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# The Bipartisan Infrastructure Law and the Forest Service: Insights for Local Job Creation and Equity from the American Recovery and Reinvestment Act

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## Abstract

The USDA Forest Service received $5.447 billion in funding from the Bipartisan Infrastructure Law of 2021, providing substantial funding to support implementation of the agency's 2022 Wildfire Crisis Strategy between fiscal years 2022 and 2026. This article examines how the agency might enhance local job creation and equity while conducting wildfire risk reduction and ecosystem restoration under the strategy using these funds. It does this by drawing on five key findings from a socioeconomic assessment of the American Recovery and Reinvestment Act of 2009 (ARRA) that are applicable today. The ARRA provided the Forest Service with $1.15 billion for wildfire, restoration, and infrastructure projects to foster job creation in counties most affected by the economic recession of 2007–2009. In addition to insights from the ARRA, we highlight the importance of considering job quality, the meaning of equity in local job creation, and characteristics of today's forest management businesses and workforces.

**Study Implications:** The Forest Service can learn from past experiences in implementing new programs of work. The frameworks through which agency funding are channeled influence the scope, type, and location of opportunities for local businesses and job creation, and the selection of communities for investment. Decisions about which tools and authorities to use when implementing Forest Service projects are key in determining access to forest management work for a diversity of business types. It is important to consider job quality as well as job quantity associated with agency initiatives to create local jobs through special funding opportunities like the Bipartisan Infrastructure Law.

**Keywords:** community economic development, Wildfire Crisis Strategy, federal land management, United States

The $1.2 trillion Infrastructure Investment and Jobs Act was passed by Congress and signed into law by President Biden on November 15, 2021, becoming the Bipartisan Infrastructure Law (BIL). The stated purpose of the law is to rebuild American infrastructure, expand access to clean drinking water and high-speed internet, address the climate crisis, advance environmental justice, and invest in communities.[1] The law also aims to create well-paying jobs, with estimates that more than 700,000 jobs a year will be created.[2]

Of the $1.2 trillion total, $550 billion represents new spending.[3] The BIL provides fiscal year (FY) 2022–2026 funding for several departments of the federal government, including the U.S. Department of Agriculture (USDA).[4] Within the USDA, the Forest Service (USFS) received $5.447 billion. This funding supports wildfire risk reduction and ecosystem restoration across land ownerships and includes $360 million for capital improvement and maintenance (Table 1).

This major injection of new funding is reminiscent of the American Recovery and Reinvestment Act of 2009 (ARRA). The ARRA made $787 billion in federal funding available to provide a stimulus to the American economy following the economic recession that began in 2007. The USDA received about $28 billion, and the USFS received $1.15 billion in ARRA funding. The USFS was directed to invest these new funds in forest management and infrastructure projects that would foster job creation in economically distressed counties, thereby promoting economic recovery and reducing the impacts of the economic recession. Projects fell into two general categories: wildland fire management (including ecosystem restoration) and capital improvement and maintenance.

Despite similarities in USFS BIL and ARRA special funding, there has not been a review of lessons learned from the ARRA and their potential current applicability. This article examines how the USFS implemented ARRA projects in a manner that prioritized job creation and local community economic development to derive relevant insights for today as the agency makes project investments with BIL funds. More specifically, we ask: how might the USFS enhance local community economic development and equity through job creation while implementing BIL projects? To address this question, we draw on findings from a socioeconomic assessment of USFS ARRA projects conducted in eight case-study locations nationwide by a team of eleven

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**Table 1.** Bipartisan Infrastructure Law funding to the USDA Forest Service.

| Category | Activities | Amount (millions) | Reference (Infrastructure Investment and Jobs Act) |
|---|---|---|---|
| Forest Service Legacy Road and Trail Remediation Program | Restore fish passage and passage for other aquatic species; decommission, relocate, or repair roads and trails to protect resources, reduce maintenance needs, and improve resilience to extreme weather events, flooding, or other natural disasters while maintaining access | $250 | Division D, Title VIII, Section 40801 and Division J, Title VI |
| Roads and dams | Road maintenance/reconstruction and temporary road construction to facilitate forest restoration and wildfire risk reduction projects; non-hydropower federal dam removal | $110 | Division J, Title VI |
| Wildfire risk reduction | Invest in technology, infrastructure, and training to support wildfire response; fund wildland firefighter salaries and expenses; map at-risk communities; plan, support, and conduct prescribed fire, thinning treatments, and timber harvest to reduce fuels in areas with high wildfire hazard potential; develop and improve fire control lines and fuel breaks; fund community wildfire defense grants to at-risk communities; support State Forest Action Plans; provide State and Volunteer Fire Assistance; conduct post-fire recovery; support firewood banks; fund research | $5,087[a] | Division D, Title VIII, Section 40803 and Division J, Title VI |
| Ecosystem restoration/ resilience | Restore ecological health on no fewer than 10,000 acres of Federal land, including Indian forest or rangeland; fund Good Neighbor Authority or Tribal Forest Protection Act agreements to implement restoration projects on Federal lands; provide financial assistance to facilities that purchase and process ecosystem restoration by-products; fund grants to states, territories, and Tribes for implementing restoration treatments on public or private lands; award grants to states and Tribes to establish temporary water crossing structures to minimize streambed disturbance; detect, prevent, and eradicate invasive species; restore, prepare, or adapt recreation sites on federal and Indian forest and rangeland; restore native vegetation and mitigate environmental hazards on mined Federal and non-Federal land; establish and implement a national revegetation effort on Federal and non-Federal land; establish a collaborative, landscape-scale restoration program to restore water quality or fish passage on Federal and Indian forest and rangeland | | Division D, Title VIII, Section 40804 and Division J, Title VI |
| TOTAL TO USFS | | $5,447 | |

[a]USFS Bipartisan Infrastructure Law appropriations for wildfire risk reduction and ecosystem restoration were directed to different internal organizations rather than explicitly subdivided between the two categories of investment. This makes it difficult to estimate how much funding is allocated to one category versus the other for purposes of this article.

USFS and university researchers between January and August 2010 (Charnley et al. 2011, 2012). The authors were members of this research team. Our analysis focuses on BIL investments associated with the agency's Wildfire Crisis Strategy, developed to confront the nation's wildfire crisis over the next 10 years (USFS 2022a). Between FY 2022 and 2026, about $3 billion in USFS BIL funds will be spent to reduce the risk of wildland fire and restore fire-adapted ecosystems across land ownerships in support of the strategy.[5]

Although not the focus of this article, on August 16, 2022, the Inflation Reduction Act (IRA) was signed into law.[6] The IRA provides the USFS with an additional $1.8 billion to undertake hazardous fuels reduction on National Forest System lands in the wildland–urban interface and $200 million for vegetation management projects through FY 2031 (Part 9, Title II, Subtitle D, Section 23001). The funding further supports implementation of the Wildfire Crisis Strategy[7] and creates additional opportunities to contribute to local community economic development and equity through job creation.

These topics are timely given Biden-Harris administration, USDA, and USFS priorities pertaining to rural prosperity and equity. Regarding rural prosperity, the administration has directed billions of dollars in BIL funds to the USDA to create economic opportunities and jobs in rural communities to benefit rural Americans[8] (many communities surrounding national forests are rural). President Biden's April 2022 Executive Order (EO) 14072 on Strengthening the Nation's Forests, Communities, and Local Economies advances the BIL by directing the Secretaries of Agriculture and Interior, within one year of issuance (by April 2023), to develop recommendations for community economic development opportunities that support sustainable forest management in timber communities [Section 2(d)(iii)].[9] One of six goals of USDA's strategic plan is to expand opportunities for economic development and improve quality of life in rural and Tribal communities (USDA 2022). Delivering benefits to the public, including contributing substantial socioeconomic benefits to local communities, is one goal of the USFS strategic plan (USFS 2015).

Two recent EOs reflect the administration's intent to make equity a priority in conducting federal government business. The January 2021 EO 13985, Advancing Racial Equity and Support for Underserved Communities Through the Federal Government, defines equity as "… the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment …" [Section 2].[10] Underserved communities specified include racial and ethnic minorities, people who live in rural areas, and people adversely affected by persistent poverty or inequality, among several others. As directed by EO 13985, the USFS has developed an Equity Action Plan to address barriers to full and equal participation in its programs, services, and funding opportunities (USFS 2022d). The plan identifies ten actions the USFS will focus on, one of which is reducing wildfire risk to Tribal, underserved, and socially vulnerable communities near National Forest System lands. President Biden's February 2023 EO, Further Advancing Racial Equity and Support for Underserved Communities Through the Federal Government, builds on EO 13985 by directing federal agencies to proactively and meaningfully engage with underserved communities; create economic opportunities in rural America, including quality jobs; and expand procurement opportunities for small businesses owned and controlled by socially and economically disadvantaged individuals, including setting goals for the percentage of federal procurement dollars awarded to them annually.[11]

Biden's January 2021 EO 14008, Tackling the Climate Crisis at Home and Abroad, established the Justice40 Initiative to further promote equity. The initiative states that 40% of the benefits of "covered" federal programs should flow to disadvantaged communities [Section 223].[12] Two USFS programs covered by the Justice40 initiative are hazardous fuels management and reducing wildfire risk to Tribes and underserved and socially vulnerable communities.[13] The Wildfire Crisis Strategy incorporates direction from these EOs, the USFS Equity Action Plan, and the Justice40 Initiative to advance equity in wildfire risk reduction.

The question of how the USFS might enhance local community economic development and equity through job creation under the Wildfire Crisis Strategy is a new version of an older question regarding how the USFS contributes to community socioeconomic well-being through the management of National Forest System lands (Charnley et al. 2018; McIver et al. 2018). The nature of this inquiry has changed over time, from an earlier focus on timber production and sustained yield (Daniels et al. 1991; Kaufman and Kaufman 1990; Le Master and Beuter 1989) to a broader focus on recreation (Cline and Crowley 2018; Hjerpe et al. 2017), forest restoration (Moseley and Reyes 2008; Nielsen-Pincus and Moseley 2013), natural amenity values (Charnley et al. 2008), and wildfire management (Moseley and Toth 2004; Nielsen-Pincus et al. 2013). Previous research on equity in relation to USFS job creation has focused primarily on job quality (Moseley and Reyes 2007; Moseley et al. 2014; Sarathy 2012).

## The BIL and the ARRA

The BIL and ARRA have many parallels (Table 2). Both provided for significant new USFS investments in wildfire management, ecosystem restoration, and infrastructure. The ARRA struck a relatively close balance between investments in wildfire management/ecosystem restoration, and capital improvement and maintenance, whereas the vast majority of BIL funding focuses on wildfire management/ecosystem restoration. Both placed a high priority on job creation. However, because the main impetus for the ARRA was to promote economic recovery and reduce impacts of the economic recession, job creation was the main driver of USFS ARRA spending. The agency's top priority in selecting and implementing projects was to target them in counties experiencing high economic distress (Charnley et al. 2012). The USFS developed a composite index based on four short- and long-term measures of unemployment from the US Department of Labor's Bureau of Labor Statistics and assigned an economic distress ranking to every county in the United States to inform this process. Secondarily, projects targeted counties having a high risk of wildfire, insect outbreaks, and disease in local forests or a need to reduce the backlog of deferred maintenance on national forests.

In contrast, wildfire risk reduction is a driving priority for USFS BIL spending. Funding will support wildfire risk reduction and ecosystem restoration across land ownerships through multiple activities (Table 2), with an initial geographic focus (FY 2022) on ten landscapes in eight western states that contain firesheds with a high risk of community exposure to wildfire (USFS 2022b, 2022c). The USFS defines firesheds as landscapes roughly 250,000 acres in size where there is a high likelihood that an ignition could spread and expose communities, homes, and infrastructure to wildfire (USFS 2022a). The ten landscapes for initial investment were chosen based on the presence of (1) firesheds classified as a high priority for wildfire risk reduction in the Fireshed Registry (Ager et al. 2021); and (2) pre-identified projects ready to be implemented that would reduce wildfire risk at the landscape scale, for example, projects identified through the Joint Chiefs' Landscape Restoration Partnership or the Collaborative Forest Landscape Restoration Program proposal process (USFS 2022b, 2022c, Jason Kuiken, personal communication, video call, Aug. 26, 2022). In January 2023, the USFS identified another eleven landscapes in seven western states for investment with additional funding received from the IRA (USFS 2023). In addition to containing high-risk firesheds, selection criteria included the presence of existing partnerships and collaborations, as well as partner investments; structure density in the wildland-urban interface; location of municipal water supplies, power supplies, and major roadways; and equity considerations (USFS 2023).

The agency estimates that investments in fuels and forest health treatments under the strategy will create 300,000 to 575,000 jobs (USFS 2022a). Many of these jobs will likely be created near firesheds that are a high priority for fuels treatment. The BIL provides significant funding for contracts and agreements with external organizations to help accomplish this work. The BIL also specifies that $480 million in USFS appropriations fund salaries and expenses for federal wildland firefighters, including creating more permanent, full-time, year-round jobs in wildland firefighting, and raising base salaries for these positions [Sec 40803 (c)(2)]. The USFS aims to convert at least one thousand seasonal firefighting jobs into permanent fire manager positions to help conduct fuels and forest health treatments on federal lands.[14] In contrast, ARRA spending was primarily invested in service contracting with private sector businesses and agreements with nonprofit

**Table 2.** Comparative features of the American Recovery and Reinvestment Act of 2009 (ARRA) and Bipartisan Infrastructure Law (BIL).

| Feature | ARRA[a] | BIL |
|---|---|---|
| Total funding amount | $787 billion | $1.2 trillion, of which $550 billion is new spending[b] |
| Purpose of legislation | Provide a stimulus to the American economy, suffering from the economic recession that began in 2007 | "Rebuild America's roads, bridges and rails, expand access to clean drinking water, ensure every American has access to high-speed internet, tackle the climate crisis, advance environmental justice, and invest in communities that have too often been left behind." [c] |
| Goals of legislation | • Preserve and create jobs and promote economic recovery<br>• Assist those most affected by the recession<br>• Increase economic efficiency by spurring technological advances in science and health<br>• Invest in transportation, environmental protection, and other infrastructure that will provide long-term economic benefits<br>• Stabilize state and local government budgets in order to minimize reductions in essential services and counter-productive state and local tax increases | • Create quality/good paying jobs—estimates that at least 700,000 new jobs/year will be created<br>• Repair and rebuild roads and bridges<br>• Address the climate crisis<br>• Invest in transportation infrastructure, especially public transit<br>• Ensure access to clean water<br>• Ensure access to high-speed internet<br>• Invest in clean energy development<br>• Undertake environmental cleanup by tackling legacy pollution<br>• Promote environmental justice [c] |
| Total funding to USFS | $1.15 billion | $5.447 billion |
| Main goals of USFS funding/direction | • Fund projects to help people most affected by the economic recession by targeting funding for projects in counties with the highest economic distress rankings, thereby creating jobs there<br>• Target projects in counties having the greatest risk of fire, insect outbreaks, and disease in their forests<br>• Create jobs in priority locations while meeting USFS goals including (1) sustain the health, diversity, and productivity of the Nation's forests and grasslands; (2) invest in wood-to-energy or biomass projects, or other initiatives that help transform rural and urban economies; (3) contribute to sustainable agency operations; (4) leverage other resources to create more jobs; and (5) create jobs that are sustainable over the long term | • Reduce the risk of wildland fire<br>• Improve wildland fire management<br>• Invest in wildland firefighters and convert numerous temporary firefighter positions to permanent positions<br>• Restore ecosystems and watersheds<br>• Repair infrastructure, especially roads, trails, and recreation-related [d] |
| Investment in wildfire management/ecosystem restoration/forest health | $500 million | $5.087 billion |
| Investment in capital maintenance/improvement | $650 million | $360 million |
| Geographic focus | Economically distressed counties | High risk firesheds |
| Time period for expenditure | FY 2010 to FY 2015 | FY 2022 to FY 2026 |

[a] From Charnley et al. 2012..
[b] https://www.senate.mn/storage/scrfa/IIJA-FIB-12-21-21.pdf Accessed March 23, 2023.
[c] https://www.whitehouse.gov/bipartisan-infrastructure-law/#:~:text=The%20Bipartisan%20Infrastructure%20Law%20makes,as%20thousands%20of%20smaller%20bridges Accessed May 17, 2022.
[d] https://www.usda.gov/infrastructure#:~:text=The%20Bipartisan%20Infrastructure%20Law%20invests,state%2C%20private%20and%20other%20partners; https://www.fs.usda.gov/managing-land/infrastructure Accessed May 17, 2022.

organizations, rather than expanding federal employment and firefighting capacity.

Promoting equity was not an explicitly stated goal of the ARRA, and the ARRA socioeconomic assessment did not evaluate the equity implications of USFS ARRA projects. However, by targeting ARRA projects to people and businesses in counties most affected by the economic recession, the USFS aimed to help those who were most economically disadvantaged and distressed by resulting unemployment, one means of advancing equity. Therefore, there are insights to be gained regarding equity from these efforts.

A goal of the BIL is to promote environmental justice, one aspect of equity. The BIL contains direction associated with USFS funding for wildfire risk reduction and ecosystem restoration that aims to advance environmental justice and equity. For example, it provides $100 million to contract or employ labor crews to reduce flammable vegetation on federal lands and use this material to produce biochar or other innovative wood products, specifying that organizations engaging young adults, Native youth, and veterans undertake some of this work [Division D, Title VIII, Section 40803 (c)(15)]. It also provides USFS State and Private Forestry with $1 billion to fund community wildfire defense grants for at-risk communities, including Tribes [Division D, Title, VIII, Section 40803 (c)(12); Division J Title VI]. At-risk, low-income communities are identified as one priority for grant funding [Division D, Title VIII, Section 40803 (f)(2)]. In addition, the BIL provides the USFS with funding for Tribes to conduct restoration

treatments on USFS lands under the Tribal Forest Protection Act authority [Division D, Title VIII, Section 40804 (b)(2)]. The USFS BIL funding can also be used to conduct ecosystem restoration and wildfire risk reduction on Tribal lands with very high wildfire hazard potential [Division D, Title VIII, Section 40803 (b); and Section 40804 (b)(1)].

The USFS identifies equity and inclusion as guidelines for how it will approach work under the Wildfire Crisis Strategy (USFS 2022c). Actions include making investments to increase equity and inclusion for underserved communities, building community capacity, and pursuing opportunities for co-management and co-stewardship with Tribes (USFS 2022c). To promote equity considerations in decision-making when implementing the strategy in the ten landscapes for initial investment, the USFS identified counties within these landscapes containing socially vulnerable populations (USFS 2022b). These populations were identified using the 2018 Social Vulnerability Index developed by the Centers for Disease Control and Prevention (CDC/ATSDR) (USFS 2022b). The 2018 index is a composite of fifteen variables from the American Community Survey grouped into four themes: socioeconomic status, minority status and language, household composition and disability, and housing type and transportation.[15] The index ranks social vulnerability at the census tract and county scales using one of two reference populations: an individual state or the nation.

Potential to reduce wildfire risk to underserved communities and proximity to Tribal lands were among the criteria the USFS and USDA used when selecting the second set of eleven high-risk landscapes for additional investment in early 2023 (USFS 2023). Equity was considered by identifying "at-risk communities" (those experiencing barriers in preparing for, responding to, and recovering from potential wildfires, and especially prone to their impacts) in and around these landscapes using data from the US Census and other sources (e.g., persistent poverty, unemployment, education level, age, disability, transportation access, housing type, language spoken, and community capacity) (USFS 2023).

## Enhancing Community Economic Development and Equity Through the BIL: Insights from the ARRA

USFS BIL and IRA funding create an opportunity to implement the Wildfire Crisis Strategy while addressing agency, USDA, and Biden-Harris administration goals relating to job creation, community economic development, and equity. The following five findings from the ARRA socioeconomic assessment (Charnley et al. 2011, 2012) offer insights into how the USFS might spend this new funding to advance these goals.

### 1. Projects That are Aligned with Agency and Community Priorities and That Build on Local Community Capacity are More Likely to Contribute Local Community Benefits

Such projects build on community infrastructure, business capacity, resources, values, and relationships by aligning what is needed or desired with what is possible to accomplish given the capacity at hand. The USFS ARRA projects that were aligned with shared agency and community needs and priorities and community capacity contributed local community benefits in the short term and were likely to facilitate more resilient local economies in the longer term.

For example, on the Apache-Sitgreaves National Forest in Arizona, millions of dollars of ARRA funding were invested in forest restoration and fuels reduction projects (Burns et al. 2011). These projects were a local priority owing to high wildfire risk in the area and the 2002 Rodeo-Chediski fire (over 460,000 acres) that burned mainly on the national forest and neighboring Fort Apache Indian Reservation, from which local communities were still recovering. Most project money was allocated to an ongoing 2004 stewardship contract to fund task orders pertaining to fuels reduction and restoration on the national forest. The ARRA money also funded a Tribal Forest Protection Act project to conduct postfire rehabilitation and restoration work there. Not only did ARRA funding contribute to job creation and capacity building for local contractors and members of the White Mountain Apache Tribe, it supported local forest products industries that use restoration by-products, including a biomass energy facility and businesses producing wood pellets, pallets, lumber, furniture, molding, and animal bedding (Burns et al. 2011).

The Wildfire Crisis Strategy acknowledges that wildfire risk reduction projects addressing community needs, reflecting shared priorities, and collaboratively developed are desirable (USFS 2022c). The ARRA experience and other studies (e.g., Santo et al. 2021) suggest that these project qualities may be supported by involving local agency employees who have been in place longer term and understand shared needs and priorities and local capacity in project development. Working with local community members via forest collaborative groups, community-based organizations with relevant missions, and Tribes to identify and develop projects collaboratively is also critical where possible (Davis et al. 2017; Hatcher et al. 2017; Spies et al. 2019). The USFS faces challenges with frequent turnover of local personnel, however, which may compromise these efforts (Coleman et al. 2021). Addressing lack of affordable housing, increasing opportunities for promotion within duty stations, hiring more local community members, supporting employee families with needed services, and greater performance incentives may help promote longer-term retention of staff in place (Santo et al. 2021). However, planning for continuity in the face of change is also important (Coleman et al. 2021). Mechanisms and authorities that directly engage Tribal communities (e.g., the Tribal Forest Protection Act) or other nonagency partners (e.g., stewardship contracts and agreements) can also help increase integration of community interests and target projects to community priorities (Cowan et al. 2022; Daniels et al. 2018; Davis 2021; Mattor et al. 2020).

Assessing local community capacity to accomplish project work so that projects can be implemented in a way that matches that capacity may also promote local community economic development. The ARRA did not require such assessments, nor does the BIL. However, there are some examples of state-level efforts to assess capacity and then more effectively target investments, such as the Regional Forest and Fire Capacity program in California (Davis et al. 2020) that may be instructive.

### 2. USFS Employee Decisions About Tools and Authorities to Use When Implementing Projects Influence the Nature and Extent of Local Business Access

Under the ARRA, some national forests chose to implement projects in ways that made them more accessible to a diversity

of local businesses by breaking project work into several components of different sizes and types. The Six Rivers National Forest in California separated roadside brush removal from a large road maintenance contract so that a small local operator with limited equipment could bid on the project (Charnley 2011). Several communities close to the Rogue River-Siskiyou National Forest in Oregon are home to a large number of businesses specializing in service contracting work. This national forest broke over $30 million in ARRA funding into fifty-three contracts and seven agreements that ranged in size from $100,000 to $1 million (Davis and Moseley 2011). The different types and scales of work offered made it possible for a variety of local businesses to obtain these contracts. In addition, it channeled some funding into agreements with local community-based organizations, making it possible to target certain organizations and populations with work opportunities, such as youth job corps programs, a noted priority for USFS BIL funding (Davis and Moseley 2011).

The Wildfire Crisis Strategy implementation plan cites the need to make full use of existing authorities and tools when undertaking wildfire risk reduction and restoration projects, including but not limited to the Tribal Forest Protection Act, Good Neighbor Authority, Collaborative Forest Landscape Restoration Program, Joint Chiefs' Landscape Restoration Partnership, and stewardship contracting authorities (USFS 2022c). Some of these authorities and programs have come into existence since the ARRA whereas others are longer standing. The ARRA projects that we studied made use of stewardship contracts and stewardship agreements, other types of agreements, grants, and Tribal Forest Protection Act authorities as tools for directing project work to local businesses and workers, demonstrating that they can be effective for creating local community benefits. Other research underscores this finding (Daniels et al. 2018; Durglo 2018; Mattor et al. 2020).

A key tradeoff with the approaches described here is that they often create more work for USFS contracting and agreements staff. Increasing contracting and agreements staff capacity within the agency to spend BIL (and IRA) funding in a manner that increases local job opportunities could help. The USFS has reorganized its contracting organization and is in the process of modernizing its grants and agreements procedures and systems, hoping to increase efficiency and make it easier to partner with external organizations.[16] Better integrating acquisition or grants and agreements staff with the needed expertise into project planning could also help forest managers determine how to accomplish work efficiently while enhancing local job opportunities through strategic use of these administrative tools (Charnley 2014).

## 3. Targeting Projects to Underserved Communities Can Create Job Opportunities, but Job Quality Is Also an Important Consideration

The USFS targeted ARRA projects to economically distressed counties in need of economic assistance. The eight case studies we investigated included projects that were successful in creating some degree and type of short-term beneficial economic outcomes for people suffering from the economic recession, with potential for longer-term benefits (we did not conduct a mid- or long-term assessment). These outcomes included short-term jobs and contracts that helped people and businesses weather the recession; bridge funding until the recession eased that enabled workers to retain permanent jobs they would otherwise have lost; jobs that helped employees develop skills, capacity, and social network connections to position them for future work opportunities; diversification of work portfolios among some companies, helping them develop new capabilities for future marketing; and infrastructure development (e.g., biomass power plant, mill facility construction) to support long-term jobs.

Rapid job creation was the main goal of the ARRA, but all jobs are not equal. Some pay poorly, lack benefits, have no long-term stability, or entail difficult and unsafe working conditions (Moseley 2006; Moseley et al. 2014; Sarathy 2012; Wilmsen et al. 2015, 2019). The ARRA did not explicitly address job quality associated with the notion of "local jobs," or the growing role of migrant and adult-in-custody populations in performing this work, despite the businesses being local to the area.

Nevertheless, some ARRA projects considered job quality. For example, the USFS provided a grant to the Alabama Forestry Commission to control a nonnative invasive plant (cogongrass, *Imperata cylindrica*) threatening the state's forest products industry and other values (Schelhas 2011). Some of this money was invested in creating immediate short-term jobs for scouts to identify and map where cogongrass was present and for herbicide applicators to spray the plants. But some was used to develop the business infrastructure and collaborative networks needed to create a long-term industry in invasive plant control in Alabama to help control cogongrass in the future, and establish enduring, quality jobs for workers in this sector (Schelhas 2011).

The ARRA experience illustrates that many jobs can create short-term benefits with implications for longer-term employment. But as President Biden emphasized, BIL funding should help create well-paying jobs and convert seasonal and temporary jobs into full-time, year-round employment. The equity and environmental justice emphasis of the BIL and Wildfire Crisis Strategy provide an opportunity to address issues like job quality and inclusion of mobile workforces who have not been historically recognized in narratives about local job creation. Increasing agency oversight over service contracting work crews, increasing enforcement of labor law provisions, improving agency inspector training, including funding and requirements for safety trainings and briefings in contract awards, and changing contract evaluation criteria away from best value to the government to reduce contractor incentives to cut costs could all help improve job quality (Moseley et al. 2014; Sarathy 2012; Wilmsen et al. 2015).

## 4. Building on and Cultivating New Partnerships Can Diversify Who Benefits from USFS Work and Increase the Agency's Organizational Networks

Working with current and well-established partners who are familiar with agency funding processes or have preexisting agreements or contracts that new money can be added to may be an expedient course of action when developing and implementing new projects, especially within tight timelines. However, a significant infusion of new funds as occurred with the ARRA and BIL creates an opportunity to establish new and develop nascent relationships between the USFS and potential partner organizations. Doing so may be especially desirable if additional capacity is needed to accomplish project work or engaging underserved communities is a goal, although it may take more time to develop relationships and understand needs.

For example, the Nantahala National Forest in North Carolina invested ARRA funding in controlling nonnative invasive plants to help protect a federally listed threatened plant, Virginia spiraea (*Spiraea virginiana*), with other conservation co-benefits (Morse 2011). The Nantahala used two participating agreements to accomplish the work and target specific partners. One agreement was established with the Western North Carolina Alliance, a conservation organization having expertise in invasive species management. Although this organization had previously sued the Nantahala over some of its project decisions, the collaborative relations that developed through the agreement helped ameliorate their earlier adversarial relationship. The second agreement was with the Eastern Band of Cherokee Indians, with whom the Nantahala wished to develop its relationship. The project was located close to Cherokee lands and the Tribe is disproportionately economically disadvantaged. With funding through these agreements, the Alliance provided two work crew supervisors who trained and managed two five-person Tribal work crews to control and eradicate nonnative plants. Not only did these agreements facilitate two new USFS partnerships, but a new working relationship between the Alliance and the Cherokee formed, creating a foundation for all three organizations to build on in future work to control invasive plants (Morse 2011).

New partnerships can also play an important role in making more local groups aware of agency job opportunities and how to gain access to them. This can help diversify who benefits from work opportunities and distribute those benefits more broadly. It can also provide the USFS with access to new organizational networks, increasing USFS contact with a broader array of potential partners. These partners often provide access to additional resources, including knowledge, skills, a workforce, and funding to support projects on USFS lands or across land ownerships (Abrams 2019; Abrams et al. 2017). In addition, new partners can help the USFS learn from the values and approaches of other organizations by increasing agency experience with diverse community groups representing a broad array of perspectives.

### 5. Infrastructure Investments that Interface With Established or Emerging Local Economic Sectors Are More Likely to Lead to Long-Term Sustainable Jobs

Although our focus in this article is on wildfire risk reduction and ecosystem restoration associated with the Wildfire Crisis Strategy, the USFS also received $360 million in BIL funds for capital improvement and maintenance. This appropriation includes $250 million to support the Forest Service's Legacy Roads and Trails program[17] and an additional $110 million for roads and dams, including road maintenance and reconstruction. The fifth ARRA finding is particularly relevant to this appropriation.

Investments in hard infrastructure development are often one-time projects. Nevertheless, they are more likely to have longer-term benefits if they are not merely stand-alone projects. For example, in communities with forest-based businesses like recreation (e.g., outfitter and guide services, lodging for overnight stays), projects that help maintain and improve recreation infrastructure such as campground facilities, roads, and trails and encourage public visitation may help support those businesses.

An ARRA project on the Lolo National Forest in Montana illustrates this point (Sturtevant et al. 2011). Some ARRA funds were used to pay for an engineering study of an old railway trestle, tunnel, and rail bed to assess what was needed to rehabilitate them as part of a new rails-to-trails project, the 30-mile Route of the Olympian, and to design a rehabilitation plan. ARRA funding was also used to restore roughly 8 miles of abandoned railway grades to form a piece of the trail. Lack of money to pay for work on this segment of the trail had held up the Route of the Olympian project for years. ARRA funding made it possible to complete the trail, already passable in other sections, opening it to multiple motorized and nonmotorized uses including bicycling and snowmobiling. The Route of the Olympian in turn connects to a popular 17-mile bike trail in Idaho. This project was anticipated to greatly increase recreation visitation locally, with economic benefits for communities where recreation and tourism were already an important economic sector.

When deciding where to invest BIL capital improvement and maintenance funds for roads and trails, the USFS may want to seek opportunities to invest in places where improvements in recreation infrastructure can help nearby communities with recreation-based businesses. Trails projects are particularly conducive to hiring youth participating in job corps programs and could be targeted to places with these programs. For example, an ARRA-funded trail maintenance project on the Six Rivers National Forest in California employed two youth corps groups (California Conservation Corps, Northwest Youth Corps) via master agreements with these organizations (Charnley 2011). This work helped youth build job skills, capacity, and connections for obtaining future jobs in the forestry and other sectors; increased connections to nature, especially among urban youth; provided income; and contributed to personal development (Charnley 2011).

## Conclusions

Major funding investments like the ARRA, BIL, and IRA offer opportunities to address community socioeconomic and equity goals while implementing forest restoration, wildfire risk reduction, and capital improvement and maintenance on and around National Forest System lands. Over a decade has passed since the ARRA was put in place to help people, businesses, and communities recover from the economic recession of 2007–2009. Given that both ARRA and BIL funding investments prioritize job creation through wildfire risk reduction, ecosystem restoration, and capital improvement and maintenance projects, we have reviewed insights gained from implementing the ARRA for application to USFS BIL spending, particularly via the Wildfire Crisis Strategy. Lessons learned from the ARRA are instructive for ongoing implementation of the strategy by the USFS and can continue to inform future government investments in federal land management and local communities. Here we summarize implications from this review, as well as consider differences in context and with the passage of time.

First, frameworks used to direct agency funds drive the selection of communities for investment. The USFS prioritized ARRA investments based first and foremost on economic need from the economic recession. In contrast, it is basing most BIL investments under the Wildfire Crisis Strategy on wildfire risk reduction criteria while generally supporting equity goals and attention to underserved communities. By

targeting high-risk landscapes and firesheds for wildfire risk reduction, BIL funds cannot be expected to serve the most disadvantaged or underserved communities in the nation or a state. Moreover, "local community benefit," and who benefits, will look different depending on how local communities and spending criteria are defined.

Second, more localized decisions about project selection and location, contract and agreement design and administration, and community involvement all play a role in the outcomes of legislation for local businesses, job creation, and equity. Agency staff and local partners could use available tools such as the CDC/ATSDR Social Vulnerability Index and fine-scale approaches like environmental justice mapping (Adams and Charnley 2018) to identify the location of low-income and minority communities within initial investment landscapes and high-risk firesheds more broadly. Doing so could help target underserved populations for outreach and engagement in decision-making about project implementation, identifying where treatments could be placed to reduce risk to these populations, and directing technical and financial assistance to reduce their vulnerability to wildfire. Methods such as social assessments and interviews could also help decision-makers better understand locally and culturally suitable opportunities for creating quality jobs and jobs for youths, Tribal members, or small businesses owned and controlled by socially and economically disadvantaged individuals.

Further, equity and environmental justice are important considerations both in the context of communities targeted for investment and the businesses and workforces involved in forest management (that may not be local). Thus, particular attention is needed to the meaning of equity in the context of local job creation and job quality, given the increasingly mobile, regional, and even transnational nature of forest management work and the history of inequitable and unsafe working conditions in this sector.

Third, the USFS did not conduct a local assessment of community, business, or agency contracting capacity in determining where and how to invest ARRA or initial BIL funds. Further, "NEPA ready" projects that could be readily implemented on the ground were an important criterion for choosing where to invest under both the ARRA and the Wildfire Crisis Strategy. Evaluating these capacities could assist in strategic use of funds both to support projects and organizations with "readiness" as well as projects and organizations located near places with a strong economic, social, or ecological need but a lack of readiness that requires capacity building. The latter would be important for meaningfully accomplishing goals of equity, capacity building, and reducing risk to underserved communities.

Finally, it is worth considering changes in the decade since the ARRA. Many strategies for contributing to local job creation through national forest management identified in the ARRA socioeconomic assessment have since been more widely adopted as a way of doing business (e.g., stewardship contracting, developing and implementing projects together with forest collaborative groups). Yet others remain underutilized (e.g., using authorities like the Tribal Forest Protection Act, building relationships with new partners who have not traditionally engaged in forest management with the USFS). In addition, agency spending authorities and priorities have changed somewhat since ARRA, with new tools such as Good Neighbor Authority, Shared Stewardship, and public-private partnerships drawing attention to opportunities for coordinating funding and management responsibility with other actors, including Tribes and state governments (Bertone-Riggs et al. 2018; Kooistra et al. 2022). This diversification of options could increase the flexibility of pathways for investing agency funding in ways that support local community benefit. However, USFS contracting and agreement decisions and capacity will remain key in determining access for a range of business types to perform forest management work.

This article has focused on strategies for enhancing local community economic development and equity through job creation while implementing BIL projects under the Wildfire Crisis Strategy. Insights from the ARRA socioeconomic assessment presented here may also be relevant for implementing other aspects of the strategy, such as leveraging partner investments, maximizing use of existing authorities, and developing "community ready" projects through collaborative processes that reflect shared priorities. There is value in considering how lessons from past USFS experiences can inform new programs of work.

## Endnotes

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11 https://www.whitehouse.gov/briefing-room/presidential-actions/2023/02/16/executive-order-on-further-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/#content Accessed March 23, 2023.
12 Disadvantaged communities are communities that have been historically marginalized and overburdened by pollution and underinvestment in housing, transportation, water and wastewater infrastructure, and health care, among other things. Official guidance for defining and identifying disadvantaged communities is evolving. https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-athome-and-abroad/ Accessed March 23, 2023.
13 Justice40 covered programs are federal programs that make an investment in one of seven categories covered by the Justice40 initiative: climate change, clean energy and energy efficiency, clean transit, affordable and sustainable housing, training and workforce development, remediation and reduction of legacy pollution, and

development of critical clean water and wastewater infrastructure. https://www.usda.gov/sites/default/files/documents/usda-justice-40-programs.pdf Accessed March 23, 2023.

14 https://www.fs.usda.gov/inside-fs/leadership/chiefs-desk-golden-opportunity-forest-service Accessed March 23, 2023.

15 A description of the 2018 CDC Social Vulnerability Index can be found here: https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/SVI_documentation_2018.html Accessed January 16, 2023. The most recent version of the SVI is from 2020 and uses 16 variables from the US Census organized into the themes: socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation. https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/SVI_documentation_2020.html. Accessed January 16, 2023.

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