# MODERNIZING 4FRI IMPLEMENTATION: PROGRESS AFTER TWO YEARS

## A Short History of Recent Forest Service Modernization and Innovation Efforts

**2013** Concern about the cost and time required for sale preparation in the Forest Service (FS) was documented in November 2013 in the "Sale Prep Task Force Report." This report led to new authorities in the 2014 Farm Bill that included Designation by Prescription/Description (DxD, DxP), weight-scaling and load count modifications for wood with low product value.

**2015** Progress on the recommendations were revisited in a report in 2015.

**2016** The Four Forests Restoration Initiative (4FRI) stakeholders expressed the need to accelerate 4FRI implementation following the approval of the first collaboratively designed Environmental Impact Statement (EIS) in April 2015.

**2016** The Ecological Restoration Institute (ERI) at Northern Arizona University proposed to FS 4FRI staff to organize a workshop focused on accelerating post-NEPA implementation processes and procedures. This was in response to observations that the FS 4FRI team and National Forest staff were stretched thin. In addition, industry was urging the FS to accelerate contract offerings on the east side of the 4FRI landscape.

**2017** In March of 2017, The Nature Conservancy (TNC) signed a Master Stewardship Agreement (MSA) with the FS to implement 20,000 acres of treatments on the west side of the 4FRI landscape. The project set three goals: 1) work with the FS to test new technology and alternative practices to make preparation and administration of harvest operations more efficient; 2) work with the FS and harvesters on ways to lower the cost of treatments so that wood from a larger footprint is economically accessible; and 3) provide a steady supply of wood to a local mill to facilitate year-round operations and demonstrate that northern Arizona is an attractive option for investments.

**2017** The FS, Washington Office (WO) launched the Forest Products Modernization (FPM) effort to improve the efficiency of FS management, the delivery of forest products, and to carry out timber sales to increase acres treated and volume produced. FPM is focused on aligning FS culture, policies, and procedures to become more agile, flexible, and adaptable to better meet current and future forest improvement goals, while caring for the health and safety of employees. https://www.fs.fed.us/science-technology/forest-products-modernization

**2017** November 29 and 30. "Accelerating Restoration Implementation Workshop." FS staff representing the 4FRI team, the 4FRI national forests, Region 3 (R3), and the WO assembled in Phoenix, Arizona, to consider opportunities for innovation for testing during 4FRI implementation. The workshop was collaboratively designed by ERI, TNC, and the FS. The Nature Conservancy MSA and the conclusions of a time and efficiency study conducted by a TNC Fellow provided an important framework for the conversation. Partners at the workshop included staff from TNC, Campbell Global, and NewLife Forest Products in order to provide industry and partner perspectives. Nineteen action items were identified by the group with the understanding capacity would limit testing and implementation.

**2018** Of the original nineteen action items, nine priorities were chosen to implement as a part of 4FRI—many of them as a part of the TNC MSA. Quarterly webinars have tracked progress on the nine items.

**2018** National FPM efforts continued, including collaboratively reviewing the forest products delivery system, identifying 12 needs to address (e.g., recruitment and retention, contracting and permitting, sale layout, forest product utilization and markets) and collecting feedback and ideas from more than 150 partners, including industry, and more than 1,000 agency employees. This resulted in more than 100 modernization actions added to the FPM project pipeline for tracking and implementation. 4FRI implementation actions became part of the FPM project pipeline.

**2019** April 18: The ERI facilitated a meeting with partners and FS staff to discuss "transformational" actions identified by partners and a letter from Coconino County to the FS. The goal of the meeting was to create a better, common understanding of modernization activities, specifically on the items identified as a result of partner frustration with the pace of modernization implementation.

**2019** June: The Forest Products Modernization (FPM) Strategic Framework for Long-Term Action: 2019–2023 released, followed by webinars with employees and partners, a Deputy Chief leadership corner, and a 'call to action' email from the National Forest Management Director Allen Rowley to all timber management staff. The FPM team is planning a series of in-person engagements with employees involved in the timber sale process on forests and districts to discuss local needs, lend support for innovation, and help make the Framework's goals tangible. The innovation experiments underway in 4FRI are helping to inform the national FPM effort. Innovations are being tracked as part of the FPM project pipeline and learning results are being shared nationally.

# STATUS OF ACTION ITEMS
## Identified at the 2017
## "Accelerating Restoration Implementation Workshop"

The following items were identified by participants during the 2017 Workshop. Where follow-up is occurring as part of 4FRI Innovation and Modernization testing (and is tied to the original workshop) the update is in **blue**. Where implementation is occurring with other partners or internally in the Forest Service the update is in **black.**

## A. Sale Preparation

1. **DxP and DxP+**. Increase use of DxP to reduce sale preparation cost and improve efficiency.
   The Coconino National Forest (NF) and The Nature Conservancy (TNC) began field testing Digital Prescription Guides (DxP+) by harvesters in 2018 on the Chimney Springs project. The use of DxP and DxP+ has expanded to the regular program of work on 4FRI forests, including at least four current projects on the Apache-Sitgreaves NF and at least 10 projects on the Coconino NF. At the beginning of July, the Apache-Sitgreaves NF sold timber on more than 1,100 acres using 100% DxP (Greens Peak timber sale). Since 2014, over 30,000 acres of 4FRI has been prepared using DxP methods. This is part of FPM.

2. **Boundary Delineation**. Test virtual boundaries and current flexibilities to reduce layout time and cost.
   There are two types of virtual boundaries: discernable and geo-fencing. The FS has authority and direction for discernable boundaries and is increasing its use. Geo-fencing boundaries are being tested and evaluated on the TNC Parks West project. Based on the pilot work at Parks West, **the new virtual boundaries protocols have been moved into final review for new handbook direction due out later this year.** This is part of FPM.

3. **Scaled Sales and Cruising**. Assess the need to cruise timber when weight-scaling is used. Reduce layout time and cost.
   Cruising is used to determine appraised value prior to sale as required by National Forest Management Act. The value and volume is also critical to Stewardship Agreements and contracts to determine the expected offset for services and matching funds requirements for partners.

However, the Region and WO have implemented policy changes to address the need to reduce sale preparation time and cost. Per the Chief's February 20, 2018 letter "Continued Work on Forest Product Modernization," the sampling error for high value scaled sales was increased. Now all scaled sales with advertised value of over $10,000 are cruised to 30% sampling error. An additional efficiency is the development of the regional "Scaled Sale and/or Designation by Prescription Decision Rationale and Approval Form" because the forests are no longer required to gain Regional Forester approval to prepare and offer scaled sales.

4. **CCF and Delegated Authority**.
   National policy limits the Regional Forester's authority for disposal of wood products to 10,000 CCF per agreement. This action seeks to determine how much authority can be delegated from the Chief's office to the Regional Forester in order to reduce the number of Supplemental Stewardship Project Agreements (SPAs) and therefore associated time and cost. Region 3 is requesting increased delegation authority for multiple foreseeable projects. For example, the Region received authority to exceed 10,000 CCF for all Integrated Resource Stewardship Contracts (IRSCs) and SPAs under the CC Cragin Watershed Protection project.

5. **Special use permits with less than 2000 CCF**. Establish standards for sales less than 2,000 CCF to achieve time and cost savings.
   Region 3 has completed a regional manual update that redefines merchantability and utilization specifications. As part of these updates, the Region developed direction for sales with an advertised value of $2,000 or less, that permits forests to use Standard Rates without doing a detailed appraisal. The Region is currently assessing streamlined volume determination methods to estimate volume on sales with less than $5,000 total value. These two regional policy updates are designed increase efficiencies and achieve time and cost savings. The WO is considering revising certain FS-2400 permits to dispose of small amounts of saw timber.

## B. Industry Operational Changes

6. **Log accountability, branding, barcoding**. Identify industry standard and/or digital methods for tracking and accountability.
   Complying with log accountability and export regulations designed for high value timber creates issues applicable to all Western forests disposing of low-value wood. The regional policy goal is to balance a purchaser's costs and commensurate effort with compliance with the regulation.

A waiver to reduce painting and branding requirements to one end of 50% of logs greater than 12" diameter on each load was formally announced by letter from the Regional Forester on July 18, 2019. Partners asked for justification for why the branding waiver is 50% when it could be lower and more cost effective for operators. Furthermore, the Region asked the WO for a policy deviation that would allow Contracting Officers to determine if circumstances warrant completely waiving branding and painting requirements where appropriate and consistent with existing law and implementing regulation.

Barcoding load tickets would create efficiencies for both the FS and partners by enabling electronic tracking and accounting of log loads. The FS National Technology and Development Program is producing a report identifying available technology, equipment, and costs for industry and FS to implement electronic load tracking and accountability. Results will be shared by the Regional Office when complete.

Weight-scaling is a method for accounting for wood volume that reduces FS cruising time and enables the FS to implement DxP. Where there are qualified scales and consistent truck-trailer combinations the baseline weight for truck-trailer combinations can be established and then loads counts can be used rather than requiring each load to be weighed. This is the least cost option for accountability. Weight scaling is a challenge for 4FRI due to a limited number of certified scales within the area. Load counts are currently authorized for use by TNC, NewLife, and their subcontractors on contracts where a specific standard weight has been established for their truck-trailer combinations and where agreements exist for average product mixes and weights. In cases where load counts have been authorized, some contractors prefer the accuracy of 100% weight scales.

7. **In-woods processing.** Test in-woods processing as a means to achieve improved economic efficiency by reducing handling and hauling costs.
   TNC is chipping logs at Chimney Springs.
   In-woods processing is allowed in the CC Cragin decision which approves the use of 5–10-acre sites for in-woods processing. Allowable tasks at processing sites may include drying, debarking, chipping stems and bark, cutting logs, manufacturing and sorting logs to size, producing wood cants, scaling and weighing logs and creating poles from suitable sized logs. This concept is also included in the Rim Country project analysis.

8. **Extended decking**. Test extended decking as a way to reduce hauling costs. Monitor and assess economic and biological outcomes of leaving material (e.g., drying rates, bug activity).
   FS, NAU School of Forestry, and Rocky Mountain Research Station studied the effects to log weights and insect distribution related to leaving wood on-site past standard contract timeframes. Weight changes from moisture mirrored seasonal moisture patterns but generally drying stabilized within 30-45 days. Some increase in bark beetle activity was detected in the harvested logs but no outbreaks occurred in harvested stands.

During the development of the Future Forest project, TNC proposed an approach that allowed for extended decking within SPAs. The intent is to improve operational efficiency by de-coupling harvesting and hauling and facilitating more efficient hauling of slash, in addition to allowing contractors more time to respond to market conditions. The process for allowing increased time between cutting and removal consists of the responsible official evaluating a written request from the partner, where approval is contingent upon the collaborative development of a risk-minimizing and monitoring plan. The concept was requested to be tested in the Chimney Springs SPA, but the test was not implemented because the harvesting was too far along by the time the request was approved.

There is continued interest by the FS and TNC, along with other partners, to expand the use of extended decking and drying where appropriate as a means of allowing woods work to become more efficient. However, the risk posed (exemplified by decks burning during the Museum Fire) calls for consideration on a case-by-case basis, based on site-specific considerations such as seasonal timing, proximity to values at risk, NEPA analysis, forest pest activity, weather and risk. These trade-offs result in complex and challenging decisions for responsible officials when considering extended decking.

9. **Raise road weight limits.** Intended to reduce hauling costs.
   The Arizona Department of Transportation has proposed to expand the Healthy Forest Initiative to allow increased load limits for transporting logs. The initiative is consistent with the Federal Bridge Formula for weight limits of various tractor trailer configurations up to 97,000 pounds on specified routes. FS bridges are built to accommodate loads consistent with the Federal Bridge Formula. The FS is in the process of evaluating bridges within the 4FRI boundary to ensure the can accommodate the heavier loads.

10. **Forest road closures and safety restrictions.** Restrict road use to contractors during operations to improve safety and reduce haul costs.
    Road closures solely for the purpose to reduce haul costs are not typically implemented due to multiple uses occurring within the Forest. However, the need to have road closures is considered on a project-by-project basis by analyzing the duration and intensity of impact to the public and public safety benefit. The Flagstaff Watershed Protection Project is a recent example, where public safety concerns led to road closures during helicopter logging.

11. **Increase collaboration with industry.** Create better two-way dialogue. Provide specific information on appraisal process.
    The annual 4FRI Industry Roundtable provides an opportunity to collaborate with industry. At the 2018 Roundtable, the FS presented information on the appraisal process and received comment. At that time, the Forest Service offered the opportunity for an appraisal training and to date no request has been made.

12. **Better use of industry resources.** Collaborate to learn from industry and expand capacity. The 4FRI Phase 2 Request for Proposals asks industry to define merchantability and utilization specifications and to propose implementation methods that expand capacity and meet industry needs. The FS sought feedback from industry when revising regional forest product merchantability and utilization specifications and rates. Also, Stewardship Agreements between TNC and FS have been designed and utilized to improve efficiencies and reduce costs.

## C. Create better alignment between timber contracts, acquisition management (AQM) contracts and agreements

13. **Train and cross-train staff.** Implement actions to facilitate consistent interpretation across the Forest Service of financial instruments.
    Over the last two years, the Region has provided four Stewardship End Results Contracting trainings bringing together Timber Sale Contracting Officers, Acquisition Contracting Officers, Grants and Agreements Management Specialists, and on-the-ground project administrators.

14. **Collaboration between personnel.** Convene contracts and agreements staff with implementers to identify the correct financial instrument to achieve management goals. This should be standard operating procedure for all projects and has been used at high levels of the FS such as during the preparation of the 4FRI Phase 2 Request for Proposal (RFP2). However, when this action was initially identified, it was focused on project-level staff and the desire for coordination from the inception of a project. Also, Stewardship End Result Contract training and the recently developed national Best Tool Decision Tree are intended to help FS staff at the implementation level select the appropriate contract or agreement to meet the management goals of a project.

15. **Develop new, blended contract instrument.** Assess the need for a new financial instrument to accomplish landscape-scale objectives.
    The WO convened a FPM contracts team to evaluate the feasibility of this suggestion and determined that this blending is unachievable due largely to the significant differences between the 36 CFR 223 regulations for disposal of timber and the Title 48 Federal Acquisition Regulations governing procurement. The team also discussed blending the Integrated Resource Timber Contract (IRTC) and FS-2400-6 contracts and it was agreed that this would make the contract larger, more complex and would create confusion.

## D. Appraisal process clarity/definition of products

**16. Appraisal unit of measure.** Determine appropriate definitions for products. Discussion also included changing the unit to determine the value of the restored acre.
During the April 18, 2019 workshop, TNC requested that offerings be based on log length rather than diameter in order to be consistent with their buyers. TNC was told that the new merchantability specifications would still focus on diameter. TNC did not pursue a formal request.

The WO issued a letter dated June 5, 2019 setting the national minimum rate at $0.25 per CCF. Forest Products should be sold for the national minimum rate of or appraised rate, whichever is higher. The Region established regional minimum rates consistent with this direction as well as new, lower, standard rates. The region will continue to monitor and adjust appraisal values based on the competitive bidding process which is indicative of market conditions. Minimum rates can only be applied if a detailed appraisal is completed and the appraised value is deficit. Otherwise, apply the appraised value as the contract rate.

An innovative approach in the 4FRI RFP2 asks bidders to define the included timber component and associated utilization specifications that meet their business model and supply input demands given the total wood fiber yield of the restoration treatment. As part of this, the 4FRI RFP2 unit of measure is for both the valuation of the goods and the costs of the service work. This departs from the normal practice of pre-determining included timber in a contract.

The region is finalizing a reclassification of products and merchantability specifications that will be approved by the end of October 2019. The effort is intended to better align FS products and merchantability specifications with local industry needs. Once approved, field personnel will be trained in proper implementation in order to apply the new standards across the region and implement on sales in preparation. The 4FRI goal is to target a portion of the FY 2020 offer and all of the FY 2021 and future sales for execution with the new standards.

**17. Standard rate appraising**. Assess with industry partners the pros and cons of standard rate appraisals.
The “standard rate” appraisal uses a predetermined value for wood products in a contract under a certain value. A recently developed national Appraisal Decision Aid identifies considerations for use of standard rate appraisals. Detailed appraisals of all products result in better estimates of value by properly accounting for and apportioning all sale related costs. As a result, the region is moving away from the current combination of standard rates and detailed appraisals within a single sale and will prepare detailed appraisals for all products in sales with an advertised value greater than $2,000. Either, standard rate or detailed appraisals can be used on sales with an advertised value less than $2,000.

## E. Use new technology

**18. Cruise with LiDAR**. Investigate the efficacy of LiDAR for deriving volume estimates.
LiDAR covers most of the ponderosa pine in the 4FRI footprint (2.6M acres). There are two tests underway using LiDAR for cruising. The first is led by the School of Forestry- NAU and funded by the WO. Volume estimates will be obtained from LIDAR assisted cruising methods (two-phase remote sensing or 2PRS approach) and compared to current FS standards. The second is led by TNC and will compare LiDAR derived cruise information to conventional cruise information to look at accuracy, time and cost.

**19. Unmanned Aerial systems (UAS).** Test UAS for sale administration and monitoring.
Forest Service forest management is not authorized to use Unmanned Aircraft Systems (UAS, i.e. drones). 4FRI is actively collaborating with partners including the U.S. Geological Survey (USGS) and TNC to fly project areas to demonstrate how data collected by UAS can be used to help streamline timber sale monitoring and the minimum resources required to do so. The UAS flights have been conducted across multiple sites, including on Future Forest project sites on the Kaibab and Coconino NF.

Through these partnerships, the FS is exploring how drone technology may offer innovations and efficiencies in cruising, layout, surveys, sale administration and monitoring. Drone imagery from the Parks West and Sitgreaves West projects has been identified as a viable tool for establishing virtual boundaries and has been used to calculate post-treatment canopy cover and estimate the volume of wood piles and decks.

## Other innovations identified during the last two years

1. TNC is working with FPM staff as well as staff from the Kaibab and Coconino NF to expand the digital tablet platform to include geo-databases for the walk-throughs and layout components of sale prep. The platform will continue to enhance the integration of information developed by specialists so that it is available for all project staff to access.

2. Operators have requested relief from road maintenance that is not linked to impacts from forest operations. The forests are attempting to accomplish deferred road maintenance to bring roads up to standards prior to agreement and contract solicitations. This reduces the cost of pre-haul road maintenance that contractors incur. FS will continue reviewing overall road maintenance needs versus harvest and hauling maintenance requirements.

3. The FS is currently collaborating with Coconino County to use an air curtain burner (ACB) on slash piles from the Chimney Springs project. Use of an ACB on federal lands requires preparation of a burn plan, with certain fire suppression equipment on site.

4. The FS and Arizona Department of Forest and Fire Management (DFFM) have entered into a Good Neighbor Agreement (GNA) to build capacity to increase the number of acres available for treatment by having Arizona DFFM assist with sale preparation activities. Depending on the state's capacity, work may begin during the FY20 field season.