

THE PATH FORWARD

I. VISION

Our vision within the Four Forests Restoration Initiative essentially mirrors that outlined in the *Statewide Strategy for Restoring Arizona's Forests*. We expect that landscape-scale restoration across the Mogollon Rim will support healthy, diverse stands, supporting abundant populations of native plants and animals; thriving communities in forested landscapes that pose little threat of destructive wildfire; and sustainable forest industries that strengthen local economies while conserving natural resources and aesthetic values.

II. To Achieve the Vision

In striving to achieve this vision across the Mogollon Rim, we recognize the critically important ecological, economic, and social contexts within which landscape-scale restoration necessarily occurs. First and foremost, we recognize that comprehensive ecological restoration needs and priorities should guide landscape-scale forest management. Second, we recognize that sustainable restoration economies can and should be developed and enhanced so that restoration can proceed more efficiently, and so that rural communities can benefit from such action. A critical step toward creating economies requires a longer-term (e.g. 10 to 20 years) assurance of wood and biomass supply to appropriately-scaled industries such that necessary economic infrastructure investments can be made. Third, we believe that sustained investment in collaboration can build agreement and trust and minimize controversy surrounding forest management, thus allowing ambitious landscape-scale restoration to proceed with maximum efficiency and effectiveness without sacrificing quality of work.

In order to implement ecologically, economically, and socially viable landscape-scale forest restoration across the Mogollon Rim, additional capital investment will be necessary at the local, state, and federal levels. Beyond investing additional resources, we will need to use existing resources with maximum efficiency. We can do so by: 1) integrating restoration, fire management, and community protection planning at the landscape scale; 2) adopting land use policies that support rather than hinder landscape-scale restoration; 3) strategically prioritizing and placing restoration treatments; 4) safely employing prescribed fire and Wildland Fire Use; 5) employing adaptive management supported by the best available science; 6) identifying sustainable cost offset opportunities through wood and biomass utilization.

Landscape-scale forest restoration across the Mogollon Rim will be a new endeavor for northern Arizona's citizens, and create significant ecological change across hundreds of thousands of acres. As such, it is imperative that we proceed ambitiously, but cautiously; that we maximize our opportunities to systematically learn our way through the process; and, that we proceed with confidence tempered with humility.

III. Ecological Goals for Ponderosa Pine Forest Ecosystems

Arizona's forests and the ecological processes that sustain them span landscapes. The *Analysis of Small Diameter Wood Supply in Northern Arizona* identified the need as well as the priorities for restoration within a large, landscape context. Identification of ecological goals and the charting of progress toward reaching those goals must also occur within a similarly large landscape context. At this scale, goals for restoring forest ecosystem health and protecting communities must be dynamic, comprehensive, and integrated. It is important to understand that restoration at this scale is characterized by uncertainty. Therefore, a diversity of restoration strategies that fit local ecological, social, political, and economic circumstances are needed. A "one-size-fits-all" approach is not appropriate, and an open, transparent, collaborative process is essential to the success of those restoration strategies.

The following ecological goals are a synthesis of the Arizona Governor's Forest Health Council's *Statewide Strategy for Restoring Arizona's Forests, Guiding Principles for Forest Restoration and Community Protection, Guiding Principles for Wildlife Habitat*, as well as the National Forest Service Manual Directive Chapter 2020: *Ecological Restoration and Resilience*.

1. Protect and restore ecosystem structures, processes and functions
2. Conserve and enhance biological diversity at multiple spatial scales (from the stand to the landscape)
3. Integrate conservation and recovery of listed, rare, and declining species into the planning and implementation of restoration treatments
4. Use historic range of variability, current conditions, and potential effects of climate change in planning of restoration treatments
5. Reduce unsustainable densities of post-settlement trees and enhance forest resilience so that low-intensity, frequent fire and other natural processes can operate to the fullest extent possible
6. Retain sufficient trees of all size and age classes to assure development of natural stand dynamics.
7. Reintroduce low-intensity, frequent fire as the primary natural process maintaining forest structure and function
8. Minimize potential negative impacts of restoration treatments to wildlife, residual vegetation, soils, aquatic systems, and other ecological and biological values
9. Strive for structural diversity in the attributes of the tree component (e.g., density, size, and spacing), the size and distribution of forested patches and openings, and the associated shrubs and understory vegetation to create diverse conditions most beneficial to wildlife and most resilient to widespread habitat loss
10. No old growth trees (predating Euro-American settlement or currently exhibiting old growth structural characteristics) shall be cut
11. Use the best available science, current and desired conditions, climate change projections, and human uses to plan restoration treatments
12. Employ adaptive management, monitoring, and evaluation with a clearly defined feedback mechanism into all ecological restoration decisions and activities

IV. Building a Science-Based, Collaborative and Adaptive Infrastructure for Accelerated Restoration

Landscape-scale restoration as described in this document will require significant commitment to science, learning, and adaptation as the effort initiates and proceeds. Prior to on-the-ground landscape-scale restoration occurring, significant resources and collective effort must be directed towards designing landscape-scale planning, monitoring, research, and adaptive management mechanisms that support highly efficient and effective program implementation.

Adaptive management is defined as a systematic approach for improving resource management by learning from management outcomes. An adaptive approach to landscape-scale forest restoration involves: 1) identifying existing conditions through pre-treatment monitoring and inventory, 2) developing explicit restoration objectives, 3) exploring alternative approaches to meet restoration objectives, 4) developing monitoring objectives that are tied to restoration objectives, 5) predicting outcomes of alternatives based on current knowledge, 6) implementing one or more alternatives, 7) monitoring effects, and 8) adjusting restoration actions if/as needed to meet objectives. [cite]

Adaptive management mechanisms should be designed to maximize the generation and incorporation of best available science during all stages of NEPA and NFMA planning that is likely to occur at the scale of the Four Forests Restoration area (approximately 2.4 million acres), as well as nested large landscape scales (e.g., 500,000 – 1 million acres), and project implementation scales (e.g., 100,000 acres). They should be used to establish desired future conditions, develop implementation strategies, and measure progress through rigorous monitoring. Funding mechanisms to support pre- and post-treatment monitoring need to be identified at the earliest stages possible.

As landscape-scale restoration proceeds, science-informed collaboration will be absolutely essential. The opportunity for formal collaboration will be necessary through all stages and at all scales of planning, implementation, monitoring. It will be especially important in the process of formalizing and integrating lessons learned into future projects. This process will also be used to navigate difficult discussions, and build agreement necessary to move forward. At 5-year intervals, a formal and comprehensive adaptive management review will be conducted to review progress and build on successes.

While certain elements of the adaptive management and collaboration infrastructure for supporting landscape-scale restoration currently exist in northern Arizona, significant re-investment will be required to bolster capacity over the next 20 years. Stakeholders will work collaboratively with the Forests over the coming months and years to ensure that this capacity (in addition to other capacity needs) is met by securing necessary public and private investments. Just as we look to the novel partnership between the Forests, industries, and stakeholders to accelerate unprecedented restoration, we should be looking at that same novel partnership to design and implement an unprecedented adaptive management approach.

V. Sideboards for Accelerated Restoration

Embarking on a 20-year initiative to restore northern Arizona's ponderosa pine forests at the landscape scale requires substantial up-front commitment, investment, and assurance of direction. Recognizing that we will learn our way through the process of accelerating landscape-scale restoration, such an initiative also requires a formal collaborative process that allows research results, monitoring, adaptive management, and lessons learned through the process of implementing landscape-scale restoration to be incorporated into an evolving set of project design parameters. The following sideboards are meant to strike a balance between up-front assurance regarding restoration direction across the region, and flexibility allowing continued learning and adaptation through the process of landscape-scale restoration. These sideboards are meant to be an initial reflection of social agreement, and an opportunity for continued analysis, refinement, and translation through subsequent planning and design efforts. Sideboards have been designed to allow landscape-

scale restoration to occur across the entire Four Forest Restoration Area for at least 20 years. Adaptations of sideboards can occur at any time. Modifications will be spatially explicit and based on a science-informed, collaborative process that is agreement based, as defined in the 4FRI Charter. As part of the 5-year comprehensive adaptive management review, sideboards will be evaluated.

1. Landscape-scale restoration of ponderosa pine forests in northern Arizona should be designed to restore and maintain watershed health and function, conserve and enhance the diversity of native species and their habitats, retain mature and old growth trees, and facilitate the reestablishment of natural fire regimes at landscape scales.
2. Landscape-scale restoration efforts should employ a combination of strategically-placed mechanical thinning, prescribed burning, road obliteration, exotic species management, hand thinning, recreation management and Wildland Fire Use techniques to meet – at the broadest possible scales – restoration, socio-economic, community protection, and fire management goals
3. Landscape-scale restoration should be guided by collaborative planning, implementation, monitoring, and adaptive management. These efforts should build on existing collaboratively developed documents such as the Arizona Governor’s Forest Health Council’s *Statewide Strategy for Restoring Arizona’s Forests*, *Guiding Principles for Forest Restoration and Community Protection*, *Guiding Principles for Wildlife Habitat*, *Guiding Principles for a New Economy based on Forest Restoration*, the *Analysis of Small Diameter Wood Supply in Northern Arizona*, and approved community wildfire protection plans.
4. Landscape-scale restoration efforts should adopt and make full use of rigorous science, including research, monitoring, and adaptive management that enhances our understanding about their ecological, social, and economic implications.
5. These efforts should support and be supported by a diverse, multi-scale, restoration economy that is ecologically and economically sustainable and has the capacity to create jobs, provide revenue to rural economies, and significantly offset the costs of planning, implementation, and monitoring of landscape-scale restoration;
6. Comprehensive ponderosa pine forest restoration efforts should include up to 1 million acres of mechanical thinning over the next 20 years. Such thinning efforts should be accelerated from an annual rate of less than 15,000 acres to a rate of up to approximately 50,000 acres per year (on average, over the next 20 years).
7. Landscape-scale restoration efforts should use elements of the consensus scenario developed in the *Analysis of Small Diameter Wood Supply in Northern Arizona* as sideboards for landscape-scale restoration across the Four Forest Restoration area. These sideboards include:
 - Landscape management area designations
 - Desired post-treatment conditions (basal area, stem density, and canopy cover)
 - Percentage of landscape management areas to be mechanically thinned
 - The goal of no net increase in roads.

It is important to note that the Wood Supply Analysis was not intended to be a prescriptive, comprehensive restoration plan. For example, desired post-treatment conditions such as spatial and structural heterogeneity were not defined due to time and modeling limitations and will need to be developed. We will also need to clarify the application of desired post-treatment conditions at landscape and site-specific scales in light of existing conditions. The ecological, social, and economic effects of applying the consensus scenario from the Wood Supply Analysis should be examined during the development of the Proposed Action and site-specific NEPA analysis.

8. No old growth trees (predating Euro-American settlement) shall be cut.
9. The group has agreed to a large tree retention strategy that is not based on a strict diameter cap. Large trees in the ponderosa pine forest type, defined by the socio-political process as those greater than 16" diameter at breast height (>16" dbh), shall be retained throughout the 4FRI landscape except as described below. Large trees may be cut/removed: 1) as necessary to meet community protection and public safety goals within the Community Protection Management Areas identified in the *Analysis of Small Diameter Wood Supply in Northern Arizona* and where stakeholder agreement identifies priority areas within approved CWPPs; or 2) when best available science and stakeholder agreement (as defined in the 4FRI Charter) identify sites where ecological restoration and biodiversity objectives cannot otherwise be met – specifically wet meadows, seeps, springs, riparian areas, encroached grasslands, aspen groves or oak stands, within-stand openings, and heavily stocked stands with high basal area generated by a preponderance of large, young trees. As part of broader research efforts, the ecological and social aspects of this large tree retention strategy coupled with limited site-specific removal needs will be examined during the development of the Proposed Action and the site-specific NEPA analysis and through stakeholder-guided research.
10. In order to improve planning and treatment efficiencies, ecological benefits, and socio-economic benefits, and to distribute those efficiencies and benefits as broadly as possible, initial sideboards should be used to guide forest restoration across the Four Forests Restoration Area.