

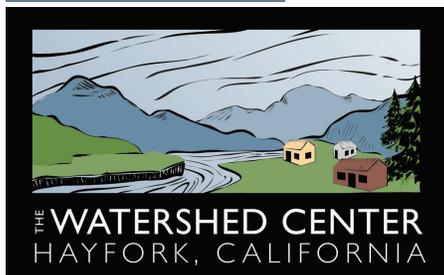
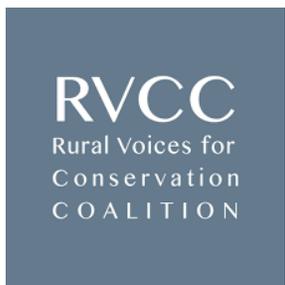
Report on May 2022 Workshop on Outcome-Based Performance Measures

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Introduction

Our steering committee is dedicated to advancing federal policy to support wider use of prescribed fire and wildfire managed for resource benefits. Both these uses of fire are essential tools for fuel reduction, community protection, and the restoration of fire-adapted forest ecosystems. Herein, we use the phrase “wildfire managed for resource benefits” (or “managed wildfire” for short) to mean intentionally using naturally ignited fires to achieve resource management objectives under appropriate conditions (Berger et al., 2018). We recognize that all fires are managed to some extent but use this shorthand in this report.

There is ongoing congressional and agency emphasis on designing “outcome-based” performance measures to track the implementation and efficacy of fuels reduction and forest restoration treatments. The recently passed Infrastructure Investment and Jobs Act (IIJA) directs billions of additional funds over the next five years to fuel reduction and forest restoration treatments in the wildland-urban interface and in high-priority watersheds (Infrastructure Investment and Jobs Act, 2021, Sec. 40803). The law provides \$250 million to the U.S. Department of Agriculture (USDA) specifically for prescribed fire (Infrastructure Investment and Jobs Act, 2021, Sec. 40803); the Department of the Interior also received the same amount for the same purpose.

To support and inform this process, in May 2022 we hosted a two-day, hybrid virtual/in-person workshop in Portland, Oregon, to discuss needs and opportunities to improve outcomes-based performance measurement. Our general aim was to understand which current and potential options for performance measures could capture effective federal fuel reduction outcomes and restoration projects across the West, keeping in mind the importance of prescribed fire and managed wildfire. We sought to identify options for using or supplementing existing measures, discussed further below, and to identify other innovative, potential outcomes-based performance measurement approaches.

Our specific objectives were to: 1) Understand existing performance measure options, particularly those that support the use of beneficial prescribed fire and wildfire, and that capture the spatial arrangement of treatments and cross-boundary work in priority landscapes to reduce fire risk and restore forest conditions (see Wurtzback and Schultz 2016 for a detailed explanation of forest restoration, ecological integrity, and resilience in the context of current planning regulations); 2) Clarify if/how outcome measures could be based on local or regional monitoring and scaled up nationally; and 3) Determine audience and communication strategy to share existing options and new ideas as needed.

This report provides an overview of the workshop and the key themes that were discussed. With the exception of the members of our Steering Committee and individual presenters, the identity of workshop participants is confidential, per Colorado State University’s human subjects ethics protocol.

We use the term “performance measures” to refer to national-level accomplishment metrics; these are sometimes also referred to as “key performance indicators” (KPIs), specific performance measures for which agencies must track progress and aim for specific target levels of accomplishment (i.e., measures with “hard targets”). These KPIs typically guide and demonstrate the value of federal investments. We use the term “monitoring” as a more general term, recognizing that monitoring can be done at many levels (e.g., project, forest plan, state, national) and sometimes, but not always, can inform national-level performance measures. “Accomplishment reporting” is a related term that is often used more loosely in our broader community of practice, sometimes referring to storytelling and communicating the value of work to the general public.

We use the term “output” to mean measurable outputs and the term “outcome” to mean measures that reflect land management goals, including specific desired conditions. A primary challenge with forest restoration and fuels reduction work is that the ultimate goal or desired outcome of work is to reduce uncharacteristic fire hazard, and for restoration projects, to create forest ecosystem structure, composition, and functions or ecological processes that are resilient to changing environmental conditions. This work includes the restoration of natural fire regimes and the reduction of uncharacteristic fire. Such an outcome is difficult to capture with metrics like “timber volume sold” or “acres treated”; measuring forest resilience is highly complex and challenging. For this reason, agency leaders and partners emphasize the need to focus on outcomes but recognize the challenges of designing outcome-based performance measures. Our workshop was meant to continue exploring this challenge, with a particular eye toward fire hazard reduction, since this is the primary emphasis of recently allocated funding.

Importantly, the nature of an output or an outcome can depend on the audience and context. For instance, in the case of the U.S. Forest Service (USFS), “timber volume sold” can be an outcome measure when selling timber is the primary goal, but it is considered an output measure when it is an interim measure in achieving the desired outcome of changed wildfire behavior or forest restoration. Similarly, “acres treated” is an output measure but alone it does not capture whether acres treated have reduced fire hazard or helped meet restoration objectives. Making these determinations requires an understanding of the types and combinations of treatments conducted, the locations of the treatments, and the scale.



Literature Review & Background

Scientists recognize that restoring fire to fire-adapted forests in the West is critical to increasing forest resilience, particularly in the face of a changing climate (Stephens et al., 2020). Prescribed fire and managed wildfire are crucial management practices for restoring the ecological integrity of fire-adapted forests and for reducing future wildfire hazard (North et al., 2012). Despite a broad consensus to increase the use of fire as a management tool, prescribed fire is underutilized in the western United States (Kolden, 2019). Barriers include a lack of capacity and funding (e.g., insufficient staff available to implement a burn) and limited incentives to use prescribed fire. There generally are no hard targets for prescribed fire, in part because prescribed fire is risky and windows for application can vary based on weather, fuel conditions, capacity, etc. (Schultz et al., 2019a). Increased use of managed wildfire for natural resource benefits also faces many barriers, including misaligned incentives and occasional public opposition (Davis

et al., 2022; Schultz et al., 2019b). Scientists and government agencies have noted the importance of improving performance measures as a key incentive for facilitating managing fire for resource benefit and supporting effective fire risk reduction through forest management.

Performance measures track agency activities and are important because they provide accountability and can incentivize organizational and individual behavior through evaluations and internal budget allocations (Bertone-Riggs and Johnston, 2021; Santo et al., 2020; Schultz et al., 2015). Both fire risk reduction and biodiversity conservation are more challenging types of activities to measure and account for as desirable land management outcomes (Biber, 2009; Schultz et al., 2015). Agencies tend to focus on goals that are easier to measure, are less expensive to accomplish, generate revenue, or have higher incentives (Biber, 2009; Radin, 2006). Agencies also focus on treatments that have a greater likelihood of accomplishing a goal, such as the use of mastication or thinning treatments in lieu of prescribed fire. Often these dynamics drive out meaningful work that is less measurable over shorter time frames and more difficult to capture than simpler annual output targets.

We also note that performance measures are important but require attendant strategic planning approaches, effective leadership direction, internal guidance to identify priorities, ongoing investment to monitor and track outcomes over time, and engagement of collaborative stakeholder groups to support organizational accountability (Santo et al., 2020; Schultz et al., 2015).

The Forest Service tracks multiple KPIs. We reviewed the USDA Fiscal Year (FY) 2022 Budget Justification report to compile current KPIs (USDA, 2021). The primary KPIs to inform forest restoration and fuel reductions have been acres treated for fuel reduction and timber volume sold. Other current KPIs include the percent of National Forest System ecosystem conditions improved or maintained based on the Terrestrial Condition Assessment (TCA),¹ the number of watersheds moved to an improved condition class based on the Watershed Condition Framework (WCF),² and the annual acreage of National Forest System lands where final hazardous fuels treatment effectively mitigated wildfire risk (i.e., “acres mitigated”). There is a new outcome-based KPI for FY 2022, the “fireshed” outcome measure, which measures the number of high-priority firesheds where treatments have occurred to reduce wildfire risk to communities (USDA, 2021, pp. 139–141). In addition to what is in USDA budget justifications, congressional staff have recently drawn our attention to Section 40803 of the Infrastructure Investment and Jobs Act (Infrastructure Investment and Jobs Act, 2021), which specifies improving the Fire Regime Condition Class (FRCC) of acres in the wildland–urban interface or priority watersheds as the performance measure for additional investments. There is a lack of clarity around expectations to improve the FRCC, given that the LANDFIRE³ program does not typically measure FRCC. Rather, it measures vegetation departure and vegetation condition class.

The opportunity to investigate and advance promising outcomes-based performance measures is ripe, given that political leaders and the agency are paying increased attention to tracking the progress and efficacy of new investments. Following the workshop, a USDA Secretary’s memorandum directed the agency to “*develop outcome-based performance measures and systems for tracking and reporting progress on fire*” by December 2022 (Vilsack, 2022, p. 8). Our aim is to inform this discussion on an ongoing basis.

¹ The Terrestrial Condition Assessment (TCA) evaluates conditions and stressors affecting the ecological integrity of landscape ecosystems on National Forest System lands to identify restoration opportunities for restoration (Cleland et al., 2017).

² The Watershed Condition Framework (WCF) evaluates the status of watersheds across all National Forest System lands by assessing conditions and stressors affecting water quality and quantity, aquatic organisms, and their habitat using key indicators (USDA, 2011).

³ LANDFIRE is a multi-agency program that provides national geo-spatial data (e.g., vegetation, fuel, etc.), databases, and ecological models to support cross-boundary planning, management, and operations.

Workshop Approach

The workshop was planned and implemented by our steering committee, which includes partners from Colorado State University, Rural Voices for Conservation Coalition, Sustainable Northwest, The Watershed Research and Training Center, The Nature Conservancy, and the Western Environmental Law Center. We prepared by reviewing USDA Budget Justification reports and additional literature on performance measurement. We also spoke with key agency individuals (e.g., regional fuel leads) and Collaborative Forest Landscape Restoration Program (CFLRP)⁴ project coordinators about ideas for performance measures and current national approaches.

On May 12th and 13th, 2022, we hosted the performance measures workshop at The Nature Conservancy office in Portland, Oregon.⁵ Participants were invited based on their knowledge of forest restoration and/or fuel reduction as it relates to capturing performance measures. In total, there were 28 participants representing different levels of state and federal agencies, current and former agency and non-agency scientists, political leaders, nonprofits, non-governmental organizations, forest collaborative groups, and universities who offered their ideas and concerns about performance measures on and around national forests. These participants included our steering committee. Representatives from the federal executive branch, the USDA Washington Office, and the Southwest Ecological Restoration Institutes attended, as well as Forest Service fuel leads, federal and university scientists, and NGO partners.

During the first day of the workshop, we introduced workshop objectives, background, and definitions (see [Appendix](#) for the final workshop agenda). The afternoon included presentations on emerging and innovative approaches to measuring outcomes and other related efforts on monitoring. We asked presenters to focus on the following discussion questions:



- 1) Can this be done with existing data, and has it been piloted (are there limitations?)
- 2) Could this be useful for national reporting, or is it more local in scope?
- 3) Any insights on political feedback/feasibility?
- 4) Is this approach being considered by other agencies?

On the second day of the workshop, after reviewing key content from day one, we discussed possible improvements to national-level performance measures. The conversation covered what the indicator would measure and how it would be implemented (i.e., the indicator goal, what would be measured, how frequently it would be measured, etc.), which key players would be involved, data/science needs, and practicality under current conditions.

⁴ In 2009, Congress authorized the Collaborative Forest Landscape Restoration Program, a competitive funding program for collaborative, landscape-scale restoration projects on priority landscapes.

⁵ Our steering committee and all participants adhered to the COVID-19 orders in place at the time the workshop was planned and executed.

Key Topics and Recommendations

Presentations and discussions at the workshop revealed many aspects of why national outcome-based performance measures are challenging to develop and where there are opportunities for improvement.

In this section, we provide an overview of presentations from the first day, then some key discussion themes, and finally potential performance measures. We developed a [table](#) of these measures and discussed what can be achieved within the current infrastructure and some known limitations.

Summary of Presentations

Andy McEvoy (Oregon State University) is working with Jim Menakis (Forest Service, Fire and Aviation Management) on Shared Stewardship measurement work, using models to understand how treatments are reducing fire risk. In his presentation, he noted that this approach might be scalable, but it is time-intensive and would require more capacity in terms of high-level modeling expertise and data aggregation. Jamie Barbour (Forest Service, National Forest System) covered the broad array of forest plan monitoring questions; we also discussed the new CFLRP monitoring framework. A key question was how to align all this monitoring to make it more efficient and whether such alignment might support future outcome measures. We discussed whether it would be desirable to have a mandate for a consistent inventory and monitoring program (similar to that of the National Parks System and the Bureau of Land Management).

Marek Smith (The Nature Conservancy) shared a framework for measuring progress toward outcomes for the Conservancy's Living with Fire strategy while contributing to the organization's 2030 goals and set of 17 performance metrics. The framework shares commonality with the Forest Service's FireShed Condition Framework, as both use multi-scalar, nested polygons that serve as boundary objects for social-ecological pairings (landscapes and communities). However, the Conservancy's approach to delineating geographic units differs in that it is based on a range of socio-ecological values rather than fire transmission from federal lands and risk exposure to structures. The Conservancy tracks progress across scales and durations through Intermediate Results for actions such as prescribed burns (acres treated), training opportunities, or investments in hazardous fuels funding—and through two rubrics used to assess movement toward ecological and community resilience in Priority Landscapes nested within local, place-based projects.

Dave Calkin (Forest Service, Rocky Mountain Research Station) said the Potential Operational Delineation (POD)⁶ team is starting to look at metrics associated with PODs, but they are more focused on fire response and incident management performance assessment. One example was the proportion of the line built that directly encountered fire. Calkin described the evolution of the PODs planning process and ways in which it could inform performance measurement. PODs hold promise in linking pre-fire planning and mitigation to fire suppression effectiveness. However, there remain some significant challenges: PODs are locally developed and context-specific.



⁶ Potential Operational Delineations (PODs) are a wildfire planning approach used by USFS scientists, fire managers, and non-agency partners to summarize wildfire risk and identify optimal fire management options on national forests before fires start. <https://www.fs.usda.gov/rmrs/potential-operational-delineations-pods>

The process has and will continue to evolve over time; thus, comparing performance across national forest units would be complicated and may not be appropriate. Further, establishing performance metrics utilizing PODs could invite users to ‘game’ the system to achieve the desired performance, which could have negative impacts on the PODs process.

General Themes from the Workshop

Our discussion revealed numerous constraints and challenges associated with developing meaningful national-level performance measures, in particular outcomes-based measures. Given these issues, it is not surprising that creating and implementing cohesive performance measures remains challenging, despite the importance of this task and the recent emphasis placed on it. The following is a list of the performance measure challenges and needs commonly discussed during the workshop.

- As a bureaucratic tool, performance measures must be relatively simple to understand and must be aggregable at the national level; they must also capture what is ecologically and socially beneficial.
- Measuring acres treated has had the most utility for policy makers and political overseers, although other options exist. Output measures like acres treated are a singular metric and can be easily communicated on a weekly basis; however, this metric does not capture whether land management practices are reducing wildfire hazard. It can also lead to double- or even triple-counting acres, as multiple treatments are implemented over time in order to reduce fire hazard in a given location. This makes it difficult to interpret acres-treated reporting.
- All performance measures and KPIs can have unintended consequences and can be gamed. One example of gaming would be treating “easy” or “cheap” acres to reach the acres-treated target, rather than treating the most important acres or using the treatment that has the greatest certainty of meeting the target (e.g., mechanical treatments in lieu of prescribed or managed wildfire). There were collective concerns from the workshop group about using PODs as a KPI for this reason, given the potential to affect PODs as a nascent and important collaborative planning tool.
- Capturing enabling conditions for successful treatment, such as collaborative readiness, potential, or support, is important to guide investments or offer accountability for how dollars have been spent. The group did not conclude, however, that enabling conditions should be built into performance measurement; instead, they suggested that this factor be built into standard practice and made foundational for major investments.
- There are important social justice concerns regarding agency priorities and the location of investments. For example, measuring community fire readiness can create a bias toward areas with high capacity and resource availability. A key remaining question is how to equitably account for underserved communities and consider social vulnerability in metrics.
- It remains unclear how to create meaningful national-level measures based on monitoring efforts when most monitoring indicators are not standardized or easily scalable. For example, some participants said they were unsure how to standardize local, multi-party monitoring questions to the regional and national levels without over-simplifying. We also heard that it is challenging to translate important place-based outcomes to Congress. In addition, we heard that monitoring in the Forest Service is not consistent across project types; CFLRP projects are creating a common monitoring strategy, but this may differ from Forest Plan monitoring (which itself is highly variable across forests), broader-scale monitoring at regional levels, or shared-stewardship monitoring approaches.
- Some modeling and data challenges are unique to various measures. For example, the fireshed framework identifies areas with the highest probability of transmitting fire to communities, yet it cannot be easily used to show risk reduction based on fuel treatment, raising the question of how to identify firesheds where risk transmission has been reduced in the future. Some participants noted that measuring outcomes of fuel treatments varies based on objectives—whether they are to facilitate

incident response, mitigate fire behavior, or restore ecological processes and ecosystem functions—which led to a discussion of whether measures are needed for all pillars of the Cohesive Strategy.

- The technical granularity of data availability and monitoring feasibility required a different focus than the intended scope of our workshop. We tabled this discussion to think more big-picture about national-level reporting, but recognized that these are necessary aspects of future discussions.

We discussed a variety of themes in addition to the challenges listed above, including the interests and needs of the executive branch and Forest Service leadership, the role of collaborators and agency decision-makers, and how to focus measures across all aspects of the Cohesive Strategy. There was a perception that the U.S. Office of Management and Budget (OMB) is interested in 1) more transparency regarding the criteria for selecting priority acres for treatment, and 2) the impact of fuel treatment on suppression operations and forest ecosystems. In light of this information, the group discussed leverage points to inform OMB and congressional staff members on this issue, while recognizing that these issues rely on internal government communication and are challenging to solve with KPIs alone.

We noted that collaborators and partners serve important and necessary roles in the co-creation and monitoring of performance measures. Partners can help with monitoring and supplement other needed capacities for the agency. They can also expand knowledge and build trust to accomplish needed work. Partners are critical to communicating success to political overseers on behalf of their broader partnerships to conduct forestry work. For these reasons, workshop participants recommended greater partner engagement in all aspects of priority setting at the national level and in tracking accomplishments, recognizing that performance metrics alone likely cannot communicate success without broader political support.

Agency decision-makers must commit to a performance measure in order for it to be useful. Developing new or refined performance measures requires time for socialization and implementation. An essential part of this process is having agency leaders make a dedicated commitment to utilize measurements to guide performance reviews and investments and to hold themselves accountable to these measures. Decision-makers must also agree to improve and maintain data collection, which in practice means clear support and major investments in analytics, data management, data sharing, and data consistency. Creating useful reporting systems and enhancing staff expertise is also required for effective performance measurement and depends on agency commitment to the approach.



Ideally, priority strategies align with the three pillars of the Cohesive Strategy: 1) Resilient Landscapes; 2) Fire-Adapted Communities; and 3) Safe and Effective Wildfire Response. The goal of tiering to the Cohesive Strategy is to emphasize the importance of social factors that are equally critical to the success of on-the-ground fire mitigation. We agreed that all the pillars were needed to achieve the desired result of wildfire-resilient ecosystems and communities. In the past, groups have reached similar conclusions, but this approach has not been pursued (National Strategic Committee, 2016).

Although it is not feasible at present, we agreed that in order to understand fire hazard reduction, we need some consistent datasets that capture forest conditions and treatments, and that can be input into spatially explicit fire behavior models. We also noted that fire hazard reduction is not the same as forest restoration. This approach is similar to what is being piloted and was discussed by Andy McEvoy, but at present it was not considered feasible or scalable to the national level, given current capacities and datasets. Nonetheless, people recognized that counting acres within, for example, firesheds, still is not a true outcome measure of fire risk reduction.

Recommended Performance Measures

Here we describe the ideas for improved national-level annual performance measures that emerged from the workshop. Participants recognized that existing measures still have value and need to be augmented. Ideally, these measures would be tiered to each component of the Cohesive Strategy. The [table](#) below is a brief reference to each measure and includes the actions, components, and data needed to achieve the measure and its general feasibility. We note that it is important to have leadership support for these, a plan for field staff to track the performance measure and progress toward it, and the ability of national-level staff to compile and provide reports to Congress.

- 1) **Acres Mitigated: the annual acreage of National Forest System lands where final treatment effectively mitigates wildfire risk.** This KPI already exists; however, its importance needs to be elevated in line officer evaluations and national reporting. To collect data for this measure, we could use existing reporting through the Forest Service Activity Tracking System (FACTS) database, although we need spatially explicit treatment data to evaluate the effects of treatments that are intended to mitigate risk. Validation of priority acres by partners or third-party stakeholders might also be desirable. Some participants identified a key challenge with the acres-mitigated target: that necessary remote sensing protocols could take time to establish. It is also challenging to count acres when task orders are awarded, versus when the work is completed. Also, wildfire acres are counted, which is problematic because these are accomplished with suppression dollars, not appropriated funds, often incentivizing forest supervisors to divert appropriated dollars to timber harvest or thinning if they have met their acres-mitigated target with wildfires. Finally, wildfire hazard risk mitigated should not be conflated with forest restoration, begging the question of whether these efforts require two different performance measures.
- 2) **Collaborative Partner Validation: partner validation of the investments and treatments in areas with local collaboratives and inclusive planning approaches, to capture whether treatments are accomplishing partner restoration goals on priority acres.** This KPI does not exist. The group did not think it would serve as a stand-alone measure but rather could be a companion measure or added credit/points to an acres-treated or acres-mitigated target, to ensure that priority areas are collaboratively identified as being locally important values. A system to regulate, report, and review the data for this measure would need to be established, perhaps with partner oversight for spending and accomplishments at the forest and regional levels. Possible reporting questions could include: If there is a local collaborative group, are these acres identified as group priorities? and Have partners confirmed treatment plans or accomplishments this year? This could also be based on whether planned acres appear in types of plans, like Community Wildfire Protection Plans (CWPPs) or CFLRP implementation plans.
- 3) **Acres Treated with Prescribed Fire: the annual acreage of National Forest System lands treated with prescribed fire.** The agency reports on prescribed fire accomplishments on NFS lands annually. Currently there is a KPI target for the annual acreage of hazardous fuels reduction (through thinning, prescribed fire, and fuel breaks), but there is no KPI target specifically for acres treated with prescribed

fire. The main challenge to a prescribed fire target is that applying fire to more acres requires prescribed fire training, a dedicated local workforce, and prescribed fire experience. It is also necessary to distinguish between acres treated with appropriated funds and those treated with suppression funds. Finally, some participants expressed concern that the pressure to meet such a target would incentivize people to take inappropriate risks. We note that in some geographies, narrow burn windows also pose a challenge and often incentivize the use of mechanical treatments because these tools offer increased certainty to meet hazardous fuels targets.

- 4) **Acres Treated with Wildfire Managed for Resource Benefit: the annual acreage of National Forest System lands moved toward desired conditions through management of natural fire ignitions.** There is no annual KPI target for acres treated with managed wildfire, although the agency reports on managed wildfire or acres of accomplishment resulting from naturally occurring wildfires. The main challenge to this measure is the need for prescribed fire training, a dedicated local workforce, and growing staff experience with managed fire. There is also a lack of a consistent methodological framework to analyze and evaluate the positive and negative effects of wildfire. It is also necessary to distinguish between acres treated with appropriated funds and those treated with suppression funds. In addition, for acres to be counted they need to be covered by a National Environmental Policy Act (NEPA) decision document and to be a result of natural, not human, ignitions.
- 5) **Treatment Effectiveness During Incident Management: the annual percentage of National Forest System fuel treatments that were used during response.** This measure is reported through the Fuel Treatment Effectiveness Monitoring (FTEM) database, which is integrated into the Interagency Fuel Treatment Decision Support System (IFTDSS) application. The challenge with this measure is that while people can report in FTEM whether a fire burned through a treated area, the system needs to be built out and augmented to report whether treatments (even those that did not directly interact with the fire) were useful in changing management decisions. In addition, forests and regions may not have the time or resources at the end of the season to collect and report on local information.



Table of Recommended Performance Measures

This table serves as a quick reference of the ideas for improved national-level annual performance measures that emerged from the workshop. The content reflects comments from participants during the workshop, but it needs further detail and validation for the process required to employ each performance measure.

Recommended Performance Measure	Indicators and Data (availability, partner role, etc.)	Feasibility
Monitoring question: Are treatments reducing fire hazards and restoring forest ecosystems?		
<p>1) Acres Mitigated <i>Annual acreage of National Forest System lands where final treatment effectively mitigates wildfire risk</i></p>	<ul style="list-style-type: none"> - Use existing Forest Service Activity Tracking System (FACTS) reporting with corresponding spatial data layer. - Strategic Planning, Budget, and Accountability (SPBA) has targets for the agency that could be used. - Could have confirmation or validation by partners, or partners could identify the acres that show up in a plan/priority area. - Department of the Interior needs to be involved to make this an interagency metric. 	<ul style="list-style-type: none"> - This KPI exists; it needs to be elevated in importance in line officer evaluations and national reporting. - Need to distinguish between acres treated with appropriated funds versus suppression funds.
<p>2) Collaborative Partner Validation <i>Validation from partners or annual review to capture investment in local collaborative groups' priority acres, inclusive planning, or whether treatments are accomplishing partner restoration goals</i></p>	<ul style="list-style-type: none"> - Based on priority mapping and accomplishment tracking and reporting in places with collaborative groups. - Acres could be validated by local groups, perhaps with partner oversight for spending and accomplishments at the forest and regional levels. Possible reporting questions could include: If there is a local collaborative group, are these acres identified as group priorities? Have partners confirmed treatment plans or accomplishments this year? - This could also be based on whether planned acres appear in types of plans, like Community Wildfire Protection Plans (CWPPs) or CFLRP implementation plans. 	<ul style="list-style-type: none"> - This KPI does not exist. It might be used more as a process point or enabling condition that requires continuous investment, rather than as a stand-alone KPI (i.e., no penalization if there is no collaborative input). - Possible option to add points or equivalent feature to certain types of acres, but there are concerns that this system could be gamed; more discussion is needed.

Recommended Performance Measure	Indicators and Data (availability, partner role, etc.)	Feasibility
<p>3) Acres Treated with Prescribed Fire</p> <p><i>Target for the annual acreage of National Forest System lands treated with prescribed fire</i></p>	<ul style="list-style-type: none"> - Use existing Forest Service Activity Tracking System (FACTS) reporting with corresponding spatial data layer. 	<ul style="list-style-type: none"> - This measure is reported by the agency but is not a KPI with targets at present. - Possible barriers include lack of internal standards or requirements, and limited burn windows and personnel. - Possible pressure to meet such a target could incentivize people to take inappropriate risks. - Needs for prescribed fire training, knowledge, dedicated local workforce, and experience. - Need to distinguish between acres treated with appropriated funds versus suppression funds.
<p>4) Acres Treated with Wildfire Managed for Resource Benefit (Natural Ignitions)</p> <p><i>Target for the annual acreage of National Forest System lands treated with natural ignitions</i></p>	<ul style="list-style-type: none"> - Use existing Forest Service Activity Tracking System (FACTS) reporting with corresponding spatial data layer. - Human-caused fires can't be "counted." - Treated acres that move the forest toward forest plan conditions can be counted nationally. - Acres covered by the National Environmental Policy Act (NEPA) can be counted locally. 	<ul style="list-style-type: none"> - This is reported on by the agency but is not a KPI with targets at present. - There is a lack of a consistent methodological framework to analyze and evaluate the positive and negative effects of wildfire.
<p>Monitoring question: Are treatments facilitating safe and effective fire response?</p>		
<p>5) Treatment Effectiveness During Incident Management</p> <p><i>Annual percentage of National Forest System fuel treatments that were used during response</i></p>	<ul style="list-style-type: none"> - Fuel Treatment Effectiveness Monitoring (FTEM) database supplemented with a survey approach. 	<ul style="list-style-type: none"> - This KPI does not exist. - FTEM needs to be augmented to determine whether treatments were used during response.

At the closing of the workshop, there were unanswered questions about establishing meaningful performance measures. We suggest that future efforts consider these questions:

- Where and how do we best capture elements like enabling conditions and some of the process ideas about how to design and implement performance measures?
- Can we move toward aligning this with forest plan, CFLRP, Shared Stewardship, etc. monitoring?
- How do we show more transparency on the priority acre selection?
- How can we leverage and expand the developing Southwest Ecological Restoration Institutes (SWERI) fuel treatment database?
- How do we build in third-party monitoring?
- How do we assess collaborative readiness (e.g., Colorado Forest Restoration Institute piloting collaborative readiness and equity considerations)?

Next Steps

Following the release of this report, we will continue to engage in conversation with the USDA Forest Service, USDA Natural Resources and Environment (NRE), the Wildfire Commission, and Congress, as opportunities arise.

Our Steering Committee is currently collaborating with additional academic partners and nongovernmental organizations working to catalog investable prescribed fire partners, conducting a survey on prescribed fire implementation capacity, and building a cross-regional and nationwide coalition to support prescribed fire and cultural burning across jurisdictions.



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Appendix: Outcome-Based Performance Measure Workshop Agenda

Objectives:

- 1) Understand existing performance measure options, particularly those that would support the use of beneficial prescribed fire and wildfire, and that capture the spatial arrangement of treatments and cross-boundary work in priority landscapes. Note: Our intent is to discuss what kind of national reporting measures will reflect the outcome of fire-risk reduction.
- 2) Clarify if/how outcome measures can be based on local or regional monitoring and scaled up nationally.
- 3) Determine audience and communication strategy to share existing options and new ideas as needed.

Pre-work we are doing:

Before the workshop, our team will review budget justifications and additional literature on performance measurement and speak with key Forest Service individuals and project coordinators about ideas for performance measures and current national approaches.

When and where:

Thursday & Friday, May 12–13, 2022

The Nature Conservancy, Oregon Conservation Center, 821 SE 14th Avenue, Portland, OR 97214

Agenda:

Day 1: Thursday, May 12

1:30–5:30 p.m. PDT

1:30–2 p.m. PDT: Introductions and overview of the purpose of the workshop and goals

2–2:30 p.m.: Courtney Schultz to share on findings from pre-work (literature, budget justifications, CFLRP)

2:30–3 p.m.: Andy McEvoy to speak on Ecological Shared Stewardship Indicators

[Break]

3:15–3:45 p.m.: Jamie Barbour to speak on standard monitoring protocols

3:45–4:15 p.m.: Marek Smith to present on The Nature Conservancy's Living with Fire Managing to Outcomes Framework

4:15–4:45 p.m.: Dave Calkin to speak on how PODs could intersect with performance measures

4:45–5:15 p.m.: Discussion and debrief

Day 2: Friday, May 13

9 a.m.–3 p.m. PDT

9–10 a.m. PDT: Review yesterday's content

10 a.m.-12 p.m.: Work up KPI ideas and have time to write as necessary

[Lunch]

1-2 p.m.: Monitoring discussion

2-3 p.m.: Discuss next steps/strategy

Organizers:

Courtney Schultz, Project Lead, Associate Professor, Colorado State University

Tyson Bertone-Riggs, Project Lead, Director, Rural Voices for Conservation Coalition

Susan Jane Brown, Attorney and Wildlands Director, Western Environmental Law Center

Nick Goulette, Executive Director, Watershed Research and Training Center

Michelle Greiner, Research Associate, Colorado State University

Dylan Kruse, Vice President, Sustainable Northwest

Becca Shively, Program Manager, Rural Voices for Conservation Coalition

Marek Smith, North America Fire Director, The Nature Conservancy



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