indian Sacred Sites*, was issued in May 1996 to address the protection and preservation of Indian religious practices at sacred sites on federal lands. This Order directs every federal agency responsible for managing federal lands to accommodate access to and ceremonial use of sacred sites by Indian religious practitioners. It also directs federal agencies to avoid adversely affecting the physical integrity of such sacred sites and, where appropriate, to maintain the confidentiality of sacred sites. Executive Order 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All*, issued in April 2023, reaffirms the direction to federal agencies to "fulfill obligations established pursuant to Executive Order 13007."

In 2021, eight federal agencies including the USDA Forest Service, entered the *Memorandum of Understanding Regarding Interagency Coordination and Collaboration for the Protection of Indigenous Sacred Sites* to affirm their commitment to coordinating and collaborating to improve the protection and accessibility of Indigenous sacred sites on federal lands consistent with Executive

Order 13007. Among the most important is ensuring that each Participating Agency integrates consideration of sacred sites into its respective decision-making, regulatory, or consultation processes at an early stage. Equally important is that each Participating Agency seek to ensure access by Tribes and the Native Hawaiian Community consistent with its applicable authorities and with Executive Order 13007. Another important step outlined was to develop best practices and guidance.

The MOU defines a sacred site as follows: "[S]acred site" means any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian Tribe or Native Hawaiian organization, or Indian or Native Hawaiian individual determined to be an appropriately authoritative representative of an Indian or Native Hawaiian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian or Native Hawaiian religion; provided that the Tribe, Native Hawaiian organization or appropriately authoritative representative of an Indian or Native Hawaiian religion has informed the agency of the existence of such a site (Working Group of the Memorandum of Understanding Regarding Interagency Coordination and Collaboration for the Protection of Indigenous Sacred Sites, 2024).

Tribes and Native Hawaiian Organizations may have different understandings of the concept of sacred sites and may use different terminology to describe these sites. Individual sacred sites are in many cases associated with larger cultural or geographic landscapes or traditional systems that have attributes distinguishing them as extraordinary or significant, often in a religious or spiritual sense, for the Tribe or for the Native Hawaiian Community. Many Tribes and NHOs prefer to use the terms "sacred place" or "sacred landscape" instead of "sacred site," in part because they do not necessarily limit a site's geographic boundary.

Tribal Rights and Interests and National Forest System Lands

Western scientific ecological knowledge (SEK) and Indigenous Knowledge (IK) research has recognized the deeply interwoven relationships between American Indians and the nonhuman elements of ecological systems across the lands of what is now called the United States. These relationships remain critical to sustaining tribal food and health security; tribal economic prosperity; tribal spiritual, cultural practices and observances; tribal cultural identity; and Indigenous knowledge systems, beliefs, and intergenerational exchange (Asselin 2015, Burger et al. 2008, De Groot et al.. 2002, Fisher 2017, Hoagland 2017, Tribal Adaptation Menu Team 2019, Tengberg et al. 2012, Long et al. 2018).

Indigenous well-being identified key indicators from a cultural perspective that included both spiritual and physical values associated with tribal identity and included: sacred sites, food resources, access, and transport (Satterfield et al. 2013). Tribes continue to rely on forest products for fuel, food, medicines, and materials for cultural purposes (Tribal Adaptation Menu Team 2019) and desire to restore the land as well as Tribal relationships with the land (Tribal Adaptation Menu Team 2019, Rogers-Martinez 1992, Schroeder 1996). As part of this system, cultural keystone species and resources are identified by Tribes because they have prominent roles in maintaining tribal economies, identity, and cultural traditions (Garibaldi and Turner 2004) (See the Ecological Impacts Analysis Report for more details on eco-cultural resources).

National Forests and Grasslands may lie within ceded territories of Tribal Nations and may subject to various Treaties. There are currently 574 federally-recognized tribes and 12 Regional Alaska Native Corporations (approximately 225 Village Corporations) within the defined boundaries of the United States and enrolled citizens live both in and outside of Reservation lands. The Dawes Act opened hundreds of thousands of acres of Tribal Reservation lands to non-Indian settlement, leaving a much-

reduced footprint for Tribal members. This increases the importance to the Tribes for subsistence from forest products. Modern Tribal members hunt, fish, and gather traditional foods and medicines on many Forest Service-administered national forests and grasslands. Further, many Tribes continue to access traditional sites for religious, cultural, and spiritual purposes.

As a federal agency, the Forest Service has a Tribal Trust Responsibility in perpetuity and the Forest Service mission charges management to "meet the needs of current and future generations." Tribes typically look seven generations, or roughly 140 years, to the future when making decisions. It is also important to understand the past context of Tribes' separation from their traditional homelands in considering effects. From the 1778 to 1871 nearly 400 treaties were signed and ratified that outlined the rights of the sovereign Tribal Nations. Numerous other treaties were developed but never ratified. A number of past actions, described below, have influenced the existing condition of tribal resources and Tribal treaty Rights on National Forest System lands.

See the SocioEcon and Cultural Impacts Analysis Report for additional discussion on Tribal Rights and Interests and NFS Lands.

3.3. Environmental Effects

In compliance with the National Environmental Policy Act (NEPA), the following effects (or impacts) discussion refers to changes to the human environment from the proposed action and alternatives that are reasonably foreseeable. The effects discussion is organized by the following topics:

- Environmental Impacts;
- Social, Economic and Cultural Impacts; and
- Tribal Rights and Interests Impacts.

Pertinent regulatory framework (i.e. laws, regulations, directives) considerations and disclosures are also included in the Ecological Impacts Analysis Report and the SocioEcon and Cultural Impacts Analysis Report, which are incorporated by reference as a whole for this EIS.

3.3.1. Environmental Impacts

The following is excerpted from the Ecological Impacts Analysis Report, which is incorporated by reference as a whole for this EIS.

Ecological Consequences Common to All Alternatives

Common vegetation management objectives and practices will continue under all alternatives, both within and outside of old-growth, as governed by the relevant land management plan. Consistent with the Multiple-Use Sustained-Yield Act of 1960 (16 U.S.C. 528–531) (MUSYA), the Forest Service manages the National Forest System (NFS) to sustain the multiple use of its renewable resources while maintaining the long-term health and productivity of the land. In addition, NFS planning focuses on ecological and social sustainability integrating forest restoration, ecological integrity, climate resilience, watershed protection, wildlife conservation, public engagement, and opportunities to contribute to vibrant local economies into an effective planning process that supports sustainable forests over time. Vegetation management activities that occur on the NFS, including in old-growth forest, are designed to foster ecosystems that are sustainable while also providing for multiple uses. These activities increasingly incorporate climate considerations to help foster climate

resilience and promote adaptation. This can reduce negative effects of ecosystem stressors and buffer the impacts of climate change across all alternatives.

Vegetation management can have short-term adverse effects but local projects are designed to minimize or mitigate these impacts to ensure that long-term positive outcomes outweigh short-term negatives, ultimately resulting in net conservation benefits and fostering ecological integrity.

Modifying fire behavior will remain a priority in the Wildland-Urban Interface (WUI), which is typically, but not always, compatible with stewardship of old-growth ecosystems. Nationally, based on FIA data, approximately 25 percent of old-growth is in WUI. Areas with more frequent fire histories are in greater need of restoration and would benefit more from management actions that reduce vulnerability of old-growth while retaining old-growth forest and concurrently reducing the fire risk in WUI. These frequent-fire ecosystems make up the majority of the WUI. The Forest Service management objectives are to both conserve forest resources, including old-growth forests, and manage the NFS to reduce wildfire risk to natural resources, critical infrastructure and communities. Vegetation management is oftentimes necessary and effective to achieve these objectives (Davis et al. 2024, USDA and USDI 2024b). To that end, by providing direction for the promotion of ecological integrity, the proposed amendment is complementary and consistent with the Wildfire Crisis Strategy and the Forest Service will continue to implement the Wildfire Crisis Strategy and related hazardous fuels reduction activities under all alternatives.

Existing plan components may or may not address old-growth forests specifically, but plan components often address related topics such as late successional forest, wildlife habitat, riparian areas, scenic integrity, and other facets of ecosystem integrity that will benefit old-growth. Therefore, all alternatives can benefit old-growth forest to some extent, though the degrees of protection and emphasis on proactive stewardship may differ.

Under all alternatives, there is uncertainty regarding the future trajectory of old-growth forests. The extent and resilience of old-growth will vary by region and ecosystem type primarily due to differences in the history of land use, disturbance regimes, climate scenarios, but also as a function of management setting. For example, frequent fire forests experiencing degraded or impaired conditions are highly vulnerable to stressors, but they are also expected to benefit significantly from targeted vegetation management. However, opportunities to use proactive stewardship to benefit old-growth are uneven. For example, according to FIA data, approximately 56 percent of old growth is in designated areas (e.g. wilderness, inventoried roadless) where vegetation management activities are limited. This management context, which varies within and across NFS units, is not expected to change in any alternative.

Forest Service funding is ultimately determined by Congress, with land management plans (LMPs) under the National Forest Management Act (NFMA) and 2012 Planning Rule (36 CFR 219) serving as guiding (but not compelling) documents that provide a framework for future actions. (See earlier discussion in Chapter 1 about the nature of a LMP under NFMA). While this Environmental Impact Statement (EIS) assumes adequate funding for management actions related to old-growth, land management plans do not make budget decisions. Should Congress emphasize specific programs by appropriation, a redistribution of priorities and allocation of funds would follow, regardless of the alternative implemented.

Ecological Consequences Common to All Action Alternatives

All action alternatives are designed to maintain and restore ecological integrity, diversity, function, and resiliency while contributing to social and economic sustainability as required by the 2012 Planning Rule (planning rule). In doing so, all action alternatives will achieve a consistent framework across the NFS to manage for the long-term persistence, distribution, and recruitment of old-growth forests.

NOGA-FW-DC-01 guides management to provide for old-growth forests that are resilient and adaptable to stressors and future climate conditions. NOGA-FW-DC-01 uses terms "amount", "representativeness", "redundancy", and "connectivity" to guide measurable progress toward achievement of the desired condition in a manner that is consistent with planning rule requirements for ecological sustainability and ecosystem integrity. NOGA-FW-DC-03 underscores that managing for the ecological integrity of old-growth forests will in turn provide valuable ecosystem services, such as water provisioning and carbon uptake, storage, and stability. Notably, while the proposed amendment is focused on old-growth forests, it also acknowledges that old-growth is a part of larger forested ecosystems, and that stewardship of old-growth should ultimately contribute to the integrity of terrestrial and aquatic ecosystems (NOGA-FW-DC-04).

The intent of NOGA-FW-DC-01 is reinforced and clarified by a suite of plan components and other plan content. First, NOGA-FW-OBJ-01 leads units to develop an "Adaptive Strategy for Old-Growth Forest Conservation" that will further guide planning and decision-making for the conservation and recruitment of old-growth forests. NOGA-FW-MA-1a provides additional detail on how to implement this objective, including consideration of climate change, tribal priorities, and incorporation of local information and Indigenous Knowledge. In addition, units should initiate at least three proactive stewardship projects/activities in the planning area to contribute to the achievement of old-growth forest desired conditions (NOGA-FW-OBJ-02) and exhibit a measurable, increasing trend towards Desired Conditions (NOGA-FW-OBJ-03).

NOGA-FW-DC-02 emphasizes that areas with "inherent capability", as defined in 36 CFR 219.19, represent higher than average value for the long-term persistence of old-growth, and is designed to promote retention of old-growth in appropriate locations given the anticipated impacts of climate change. NOGA-FW-MA-1b clarifies that these are areas of likely climate or fire refugia. NOGA-FW-GDL-01 supports NOGA-FW-DC-02 by constraining vegetation management projects in areas identified as compatible with and prioritized for the development of future old-growth forest to actions that help to promote those desired conditions.

Another central feature of all action alternatives is the incorporation of Indigenous Knowledge, and the recognition and respect for tribal sovereignty and treaties. The action alternatives are intended to foster tribal inclusion in the stewardship of old-growth forests. For example, NOGA-FW-GOAL-01 strives to encourage recognition and respect for the ethic of reciprocity and responsibility to future generations into the implementation of proactive stewardship activities. NOGA-FW-OBJ-03 further guides the initiation of at least one co-stewardship project with interested Tribes for the purpose of proactive stewardship within two years. Goals are optional content to include in a land management plan; however, once included they are not optional to follow. Including this goal as part of the proposed amendment fosters tribal inclusion in the interpretation and implementation of all aspects of the old-growth amendment leading to better and more sustainable ecological outcomes.

Further, NOGA-FW-MA-01 and NOGA-FW-OBJ-01 guide units to identify tribal priorities in the development of the *Adaptive Strategy for Old-Growth Forest Conservation*. These plan components

are expected to empower Tribes to interact with implementation of the old-growth amendment on their terms. Incorporating these perspectives locally and focusing on the human interaction with these forests is expected to lead to better ecological, social, and cultural outcomes. For example, this could include increased emphasis on understory and associated ecosystem services. This could also include attention to the retention of ancient trees that have survived centuries of disturbances. NOGA-GDL-03 addresses culturally significant trees both within and outside old-growth. Finally, there may be more attention to functioning ecological systems rather than individual old-growth stands, as the boundary between old-growth and other ecological elements may receive less emphasis.

NOGA-FW-STD-01 defines where old-growth specific plan components shall apply in all action alternatives. NOGA-FW-STD-01, which clarifies the approach to defining old-growth forest and setting criteria to identify these forests, will change the area managed for old-growth on some planning units. However, this analysis assumes that these changes will not be more or less than 10 percent of the old-growth area addressed in current plans. About 70 percent of planning units will apply all or part of current regional old-growth criteria, if available, in accordance with NOGA-FW-STD-01, while the other 30 percent will operate under their existing criteria. Of the 90 units that will apply new criteria, 59 may see changes in the amount of area classified as old-growth compared to the existing condition, particularly in forest types that lack quantitative criteria or defined qualities in the text of the LMP. The remaining 30 units do not have a definition or criteria in the land management plan. Most of the 89 units applying the new criteria already have plan components related to old-growth in their land management plans. For these units, NOGA-FW-STD-01 will most likely have the effect of increasing the area to which these existing old-growth plan components apply. This is expected to increase the protections and proactive stewardship options for old-growth forest on these units.

Region 9 and parts of Region 5 present unique circumstances relative to NOGA-FW-STD-01. Currently in Region 9 there are no regional old-growth narrative definitions or criteria for units to tier to for field applications, and most units have either a narrative definition without quantitative criteria or a narrative definition and an age threshold. While the region is currently working with the Northern Research Station to develop operational definitions, they are not expected to be available until completion of the *Adaptive Strategy for Old-Growth Forest Conservation* (NOGA-FW-OBJ-01). Therefore, most units in Region 9 will not have regional criteria by the time the proposed amendment is to go into effect. Region 9 LMPs acknowledge the importance of old-growth on ecological integrity by describing desired future conditions that strive for encompassing all ecosystem seral stages. Therefore, the desire to move in the direction of promoting representation of old-growth follows the intent of NOGA. In Region 5, the regional materials present ranges of values developed to aid in the identification of old-growth, but no minimum criteria. Units in Region 5 that are a part of the Northwest Forest Plan or Sierra Nevada Forest Plan may have minimum criteria for old-growth classification to refer to that were developed in the analysis phase of the amendments.

As climate continues to deviate from historical conditions, acute and chronic climate-amplified disturbances such as drought, wildfires, and insect and disease outbreaks are expected to continue as primary threats to old-growth stands on national forests (USDA Forest Service Climate Adaptation Plan 2022, USDA and USDI 2024b). In response, NOGA-FW-MA-01a provides guidance to support achievement of desired conditions through engagement in climate adaptation using explicit resistance, resilience, or transition approaches to address climate risks and achieve desired conditions, or otherwise intentionally accept alternative climate-driven outcomes. Adaptation actions can then be selected that respond to vulnerabilities and risks while meeting goals for a specific area,

and these actions will vary based on context (Swanston et al. 2016). In many situations, intentionally accepting alternative climate-driven outcomes without implementing proactive stewardship may slow the development of old-growth forests or result in a reduction of old trees and old-growth forests (Steel et al. 2022, Case, Ettinger & Pradhan 2023, Noel et al. 2023, USDA and USDI 2024b).

NOGA-FW-GDL 2 reiterates that NOGA plan components do not supersede existing plan components that directly or indirectly address old-growth resources. In certain cases, the retained existing plan components, when more restrictive than the NOGA, may limit the ability to use proactive stewardship to achieve NOGA desired conditions of the action alternatives. For example, Eastside Screens (USDA Forest Service 1994a, USDA Forest Service 1995) require that proposed timber sales be evaluated using three screens: ecosystem, riparian and wildlife. Once evaluated, there is a potential that forest stewardship activities could be restricted, limited, or continue with adherence to specific design criteria. These limits on harvest could be considered more restrictive than plan components proposed for NOGA, limiting the potential to actively reduce the vulnerability of these forests to stressors. In the Northern Region, five units have a standard or guideline stating that old-growth forests must continue to meet the regional old-growth minimum criteria after vegetation management for proactive stewardship, and not only for other purposes as in NOGA-FW-STD-02b. Some units will also have more restrictive language for a particular old-growth forest type, such as ancient cedar or bristlecone pine, where activities require more permissions or have fewer exceptions than NOGA. Based on current LMP direction, there is a potential for managers to encounter limitations to management tools available to meet proactive stewardship objectives.

In addition to the plan components and management approaches described above, all action alternatives contain two monitoring requirements designed to track the areas identified and prioritized for the retention and promotion of old-growth forests (NOGA-FW-MON-01) and provide regular updates on measurable changes in unit-level old-growth forest, actions taken pursuant to this amendment, and potential unintended consequences (NOGA-FW-MON-02). These monitoring requirements will facilitate learning, enable swifter progress towards the desired conditions, and provide for continuous support of the *Adaptive Strategy for Old-Growth Forest Conservation*.

In summary, all action alternatives contain the same desired conditions, guidelines, objectives, management approaches and monitoring requirements. This suite of plan components and other plan content common to all action alternatives are designed to encourage management actions that maintain or restore the structure, function, and composition of old-growth forests, reduce vulnerability to disturbance, contribute to the promotion of ecological integrity, and increase climate resilience. This will enhance the resiliency and adaptability of old-growth and foster its occurrence, stability, and connectivity. As such, all action alternatives will support ecosystem integrity and ecosystem services associated with old-growth forests such as biodiversity, carbon storage and stability, and water quality.

The difference between action alternatives are the standards which essentially influence the rate and manner of obtaining the desired conditions. Regardless of the standards, desired conditions are binding on projects (see 36 CFR 219.15(d)(1)) and the shared desired conditions among the action alternatives mediates effects of differences between the standards in the alternatives. The primary ecological differences among action alternatives will be assessed based on their anticipated impact on the rate of achieving desired conditions.

Unique Ecological Consequences

Alternative 1

Alternative 1 (no action) represents continuation of current management. Not all NFS units with Land Management Plans developed or revised under the 1982 planning rule will have plan components specifically designed to maintain or restore old-growth or the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan area. Sixteen out of 128 Land Management Plans have been revised under the 2012 Planning Rule, with additional plans currently in the revision process. These plans all contain plan components designed to maintain or restore ecological integrity of terrestrial ecosystems, including old growth. However, the manner in which these plans addressed old growth is not necessarily consistent with the action alternatives proposed as part of this old-growth amendment.

The current rate of restoration in old-growth forests will continue but there is no assurance that proactive stewardship of old-growth will be prioritized or carried out in a strategic fashion, which could lead to increased vulnerability in the future relative to the action alternatives.

Alternative 2

Alternative 2 is the proposed action. Alternative 2 contains NOGA-FW-STD-03 which prohibits proactive stewardship in old-growth forests for the purpose of timber production. Timber production is defined as the purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use (36 CFR 219.19). This standard, along with NOGA-FW-STD-02a, ensures that the sole purpose of proactive stewardship will be to promote the composition, structure, pattern, or ecological processes necessary for old-growth forests to be resilient and adaptable to stressors and likely future environments. The proposed action, within the scope and scale of the amendment, is intended to further land management plans toward ecological integrity for old-growth forests and is anticipated to have a net-positive effect on the extent of old-growth forests and upon associated species, habitats, and ecosystem services. Given the combination of NOGA-FW-STD-03 and the preservation of all tools that could help implement proactive stewardship activities, including commercial timber harvest, Alternative 2 is anticipated to lead to the achievement of desired conditions at the fastest rate.

Alternative 2 and 3

Alternatives 2 and 3 contain NOGA-FW-STD-2a, NOGA-FW-STD-2b, and NOGA-FW-STD-2c. NOGA-FW-STD-2a limits vegetation management in old-growth to actions that "proactively steward" stands toward ecological integrity. It describes 12 specific elements of old-growth and relevant projects will need to address one or more of these elements. NOGA-FW-STD-2a will limit vegetation management in old-growth to actions that promote the composition, structure, pattern, or ecological processes necessary for old-growth forests to be resilient and adaptable to stressors and likely future environments.

NOGA-FW-STD-02b allows for the cutting or removal of trees in old-growth forests for the purposes other than proactive stewardship when two qualifiers occur: 1) when said action is incidental to the implementation of a management activity not otherwise prohibited by the plan, as amended, and 2) the area – as defined at an ecologically appropriate scale – continues to meet the definition and associated criteria for old-growth forest after the incidental tree cutting or removal. Examples of such activities, consistent with the LMP as amended, could be the development of infrastructure or recreation opportunities on or through NFS lands such as pipelines, transmission

lines, roads, or ski area runs in which incidental tree cutting or removing is determined to be necessary or appropriate. Additionally, it may be necessary to have incidental cutting or removal of trees in old-growth forests in addition to proactive stewardship activities that may already be occurring. For example, trail construction or maintenance – not associated with the proactive stewardship – may be occurring in the same area and require incidental tree cutting. Future activities may do so, so long as said incidental tree cutting or removal of trees in old-growth forests does not diminish the ability for said forest to continue to meet the definition and criteria of old-growth, on an ecologically appropriate scale.

It should be acknowledged that some of these infrastructure or multiple use activities may be large enough that they impact whether an area meets the definition and associated criteria of old-growth at the ecologically appropriate scale.

NOGA-FW-STD-2c describes six scenarios where deviations to NOGA-FW-STD-2a and NOGA-FW-STD-2b are permitted, including:

> i. *In cases where this standard would preclude achievement of wildfire risk management objectives within municipal watersheds or the wildland-urban interface (WUI) as defined in Section 101 of the Healthy Forest Restoration Act of 2003 (16 USC 6511) and its application by the local planning unit, or would prevent protection of critical infrastructure from wildfire* –
>
> Nationally, approximately 6.2 million acres of old-growth (25 percent of total old-growth) is estimated to be in WUI. In these areas, the density of stands may be reduced through thinning or prescribed fire. The primary objective of these treatments is most likely to be to reduce probability of extreme fire behavior. Depending on the site-specific conditions, vegetation management actions that optimize wildfire risk reduction may not be the same as an objective that was strictly proactive stewardship. In these cases, the exception to NOGA-FW-STD-2c may be invoked. However, the majority of WUI is in frequent-fire ecosystems. As such, it is expected that objectives of wildfire risk management and proactive stewardship will usually be mutually compatible.
>
> *ii. to protect public health and safety*
>
> This could include the removal of trees at risk of falling and causing injury to the public or damage to infrastructure such as buildings, roads, campgrounds, or powerlines.
>
> *iii. to comply with other statutes or regulations, valid existing rights for mineral and energy resources, or authorizations of occupancy and use made prior to the old-growth amendment decision*
>
> Trees could be removed as part of mineral and energy activities and the extent varies by group (locatable, saleable, and leasable). See additional discussion in the Mineral and Energy resources section of the SocioEcon and Cultural Impacts Analysis Report.
>
> *iv. for culturally significant uses as informed by tribes or for de minimis use for local community purposes;*
>
> The specifics will be determined locally, but may include removal of trees for specific types of wood products of cultural value such as bark and trunks of the Eastern White Pine in the East Region; canoe-size wiigwaas (paper birch) in the Great Lakes Region; edible fruits and

nuts, bark, leaves, and roots of old-growth American Persimmon in the East and Midwest region; edible fruits and nuts, bark, and trunk of Black Walnut throughout the central region; edible berries, leaves for medicines, and wood for building material from old-growth juniper in the southwest; or totem pole use in Alaska. Local community purposes could include firewood gathering or other such de minimis uses. Personal and free use could also fall under this exception.

v. in areas designated for research purposes, such as experimental forests or research natural areas.

Experimental forest and research natural areas are usually recommended in a land management plan and established through separate regulatory authorities. The specific management of these designated areas is described in a specific plan for each area.

Research natural areas (RNAs) and experimental forests are permanently established for research purposes and to represent the range of vegetation types and areas of special ecological significance on national forest lands. These designations are made with the goals of research and of maintaining natural ecosystem components and processes. Theys are identified and administratively designated by the Regional Forester with concurrence of the research station director, and serve as areas for research, education, and the maintenance of biodiversity. In some cases, stewardship management or experimental manipulation is needed to achieve objectives, including actions such as invasive weed control or prescribed fire. These management activities are also coordinated between the national forests and the research station.

vi. in cases where it is determined – based on best available science, which includes Indigenous Knowledge – that the direction in this standard is not relevant or beneficial to a particular species or forest ecosystem type.

In the western United States, seral lodgepole pine (*Pinus contorta*) is one example of a forest type that may fall under this exception. Lodgepole is a shade-intolerant, fire-adapted pioneer species that usually regenerates in dense, structurally homogenous, even-aged stands (Lotan and Perry 1983). Most lodgepole-dominated forests occur as early-to mid-successional forests persisting for 50-200 years on warmer, lower elevation forests, and 150-400 years in subalpine forests. Because, (1) large, contiguous areas of pure lodgepole are highly vulnerable to mountain pine beetle outbreak (Williams et al. 2018), (2) in the coming decades, warmer climates are predicted to further increase bark beetle outbreak frequency, severity, and range (Kurz et al. 2008, Bentz et al. 2009, Six et al. 2014), and (3) silvicultural treatments in mature lodgepole pine are the most useful tool managers have to promote landscape heterogeneity and sustain lodgepole pine ecosystems (Whitehead et al. 2003, Coops et al. 2008, Hood et al. 2016), excluding lodgepole forests from NOGA-FW-STD-2a may detract from ecological integrity. However, this determination must be made on a case-by-case basis within a local context.

Similarly, in the northern and western Great Lakes region, the jack pine (*Pinus banksiana*) ecosystem is characterized by a savanna-like overstory with a low diversity, open prairie understory. Ecosystem structure and species assemblage are maintained by a frequent fire regime (every 10-50 years). Fire is required for successful regeneration of the relatively short-lived (60-100 years) jack pine as the serotinous cones depend on the heat to release the seeds, and fire exposes bare mineral soil and releases nutrients necessary for germination.

Thus, the combination of frequent disturbance and short life spans of characteristic species makes old-growth management contrary with this ecosystem.

Exception *vi* of NOGA-FW-STD-2c may also apply in systems that are already above the natural range of variation and are not contributing to ecological integrity as determined by a local analysis based on best available scientific information.

For species or ecosystems where proactive stewardship is beneficial, where vegetation management would occur under the NOGA-FW-STD-2a, and for areas outside of WUI, the NOGA-FW-STD-2c exceptions *ii* to *vi* listed above are likely to be minimal, and less than five percent of the total amount of old-growth across each forest. This estimate is based on the following factors:

- Desired Conditions will continue to govern all Forest Service projects, regardless of the purpose of the project. While exceptions are allowed, management actions must not preclude the eventual attainment of the desired conditions for old-growth for the forest as a whole.

While some activities like mining can have significant local effects, they usually have a small footprint when compared to an entire National Forest. (see Social Economic section of this DEIS)

- The public health and safety exception would typically be applied near roads or developments such as campgrounds or areas with concentrated use, which is only a small footprint of National Forests.
- Vegetation management and incidental tree cutting and/or removal can still occur for the reasons listed in the exceptions while still meeting old-growth objectives, meaning in these cases no exceptions would need to be invoked.

Specific to Region 10, in contrast to Alternatives 1 and 4, Alternatives 2 and 3 would effectively halt larger commercial old growth timber sales on the Tongass NF, leaving commercial harvesting to occur within young or secondary growth areas. The 2016 Tongass Forest Plan, as amended, and the 2021 Southeast Alaska Sustainability Strategy (SASS) already envision reduced commercial timber harvesting of old growth. Although the SASS looks toward an end to large-scale, old-growth timber harvest, it also envisions small and micro-old-growth timber sales, likely to average 5 MMBF (million board feet) per year for cultural purposes and to help the timber industry in Southeast Alaska transition from primarily milling old-growth to young growth timber. This has been expected to be a very small portion of the old-growth in the Tongass, and timber harvests were likely to be concentrated in areas with road access.

As a general strategy, the SASS is not a component of the Tongass NF Plan, although it will be considered in revision of the Plan – which is underway. It is assumed that the strategy is compatible with Alternatives 1 and 4; however, NOGA-FS-STD-03 in Alternatives 2 and 3 removes the option for most commercial timber harvest. It is therefore assumed that the small commercial sales would not occur under Alternatives 2 and 3, although there may be ecologically appropriate stewardship actions under NOGA-FS-STD 2a and non-commercial activities in accordance with the exceptions.

Alternative 3

Alternative 3 is considered the most restrictive alternative. In this alternative, NOGA-FW-STD-3 would prohibit commercial timber harvest in old-growth in accordance with NOGA-FW-STD-1 and NOGA-FW-STD-2. (See the Glossary in the Draft EIS for a definition of commercial timber harvest.)

Commercial timber harvest on NFS lands is governed by the land management plan, as authorized by NFMA and its implementing regulations. Timber harvest on NFS lands occurs for many different reasons, including ecological restoration, community protection in wildland-urban interfaces and high-risk firesheds, habitat restoration, protection of municipal water supplies, and to contribute to economic sustainability through the production of timber.

As further explained in the Timber section in the SocioEcon and Cultural Impacts Analysis Report, a prohibition on commercial timber harvest in old-growth forest (NOGA-FW-STD-03 for Alternative 3) would have the effect of limiting proactive stewardship activities and other vegetation management in cases where adherence to NOGA-FW-STD-2a would otherwise yield commercially viable material as a byproduct of proactive stewardship. For example, in fire excluded, or other degraded or impaired areas, silvicultural activities that are necessary to promote resilient and adaptable composition, structure, pattern, or ecological processes may include removal of commercially viable, but not ecologically desirable, trees. In many ecosystems, cutting and leaving trees is not desirable due to the accumulation of excessive dead wood, which would remain on the ground, leading to an increase in fuels that can lead to adverse effects from wildfire. The scope of the agency's ability to restore old-growth resiliency and achieve desired conditions would be more limited with the removal of commercial harvest as a management tool.

Notwithstanding the fact that timber harvest and production are primary aspects of the agency's mission, there is an interest in the role that economic incentives play in shaping agency decision making, particularly as it relates to achievement of ecological management objectives. However, NOGA-FW-STD-2 clearly stipulates that vegetation management in defined old-growth areas "may *only* be for the purpose of proactive stewardship" (emphasis added). This sole purpose of the standard limits the risk of commercial incentives influencing the decision-making process.

It is reasonable to foresee that some number of projects that would harvest trees in old-growth would be avoided under this alternative compared to the preferred alternative, and thus the consequences of removing old trees in those projects would be avoided. It is not feasible, however, to predict with any certainty the extent or magnitude of those avoided consequences. As noted above, the risk of those consequences is limited due to the "sole purpose" language within NOGA-FW-STD-2. It should be noted that the *Adaptive Strategies for Old-growth Conservation Forest Conservation* provide further opportunities to design and evaluate the effectiveness of proactive stewardship activities at the appropriate ecological scale within unique socio-ecological management settings.

Overall, for Alternative 3, from an ecological perspective, the anticipated negative effects of reducing the rate of proactive stewardship by limiting vegetation management tools – and thereby accepting avoidable loss of old-growth – likely outweighs any potential benefits of ensuring that commercial timber harvest does not negatively influence old-growth management decisions. The alternative is likely to be less effective at achieving desired outcomes under the old-growth amendment because it would limit ecologically necessary proactive stewardship activities governed by NOGA-FW-STD-2a that are dependent on commercial mechanisms to be economically feasible at an ecologically appropriate scale. Consequently, the rate of restoration of old-growth will be slowest under this alternative because the agency's ability to restore old-growth resiliency and achieve desired conditions would be more limited with the removal of commercial harvest as a management tool.

Alternative 4

Alternative 4 is considered the least restrictive as the only standard it retains is NOGA-FW-STD-1. By omitting NOGA-FW-STD-2a, NOGA-FW-STD-2b, NOGA-FW-STD-2c and NOGA-FW-STD-3, vegetation management in old-growth may be for purposes other than proactive stewardship in Alternative 4. However, the plan components common to all action alternatives – including desired conditions, objectives, and guidelines in addition to required monitoring elements and management approaches – would still guide old-growth management towards greater ecological integrity. As such, the rate of progress towards desired conditions under this alternative would likely be second fastest only to the proposed action because all funding and management tools are available but not all old-growth treatments are necessarily optimized for proactive stewardship purposes.

Threatened, Endangered and Proposed Species

Under a variety of statutes, the Forest Service cooperates with States, Tribes, other federal agencies, conservation organizations, concerned landowners, and individuals in all appropriate aspects of wildlife, fish, and threatened, endangered, and sensitive/SCC species management. Section 7(a)(1) of the Endangered Species Act (ESA) authorizes all federal agencies to carry out programs for the conservation of endangered species and threatened species. Section 7(a)(2) of the ESA requires federal agencies to ensure that any actions authorized, funded, or carried out by the agency are not likely to jeopardize the continued existence of any threatened or endangered species or to adversely modify critical habitat.

During Spring 2024, the Forest Service initiated conversations with U.S. Fish and Wildlife Service and National Marine Fisheries Service concerning ESA compliance for the old-growth amendment. After a series of technical assistance meetings, the three agencies determined Section 7 consultation was not warranted for the old-growth amendment at this time. The agencies determined that reasonable certainty of effects to species does not exist because of because the national scale and programmatic nature of the old-growth amendment. The Forest Service commits to Section 7 consultation for any future old-growth conservation where impacts to listed species would occur.

Sensitive Species (FSM 2670) and Species of Conservation Concern (2012 Planning Rule)

Effects common to all Alternatives

Most vegetation and habitat management actions on the National Forest System are designed to encourage ecosystems that are sustainable, adaptive, and more resilient to climate change. While vegetation management can have short-term adverse effects, local projects are designed to mitigate these impacts to ensure that long-term positive outcomes outweigh short-term negatives, ultimately resulting in net conservation benefits.

These conservation benefits will likely benefit most native plant and animal species, including those that are rare or at-risk. The proposed old-growth amendment plan components are designed to guide management actions to support the persistence of native species. Desired conditions and objectives direct management to provide the ecological conditions required by native species. Standards and guidelines constrain management actions that may pose a risk and result in long-term adverse impacts.

Effects common to all action alternatives

All old-growth amendment action alternatives encourage retention or restoration of old-growth and associated naturalistic conditions. Habitat management may occur inside and outside of old-growth as a means to retain or restore old-growth ecosystems. Forest Service management planning focuses on ecological sustainability which includes the sustainable management of plants and animals including viable populations of at-risk and special status species.

Conservation benefits from action alternatives will likely benefit most native plant and animal species, including those that are rare or at-risk as well as Endangered Species Act (ESA) listed threatened and endangered species. That said, promotion of ecological conditions for wildlife and at-risk species are not the only emphasis for planning vegetation management projects. Fire and fuels management also figure prominently.

Modifying fire behavior will remain a priority in the Wildland-Urban Interface (WUI), which is typically compatible with stewardship of old-growth ecosystems - but not always. Areas with more frequent fire histories are in greater need of restoration and stand to benefit more from management actions. Such management actions may benefit forest health overall, and benefit most at-risk species, but may not always benefit all at-risk species present. Some level of short-term adverse impacts to rare plant and animal species may be an unavoidable aspect of such vegetation management.

The old-growth amendment is focused on old-growth forests within the context of larger forested ecosystems. All action alternatives include NOGA-FW-STD-01, which directs how units will define old-growth and determines where old-growth specific plan components apply. The amendment emphasizes that stewardship of old-growth should ultimately contribute to the integrity of terrestrial and aquatic ecosystems (NOGA-FW-DC-04). This integrity filters down to the native plant and animal species that depend upon those ecosystems. Species that require naturalistic conditions associated with old growth, which includes most native species, will gain long-term benefit from implementation of the amendment.

None of the alternatives remove existing old-growth guidance from plans, but rather supplement the guidance. Relevant existing plan components may or may not address old-growth specifically - there are often plan components addressing related topics such as late successional forest, wildlife habitat, riparian areas, scenic integrity, and other facets of ecosystem integrity that will also meet objectives for conserving old-growth. Therefore, all action alternatives will have the same effects for the portion of each planning area with current management direction for old-growth or related guidance, regardless of whether or not the current plan specified “old growth”. See discussion in the Ecological Impacts Analysis Report on Current Management Direction, which includes discussion on how some land management plan direction may serve as a proxy for old-growth even though the term “old growth” is not used.

Some native species require non-old growth conditions, such as early seral stages, small forest openings, bare ground, or frequent disturbance. The action alternatives of the old-growth amendment do very little to limit the proactive management and stewardship of non-old growth conditions necessary for rare species on the NFS, unless as specified in Guideline 1, the specific location has been “identified as compatible with and prioritized for the development of future old growth conditions”.

As such, the old-growth amendment does not prevent vegetation management actions that may preserve, restore, or protect rare plant or animal non-old growth habitat or necessary ecological

conditions so long as that management is not detrimental to old-growth. Small forest openings can be maintained in order to manage habitat. Thinning could still occur as a means of preventing or limiting intense wildfires. Early seral stages can be maintained.

During development of the old-growth amendment, the Forest Service reviewed all LMPs to determine whether or not plans have management direction for old-growth and whether it is more restrictive than the old-growth amendment guidance. That review determined that most national forests have old-growth desired conditions, but less than half the plans have old-growth specific standards. However, many units are often de-facto managing old-growth via passive management (in designated areas such as wilderness) or had requirements encouraging large trees, shaded understories and other characteristics associated with old-growth. The old-growth amendment was found to be generally not contradictive of such plan components.

Endangered Species Act-listed species

A total of 617 species or populations present in the plan area are listed under the Endangered Species Act. A summary of the consultation for listed species can be found in the Threatened, Endangered and Proposed Species discussion above.

Regional Forester's Sensitive Species

Over 3,500 species (plants, animals, and fungi) are listed as Regional Forester Sensitive Species (RFSS) on Forest Service-managed lands. Each Region of the USFS compiles its own lists of RFSS and periodically updates them. This evaluation uses the most recent list from each region. For the purposes of RFSS, the word "species" can refer to a species, a subspecies, a botanical variety, or a distinct population or population segment.

Species were evaluated at the level of each Region. The process of designating RFSS occurs at the regional level and the deciding official who authorizes the list is the Regional Forester for each Region. Lists of species and effects to those species are analyzed in the old-growth amendment Biological Evaluation (found in Miscellaneous Supporting Documents for the Draft EIS) and summarized here.

All RFSS nationwide were assessed for their habitat associations using either geospatial evaluation, literature-based evaluation, or both. The habitat evaluation process is described further in the Biological Evaluation (found in Miscellaneous Supporting Documents for the Draft EIS). Briefly, species' habitats were categorized into National Land Cover Database classes (MLCR 2024), modified from the Anderson Land Cover Classification System (Anderson et al. 1976) (Table 11).

Table 11. National Land Cover Database Cover Classes analyzed for RFSS impacts. Columns show total number of RFSS occurrences by cover class. Cover classes with potential to support old-growth are shaded in gray. RFSS occurrences are from the Global Biodiversity Information Facility (GBIF; Global Biodiversity Information Facility 2022a), as described further in the Biological Evaluation. Two hundred RFSS lacked occurrence records in GBIF and as such are not reflected in this table.

Region name (region number)	Barren Land	Cultivated Crops	Deciduous Forest	Developed, Open Space	Developed, Low Intensity	Developed, Medium Intensity	Developed, High Intensity	Dwarf Shrub (Alaska only)	Emergent Herbaceous Wetlands	Evergreen Forest	Hay/Pasture	Herbaceous	Mixed Forest	Open Water	Perennial Snow/Ice	Sedge/ Herbaceous (Alaska	Shrub/Scrub	Woody Wetlands
Northern (1)	384	66	475	664	301	261	56	10	491	6,287	47	1,322	403	985	31	0	3,615	1,098
Rocky Mountain (2)	574	102	368	816	300	223	153	2	333	3,064	182	986	325	592	25	0	2,060	826
Southwestern (3)	60	17	254	865	163	177	97	0	89	5,318	3	774	492	144	11	0	3,889	309
Intermountain (4)	269	4	176	336	85	42	10	0	117	3,335	2	695	80	574	16	0	2,490	179
Pacific Southwest (5)	575	73	121	2,101	555	315	79	3	219	7,076	11	2,566	438	242	34	0	8,791	304
Northwest (6)	1,860	190	1,153	2,607	1,098	1,011	374	69	1,112	15,097	110	4,752	1,078	2,740	185	11	11,974	1,808
Southern (8)	42	194	4,001	1,483	602	529	322	1	420	2,942	620	288	1,867	1,283	0	0	328	1,967
Eastern (9)	1,304	466	6,217	3,063	1,619	1,294	809	42	1,254	10,714	676	2,793	3,233	2,176	81	4	4,531	3,733
Alaska (10)	98	0	80	61	34	86	58	3	177	580	1	75	36	532	17	0	204	98
Total	5,166	1,112	12,845	11,996	4,757	3,938	1,958	130	4,212	54,413	1,652	14,251	7,952	9,268	400	15	37,882	10,322

Of the 18 National Land Cover Database classes assessed, it was assumed that only shrublands, forests, and woody wetlands provide for possible establishment of old-growth forest (Table 11). Based on species' assigned land cover classes, all RFSS were then assigned to one of two categories to reflect their association with old-growth forest:

- No habitat association with old-growth forest – these species do not occur in old-growth forest for any part of their life history and were assigned a "No Impact" determination. For example, exclusively cave-dwelling or grassland species that never use forest habitat were placed in this category.
- Habitat may include old-growth forest – these species may use old-growth forest at any stage in their life history. Where there was uncertainty regarding whether a species could use old-growth habitat, we made the conservative assumption that it may possibly use old-growth habitat. These species could be affected by the amendment and were carried forward in programmatic analysis of indirect and cumulative effects.

The old-growth amendment represents a programmatic decision that guides future management. It neither compels nor authorizes any on-the-ground type of action. The proposed old-growth amendment encourages units to plan and implement projects (subject to funding) that would be supportive of ecological stewardship of old-growth. As such, the old-growth amendment could have indirect effects to species that occur in old-growth supportive habitat types. Direct impacts stemming from projects implementing the amendment would be analyzed at the project level.

Conclusion for Regional Forester's Sensitive Species

For these species it was determined that the impact of the old-growth amendment would be "May Impact Individuals or Habitat" (MIIH). Use of this determination indicates that the proposed amendment will not cause a trend towards federal listing under ESA, nor cause a loss of viability in the planning area. For species that occur in old-growth supportive habitat, impacts of the amendment are likely to be negligible or beneficial. For species occurring outside old-growth supportive habitat, the impacts of the amendment are likely to be negligible as the amendment does not change management of other seral stages. Early seral stages would continue to be created through natural disturbance (e.g. wildfire). Other seral stages, such as mature, may be managed for recruitment to future old-growth but this is not anticipated to lead to a noticeable reduction of habitat given the scale at which mature forest and other stages exist across the National Forest System (as described in the *Mature and Old-Growth Forests: Definition, Identification, and Initial Inventory on Lands Managed by the Forest Service and Bureau of Land Management* technical report). Further discussion on effects determinations can be found in the Biological Evaluation (found in Miscellaneous Supporting Documents for the Draft EIS)

Species of Conservation Concern (SCC)

For all land management plans (LMPs) that have been or are being revised under the 2012 Planning Rule, the appropriate Regional Forester identified species of conservation concern (SCC). A SCC is a species – other than federally recognized threatened, endangered, proposed, or candidate species – that is known to occur in the plan area and for which the Regional Forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area (§ 219.9(c)).

For the proposed old-growth amendment, it was determined that it would be most appropriate to evaluate the LMPs currently undergoing plan revision for both SCC and the applicable Regional

Forester's Sensitive Species (RFSS) List due to the plan revision status. (Also see *20240529NFMASCCWhitepaper* in Miscellaneous Supporting Documents for further discussion on SCC analysis. Links to each National Forest's SCC list are provided at the end of this document.) Table 13 provides a summary of the LMPs that were included in the review for impacts to SCC.

Table 12. Summary of National Forest System Land Management Plans with SCC

FS Region	Revised Plans Under 2012 Rule	Plans in Revision Under 2012 Rule
R1	Flathead (2018), Helena - Lewis and Clark (2021), Custer-Gallatin (2022)	Nez Perce-Clearwater (2024, pre-ROD); Lolo (pre-DEIS)
R2	Rio Grande (2020), Grand Mesa, Uncompahgre, and Gunnison (GMUG) (2024)	Black Hills (Assessment completed in 2023; At-Risk Species Report includes potential SCC)
R3	Carson (2022); Cibola NF & Cibola NG (both 2022); Santa Fe (2022); Tonto (2022)	Gila (Draft LMP 2019); Lincoln (DEIS and DLMP 2021)
R4	Ashley (2024)	Manti-La Sal (DLMP 2020); Bridger-Teton (2024, Assessment Phase)
R5	Inyo (2019); Sierra (2023); Seqouia (2023, not including the Sequoia National Monument)	None
R6	None	Blue Mountains National Forests (Malheur, Umatilla, and Wallowa-Whiteman NFs) (2024, Draft Assessment released)
R8	Francis Marion (2017); El Yunque (2019); Nantahala and Pisgah (2023)	None
R9	None	Wayne (Assessment completed in 2020 included potential SCC)
R10	Chugach (2020)	None

The requirement for evaluating SCC under the 2012 Planning Rule (36 CFR 219.13(b)(6)) states that "for an amendment to a plan developed or revised under a prior planning regulation, if species of conservation concern (SCC) have not been identified for the plan area and if scoping or NEPA effects analysis for the proposed amendment reveals substantial adverse impacts to a specific species, or if the proposed amendment would substantially lessen protections for a specific species, the responsible official must determine whether such species is a potential SCC, and if so, apply section 36 CFR 219.9(b) with respect to that species as if it were an SCC".

For LMPs that have a SCC list, the 2012 Planning Rule, Section 36 CFR 219.9 Diversity of Plant and Animal Communities outlines the requirement for LMPs under the 2012 Planning Rule to provide a complementary ecosystem and species-specific approach to maintaining the diversity of plant and animal communities, and the persistence of native species in the plan area. This is done in the form of plan components. The ecosystem requirements (or "coarse filter requirements") are intended to provide the ecological conditions to both maintain the diversity of plant and animal communities and support the persistence of most native species in the plan area. Additional species-specific plan components (or "fine filter") can provide for ecological conditions not otherwise provided by the ecosystem-level plan components where warranted based on section 36 CFR 219.9(b).

Land Management Plans Developed Under the 1982 Planning Rule

LMPs originally developed under a previous planning rule (i.e., the 1982 Planning Rule) must still go through a review for potential SCC; however, these LMPs do not have SCC identified for the plan area. For LMPs that lack a SCC list, the planning regulations (36 CFR 219.13(b)(6)) require the responsible official to assess whether an amendment to the LMP would cause substantial adverse

impacts to a specific species or lessen protections for a specific species. The proposed old-growth plan components are designed to increase ecological integrity and therefore will have an overall benefit to species diversity and resilience. The amendment does not include changes that would lessen species-specific protections within existing plans and allows for the consideration of the needs for all species at the project-planning level and subsequent NEPA completed by the local unit (See DEIS section 1.6.2). As the amendment only further constrains site-specific actions that could lead to potentially adverse impacts, we do not anticipate substantial adverse impacts to a species or population. Lacking either substantial adverse impacts to a specific species or reductions in species-specific protections, there is no need to identify potential SCC for LMPs that have not yet revised under the 2012 planning rule.

Revised Land Management Plans and those Currently in Revision Under the 2012 Planning Rule

Each LMP that has completed its revision under the 2012 Planning Rule has SCC identified by the applicable Regional Forester. For NFS units that are in the process of revising their LMP under the 2012 Planning Rule and are, at a minimum, in the Assessment Phase, also have SCC identified by the applicable Regional Forester. In both instances, having SCC requires that the proposed plan components and direction for the old-growth amendment must be reviewed to ensure that plan direction provides the required ecosystem integrity and diversity (coarse-scale) as described in 36 CFR 219.9(a) in order to provide the ecological conditions necessary to maintain a viable population of SCC.

Due to the purpose of this proposed amendment and the contents of the proposed plan components and direction, it is expected that there will be an overall increase in ecological integrity and diversity; therefore, there will be a beneficial effect to SCC. The NFS unit determines whether or not there is a need for species-specific plan components when SCC are identified. The Forest Service reviewed the old-growth amendment for consistency with all existing forest plans and found that the old-growth amendment adds to existing plans but does not contradict plans relating to old-growth. The proposed guideline NOGA-FW-GDL-02 clarifies that "Where there are additional land management plan components for old-growth that existed prior to the old-growth amendment and these provide more restrictive direction for old-growth forests, the more restrictive direction should be adhered to." As such, no fine-filter or species-specific components would need to be added to the old-growth amendment to ensure persistence of SCC on any unit operating under a LMP developed or revised under the 2012 Planning Rule.

Conclusion for SCC

Based on the regulatory requirements of the 2012 Planning Rule regarding SCC and the plan amendment process, there will be no substantially adverse impacts to a specific species, and the proposed old-growth amendment would not substantially lessen protections for a specific species. The proposed plan components and direction will continue to provide for ecosystem integrity and diversity without the need for species-specific plan components. Furthermore, as stated in Section 1.6 of the DEIS, a second stage of decision-making at the project-level will provide site-scale analyses and considerations of impacts to species.

3.3.2. Social, Economic and Cultural Impacts

The following is excerpted from the SocioEcon and Cultural Impacts Analysis Report, which is incorporated by reference as a whole for this EIS.

Refer to the report for more detailed discussions that include evaluation of the affected environment and impact of the modified proposed action and alternatives on specific concerns raised during scoping, including timber, mineral and energy resources, rangelands and grazing, recreation and recreation special uses (to include ski areas), lands special uses and landownership adjustment, and cultural and historic resources. The Ecological Impact Analysis Report describes the relationship between old-growth forests and carbon storage and climate regulation.

Social, Cultural and Economic Conditions

Alternative 1

Alternative 1 is not expected to have any major effects on population characteristics or employment and income in communities surrounding National Forest System lands. Under the no-action alternative, the need for revised or additional plan direction for old-growth forests would be identified at the local level and pursued through individual land management plan amendments or revision. There is no specific requirement in the 2012 planning rule to address old-growth forests in land management planning, although some land management plans do contain plan components for management of old-growth forests (see Section 8 of the Ecological Impacts Analysis Report). Land management plans may contain plan components that promote the social, cultural, and economic values of old-growth forests in places where they occur and are important. However, where the health or resilience of old-growth forests is currently low, the values people hold for these landscapes would remain at-risk under Alternative 1.

Requirements for collaboration and public involvement in plan revision or amendment are outlined in the 2012 planning rule, but individual units use a wide range of strategies to meet the intent of the rule. The approaches used to evaluate public attitudes, beliefs, and values would continue to be consistent with agency directives. The no-action alternative may have consequences for public trust amongst parties who have expectations for action under Executive Order 14072, which required the Secretary of Agriculture to develop policies, with robust opportunity for public comment, to institutionalize climate-smart management and conservation strategies that address threats to mature and old-growth forests on Federal lands. Public comments on the Advanced Notice of Proposed Rulemaking and Notice of Intent to prepare an Environmental Impact Statement have demonstrated abundant public support for national-level action to address threats to old-growth forests; selection of the no-action alternative may also reduce trust among these parties.

Effects Common to all Action Alternatives

All action alternatives demonstrate responsiveness to public interest in and support for the conservation of old-growth forests and their social, cultural, and economic values across the National Forest System. Alternatives 2, 3, and 4 include NOGA-FW-DRC, which would amend the Statement of Distinctive Roles and Contributions for all covered land management plans to acknowledge the distinctive ecosystem services and social, cultural, and economic values of old-growth forests on National Forest System lands. NOGA-FW-DRC also acknowledges that people hold meanings for old-growth forests based on their social, cultural, spiritual, recreational, and economic relationships with them.

Under all action alternatives, NOGA-FW-STD-01 requires old-growth forests to be determined using definitions in land management plans if they have been established, or regional definitions and criteria when definitions for the planning unit are incomplete or non-existent. The action alternatives do not apply a nationally consistent definition for old-growth forests, which respects their ecological

diversity as well as the potential for those definitions to address place-based meanings linked to locally important social, cultural, and economic values.

All action alternatives promote proactive stewardship of old-growth forests, with potential impacts to associated values. Objective 2 (NOGA-FW-OBJ-02) and Objective 3 (NOGA-FW-OBJ-03) respectively set expectations for implementation of three proactive stewardship activities within one year of completing an *Adaptive Strategy for old-growth forest Conservation* and one co-stewardship project within two years. Generally, proactive stewardship is expected to positively affect the material and non-material values people hold for old-growth forests, as more resilient forests can support more durable ecosystem services, economic values, and non-material values. However, proactive stewardship is likely to be at odds with values that prioritize the naturalness or wildness of old-growth forests as unmanaged, self-determined landscapes. Vegetation management in old-growth is currently uncommon on many forests for various reasons (e.g., land designations and accessibility); thus, compared to the no-action alternative, all action alternatives will have stronger effects on any values that are influenced, whether positively or negatively, by management activities in old-growth.

All action alternatives, which amend almost all of the land management plans for National Forest System units (exceptions are described in Draft EIS, Chapter 2), represent an unprecedented approach to plan amendment and decision-making. This approach has potential impacts to public trust in the procedures for public involvement in land management planning established by Forest Service planning regulations. The perception that amendments can be made relatively quickly at the national level may erode belief that local, interested parties can influence planning for the management of National Forest System lands in their area. All action alternatives will be compliant with requirements for public involvement under the National Environmental Policy Act, the 2012 planning rule, and other relevant laws and regulations. However, relative to other plan revisions or amendments at the unit or multi-unit scale, the national scale of this amendment – as well as it being developed in response to EO 14072 – provides fewer opportunities for meaningful engagement by individuals, organizations, and local, State, and Tribal governments in the development of the purpose and need, plan components, and alternatives. Based on sentiments shared in public comments submitted during scoping, a national-level amendment will have consequences for public attitudes about Forest Service land management planning.

Although opportunities for local involvement may be reduced relative to typical amendment processes, all action alternatives contain an objective and related management approaches that direct the creation or adoption of an *Adaptive Strategy for Old-Growth Forest Conservation* within two years of the old-growth amendment record of decision. These adaptive strategies are to be developed in consultation with Tribes and Alaska Native Corporations and in collaboration with interested States, local governments, industry and non-governmental partners, and public stakeholders, based on geographically relevant data and information for the purpose of furthering old-growth forest desired conditions (NOGA-FW-OBJ-01). This objective applies consistent expectations for local consultation and collaboration in the development of place-based strategies for old-growth management that will be consistent with the direction in other amendment plan components.

Under all action alternatives, plan components orient future management but do not direct or authorize any action. All action alternatives promote consistency in old-growth management across forests, which is likely to result in beneficial effects for old-growth goods and services that transcend unit boundaries. Potential impacts of individual management actions that may impact old-growth forests will be evaluated through project-level environmental analysis, including associated public

involvement. The intent of the old-growth amendment EIS is to serve as a mobilization mechanism for much-needed and urgent priority on adaptive strategy for the nation's mature and old-growth forests in a physical environment rapidly changing from climate change. The pace and scale of threats might require the top-down approach for quick action. The purpose of amendment is to establish a baseline for OG management, not dictate which areas are managed. These are determined through local definitions and Adaptive Strategies. The strength and scope of the values held for old-growth forests may warrant swift action.

Alternatives 2 and 3

Under Alternatives 2 and 3, Standard 2a (NOGA-FW-STD-02a) states that vegetation management in old-growth forests may only be for the purpose of proactive stewardship. Proactive stewardship is defined as vegetation management that promotes the composition, structure, pattern, or ecological processes necessary for old-growth forests to be resilient and adaptable to stressors and likely future environments. NOGA-FW-STD-02a(x.) includes culturally significant species or values, including key understory species, among the conditions that can be promoted by proactive stewardship. Additionally, in all action alternatives NOGA-FW-STD-02c(iv) provides an exception to Standard 2a and Standard 2b to allow vegetation management or incidental tree-cutting or removal in old-growth for culturally significant uses as informed by Tribes or for de minimis use for local community purposes. Due to the framing of proactive stewardship in NOGA-FW-STD-02a and the exceptions in NOGA-FW-STD-02c, Alternatives 2 and 3 are expected to have beneficial effects for many of the life-support and non-material values of old-growth forests. Additionally, NOGA-FW-STD-02b allows for cases where tree-cutting in old-growth forest is incidental to other activities not otherwise prohibited *and* the area continues to meet the definition and associated criteria for old-growth forest afterwards. This standard minimizes potential negative impacts to many of the economic values associated with old-growth forest products and landscapes (see further discussion in the SocioEcon and Cultural Impacts Analysis Report). However, under Alternatives 2 and 3, NOGA-FW-STD-03 may have effects on values associated with timber harvest in old-growth forests (see Section 3.4 of the *SocioEcon and Cultural Impacts Analysis Report*, link above).

NOGA-FW-DRC describes old-growth forests as dynamic systems that are distinguished by, but comprised of more than, old trees. NOGA-FW-DC-04 also recognizes the contributions of old-growth forests to the ecological integrity of other terrestrial and aquatic ecosystems. Still, unit- and regional-level old-growth criteria are generally tree-centric. Thus, even when areas continue to meet the definition and associated criteria for old-growth forest after incidental tree cutting or removal (per NOGA-FW-STD-02b), there may be impacts to understory species and other resources valued by people. These potential impacts would be evaluated in project-level environmental analysis.

Alternative 3

Standard 3 in the more restrictive alternative removes commercial timber harvest as a tool for vegetation management in old-growth forests. Parties who hold strong non-material values for old-growth forests or prioritize sustaining and supporting ecosystem services will benefit more from this alternative. The standard is consistent with non-material values that are in conflict with the transfer of old-growth forest materials in a market-based economy. Parties who prioritize the timber-related, provisioning services or material values of old-growth forests may experience negative impacts from Alternative 3, although impacts to the overall timber industry are not expected to be major (see Section 3.4 of the *SocioEcon and Cultural Impacts Analysis Report*, link above).

Alternative 4

See discussion above under Effects Common to All Action Alternatives.

Ecosystem Services

Alternative 1

Under the no-action alternative, the Forest Service would continue to manage National Forest System (NFS) lands consistent with the Multiple-Use Sustained-Yield Act of 1960 (16 U.S.C. 528–531), which requires the Agency to sustain the multiple use of its renewable resources while maintaining the long-term health and productivity of the land. This applies to the totality of NFS lands, which include old-growth forests. Current levels of multiple uses and ecological integrity in old-growth forests on NFS lands generate a wide variety of ecosystem services, or benefits, to people.

Due to existing law, regulation, and policy, old-growth forests on NFS lands would continue to provide ecosystem services under the no-action alternative. However, plans developed prior to implementation of the 2012 planning rule may not explicitly address the diversity of ecosystem services provided by planning units. Further, those plans that have been revised under the 2012 planning rule may not consistently address the ecosystem services provided by old-growth forests when they are present in the planning area. Thus, under the no-action alternative, there may be risks to many of the ecosystem services provided by old-growth forests on units that currently lack plan direction for proactive stewardship of old-growth forests.

Effects Common to all Action Alternatives

Under all action alternatives, the Statement of Distinctive Roles and Contributions (NOGA-FW-DRC) and Desired Condition 3 (NOGA-FW-DC-03) recognize the variety of ecosystem services provided by healthy old-growth forests on National Forest System lands and provide consistent intent to steward those forests in ways that provide a range of cultural, supporting, regulating, and provisioning ecosystem services. NOGA-FW-DC-03 would specifically orient future Forest Service actions towards the provision of ecosystem services from old-growth forests, including but not limited to long-term stability of forest carbon, clean water and soil stabilization, plant and animal habitat, spiritual and cultural heritage values and education, and recreational and tourism experiences.

All plan components in the action alternatives are intended to conserve the characteristics and functions of old-growth forests that provide a variety of ecosystem services and associated values for people. Because ecosystem services are a function of ecosystem integrity, and all action alternatives provide for ecological integrity of old-growth forests (see Section XX), all action alternatives are expected to contribute to range of old-growth forest ecosystem services. Between alternatives, those that provide for the most resilience in old-growth forests are expected to be most beneficial for contributions to ecosystem services. Action Alternatives 2 and 3 set explicit expectations for proactive stewardship activities in old-growth forests in order to promote the composition, structure, pattern, or ecological processes necessary for old-growth forests to be resilient and adaptable to stressors and likely future environments. These activities may have short-term detrimental effects to some ecosystem services (e.g., impacts to aesthetic values or water quality from a prescribed burn). However, given the definition of proactive stewardship, all short-term, negative effects are expected to be followed by enduring beneficial effects in the long-term.

The action alternatives do not authorize any ground-disturbing activities. Effects, defined as reasonably foreseeable changes to the human environment, which means comprehensively the natural and physical environment and the relationship of present and future generations with that environment, would be required to be analyzed at the project level. That analysis of effects, which can be ecological, aesthetic, historic, cultural, economic, social, or health-related (40 CFR § 1508.1(i)), reflects the ways in which people relate to old-growth forests through ecosystem services.

Alternatives 2 and 3

Under Alternatives 2 and 3, NOGA-FW-STD-02a restricts vegetation management in old-growth forests to proactive stewardship and details specific old-growth characteristics that must be promoted by proactive stewardship activities. Compared to Alternative 4, which does not contain NOGA-FW-STD-02a, the constraints on management actions in old-growth provided by this standard establish stronger direction for cultivating ecological characteristics that are essential for the provision of ecosystem services by old-growth forests (e.g., resilience to insects and disease and connectivity for old-growth obligate species). At the same time, NOGA-FW-STD-02b allows for the removal of trees in old-growth forest for purposes other than proactive stewardship when "(1) incidental to the implementation of a management activity not otherwise prohibited by the plan, and (2) the area – as defined at an ecologically appropriate scale – continues to meet the definition and associated criteria for old-growth forest after the incidental tree cutting or removal". NOGA-FW-STD-02c provides deviations from NOGA-FW-STD-02a and NOGA-FW-STD-02b that allow for vegetation management or incidental tree cutting in old-growth forests in some instances, which supports the continued provision of ecosystem services related to cultural uses, recreation, mineral and energy resources, and research.

Alternative 3

Alternative 3 is most restrictive on timber resources and timber resource management because of standard 3 (NOGA-FW-STD-03). Compared to Alternatives 2 and 4, Alternative 3 may be less beneficial for the provision of ecosystem services from old-growth forests on National Forest System lands, due to the expectation that less proactive stewardship will be feasible under this alternative.

Alternative 4

Under Alternative 4, there are no standards for restrictions on vegetation management in old-growth forests. Alternative 4 is expected to result in fewer beneficial effects for ecological integrity and ecosystem services than Alternative 2 because Alternative 2 sets explicit expectations for proactive stewardship activities to promote the resilience old-growth forests. Alternative 4 is expected to result in more beneficial effects than Alternative 3; while Alternative 3 sets the same expectations for proactive stewardship, it limits the availability of tools to achieve proactive stewardship through timber harvest, which may reduce the pace and scale of restoration and provision of ecosystem services.

Environmental Justice

Effects Common to all Action Alternatives

All action alternatives allow vegetation management in old-growth forests when necessary to protect public health and safety or to achieve wildfire risk management objectives, both of which may be important for well-being of communities with environmental justice concerns.

Overall and enduring effects to recreation on National Forest System lands are expected to be beneficial, with improvements in scenery and recreation settings from proactive management of old-growth forests. These benefits would be shared by all people who visit national forests and live in the vicinity of these lands. While some administrative burden associated with Alternatives 2 and 3 may impact new developed recreation sites, there is no indication that those challenges would be disproportionately experienced by communities with environmental justice concerns (see Section 6).

Effects of all action alternatives for Tribal rights and interests are expected to be largely beneficial, given the direction in plan components to manage old-growth forests for reasons including the promotion of culturally significant uses and values; to integrate Indigenous Knowledge; to initiate co-stewardship projects within two years of the record of decision; and to develop place-based strategies for old-growth conservation in consultation with interested Tribes (see Section 9).

Based on the analyses in other sections of the SocioEcon and Cultural Impacts Analysis Report, no substantial, adverse effects to the goods and services provided by old-growth forests on National Forest System lands are expected from any of the action alternatives, and thus no disproportionate and adverse effects on communities with environmental justice concerns are anticipated. All action alternatives are expected to enhance the ecological integrity of old-growth forests compared to the no-action alternative, with resulting beneficial effects for communities that rely on goods and services from National Forest System lands. The proposed amendment to land management plans across the National Forest System is programmatic; it orients future decisions but does not authorize action. Project-level environmental analysis will consider impacts to communities with environmental justice concerns in the context of specific actions, consistent with current NEPA implementing regulations and best practices. The Forest Service's Climate Risk Viewer Fireshed map contains data layers for Census tracts that are considered disadvantaged in the CEJST, tracts that are considered socially vulnerable using the CDC-ATSDR Social Vulnerability Index, American Indian and Alaska Native Lands, and Economic Research Service (ERS) Persistent Poverty Census Tracts. These data layers can be displayed along with fireshed-level data on fire risk, at-risk species habitat, carbon storage, infrastructure, watersheds, and ecological connectivity. This tool is available for future project-level analysis to consider the distribution of risks and benefits from Agency management actions.

As described in Section 2.5.1.2, opportunities for meaningful involvement for all people may be reduced in a national-level amendment of all National Forest System land management plans (with exceptions described in Chapter 2), compared to unit- or multi-unit amendments. However, development of the amendment will meet requirements of the National Environmental Policy Act and the 2012 planning rule, which requires the responsible official to encourage participation from youth, low-income, and minority populations. Additionally, under all action alternatives, there will be opportunities for meaningful engagement through project-level environmental analysis, as well as the development of *Adaptive Strategies for Old-Growth Forest Conservation* (NOGA-FW-OBJ-01). Plan components in the action alternatives are not expected to have the effect of reducing the ability of communities with environmental justice concerns to participate in decision-making processes for future management actions in old-growth forests.

Overall Social and Economic Sustainability

Social and economic sustainability related to the timber industry, the restoration related economy, and associated rural community well-being are only anticipated to change from effects occurring under Alternative 3. Alternative 3 does not allow funding for restoration through commercial timber sales and would not support the anticipated level of restoration work needed to reduce threats to old-

growth forests. As a result, the restoration related economy would not see the economic activity allowed by Alternatives 2 and 4. Under Alternative 3, contributions to rural community well-being would be less than for the other alternatives, given the lower level of restoration-related economic activity. Payments to counties from federal timber receipts under Alternative 3 would be less than Alternatives 2 and 4, providing less associated funding to local governments. Effects on the pace and scale of restoration under Alternative 3 would not provide the level of ecosystem services associated with the improved ecosystem integrity expected under the other action alternatives.

With the sale of commercial timber products allowed under Alternatives 2 and 4, and the assumed availability of substitute suitable lands under Alternative 3, no economic effects to the timber industry outside of Alaska are anticipated because there will be no change in forest Allowable Sale Quantity (ASQ), Projected Timber Sale Quantity (PTSQ) or land suitability.

To clarify, the proposed old-growth amendment does not change lands suitable for timber production. Old-growth forests will remain forested lands as a part of this amendment process. The amendment also does not propose special designation status (e.g. roadless, a new management area in the land management plan etc.) for old-growth forests. While the amendment proposes constraints on the purpose of vegetation management activities in old-growth forests, it is recognized these are dynamic systems and areas that currently meet the definition (and associated criteria) of old-growth could no longer meet the definition/criteria in the future – for example, due to natural disturbance (e.g. wildfire, insect and disease). Should this occur, these areas would no longer be subject to the old-growth amendment. The amendment also does not change ASQ or PTSQ because the projected timber sale quantity includes volume from timber harvest for any purpose from all lands in the plan area based on expected harvests that would be consistent with the plan components. (See the Timber discussion – specifically the affected environment portion – in the SocioEcon and Cultural Impacts Analysis Report for further context and rationale regarding suitable lands, ASQ/PTSQ and estimated contributions of tree cutting in old-growth that contributes to the timber program.)

In Alaska, under Alternative 3, no small and micro- commercial old-growth sales would occur for the Tongass. The demand for raw materials from sawmills dependent on old-growth timber could accelerate harvest of remaining stands of old-growth timber from state and Native lands in southeast Alaska. The timber industry in southeast Alaska could contract as mills dependent on old-growth timber curtail operations or shut down from lack of old-growth timber supply. Alternatives 2 and 4 allow for continued transition from old-growth to a primarily young-growth timber base with fewer effects to the timber industry and timber-related economic benefits such as federal payments to boroughs in southeast Alaska.

Social and economic sustainability related to mineral and energy management may change with potential effects to the management and development of mineral and energy resources. The potential for spatial overlap between mineral and energy resources and old-growth forest is minimal due to the small percentage of NFS lands currently known to be occupied by both resources. However, mineral operations could occur in old-growth forests as the proposed amendment is subject to valid existing rights for use and occupancy (NOGA-FW-STD-02c) and the proposed amendment does not change the mineral status of the lands (i.e., does not propose a mineral withdrawal).

Under all the action alternatives, long-term beneficial effects are anticipated from many types of recreation, and associated social and economic sustainability, through the long-term resilience and retention of old-growth forests. All new recreation developments (developed recreation, roads, trails, special uses, and ski areas) will be designed and analyzed at the project level. Project areas

characterized by old-growth forest may need a survey for old-growth. If projects areas are found to have old-growth forest, the deciding official would determine if Standard 2.b applies. Some projects may not comply with Standard 2.b and in instances where projects cannot be mitigated, a project-level forest plan amendment may be necessary. In some cases, the deciding official may choose not to pursue project-level plan amendments and forego the project, with potential consequences for recreation and economic benefits.

Under all the alternatives, current special use authorizations managed by the Forest Service lands program would not be affected since the alternatives allow for reasonable actions to ensure the safety and reliability of operations or activities. Landownership adjustment mandatory conveyances would, by their nature, also be insulated from old-growth restrictions. New special use proposals and discretionary landownership adjustments would require assessment and may be altered or include adaptive strategies based on potential reduction to old-growth. As a result, social and economic sustainability connected to lands and special uses would not be affected.

3.3.3. Tribal Rights and Interests Impacts

The following is excerpted from the SocioEcon and Cultural Impacts Analysis Report, which is incorporated by reference as a whole for this EIS.

Tribal sovereignty, treaty rights, and trust responsibilities

Honoring Tribal sovereignty, the trust responsibility, Treaty Rights, and compliance with Federal regulations pertaining to federally-recognized tribes is required for all Forest Service activities that have the potential to affect treaty resources, Tribal access to treaty resources, areas of Tribal importance, or sacred sites.

Under all action alternatives, the amendment represents a statement of policy and change in management direction that will inform future projects, but the amendment itself does not propose actions for timber, recreation, land uses, etc. When individual Forest Service units begin planning projects to implement activities on the ground, management and line officer decisions pertaining to these activities should first consider Treaty Rights because those rights supersede federal law, regulation, or policy.

Under all action alternatives, NOGA-FW-GOAL-01 sets an intention for tribal inclusion in the interpretation and implementation of all aspects of the amendment. The goal specifies that “Interpretation and implementation of the old-growth amendment is grounded in recognition and respect for tribal sovereignty, treaties, Indigenous Knowledge and the ethic of reciprocity and responsibility to future generations.” It is thus assumed that all action alternatives will protect Tribal Treaty rights and resources.

Under all alternatives, visual and ground disturbance in conjunction with management activities in old-growth forests may occur in treaty resource ecosystems or areas of Tribal importance, or sacred sites may be encountered. Consultation would be required and implemented under all alternatives prior to project implementation to identify, discuss, protect, and mitigate potential impacts to Treaty Resource ecosystems, areas of Tribal importance, or sacred sites.

Areas of Tribal importance

(2012 Planning Rule) The action alternatives do not change existing plan components related to the management of areas of Tribal importance, so under all alternatives current plan direction related to

areas of Tribal importance will remain in effect. The 2012 Planning Rulerequires that land management plans promote ecological sustainability and contribute to social, cultural, and economic sustainability, including by managing areas of Tribal importance. Current land management plans may have management direction that requires coordination with Native American Tribes on rights and interests, issues, and concerns. For plans revised under the 2012 Planning Rule, current direction may include forest-wide goals, objectives, desired conditions, standards, and guidelines pertaining to American Indian rights and interests. Specific issues addressed via direction and consultation in some recently revised plans include honoring Tribal sovereignty, honoring the trust responsibility, honoring treaty rights, areas of Tribal importance, marked and unmarked burial sites, and other areas of sacred or religious significance. Plans revised under the 2012 Planning Rulewill continue to provide direction for the management of areas of Tribal importance. However, plans that have not been revised under the 2012 Planning Rule may not contain explicit direction for areas of Tribal importance.

The amendment itself does not identify areas of Tribal importance but supports the 2012 Planning Rule to consult with Tribes to identify and assess effects to areas of Tribal importance. Because the action alternatives amend National Forest System land management plans to include management approaches and objectives that promote proactive stewardship in old-growth forests, the likelihood of performing management activities in areas of Tribal importance may be higher for these alternatives, compared to Alternative 1. However, NOGA-FW-MA-01b requires the prioritization of areas for proactive stewardship for a number of purposes, including restoring or enhancing attributes identified as culturally significant.

Tribal sacred sites

(E.O. 13007) The action alternatives do not change existing plan components related to the management of Tribal sacred sites. Under all alternatives, effects to Tribal sacred sites will continue to be identified in collaboration with tribes for early consideration of the protection and access to Indigenous scared sites, following the Memorandum of Understanding Regarding Interagency Coordination and Collaboration for the Protection of Indigenous Sacred Sites of 2021.

Although the amendment itself does not authorize any specific projects or work on the ground, management actions implemented at the unit level as a result of the amendment have the potential to cause effects to sacred sites.

Tribal Consultation

(E.O. 13175) Effects to tribal interests, including treaty rights, sacred sites, areas of Tribal importance, tribally-affiliated cultural resources, religious freedom, and Indigenous Knowledge will continue to be identified and defined by Tribes through consultation on proposed actions. Under all alternatives, forests would continue to meet their obligations to tribes via consultation requirements.

The action alternatives are anticipated to result in less potential to impact Tribal Rights and Interests because they provide for more Tribal input and collaboration. Consultation would still be required to determine the extent of adverse effects. All action alternatives clarify and provide overarching context for the ecological, cultural, and socioeconomic values of old-growth forests and the ecosystem services they provide. All action alternatives provide opportunities to identify tribal priorities and to support cultural, medicinal, food, and ceremonial values, practices and uses.

Tribal Collaboration, Including Co-Stewardship

(J.S.O. 3403) Authority and opportunities for Tribal co-stewardship exist under all alternatives.

Action alternatives would provide additional opportunities for Tribal collaboration and address Tribal concerns by including Objective 3 (NOGA-FW-OBJ-03), which incorporates a requirement that within two years of completing the *Adaptive Strategy for old-growth forest Conservation Strategy,* initiate at least one co-stewardship project with interested Tribes for the purpose of proactive stewardship. Tribes expressed concerns regarding proactive stewardship limitations of the proposed amendment. Tribes also expressed concerns regarding alignment with Indigenous approaches to stewardship. An example of this concern is expressed by the Confederated Tribe of Coos Lower Umpqua and Siuslaw Indians, "We are also concerned that certain components of the NOI are not aligned with an Indigenous approach to stewardship and would actually provide obstacles to the type of proactive stewardship that's needed to restore our nation's forests… We are concerned that the Standards for Management Actions within old-growth forest Conditions contains language that will provide additional disincentives for the FS to engage in proactive stewardship aimed at promoting the long-term resilience of old-growth at the landscape scale (Brad Kneaper, Chair Tribal Council, February 1, 2024)." An example of a similar perspective from GLIFWC, "NOGA initiative needs to be strengthened in consideration of old-growth characteristics and beings that are important to Tribes with rights to use National Forests (Jason Schlender, Executive Administrator, May 24, 2024)."

Indigenous Knowledge

The action alternatives do not change existing definitions of Indigenous Knowledge as clarified in 36 CFR Part 219 or guidance set forth by the Office of Science and Technology Policy and the Council on Environmental Quality within the Executive Office of the President on November 30, 2022. Agency policy on Indigenous Knowledge is still considered for land management planning as a source of best available scientific information.

All action alternatives include NOGA-FW-MA-01a, which requires development and adherence to an *Adaptive Strategy for old-growth forest Conservation.* These strategies are to effectively incorporate place-based Indigenous Knowledge and other forms of Best Available Scientific Information as equals to inform and prioritize planning and decision-making for the conservation and recruitment of old-growth forests through proactive stewardship. This management approach addresses concerns that have been raised by Tribes about the incorporation of Indigenous Knowledge in the management of old-growth forests on National Forest System lands. For example, the Great Lakes Indian Fish and Wildlife Commission (GLIFWC), an intertribal natural resources agency exercising delegated authority from 11 federally-recognized Ojibwe Tribes, expressed the need to incorporate "Indigenous Knowledge (Anishinaabe Gikendaasowin) into planning, project design, and implementation to achieve forest management goals and help meet general trust responsibilities" (Jason Schlender, Executive Administrator, May 24, 2024). All action alternatives also specify that what constitutes old-growth forest is informed by best available science, which includes Indigenous Knowledge.

An indirect consequence of all action alternatives pertains to the requirement for units to use Indigenous Knowledge to inform the identification and management of old-growth forests on National Forest System lands. The action alternatives require the agency to use Indigenous Knowledge, but plan components do not provide guidance for how to do this. The requirement to use Indigenous Knowledge does not inherently provide for Tribal Indigenous Knowledge and data sovereignty, which protects Tribal knowledge and information that may be shared with the agency

for management purposes under the amendment. Under all action alternatives, there is a need for the agency to consult with Tribes to develop guidance and best practices for the incorporation of Indigenous Knowledge and how the agency will honor Tribal data sovereignty to protect all Indigenous Knowledge that is shared by Tribes.

3.3.4. Consideration of Programmatic Cumulative Effects

The impact on the environment resulting from the incremental impact of the proposed old-growth amendment when added to other past, present, and reasonably foreseeable future actions:

Past actions that have impacted old-growth forest on National Forest System (NFS) lands include many that resulted in loss or degradation of old growth habitats, such as human population growth, commercial timber harvest, silvicultural manipulation to favor tree species preferred for timber production, and wildfire suppression. Unplanned but human-caused actions, such as human-ignition wildfire and introduction of tree-killing insect and fungal pests, have also contributed to the loss or degradation of old growth on National Forest System lands.

Some past and current Forest Service actions have been beneficial to old-growth forests. Reseeding and replanting after fires or after vegetation management can contribute to restoration of old-growth forests, depending upon the specifics of each individual project. Existing land use designations, such as wilderness, inventoried roadless, certain management areas identified in land management, and many others across all NFS units can be protective of old-growth forests by limiting activities that could be harmful; however, at the same time, these designations can preclude proactive stewardship where it could be beneficial to old-growth forests.

Some existing land use designations and previous agency actions (such as the Northwest Forest Plan amendments) have resulted in declines in old-growth timber harvest on some NFS lands and the potential for reduced contributions to some local economies. Additional restrictions on vegetation management in the proposed amendment could have cumulative effects with these decisions. Adjustments made in the timber industry, including retooling to mill smaller diameter logs and shifting to timber sourced from state and private lands, may also have consequences for restoration capacity to achieve improved ecological conditions in or near old-growth forests under the proposed amendment.

The ability of proactive stewardship to positively affect old-growth is partially dependent upon the ability to sell forest products to manufacturing companies and to use harvesting processes (including the residual slash disposal activities) to positively affect the forest vegetation and reduce hazardous fuels. If the forest products industry declines in areas surrounding NFS units to the degree that it is difficult to sell forest products, or if "stumpage prices" decrease substantially, it would affect how many acres could be treated. While some treatments could be accomplished by using prescribed burning only, it is generally very risky in the wildland-urban interface and expensive, leading to fewer acres treated.

The natural amenities on NFS lands, including old-growth forests, can support employment and rural population change in counties. Population growth can have beneficial effects for local economies and community stability, but it can also stress communities, natural resources, and land management. Forest managers face pressures to maintain the quality of visitors' experiences while providing forest products and unique cultural and recreational experiences to a greater number of people. Enhanced resilience of old-growth forests on National Forest System lands and resulting benefits to ecosystem

services and values may counteract some of the negative impacts of urbanization on quality of life in communities around National Forest System lands.

Continued population and economic growth are also causing shifts in development patterns, with conversion of more privately owned rural land into housing developments, community infrastructure, commercial centers, and industrial sites. While these development patterns are not on National Forest System lands, some are adjacent to or surrounded by National Forest System lands. This type of land conversion has escalated problems for firefighters and heightened the demand from homeowners for wildland fire protection at the wildland-urban interface. The ability to implement proactive stewardship is highly dependent upon prescribed burning (both associated with timber harvesting and without it). Therefore, public concern about smoke and associated air quality regulations could have substantial effects in limiting vegetation treatments using fire and meeting desired vegetation conditions.

Wildlife management actions – such as (but not limited to) the Southern Rockies Lynx Amendment (SRLA), the Northern Rockies Lynx Management Direction (NRLMD), habitat management direction for the Northern Continental Divide Ecosystem grizzly bear population, and the Northwest Forest Plan – also protect and allow restoration of old growth as a means of managing and protecting wildlife species.

Reasonably foreseeable Forest Service actions that could further impact old-growth forests include development, amendment, or revision of Forest Service management strategies, policies, and regulations. This includes revising land management plans across the National Forest System under the 2012 planning rule, updates to Canada lynx habitat mapping (which in turn guides implementation of the SRLA and NRLMD), amendment to the Northwest Forest Plan, and other plan amendments that may arise over the lifetime of the old-growth amendment, if approved and implemented, as understanding of wildlife conservation and habitat management improves.

Guidance that aides in establishing consistent approaches to conserve, steward, and monitor existing and future forest old growth conditions across NFS lands was released in March 2024. The Technical Guidance for Standardized Silvicultural Prescriptions for Managing Old-growth (USDA 2024) provides more detailed direction on preparing silvicultural prescriptions to maintain or restore ecological integrity (composition, structure, function, connectivity) and resilience of old-growth forests on NFS lands in the face of current and future disturbance and climate change. The primary purpose of silviculture treatments in old-growth forests would be to move the stand toward desired conditions or improve ecological integrity (or both). Many Forest Service management actions already function to preserve or restore old growth ecosystems, either as the focus of such actions or as a byproduct of wildlife habitat conservation. The proposed old-growth amendment plan components are generally complementary to the management of most native species. This includes threatened and endangered and rare species, such as (but not limited to) marbled murrelet, northern spotted owl, Canada lynx, and grizzly bear.

A number of past Federal activities have had effects on American Indian rights and interests. Tribal consultation will be implemented under all alternatives, providing an opportunity to discuss potential cumulative effects from agency actions in old-growth forests to Treaty resource ecosystems, areas of Tribal importance, sacred sites, and other Tribal interests and to identify opportunities for mitigation, where appropriate.

3.3.5. Other Considerations and Disclosures

Unavoidable Adverse Environmental Effects

No unavoidable, adverse environmental were detected when analyzing the impact of the old-growth amendment.

Irreversible or Irretrievable Commitment of Resources

There will be no irreversible or irretrievable commitment of resources as a result of the old-growth amendment.

Historic and Cultural Resources and Conservation Potential

Under all action alternatives, the amendment represents a statement of policy and change in management direction that will inform future projects, but the amendment itself does not authorize any specific projects or work on the ground with the potential to cause effects to historic properties or cultural resources.

Possible Conflicts with Other Land Use Plans, Policies and Controls

In the course of coordinating with other public planning efforts the Forest Service will consider ways the proposed old-growth amendment could contribute to common objectives, address impacts, resolve or reduce conflicts, and contribute to compatibility between Forest Service and other agencies' plans. Also refer to the discussion under Chapter 1, Section 1.11 regarding *Plan Amendments and Revisions* and *Coordination with Other Planning Efforts.*

Energy Requirements and Conservation Potential

The potential for spatial overlap between mineral and energy resources and old-growth forest is minimal due to the small percentage of National Forest System lands currently known to be occupied by both resources. However, mineral operations could occur in old-growth forests as the proposed old-growth amendment is subject to valid existing rights for use and occupancy (NOGA-FW-STD-02c) and the proposed old-growth amendment does not change the mineral status of the lands (i.e., does not propose a mineral withdrawal). Effects could be reduced by the agency's ability to apply environmental protection measures (design features and mitigation measures) and collaborate with mineral proponents on project design to ensure compliance with all laws, regulations, and policy.

Natural or Depletable Resource Requirements and Conservation Potential

Negligible effects are anticipated from the proposed amendment on the overall National Forest System timber resources and timber resource management. Agency funds will go further under Alternatives 2 and 4 and treat additional acres of old-growth with the sales of commercial products covering a portion of restoration costs or "goods for services" unlike Alternative 3 where appropriated funds will be needed to treat acres. With the continued ability to trade goods for services, the agency will be able to conduct necessary treatments to reduce risk and provide benefits arising from old-growth forest management. In addition, there will be no change in ASQ, PTSQ or land suitability as a result of the amendment.

Livestock grazing and rangeland management approaches are designed and analyzed at the project level. Authorized livestock grazing and associated rangeland management activities must be designed and implemented in a manner that is consistent with the applicable plan components of the

relevant land management plan. The old-growth amendment is not anticipated to adjust plan components associated with existing relevant land management plans to a degree that would impact existing and/or future grazing and/or livestock use permits. Therefore, there are no anticipated impacts to livestock grazing opportunities on National Forest System lands, nor impacts to the economic and social well-being of permittee holders.

Refer to the SocioEcon and Cultural Impacts Analysis Report for more detailed discussions on these resources.

Incomplete or Unavailable Information

In accordance with 36 CFR 219.3, this analysis uses the best available scientific information found to be relevant to National Forest System old-growth forests and ecosystems and social, cultural and economic conditions that could be impacted by the proposed old-growth amendment. The accurate, reliable, and relevant sources used for the analysis are cited throughout; uncertainty and/or conflicting sources of information are acknowledged and interpreted where applicable. The preparers of this analysis recognize uncertainties and gaps may exist given the lack of site-specific information available at the time of analysis and that additional best available science, alternate sources of data, or other analysis approaches could be identified between the time of this analysis and the Final Environmental Impact Statement.

4. Chapter 4 Preparers and Contributors

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and other organization and individuals during the development of this environmental impact statement:

Interdisciplinary Team Members

Name	Contribution to EIS	Educational/Specialized Experience	Years of Experience
Aldridge, Michelle	Region 8 LMP Review, Liaison	M.S. Natural Resources	16
Alexander, Mara	Adaptive Management Program Leader	Ph.D. Limnology and Marine Science, M.A. Earth and Planetary Science, B.S. Biology and Ecology	24
Allen, Anastasia	Mountain Planning Service Group Leader	M.S. Conservation Biology and Sustainable Development; B.S. Forestry	20
Barbour, Jamie	Science and Analysis Leader	Ph.D./M.S. Wood and Fiber Science, B.S. Botany, Agency Lead for Adaptive Management and Monitoring	38
Barndt, Scott	Adaptive Management Project Manager	M.S. Biology, B.S. Fish and Wildlife Management	30
Barnes, Jessica	Social Scientist	Ph.D. Forestry and Environmental Resources	8
Brown, Christopher	LMP Review	B.S. Forestry	20
Capp, Michelle	Tribal Engagement Specialist	B.S. Natural Resource Management	28
Carnwath, Gunnar	Ecology affected environment/effects	Ph.D. Forestry; Masters Ecosystem Management	18
Conley, Keats	Fish Biologist	Ph.D. Biology, Masters Environmental Studies	7
Costanza, Jen	Future projections of old growth area	Ph.D. Landscape ecology, forest dynamics modeling	20
Croissant, Tim	Wildlife Biologist	B.S. Wildlife Biology and Botany	25
Daniels, Jean	Economic affected environment/effects	Ph.D. Forest Economics	24
DiProfio, Nicholas	Planning Specialist	M.A. Public Policy, NEPA and Natural Resource Management	11
Eichman, Henry	Economist	M.S. Agriculture and Resource Economics; B.A. Ecology	21
Erickson, Jonathan	Recreation, Recreation Special Uses	M.S. Conservation Social Science	25
Feinberg, Jeremy	Natural Resource Specialist (assisted with ESA consultation)	Ph.D. Ecology and Evolution, M.S. Biology	25
Frey, Greg	Consultation on social and economic data	Ph.D.; Research Forester	15
Gaugush, Sam	Project Advisor	J.D.	15
Graelyn, Tera	Project Leader	M.S. Organizational Performance; B.A. Communication; PMI Certified Assc in Project Management	17
Greenler, Skye	Climate refugia analysis	Ph.D. Sustainable Forest Management; M.S. Forest Biology	11
Grim, Mary	Endangered Species Act (ESA) Consultation Lead	B.A. Biology; Fish and wildlife conservation and ESA policy	31

Name	Contribution to EIS	Educational/Specialized Experience	Years of Experience
Groff, Shannon	Geospatial Systems Specialist	M.S. Ecology & Environmental Sciences; B.S. Geography; certified GIS Professional (GISP)	14
Hartless, Cheri	National Fire and Fuels Silviculturist Specialist	M.S. Forest Management; Certified Silviculturist	33
Hayward, Greg	Ecologist	Ph.D. Ecology	36
Houlette, Shannon	LMP Review	Ph.D. Wildlife Sciences	18
Johnson, Casey	National Rangeland Management Program Specialist	B.S. Rangeland Management (Wildlife Biology Minor)	20
Kaiser, Kirsten	Public Engagement and Cooperating Agency Coordination Leader	B.S. in Forestry/Wildlife Bio, M.S. of Public Administration	30
Kamoske, Aaron	Ecological Analyst	Ph.D. Geography, Environment, and Spatial Sciences (Certificate in Spatial Ecology)	9
Karchut, Marissa	Cultural and Historic Resources Specialist (Archaeologist)	M.A. Applied Anthropology; B.A. Anthropology	25
Kartchner, Benjamin	LMP Review	B.S. Wildlife and Wildlands Conservation	6
Kaufmann, Kira	Tribal Relations Specialist	Ph.D. Anthropology (minor GIS and Geophysics); M.A. Anthropology/Archaeology; B.A. Anthropology (minors in Biology and French)	37
Keil, Martina	Ecologist	M.S., Rangeland Ecology and Management, B.A., Communications and Public Relations	24
Kim, John	Climate refugia analysis	Ph.D. Fisheries & Wildlife Conservation; ESA Certified Ecologist	20
Kleinsmith, Shanna	Writer-Editor	B.S. Natural Resources Ecology	20
Kluesner, Lisa	Affected Environment, Environmental Consequences	M.S. Environmental Science; B.S. Natural Resources Management; ESA Certified Ecologist	17
Lehr, Jacob	Relative recreation estimates	M.S. Computational Analysis and Public Policy; B.A. Economics	5
Long, Jennifer	Fire Ecologist, Affected Environment	M.S. Natural Resources - Forestry; B.A. Geography/Environmental Studies	25
MacDonald, Kit	Affected Environment, Environmental Consequences	Ph.D. Forestry	28
Maclennan, Audrey	Climate refugia analysis	M.S. Sustainable Forest Management	10
Marshall, Amy	NEPA Specialist	B.S. in Forestry	25
Mcgiffin, Matthew	Timber Presales Lead	B.S. in Forest Management	18
McRae, Jennifer	Team Leader/Assistant Director	M.S. Soil and Water Science; B.S. Soil Resource Management	33
Middleton, Karen	Records Manager/Engagement Specialist	B.S. Civil Engineering	21
Mihiar, Chris	Consultation on social and economic data	Ph.D., Research Economist	5

Name	Contribution to EIS	Educational/Specialized Experience	Years of Experience
Miranda, Brian	LMP Review	M.S. Environmental and Forest Biology	21
Naficy, Cameron	Climate refugia analysis	Ph.D. Geography; M.S. Biology	19
Overby, Anna	Consultation on social and economic data	Ph.D. Research Forester	1
Padilla Nieves, Delissa	Outreach and Engagement	M.S. Natural Resources Management	15
Palagonia, Eric	Social Scientist, Designated Areas	B.A. Economics (Certificate in Public Policy Econ); M.A. Environmental Resource Policy (Certificate in GIS)	6
Panico, Nichole	Natural Resource Specialist (assisted with ESA consultation)	B.S. Wildlife Ecology and Conservation	9
Parker, Susan	Pacific Planning Service Group	Ph.D. Forest and Natural Resources	22
Parker, Wendy	Archaeologist, USDA Forest Service	M.A. Anthropology	21
Povak, Nicholas	Climate refugia analysis	Ph.D. Forestry, University of Washington	17
Ramirez, Emily	Biologist	M.S. Forestry, Natural Resource Management; B.A. Environmental & Earth Sciences	15
Reilly, Matthew	Climate refugia analysis	Ph.D. Forest Science	20
Remley, Deirdre	Cultural and Historic Resources Specialist	M.A. Anthropology (Archaeology emphasis), Cultural resources management	30
Renwick, Katie	FIA National Analyst	Ph.D. Ecology	10
Rothenberg, Rebecca	Carbon Stewardship Specialist	B.A. English; M.S. Forest Science; Ph.D. Forest Landscape Ecology; Research Ecologist at PNW Research Station	20
Rupe, John	Planning Advisor	B.S. Civil Engineering; M.S. Planning	47
Schmidt, Leslie	Archaeologist	M.A. Anthropology	20
Schmitt, Kristen	Climate Adaptation Specialist	M.S. Fisheries and Wildlife	*None provided*
Shaw, Jimmy	Eastern Planning Service Group Leader	MBA, M.S. Interdisciplinary Engineering	22
Shivan, GC	Consultation and gathering of social and economic data	Ph.D.; ORISE Fellow	1
Stephens, Douglas	Federal Preservation Officer	M.A. Anthropology	30
Stuart, Julia	Ecologist	Ph.D., M.S. Biology	*None provided*
Trager, Matthew	Region 8 LMP Review, Liaison	Ph.D. Interdisciplinary Ecology	12
Vogel, Mindy	Minerals & Geology Program Leader	M.S. Geology	20
Wahlberg, Maximillian	Climate refugia analysis	B.A.	22
Walters, Ashley	Affected Environment/ Wildlife and Fisheries	Ph.D. Ecology, Evolution and Environmental Biology	4
White, Eric	Relative recreation estimates	Ph.D. Forestry	19
Whitford Jones, Mairead	Pacific Planning Service Group	B.S. Environmental Science and Technology	3

Name	Contribution to EIS	Educational/Specialized Experience	Years of Experience
Wiener, Sarah	Adaptive Management Social Scientist	M.S. Forestry, Natural Resource Mgmt	10
Woodruff, Reggie	Consultation on social and economic data	M.A. Political Communications/Energy and Realty Specialist	12
Yasuda, Don	Pacific Planning Service Group Leader	B.S. Wildlife and Fisheries Biology; Certified Wildlife Biologist	36
Zuiderveen, Grady	Project Manager, Ecology	Ph.D. Forest Resources, M.S. Plant Breeding, B.S. Plant Biology; FAC P/PM training	9

Federal, State, and Local Agencies

- Department of the Interior (DOI), Environmental Protection Agency
- DOI, U.S. Fish and Wildlife Service
- Department of Commerce, National Oceanic and Atmospheric Administration
- Advisory Council on Historic Preservation

Tribes

In letters dated February 23, 2024, National Forest System Deputy Chief Chris French invited Tribal leaders to request consultation with national, regional, and local consulting officials on the actions identified in the proposed amendment related to the stewardship of old-growth forests on National Forest System lands.

The Forest Service has received the following government-to-government consultation requests and is in the process of coordinating consultation meetings:

- Rappahannock Tribe;
- Confederated Tribes of Siletz Indians; and
- Klamath Tribes

The Forest Service has also received the following non-government-to-government requests:

- Organized Village of Saxman, request to meet face-to-face with the federally recognized Tribes in Southeast Alaska;
- Organized Village of Kake, request to withdraw from the old-growth amendment the exemption that allows commercial logging of the Tongass National Forest to implement the Southeast Alaska Sustainability Strategy; and
- Yakutat Tlingit Tribe, same request as Organized Village of Kake.

The Forest Service Office of Tribal Relations will coordinate old-growth amendment consultation requests. Tribal leaders may request consultation with national, regional, and local consulting officials on national policies, procedures, and actions. The consultation period will continue throughout the environmental impact assessment process until a record of decision is signed by the Secretary of the U.S. Department of Agriculture later this year. The Forest Service will provide timelines for consultation and collaboration on actions as they are received and prioritized.

Additional information can be found on the Office of Tribal Relation's National Consultation webpage.

Others

- Borja Arboleda, Maria (contractor)
- Krueger, Joseph (Agriculture Conservation Experienced Services)
- Nelson, Peter (contractor)
- Patterson, Matthew (contractor)
- Rock, Ryan (contractor)
- Schaaf, Abigail (contractor)
- Seibert, Angela (contractor)

5. Chapter 5 Distribution of the Environmental Impact Statement

This environmental impact statement (EIS) is being distributed to individuals who specifically requested a copy of the document and those who submitted substantive comments during the scoping period initiated by the Notice of Intent to prepare this EIS. In addition, copies have been sent to the following Federal agencies, federally recognized tribes, State and local governments, and organizations representing a wide range of views.

Required Distribution

- USDA, Animal and Plant Health Inspection Service
- USDA, Natural Resources Conservation Service
- USDA, National Agricultural Library
- USDA, Rural Utilities Service
- Department of the Interior (DOI), Environmental Protection Agency
- DOI, Department of Energy
- Department of Commerce, National Oceanic and Atmospheric Administration
- Department of Defense (DoD), Deputy Assistant Secretary of Defense (Environment)
- DoD, Air Force Civil Engineer
- DoD, Chief of Naval Operations
- U.S. Army Corps of Engineers
- Department of Transportation, Federal Highway Administration
- Northwest Power Planning Council
- Tennessee Valley Authority

Tribal Governments and Organizations

- Great Lakes Indian Fish & Wildlife Commission (GLIFWC)
- Intertribal Timber Council (ITC)
- Confederated Tribe of Coos Lower Umpqua and Siuslaw Indians
- Rappahannock Tribe
- Klamath
- United Keetoowah Band of Cherokee Indians in Oklahoma
- Confederated Tribes of Siletz Indians
- Leech Lake Band of Ojibwe
- Tribal and Alaska Native Corporation leaders
- Nez Perce
- Karuk Tribe

The Draft EIS is also being sent to numerous tribal organizations nation-wide using a list maintained by the Forest Service's Office of Tribal Relations.

State and Local Governments

- Arizona Department of Forestry, Tom Torres
- California Department of Forestry, Mathew Reischman
- Idaho Dept Lands (WGA), Craig Foss
- Montana Dept of Natural Resources and Conservation (WGA), Amanda Kaster
- New Mexico Forestry Division, Laura McCarthy
- North Carolina Forest Service, David Lane
- State of Utah Department of Natural Resources, Redge Johnson
- The National Association of State Foresters, Jay Farrell
- Wisconsin Department of Natural Resources, Division of Forestry, Heather Berklund
- Wyoming State Forestry Division (WGA), Kelly Norris
- WGA – Nevada, KC Kacey
- WGA - South Dakota, Marcus Warnke
- WGA – Utah, Sindy Smith
- Western Governor's Association, Jack Waldorf
- Wyoming County Commissioners Association, Micah Christensen
- NACo - Prairie County, MT, Todd Devlin

- NACo - Carbon County, WY, John Epsy
- NACo - Stevens County, WA, Wes McCart
- NACo - Tulare County, CA, Dennis Townsend
- NACo - Douglas County, OR, Tim Freeman
- NACo - Skagit County, WA, Lisa Janicki
- NACo, Joe Jackson
- Daggett County Commissioner, Jack Lytle
- National Association of Conservation Districts reps, Annica McGuirk
- Sublette County Conservation District, Michael Henn
- Saratoga-Encampment-Rawlins Conservation District, Leanne Correll
- Uinta County Conservation District, Kelly Guild
- Wyoming Association of Conservation Districts, Holly Kennedy
- Ruby Conservation District, Cortney Bue
- Coalition of Arizona/New Mexico Counties for Stable Economic Growth, Howard Hutchinson

Non-Government Organizations

Conservation

- Alaska Rainforest Defenders, Larry Edwards, President
- Center for Biological Diversity, Kieran Suckling, Executive Director
- Center for Biological Diversity (Alaska), Cooper Freeman, Alaska Representative & Senior Advocate
- Earthjustice, Abigail Dillen, President
- Natural Resources Defense Council, Manish Bapna, President
- American Bird Conservancy, Steve Holmer, Vice President of Policy
- Applegate Siskiyou Alliance, Luke Ruediger, Executive Director
- Clean Air Task Force, Kathy Fallon, Land Systems Program Director
- Representative for Colorado Wild Public Lands, Rocky Smith
- Environment America, Wendy Wendlandt, President
- Southern Environmental Law Center, Sam Evans, National Forests and Public Lands Program Leader
- Wild Heritage, Dominick DellaSalla, Chief Scientist
- Woodwell Climate Research Center, Richard Birdsey

Recreation

- Blue Ribbon Coalition, Ben Burr, Executive Director
- National Ski Area Association, Geraldine Link, Director of Public Policy
- Outdoor Alliance, Adam Cramer, Chief Executive Officer
- Recreational Equipment, Inc. (REI), Taldi Harrison, Director Community & Government Affairs
- Outdoor Recreation Roundtable, Jess Turner, President
- The Wilderness Society, Paul Sanford, Director of Policy Analysis

Forest Users

- Trout Unlimited, Chris Wood, Chief Executive Officer
- National Wild Turkey Federation, Matthew Lindler, Director of Government Relations
- Theodore Roosevelt Conservation Partnership, Becky Humphries, Interim CEO
- Mule Deer Foundation, Steve Belinda, Chief Conservation Officer
- National Wildlife Federation, Abby Tinsley, VP for Conservation Policy
- Boone and Crockett, Tony Schoonen, Chief Executive Officer
- Rocky Mountain Elk Foundation, Blake Henning, Chief Conservation Officer

Industry

- American Forest Resource Council, Travis Joseph, President
- Federal Forest Resource Coalition, Bill Imbergamo, Executive Director
- Idaho Forest Group, Tom Schultz, Vice President of Resources
- Intermountain Forest Association, Ben Wudktke, Executive Director
- New Hampshire Timberland Owners Association, Jasen Stock, Director
- Sustainable Forestry Initiative, Nadine Block, Senior VP Community and Government Relations
- Rural Voices for Conservation Coalition, Laurel Harkness, Coalition Director

"Denver Group"

- Silvix Resources, Susan Jane Brown, Principal & Chief Legal Councel
- National Wildlife Federation, David Dreher, Senior Policy Manager for Public Lands
- Idaho Conservation League, John Robison, Public Lands & Wildlife Director
- Conservation Northwest, Mitch Friedman, Executive Director
- Montana Wildlife Federation, Frank Szollosi, Executive Director
- North Carolina Wildlife Federation, Tim Gestwicki, Chief Executive Officer

- New Mexico Wildlife Federation, Jesse Deubel, Executive Director
- Environmental Defense Fund, Drew McConville, Senior Managing Director
- Sierra Forest Legacy, Susan Britting, Executive Director
- Sustainable Northwest, Dylan Kruse, Vice President
- Forest Stewards Guild, Zander Evans, Executive Director
- The Wilderness Society, Jamie Williams, President
- The Nature Conservancy, David Banks, Chief Conservation Officer
- American Forest Foundation, Nathan Truitt, Executive VP, Climate Funding
- American Forests, Jad Daley, Chief Executive Officer
- Society of American Foresters, Terry Baker, Chief Executive Officer
- US Endowment for Forestry and Communities, Pete Madden, Chief Executive Office

Acronyms

ANPR – Advanced Notice of Public Rulemaking

ASQ – Allowable Sale Quantity

BASI – Best Available Scientific Information

BLM – Bureau of Land Management

CEQ – Council on Environmental Quality

CFR – Code of Federal Regulations

DA – Designated Area

DBH (or dbh) - Diameter at Breast Height

DC – Desired Condition

EIS – Environmental Impact Statement

EO – Executive Order

ERU – Ecological Response Unit

ESA – Endangered Species Act

FIA – Forest Inventory and Analysis

FR – Federal Register

FS or USFS – U.S. Forest Service

FSH – Forest Service Handbook

FSM – Forest Service Manual

FY – Fiscal Year

GA – Geographic Area

GDL - Guideline

GHG – Greenhouse Gas

HRV – Historic Range of Variability

HWP – Harvested Wood Products

IK – Indigenous Knowledge

INFISH – Refers to *Inland Native Fish Strategy for Managing Fish-Producing Watersheds in eastern Oregon and Washington, Idaho, western Montana and Portions of Nevada*

IPCC – Intergovernmental Panel on Climate Change

LMP(s) – Land Management Plan(s)

LTBMU – Lake Tahoe Basin Management Unit

LUD – Land Use Designations

MA – Management Area

MOG – Mature and Old-Growth [forests]

NEPA – National Environmental Policy Act

NF – National Forest

NFMA – National Forest Management Act

NFS – National Forest System

NG – National Grassland

NHPA – National Historic Preservation Act

NOGA – National Old Growth Amendment

NOI – Notice of Intent

NRLMD – Northern Rockies Lynx Management Direction

NRM – Natural Resources Manager

NRT – National Recreation Trail

NSHT – National Scenic and Historic Trails

NWFP – Northwest Forest Plan

PACFISH – Refers to *Interim Strategies for Managing Anadromous Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho, and portions of California*

PJ – Pinyon-Juniper

PTSQ – Projected Timber Sale Quantity

QMD – Quadratic Mean Diameter

RCA – Riparian Conservation Area

RFSS – Regional Forester Sensitive Species

RHCA – Riparian Habitat Conservation Area

RMZ – Riparian Management Zone

RNA – Research Natural Area

RPA – Resources Planning Act

SASS – Southeast Alaska Sustainability Strategy

SCC – Species of Conservation Concern

SCNFV – Southern California National Forest Vision

SDI – Stand Density Index

SEK – [Western] Scientific Ecological Knowledge

SNEP - Sierra Nevada Ecosystem Project

SNFPA – Sierra Nevada Forest Plan Amendment

SRLMD – Southern Rockies Lynx Management Direction

STD – Standard

TES – Threatened and Endangered Species

USDA – U.S. Department of Agriculture

USDI – U.S. Department of the Interior

USFS or FS – U.S. Forest Service

VPD – Vapor Pressure Deficit

WIZ – Water Influence Zone

WUI – Wildland Urban Interface

Glossary

Allowable Sale Quantity (ASQ): The maximum amount of volume potentially available as part of regularly scheduled timber harvest from lands suitable for timber production per decade. Although it is expressed as an annual figure, it is actually a 10-year cap, within which annual variation is allowed. ASQ is primarily influenced by desired conditions, existing conditions, the number of acres considered suitable for timber production, and an assumption of "non-declining flow" (not required). ASQ is not the same as the total harvested volume and it is not a promise or a goal. ASQ is not based on budget, as larger budget assumptions do not result in higher ASQ. ASQ applies to land management plans developed or revised under the 1982 Planning Rule.

Commercial timber harvest: For the purpose of the old-growth amendment and analysis, *commercial* timber harvest refers to the commercial exchange of wood products through the use of timber sale contracts, end result stewardship contracts, and agreements. *Also see the definition of "timber harvest".*

Co-Stewardship: Collaboration with Indian Tribes, Alaska Native Corporations, or Native Hawaiian Organizations, with respect to their shared interests in the management, conservation, and protection of Federal lands, waters, and associated resources in a manner that seeks to protect treaty, religious, subsistence, and cultural interests; is consistent with the nation-to-nation relationship between the United States and federally recognized Indian Tribes; and fulfills the United States' unique trust obligation to federally recognized Indian Tribes and their citizens (adapted from Joint Secretarial Order Number 3403). Tribal co-stewardship is focused on meaningful and continued engagement that allows for Tribal guidance in the development and implementation of management plans, rather than merely consultation on discrete issues, incorporates listening to what is important to Tribes as defined by Tribes rather than Federal agencies, engages Tribes as primary partners in planning and implementation, seeks to ensure that management decisions reflect and integrate tribal knowledge, and is defined by the Forest/Grassland and Tribal co-stewards within their relationship. *Also see the definitions of "stewardship" and "proactive stewardship".*

Forest land: Land that is at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for non-forest uses. Land developed for non-forest use includes areas for agricultural crops, improved pasture, residential or administrative areas, roads of any width and adjoining road clearing, and powerline clearing of any width (36 CFR 219.19). *Also see the definition of "non-forest land".*

Indigenous Knowledge: A body of observations, oral and written knowledge, innovations, practices, and beliefs developed by Tribes and Indigenous Peoples through interaction and experience with the environment. It is applied to phenomena across biological, physical, social, cultural, and spiritual systems. Indigenous Knowledge can be developed over millennia, continues to develop, and includes understanding based on evidence acquired through direct contact with the environment and long-term experiences, as well as extensive observations, lessons, and skills passed from generation to generation. Indigenous Knowledge is developed by Indigenous Peoples including, but not limited to, Tribal Nations, Native Americans, Alaska Natives, and Native Hawaiians. Each Tribe or Indigenous community has its own place-based body of knowledge that may overlap with that of other Tribes. Indigenous Knowledge is based in ethical foundations often grounded in social, spiritual, cultural, and natural systems that are frequently intertwined and inseparable, offering a holistic perspective. Indigenous Knowledge is inherently heterogeneous due to the cultural, geographic, and socioeconomic differences from which it is derived, and is shaped by the Indigenous Peoples' understanding of their history and the surrounding environment. Indigenous Knowledge is unique to each group of Indigenous Peoples and each may elect to

utilize different terminology or express it in different ways. Indigenous Knowledge is deeply connected to the Indigenous Peoples holding that knowledge.

Land that may be suitable for timber production: A preliminary classification in the process of determining lands that are suited for timber production. This preliminary classification excludes National Forest System lands that are not suitable for timber production based on the factors identified in 36 CFR 219.11(a)(1)(i), (ii), (iv), (v), and (vi), and is made prior to the consideration of the factor at 36 CFR 219.11(a)(iii), which identifies suitability based on objectives and desired conditions established by the plan for those lands. (1909.12 Chapter 60) *Also see the definition of "timber production".*

Mesophication: The transformation of fire-maintained open forest to closed-canopy forest resulting from replacement of heliophytic (sun loving), fire-tolerant plants by shade-tolerant, fire-sensitive plants following extended fire suppression and elimination of cultural burning. This transformation results in gradual decline and loss of oak, oak-hickory, and oak-pine forests that once were in an open old-growth stage of development (Nowacki and Abrams 2008, Abrams et al. 2022)

Multiple Use: The management of the various renewable surface resources of the National Forest System lands so that they are utilized in the combination that will best meet the needs of the American people, making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions. Some lands will be used for less than all of the resources. Multiple-use management is characterized by harmonious and coordinated management of the various resources without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output, consistent with the Multiple-Use Sustained-Yield Act of 1960 (see 16 U.S.C. 528–531).

Non-forest land: Lands that do not meet the definition of forest land. (1909.12, Chapter 60) *Also see the definition of "forest land".*

Plan area (or planning area): The National Forest System lands covered by a plan. (36 CFR 219.19)

Proactive stewardship: Refers to vegetation management that promotes the quality, composition, structure, pattern, or ecological processes necessary for old-growth forests to be resilient and adaptable to stressors and likely future environments. (Definition is also included in NOGA-FW-STD-02a) *Also see the definitions of "co-stewardship" and "stewardship".*

Projected timber sale quantity (PTSQ): The estimated quantity of timber meeting applicable utilization standards that is expected to be sold during the plan period. As a subset of the projected wood sale quantity (PWSQ), the projected timber sale quantity includes volume from timber harvest for any purpose from all lands in the plan area based on expected harvests that would be consistent with the plan components. The PTSQ is also based on the planning unit's fiscal capability and organizational capacity. PTSQ is not a target nor a limitation on harvest and is not an objective unless the responsible official chooses to make it an objective in the plan. PTSQ applies to land management plans developed or revised under the 2012 Planning Rule. (1909.12, Chapter 60)

Stewardship: The management of forests for any goods, benefits, and values that can be sustained for present and future generations (Dictionary of Forestry; Bethesda, MD: Society of American Foresters, Page 72 and 177). *Also see the definitions of "co-stewardship" and "proactive stewardship".*

Suitability of lands. A determination made regarding the appropriateness of various lands within a plan area for various uses or activities, based on the desired conditions applicable to those lands. The terms suitable and suited and not suitable and not suited can be considered the same. (1909.12 Chapter 60)

Timber harvest: The removal of trees for wood fiber use and other multiple use purposes (36 CFR 219.19 & 1909.12 Ch 60). *Also see the definition of "commercial timber harvest".*

Timber production: The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use. (36 CFR 219.19) *Also see the definition of "land that may be suitable for timber production".*

Tree cutting: Felling and often removal of standing trees for wood fiber use and other multiple uses. Tree cutting includes, but is not limited to, firewood removal for personal use, various silvicultural treatments including non-commercial thinning, intermediate thinning, sanitation and salvage treatments, hazard tree removal, regeneration harvests, improvement cutting, and fuels treatments. A range of tree cutting activities leave felled trees in the forest to meet numerous purposes such as non-commercial thinning, hazard trees, wildlife habitat for coarse woody debris, soil nutrient cycling, site preparation for prescribed burning treatments or preparations for cultural burning. The intensity and scale of tree cutting can range from felling or removal of an individual tree to removal of many trees. *Also see the definition of "vegetation management".*

Reciprocity: In Indigenous ideology, reciprocity incorporates concepts of equitable co-existence between humans and non-human beings (Tribal Adaptation Menu Team 2019:8). **Note: This is one Tribal understanding of "Reciprocity," but with 574 federally-recognized Tribes and over 20 Alaska Native Corporations, ideologies and definitions of reciprocity vary across cultures.* (Citation: Tribal Adaptation Menu Team. 2019. Dibaginjigaadeg Anishinaabe Ezhitwaad: A Tribal Climate Adaptation Menu. Great Lakes Indian Fish and Wildlife Commission, Odanah, Wisconsin. 54p.)

Vegetation management: Includes – but is not limited to – prescribed fire, timber harvest, and other mechanical/non-mechanical treatments used to achieve specific silviculture or other management objectives (e.g. hazardous fuel reduction, wildlife habitat improvement). (Definition is also included in NOGA-FW-STD-02a)

Index

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