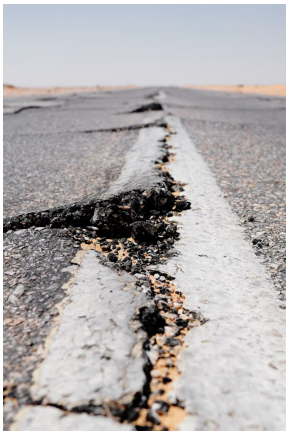
Long-Term Disaster Recovery: Recommendations for the Public Sector


October 2024 | Final Report

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Acknowledgments

This report was made possible by the U.S. Department of the Interior Grant No. L23AC00084-00. The Bureau of Land Management's Joint Fire Sciences Program administers this program.

This research was also made possible by the University of Oregon's School of Planning, Public Policy and Management Master of Public Administration Capstone practicum.

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Many thanks to the government officials who participated in our research; they will remain anonymous, but we are extremely grateful for their contributions!

Table of Contents

Table of Figures

List of Tables

Glossary

Acronyms

DLCD: Oregon Department of Land Conservation and Development

FEMA: Federal Emergency Management Agency

FTE: Full Time Equivalent (40 hours per week)

LDRM: Long-Term Disaster Recovery Manager

HUD: Department of Housing and Urban Development

ODF: Oregon Department of Forestry

OEM: Oregon Department of Emergency Management

OHCS: Oregon Department of Housing and Community Services

Key Terms

Emergency Manager: Local official responsible for coordinating all components of the emergency management programs and activities for the community, including managing resources before, during, and after a major emergency or disaster; conducting activities related to the critical components of emergency management; and coordinating with all partners in the emergency management process.[1]

Mitigation: An action to reduce the loss of life and property by lessening the impact of disasters (e.g., creating defensible space around a home or building a seawall).[2]

Precovery: Any action that occurs *before* a disaster that helps increase the efficiency of recovery efforts *after* a disaster (i.e., developing a scope of work to hire a construction company to rebuild public buildings). Precovery differs from recovery in that the bulk of this work occurs without a specific disaster from which to recover. See *Table 2* for a breakdown of the differences between precovery and recovery.

Recovery: Recovery efforts focus on how best to restore, redevelop, and revitalize the health, social, economic, natural, and environmental fabric of the community and often begin while the response is still occurring. Long-term recovery may take years.[3]

Resilience: Resilience is the capacity of individuals, communities, businesses, institutions, and governments to adapt to changing conditions and to prepare for, withstand, and rapidly recover from disruptions to everyday life, including natural hazard events.[4]

Response: Response efforts focus on stabilizing the situation in the immediate aftermath of a disaster by saving lives and property and meeting basic human needs.[5]

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[1] FEMA. (n.d.). *Role of Local Emergency Manager.* https://emilms.fema.gov/is_0230e/groups/98.html.
[2] FEMA. (2023, September 15). *Mitigation for Homeowners.* https://www.fema.gov/fact-sheet/mitigation-homeowners.
[3] FEMA. (2020, June). *National Disaster Recovery Framework (Second Edition) Information Sheet.* https://www.fema.gov/sites/default/files/2020-06/information_sheet_recovery_framework.pdf.
[4] FEMA. (2017, November). *Planning For a Resilient Community: A 4-Hour Workshop For Planners Fact Sheet.* https://www.fema.gov/sites/default/files/documents/fema_planning-resilient-communities_fact-sheet.pdf.
[5] FEMA. (2020, June). *National Disaster Recovery Framework (Second Edition) Information Sheet.* https://www.fema.gov/sites/default/files/2020-06/information_sheet_recovery_framework.pdf.

Executive Summary

This report highlights the challenges in wildfire recovery and offers policy recommendations for local, state, and federal agencies.

The 2020 Labor Day Fires in Oregon had an unprecedented impact, burning over 1 million acres of forest and woodland and forcing more than 40,000 Oregonians to evacuate. The recovery process has been challenging, and this report is informed by insights from government staff directly involved in the recovery efforts. Our goal is to improve the recovery timeline for future disasters by addressing the barriers that hinder successful disaster recovery.

Our recommendations were developed in three phases. The first phase involved background research, including a literature review on wildfire risk management, agile government practices, and successful disaster recovery case studies. The second phase included engagement with public sector stakeholders through interviews and a workshop with County officials. The final phase focused on developing three key policy recommendations to enhance long-term disaster recovery in Oregon:

- **Pre-Funding for Recovery**: Establish flexible, dedicated reserve funds for natural disaster recovery across Oregon. These funds will enable local governments to plan for disaster recovery, ensure efficient and effective recovery activities, and build long-term resilience.
- **Long-Term Disaster Recovery Managers**: Create a Long-Term Disaster Recovery Manager position in each County or region of adjacent Counties to coordinate recovery and "precovery" efforts at the county level.
- **Data Management**: Implement pre-disaster data sharing agreements and a common data collection form to gather essential information for response and recovery efforts, reducing complexity and confusion among agencies and the public.

While these recommendations are based on the impacts of the 2020 Labor Day fires on private landowners in Lane and Marion counties, we believe they apply to jurisdictions throughout Oregon and can be adapted to recovery for other disasters, not just wildfires.

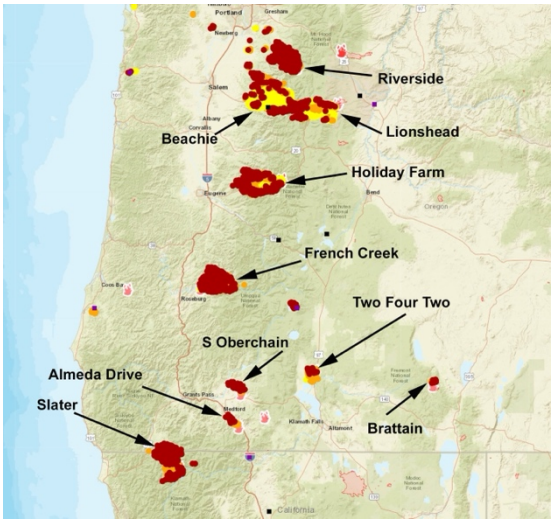
Chapter 1. Introduction

The 2020 Labor Day Fires

Over the past few decades, wildfires have increased across the Western United States, primarily due to climate change[6]. Wildfires play a crucial role in forest ecosystems by thinning vegetation, promoting new growth, and enriching soil[7]. However, climate change has led to earlier, warmer springs and hotter, drier summers in Oregon, extending the wildfire season. Combined with drought conditions, aggressive fire suppression practices, and continued development in the wildland-urban interface (WUI), these factors have increased the frequency and intensity of wildfires[8].

The 2020 Labor Day Fires in Oregon were unprecedented, burning an estimated 1 million acres of forest and woodland and forcing over 40,000 Oregonians to evacuate[9]. Severe drought conditions and a historic wind event caused multiple fires to converge into five massive "mega-fires" that began on September 7 and 8, 2020[10]. On September 15, the Federal Emergency Management Agency (FEMA) declared the Labor Day Fires a Major Disaster. While most of the damage occurred in September, the fires were not fully contained until November 3, 2020. Our research focuses on the Holiday Farm Fire, which primarily impacted Lane County, and the Beachie Creek and Lionshead Fires, which mainly impacted Marion County. See *Figure 1* for a visual representation of the range of these fires.

Figure 1: 2020 Labor Day Fire Extent[11]



After the immediate threat of the fires had been contained, the Oregon Department of Emergency Management (OEM), the Oregon Department of Housing and Community Services (OHCS), and various other state agencies transitioned from disaster response activities to long-term recovery efforts. More than four years later, however, many communities throughout the state still struggle to rebuild. The policy recommendations in this report are informed by the lived experiences and expertise of public officials working in the communities affected by the 2020 Labor Day Fires.

Impact of the 2020 Labor Day Fires

The Holiday Farm Fire caused widespread destruction in Lane County, disproportionately affecting private landowners. Private land accounted for 65 percent of the total acres burned in the Holiday Farm Fire and 46 percent across the 2020 Labor Day Fires burn period, marking a seven percent increase from the previous ten fire seasons[12]. The Holiday Farm Fire displaced over 2,500 residents and destroyed nearly a thousand structures over a 20-mile stretch[13].

The Santiam Canyon Fires, including the Beachie Creek and Lionshead fires, were equally devastating. They burned tens of thousands of acres across Linn and Marion counties, damaged crucial water infrastructure, and destroyed 720 structures in Marion County alone. The cities of Detroit and Gates lost virtually all built structures[14].

Private landowners are particularly vulnerable to destruction caused by natural disasters due to the challenges of rebuilding and navigating complex government regulations. Several interviewees from our study indicated that governmental red tape brought on by building and land use code enforcement, data sharing restrictions, and federal aid applications served as barriers to community recovery.

The timeline for wildfire recovery has no set start or end date. It follows the immediate destruction and emergency response from a wildfire. Post-disaster landscapes are often so altered that pinpointing the moment a community fully recovers is impossible. This lack of clarity can create public service inefficiencies and uncertainty for impacted residents.

Project Background

This report explores how actions taken at all levels of government—federal, state, and local—have enhanced or impeded disaster recovery, using agile, collaboration, and resilience frameworks. We have identified recommendations and best practices for future disasters to improve public service delivery.

Where possible, our report considers the needs unique to *non-industrial private forested (NIPF) landowners,* a subset of the total population impacted by the 2020 Labor Day Fires. **Our research found little distinction in delivering public services to NIPF residents compared to other groups, such as renters or individuals living in the wildland-urban interface.** However, where applicable, this report will call attention to findings that pertain only to NIPF landowners.

This report's overarching goal is to ask, *how does the intersection of individuals, their land, and the local institutional context of recovery support emergent social and ecological resilience to wildfire at the landscape level?* To better understand the *social* landscape around wildfire recovery, the grant studies nonprofit and public sector behaviors through (1) agility, red tape, and administrative burden and (2) collaboration and communication within and across these sectors. Cross-sectoral collaboration is essential for disaster recovery. This report focuses solely on government actions.

Research Scope

This report provides recommendations that can be implemented at various levels of government, with a focus on actionable policies to be adopted by Oregon State and County governments. Where applicable, our findings also detail the efforts that federal government agencies – mainly FEMA – can take to ensure that services and funds are delivered effectively and efficiently—.

[6] United States Environmental Protection Agency. (2024, May 21). *Climate change indicators: Wildfires*. https://www.epa.gov/climate-indicators/climate-change-indicators-wildfires.
[7] Snow, Meghan. (2022, October 11). *How does wildfire impact wildlife and forests?* U.S. Fish and Wildlife Service. https://www.fws.gov/story/2022-10/how-does-wildfire-impact-wildlife-and-forests.
[8] Pierre-Louis, K. and Popovich, N. (2018, November 27). *Climate change is fueling wildfires nationwide, new report warns.* The New York Times. https://www.nytimes.com/interactive/2018/11/27/climate/wildfire-global-warming.html.
[9] Oregon Department of Emergency Management (n.d.). *2020 Oregon Wildfire Spotlight*. https://storymaps.arcgis.com/stories/6e1e42989d1b4beb809223d5430a3750.
[10] Rasmussen, M., Lord, R., Fay, R., Baribault, T., & Goodnow, R. (2021, September). *2020 Labor Day Fires: Economic Impacts to Oregon's Forest Sector.* Oregon Forest Resources Institute.

https://site.oregonforests.org/sites/default/files/2021-09/OFRI-LaborDayFiresEconomicReport_Final%20Sept%202021.pdf.
[11] Source: JoCo Forest Fire Watch by Brian O'Connor. September 9, 2020.
https://brianoconnor.typepad.com/joco_forest_fire_blog/
[12] Ibid.
[13] Oregon Department of Emergency Management (n.d.). *2020 Oregon Wildfire Spotlight*.
https://storymaps.arcgis.com/stories/6e1e42989d1b4beb809223d5430a3750.
[14] Ibid.

Chapter 4.
Policy Recommendations breaks down our recommendations by levels of government and attempts, where possible, to indicate how these governments should interact to implement these policies. The most robust recovery efforts will occur when County officials, State agencies, FEMA, and nonprofits work in tandem and maintain communication channels.

Geographic Scope

Due to the project scope, time constraints, and participants' capacity, the research team focused on our community engagement efforts in Lane and Marion counties. As a result, some of the findings detailed here may not be generalizable to other counties or regions in Oregon. However, we believe that our recommendations apply broadly to jurisdictions across Oregon and disasters beyond wildfire.

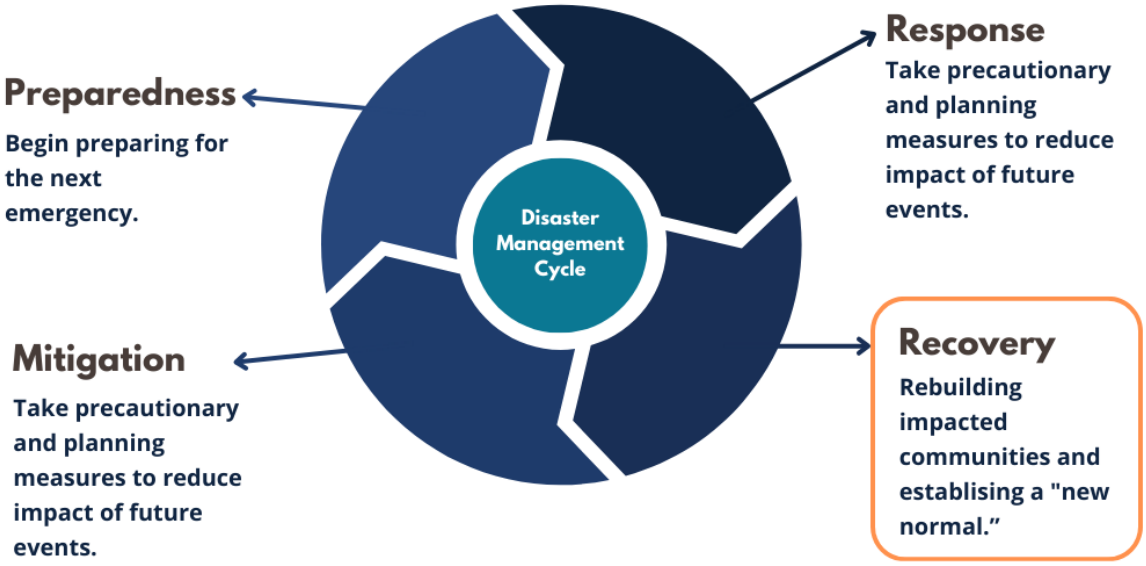
Why focus on recovery?

Traditionally, disaster management falls into four distinct (though overlapping) phases that operate continuously: Mitigation, Preparedness, Response, and Recovery.[15] While this report focuses on policy recommendations for *recovery*, it is often difficult in practice to entirely separate recovery from the other stages of the management cycle. Recovery typically begins once immediate response measures – such as search-and-rescue, evacuation, and hazardous waste and debris removal – have concluded and represent rebuilding impacted communities and establishing a "new" normal. As the aftermath of the 2020 Labor Day Fires has demonstrated, the recovery process is often non-linear and can require years of joint effort from governments, nonprofits, and community members alike.

A well-designed policy is needed at all four recovery stages to ensure communities grow back better—more resilient, sustainable, and prepared. This report contributes to a broader framework of resilient, agile disaster management in Oregon.

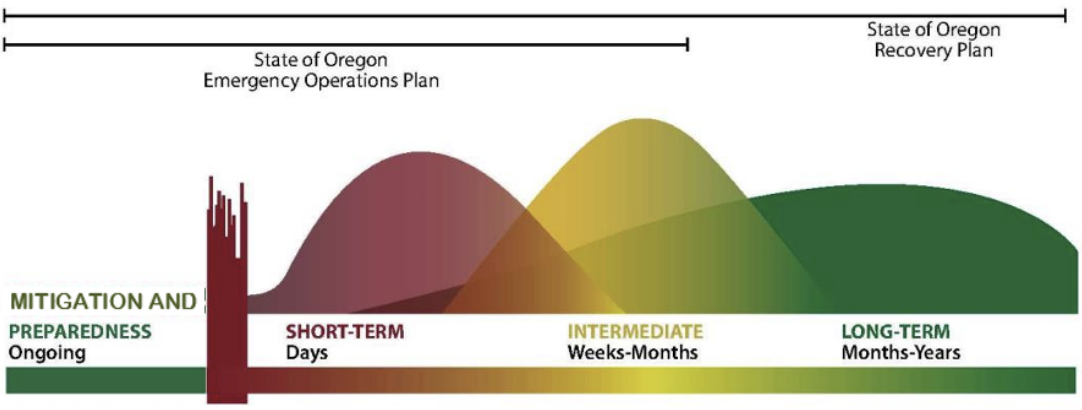
Natural disaster recovery – and recovery from other disasters, such as pandemic events like COVID-19 or major accidents like train derailments – is an integral component of Oregon's disaster management framework. *Figure 2* demonstrates how these four phases operate in a continuous cycle. However, these four phases rarely transition cleanly. *Figure 3* illustrates that mitigation and preparedness are often ongoing activities and that response and recovery overlap considerably.

Figure 2: Phases of Disaster Management



Source: research team

Figure 3: Recovery Continuum



Source: Oregon Military Department, Office of Emergency Management. (2018, March 1). *State of Oregon Emergency Management Plan, Volume IV: Oregon Disaster Recovery Plan.* https://www.oregon.gov/oem/Documents/OR_RECOVERY_PLAN_MARCH_2018.pdf.

Table 1: State Recovery Function Coordinating Agencies

Section/Annex	Coordinating Agency or Team
Basic Plan	Office of Emergency Management
State Recovery Function (SRF) Annexes	

SRF 1: Community Planning and Capacity Building	Oregon Department of Land Conservation and Development
SRF 2: Economic Recovery	Business Oregon
SRF 3: Health Services	Oregon Health Authority
SRF 4: Social Services	Oregon Department of Human Services
SRF 5: Disaster Housing	Oregon Housing and Community Services
SRF 6: Infrastructure Systems	Oregon Department of Administrative Services Oregon Department of Energy Oregon Department of Transportation Public Utility Commission of Oregon
SRF 7: Natural and Cultural Resources	Oregon Department of Environmental Quality

Source: Oregon Military Department, Office of Emergency Management. (2018, March 1). *State of Oregon Emergency Management Plan, Volume IV: Oregon Disaster Recovery Plan.* https://www.oregon.gov/oem/Documents/OR_RECOVERY_PLAN_MARCH_2018.pdf.

Various agencies are vital in facilitating recovery processes within the existing State structures. The Oregon Department of Emergency Management (OEM) serves as a central coordinating body that partners with agencies such as the Oregon Department of Land Conservation and Development (DLCD), Business Oregon, the Oregon Health Authority (OHA), the Oregon Department of Human Services (ODHS), the Oregon Housing and Community Services (OHCS), the Oregon Department of Administrative Services (DAS) along with the Oregon Department of Energy (ODOE), the Oregon Department of Environmental Quality (DEQ), the Oregon Department of Transportation (ODOT), and the Oregon Public Utility Commission (OPUC). See *Table 1* for the differentiation of state agency roles in recovery.

What is "precovery"?

It is essential to recognize the distinction between disaster preparedness and what is known as **"precovery."** Most of the recommendations and findings in this report are intended to occur *before* a natural disaster rather than during long-term recovery in the aftermath of a disaster. These include developing a scope of work with a local construction company to deploy during rebuilding efforts. However, these actions should not be confused with preparedness, which aims to improve the immediate response and safety efforts during a natural disaster, or mitigation, which seeks to reduce hazard risk. Our "precovery" recommendations take place in anticipation of a natural disaster; the intention is to streamline the support that happens after the immediate danger of a natural disaster has been resolved when community members

are ready to seek support to build and return to their homes. *Table 2* demonstrates some critical differences between "precovery" and recovery.

Table 2: Comparing Precovery and Recovery

Precovery	Recovery
Planning and preparation before a disaster occurs. Aims to reduce the impact of a disaster and enhance recovery efforts.	Actions taken after a disaster event occurs. Emphasis on rebuilding infrastructure and restoring services.
A continuous process that works in tandem with emergency management functions.	Focuses on the long term - can be multiple months or years after a disaster.
Funding sources are difficult to pinpoint. Typically, these functions are funded by emergency management.	Funding can come from a variety of sources, such as FEMA, other federal grants, and state and local emergency/mitigation funds.

[15] Oregon Department of Emergency Management. (n.d.). *Plans and Assessments: Comprehensive Emergency Management Plan (CEMP).* https://www.oregon.gov/oem/emresources/plans_assessments/pages/cemp.aspx.

Chapter 2. Methods

This section outlines our approach to data collection and policy development, which includes three phases:

1. **Background Research:** A literature review on wildfire recovery, agile government theory, and case studies on successful disaster recovery in the U.S.
2. **Stakeholder Engagement:** Collected qualitative data through outreach and engagement with key public-sector stakeholders at the County level, including interviews and a workshop with County officials.
3. **Recommendations and Report Writing:** Development of a report detailing the findings and policy recommendations based on background research and stakeholder engagement.

Background Research

We started with background research to assess the disaster recovery landscape. This included a review of scholarly literature on wildfire risk management, agile government theory, and disaster recovery frameworks (see Appendix A. Literature Review). To ground this research in real-world scenarios, we compiled case studies from disaster recovery in other regions of the United States (see Appendix B. Case Studies). This research provided a strong foundation for effective public sector stakeholder engagement.

Stakeholder Engagement

Engaging with key players in public sector disaster recovery was crucial for our research findings and policy recommendations. To understand the specific impacts of the 2020 Labor Day Fires, we interviewed government officials from Lane and Marion counties, selecting participants from the attendee list for the October 2023 Oregon Summit on Wildfire Recovery[16]. The summit occurred on October 30 and 31, 2023, at the University of Oregon Ford Alumni Center in Eugene, Oregon[17].

The research team identified 26 individuals based on their involvement with the 2020 Labor Day Fires and long-term disaster recovery responsibilities. This selection process ensured a holistic representation from local government, emergency services, and disaster response departments in both regions. Ultimately, we conducted 15 interviews based on the interviewees' capacity and willingness to participate.

These interviews provided significant insights into the long-term recovery landscape. We focused on questions about existing disaster recovery policies, funding mechanisms, communication between government entities, and impacts on residents, including non-industrial private forested landowners. A detailed interview guide is available in *Appendix C. Interview Guide.*

From these interviews, we identified three key themes, emphasizing actionable steps that governments can take to improve recovery:

1. Recovery funding sources;
2. Capacity and coordination needs; and
3. Data sharing and management.

After completing the interviews, key stakeholders and interviewees were invited to a collaborative workshop. The workshop refined the key themes from the interviews, developed actionable recommendations, and solicited further input from subject matter experts. We incorporated workshop contributions into the finalized recommendations, which were emailed to interviewees and workshop attendees for a final round of input.

Recommendations and Report Writing

We collected qualitative data from key local government stakeholders, providing greater insight into the overall challenges in long-term disaster recovery efforts. This data and information from our background research were used to create three policy recommendations. Feedback that was useful but did not rise to the level of policy recommendations was captured and included as findings (see

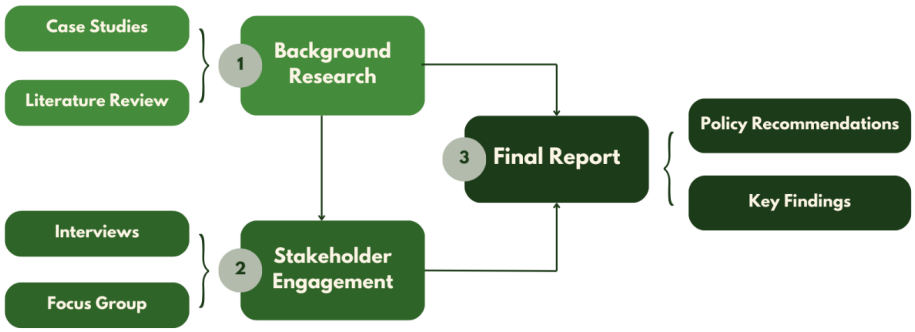
[16] To see a playback of the Summit on YouTube, you can start the playlist here: https://www.youtube.com/watch?v=RCr9VOKkiLM&list=PLK88ejaoliXp57k_hDkmOWQjJNePh1tzv

[17] The Oregon Summit on Wildfire Recovery took place on October 30 and 31, 2023, at the University of Oregon Ford Alumni Center in Eugene, Oregon. For more information, visit: https://center.uoregon.edu/OregonSummitWildfireRecovery/2023/.

Chapter 3. Findings for more information). *This section also highlights topics that may require further research or are beyond the project's scope.*

Figure 4 illustrates how our background research and stakeholder engagement processes led to the development of our policy recommendations.

Figure 4: The Research Process



Data Limitations

The small sample size of interviewees may have limited the variance in responses received, and our process undeniably excluded specific populations (i.e., wildfire survivors). Similarly, interview bias may have influenced the answers some interviewees gave, as they may have withheld information or tempered their responses due to a sense of professionalism. However, our research reflects the lived experiences of public-sector actors who actively supported community recovery. While our findings may not be generalizable, they paint an essential picture of Oregon's long-term disaster recovery landscape.

Chapter 3. Findings

The findings detailed in this chapter stem from our background research (including the literature review and case studies found in *Appendix A. Literature Review* and *Appendix B. Case Studies*, respectively), stakeholder interviews, and a feedback workshop. These takeaways formed the basis for the recommendations detailed in .

Chapter 4.
Policy Recommendations.

Note that only some of the findings discussed in this section led to a recommendation. For more information on potential actions and future research related to our findings, see *Chapter 5. Next Steps for Disaster Recovery.*

Our team identified three major findings that directly informed the policy recommendations proposed in Chapter 4:

- **Local governments require flexible funding sources for recovery.**
- **Local governments need greater staff capacity and centralization.**
- **Poor data management impedes recovery efficiency.**

Our research also yielded six additional important takeaways regarding long-term recovery that, while not producing direct, actionable policy recommendations, are nonetheless important to capture in this report:

- **Renters and medium-income homeowners are vulnerable populations. Private forested landowners do not experience distinct impacts during recovery.**
- **Disasters may create opportunities for smarter rebuilding.**
- **Communication across government agencies is uneven.**
- **Nonprofits are highly valued in recovery efforts.**
- **Bureaucratic procedures hindered state and federal service delivery.**
- **Land use codes can restrict rebuilding efforts.**

Local governments require flexible funding sources for recovery

Local governments are often the first to respond after a disaster, taking a boots-on-the-ground approach to service provision. While funding and resources for responding to the wildfires following the 2020 Labor Day Fires were plentiful, the funding and resources to support recovery from the disaster(s) were not. Our stakeholders repeatedly emphasized the need for flexible funds to support recovery and prevent local governments from taking on debt (see *1. Pre-Funding Recovery*).

Following the 2020 Labor Day Fires, residual funds from the 2021 American Rescue Plan Act (ARPA) allowed local administrators high levels of discretion in their spending. Because these funds were not earmarked for specific aspects of recovery, counties could use them for various purposes, including waiving residential permitting fees for rebuilding and hiring additional staff to take on recovery activities. The Municipal Wildfire Assistance Program (MWAP) also proved a primary funding source for Lane and Marion counties in the first 18 months following the 2020 Labor Day Fires. In interviews, all our stakeholders said they could only have done the recovery activities they did because of MWAP and ARPA dollars.

What does flexible funding look like?

In our interviews with public sector stakeholders, we repeatedly heard that local governments would prefer to receive funding up-front rather than reimbursements, particularly from FEMA. The reimbursement process requires local governments to divert funds from their budgets to support immediate recovery needs. While FEMA usually reimburses this local debt, the interim period can last months or years, impacting local budgets and creating uncertainty. Up-front loans that Cities can pay back over time – or grants that do not require any funds to be paid back – allow for greater agility. Revenue replacement mechanisms, like 2021 ARPA funds, allow local governments to accrue less debt and pursue additional relief programs. Without these flexible funds, the recovery process becomes less effective and inefficient.

Examples of flexible funding programs:

- **CBDG-DR funds:** Community Development Block Grant Disaster Recovery (CBDG-DR) funds, distributed by the U.S. Department of Housing and Urban Development (HUD), are designed to be flexible and often target low-income areas, offering "seed money" at the start of the long-term recovery process.[18] Some of the stakeholders we interviewed identified HUD as slow-moving.

- **ARPA funds:** The 2021 American Rescue Plan Act (ARPA), a federal stimulus bill passed by executive order in response to COVID-19, designated a significant portion of its $1.9 trillion to disaster recovery. In Oregon, tens of millions of dollars in ARPA funding were spent on wildfire recovery efforts. The stakeholders we interviewed expressed that much of the recovery work in Lane and Marion counties could not have happened without ARPA funds, which could be used for various purposes, including waiving residential permitting fees for rebuilding and hiring additional staff to take on recovery activities.
- **MWAP funds:** The Municipal Wildfire Assistance Program (MWAP),[19] first funded by the state legislature and subsequently by the Oregon Legislative Emergency Board, granted $6 million to Business Oregon from the State of Oregon General Fund to be administered to municipalities impacted by the 2020 Labor Day Fires. MWAP became a primary funding source in Lane County for the first 18 months following the fires. Interview subjects said that MWAP funds were beneficial for County governments.

What happens when counties cannot access flexible funding sources?

Local administrators are often best equipped to identify their communities' most urgent recovery needs. However, special purpose funds may reflect state rather than local community priorities, creating inefficiencies in spending. State and federal funds are also often slowed down by bureaucratic processes. Without immediate funding, local governments struggle to decide whether to take on debt or wait for funding sources, which could take months or years. Many governments choose recovery over fiscal prudence. For example, following the 2020 Labor Day Fires, Marion County took a proactive approach by diverting County funds to recovery efforts before administrators were certain of the support they would receive from state and federal agencies. By acting rapidly, the County ensured residents could begin rebuilding as soon as possible. Many stakeholders felt that this approach significantly sped up the recovery process. However, when municipalities take on debt, they are much less likely to have the financial capacity to pursue additional forms of relief, such as federal grants.

Local governments need greater staff capacity and centralization

While state and federal agencies (mainly OEM and FEMA) are well-equipped to support local disaster response, our research found that the same level of support and centralization is not given to long-term recovery. After the 2020 Labor Day Fires, Lane and Marion County governments were forced to reassign staff from their regular duties to take on aspects of rebuilding, such as reviewing construction and land use permits,

administering state and federal funding designed to help homeowners, and answering questions from the public about the overall recovery process.

This shift left personnel overextended and burnt out. Without the significant funding provided to local and state governments by the American Rescue Plan Act (ARPA), most organizations would not have been able to afford the personnel changes required to facilitate recovery. In the future, agencies should have a plan to address additional capacity needs in the event of a major disaster.

Centralization

The most successful recovery efforts throughout Lane and Marion counties arose from centralized processes. As noted in greater detail in the relevant policy recommendation (see *2. Long-Term Disaster Recovery* Managers) and the inset to the left, Lane County hired a Long-Term Disaster Recovery Manager (LDRM) to coordinate recovery efforts from the 2020 Labor Day fires. This position served as a liaison between the vast array of funding flowing from state agencies and the many needs of local governments and organizations. However, there were still issues with a lack of staff capacity throughout the County that significantly hindered the efficiency and efficacy of recovery efforts.

The stakeholders we interviewed all felt the need to have individuals well-established in dedicated recovery roles (e.g., the LDRM) or with recovery activities embedded into their job descriptions to support the recovery process.

**Lane County's Approach:
A Model for Increasing Capacity**

Nine months after the Holiday Farm Fire was contained, Lane County funded seven staff within the planning department to guide residents through rebuilding. These positions were supported by ARPA funding and were able to quickly begin processing permits and even set up office hours in the rural areas most affected by the fires to meet survivors in their own communities. Lane County also set up a website containing information and resources to help homeowners navigate recovery.

Poor data management impedes efficient recovery

For governments and nonprofits to effectively provide recovery services, they need to know how a natural disaster has impacted their communities. *How many residents were living in the disaster zone? How many have been displaced? What resources do they have, and how many are without essentials, such as food and shelter?* These are the kinds of vital questions captured by post-disaster impact data. Following the 2020 Labor Day Fires, officials at all levels of government ran into issues with access to, sharing of, and overall management of this impact data.

From our conversations with recovery stakeholders, we learned that public officials and nonprofit organizations have just one opportunity to capture robust survivor information: the brief time during and immediately after a disaster when residents are congregated in evacuation zones. After this time, families disperse in search of new housing. Many, especially renters and unhoused residents, will never return to the disaster site. Without accurate impact data, local governments are forced to seek federal assistance without understanding their residents' needs or demographics. This issue directly informed the policy recommendation regarding implementing best practices for recovery data (see 3. Data Management).

Response

Most people displaced by natural disasters find themselves in evacuation centers run by a government agency or nonprofit, such as the American Red Cross. While there, volunteers or staff collect basic information from them: their name, address, contact information, and what services they might need. There was no central database to house this information after the 2020 Labor Day fires, so local and County officials needed reliable statistics regarding who had been affected. More importantly, these governments were left without a way to contact folks and connect them with vital public services and resources.

If data-sharing agreements with large agencies, such as FEMA and the American Red Cross, are *not* currently feasible, Counties need duplicative processes that allow them to collect information separately from but in tandem with these agencies. Given comments from our interviewed stakeholders, such agreements may be complex, as both organizations are reluctant to share data collected on their behalf.

Recovery

As people began to return to their homes after the 2020 Labor Day Fires had been contained, the lack of data management that had emerged during response efforts

became apparent. Local governments began to access state and federal funding for rebuilding and recovery efforts but did not have a uniform and reliable database from which to build an outreach campaign. Consequently, Lane and Marion counties expended significant resources to ensure that everyone eligible for support was contacted.

Understanding how a disaster impacts communities can also support resilient, equitable rebuilding. Data can offer insights into who may be more vulnerable, address social inequities, and ensure that communities are rebuilt stronger.

Who gets to access data?

One key aspect of recovery that occurs parallel to community rebuilding is ecosystem restoration. In an area affected by the 2020 Labor Day Fires, a local organization contracted with FEMA to collect data that would inform riparian restoration efforts. After the project was completed, a county official reached out to the organization to request access this data. Unfortunately, FEMA's data sharing restrictions prevented access. The county was unable to reap the benefits of over a year's worth of data collection efforts undertaken within their own community. This incident illustrates how poor data management and a lack of clear data-sharing agreements hampered recovery efforts.

Resource accessibility varies among renters and landowners

The road to recovery can differ depending on a resident's financial status, access to local networks, and whether they own property. While this report focuses on how governments can improve long-term disaster recovery, we also sought to determine whether certain groups of residents faced disproportionate barriers to accessing resources. The *Grow Back Better* project is particularly interested in impacts on non-industrial private forested (NIPF) landowners. **However, in our research, we found no significant difference between NIPF and other types of landowners.**

Categorically, all the stakeholders we interviewed noted that private landowners fared better than non-landowners in securing resources for recovery following the 2020 Labor Day Fires. Across the board, renters, low-income families, and particularly low-income renters struggled to access resources. Many tenants needed formal lease agreements, making them especially vulnerable. Comparatively, landowners had better insurance, found it easier to acquire funds and resources to rebuild, and could more easily participate in the community recovery process. This should not diminish the impact on landowners; for many, property insurance and payouts from FEMA did not cover the total value of homes and other structures lost to the fires. The level of insurance also played a role, as some homeowners were underinsured and thus could not fund the rebuilding fully. Many renters did not have insurance and could not afford to replace items destroyed in the fires.

"Those who need help most are those that get it last."

After the Holiday Farm Fire, many older, low-income residents in Lane County were unaware of the public resources available. Many rural seniors do not have social media and rely on other informal networks (such as word of mouth) to receive information. They may also hold a deep-seated distrust in government. Local recovery leaders and nonprofits must work hard to ensure that these vulnerable residents receive the information they need.

How did the 2020 wildfires impact different residential groups?

Seasonal residents, for whom a house impacted by the 2020 Labor Day Fires was typically a second home, were more likely to be high-income, while permanent residents were likelier to be low- or middle-income.[20] Permanent residents faced the additional challenge of finding temporary housing while their homes were rebuilt, while seasonal residents could return to their primary homes. Researchers have found across many parts of wildfire-prone US states, particularly in significant portions of

Oregon, that "lower-income homeowners as a proportion of all homeowners in areas of high wildfire risk are prominent."[21] Thus, findings from our data collection verify these other studies, showing that risk is not evenly distributed across income groups.

In addition, the areas impacted by the 2020 Labor Day Fires were home to an unknown number of unhoused individuals, for whom acquiring data and maintaining regular contact is particularly difficult. Many individuals left the area, both among tenants and unhoused residential groups.

Individuals whose income fell just above 80 percent of the Area Median Income (AMI) faced additional financial barriers to recovery. While households at or below 80 percent AMI qualified for CDBG-DR funding and other relief programs, those just above this 80 percent threshold did not receive assistance, meaning that many working-class households could not access the financial support needed to get back on their feet. In some states, CDBG-DR[22] funds are granted to households with up to 120 percent AMI.

What can be done to support residents impacted by natural disasters?

- **Expand eligibility for services:** Raising the threshold for eligibility for CDBG-DR funds, as illustrated above, from 80 percent AMI to 100 percent or even 120 percent AMI.
- **Property tax rebates:** Temporarily exempting landowners from paying some or all of their property taxes can provide financial relief to individuals rebuilding their homes after a natural disaster.
- **Change rental home classifications:** The federal government considers rental homes commercial enterprises, meaning owners are not provided incentives or support to rebuild. Following the 2020 Holiday Farm Fire, rental housing in Lane County has been slow to be replaced—at a time when it is especially needed.

Disasters may create opportunities for smarter rebuilding

When wildfires encroach on the wildland-urban interface, they become destructive, traumatic events that drastically alter built environments. Large-scale devastation can sometimes allow communities to rebuild smarter—redesigning their communities more equitably and resiliently. Long-term recovery can allow administrators and planners to assess whether land-use codes and zoning laws have become outdated and whether these regulations create needless red tape that slows recovery efforts.

Resilient Rebuilding

The cities of Gates and Detroit, both of which were severely impacted by the 2020 Labor Day Fires, have seen their development codes rewritten to include home hardening and defensible space incentives for private landowners, such as installing metal roofs and fire-resistant windows, trimming low-hanging tree branches, and clearing fuels around structures. These mitigation practices build community resilience and lower the risk of future wildfires.

Communities should also prepare for the possibility that corporate real estate groups may wish to purchase private land, rebuild homes, and sell them at a premium, making it more difficult for low-income residents to return. In response to corporate actions, some government officials have considered empowering local or state governments with a "right of first refusal" on these properties, enabling them to purchase these lots and ensure no future non-compliant development occurs. The funding for such a program – as well as the political feasibility – remains unclear.

In academic literature, authors such as Smith and Wenger (2020) argue that community leaders should take time to restore local infrastructure to its pre-disaster state. Instead, they should evaluate whether that infrastructure has historically benefitted the community or served the interests of a narrow pool of economic development players to the detriment of vulnerable groups. This evaluative process must engage various stakeholders and establish clear goals during rebuilding.
(See *Appendix A. Literature Review* for more details.)

Communication across government agencies is uneven

With numerous State of Oregon agencies involved, many County officials found navigating the disaster recovery landscape challenging after the 2020 Labor Day Fires. Typically, County governments are responsible for gathering resources from state agencies and distributing them to municipalities, which can impose a considerable administrative burden on County officials. Several interviewees felt they would have benefitted from a consolidated list of resources or additional guidance from the State. Local actors also expressed that recovery policies from state and federal governments are complex and challenging to navigate without high levels of expertise.

County officials also noted a distinct lack of communication between state agencies, sometimes leading to duplicative efforts. The state should establish more communication channels *before* disaster events to coordinate with state agencies and support local administrators. These channels would create additional opportunities for County officials to provide input on State decision-making processes, such as how funds should be distributed. The State should also streamline recovery efforts to reduce complexity and potential redundancies. This sentiment supports other findings in this chapter that indicate the need for a centralized hub for recovery efforts. We address this finding through one of our policy recommendations (see *2. Long-Term Disaster Recovery* Managers).

What might the State of Oregon do to address these findings?

- Create resource guides for local administrators.
- Coordinate and host statewide resource- and information-sharing forums to prevent siloed community recovery.
- Support the establishment of county-level (or multi-county) Long-Term Disaster Recovery Managers to coordinate efforts.
- Streamline recovery efforts within a centralized state agency rather than dispersing them across multiple agencies.
- Develop a policy framework for long-term disaster recovery, such as establishing a “Recovery Operations Center” that mirrors the statewide Emergency Operations Center but is focused on recovery activities rather than response. See *Appendix D. Long-Term Recovery Framework* for more information.

Nonprofits are highly valued in recovery efforts

Public agencies play a vital role in disaster recovery, from administering state and federal funding flows to temporarily changing laws on building permit fees to support rebuilding efforts. However, residents of all types – i.e., renters, homeowners, private forestland owners, elderly and disabled people, and other survivors – frequently responded significantly more positively to outreach from and services provided by nonprofit organizations.

This was especially true regarding efforts to contact individuals about recovery resources that might be available. People are much more likely to interact with a member of their local Long-Term Recovery Group (independent nonprofits formed and led by community members after a disaster) regarding funding for home construction or education about creating defensible space than they are to engage with local or County government staff. Many people move to rural, wooded areas to avoid interacting with the government, and their distrust of government can make it difficult to reach them. Nonprofits often have more success establishing trusting relationships with rural communities.

The most successful government agencies leveraged this fact, working with Long-Term Recovery Groups and Community Organizations Active in Disaster (COADs) to coordinate services for survivors while taking on different aspects of the recovery process. Governments must continue building relationships with nonprofit and community-based organizations to ensure that the array of responsibilities within response and recovery are delegated to the entity best suited for that work.

Leveraging Nonprofits in Louisa County, Virginia

In 2011, Louisa County, Virginia, was the epicenter of a magnitude 5.8 earthquake that caused significant damage throughout the region. Within a day of the quake, the County's Director of Emergency Services contacted local churches to engage their volunteer networks and develop a bottom-up community mutual aid system. This approach has since been codified via County ordinances, with the Director of Emergency Services having the authority to engage public and private agencies to create mutual aid agreements without seeking permission from the County Board of Supervisors in the event of a disaster. This helps county officials conduct faster response efforts but also aids them during recovery by removing potential red tape that impedes efficient rebuilding.

Bureaucratic procedures hindered the state and federal response

Disaster recovery is a tremendously complex process that requires action and funding from local, county, state, and federal government agencies. While all layers of recovery suffered from administrative barriers, the state and federal response to the 2020 Labor Day fires demonstrated the most significant degree of bureaucratic hindrances. This is not to say that state agencies and the federal government did not drive large portions of the successful recovery from wildfire across Oregon. However, counties, cities, and special Districts all indicated that despite the best efforts of state and federal officials, the coordination of recovery efforts was often unwieldy.

State Agencies

A wide array of agencies stepped in to coordinate recovery efforts, including – but not limited to – the Oregon Department of Emergency Management (OEM), Oregon Housing and Community Services (OHCS), the Department of Land Conservation and Development (DLCD), and the Governor's office. Unfortunately, as expanded on further in another finding, these agencies frequently did not talk with one another. They also often provided conflicting information to County and local governments (see *Communication across government agencies is uneven*). Furthermore, the flow of recovery funding took a long time to begin and required many agencies to front the costs, impacting other areas of their budgeting. State agencies should consider procedures to improve their coordination of recovery in the future.

FEMA

The Federal Emergency Management Agency (FEMA) plays the most significant role in disaster recovery at the federal level. There were mixed reactions to FEMA's work. Many officials believed that funding for recovery needed to be distributed more quickly. Requiring county and local governments to cover upfront costs and carry millions of dollars of debt for months or even years until reimbursement comes from FEMA puts a strain on these governments. In some areas of the state, individuals are still waiting for reimbursement on recovery-related expenses nearly four years after the fires were contained.

Additionally, as expanded on further in "Poor data management impeded the efficiency of recovery," the lack of clear procedures regarding data-sharing further slowed recovery efforts. FEMA should consider ways to expedite funding and prepare local and county officials for the recovery process.

Land use codes can impact rebuilding efforts

In the months and years following the 2020 Labor Day fires, people returning to their homes encountered obstacles due to a variety of state-level land use and building codes, as well as administrative processes managed by the affected Counties. For instance, homeowners were required by most state and local agencies to sign access agreements before they could begin work on their private land. However, each agency had its own agreement, resulting in confusion for both residents and agencies. This maze of different contracts made it difficult for residents to review, sign, and organize the necessary documents while also trying to rebuild their homes and lives after a disaster. Additionally, state-level land use policies, such as minimum lot size requirements and restrictions on the number of dwellings per lot, inadvertently impeded recovery efforts in rural, unincorporated communities.

Non-Compliant Rebuilding

The impacts of land use codes on recovery, particularly concerning non-compliant rebuilding, are crucial. Many properties in rural Oregon were constructed before modern building and land use codes were introduced in the 1970s. These properties were grandfathered into the system to prevent residents from being required to rebuild their homes to comply with the new codes. However, when these homes are destroyed in a wildfire, residents want the option to rebuild their homes exactly as they were before, regardless of potential long-term impacts on riparian areas or compliance with other regulations, such as the Blue Basin Rule concerning drainage in the McKenzie River Valley. ORS 215.130 allows for non-compliant rebuilding within one year after a disaster, and this timeline was extended to five years for the 2020 Labor Day fires. However, government agencies are divided on whether to apply this extension to all disasters in the future and how to balance the need to get people back into their homes with ensuring that all properties are safe and environmentally sound.

Land Use and Rebuilding

Even though this issue was not included as a policy recommendation in this report, it is still a matter of great concern for counties, cities, and special districts. The state should bring together interested parties to examine the issues related to land use and building codes and explore policy options that could facilitate recovery efforts while also addressing the potential problems associated with unrestricted rebuilding. Additional research and collaboration are needed to achieve a balance between effective land use and efficient recovery. See *Chapter 5. Next Steps for Disaster Recovery* for more information.

[18] U.S. Dept. of Housing and Urban Development. (2024, February 23). *Community Development Block Grant Disaster Recovery Grant Funds*. https://www.hud.gov/program_offices/comm_planning/cdbg-dr/.
[19] League of Oregon Cities. (2021, February 11). *State and federal funding for recovery staffing and planning.* https://www.orcities.org/application/files/7316/1470/4281/State__Federal_Funding_for_Recovery_Staffing_2.11.21_003.pdf.
[20] Please note that these observations are based on interviews with government officials and therefore represent an aggregate of personal opinions rather than official data sources.
[21] Auer, M.R.; Hexamer, B.E. Income and Insurability as Factors in Wildfire Risk. *Forests* **2022**, *13*, 1130. https://doi.org/10.3390/f13071130
[22] Community Development Block Grant Disaster Recovery funds, distributed by the U.S. Department of Housing and Urban Development (HUD), are designed to be flexible and support a wide range of recovery services. For more information, visit: https://www.hud.gov/program_offices/comm_planning/cdbg-dr/.

Chapter 4.
Policy Recommendations

This chapter provides policy recommendations based on the background research and engagement efforts outlined in previous chapters. It offers concrete actions to improve long-term recovery. While the report initially focused on long-term wildfire recovery, the recommendations are applicable to long-term disaster recovery planning for various hazards and disaster scenarios in Oregon, including droughts, earthquakes (crustal or Cascadia Subduction Zone), floods, landslides, tsunamis, and winter/windstorms.

Recommendations Overview

The three recommendations detailed in this chapter are listed below. Each section includes a short description of the overarching recommendation followed by the specific local, state, and (if applicable) federal actions contained within that recommendation. Each section also includes anticipated barriers to implementation.

1. **Pre-Funding Recovery:** Flexible, dedicated reserve funds should be set aside for natural disaster recovery throughout Oregon. Local governments will use these funds to plan for disaster recovery, ensure that recovery activities are efficient and effective, and build long-term resilience.
2. **Long-Term Disaster Recovery Managers:** Each County—or region of adjacent Counties—should establish a Long-Term Disaster Recovery Manager position to coordinate recovery and "precovery" efforts at the County level.
3. **Data Management:** Pre-disaster data sharing agreements and a common data collection form should be established to gather essential information to inform response and recovery efforts while reducing complexity and confusion among agencies and the public.

1. Pre-Funding Recovery

Flexible, dedicated reserve funds should be set aside for natural disaster recovery. Local governments will use these funds to plan for disaster recovery, ensure that recovery activities are efficient and effective, and build long-term resilience.

While most government actors agree that long-term disaster recovery is essential, the intergovernmental allocation and funding distribution do not always reflect this. While we cannot know the specific nature of a disaster before it occurs, we can be certain that disasters will continue to impact our communities. The best long-term recovery frameworks will anticipate recovery needs in advance and plan for them with established reserves and "pre-funding" mechanisms.

The recovery efforts in Lane and Marion counties following the 2020 Labor Day Fires were aided by significant allocations from the American Rescue Plan Act (ARPA), a federal stimulus bill created in response to the COVID-19 pandemic. These funds will not be available under most disaster recovery scenarios. While ARPA funds are set to expire by 2026, natural disasters do not operate on government timelines. Permanent, sustainable capital must be set aside to support a variety of recovery services, including but not limited to:

- Establishing a 1.0 Full Time Equivalent (FTE) Long-Term Disaster Recovery Manager (LDRM) in each County or region of Counties (see *2. Long-Term Disaster Recovery* Managers).
- Coordinating impact data collection efforts as quickly and efficiently as possible (see *3. Data* Management).
- Conducting needs assessments, land and housing surveys, and other recovery studies.
- Carrying out "precovery" tasks before a disaster event, such as creating scopes of work for recovery activities.
- Ensure that essential community services that may not traditionally fall under the purview of "recovery" can continue with minimal disruption (*see inset box, right).*

What do we mean by "essential community services"?

Rural communities with low administrative capacity and a small tax base depend heavily on outside financial support from the state and county. After the 2020 Labor Day Fires, the cities of Gates and Detroit were decimated by the Santiam Canyon Fires and needed emergency funds to operate basic water infrastructure and pay City administrator salaries. Both are essential functions of recovery: residents need clean, accessible drinking water and local leadership to begin rebuilding.

Where might this funding be housed?

It will be crucial to divide recovery capital among state and local actors. While the state has a greater capacity for acquiring and managing funds, state agencies may face more barriers that slow access to these reserves than local governments. Therefore, it is suggested that a local fund be created at the county level to increase flexibility after a disaster.

As we learned from the 2020 Labor Day Fires, many state agencies are involved in the recovery landscape. Further research is needed to recommend the best-suited agency to house a state-level disaster recovery fund. This agency must be agile and responsive to the needs of local governments and would need a clear recovery framework to inform how, when, and to what ends these funds would be administered. See *Chapter 5. Next Steps for Disaster Recovery* for more information.

Local Actions

County governments should set up dedicated disaster recovery funds to hold reserves for recovery efforts[23]. They need to create clear procedures for managing and using this fund, including defining what qualifies as a "disaster," such as a minimum number of destroyed homes or a state or federal disaster declaration. This approach does not require distinguishing between different types of disasters; instead, the focus should be on the extent and severity of the impact.

Counties can use these funds to activate relevant recovery positions – such as building and land use permit navigators – immediately after the disaster is contained, rather than waiting months or years for state or federal funding to become available.

Counties should create a recovery plan or framework that outlines how these funds will be managed and administered. Deliberate, strategic, advanced planning will ensure that funds are leveraged effectively. Counties might consider establishing ordinances or other policy frameworks—see *Appendix D. Long-Term Recovery Framework* for more information. The American Planning Association's "Planning for Post-Disaster Recovery Briefing"[24] provides another pre-recovery ordinance model, a piece of legislation that could be passed at the City or County levels before a disaster to coordinate the delivery of recovery funding.

State Actions

The state has a greater capacity to preserve and distribute funds as needed than local governments, and it tends to be more responsive than federal agencies. State-held recovery reserves can be directed to any community impacted by a disaster, effectively serving as an "insurance plan" for recovery across the state. This approach can offset barriers preventing local governments from building substantial reserves.

The state legislature can support the management of local disaster funds by setting explicit protocols and pre-determined criteria for when these funds can be used. The state should avoid being overly prescriptive about how funds should be used to ensure local governments can act nimbly and with discretion.

The state should consider leveraging the Oregon Disaster Recovery Fund (ORS 401.534)[25] to administer funding. While this fund is not currently active, it could be activated. Established in the State Treasury, ORS 401.534 is designed to house federal grant appropriations. A similar account –within or adjacent to ORS 401.534 – could be created for long-term recovery activities.[26] Note that ORS 401.534 funds are intended to flow to the Oregon Department of Emergency Management, which may not be the optimal home for long-term recovery funding.

Federal Actions

The federal government – in particular, the Federal Emergency Management Agency (FEMA) – plays a key role in the short-term disaster recovery funding landscape; any policy recommendations must take them into account. Based on feedback from public-sector recovery stakeholders, we recommend that FEMA consider the following policy changes:

- **Eliminate match requirements for local governments.**
    - Even a small match requirement can impose major financial burdens on small jurisdictions and prevent them from accessing federal reimbursement.
- **Extend timeline requirements for funding at the local level.**
    - Many FEMA funds must be spent rapidly, which can cause local actors to make hasty decisions about spending. Slowing down the spending timeline while still ensuring that funds are delivered swiftly can allow governments to spend strategically and with discretion.

Anticipated Barriers to Implementation

Public sector stakeholders worry that, as the traumatic impacts of wildfires and other disasters fade from public memory, county governments and the state government will

face pressure from citizens to reallocate disaster recovery funds for other purposes. Therefore, these funds might need to be drawn from a source *other than* the current-year county or state General Funds. Ideally, the state would set aside funds or issue a mandate **requiring** counties to set funds aside and provide stipulations for events that "trigger" funding, such as state-declared emergencies.

2. Long-Term Disaster Recovery Managers

Each county – or region of adjacent counties – should establish a Long-Term Disaster Recovery Manager (LDRM) position to coordinate recovery and "precovery" efforts at the county level.

Coordinating disaster recovery efforts is a time- and resource-intensive process that often requires deploying staff from other departments to cover this work. Counties should create a 1.0 FTE LDRM position to oversee both active recovery and "precovery" projects. The duties of this position may include, but are not limited to, the following:

- Coordinating federal, state, and local recovery partners, including the public sector (cities and special districts such as school districts), the private sector (business associations), and the nonprofit sector (community-based service organizations), to ensure recovery efforts are effective and efficient.
- Reporting progress on recovery to elected officials and the community.
- Administer recovery funding and prioritize its use before disbursement.
- Convening community partners to inform local government priorities.
- Conducting "precovery" work to prepare for recovery before a disaster, including applying for federal and state mitigation funding, overseeing mitigation projects, and encouraging data sharing (see *3. Data* Management).

Given the lack of capacity in most counties throughout Oregon, the state should provide funding to cover some or all of the costs of LDRMs (see *2. Long-Term Disaster Recovery* Managers). Rural, sparsely populated counties may need to share an LDRM.

How does this position differ from that of an Emergency Manager?

At first glance, the responsibilities of an LDRM and an Emergency Manager may seem to overlap significantly. However, the main difference lies in which phase of a disaster the position focuses. Emergency Managers are concerned with **preparedness and response,** while LDRMs focus on **recovery and "precovery,"** as well as **mitigation** when there are not active recovery activities. Their primary role begins at the time of disaster, taking the lead once there is no longer an imminent safety risk posed by the disaster (e.g., when the Emergency Operations Center or Joint Command Center is closed). The two roles would be expected to work closely on the transition between response and recovery as well as community emergency preparedness.

Local Actions

Each County should establish a 1.0 FTE LDRM position operating at the same organizational level as their Emergency Manager. Alternatively, several adjacent Counties could pool resources to fund a joint 1.0 FTE LDRM position across multiple counties. While this regional approach allows for more effective resource sharing, it adds more responsibilities to the LDRM position. It reduces the amount of time an LDRM can spend focused on the needs of any one county.

Each county should work with the county emergency manager, any local Long-Term Recovery Groups, local cities and special districts, state agencies, and other counties with LDRMs to customize the scope of the LDRM for that county/region of counties.

LDRMs could be charged with creating a "Recovery Operations Center" modeled after Emergency Operations Centers and working to incorporate recovery into the job descriptions of other local and county-level positions. See *Chapter 5. Next Steps for Disaster Recovery* for more information.

State Actions

The state should provide full or partial funding to support county-level LDRMs for each of the 36 counties in Oregon (or a smaller pool of FTE if counties decide to establish regional LDRMs). Funding could be structured in several ways:

- The state could require a local match (e.g., 25 percent county funding, with a waiver for 10 percent funding if the county can prove financial hardship and/or exposure to greater natural hazard risk).

- The state could require specific actions before funding is offered, such as requiring a County to fully fund its Emergency Manager position or establish a local recovery fund (see *1. Pre-Funding Recovery*).

The state should also ensure that agencies such as the Oregon Department of Emergency Management and Oregon Housing and Community Services are fully staffed so local LDRMs have state counterparts with whom to interact.

Anticipated Barriers to Implementation

Given that disasters do not occur annually, there may be periods of several years where LDRMs have no active recovery duties. However, ensuring continuity in this position is essential not only because LDRMs could continue to carry out "precovery" and mitigation activities but also because having an LDRM already hired ensures that recovery can begin as soon as a disaster occurs. Moreover, LDRMs could carry lessons learned from one disaster to inform the next recovery effort.

3. Data Management

Pre-disaster data sharing agreements and a common data collection form should be established to ensure collected data is available to partner agencies and to reduce complexity and confusion among agencies and the public.

Data access during and after the 2020 Labor Day Fires was severely limited due to the different collection procedures and agencies involved. For survivors of disasters, evacuation zones are often the best place to gather impact data; once residents have dispersed, it becomes increasingly difficult to capture accurate information, especially for non-landowners who may never return to the disaster site. The first 24 hours following a disaster are critical in collecting survivor data. If contact is not made with survivors during or immediately after a disaster, reconnecting and gathering information later becomes very difficult.

Establishing a standard data collection template and agreed-upon data-sharing procedures will reduce administrative burden across agencies, eliminate redundant collection efforts, and increase data availability to enhance recovery. A common template will also reduce the burden on survivors to provide the same information to multiple agencies.

Local Actions

The LDRM – or another county official – should be assigned most of the local data management responsibilities. The LDRM (or other official) should preemptively gather resident information in areas at high risk of hazards to be prepared in an emergency.

Information provided will be voluntary, and opting out will not disqualify residents from receiving aid. The LDRM (or other official) should also be prepared to gather data in the immediate aftermath of a disaster during the crucial first 24 hours. Data should be collected through a shared contact form template that agencies can use to gather needed resident information. This may include contact information, housing status, and other factors that affect disaster aid (e.g., household income).

The LDRM will also coordinate with state and federal agencies to establish pre-disaster data-sharing agreements. This will improve speed and efficiency between agencies.

Where will this data be stored?

Consider using an existing database to house this information. This will eliminate the need to create a new data repository and the challenges that accompany it. Lane County's existing Homeless Management Information System (HMIS) may be a good starting point.

State Actions

State agencies should support local governments in developing data-sharing frameworks before disasters. Impact data collected by or for state agencies must be shared with local governments to ensure administrators can effectively serve their communities.

- Facilitate discussion between local and federal partners and appropriate state agencies to determine what data needs to be collected. Collaborate with local and federal agencies to develop a common contact form.
- Establish a pre-disaster data-sharing agreement. When state agencies collect survivors' information at disaster sites, local and federal partners can access this information.

Federal Actions

Federal agencies, like the state government, should be involved in data-sharing agreements and developing data collection templates.

- Facilitate discussions with state and local partners to determine what data needs to be collected and to develop a common contact form.
- Establish a pre-disaster data-sharing agreement allowing federally collected survivor information to be shared with local and state partners. When creating confidentiality agreements, federal agencies should stipulate (where applicable)

that data will be shared with other government agencies and certified nonprofits to support recovery.

Anticipated Barriers to Implementation

General distrust of the government may prove to be an obstacle. Residents may be hesitant to provide personal information when contacted before a disaster. These privacy concerns may reduce participation rates. If Personally Identifiable Information (PII) is collected, agencies sharing information must include confidentiality agreements. Residents may also be concerned that opting out of preemptively providing information may disqualify them for disaster aid and feel obligated to participate. Efforts must be made to reassure them that this is not the case and that refusal to participate will not negatively affect future support.

Getting multiple agencies to agree on a standard collection form will be challenging. How data collection occurs and what data should be collected may prove contentious. These additional tasks will require extra effort. Some agencies may need more resources to coordinate data sharing and collection agreements.

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[23] Lane County Administrator Steve Mokrohisky has proposed that the FY2024-25 budget for the County include a Local Incident Fund for Emergencies (LIFE) that is seeded with one-time reserves to be used as flexible, one-time funding to rapidly respond to local emergencies, such as wildfires, winter storms, floods and earthquakes. Source: S. Adams (personal communication, June 3, 2024).

[24] American Planning Association. (2014, June 1). *Adopt a pre-event recovery ordinance: Planning for post-disaster recovery briefing paper 8*. https://www.planning.org/publications/document/9139474/.

[25] Oregon Laws. (n.d.). ORS §401.534 Oregon Disaster Recovery Fund. https://oregon.public.law/statutes/ors_401.534.

[26] The 2022 Disaster Recovery Authority Workgroup recommended making two accounts within ORS 401.534 to address *short*-term recovery; H.B. 2854 was introduced to this effect in 2023 but has not been made law as of the time of this report's completion. A similarly structured account could instead emphasize *long*-term recovery activities. *See:* Oregon Legislative Policy and Research Office. (2022, November). *Oregon Disaster Recovery Authority Workgroup summary*. https://www.oregonlegislature.gov/lpro/Publications/Disaster%20Recovery%20Authority%20Workgroup%20-%20Summary%20Nov.%202022.pdf.

Chapter 5. Next Steps for Disaster Recovery

In this report, our team aimed to cover as many aspects of wildfire recovery and general disaster recovery as possible. However, there are four specific topics that still require further research. These areas will be the focus of future long-term disaster recovery studies.

Create a resource guide

Nearly every stakeholder our team interviewed and the individuals convened for our focus group identified the need to develop a resource guide on recovery for local and county governments. This could include:

- Lessons learned as described throughout this report;
- A step-by-step process outlining how governments should conduct pre-disaster "precovery" planning, post-disaster needs assessments, and other similar projects; and
- Information regarding available funding opportunities at the state and federal levels and sample applications for these grants/programs.

Creating such guides could be a joint project between state agencies and local county or regional LDRMs and would ideally include both state and local guides. A resource guide would address the complexities of long-term recovery activities at the state level, helping local-level administrators identify the appropriate state agency to involve at a given stage in the recovery process.

Review the intersections between land use policies and effective rebuilding

Oregon has a wide array of strong land use policies that guide building and development throughout the state, particularly for the rural unincorporated areas that are often most affected by wildfires. While many of these policies provide strong benefits for various policy goals—not least of which is natural resources and area stewardship—some policies unintentionally impede rebuilding efforts.

State agencies whose work intersects with land use, led by the Department of Land Conservation and Development, may consider convening a working group comprised of state and local government officials, nonprofits, developers, and community members experienced in rebuilding to review ways in which state land use policies could be adjusted in the event of a disaster to facilitate more efficient recovery efforts.

Identify the agency best suited to house recovery funding

Given the number of state agencies involved in disaster recovery and the complexities of each of their roles in the process, the state legislature is best equipped to decide in which agency recovery funding should be located. With that in mind, listed below are several agencies that may be well-suited to house a state-level disaster recovery fund. The best agency will be both agile (i.e., fast-moving) and highly responsive to the needs of local communities impacted by a disaster.

- **Oregon Department of Emergency Management (OEM)**
  - While OEM is heavily involved in natural disaster management, the agency focuses more on response than recovery. Some stakeholders interviewed by our team were concerned that any funds within OEM might be diverted to response instead of recovery activities.
- **Office of Resilience and Emergency Management (OREM)**
  - Through OREM, the Oregon Department of Human Services (ODHS) leads mass care efforts in collaboration with various agencies, focusing on non-medical support, emergency assistance, needs assessment, coordination of services, and addressing language barriers for impacted individuals. Their human-facing approach could complement the physical rebuilding of communities by supporting community members' other needs.
- **Oregon Housing and Community Services Department (OHCS)**
  - OHCS may be particularly well-suited to address community rebuilding efforts and impacts on the WUI. Some stakeholders interviewed by our team expressed concerns about the lack of agility shown by OHCS during some portions of wildfire recovery.
- **Oregon Department of Land Conservation and Development (DLCD)**
  - DLCD offers substantive policy expertise on rebuilding communities with resilience to future disasters. However, they did not play a significant role in recovering from the 2020 Labor Day fires.

- **Department of Administrative Services (DAS)**
  - Several stakeholders our team interviewed highly regarded DAS for its ability to move funding to those who needed it most quickly. However, DAS needs more programmatic experience and disaster expertise similar to OEM and OHCS staff.
- **Oregon Governor's Office**
  - The Governor's Office has considerable leverage to push funding through the legislature. That said, the Governor may face pressure to allocate funding to a wide range of services beyond disaster recovery.

Develop a long-term recovery framework

Many of the stakeholders interviewed by our team identified the need for a long-term recovery framework to address barriers to recovery before a disaster. Academic literature (Smith & Wenger, 2020) recommends establishing clear goals for community recovery – preferably before a disaster occurs – that can guide public administrators. At the state and regional levels, a broader framework for "precovery," a recovery continuum (see *Figure 3*), and an agile government would enhance coordination, efficiency, and resiliency. A review of one such approach can be found in *Appendix D. Long-Term Recovery Framework.*

Moving Recovery Forward

This report outlines different local, state, and federal measures that could improve recovery efforts after future disasters, such as wildfires, winter storms, earthquakes, tsunamis, and other natural disasters. Lane County, Marion County, and others looking to enhance disaster recovery should consider which measures to pursue and how they can push for changes at the state and federal levels.

It should also be noted that the research contained herein is just one aspect of the broader *Grow Back Better* project, including research on improving nonprofit and ecological recovery. These policy recommendations and broader findings should be revisited in the context of the conclusions of these other aspects of the overall grant.

Crucially, recovery is an archetype for policy that suffers from recency bias. Recovery from the 2020 Labor Day Fires is beginning to wind down, and it is easy to dismiss the importance of this work without another disaster from which to recover. However, Oregon is at risk from an array of natural disasters, any of which would trigger the need for significant recovery efforts, and therefore, planning for recovery *before* a disaster occurs is of the utmost importance.

Appendix A. Literature Review

Long-term disaster recovery is a complex issue that is affected by many variables. This literature review considers how agile governance and red tape theories affect recovery efforts and examines the existing literature on government-managed long-term recovery. The agile governance and red tape literatures were selected based on conversations with key government stakeholders. This review also identifies shortcomings in the academic literature concerning management strategies and lists best practices for recovery.

Agile Government

Agile methodology was initially developed for software project management and is characterized by increased collaboration with the customer, adaptability, sprints with incremental development, transparency, and continuous improvement. Agile government prioritizes producing small, viable project pieces emphasizing cross-departmental collaboration. Theories of agile governance emerged to challenge traditional methods of governance, which can be compared to the waterfall style of software development: a slow, linear process that focuses on one rigid step after the other. Waterfall stifles innovation and flexibility in favor of predictability (Mergel et al., 2021). When a government uses this method, projects and processes progress at a reduced rate, and teams are siloed.

While shifting to agile government will be difficult for governments to make, there are many benefits. The agile approach is focused on achieving outcomes instead of reporting as in traditional government (Mergel et al., 2021). By its very nature, agile demands inter-team collaboration and frequent communication with the client. This constant feedback provides opportunities for change mid-project and increases the adoption of feedback. Failures are also considered essential feedback and a chance to improve the process, not setbacks as they typically are. Agile empowers low-level employees to make decisions and have agency. This bottom-up approach is a hallmark of agile and increases employee buy-in (Mergel et al., 2021). In a disaster and during recovery efforts, timely decisions are critical. Agile governments can rapidly respond to changing circumstances and constantly incorporate feedback to improve future decision-making.

Along with this empowerment comes challenges for government adopters. With increased employee responsibility comes greater trust from the managers. Managers must trust employees' decision-making as decisions are made at the lowest possible level. This decentralized method differs from the top-down approach in government today (Mergel et al., 2021). Managers must insulate their teams from outside pressures that seek to influence their decision-making and stand behind decisions they do not make. Politically, this is a large shift from managers having direct influence over major decisions. Delegating power while retaining responsibility will be a difficult pill to swallow for some career public managers.

Adaptability goes hand in hand with agile government. Where agile focuses on the decision-making process and project management, adaptability is more concerned with an organization being a better fit for the environment (Janssen & van der Voort, 2020). Adaptability is a broader lens through which to view problems and takes a more holistic approach to decision-making, with the power given to decision-makers at all levels. Governments need to evolve to survive in their constantly changing environments. Adaptability is difficult to measure as it is primarily a descriptive model (Janssen & van der Voort, 2020). However, governments can best manage disaster recovery by using both adaptability and agility.

Red Tape

Red tape is an administrative process that delays government key functions (Bozeman, 1993). This can include formal procedures and regulations or even the established best practices in a specific organization (e.g., always copying managers on emails). Government red tape causes delays and can derail time-sensitive projects like disaster recovery efforts.

A key concept to consider when analyzing the effect of red tape is rule density (Bozeman, 1993). Rule density is the sum of all resources used to comply with necessary rules and procedures. This is difficult to measure quantitatively but can be expressed in lost work hours. It is necessary for government agencies to critically analyze their policies and procedures to determine what, if anything, can be cut out in the name of efficiency. Too often, existing rules that serve a legitimate purpose can devolve into meaningless bureaucracy (Bozeman, 1993).

Red tape can be created by the government establishing its own safeguards to policies to limit its power. Some may consider internal controls red tape as they slow down policy action, albeit in the name of safety and project quality management. In this instance, it is imperative to distinguish between harmful red tape and needed controls, or “white tape” (Bozeman, 1993).

However, Brewer and Walker (2009) suggest that red tape has a more nuanced relationship with government efficiency and needs to be evaluated as a multi-faceted idea. Likewise, government efficiency is not straightforward. Different audiences can define both differently, and how they are defined significantly impacts how red tape's effect is measured and reported. Brewer and Walker performed a quantitative analysis to determine the relationship between government efficiency and red tape measures. While the results show that red tape does have a significant, negative relationship to government performance, that relationship changes when additional variables are added, specifically internal and external red tape measures (Brewer and Walker, 2009). The rules and procedures that exist within an organization are internal red tape. External red tape is created by an outside entity that impacts another body. Brewer and Walker (2009, 243) note,

> When we entered additional internal and external control variables in the models, the red tape coefficients lost their strength and statistical significance. This suggests that more fully specified models tend to wash away the effects of red tape when the concept is measured in aggregate form. Another interpretation is that internal management and external constraints can contain the harmful effects of red tape in its aggregate form.

Brewer and Walker (2009) speculate that this may mean some red tape can be beneficial. They found that external red tape has a positive correlation with performance measures. They explain that external red tape may act as a layer to protect government staffers from political or administrative changes and allow them to focus more completely on their projects. To that end, Brewer & Walker postulate that stakeholder perceptions are often overlooked. Internal and external stakeholders can have very different outlooks on performance.

Disaster Response and Recovery: Recommendations and Findings from the Literature

While much has been written on natural disaster mitigation, preparation, and immediate response, the literature around recovery—and wildfire recovery in particular—is underdeveloped. Scholars and public officials alike recognize the need for collaborative, integrated recovery methods that remove bureaucratic red tape and strengthen community resilience but offer little insight into achieving these ends.

The literature has even less to say on the intersection between long-term recovery and agile government – perhaps because it is easier to frame agility within the short-term response. Where scholars (e.g., Davis et al., 2022; Dzigbede, et al., 2020; Smith and Wenger, 2020) do explore this topic, they identify opportunities to develop sustainable policies based on four key takeaways:

- **Relationship- and coalition-building:** Local, state, and government partners must work together to align their policies and management strategies. Cross- and inter-sectoral collaboration can produce more sustainable and equitable outcomes.
- **Information-sharing:** Collaborative approaches also ensure that valuable information about community disaster risk, mitigation, and resources is disseminated to the public promptly to prevent misinformation or collective inaction.
- **Deemphasis on fire suppression tactics:** Historically, wildfire management has foregrounded fire suppression despite evidence that managed fuel reduction can lessen the impact of wildfires and ease the path to community recovery. Where applicable, the public sector should pursue policies and approaches that deemphasize fire suppression in favor of managed wildfire practices – thus ensuring that local, state, and federal wildfire management policies do not oppose one another.
- **Theories and frameworks for recovery:** To address gaps in the literature, scholars and public officials should work to develop wildfire recovery frameworks that establish clear goals, identify relevant partners with which to engage, and assess all available resources.

The following section explores these takeaways in greater detail based on exploring the existing literature.

Wildfire Management Policies

Conflicting local, state, and government policies have historically impeded wildfire response, with implications for long-term recovery outcomes. Indigenous practices and a wealth of empirical evidence support the use of "managed wildfires" to reduce natural fuels so that when unplanned fires do occur, they burn with lessened severity and range (Davis, et al., 2022; Calkin, et al., 2015). However, recent spikes in costly, wide-reaching fires, drought conditions in the U.S. West, and the COVID-19 pandemic have all weakened public support for managed fire tactics in favor of total fire suppression. Reexamining fire management tactics and the benefits of managed fuels reduction will drastically improve mitigation and recovery outcomes.

In 2001, attempts by the federal government to address wildfire policy resulted in the National Fire Plan (NFP), which proposed four primary goals for reducing wildfire risk and building collaboration: (1) improve fire suppression, (2) reduce hazardous fuels, (3) restore fire-adapted ecosystems, and (4) promote community assistance (Steelman & Burke, 2007, 68). The first two goals, suppression and fuels reduction, have received the most nationwide attention since the NFP implementation. Steelman & Burke argue that community recovery assistance, restoration policies, and inter-governmental collaboration must all be emphasized to create sustainable recovery mechanisms. Applying agile government to this "integrated" approach would address concerns of federal agency gridlock, excessive fire suppression policies, and barriers to post-disaster community relief.

Inter-agency Relationships

Davis, et al. (2022) found that conflicting policies and practices among public agencies can create barriers to government response and increase the damage caused by wildfires. Federal agencies often have greater discretion to implement managed fire techniques. In contrast, state agencies with jurisdiction over state- and privately owned land may be more likely to act under strict fire suppression orders. To address this disconnect between levels of government, Davis, et al. (2022, p. 924) recommend using "collective venues," or coalitions of public agencies that can agree on harmonious response tactics. Forming these coalitions can support managed wildfire techniques, with implications for long-term mitigation. According to the authors, these venues create a "shared sense of mission" where participants are likelier to see the value in managed wildfire techniques.

Dzigbede, et al. (2020) support the role of relationship-building among community and regional partners. Not only does establishing collaborative relationships ensure synchronized management tactics, but it also encourages critical information-sharing practices, both inter-governmental and between governments and citizens. Public complacency, spurred on by "conflicting or inconsistent information and recommendations," can result in slower civilian action in disaster response and recovery (Kapucu, 2008, p. 246). In communities at high risk from natural disasters or those that experience frequent disasters, a collective "numbness" (243) may set in, further slowing recovery. To this end, public information officers must be closely aligned with local government officials such as city managers to ensure effective communication (Dzigbede, et al., 2020, p. 638).

Approaches to Increase Sustainability in Recovery

Smith and Wenger (2020) offer two interconnected approaches for enhancing sustainable recovery. First, communities must create a theory of sustainable recovery. Practitioners and scholars should compile research, findings, and lessons from personal experience into a theory that guides future recovery efforts.

Components of this theory should include pre-disaster community variables, such as local leadership characteristics, infrastructure conditions, and relative vulnerability; the scope, intensity, and duration of the disaster; public and private actors involved in recovery measures, as well as their resources and capacity; and any predicted impediments to recovery. Creating such a theory would address many gaps in the literature on wildfire recovery.

Second, disaster recovery managers should introduce a "new policy implementation framework" from the sustainable recovery theory focusing on community-level recovery support (Smith and Wenger, 2020, 244). Pre- and post-disaster trainings involving key local, state, and federal actors are critical to improving recovery efforts. Smith and Wenger (2020) note that those local governments with the most capacity – in terms of financial, administrative, and technical resources – are the most successful at securing federal funds after a disaster. At the same time, capacity-poor, low-income communities fall further into decline. Therefore, all communities should focus on building local capacity and identifying available resources. However, the authors do not identify any existing frameworks that might be used in this context.

Opportunities for Smarter Rebuilding

While recovery has often meant the return to "business as usual," Smith & Wenger (2020) suggest that recovery can present opportunities for communities to rebuild themselves with greater sustainability and resiliency than before. Recovery managers must be mindful of three failures that hinder community restoration:

- The failure to establish clear goals and implementation frameworks;
- The failure to involve a "wide range of stakeholders in the decision-making process" (239); and
- The failure to know the full array of options available for community recovery can lead to artificial choice constraints.

Communities should not rush to restore local infrastructure to its pre-disaster state; instead, they should evaluate whether that infrastructure has historically benefitted the community or served the interests of a narrow pool of economic development players to the detriment of vulnerable groups. Public managers must also seek the involvement of these populations through "consensual approaches that elicit mutual gains across

potentially conflicting groups" (Smith and Wenger 2020, 240). Smith and Wenger (2020) suggest that public dispute resolution tactics can address long-standing imbalances in community power and support the best interests of vulnerable populations.

Conclusion

Scholarly research on the intersection between red tape, agile government theory, and wildfire recovery remains limited. Though generally used in a negative context, red tape may protect government agencies. Agile government practices appear to be a more efficient and effective alternative to traditional, hierarchical models of public service provision. Governments must unquestionably prioritize collaboration, communication, and integrated policies to build community resiliency for long-term recovery. Future research should explore potential policy theories and frameworks, as suggested by Smith and Wenger (2020), and the effects of red tape on local recovery.

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Appendix B. Case Studies

This appendix highlights specific examples of successful recovery from natural disasters in other states nationwide. In conjunction with the review in *Appendix A. Literature Review*, these case studies provide a foundation our team built when interviewing government stakeholders and developing policy recommendations.

Case Studies

Our team reviewed three natural disasters as part of this case study examination:

- **Sonoma Complex Fire** (October 2017) – Sonoma County, California
- **Magnitude 5.8 Earthquake** (August 2011) – Louisa County, Virginia
- **Bastrop County Complex Fire** (September 2011) – Bastrop County, Texas

Key Takeaways

The case studies reveal two primary components to successful disaster recovery:

- **Establishing a sole point of contact:** *All three successful disaster recoveries benefited from having a single organization or individual in charge of recovery efforts.* Having just one entity fill this overarching role makes it easier for community members to direct concerns to government officials. It assists in streamlining applications for and coordination of recovery funding. The entity identified for this role varied between counties. Still, it was essential in all three, with Bastrop County employing a community-led Long Term Recovery Team, Sonoma County creating an Office of Recovery and Resiliency, and Louisa County providing emergency executive power to their Board of Supervisors.
- **Investing in mitigation planning and emergency management***: The role of planning and emergency management departments varied between the three disasters but was key to success.* Bastrop County leveraged its Office of Emergency Management to identify and execute fuels reduction projects within two years of the Bastrop County Complex Fire. Louisa County's Director of Emergency Services rapidly engaged key community stakeholders to support those impacted by the earthquake. At the same time, their Board of Supervisors had previously conducted detailed mitigation planning that enabled them to access state and federal funding quickly. Sonoma County created a Department of Emergency Management within two years of the Sonoma Complex Fire, which enabled them to execute key policy changes quickly.

Sonoma Complex Fire (October 2017) – Sonoma County, California

Event Description

Beginning October 8, 2017, ignitions from power equipment combined with severe drought and a historic wind event started the Sonoma Complex Fire. The Sonoma Complex Fire combined four distinct fires – Nuns, Tubbs, Kincade, and Pocket – that burned for three weeks and damaged more than 110,000 acres in Sonoma and Napa counties. The personal and property damage from the fires was significant, as "24 lives were lost as a result of the fires…[and] 6,997 structures were destroyed, resulting in direct losses exceeding $7.8 billion" (Sonoma County Agriculture and Open Space, 2019). The Tubbs Fire was the deadliest of the four component fires of the Sonoma Complex Fire, burning nearly 12 miles from the rural community of Calistoga to the Coffey Park neighborhood of the City of Santa Rosa, crossing a six-lane highway, forcing tens of thousands of people to evacuate their homes, leading to 22 deaths and over 4,600 lost homes, and igniting an area larger than the five boroughs of New York City (Barber, 2022).

Recovery Tactics

In the immediate aftermath of and long-term recovery from these devastating wildfires, government officials in Sonoma County took four key approaches as part of their disaster recovery efforts:

- **Investing in response technology:** One of the critical factors in the casualties caused by the Tubbs Fire was the lack of information about the severity of the fire and the number of individuals that needed to evacuate. Working with the state and other regional partners, several cities in the county and the County itself have invested in technology that can support immediate response, including warning sirens, cameras mounted on lookout towers and tied into the six-state ALERTWildfire system, and the designation of and community education on evacuation sites. Though these items are primarily aimed at aiding response efforts, they also help community members feel more comfortable about the safety of returning to their homes during rebuilding (Barber, 2022).
- **Forming a department to facilitate efficient recovery:** Two months after containing the fires, the Sonoma County Board of Supervisors created an Office of Recovery and Resiliency. This department carried out nearly 300 action items identified by the Board of Supervisors, county officials, community members, business owners, community-based organizations, and other key stakeholders.

These items included coordinating proposals for state and federal grants, collecting data on fire survivors and distributing aid as the county received funding, and developing a new website to house all relevant emergency/disaster information for both regular operations and in the event of an emergency (e.g., to be used to communicate evacuation orders). Crucially, the Office of Recovery and Resiliency and the dedicated staff provided a single point of contact as recovery efforts proceeded, significantly streamlining communication throughout the county (County of Sonoma, 2018).

- **Creating a department to oversee mitigation and recovery efforts:** Two years after the Sonoma Complex Fire, the Sonoma County Board of Supervisors established a Department of Emergency Management. Investing in a centralized county-level division – instead of what the county had previously, where specialists were housed within law enforcement[27] – allowed the county to begin implementing key improvements and mitigation projects. These included faster emergency alerts in both English and Spanish, fuels reduction to mitigate wildfire risk throughout the county, and improved communication procedures internally and with local, state, federal, and nonprofit organizations on a day-to-day basis and in the event of another major fire. This also ensures the county will have a more efficient recovery effort after the next wildfire due to this centralized agency's formation and established presence (Bratton, 2022).
- **Prioritizing affordable housing:** One of the neighborhoods destroyed during the Sonoma Complex Fire was the Journey's End Mobile Home Park, where 75 percent of the 160 mobile homes burned down. A year after the fires, the site owner worked with a local nonprofit affordable housing developer and the City of Santa Rosa to procure funding for an affordable housing project. Construction was completed five years later, with the 160 mobile home units being replaced by 162 affordable housing units and 370 market-rate units – and residents of Journey's Home receiving priority for the units. In an area with few developments, the wildfires "created an opportunity to build more dense housing to meet the needs of area residents" (Choi, 2023).

Magnitude 5.8 Earthquake (August 2011) – Louisa County, Virginia

Event Description

On August 23, 2011, a magnitude 5.8 earthquake struck Louisa County, Virginia – a small County about 100 miles southwest of Washington, D.C. The earthquake was the "strongest recorded earthquake east of the Rocky Mountains since 1944" and the most widely felt seismic event in the history of North America, affecting approximately one-third of the U.S. population (Lukasik, 2021). The damage resulting from the earthquake was widespread and totaled between $200 and $300 million, with the most significant damage occurring in Louisa County. However, the impacts extended to historical sites in the D.C.-Maryland-Virgina area, including the Washington National Cathedral, the Washington Monument, and the Robert E. Lee Memorial in Arlington National Cemetery (Office of Communications and Publishing, 2021).

In Louisa County, the impact was significant. It included "damage to unreinforced masonry homes and schools, failure of brick veneer…cracking in reinforced masonry and reinforced concrete structures, and failure of some residential carport structures" (Lukasik, 2021). Due to structural damage, Louisa County High School and Thomas Jefferson Elementary were closed for the school year. At the same time, inspections revealed that 65 homes sustained major or severe damage, and 125 homes experienced mild to moderate damage (Lukasik, 2021).

Recovery Tactics

In the immediate aftermath of and long-term recovery from this magnitude 5.8 earthquake, government officials in Louisa County employed four primary methods as part of their disaster recovery efforts:

- **Prompt communication with key government officials:** In the week after the earthquake, the County Board of Supervisors was warned that an impending hurricane in the mid-Atlantic was likely to draw the attention of regional and federal officials. In response, the Board Chair rapidly organized meetings with the governor and two members of their Congressional delegation – a senator and a representative – to highlight key needs and prep these officials for incoming recovery funding requests to repair the two damaged schools. This planning ensured that the County could access funding for recovery and do so faster than other less prepared counties (Willoughby et al., 2020).

- **Prior identification of infrastructure needs:** Due to previous natural hazard mitigation planning conducted by County officials, several sites damaged during the earthquake—including the local high school—had already been identified as potential future investments in seismic resilience. This foresight allowed the County to access federal funds for recovery more quickly than other areas impacted by the earthquake (Willoughby et al., 2020).
- **Leveraging community resources:** The day after the earthquake, the County's director of emergency services reached out to local churches, known for their mission work, to engage their volunteer networks and begin developing a bottom-up mutual aid system to support those affected by the earthquake (Willoughby et al., 2020). This approach of rapid community engagement has since been codified in the Louisa County code, with the Director of Emergency Services having the authority to engage both public and private agencies to "develop or cause to be developed mutual aid agreements for reciprocal assistance" without having first to seek permission from the County Board of Supervisors. This helps County officials conduct faster response efforts, and it also aids them during recovery by removing potential administrative hurdles (Willoughby, Dzigbede, and Gehl, 2020).
- **Empowering executives during and after emergencies:** In the year following the earthquake, both cities in the County – Mineral, the earthquake's epicenter, and Louisa – passed local ordinances empowering "the [County] director of emergency services to use the county's resources as much as needed to address local demands when a major disaster hits the community (Willoughby, Dzigbede, and Gehl, 2020). This will help the County in the event of another significant natural hazard by enabling this executive official to act quickly, divert funds efficiently, and cut through red tape.

Bastrop County Complex Fire (September 2011) – Bastrop County, Texas

Event Description

On September 4, 2011, severe drought and unusually high winds merged three smaller wildfires into the Bastrop County Complex Fire, the most destructive wildfire in Texas state history. The fire raged for nearly two months in Bastrop County, located about 30 miles southeast of Austin, eventually burning over 34,000 acres, destroying more than 1,700 homes, and leading to the deaths of two people. Significant impacts were felt in several highly trafficked areas, including the Tahitian Village neighborhood and the destruction of 96 percent of Lone Pine Woods in Bastrop State Park (Bastrop State Park, n.d.). The fires continued to cause damage several months after they were contained due to the significant number of fallen trees and other vegetation that impacted power lines and dozens of roads (Bastrop County Office of Emergency Management, 2016).

Recovery Tactics

In the immediate aftermath of and long-term recovery from these destructive wildfires, government officials in Bastrop County undertook three main initiatives as part of their disaster recovery efforts:

- **Community-specific mitigation projects:** To address the immediate damage due to fallen trees and vegetation while mitigating future impacts, stakeholders chose location-specific initiatives instead of a one-size-fits-all approach. In Bastrop State Park, officials relied on an extensive volunteer network to clear debris and reduce erosion while using state funding to resume prescribed burning, a practice they had ceased before the fire (Bastrop State Park, n.d.). Conversely, the Bastrop County Office of Emergency Management used funding from FEMA's Hazard Mitigation Grant Program. It worked with local experts to employ a non-traditional mechanical fuels reduction project in communities within the wildland-urban interface. This process assisted with securing private landowner buy-in while protecting the habitat of the endangered Houston toad (Federal Emergency Management Agency, 2021).
- **Deployment of community-led long-term recovery team:** Before the fire was officially contained, community members worked with County officials and key local businesses and organizations to launch the Bastrop County Long-Term Recovery Team. The creation of this formal nonprofit provided a primary point of contact for County residents to access resources as they became available via local, state, and federal funding. In addition, the Long-Term Recovery Team was

able to leverage its network to secure financing and complete the reconstruction of 135 homes destroyed during the fire. Since the Bastrop County Complex Fire, this organization has coordinated recovery efforts for several more natural disasters, including the 2015 Hidden Pines fire, floods, winter and windstorms, and even the COVID-19 pandemic (Drummond, 2021).

- **Leveraging partnerships to streamline grant application and implementation:** In the months after the fire, the County worked with Bowman Consulting Group to apply for and implement several federal grants, including a $25 million federal housing grant and a $2.35 million watershed protection grant. The County had previously identified Bowman as a company with whom to work in the event of a disaster. By relying on this third-party organization and partnering closely with other key stakeholders throughout the county, Bastrop County was able to begin work on projects to repair and restore land within two years of the fire being contained (Bowman, n.d.).

[27] This is a common practice for local jurisdictions that lack the resources for a department dedicated solely to emergency management. In Oregon, most emergency management units are housed within the County Sheriff's department.

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Appendix C. Interview Guide

The research team used the following list of questions to guide our interviews with public-sector stakeholders. The Principal Investigators of the *Grow Back Better* project developed the initial version of this guide for interviews with nonprofit organizations. The research team then made some minor adaptations to suit government contexts. Having a standardized list of questions ensured consistent data collection. However, please note that this does not reflect the precise structure and content of each interview, as we often adjusted as needed based on time constraints or content relevance (i.e., not asking a planned follow-up question if the initial response answered that question).

UO Wildfire Recovery Research: Interview Questions

This interview is part of Grow Back Better*, a project examining the social and ecological factors shaping wildfire recovery on nonindustrial private forestland.*

BACKGROUND

- Can you please give us a short introduction to your role in your organization?
- What segments of the population does your organization serve? Did that change after the 2020 Labor Day fires?
- What type of role do you play in long-term recovery?
- Did you need to pivot your work to support wildfire recovery? Was this a short-term or longer-term change, and how and why?

COLLABORATION

- Did you collaborate with other agencies/organizations in recovering from the fire(s)?
- Was there a clear delineation of responsibilities between organizations? Please describe.
- This could include entities within your organization (e.g., different departments within the same county) or between organizations at different levels of government (e.g., city and county).

- Were there any cases, throughout the recovery process, where the presence of other organizations hindered, rather than helped, your work (too many 'cooks in the kitchen')? Please describe any barriers to collaboration.
    - E.g., rules and regulations; turf battles or personality clashes; administrative/organizational issues
- What resources were available to you? How did you access these resources?
- Are there policies or other sorts of government interventions that could have aided in your long-term recovery work? Be specific about the level of government that could help (federal, state, local), and individual departments or agencies, if possible.
- Have you worked with indigenous tribal leadership in wildfire mitigation or recovery?
- What work do you think should be reserved for government agencies versus reserved for nonprofit organizations in the longer-term recovery process?
- Are there people or groups that you saw affected by the fire that did not have adequate recovery support (short or long term)?
    - What/how and what could have been done to address this?
- Any other ideas for how organizations can work more effectively together?

COMMUNICATION

- If you work with private landowners, did they access government services or receive public funding? What did that process look like?
- How can public and private organizations involved in long-term recovery use technology/ communication tools more effectively in coordinating efforts or sharing resources and information?

CLOSING

- Reflecting back, what is the one thing you wish you would have known for your organization before the 2020 Labor Day fires? What is the one piece of advice you would have given your organization, or others going through a similar event?

Appendix D. Long-Term Recovery Framework

Many of the stakeholders interviewed by our team identified the need for a long-term recovery framework. This plan would ideally be similar to how local, state, and federal governments form Emergency Operations Centers (EOCs) to coordinate response but focused instead on recovery: a Recovery Operations Center (ROC). The language in this appendix details one approach for creating and maintaining an ROC. It is copied from the unpublished Western Lane County Post-Disaster Recovery Framework, developed in June 2011 by the Institute for Policy Research and Engagement.

Concept of Operations

This section utilizes the National Incident Management System (NIMS) Incident Command System (ICS) model, Emergency Support Function (ESF) #14, and the National Disaster Recovery Framework (NDRF) as the bases to assign specific roles and responsibilities during the long-term recovery process. These national frameworks describe the connections and transitions between response and recovery activities at the County level. In this section, OPDR (1) defines short-, intermediate-, and long-term recovery, (2) introduces the terms Recovery Coordinator and Recovery Operations Center, and (3) presents a generalized timeline for the order in which events occur during a catastrophic disaster incident of local, regional or national significance. This section is organized as follows:

- National Recovery Operations Guidance
- Recovery Command Structure (using the ICS model)
- Phases of Recovery
- Local Recovery Operations Structure
- Recovery Coordinator
- Recovery Operations Center
- Recovery Framework Operation Levels
- Recovery Framework Activation
- Transition from EOC to ROC
- Recovery Operations Center Deactivation
- Community Roles and Responsibilities

National Recovery Operations Guidance

Recovery actions at the local level will rely on a national framework for structure and guidance. The following section describes the elements of the national framework and how they relate to local recovery.

National Incident Management System

The National Incident Management System (NIMS), developed by FEMA, is a system used to coordinate activities among various federal, tribal, state, and local agencies. NIMS "provides a systematic, proactive approach to guide departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work seamlessly to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, to reduce the loss of life and property and harm to the environment" (Department of Homeland Security (DHS) 2008). One of NIMS's most important best practices is the Incident Command Structure (ICS). ICS is a standard, on-scene, scalable, flexible, all-hazards management structure designed to assign roles to specific community members to effectively and appropriately respond to and recover from a disaster or manage complex projects or events. NIMS provides the flexibility to allow adjustability at every level of government while providing a standardized organization structure (ICS) to improve operability among diverse jurisdictions. It is important to note that NIMS is not just for response activities; it is a scalable management system that is designed to deal with complex management tasks associated with a wide range of incidents, events, or projects.

For more information on NIMS, visit
http://www.fema.gov/emergency/nims/index.shtm.

National Response Framework

The National Response Framework (NRF) presents the guiding principles that enable all response partners to prepare for and provide a unified national response to disasters and emergencies. The NRF establishes a comprehensive, national, all-hazards approach to domestic incident response (DHS 2008). It utilizes standardized NIMS structures and tools that enable a unified approach effective both on-scene and at the EOC. The NRF is a national plan developed using the NIMS principles and intended to be organized primarily at the local level.

The NRF retains the same core principles of the NIMS response doctrine, which consists of five key principles:

- Engaged partnerships;
- Tiered response;
- Scalable, flexible, and adaptable operational capabilities;
- Unity of effort through unified command and
- Readiness to act.

The NRF encourages a high degree of preparedness by emphasizing preparedness activities, which include planning, organizing, training, equipping, exercising, and applying lessons learned. The five key principles are articulated within the framework and supporting annexes (i.e., emergency support functions).

Emergency Support Functions

The Emergency Support Functions (ESFs) provide a structure for coordinating federal interagency support during a federal response to an incident. The Incident Command System (ICS) structure (explained below) is designed to organize command, control, and coordination of emergency response operations during an incident.

Specific to this plan is ESF-14, Long-Term Community Recovery. ESF-14 addresses long-term community recovery and mitigation by providing a framework for federal government support to tribal, state, regional, and local governments, nongovernmental organizations (NGOs), and the private sector to enable community recovery from the long-term consequences of a disaster. This support consists of available programs and resources of federal departments and agencies to enable community recovery (especially long-term community recovery) and, where feasible, to reduce or eliminate risk from future incidents. ESF #14 is activated when an incident's severity of impacts and/or complexity of recovery will require considerable interagency coordination and technical support.

NRF's ESF-14 is specifically designed to provide:

- A social and economic community impact assessment;
- Long-term community recovery assistance to states, local governments, and the private sector; and
- analysis and review of mitigation program implementation (DHS 2008)

National Disaster Recovery Framework (Draft)

Like the NRF, FEMA's National Disaster Recovery Framework (NDRF) focuses on post-disaster recovery. This document is currently in draft form (February 5, 2010), and it is unknown when or if a final version will be approved and released. The NDRF builds on and aligns with the NRF while seeking to facilitate understanding and develop a standard planning structure (DHS, FEMA, & HUD, 2008, p. 7).

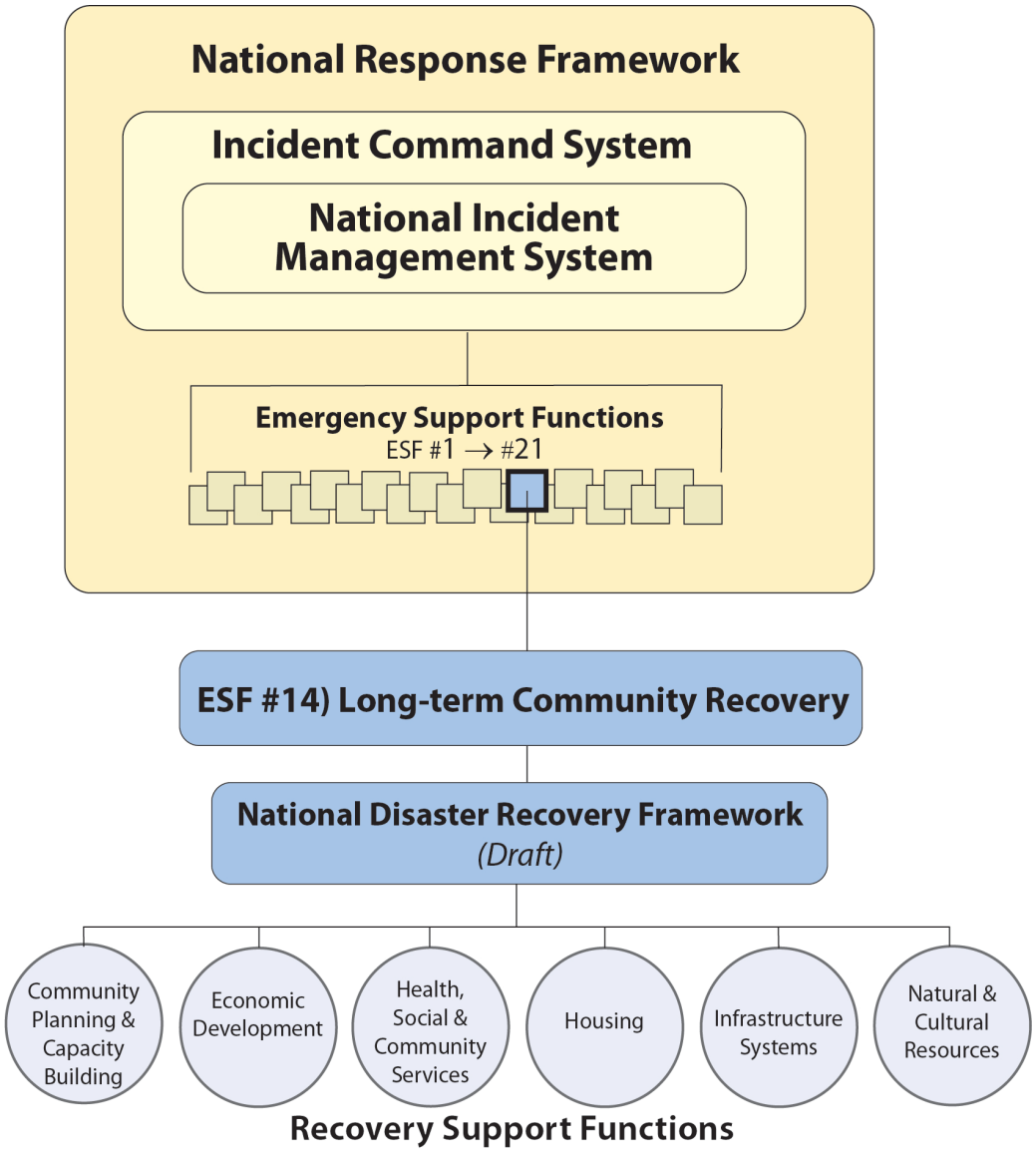
The draft National Disaster Recovery Framework incorporates and expands upon key elements of ESF-14 (DHS, FEMA, & HUD, 2008, p. 6). The NDRF adds "leadership elements, organizational structure, planning guidance, and other components needed to coordinate continued recovery support to individuals, business, and community" (DHS, FEMA, & HUD, 2008, p. 6).

In addition, the NDRF works to revitalize the community's economic, social, educational, environmental, and cultural aspects against future disasters. This recovery plan is modeled on that same idea.

Recovery Support Functions

Recovery Support Functions (RSFs) are the ESF equivalent in the NDRF draft document. RSFs bring federal departments and agencies together to collaborate on recovery needs. The RSFs aim to facilitate the identification, coordination, and delivery of federal assistance needed to supplement recovery resources and various coordinating bodies (DHS, FEMA, & HUD, 2008, p. 36). *Figure 5* illustrates recovery's relationship with the federal emergency management structures discussed above.

Figure 5: National Response Framework Relationships



Source: Oregon Partnership for Disaster Resilience

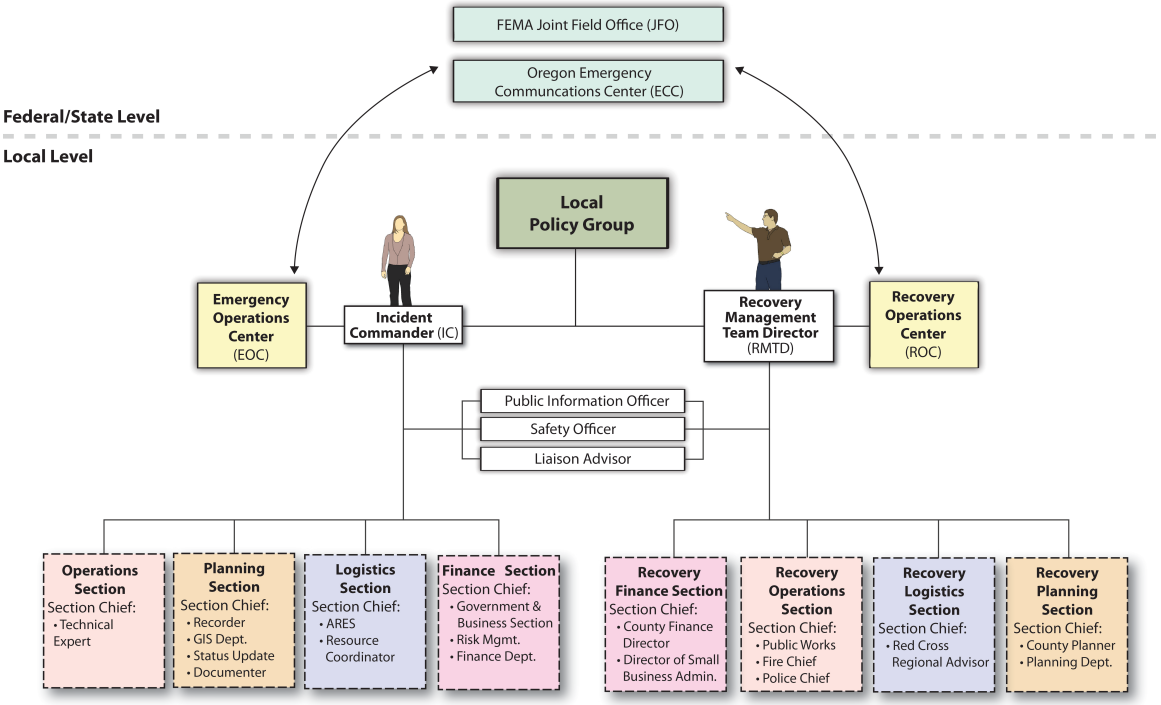
Recovery Planning: Local Government Recovery Plan Template

In December 2010, FEMA released a Local Government Recovery Plan Template that was reviewed by the Oregon Partnership for Disaster Resilience. The materials were not made available early enough for OPDR to integrate the framework process fully with the template. However, the template was reviewed, and elements of the framework were updated to reflect the crucial aspects of the plan and the public process that had already been completed. This framework uses the same language and organizational structure as provided within these guiding documents.

Recovery Command Structure

The recovery command structure utilized in this framework follows the structure of the NIMS ICS model. Figure 6 compares the two models side-by-side. The left side depicts the ICS for emergency response with an activated Emergency Operations Center (EOC). When fully activated, the right side represents the Recovery Operations Center (ROC) structure. Note that the two structures are roughly parallel to facilitate a high degree of communication and collaboration as the response and recovery to the disaster unfolds.

Figure 6: Unified Command Organizational Chart

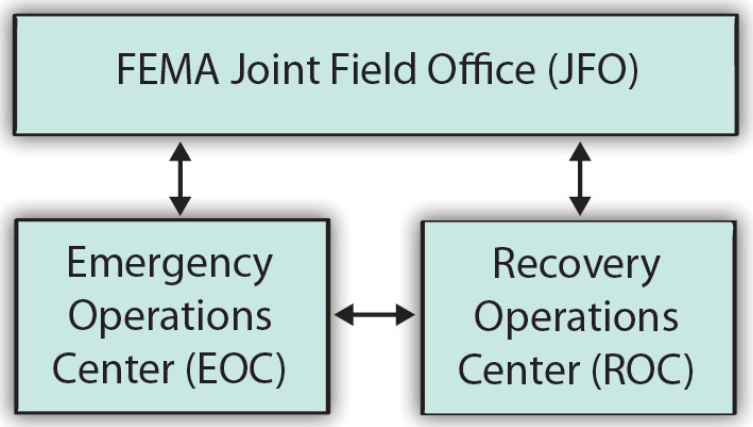


Source: Oregon Partnership for Disaster Resilience

Initial response and assessment (activation) occur shortly after an incident occurs. Response activities will commence immediately following activation and proceed from 0 to 30 days. The Recovery Management Team Director (RMTD) is embedded within the standard ICS response structure during the planning process. He will coordinate the need for the Recovery Operations Center management structure to activate. Upon demobilizing the response command structure, the agency administrator will transition and delegate authority to the Recovery Management Team (built on the ICS model) as the ROC officially stands up. The EOC and the ROC coordinate with FEMA's Joint Field Office (JFO).

FEMA's Joint Field Office coordinates activities with the EOC, ROC, and state emergency management personnel. Typically, FEMA officials close a JFO when most of its work is completed and relocate to a regional field office to close out major projects over the next few years. However, in a catastrophic disaster, it is expected that the JFO will remain in Salem. *Figure 7* depicts the relationship between the EOC, JFO, and ROC. Unlike the EOC and ROC, the JFO is a temporary facility funded and staffed by FEMA.

Figure 7: Unified Command Connection



Source: Oregon Partnership for Disaster Resilience

These three facilities designate specific titles and jobs to people to get the community back to a sense of normalcy. The EOC, ROC, and JFO cooperated in recovery efforts during a catastrophic event. Sometimes, the EOC and ROC will be housed in the same building. At the same time, the JFO typically has a separate, temporary facility set up by FEMA, and it is generally located in Salem, where access to coordinating state and federal agencies is most efficient. Sub-JFOs will be regionally created if necessary to facilitate communication between communities far removed from Salem and the JFO.

When incidents impact the entire nation or multiple States or localities, multiple JFOs may be established regionally. In these situations, one of the JFOs may be identified (typically in the most heavily impacted area) to serve as the primary JFO and provide strategic leadership and coordination for the overall incident management effort, as designated by the secretary.

The JFO Coordination Group (a multiagency coordination group composed of JFO members and representatives from tribal, State, local, and non-governmental organizations (NGO) representatives) coordinates shared priorities, allocates resources, resolves agency policy issues, and provides strategic guidance for federal incident management activities.

The Recovery Management Team (RMT) reports directly to the Recovery Management Team Director (RMTD). It consists of representatives interested in long-term recovery who oversaw the implementation of this framework. Like an Incident Management Team for response, the RMT operates under a delegation of authority granted by the Western Lane Emergency Operations Group to provide the goals and objectives of the recovery for Western Lane County.

The recovery issue categories described throughout this framework are designed to relate to one of the ICS Sections, as illustrated in *Table 3.*

Table 3: ICS Sections Related to Recovery Sections

Incident Management Team ICS Section		Recovery Management Team Recovery Section
Operations	←→	Recovery Operations: (Critical Infrastructure and Facilities)
Planning	←→	Recovery Planning: (Land Use and Development)
Logistics	←→	Recovery Logistic: (Health and Human Services)
Finance	←→	Recovery Finance: (Economy and Recovery Finance)

Source: Oregon Partnership for Disaster Resilience