



Restoring Our Investment in America's Forests

How the 2018 Farm Bill Can Create New Jobs for Rural America

By Ryan Richards

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Center for American Progress



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Introduction and summary

The economies of rural counties have been lagging behind urban and suburban counties for more than a decade.¹ The boom and bust cycle of extractive industries, slowing population growth, and a demographic shift to an older, retiring population have taken a heavy toll on rural communities.² While the entire country faced a slow recovery following the Great Recession, urban and suburban regions have finally surpassed the employment numbers they held before 2008.³ Recovery in rural areas has been a different story—in these communities, overall employment still lags several percent below their 2008 levels.⁴

The farm bill, which is up for congressional reauthorization in 2018, provides a ready-made opportunity for lawmakers to strengthen rural economies. Indeed, that goal was the impetus for the very first farm bill in 1933, which was passed to support struggling farmers who had lost their farms, crops, and earnings in the wake of the Dust Bowl—a period of severe dust storms brought on by drought, poor land management, and soil erosion that devastated the agriculture and ecology of the Great Plains.⁵ Today’s farm bill, which now encompasses a variety of agricultural, food, and conservation programs, can and should help ensure rural communities have the tools they need to thrive.

This report focuses on the role the farm bill plays in U.S. forest policy. In particular, it addresses the effect of the farm bill on forest restoration, which is often overlooked for its potential to create jobs and support healthy, resilient communities in rural America. Unfortunately, despite the array of activities that fall under the forestry title of the farm bill, the focus has continued to be placed on two main objectives—timber harvest and wildfire avoidance—even in light of growing evidence that board feet and firefighting are poor metrics for forest health.⁶ Some decisionmakers have also construed forest restoration to mean clearcutting practices and fire suppression tactics, instead of a science-based strategy to improve forest health.⁷ But studies show that decades of widespread logging and a misguided commitment to fire suppression have combined to make forests more

vulnerable to uncharacteristically severe wildfires than they would have been in the absence of these activities, putting the economic and ecological benefits of these ecosystems at risk.⁸ (see text box)

This tunnel vision has neglected other key roles forests play as anchors of a robust outdoor recreation economy and natural filters for drinking water for more than half of all Americans.⁹ This report includes new analysis from the Center for American Progress that finds that an additional 2 million acres of targeted forest restoration¹⁰ every year—essentially doubling the current rate on national forests—could directly create more than 40,000 new jobs, mainly in rural communities, while protecting drinking water, enhancing wildlife habitat, and reducing the risk of severe wildfires. It also presents new research on the status of watersheds within national forests and the importance of these watersheds to the nation’s drinking water, which support past recommendations from the Center for American Progress to increase investment in the stewardship of these resources.¹¹

These data are necessary for a discussion of the economic and ecological benefits of forest restoration, and provide insight into specific policy recommendations that Congress can fold into the 2018 farm bill to leverage the job creating potential of forest conservation and restoration. Those policies include:

- Fixing the federal budgeting regime for wildfire suppression so that fighting wildfires does not decimate the U.S. Forest Service (USFS) budget for proactive science-based forest management that would reduce fire hazard and risk
- Encouraging partnerships with states, utilities, and businesses to grow investments in national forests
- Expanding innovation grants and collaborations that empower local communities and businesses.

Forests are a critical part of the nation’s natural infrastructure, and maintaining the services they provide requires investments beyond the traditional timber considerations that have shaped their current form. Encouraging partnerships with drinking water utilities and other innovative uses of forest resources will help ensure that local communities can take full advantage of what forests have to offer.

Defining forest restoration

Forest restoration refers to a range of actions that aim to manage a forest in a way that reflects its historical ecological state in a certain place. This can include replanting or reintroducing native plants and animals, mechanical thinning and prescribed burning to replicate historical tree densities, removal of invasive species, or returning physical processes—for example, fire behavior, functioning streams and floodplains—to a more natural and resilient state.

The goal of restoration is not to recreate a specific appearance, but to reduce the effects of past human activities, such as clearcutting and fire suppression, that keep a forest from functioning like it would in a natural state. This sort of approach to forest management provides economic and environmental values and helps land managers ensure the land will support communities by protecting natural resources including timber, wildlife, and water.

Examples of current forest restoration efforts

- In central Oregon, Blue Mountains Forest Partners has convened timber companies, environmental groups, ranchers, and county governments to work with the U.S. Forest Service on restoration and management of the Malheur National Forest.¹² The group helps coordinate research on timber production, grazing, and restoration, and share those results with the communities that rely on the forest. It also uses this research to bring together groups and plan different forest uses to ensure that all management needs are being met for the community.
- The Collaborative Forest Landscape Restoration Program funds a set number of partnerships in national forests across the country that link USFS, state agencies, businesses, and nongovernmental organizations (NGOs) to plan and conduct science-based restoration. Some of these efforts are large-scale projects, such as the Four Forest Restoration Initiative in Arizona, which conducted a 1 million-acre environmental impact statement to plan and prioritize mechanical tree thinning, prescribed burning, and other restoration activities. The goal is to return the native ponderosa pine forests to their fire-adapted state to protect wildlife and outdoor recreation resources.¹³
- In Colorado, utility managers at Denver Water, which serves 1.4 million people in Denver and its surrounding communities, sought to protect its drinking water reservoirs, which become clogged with sediment when fires burn upstream. Denver Water partnered with the USFS to pay for tree thinning, prescribed burns, and tree planting that prevented erosion, lowered risks of large fires, and created tree stands of different ages in the forest—a complex landscape more reflective of its natural state.¹⁴

Benefits of forest restoration

The sheer size and scale of forests in America can be surprising. Forests cover 766 million acres of land across the United States, or roughly one-third of the entire nation.¹⁵ Approximately 25 percent of forests are managed by the Forest Service, and nearly half of all Americans—more than 150 million people—live within 50 miles of a national forest.¹⁶ The National Forest System is also the largest single source of drinking water in the country, supplying 20 percent of the nation’s total drinking water needs and at least some of the water used by 180 million Americans.¹⁷

Forests are huge economic drivers for the nation. Timber harvesting on public and private forestland directly generates \$200 billion in economic activity, and approximately 1 million jobs.¹⁸ Managed for multiple-use, national forests include rangelands for livestock ranchers, important areas of fish and wildlife habitat, wilderness and roadless lands, and serve as an anchor for the country’s booming \$887 billion outdoor recreation economy.¹⁹

In short, the health of our national forests is inextricably linked to the health of our economy and rural communities. However, many parts of America’s forests are not in great shape. Climate change is contributing to more frequent and severe forest fires that are burning millions of acres of timber and wildlife habitat every year.²⁰ This trend is evident on state and private lands as well as on forestland managed by USFS. A recent report by the Center for Western Priorities notes that, according to fire hazard models developed by the Council of Western State Foresters, similar levels of fire potential are present on both federal lands and state lands across the West.²¹

The watersheds that forests grow within are at risk as well. New research from Conservation Science Partners found that more than 25,000 miles of rivers and streams within national forests in the West have been altered by human development.²² In addition, the USFS has estimated that 7,189 watersheds connected to national forest land—and covering more than 160 million acres of federal, state, and private land—have been significantly altered by past fires, adverse changes to rivers and streams, invasive plant species, and other factors.²³ This reduces their capacity to filter drinking water and function as critical components of natural landscapes.

Accelerating the USFS's pace and scale of restoration would not only have a big effect on protecting watersheds and reducing the risks to communities from wildfires, but also provide a boon to rural economies. Forest restoration requires labor and machines, creating employment opportunities and supporting local businesses. And depending on the location and restoration technique, these projects can provide timber and other wood products, such as pulp or biomass energy, that support other businesses.

The Forest Service estimates that between 65 million and 82 million acres of national forests are in need of restoration, which they define using the aforementioned data on wildfire hazard potential as well as aerial imagery of insect or disease-caused tree die-offs.²⁴ Since 2010, the Forest Service has worked with partners to restore 2 million to 4 million acres annually across the country.²⁵ This area is twice the size of Rhode Island, but there are still numerous communities, watersheds, and other resources that are vulnerable to fire, or otherwise in need of ecological restoration.

If the USFS were to double the rate of restoration—which, conservatively, would amount to adding 2 million more acres a year—the agency could put a bigger dent in the backlog of restoration projects and create much-needed jobs for rural America. As an industry, ecological restoration already generates \$24.5 billion in economic activity and directly provides 126,000 jobs in the United States.²⁶ For every \$1 million invested in restoration, between 12 to 30 jobs are created, depending on the level of mechanization used on-site.²⁷ Based on average estimated restoration costs of \$700 per acre for forest restoration, investing in an additional 2 million acres of restoration annually would create up to 42,000 jobs. The indirect economic effects would also be strong, as much of the restoration costs are paid to labor and the economic benefits stay within communities.

To be sure, not all forest restoration proposals are created equal. Forest restoration is not a prescription for wholesale clear-cutting of forests, and it is impossible to achieve restoration goals—even improving public safety or sustainable timber management—by short-cutting important environmental reviews. Instead, policies should enable the Forest Service to build from its own research on forest fire science, hydrology, and ecology to plan and prioritize restoration projects in national forests that protect critical watersheds, are close to human population centers, and/or provide important wildlife habitat. Without diving into those important issues, this report offers practical ideas for how the 2018 farm bill can help conservation and restoration of national forests.

Broad exemptions to landmark environmental laws are misguided and counterproductive

Restoring forests to better reflect their natural condition requires smart planning based on science and input from local government, businesses, and nongovernmental organizations. But some members of Congress have proposed granting logging companies egregious short-cuts to the National Environmental Policy Act (NEPA)—allowing tens of thousands of acres to be clear cut without any consideration of the environmental impact. These exemptions would be an enormous increase—429 percent—from the current 70-acre exclusions. We know how this story ends – the singular focus on timber stand production after World War II, without regard for the impacts of logging on the landscape, is one reason fire dynamics are so difficult to manage today.²⁸

There are also legislative proposals that would restrict the ability for the public to file suit over forest plans, requiring instead that they enter binding arbitration with the Forest Service. This restriction on public access to courts is concerning, not only because it would break with traditions of governance but also because there is no data to support claims that the environmental review system has been skewed. A Government Accountability Office (GAO) report showed that the actual number of appeals related to fuel reduction projects is, in fact, very low.²⁹ Only 2 percent of projects were litigated during the study period, affecting just 121,000 acres of the 9 million acres slated for fuel reduction. Similar patterns were found in reviews of appeals and litigation over Forest Service fuel reduction projects from 2009-2011.³⁰

The argument for exorbitant categorical exclusions ignores the fact that NEPA is not the enemy: there are tens of thousands of NEPA-approved acres in the national forest ready for restoration. What is lacking is resources. Officials within USDA, including the secretary of agriculture and chief of the Forest Service, acknowledge that existing authorities already allow them to scale up restoration, and that the Forest Service has more partnerships with outside groups to conduct restoration than ever before in its history.³¹ Neither public records on litigation nor scientific evaluation of fire ecology support the argument that America's bedrock environmental laws hinder forest restoration. Instead, exemptions to environmental review could make the dynamics of fire management more complex for the Forest Service and state agencies. Similarly, restrictions on public input would not reduce the potential for uncharacteristic wildfire, but may exacerbate the problem by focusing on fire suppression and harvesting approaches that are appealing to commercial timber activity and detrimental to rural communities and businesses that benefit from restoring natural fire patterns and watershed conditions.

Recommendations: Enhancing forest stewardship and job growth

Through the 2018 farm bill, Congress can encourage investment in forests and nearby communities. First and foremost, policymakers should develop a comprehensive fix for the fire budget to ensure that fighting costly catastrophic wildfires does not come at the expense of other USFS programs, including restoration projects that help to reduce the severity and cost of wildfires. Second, policymakers can build upon new authorities from recent farm bills to leverage partnerships with state and private entities that expand the pool of funding for forest restoration. Finally, Congress should expand federal grants programs that spur innovation at the ground level, empowering local communities and businesses to pursue products and projects that have long-term benefits for forests and the people who depend on them.

Fix funding for fighting wildfires

The costs of fighting wildfires are skyrocketing every year. Longer, hotter, drier fire seasons mean that more and more of the USFS budget is eaten up by fire suppression activities.

In fact, more than 50 percent of the USFS budget is now spent on fighting wildland fires, up from 13 percent in the mid-1980s.³² In order to prepare for fire season, the USFS now waits to allocate money for nonfire management purposes; federal law prevents the Forest Service from spending more money than it has, so other activities have to wait until the impact of a fire season is known. Ironically, diverting funds to firefighting means the Forest Service cannot invest in activities that protect public resources from future wildfires.

Escaping this Catch-22 dynamic does not require wholesale changes to forest fire budgeting. In recent years, more than 30 percent of the USFS budget has been spent on fighting less than 2 percent of wildfires.³³ As Congress reconsiders how to fund disasters following the powerful 2017 hurricane season, they should structure eligibility for federal disaster resources to include the worst 1

percent of wildfires. Treating fires as natural disasters—much like a hurricane or an earthquake—would allow the Forest Service to tap into a special account, rather than needing to siphon off funds intended for other important forest restoration activities.

FIGURE 1

Fighting fire now dominates the U.S. Forest Service budget

Share of U.S. Forest Service budget spent fighting wildfires



Source: U.S. Forest Service, *The Rising Cost of Wildfire Operations: Effects on the Forest Service's Non-Fire Work* (U.S. Department of Agriculture, 2015), available at <https://www.fs.fed.us/sites/default/files/2015-Fire-Budget-Report.pdf>.

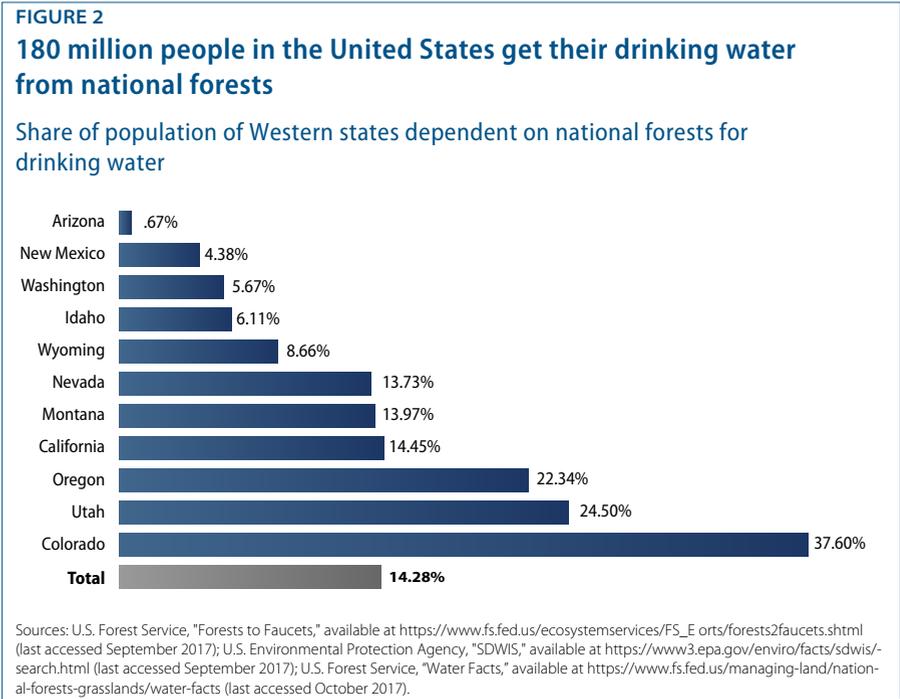
As an example of the benefits of such a fix, in 2015, the USFS spent more than \$320 million to fight just 10 fires.³⁴ Had that money alone been allocated to restoration activities, the USFS could have restored an additional 450,000 acres across the country.³⁵ This investment could have lowered the risk of future large wildfires, protecting rural properties, timber, and outdoor recreation opportunities. It would have also created contracts for local businesses to conduct restoration, and generated upwards of 9,600 jobs, protecting natural resources and private property.

While Congress has come close to passing a fix for wildfire funding in the past, the must-pass reauthorization of the farm bill in 2018 may be the perfect vehicle to finally get this much-needed change done.

Create space for more partnerships

Healthy national forests provide huge benefits to society, including clean water and places for outdoor recreation. Businesses and state and local governments, therefore, have a vested interest in protecting this natural infrastructure. The 2018 farm bill could help the USFS accelerate these partnerships through the authorization of novel financial agreements between USFS and utilities, federal support for small utilities, and appropriations that allow USFS to scale up technical and contracting capacity.

Municipal water utilities, for example, hold great potential as partners to invest in national forest restoration, as millions of their customers depend on forests for clean drinking water. (see Figure 2) Working examples abound. Denver Water partnered with the USFS in 2010 to invest \$33 million in forest restoration activities with the goal of reducing the impact of future wildfires on the reservoirs supplying the city with drinking water.³⁶ In 2012, the voters of Flagstaff, Arizona, passed a \$10 million bond measure to fund forest management in the Coconino National Forest that would protect their water supplies.³⁷ Similar partnerships between utilities and USFS are occurring across the country.³⁸ California recently adopted legislation that makes it easier for utilities to finance watershed restoration projects for drinking water security, which should make it easier to fund projects with the Forest Service.³⁹



The 2014 farm bill made two big changes to USFS policy to support this approach for forest restoration: the permanent reauthorization of the USFS Stewardship Authority and a five-year authorization to extend the Good Neighbor Authority. The stewardship authority allows USFS and the Bureau of Land Management to enter into contracts with external groups for up to 10 years in order to achieve management goals, including forest restoration.⁴⁰ The Good Neighbor Authority, previously only applicable in Colorado and Utah, was extended to all 50 states and

Puerto Rico, to allow the Forest Service to enter agreements with state agencies to conduct certain types of restoration within National Forests where federal properties are adjacent to state lands.⁴¹ This makes it easier to manage across multiple property types, which is a common challenge in western watersheds.

It is worth noting that these partnerships still take years to develop, as they require agreements between the USFS and a range of other organizations to plan, finance, and implement. As a result, most existing drinking water partnerships with the USFS have been made with larger utilities. However, new CAP analyses of U.S. Environmental Protection Agency (EPA) drinking water utility data show that nationwide more than 5.4 million people in rural counties are served by more than 2,800 small- and medium-sized utilities that rely on surface water sources for their drinking water.⁴² Smaller communities and the utilities that serve them face unique challenges in protecting their water supplies. In addition to a smaller base for raising funds, rural utilities are more heavily affected by necessary maintenance and upkeep commitments for existing built infrastructure.⁴³ Protecting natural infrastructure often becomes a lower priority for these communities' limited finances, leaving rural jurisdictions more exposed to the effects of forest fires.

In order to ensure that smaller utilities also have the resources to protect the forests upstream of their water supplies, Congress should include a green infrastructure credit assistance program in the farm bill. This program could operate through the U.S. Department of Agriculture's (USDA) Rural Development branch in a similar manner as the Rural Water and Waste Disposal Loan & Grant Program, through which utilities serving small communities are eligible for low-interest loans or one-time grants to help finance projects. Giving small communities and rural counties support to make proactive investments in their watersheds will improve their resilience to fire, safeguarding a vulnerable aspect of rural infrastructure.

The farm bill can also ensure that the USFS has the technical capacity to expand its participating agreements with utilities for restoration. The projects mentioned above have helped USFS develop pilot agreements and contracting protocols, but more work is needed to prepare agency capacity for future projects and refine monitoring tools that can be used to expand the range of financing arrangements available to utilities and investors.

Empower local communities and innovative projects

The past several farm bills have provided support for local-level projects that better utilize the range of goods and services provided by forests. These include incentives to support innovation in conservation and the use of timber products, and grants to help multiple stakeholders partner with the Forest Service in large-scale forest restoration projects.

Conservation Innovation Grants (CIG) provide seed money to support novel conservation practices such as carbon crediting or integrated pasture-forestry systems that help landowners diversify their on-farm revenue.⁴⁴ The grants have also elevated promising ideas such as “forest resilience bonds” that would allow utilities to finance forest restoration by engaging private capital to pay for planned projects upfront and earn a return based on improvements in water resources.⁴⁵ These programs help private landowners sustain their forest resources, which include approximately 30 percent of the nation’s forestland. It is especially important outside of the American West where private lands dominate the landscape and recent advances in agriculture and landscape conservation need to be brought to scale.⁴⁶

The federal government can also support responsible forest restoration through investments in research and development of new timber products that utilize wood from restoration projects. This research can be conducted at the Forest Service’s Forest Products Lab, or a range of universities across the country, to help develop new building materials and construction techniques, like mass timber framing for high-rises and other structures. Identifying suitable products would create commercial demand for the products of forest restoration, as well as investment in wood processing and manufacturing jobs.

The Collaborative Forest Landscape Restoration Program (CFLRP) is another recent innovation that should be expanded in the upcoming farm bill. This program engages multiple partners in the national forest restoration to protect watersheds, reduce wildfire risks, and develop supplemental timber products, such as biomass energy, which helps to offset the costs of restoration. Through coordinated and collaborative efforts, these strategies have made restoration approaches more efficient.⁴⁷

The farm bill should continue to support these projects, expand their scope, and scale to maximize their impact. The CFLRP has achieved recognition for its high levels of project proposals, and for the external funding that has been leveraged to supplement federal support for project activities. Authorizing a larger number of projects and an expanded funding cap for the CFLRP would help accelerate the return of National Forest System lands to a more natural fire regime, and create thousands of additional jobs. The Conservation Innovation Grants have a track record of supporting compelling projects, but advancing good ideas within watersheds and regions may be better supported through programs such as limited loan guarantees for certain types of project, which help absorb some risk of moving from field-testing concepts to developing market activity. And supporting research into new technologies that utilize wood in construction will help open new markets, attracting investments that support stewardship and provide opportunities in rural economies.

Conclusion

This is a critical juncture for the nation's forests, as the effect of historical management practices and a changing climate threaten to dramatically impact both their ecology and the services they provide to society. Recent policy developments have made it easier to conduct some restoration activities, and have supported pilot projects to diversify financing to manage forests. However, the scale of the management needs associated with protecting rural communities, watersheds, and valuable forest resources far exceed the resources currently available to forest managers.

The 2018 farm bill presents an opportunity to accelerate the pace of restoration. Recognizing major wildfires as the disasters that they are will help to reduce the impact of firefighting activities on the U.S. Forest Service budget and permit more money to flow to restoration activities. Although these activities are not a cost-saving measure in the short-term, it does allow for investments in restoration projects that can reduce fire risk to communities and natural resources that help support their economies, for example outdoor recreation. It also frees up Forest Service capacity, which will help attract new and innovative funding to protect community watersheds and other benefits that flow from healthy forests. This approach could potentially double the rate of restoration, creating tens of thousands of new jobs while reducing the risk of wildfires to properties and natural resources. Establishing programs that capitalize on the value of forests to downstream water users and to neighboring communities provides an opportunity to bring sustainable support to forest restoration by creating jobs, protecting communities, and improving America's forest resources.

About the author

Ryan Richards is a senior policy analyst for the Public Lands team at the Center for American Progress.

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Endnotes

- 1 Brian Thiede and others, "Six charts that illustrate the divide between rural and urban America," *The Conversation*, available at <https://theconversation.com/six-charts-that-illustrate-the-divide-between-rural-and-urban-america-72934> (last accessed September 2017).
- 2 John Cromartie, "How is Rural America Changing?" (U.S. Department of Agriculture, 2013), available at https://www.census.gov/newsroom/cspan/rural_america/20130524_rural_america_slides.pdf; *Headwaters Economics*, "Populations at Risk," available at <https://headwaterseconomics.org/tools/populations-at-risk/> (last accessed September 2017).
- 3 Brian Thiede and others, "Six charts that illustrate the divide between rural and urban America," *The Conversation*, available at <https://theconversation.com/six-charts-that-illustrate-the-divide-between-rural-and-urban-america-72934> (last accessed September 2017).
- 4 Robert Hennely, "Getting Closer to the Roots of Economic Insecurity," CBS, March 31, 2016, available at <https://www.cbsnews.com/news/getting-closer-to-the-roots-of-economic-insecurity/>; Andrew Schwartz, "Heartland's Struggling Economy Shows That the U.S. Needs More Good Jobs," *Morning Consult*, July 14, 2017, available at <https://morningconsult.com/opinions/heartlands-struggling-economy-shows-u-s-needs-good-jobs/>; Thiede and others, "Six charts that illustrate the divide between rural and urban America."
- 5 National Drought Mitigation Center, "Drought in the Dust Bowl Years," available at <http://drought.unl.edu/DroughtBasics/DustBowl/DroughtintheDustBowlYears.aspx> (last accessed October 2017).
- 6 Pacific Forest Trust, "A Risk Assessment of California's Key Source Watershed Infrastructure: Repair and Maintenance Needs for the Feather, Pit, McCloud, Upper Sacramento, and Upper Trinity River Watersheds" (2017), available at https://www.pacificforest.org/wp-content/uploads/2017/07/HWC-Book_Web.pdf.
- 7 George W. Bush White House, "President Bush Signs Healthy Forests Restoration Act into Law," Press release, December 3, 2003, available at <https://georgewbush-whitehouse.archives.gov/infocus/healthyforests/> (last accessed September 2017).
- 8 Cameron Naficy and others, "Interactive effects of historical logging and fire exclusion on ponderosa pine forest structure in the northern Rockies," *Ecological Applications* 20 (7) (2010): 1851-1864, available at <http://onlinelibrary.wiley.com/doi/10.1890/09-0217.1/abstract>.
- 9 U.S. Forest Service, "Water Facts," available at <https://www.fs.fed.us/managing-land/national-forests-grasslands/water-facts> (last accessed October 2017).
- 10 "Targeted" here refers to priority areas within forested landscapes, specifically important watersheds and the wildland-urban interface, which are areas where communities are near forested land.
- 11 Adam Fetcher, "America's Forgotten Forests: A Vision for Revitalizing Rural Economies Through Restoration" (Washington: Center for American Progress, 2017), available at <https://www.americanprogress.org/issues/green/reports/2017/03/23/429031/americas-forgotten-forests/>.
- 12 Blue Mountains Forest Partners, "Mission – History," available at <http://www.bluemountainsforestpartners.org/about/> (last accessed October 2017).
- 13 The Four Forest Restoration Initiative, "Background Information," available at <http://www.4fri.org/background.html> (last accessed September 2017).
- 14 Denver Water, "From Forests to Faucets: U.S. Forest Service and Denver Water Watershed Management Partnership," available at <https://www.denverwater.org/your-water/water-supply-and-planning/watershed-protection-and-management> (last accessed September 2017); Claire Harper, "USFS-Denver Water Partnership 'From Forests to Faucets'" (2012), available at <https://www.epa.gov/sites/production/files/2014-07/documents/urban-waters-dw-partnership-122012.pdf>.
- 15 This number includes Alaska and Hawaii. In the Lower 48 states, forests cover slightly less than 636 million acres.
- 16 Donald BK English, Pam Froemke, and Kathleen Hawkos, "Paths More Traveled: Predicting Future Recreation Pressures on America's National Forests and Grasslands" (U.S. Forest Service, 2015), at https://www.fs.fed.us/sites/default/files/media/types/publication/field_pdf/paths-more-traveled-final-9-28-15.pdf.
- 17 U.S. Forest Service, "Water Facts."
- 18 U.S. Forest Service, *U.S. Forest Resource Facts and Historical Trends* (2014) available at https://www.fia.fs.fed.us/library/brochures/docs/2012/ForestFacts_1952-2012_English.pdf.
- 19 Outdoor Industry Association, "The Outdoor Recreation Economy" (2017), available at https://outdoorindustry.org/wp-content/uploads/2017/04/OIA_RecEconomy_FINAL_Single.pdf.
- 20 John T. Abatzoglou and A. Park Williams, "Impact of anthropogenic climate change on wildfire across western US forests," *Proceedings of the National Academy of Sciences of the U.S.* 113 (42) (2016): 11770-11775, available at <http://www.pnas.org/content/113/42/11770.abstract>.
- 21 Center for Western Priorities, "Fire Lines: Comparing wildfire risk on state and U.S. public lands" (2017), available at <http://westernpriorities.org/wp-content/uploads/2017/09/FireLinesReport.pdf>.
- 22 Conservation Science Partners, "Description of the approach, data, and analytical methods used to estimate river alteration and fragmentation in the western U.S." (forthcoming).
- 23 U.S. Forest Service, *Watershed Condition Framework* (2011), available at https://www.fs.fed.us/sites/default/files/Watershed_Condition_Framework.pdf.
- 24 U.S. Forest Service, *From Accelerating Restoration to Creating and Maintaining Resilient Landscapes and Communities Across the Nation: Update on Progress from 2012* (2015), available at <https://www.fs.fed.us/sites/default/files/accelerating-restoration-update-2015-508-compliant.pdf>.

- 25 U.S. Forest Service, *Increasing the Pace of Restoration and Job Creation on Our National Forests* (2012), available at https://www.fs.fed.us/sites/default/files/media/types/publication/field_pdf/increasing-pace-restoration-job-creation-2012.pdf.
- 26 This includes forest restoration, as well as restoration of other habitats, such as wetlands and streams.
- 27 Todd BenDor and others, "Estimating the Size and Impact of the Ecological Restoration Economy," *PLOS ONE* 10 (6) (2015): 1-15, available at <http://journals.plos.org/plosone/article/asset?id=10.1371%2Fjournal.pone.0128339.PDF>.
- 28 Paul F. Hessburg and others, "Restoring fire-prone Inland Pacific landscapes: seven core principles," *Landscape Ecology* (30) (2015): 1805-1835, available at https://www.fs.fed.us/pnw/pubs/journals/pnw_2015_hessburg001.pdf.
- 29 U.S. Government Accountability Office, "Information on Appeals, Objections, and Litigation Involving Fuel Reduction Activities, Fiscal Years 2006 through 2008," GAO-10-337, Report to Congressional Requesters, March 2010), available at <http://www.gao.gov/assets/310/301415.pdf>.
- 30 House Natural Resource Committee Democrats, "Dousing the Claims: Extinguishing Republican Myths about Wildfire" (2012), available at https://web.archive.org/web/20121109155639/http://democrats.naturalresources.house.gov/sites/democrats.naturalresources.house.gov/files/DousingtheClaims_WildfireReport.pdf.
- 31 Mark Heller, "Tooke to focus on existing authorities in tackling fire risks," *E&E News*, October 6, 2017, available at <https://www.eenews.net/greenwire/2017/10/06/stories/1060062947>.
- 32 US Forest Service, *The Rising Cost of Fire Operations: Effects on the Forest Service's Non-Fire Work* (2015), available at <https://www.fs.fed.us/sites/default/files/2015-Fire-Budget-Report.pdf>.
- 33 Ibid.
- 34 Ibid.
- 35 Calculated using average cost of \$700/acre for forest restoration.
- 36 Denver Water, "From Forests to Faucets: U.S. Forest Service and Denver Water Watershed Management Partnership," available at <https://www.denverwater.org/your-water/water-supply-and-planning/watershed-protection-and-management> (last accessed September 2017).
- 37 Flagstaff Watershed Protection Project, "Project Background," available at <http://www.flagstaffwatershedprotection.org/> (last accessed September 2017).
- 38 Suzanne Ozment and others, "Protecting Drinking Water at the Source: Lessons from United States Watershed Investment Programs" (Washington: World Resources Institute, 2016), available at <http://www.wri.org/publication/protecting-drinking-water-source>.
- 39 Assembly Bill 2480, 2015-2016 Reg. Session, Chapter 695, 2016 California Statute, available at http://leginfo.ca.gov/faces/billCompareClient.xhtml?bill_id=201520160AB2480 (last accessed September 2017).
- 40 U.S. Forest Service, "Stewardship Contracting Overview," available at https://www.fs.fed.us/restoration/Stewardship_Contracting/overview.shtml (last accessed September 2017).
- 41 U.S. Forest Service, "Good Neighbor Authority," available at <https://www.fs.fed.us/managing-land/farm-bill/gna> (last accessed September 2017).
- 42 Data from US Environmental Protection Agency, "Safe Drinking Water Information System," available at <https://www3.epa.gov/enviro/facts/sdwis/search.html> (last accessed September 2017). Count of number of and population served by very small, small, and medium-sized utilities (less than 10,000 people served) for all U.S. Census Bureau-defined rural and mostly (more than 50 percent) rural counties in the United States. Exact numbers: People: 5,479,319; Utilities: 2,882
- 43 American Water Works Association, "Buried No Longer: Confronting America's Water Infrastructure Challenge," available at <http://www.awwa.org/Portals/0/files/legreg/documents/BuriedNoLonger.pdf> (last accessed September 2017)
- 44 USDA Natural Resource Conservation Service, "Conservation Innovation Grants," available at <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/cig/> (last accessed September 2017)
- 45 Blue Forest Conservation, "Forest Resilience Bonds," available at <https://www.forestresiliencebond.com/> (last accessed September 2017)
- 46 USDA Natural Resource Conservation Service, "Landscape Conservation Initiatives," available at <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/initiatives/> (last accessed September 2017)
- 47 The Nature Conservancy, "Fighting Mega-Fires by Restoring Arizona's Forests" available at <https://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/arizona/fighting-mega-fires-by-restoring-arizonas-forests.xml> (last accessed September 2017)

Our Mission

The Center for American Progress is an independent, nonpartisan policy institute that is dedicated to improving the lives of all Americans, through bold, progressive ideas, as well as strong leadership and concerted action. Our aim is not just to change the conversation, but to change the country.

Our Values

As progressives, we believe America should be a land of boundless opportunity, where people can climb the ladder of economic mobility. We believe we owe it to future generations to protect the planet and promote peace and shared global prosperity.

And we believe an effective government can earn the trust of the American people, champion the common good over narrow self-interest, and harness the strength of our diversity.

Our Approach

We develop new policy ideas, challenge the media to cover the issues that truly matter, and shape the national debate. With policy teams in major issue areas, American Progress can think creatively at the cross-section of traditional boundaries to develop ideas for policymakers that lead to real change. By employing an extensive communications and outreach effort that we adapt to a rapidly changing media landscape, we move our ideas aggressively in the national policy debate.

