Volume II: Appendices

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Appendix A: Action Item Forms

High Priority Actions

This section builds on the **high priority** actions identified in the County's Mitigation Strategy in Volume I, Section 3. Additional actions and high priority action item forms for cities and special districts can be found in Volume III. The high priority County actions are as follows:

Multi-Hazard

1.1 Create countywide full-time positions to manage mitigation efforts, including sourcing funding, coordinating projects, and creating outreach materials.

1.2 Increase interoperability and availability by upgrading 911 Computer Assisted Dispatch (CAD), dispatch radio system, County phone systems, and resilient power and internet infrastructure.

1.3 Update County land use plan and zoning ordinances to mitigate natural hazard risk (particularly wildfire, landslide, and flooding).

1.4 Retrofit or build a facility for use as a community shelter, 911 dispatch, Emergency Operations Center, and/or point of distribution for emergency resources (including wildfire fighting).

Earthquake/Cascadia Subduction Zone Event

4.1 Address seismic issues in identified vulnerable and critical facilities via structural and non-structural retrofits.

Wildfire

9.1 Expand education and outreach to increase awareness about defensible space and preparedness.

9.2 Develop and conduct fuels reduction projects across Hood River County, emphasizing treatment near residential communities, energy and key structures, and forestland to reduce fire intensity and aid suppression. See countywide map and list of projects throughout the County with information on project details and locations as identified by local fire districts, ODF, and USFS in Volume IV: Community Wildfire Protection Plan.

Action Item Form Components

Each action item has a corresponding action item form describing the project, assigning coordination and partner organizations, and detailing key information about potential project implementation and community/hazard risk reduction impacts. These forms are designed to assist the community in pre-packaging potential projects for state and federal grant funding. Each of the form components are described below.

These components are based on the 2024 Oregon Department of Emergency Management (OEM) guidance for the Federal Emergency Management Agency (FEMA)'s Hazard Mitigation Assistance non-disaster grants (HMA). Forms were developed by the Oregon Partnership for Disaster Resilience (OPDR).

Proposal Title, Description, and Coordinating Organization(s)

This section includes the title of the proposal project (as listed in the Mitigation Strategy in Volume I, Section 3), a brief description of what the project would entail, and the organization(s) expected to coordinate it.

Potential Funding Sources

This section lists state and federal grant programs and other resources identified by the County, the Steering Committee, and OPDR as potential funding sources for the proposed project. The primary source of federal funding for projects in this NHMP is BRIC, administered by FEMA and described in detail in the "FEMA Activity Type" section. The ideas listed here are not exhaustive; see Volume II, Appendix F for a full list of funding sources.

Project Cost and Timeline

This section details two key facets of the project: cost and timing.

Estimated Cost
Estimated cost is divided into four categories. Note that this scale is different from the previous NHMP, which defined Medium as $50,000 to $100,000 and High as $100,000 or more. This change was made to better reflect the current cost of mitigation projects.

- Low (less than $50,000)
- Medium ($50,000 to $500,000)
- High ($500,000 to $5 million)
- Very High ($5 million or more

Anticipated Timeline
For the purposes of this plan, the anticipated timeline for projects is divided into four categories. Note that any project with a *long-term* timeline was deemed important and relevant by the Steering Committee but is outside the scope of this NHMP (which is updated every five years).

- Ongoing – the Steering Committee sought to assign a specific timeline to every action possible, but some actions were ultimately deemed as supporting ongoing work.
- Short (1-2 years)
- Medium (3-5 years)
- Long (5 or more years)

FEMA Activity Type

The categories for this section are taken from OEM's guide for HMA, administered and awarded by FEMA. While not every project may seek federal funding, identifying which aspect of FEMA's grant funding the project would fall under helps clearly define the project's purpose. The options vary for Building Resilient Infrastructure and Communities (BRIC) and Flood Mitigation Assistance (FMA). Only one category may be selected (i.e., a project cannot apply as both a BRIC Mitigation Project and an FMA Community Flood Mitigation Project).

BRIC

BRIC Projects fall into three main categories, with one category having four subcategories. More information on these categories can be found on FEMA's website.

- Capability- and Capacity-Building (CC&B) – activities that enhance the knowledge, skills and expertise of the current workforce to expand or improve the administration of mitigation assistance.
    - Project Scoping – activities that help communities generate mitigation strategies and obtain data to develop applications/processes that increase capacity to identify and/or develop mitigation strategies.
    - Building Codes – adopting, implementing, or enhancing codes, specifications, and/or standards that incorporate hazard-resistant designs and establish minimum acceptable criteria for the design, construction, and maintenance of residential and nonresidential structures.
    - Partnerships – activities that enhance the knowledge, skills, and expertise of governments, tribal entities, nonprofits, and other organizations in developing and managing partnerships to build whole community resilience.
    - Planning – conducting the required five-year update to an NHMP as well as developing new hazard mitigation plans and other related planning activities.
- Mitigation Project – conducting any project that is cost-effective, technically feasible, and designed to increase resilience and public safety; reduce injuries and loss of life; and reduce damage and destruction to property, critical services, facilities, and infrastructure from natural hazards.
- Technical Assistance – obtain support for FEMA to conduct a Benefit-Cost Analysis if a community does not have the capacity to do so on their own.

FMA

FMA Projects fall into five main categories. More information on these categories can be found on FEMA's website. Hood River County does not have any projects seeking funding through FMA.

- **Project Scoping** – see definition in BRIC section.
- **Community Flood Mitigation Project/ Individual Flood Mitigation Project** – see definition for *Mitigation Project* in BRIC section.
- **Flood Hazard Mitigation Planning** – see definition for *Planning* in BRIC section.
- **Technical Assistance** – see definition in BRIC section.

Hazard Type

This section defines which hazards the project is anticipated to address and includes all the hazards identified for the County in Volume I, Section 2.

Community Lifelines

This section identifies which of FEMA's Community Lifelines the project will address. A lifeline enables the continuous operation of critical government and business functions and is essential to human health and safety or economic security. FEMA identifies eight (8) categories of lifelines, described below. More information on lifelines can be found on FEMA's website.

- **Safety and Security:** Law Enforcement/Security, Fire Service, Search and Rescue, Government Service, Community Safety
- **Food, Hydration, Shelter:** Food, Hydration, Shelter, Agriculture
- **Health and Medical:** Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management
- **Energy:** Power Grid, Fuel
- **Communications:** Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch
- **Transportation:** Highway/Roadway/Motor Vehicle, Mass Transit, Railway, Aviation, Maritime
- **Hazardous Materials:** Facilities, HAZMAT, Pollutants, Contaminants
- **Water Systems:** Potable Water Infrastructure, Wastewater Management

Risk Reduction/Resilience Effectiveness

This section addresses how the project reduces hazard risk, increases resilience, and realizes ancillary benefits that provide the greatest support to those with greatest need. Ancillary benefits as identified by OEM include water/air quality, habitat creation, energy efficiency, economic opportunity, reduced social vulnerability, cultural resources, and public/mental health.

Climate Change and Other Future Conditions

This section details the degree to which the project addresses the need to mitigate the current and future expected impacts of climate change in the County. These impacts may be either direct (i.e., building a seawall to protect against future sea level rise) or indirect (i.e., investing in hazard mitigation capacity).

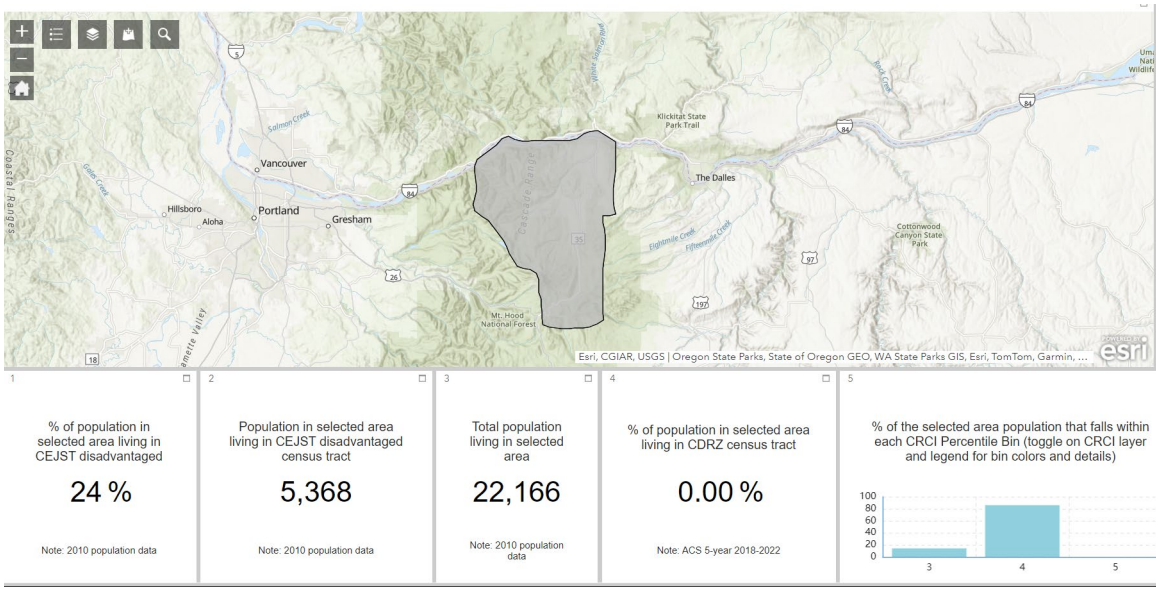
Implementation Measures

The bullets in the section outline how the project will be implemented and indicate that the necessary planning, resources, and human and financial capital are in place. This section may include potential obstacles (e.g., technical, political, or financial), past successful projects similar to the proposed one, the identification of staff that will support the project, and other project-specific items (i.e., the incorporating of strong labor standards).

Population Impacted

This section identified the degree to which the project is anticipated to affect the entire community as well as underserved and socially vulnerable populations. Unless otherwise noted, the Disadvantaged Population, Percentage Disadvantaged, and Total Area Population are calculated using FEMA's Grant Equity Threshold Tool (GETT) according to OEM's guidance. A screenshot of this calculation is shown in Figure A-1.

Figure A-1 Hood River County GETT Results



Source: FEMA (2024). Grant Equity Threshold Tool. Retrieved October 16, 2024, from https://fema.maps.arcgis.com/apps/webappviewer/index.html?id=d1f3c8801ac2403781fd44160e18aa6f.

Definitions for each of the terms included in this section are listed below. Unless otherwise noted, definitions and the data supporting each term can be found in the Community Profile in Volume II, Appendix D, and/or as part of the U.S. Council on Environmental Quality's Climate and Economic Justice Screening Tool (CEJST).

- **Limited water and sanitation access and affordability:** Low-income households that lack indoor kitchens or plumbing. Data found in the CEJST.
- **High and/or persistent poverty:** Regions with a poverty rate of 20 percent or higher over the past 30 years. Data found in the Community Profile and the CEJST.

- **Rural community:** The Oregon Office of Rural Health defines a rural community as any geographic area that is ten miles or more from a population center of 40,000 people or more.[47] Data found in the Community Profile.
- **Jobs lost through the energy transition:** *This figure should be determined locally based on any employment data available to the County.*
- **High energy cost burden and low energy access:** FEMA defines high energy cost communities as those where annual expenditures for home energy exceeds 275% of the national average.[48] Data found in the CEJST.
- **Racial and ethnic segregation where the segregation stems from discrimination by government entities:** *This figure should be determined locally based on any data available to the County as well as information from community-based organizations.*
- **High unemployment and underemployment:** Regions with an unemployment rate of 10 percent or higher. Data found in the Community Profile and the CEJST.
- **Low income:** Households where income is less than or equal to twice the federal poverty level, not including college students. Data found in the Community Profile and the CEJST.
- **Linguistic isolation:** Households where no one over the age of 14 speaks English well. Data found in the CEJST.
- **Disproportionate impacts from climate:** Regions expected to experience high levels of agriculture loss, extreme weather, sea level rise, and other climate impacts. Data found in the CEJST.
- **High transportation cost burden and/or low transportation access:** Households with high commute costs (greater than 30% of household income) and time or that lack access to vehicles. Data found in the Community Profile and the CEJST.
- **High housing cost burden and substandard housing:** Households that are low-income and cost-burdened (spending more than 30% of income on housing). Data found in the Community Profile and the CEJST.
- **Limited access to health care**: Households lacking access to private or public health insurance. Data found in the Community Profile.
- **Distressed neighborhoods:** Oregon Administrative Rule 123-024 defines distressed areas via a combination of high unemployment, low income, low wages, and lack of employment growth.[49] Data can be found on Business Oregon's website.
- **All geographic areas within Tribal jurisdictions:** Data found in the Community Profile.
- **Disproportionate environmental stressor burden and high cumulative impacts:** Regions experiencing legacy pollution such as hazardous waste sites, Superfund sites, or abandoned military sites. Data found in the CEJST.

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[47] Oregon Office of Rural Health (2017). *Rural Health.* Oregon Medical Board. Retrieved October 16, 2024, from https://www.oregon.gov/omb/topics-of-interest/pages/rural-health.aspx.

[48] FEMA (2024, March 25). Assistance to High Energy Cost Communities. Retrieved October 16, 2024, from https://www.fema.gov/emergency-managers/practitioners/recovery-resilience-resource-library/assistance-high-energy-cost.

[49] Oregon Secretary of State (2013). *OAR 123-024: Oregon Business Development Department, Distressed Areas.* https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=161.

Community Engagement

This section describes the degree to which community stakeholders have been involved in the development of the proposed project and to which they are anticipated to be involved in project implementation. If relevant, this section also details what information will be shared with the public and how public feedback will be collected.

Leveraging Partners

In this section, anticipated community partners for project development and implementation are identified and any details regarding expected collaboration or future partnerships beyond the proposed project timeline are noted.

National Flood Insurance Program (NFIP)

This section clarifies whether the project contains any commercial or residential properties covered by NFIP. Hood River County does not have any projects involving NFIP properties.

Infrastructure Project

This section identifies whether and how the project will mitigate hazard risk to Community Lifelines or other key infrastructure components. Outreach, awareness, and education campaigns would not meet this criteria.

Nature-Based Solutions

This section identifies whether any component of the proposed project can be considered nature-based mitigation. FEMA identifies a nature-based solution as sustainable planning, design, or environmental management that weaves natural features or processes into the built environment to promote adaptation and resilience. Projects that fit into this category include, but are not limited to, restoring dunes and wetlands to increase flood resilience and planting trees to reduce urban heat. More information can be found on FEMA's website.

Innovative Techniques

An innovative project may bring multiple funding sources or in-kind resources from a range of private and public sector partners and/or may offer multiple benefits to a community in addition to the benefit of risk reduction. This section addresses the degree to which the proposed project can be considered innovative, including the usage of new approaches.

Building Code Effectiveness Grading Schedule Rating (BCEGSR)

This section addresses whether any of the structures impacted by the project have received a Building Code Effectiveness Grading Schedule Rating (BCEGSR) between 1 and 5 as indicated by Verisk (formerly the Insurance Service Office, or ISO Mitigation) and required by FEMA. A report may be obtained for no cost by a community's building official or chief administrative official. More information can be found on Verisk/ISO Mitigation's website.

Table A-1 Action Item Form – Multi-Hazard 1.1

Proposal Title	**Create countywide full-time positions to manage mitigation efforts, including sourcing funding, coordinating projects, and creating outreach materials.**
Proposal Description	The County, cities, ports, and fire districts have identified the need to hire an individual to coordinate hazard and wildfire mitigation efforts in the county. This position would serve under the Emergency Manager and oversee the application, development, execution, and reporting for state and federal hazard mitigation grant projects.
Coordinating Organization(s)	County Emergency Management

Project Cost and Timeline

Estimated Cost	Anticipated Timeline
☐ Low (less than $50,000)	☐ Ongoing
☒ Medium ($50,000 to $500,000)	☐ Short (1-2 years)
☐ High ($500,000 to $5 million)	☒ Medium (3-5 years)
☐ Very High ($5 million or more)	☐ Long (5 or more years)

Potential Funding Sources	HMA; Federal/State Funding (OEM, ODF, FEMA)

FEMA Activity Type (select only one; select subcategory for CC&B under BRIC)

☒ Building Resilient Infrastructure and Communities (BRIC)	☐ Flood Mitigation Assistance (FMA)
☒ Capability- and Capacity-Building (CC&B) ☐ Project Scoping ☐ Building Codes ☒ Partnerships ☐ Planning ☐ Mitigation Project ☐ Technical Assistance	☐ Project Scoping ☐ Community Flood Mitigation Project ☐ Flood Hazard Mitigation Planning ☐ Individual Flood Mitigation Project ☐ Technical Assistance

Hazard Type (select all that apply)

☒ Multi-Hazard	☒ Extreme Heat	☐ Volcanic Event
☒ Air Quality/Smoke	☐ Flood	☒ Wildfire
☐ Drought	☒ Landslide/Debris Flow	☒ Windstorm
☒ Earthquake/CSZ Event		☒ Winter Storm

Community Lifelines (select all that apply)

☒ Safety and Security	☒ Communications
☐ Food, Hydration, Shelter	☐ Transportation
☐ Health and Medical	☐ Hazardous Material
☐ Energy	☐ Water Systems

Risk Reduction/ Resilience Effectiveness	Creating a full-time position to coordinate mitigation will enable the County and jurisdictions within to prepare stronger grant applications, receive additional mitigation funding, and conduct both a large volume and higher quality of projects to reduce hazard risk.

Climate Change and Other Future Conditions	Many of the mitigation projects detailed in this NHMP will enhance climate change adaptation; creating a full-time position to facilitate such work will therefore lead to a more climate resilient community.
Implementation Measures	• Work with jurisdictions within the county to develop a comprehensive position description for this new role based on other similar positions in Oregon/Washington state. • Hire an individual to fill this position and have them take on a co-convener role for this NHMP alongside the Emergency Manager.

Population Impacted		
Disadvantaged Population: **5,368**	**Percentage Disadvantaged:** **24%**	**Total Area Population:** **22,166**

Population Impacted (select all that apply)	
☒ Limited water and sanitation access and affordability ☐ High and/or persistent poverty ☒ Rural community ☐ Jobs lost through the energy transition ☐ High energy cost burden and low energy access ☐ Racial and ethnic segregation where the segregation stems from discrimination by government entities ☐ High unemployment and underemployment	☒ Low income ☐ Linguistic isolation ☒ Disproportionate impacts from climate ☐ High transportation cost burden and/or low transportation access ☒ High housing cost burden and substandard housing ☐ Limited access to health care ☐ Distressed neighborhoods ☐ All geographic areas within Tribal jurisdictions ☐ Disproportionate environmental stressor burden and high cumulative impacts

Community Engagement	This project was conceived during the development of this NHMP and engaged a broad array of stakeholders throughout the county who would also be involved with developing the position description for this role; see Volume II, Appendix B for more information.
Leveraging Partners	Between the development of the position description and the implementation of these mitigation coordinator roles, County Emergency Management anticipates working with the following stakeholders: cities, ports, fire districts, and the school district.
National Flood Insurance Program (NFIP)	This project will not involve any NFIP properties.
Infrastructure Project	This is not an infrastructure project.
Nature-Based Solutions	This project is not a nature-based solution.
Innovative Techniques	This project should be considered innovative because it seeks to centralize the coordination of mitigation projects throughout the County to increase efficiency in applying for and implementing hazard mitigation funding.
BCEGSR	This project does not have a BCEGSR.

Table A-2 Action Item Form – Multi-Hazard 1.2

Proposal Title	**Increase interoperability and availability by upgrading 911 Computer Assisted Dispatch (CAD), dispatch radio system, County phone systems, and resilient power and internet infrastructure.**
Proposal Description	The County, cities, and fire districts have identified the need to significantly upgrade the County's emergency communications infrastructure, including the Computer Assisted Dispatch, dispatch radio, and County phones. These systems are all housed in the County building at 601 State Street in the City of Hood River.
Coordinating Organization(s)	County Emergency Management

Project Cost and Timeline

Estimated Cost	Anticipated Timeline
☐ Low (less than $50,000)	☐ Ongoing
☒ Medium ($50,000 to $500,000)	☐ Short (1-2 years)
☐ High ($500,000 to $5 million)	☒ Medium (3-5 years)
☐ Very High ($5 million or more)	☐ Long (5 or more years)

Potential Funding Sources	HMA (BRIC); State Funding (OEM); Bond

FEMA Activity Type (select only one; select subcategory for CC&B under BRIC)

☒ Building Resilient Infrastructure and Communities (BRIC)	☐ Flood Mitigation Assistance (FMA)
☐ Capability- and Capacity-Building (CC&B)	
☐ Project Scoping	☐ Project Scoping
☐ Building Codes	☐ Community Flood Mitigation Project
☐ Partnerships	☐ Flood Hazard Mitigation Planning
☐ Planning	☐ Individual Flood Mitigation Project
☒ Mitigation Project	☐ Technical Assistance
☐ Technical Assistance	

Hazard Type (select all that apply)

☒ Multi-Hazard	☒ Extreme Heat	☐ Volcanic Event
☒ Air Quality/Smoke	☐ Flood	☒ Wildfire
☐ Drought	☒ Landslide/Debris Flow	☒ Windstorm
☒ Earthquake/CSZ Event		☒ Winter Storm

Community Lifelines (select all that apply)

☒ Safety and Security	☒ Communications
☐ Food, Hydration, Shelter	☐ Transportation
☐ Health and Medical	☐ Hazardous Material
☐ Energy	☐ Water Systems

Risk Reduction/ Resilience Effectiveness	Upgrading the County's emergency communications infrastructure will enable faster, more efficient, and more reliable communication before, during, and after a major natural hazard event.

Climate Change and Other Future Conditions	This project will not address anticipated climate change impacts.
Implementation Measures	• Research options for upgraded communications systems for each of three components of this project (Computer Assisted Dispatch, dispatch radio, and County phones). • Work with the agencies and organizations identified in "Leveraging Partners" to implement new systems that are compatible with each other, increasing interoperability.

Population Impacted		
Disadvantaged Population: <u>**5,368**</u>	**Percentage Disadvantaged:** <u>**24%**</u>	**Total Area Population:** <u>**22,166**</u>

Population Impacted (select all that apply)	
☐ Limited water and sanitation access and affordability ☐ High and/or persistent poverty ☒ Rural community ☐ Jobs lost through the energy transition ☐ High energy cost burden and low energy access ☐ Racial and ethnic segregation where the segregation stems from discrimination by government entities ☐ High unemployment and underemployment	☒ Low income ☐ Linguistic isolation ☒ Disproportionate impacts from climate ☐ High transportation cost burden and/or low transportation access ☐ High housing cost burden and substandard housing ☐ Limited access to health care ☐ Distressed neighborhoods ☐ All geographic areas within Tribal jurisdictions ☐ Disproportionate environmental stressor burden and high cumulative impacts

Community Engagement	This project was conceived because of a need for interoperability and other communication upgrades identified by an array of community partners, including the cities of Cascade Locks and Hood River, the Hood River Police Department, and fire districts.
Leveraging Partners	Between research into options and the implementation of upgrades, County Emergency Management anticipates working with the following stakeholders: cities, fire districts, the Sheriff's Office, and the 911 Advisory Board.
National Flood Insurance Program (NFIP)	This project will not involve any NFIP properties.
Infrastructure Project	This is not an infrastructure project.
Nature-Based Solutions	This project is not a nature-based solution.
Innovative Techniques	This project does not employ innovative techniques.
BCEGSR	This project does not have a BCEGSR.

Table A-3 Action Item Form – Multi-Hazard 1.3

Proposal Title	**Update County land use plan, building codes, and zoning ordinances to mitigate natural hazard risk (particularly wildfire, flooding, and landslide).**
Proposal Description	The County requires support for building code, zoning, and land use planning updates for wildfire (to comply with new state regulations), flooding (to incorporate new FEMA FIRM maps expected in 2026), and landslide (to include lessons learned from a DOGAMI landslide risk reduction project expected to be completed in 2025).
Coordinating Organization(s)	County Community Development

Project Cost and Timeline	
Estimated Cost	**Anticipated Timeline**
☐ Low (less than $50,000) ☒ Medium ($50,000 to $500,000) ☐ High ($500,000 to $5 million) ☐ Very High ($5 million or more)	☐ Ongoing ☐ Short (1-2 years) ☒ Medium (3-5 years) ☐ Long (5 or more years)

Potential Funding Sources	HMA (BRIC); State Funding (DLCD)

FEMA Activity Type (select only one; select subcategory for CC&B under BRIC)	
☒ Building Resilient Infrastructure and Communities (BRIC)	**☐ Flood Mitigation Assistance (FMA)**
☒ Capability- and Capacity-Building (CC&B) ☐ Project Scoping ☒ Building Codes ☐ Partnerships ☐ Planning ☐ Mitigation Project ☐ Technical Assistance	☐ Project Scoping ☐ Community Flood Mitigation Project ☐ Flood Hazard Mitigation Planning ☐ Individual Flood Mitigation Project ☐ Technical Assistance

Hazard Type (select all that apply)		
☒ Multi-Hazard ☐ Air Quality/Smoke ☐ Drought ☐ Earthquake/CSZ Event	☐ Extreme Heat ☒ Flood ☒ Landslide/Debris Flow	☐ Volcanic Event ☒ Wildfire ☐ Windstorm ☐ Winter Storm

Community Lifelines (select all that apply)	
☒ Safety and Security ☐ Food, Hydration, Shelter ☐ Health and Medical ☐ Energy	☐ Communications ☐ Transportation ☐ Hazardous Material ☐ Water Systems

Risk Reduction/ Resilience Effectiveness	Improving the County's hazard-related land use planning will allow for broad hazard mitigation through stronger building codes (especially for wildfire) and ensure that future construction is resilient, especially in areas with potentially high hazard risk.

Climate Change and Other Future Conditions	Updating County floodplain ordinances with information from the updated FEMA FIRM data will better prepare the County to mitigate potential future climate change-influenced flooding.
Implementation Measures	• County Community Development will review state guidelines for wildfire, FEMA FIRM data, and results from DOGAMI's landslide risk project to identify model land use plans and building code. • County Community Development will then update their land use planning through their normal planning process.

Population Impacted		
Disadvantaged Population: **5,368**	**Percentage Disadvantaged:** **24%**	**Total Area Population:** **22,166**

Population Impacted (select all that apply)	
☒ Limited water and sanitation access and affordability ☐ High and/or persistent poverty ☒ Rural community ☐ Jobs lost through the energy transition ☐ High energy cost burden and low energy access ☐ Racial and ethnic segregation where the segregation stems from discrimination by government entities ☐ High unemployment and underemployment	☒ Low income ☐ Linguistic isolation ☒ Disproportionate impacts from climate ☐ High transportation cost burden and/or low transportation access ☒ High housing cost burden and substandard housing ☐ Limited access to health care ☐ Distressed neighborhoods ☐ All geographic areas within Tribal jurisdictions ☐ Disproportionate environmental stressor burden and high cumulative impacts

Community Engagement	The County expects to use the same community engagement process employed by other major updates to County plans and ordinances with this project, including public comment and a hearing with the County Commissioners.
Leveraging Partners	To update each of these land use planning components, County Community Development anticipates working with the following stakeholders: County Commissioners, County Emergency Management, cities, ports, and state agencies (including DLCD, DOGAMI, and OSFM).
National Flood Insurance Program (NFIP)	Based on the results of FEMA's FIRM update process, this project may end up involving NFIP properties as part of updates to the County and city floodplain ordinances.
Infrastructure Project	This is not an infrastructure project.
Nature-Based Solutions	This project is not a nature-based solution.
Innovative Techniques	The County hopes to incorporate new methods for land use planning that mitigates hazard risk, including wildfire building codes designed to protect residences as identified by OSFM and landslide risk reduction land use ordinances based on research from DOGAMI.
BCEGSR	This project does not have a BCEGSR.

Table A-4 Action Item Form – Multi-Hazard 1.4

Proposal Title	**Retrofit or build a facility for use as a community shelter, 911 dispatch, emergency operations center, and/or point of distribution for emergency resources (including wildfire fighting).**
Proposal Description	The Port of Hood River and County Emergency Management would like to expand the capacity of the Ken Jernstedt Airfield (which lies south of the City of Hood River) or build a new facility to serve as a multi-hazard hub. This project would scope a facility that could serve as a community shelter, an Emergency Operations Center, and/or be utilized for major wildfire operations in the region (like the Columbia Gorge Regional Airport in The Dalles, in neighboring Wasco County).
Coordinating Organization(s)	Port of Hood River / County Emergency Management

Project Cost and Timeline	
Estimated Cost	**Anticipated Timeline**
☐ Low (less than $50,000) ☐ Medium ($50,000 to $500,000) ☐ High ($500,000 to $5 million) ☒ Very High ($5 million or more)	☐ Ongoing ☐ Short (1-2 years) ☐ Medium (3-5 years) ☒ Long (5 or more years)
Potential Funding Sources	HMA (BRIC); State Funding (OEM, ODF, ODHS); Bond

FEMA Activity Type (select only one; select subcategory for CC&B under BRIC)	
☒ Building Resilient Infrastructure and Communities (BRIC)	**☐ Flood Mitigation Assistance (FMA)**
☒ Capability- and Capacity-Building (CC&B) ☒ Project Scoping ☐ Building Codes ☐ Partnerships ☐ Planning ☐ Mitigation Project ☐ Technical Assistance	☐ Project Scoping ☐ Community Flood Mitigation Project ☐ Flood Hazard Mitigation Planning ☐ Individual Flood Mitigation Project ☐ Technical Assistance

Hazard Type (select all that apply)		
☒ Multi-Hazard	☒ Extreme Heat	☐ Volcanic Event
☒ Air Quality/Smoke	☐ Flood	☒ Wildfire
☐ Drought	☒ Landslide/Debris Flow	☒ Windstorm
☒ Earthquake/CSZ Event		☒ Winter Storm

Community Lifelines (select all that apply)	
☒ Safety and Security	☐ Communications
☒ Food, Hydration, Shelter	☒ Transportation
☒ Health and Medical	☐ Hazardous Material
☐ Energy	☐ Water Systems

Risk Reduction/ Resilience Effectiveness	This facility would significantly increase the response and recovery capacity of the County while simultaneously providing another major regional hub for wildfire operations for ODF and USFS.
Climate Change and Other Future Conditions	This facility would ensure the County is better prepared for response and recovery from major hazard event; this is particularly impactful for wildfire, which is anticipated to worsen with climate change.
Implementation Measures	• The Port of Hood River and County Emergency Management will work together to review other similar facilities (e.g., at the Columbia Gorge Regional Airport) and generate options. • Once a facility has been scoped, the Port and County anticipate applying for additional funding to construct this hub.

Population Impacted		
Disadvantaged Population: **5,368**	**Percentage Disadvantaged:** **24%**	**Total Area Population:** **22,166**

Population Impacted (select all that apply)	
☒ Limited water and sanitation access and affordability ☐ High and/or persistent poverty ☒ Rural community ☐ Jobs lost through the energy transition ☐ High energy cost burden and low energy access ☐ Racial and ethnic segregation where the segregation stems from discrimination by government entities ☐ High unemployment and underemployment	☒ Low income ☐ Linguistic isolation ☒ Disproportionate impacts from climate ☐ High transportation cost burden and/or low transportation access ☐ High housing cost burden and substandard housing ☐ Limited access to health care ☐ Distressed neighborhoods ☐ All geographic areas within Tribal jurisdictions ☐ Disproportionate environmental stressor burden and high cumulative impacts

Community Engagement	The Port and County would facilitate input from community members and public, nonprofit, and businesses partners to ensure that this facility meets the needs and desires of the community.
Leveraging Partners	The Port of Hood River would lead the project scoping process, with County Emergency Management providing support as needed. Other stakeholders to be incorporated include: cities, state agencies (including ODF and OEM), and federal agencies (including USFS).
National Flood Insurance Program (NFIP)	This project will not involve any NFIP properties.
Infrastructure Project	This is not an infrastructure project. However, the final project would lead to a significant upgrade for the Ken Jernstedt Airfield, an important component of regional transportation infrastructure.
Nature-Based Solutions	This project is not a nature-based solution.
Innovative Techniques	The Port and County plan to incorporate as many new models for operations as possible, including new standards for community resilience such as solar panels with battery backups.
BCEGSR	This project does not have a BCEGSR.

Table A-5 Action Item Form – Earthquake 4.1

Proposal Title	**Address seismic issues in identified vulnerable and critical facilities via structural and non-structural retrofits.**
Proposal Description	The County and community partners have identified many facilities that require structural and non-structural seismic retrofits. This identification has been informed by many data sources, including DOGAMI's Risk Report for the County. This project seeks to conduct these retrofits for an array of vulnerable and critical facilities.
Coordinating Organization(s)	County Emergency Management/County Public Works

Project Cost and Timeline

Estimated Cost	Anticipated Timeline
☐ Low (less than $50,000)	☐ Ongoing
☐ Medium ($50,000 to $500,000)	☐ Short (1-2 years)
☐ High ($500,000 to $5 million)	☒ Medium (3-5 years)
☒ Very High ($5 million or more)	☐ Long (5 or more years)

Potential Funding Sources	HMA (BRIC); State Funding (Seismic Rehabilitation Grant Program) Bond

FEMA Activity Type (select only one; select subcategory for CC&B under BRIC)

☒ Building Resilient Infrastructure and Communities (BRIC)	☐ Flood Mitigation Assistance (FMA)
☐ Capability- and Capacity-Building (CC&B)	
☐ Project Scoping	☐ Project Scoping
☐ Building Codes	☐ Community Flood Mitigation Project
☐ Partnerships	☐ Flood Hazard Mitigation Planning
☐ Planning	☐ Individual Flood Mitigation Project
☒ Mitigation Project	☐ Technical Assistance
☐ Technical Assistance	

Hazard Type (select all that apply)

☐ Multi-Hazard	☐ Extreme Heat	☐ Volcanic Event
☐ Air Quality/Smoke	☐ Flood	☐ Wildfire
☐ Drought	☐ Landslide/Debris Flow	☐ Windstorm
☒ Earthquake/CSZ Event		☐ Winter Storm

Community Lifelines (select all that apply)

☒ Safety and Security	☐ Communications
☒ Food, Hydration, Shelter	☐ Transportation
☐ Health and Medical	☐ Hazardous Material
☐ Energy	☐ Water Systems

Risk Reduction/ Resilience Effectiveness	These retrofits will significantly reduce the potential impacts from both a crustal earthquake or a CSZ event by increasing the resilience of vulnerable and critical facilities throughout the County.

Climate Change and Other Future Conditions	This project will not address anticipated climate change impacts.
Implementation Measures	County Emergency and community partners will conduct seismic retrofits throughout the County, including but not limited to: • County Building (601 State St., Hood River) • County Courthouse (309 State St., Hood River) • City of Hood River City Hall (211 2nd St, Hood River) • City of Cascade Locks City Hall (140 Wa Na Pa St., Cascade Locks) • Port of Hood River facilities (see addendum in Volume III) • Schools (see Hood River County School District addendum in Volume III)

Population Impacted		
Disadvantaged Population: **5,368**	**Percentage Disadvantaged:** **24%**	**Total Area Population:** **22,166**

Population Impacted (select all that apply)	
☐ Limited water and sanitation access and affordability ☐ High and/or persistent poverty ☒ Rural community ☐ Jobs lost through the energy transition ☐ High energy cost burden and low energy access ☐ Racial and ethnic segregation where the segregation stems from discrimination by government entities ☐ High unemployment and underemployment	☒ Low income ☐ Linguistic isolation ☐ Disproportionate impacts from climate ☐ High transportation cost burden and/or low transportation access ☒ High housing cost burden and substandard housing ☐ Limited access to health care ☐ Distressed neighborhoods ☐ All geographic areas within Tribal jurisdictions ☐ Disproportionate environmental stressor burden and high cumulative impacts

Community Engagement	This project would not involve significant community engagement, as targets for seismic retrofits have already been identified.
Leveraging Partners	County Emergency Management anticipates implanting retrofits with the following stakeholders: County Commissioners, cities, ports, fire districts, the School District, the Library District, and state agencies (including DLCD, DOGAMI, and OEM).
National Flood Insurance Program (NFIP)	This project will not involve any NFIP properties.
Infrastructure Project	This project would significantly improve the seismic resilience of a wide array of infrastructure components, including bridges and key energy and water facilities.
Nature-Based Solutions	This project is not a nature-based solution.
Innovative Techniques	This project does not employ innovative techniques.
BCEGSR	The BCEGSR varies for each building identified for a seismic retrofit.

Table A-6 Action Item Form – Wildfire 9.1

Proposal Title	**Expand education and outreach to increase awareness about defensible space and preparedness.**
Proposal Description	The County, fire districts, and other community partners have identified the need for a significant outreach campaign to increase knowledge about both defensible space creation and wildfire preparedness among both community members and visitors.
Coordinating Organization(s)	County Emergency Management/Local Fire Districts

Project Cost and Timeline

Estimated Cost	Anticipated Timeline
☐ Low (less than $50,000)	☐ Ongoing
☒ Medium ($50,000 to $500,000)	☐ Short (1-2 years)
☐ High ($500,000 to $5 million)	☒ Medium (3-5 years)
☐ Very High ($5 million or more)	☐ Long (5 or more years)

Potential Funding Sources	HMA (BRIC); State/Federal Funding (ODF, OSFM, USFS – Community Wildfire Defense Grant)

FEMA Activity Type (select only one; select subcategory for CC&B under BRIC)

☒ Building Resilient Infrastructure and Communities (BRIC)	☐ Flood Mitigation Assistance (FMA)
☒ Capability- and Capacity-Building (CC&B)	
☐ Project Scoping	☐ Project Scoping
☐ Building Codes	☐ Community Flood Mitigation Project
☒ Partnerships	☐ Flood Hazard Mitigation Planning
☐ Planning	☐ Individual Flood Mitigation Project
☐ Mitigation Project	☐ Technical Assistance
☐ Technical Assistance	

Hazard Type (select all that apply)

☐ Multi-Hazard	☐ Extreme Heat	☐ Volcanic Event
☐ Air Quality/Smoke	☐ Flood	☒ Wildfire
☐ Drought	☐ Landslide/Debris Flow	☐ Windstorm
☐ Earthquake/CSZ Event		☐ Winter Storm

Community Lifelines (select all that apply)

☒ Safety and Security	☒ Communications
☐ Food, Hydration, Shelter	☐ Transportation
☐ Health and Medical	☐ Hazardous Material
☐ Energy	☐ Water Systems

Risk Reduction/ Resilience Effectiveness	The creation of defensible space and other increases in awareness (e.g., home hardening, burn bans, etc.) would significantly reduce wildfire risk for residential communities and the County as a whole.
Climate Change and Other Future Conditions	Creating more defensible space would reduce risk from wildfire, which is anticipated to worsen with climate change.

Implementation Measures	• The County will work with community partners to identify key areas where the public lacks knowledge on wildfire preparedness, including defensible space creation as well as home hardening and other methods for reducing wildfire risk. • The County will then work with partners to execute a campaign utilizing a variety of mediums to reach as many residents and visitors as possible.

Population Impacted		
Disadvantaged Population: **5,368**	**Percentage Disadvantaged:** **24%**	**Total Area Population:** **22,166**

Population Impacted (select all that apply)	
☐ Limited water and sanitation access and affordability ☐ High and/or persistent poverty ☒ Rural community ☐ Jobs lost through the energy transition ☐ High energy cost burden and low energy access ☐ Racial and ethnic segregation where the segregation stems from discrimination by government entities ☐ High unemployment and underemployment	☒ Low income ☐ Linguistic isolation ☒ Disproportionate impacts from climate ☐ High transportation cost burden and/or low transportation access ☐ High housing cost burden and substandard housing ☐ Limited access to health care ☐ Distressed neighborhoods ☐ All geographic areas within Tribal jurisdictions ☐ Disproportionate environmental stressor burden and high cumulative impacts

Community Engagement	This project is entirely focused on engaging community members. County Emergency Management and community partners would be interacting with the public consistently through surveys, tabling at events, workshops, social media posts, flyers, and other methods of communication.
Leveraging Partners	County Emergency Management and local fire districts would lead this project but anticipate including the following stakeholders: cities, the Columbia Gorge Tourism Association, state agencies (including ODF and OSFM), and federal agencies (including USFS).
National Flood Insurance Program (NFIP)	This project will not involve any NFIP properties.
Infrastructure Project	This is not an infrastructure project.
Nature-Based Solutions	This project is not a nature-based solution.
Innovative Techniques	This project does not employ innovative techniques.
BCEGSR	This project does not have a BCEGSR.

Table A-7 Action Item Form – Wildfire 9.2

Proposal Title	**Develop and conduct fuels reduction projects across Hood River County, emphasizing treatment near residential communities, energy and key structures, and forestland to reduce fire intensity and aid suppression.**
Proposal Description	Local fire districts, ODF, and USFS would like to carry out a variety of fuels reduction projects to create defensible space and mitigate wildfire risk throughout the County. More information on specific projects, including a countywide map, can be found in Volume IV, Community Wildfire Protection Plan.
Coordinating Organization(s)	Fire Districts / ODF / USFS

Project Cost and Timeline

Estimated Cost	Anticipated Timeline
☐ Low (less than $50,000)	☐ Ongoing
☐ Medium ($50,000 to $500,000)	☐ Short (1-2 years)
☒ High ($500,000 to $5 million)	☒ Medium (3-5 years)
☐ Very High ($5 million or more)	☐ Long (5 or more years)

Potential Funding Sources	HMA (BRIC); State/Federal Funding (ODF, OSFM, USFS – Community Wildfire Defense Grant)

FEMA Activity Type (select only one; select subcategory for CC&B under BRIC)

☒ Building Resilient Infrastructure and Communities (BRIC)	☐ Flood Mitigation Assistance (FMA)
☐ Capability- and Capacity-Building (CC&B)	
☐ Project Scoping	☐ Project Scoping
☐ Building Codes	☐ Community Flood Mitigation Project
☐ Partnerships	☐ Flood Hazard Mitigation Planning
☐ Planning	☐ Individual Flood Mitigation Project
☒ Mitigation Project	☐ Technical Assistance
☐ Technical Assistance	

Hazard Type (select all that apply)

☐ Multi-Hazard	☐ Extreme Heat	☐ Volcanic Event
☐ Air Quality/Smoke	☐ Flood	☒ Wildfire
☐ Drought	☐ Landslide/Debris Flow	☐ Windstorm
☐ Earthquake/CSZ Event		☐ Winter Storm

Community Lifelines (select all that apply)

☒ Safety and Security	☐ Communications
☐ Food, Hydration, Shelter	☒ Transportation
☐ Health and Medical	☐ Hazardous Material
☒ Energy	☒ Water Systems

Risk Reduction/ Resilience Effectiveness	These projects would significantly reduce wildfire risk for residential communities (primarily through the creation of defensible space), public and commercial properties, and orchards and farmland.
Climate Change and Other Future Conditions	These projects would reduce risk from wildfire, which is anticipated to worsen with climate change.
Implementation Measures	Local fire districts will work with ODF and USFS to hire staff and conduct fuels reduction project as identified in Volume IV, Community Wildfire Protection Plan. These projects have already been prioritized and high priority projects will be funded first.

Population Impacted		
Disadvantaged Population: **5,368**	**Percentage Disadvantaged:** **24%**	**Total Area Population:** **22,166**

Population Impacted (select all that apply)	
☐ Limited water and sanitation access and affordability ☐ High and/or persistent poverty ☒ Rural community ☐ Jobs lost through the energy transition ☐ High energy cost burden and low energy access ☐ Racial and ethnic segregation where the segregation stems from discrimination by government entities ☐ High unemployment and underemployment	☒ Low income ☐ Linguistic isolation ☒ Disproportionate impacts from climate ☐ High transportation cost burden and/or low transportation access ☒ High housing cost burden and substandard housing ☐ Limited access to health care ☐ Distressed neighborhoods ☐ All geographic areas within Tribal jurisdictions ☐ Disproportionate environmental stressor burden and high cumulative impacts

Community Engagement	This project does not require a significant amount of community engagement. However, once funding is received, fire districts will work with community members to ensure that planned projects are focused on the areas of highest need.
Leveraging Partners	Local fire districts will lead this process with support from ODF and USFS. Other community stakeholders involved include County Emergency Management, cities, ports, and other state agencies (including OSFM).
National Flood Insurance Program (NFIP)	This project will not involve any NFIP properties.
Infrastructure Project	This is not an infrastructure project.
Nature-Based Solutions	Fuels reduction projects should be considered as nature-based solutions because they seek to reduce and mitigate wildfire risk in forestland and other properties without building new infrastructure.
Innovative Techniques	This project hopes to include innovative techniques in defensible space creation and fuels reduction work, including utilizing methods for thinning vegetation such as prescribed fires.
BCEGSR	This project does not have a BCEGSR.

Appendix B: Glossary and Acronyms

Glossary

100-year flood means a flooding condition which has a one percent chance of occurring each year. The 100-year flood level is used as the base planning level for floodplain management in the National Flood Insurance Program. https://www.fema.gov/flood-zones

Cascadia Subduction Zone (CSZ) is the area where the seafloor plate (the Juan de Fuca and Gorda) is sliding down and below the North American plate. https://pnsn.org/outreach/earthquakesources/csz

Community Wildfire Protection Plan (CWPP) In 2003, Congress passed the federal Healthy Forests Restoration Act (HFRA), which encourages local communities to collaborate with federal land managers to develop comprehensive fuels reduction strategies. This is accomplished through the creation of a Community Wildfire Protection Plan (CWPP). https://www.fs.usda.gov/managing-land/fire

Disaster Mitigation Act of 2000 (DMA2K) amended the Stafford Act, including: establishing a national program for pre-disaster mitigation; streamlining the administration of disaster relief; changing FEMA's post-disaster programs for individuals and families, including creating the Individuals and Households Program; establishing minimum standards for public and private structures; requiring local and state natural hazards mitigation plans that meet a FEMA standard (Section 322); revising - in part - FEMA funding for the repair, restoration and replacement of damaged facilities (Section 406); revising FEMA's participation in the costs of WUI fire suppression through an expanded and renamed Fire Management Assistance Grant Program (Section 420); removing the requirement for post-disaster IHMT or HMST meetings and reports; and other amendments. https://www.fema.gov/sites/default/files/2020-11/fema_disaster-mitigation-act-of-2000_10-30-2000.pd

El Niño-Southern Oscillation is a cycle in the Pacific Basin involving water and air temperatures that has a profound effect on weather patterns around the world, events typically last 6-18 months. https://www.climate.gov/news-features/blogs/enso/what-el-ni%C3%B1o%E2%80%93southern-oscillation-enso-nutshell

Firewise is a program developed by the National Fire Protection Association (NFPA) featuring templates to help communities reduce risk and protect property form the dangers of wildland fires, an interactive resource-rich website and training programs throughout the nation. http://www.firewise.org

Floodplain is a land area adjacent to a river, stream, lake, estuary, or other water body that is subject to flooding. These areas, if left undisturbed, act to store excess flood water. https://www.fema.gov/flood-zones

Floodplain Administrator/Manager is the person designated by the governing body in a flood-prone community who is responsible for making floodplain determinations for construction sites, issuing building permits for floodplain construction, ensuring compliance and other floodplain management activities. https://www.fema.gov/floodplain-managers

Floodway is the channel of a river and the portion of the floodplain that carries most of the flood flow. Floodways are usually the area where water velocities and forces are the greatest and most destructive. The National Flood Insurance Program (NFIP) definition of floodway is the channel of a river or other watercourse and adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot. NFIP regulations, adopted in local ordinances, require that floodway be kept open so that flood flows are not obstructed or diverted onto other properties. https://www.fema.gov/flood-zones

Goal 7 of the statewide land use planning program calls for local comprehensive plans to include inventories, policies and implementing measures to guide development in hazard areas thereby reducing losses from flooding, landslides, earthquakes, tsunamis, coastal erosion and wildfires. https://www.oregon.gov/lcd/OP/Pages/Goal-7.aspx

Hazard is any situation that has the potential of causing damage to people, property or the environment.

Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. (44 CFR 201.2) https://www.fema.gov/hazard-mitigation-planning

Hazard Mitigation Grant Program is the program authorized under Section 404 of the Stafford Act and implemented at 44 CFR Part 206, Subpart N, which authorizes funding for certain mitigation measures identified through the evaluation of natural hazards conducted under Section 322 of the Stafford Act (44 CFR 201.2). https://www.fema.gov/hazard-mitigation-grant-program

Hazus-MH (HAZards United States Multi-Hazard) is a standardized loss estimation methodology that is also a FEMA software program using mathematical formulas and Geographical Information Systems (GIS) data about building stock, local geology, etc. and the location and size of potential hazards (earthquakes, floods and hurricanes) to estimate physical, economic and social impacts of disaster. https://www.fema.gov/hazus

Landslide is any detached mass of soil, rock or debris that moves down a slope or a stream channel. https://www.oregongeology.org/Landslide/landslidehome.htm

LiDAR (Light Detection and Ranging) is an optical remote sensing technology that can measure the distance to and other properties of a target, by illuminating the target with light, often using pulses from a laser. http://www.oregongeology.org/lidar/

Major disaster is any natural catastrophe including any hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm or drought, or, regardless of cause, any fire, flood, or explosion in any part of the United States, which in the determination of the President causes damage of sufficient severity and magnitude to warrant major disaster assistance to supplement the efforts and available resources of states, local governments and disaster relief organizations in alleviating the damage, loss, hardship, or suffering caused thereby (44 CFR 206.2). https://www.fema.gov/disasters

National Fire Plan is a federal program that helps manage the impact of wildfires on communities, it has five main components: (1) firefighting, (2) rehabilitation and restoration, (3) hazardous fuel reduction, (4) community assistance and (5) accountability. https://www.hsdl.org/?abstract&did=480165

National Flood Insurance Program is the program run by the federal government to improve floodplain management, to reduce flood-related disaster costs and to provide low cost flood insurance for residents of flood-prone communities. https://www.fema.gov/national-flood-insurance-program

Natural Hazard Mitigation Plan is a plan resulting from a risk assessment of the nature and extent of vulnerability to the effects of natural hazards present in a geographic area and actions needed to minimize future vulnerability to those hazards, especially a plan developed and adopted which meets the requirements of 44 CFR Part 201.4/5/6. https://www.fema.gov/hazard-mitigation-planning

Public Assistance is the part of the disaster assistance program in which the federal government supplements the efforts and available resources of state and local governments to restore certain public facilities or services. Public Assistance includes emergency assistance, debris removal, community disaster loans and the permanent repair, restoration or replacement of public and designated private nonprofit facilities damaged or destroyed by a major disaster and is further described under Section 406 of the Stafford Act. https://www.fema.gov/public-assistance-local-state-tribal-and-non-profit

Senate Bill 762 in 2021 directed the Oregon Department of Consumer and Business Services and the Oregon State Fire Marshal to update building codes and defensible space requirements for structures located in the Wildland Urban Interface (WUI) rated in high and extreme risk areas. As regulations are put in place to implement this legislation, Hood River County should implement these updated requirements through their building and land use codes. https://www.oregon.gov/odf/pages/sb762.aspx

Special Flood Hazard Area is the land area covered by the floodwaters of the base flood and is where the NFIP's floodplain management regulations must be enforced; also the area where the mandatory purchase of flood insurance applies. https://www.fema.gov/flood-zones

Stafford Act is the Robert T. Stafford Disaster Relief and Emergency Assistance Act (PL 100-707, which amended PL 91-606 and PL 93-288; then was further amended by PL 106-390, the Disaster Mitigation Act of 2000; and PL 109-295, the Post-Katrina Emergency Reform Act). https://www.fema.gov/robert-t-stafford-disaster-relief-and-emergency-assistance-act-public-law-93-288-amended

State Hazard Mitigation Officer is the official representative of state government who is the primary point of contact with FEMA, other federal agencies and local governments in mitigation planning and implementation of mitigation programs and activities required under the Stafford Act. In Oregon, this person is on the staff of Oregon Emergency Management. https://www.fema.gov/state-hazard-mitigation-officers

State Interagency Hazard Mitigation Team is a team of state agency officials who, in 1997, Governor Kitzhaber directed Oregon Emergency Management to make a permanent body and establish regular meeting dates to understand losses arising from natural hazards and coordinate recommended strategies to mitigate loss of life, property and natural resources. http://www.oregon.gov/oem/Councils-and-Committees/Pages/IHMT.aspx

Subduction zone is the area between two converging plates, one of which is sliding down and below the other. http://www.oregongeology.org/sub/publications/ims/ims-028/unit20.htm

Subduction zone earthquake is an earthquake along the subduction zone. In Oregon, this refers to the Cascadia Subduction Zone (CSZ), which lies offshore of the Oregon, California, and Washington Coasts. https://www.oregongeology.org/pubs/ims/ims-028/unit20.htm

Vulnerability is the susceptibility of life, property, or the environment to damage if a hazard manifests to potential.

Wildfire hazard zone (OAR Chapter 629, Division 44) is the portion of a local government jurisdiction that has been determined to be at risk of a catastrophic wildfire. https://secure.sos.state.or.us/oard/displayChapterRules.action?selectedChapter=82

Wildland-urban interface (WUI) is an area where structures are adjacent to or are intermingled with natural vegetation fuels which is prone to the occurrence of wildland fires. https://www.usfa.fema.gov/wui/

Acronyms

ASFPM – Association of State Floodplain Managers

BLM – Bureau of Land Management

CSZ – Cascadia Subduction Zone

CWPP – Community Wildfire Protection Plan

DEQ – Department of Environmental Quality

DLCD – Oregon Department of Land Conservation and Development

DOGAMI – Oregon Department of Geology and Mineral Industries

FEMA – Federal Emergency Management Agency

FMA – Flood Mitigation Assistance

HMA – Hazard Mitigation Assistance

HMGP – Hazard Mitigation Grant Program

HRC – Hood River County

NFPA – National Fire Protection Association

ODF – Oregon Department of Forestry

OEM – Oregon Department of Emergency Management

OPRD – Oregon Parks and Recreation Department

OWRD – Oregon Water Resourced Department

RFPD – Rural Fire Protection District

SFHA – Special Flood Hazard Area

SRGP – Seismic Rehabilitation Grant Program

USFS – United States Forest Service

Appendix C: Planning and Public Process

This appendix describes the changes made to the 2018 Hood River County Multi-Jurisdictional Natural Hazard Mitigation Plan (NHMP) during the 2025 NHMP update process.

Project Background

Hood River County, the cities of Cascade Locks and Hood River, and five special districts (the Port of Cascade Locks, the Port of Hood River, the Hood River County Library District, Hood River County School District, and the West Side Rural Fire Protection District) partnered with the Oregon Partnership for Disaster Resilience (OPDR) to update the multi-jurisdictional 2018 Hood River County NHMP. The Disaster Mitigation Act of 2000 requires communities to update their mitigation plans every five years to remain eligible for funding via disaster and non-disaster grants, Building Resilient Infrastructure and Communities (BRIC) program, Flood Mitigation Assistance (FMA) program, and Hazard Grant Mitigation Program (HMGP). A Federal Emergency Management Agency grant funded the plan update with non-federal match provided by the Oregon Legislature.

OPDR and the Steering Committee made several changes to update and consolidate the previous NHMP. Three special districts were added to the NHMP with this update: the Hood River County School District, the West Side Rural Fire Protection District, and the Hood River County Library District. Major changes are documented and summarized in this appendix.

NHMP Update Changes

The sections below only discuss *major* changes made to the NHMPs during the NHMP update process. Major changes include the replacement or deletion of large portions of text, changes to the NHMP's organization, new mitigation action items, and the addition of jurisdictional addenda to the NHMP. If a section is not addressed in this memo, then it can be assumed that no significant changes occurred.

The NHMP's format and organization have been altered to fit within OPDR's NHMP templates. Table C-1 lists the 2018 Hood River County NHMP section names and the corresponding 2025 section names, as updated (major Volumes are highlighted). This memo will use the 2025 NHMP update section names to reference any changes, additions, or deletions within the NHMP. As the table indicates, the structure of the NHMP has changed significantly, most notably via the merging of Volume II: Hazard Annex into Volume 1, Section 2: Hazard Identification; the addition of several additional addenda; the removal of the OCCRI Report to reduce plan length; and the incorporation of the Community Wildfire Protection Plan as a formal volume of the NHMP.

Table C-1 Changes to NHMP Organization

2018 Hood River County NHMP	2024 Hood River County NHMP/CWPP
Special Thanks & Acknowledgements	Special Thanks & Acknowledgements
Table of Contents	Table of Contents
FEMA Review Tool	FEMA Review Tool
Approval Letters and Resolutions	Approval Letters and Resolutions
Volume I: Basic Plan	**Volume I: Basic Plan**
Executive Summary	Plan Summary
Section 1: Introduction	Section 1: Introduction
Section 2: Risk Assessment	Section 2: Hazard Identification and Risk Assessment
Section 3: Mitigation Strategy	Section 3: Mitigation Strategy
Section 4: Plan Implementation and Maintenance	Section 4: Plan Implementation and Maintenance
Volume II: Hazard Annex	**-**
Winter Storm	-
Wildfire	-
Earthquake	-
Landslide	-
Drought	-
Flood	-
Windstorm	-
Volcano	-
Volume III: Jurisdictional Addenda	**Volume III: Jurisdictional Addenda**
City of Cascade Locks	City of Cascade Locks
Port of Cascade Locks	Port of Cascade Locks
City of Hood River	City of Hood River
Port of Hood River	Port of Hood River
-	Hood River County School District
-	West Side Rural Fire Protection District
-	Hood River County Library District
Volume IV: Appendices	**Volume II: Appendices**
Appendix A: Action Items Form	Appendix A: Action Item Forms
Appendix B: Planning and Public Process	Appendix B: Glossary and Acronyms
Appendix C: Community Profile	Appendix C: Planning and Public Process
Appendix D: Economic Analysis	Appendix D: Community Profile
Appendix E: Grant Programs and Resources	Appendix E: Economic Analysis
Appendix F: Public Outreach Survey	Appendix F: Grant Programs and Resources
Appendix G: Climate Change Influence on Natural Hazards: Overview and Hood River County Projections	Appendix G: Community Survey
-	**Volume IV: Community Wildfire Protection Plan**

Front Pages

- The NHMP's cover has been updated.
- Acknowledgements have been updated to include the 2025 project partners and planning participants.
- The FEMA approval letter, review tool, and county, city, and special district documents of adoption are included.

Volume I: Basic Plan

Volume I provides the overall NHMP framework for the 2025 Multi-jurisdictional NHMP update. Volume I includes the following sections:

Plan Summary
The 2025 NHMP includes an updated NHMP summary that provides information about the purpose of natural hazard mitigation planning and describes how the NHMP will be implemented.

Section 1: Introduction
Section 1 introduces the concept of natural hazard mitigation planning and answers the question, "Why develop a mitigation plan?" Additionally, Section 1 summarizes the 2025 NHMP update process, and provides an overview of how the NHMP is organized. Section 1 also outlines the layout of the NHMP update, which has been altered as described herein.

Section 2: Hazard Identification and Risk Assessment
This section consists of three phases: hazard identification, vulnerability assessment, and risk analysis. The first phase involves the identification of hazard geographic extent, its intensity, and probability of occurrence. The second phase attempts to predict how different types of property and population groups will be affected by the hazard. The third phase involves estimating the damage, injuries, and costs likely to be incurred in a geographic area over a period. Changes include:

- The entirety of Volume II: Hazard Annex from the 2018 NHMP has been incorporated into this section to streamline the plan.
- Two additional hazards were added: air quality/smoke and extreme heat.
- Hazard identification, characteristics, history, probability, vulnerability, and hazard specific mitigation activities were updated. Outdated and extraneous information was removed and links to technical reports were added as a replacement where relevant.
- Links to specific hazard studies and data are embedded directly into the NHMP where relevant and available.
- NFIP information was updated.
- The hazard vulnerability analysis has been updated for the county. City and special district hazard vulnerability is included with more detail within Volume III.

Section 3: Mitigation Strategy

This section provides the basis and justification for the mission, goals, and mitigation actions identified in the NHMP. The mission and goals were reviewed in relation to the State NHMP. The County and Steering Committee agreed to adopt a new, actionable mission; clearly define each of the plan goals; and add Plan Goal 7 to center equity in their mitigation work.

Volume I, Section 3 details the County's mitigation strategy. Table C-2 includes the status of and changes to actions since the previous NHMP. All actions were renumbered in this update. Actions identified as still relevant are included in the updated action plan (Table 3-1).

Note that the 2018 NHMP did not include a Multi-Hazard #6 (proceeding straight from #5 to #7), so this has been omitted from the table to avoid further confusion.

Previous NHMP Actions that are Complete:

Multi-Hazard #3: *Partner with Oregon Health Authority, health care sector, and Hood River County Public Health to utilize vulnerable populations database.* Complete. The County has developed an active partnership to access and deploy this database.

Earthquake #2: *Improve knowledge of earthquake impacts (Blue Ridge Fault and CSZ).* Complete. The 2021 update to the 2018 DOGAMI Risk Report incorporated additional information about the risks and impacts associated with these and other faults in the region.

Previous NHMP Actions that are Not Complete and No Longer Relevant:

Landslide #1: *Improve understanding of landslide risk in Eagle Creek Burn Scar.* Not Complete. This work is being undertaken as part of a broader 2024-25 DOGAMI-led project to map landslide risk in the region and will be incorporated into the NHMP once complete.

Table C-2 Status of All Hazard Mitigation Actions in the Previous Plan

2018 Action Item	2025 Action Item	Status	Still Relevant? (Yes/No)
Multi-Hazard Mitigation Strategies			
Multi-Hazard #1	1.1	Not Complete	Yes
Multi-Hazard #2	1.5	Not Complete	Yes
Multi-Hazard #3	-	Complete	No
Multi-Hazard #4	1.3	Not Complete	Yes
Multi-Hazard #5	1.6	Not Complete	Yes
Multi-Hazard #7	1.7	Not Complete	Yes
-	1.2	New	-
-	1.4	New	-
-	1.8	New	-
-	1.9	New	-
-	1.10	New	-
-	1.11	New	-

Table C-2 Status of All Hazard Mitigation Actions in the Previous Plan

2018 Action Item	2025 Action Item	Status	Still Relevant? (Yes/No)
-	1.12	New	-
-	1.13	New	-
-	1.14	New	-
-	1.15	New	-
-	1.16	New	-
Air Quality Mitigation Strategies			
-	2.1	New	-
-	2.2	New	-
-	2.3	New	-
Drought Mitigation Strategies			
Drought #1	3.1	Not Complete	Yes
Earthquake/CSZ Event Mitigation Strategies			
Earthquake #1	4.1	Not Complete	Yes
Earthquake #2	-	Complete	No
Extreme Heat Mitigation Strategies			
-	5.1	New	-
Flood Mitigation Strategies			
-	6.1	New	-
Landslide/Debris Flow Mitigation Strategies			
Landslide #1	-	Not Complete	No
-	7.1	New	-
-	7.2	New	-
Volcanic Event Mitigation Strategies			
-	8.0	New	-
Wildfire Mitigation Strategies			
Wildfire #1	9.3	Not Complete	Yes
Wildfire #2	9.4	Not Complete	Yes
Wildfire #3	9.5	Not Complete	Yes
-	9.1	New	-
-	9.2	New	-
-	9.6	New	-
Windstorm Mitigation Strategies			
-	10.0	New	-

Table C-2 Status of All Hazard Mitigation Actions in the Previous Plan

2018 Action Item	2025 Action Item	Status	Still Relevant? (Yes/No)
Winter Storm Mitigation Strategies			
Winter Storm #1	11.1	Not Complete	Yes
-	11.2	New	-

Section 4: Plan Implementation and Maintenance
Hood River County Emergency Management will continue to convene and coordinate the County Steering Committee. Documentation for the city and special district Steering Committees is contained within Volume III.

Volume II: Appendices

Below is a summary of the appendices included in the 2025 NHMP. Note that the OCCRI Report included in the 2018 NHMP was removed from this update to reduce plan length.

Appendix A: Action Item Forms
This appendix was updated with OPDR's new action item form template, definitions for terms within the template, and new forms for high priority actions.

Appendix B: Glossary and Acronyms
This appendix was updated with this version of the NHMP and includes common words and their acronyms found throughout the NHMP.

Appendix C: Planning and Public Process
This planning and public process appendix reflects changes made to the Hood River County NHMP and documents the 2025 planning and public process.

Appendix D: Community Profile
The community profile has been updated.

Appendix E: Economic Analysis of Natural Hazard Mitigation Projects
Updates are provided for the economic analysis of natural hazard mitigation projects.

Appendix F: Grant Programs and Resources
Updates were made to grant programs and resources.

Appendix G: Community Survey
This survey was administered during the development of the NHMP by OPDR. This survey was utilized to inform the development of mitigation strategies and identification of community vulnerabilities. It is provided herein as documentation and to serve as a resource for future planning efforts.

Volume III: Jurisdictional Addenda

The cities of Cascade Locks and Hood River and the port of Cascade Locks and Hood River opted to participate again and include addenda in the Hood River NHMP. Additionally, three special districts were added to the NHMP with this update: the Hood River County Library District, Hood River County School District, and the West Side Rural Fire Protection District.

Where appropriate, information has been consolidated and a reference is provided within the addenda to the appropriate NHMP section. New data and hazard information was included for the participating cities and actions were reviewed, revised, and prioritized as described in the addenda.

Public Participation Process

Hood River County is dedicated to directly involving the public in the review and update of the NHMP. Although members of the Steering Committee represent the public to some extent, the residents of Hood River County were provided the opportunity to provide feedback about the NHMP. The NHMP will undergo review by the County NHMP Steering Committee on a semiannual basis and by the city and special district steering committees on an annual basis.

Hood River County made the NHMP available via their website throughout the update process and the updated NHMP was made available for public review and comment through the FEMA review period. The participating cities and special districts were included within the press release provided to the public (see following page).

Engagement Summary

The planning process provided a variety of opportunities for the public and stakeholders to be involved.

Work Session: Hood River County Board of Commissioners
On November 18, 2024, the Hood River County Emergency Manager briefed the Hood River County Board of Commissioners on the updates to the County Multi-Jurisdictional NHMP.

The Hood River County Emergency Manager also presented the draft Multi-Jurisdictional NHMP and a method to provide content and feedback at the November 25, 2024, meeting of the City of Hood River City Council.

The following agencies and organizations were provided multiple opportunities to inform the plan's content through a variety of mechanisms including the opportunity for comment on the draft plan via the meetings referenced above. The agencies and organizations represent local and regional agencies involved in hazard mitigation activities, those that have the authority to regulate development, neighboring communities, representatives of businesses,

academia, and other private organizations, and representatives of nonprofit organizations, including community-based organizations, that work directly with and/or provide support to vulnerable populations. Additional agencies and organizations are identified within each jurisdictional addendum.

- Hood River County Board of Commissioners
- Hood River County Administration
- Hood River County Planning
- Hood River County Emergency Management
- City of Hood River
- City of Cascade Locks
- Port of Hood River
- Port of Cascade Locks
- Hood River Public Health
- Mid-Columbia Economic Development District
- 911 User Advisory Board
- OSU Extension
- Oregon Parks and Recreation District
- Oregon Department of Geology and Mineral Industries (DOGAMI)
- Hood River Soil and Water Conservation District
- American Red Cross
- Hood River County School District
- Columbia Gorge Community College
- Pacific Power
- Hood River Parks & Recreation
- Oregon Department of Human Services
- Oregon Department of Emergency Management
- Farmers Irrigation District
- Middle Fork Irrigation District
- Crystal Springs
- Columbia Area Transit
- Columbia Gorge Community Organizations Active in Disaster
- Gorge Health Council
- The Next Door
- Providence Hood River Memorial Hospital
- Oregon Food Bank
- Columbia River Inter-Tribal Fish Commission
- Wasco County
- Clackamas County
- Klickitat County (WA)
- Age +Adult Center
- Oregon State Fire Marchall
- Oregon Department of Transportation
- United States Forest Service
- Hood River Forest Alliance
- Oregon Department of Forestry
- FISH Food Bank

Additionally, a survey was provided to the public during the early stages of the update cycle (Volume II, Appendix G). Information from this survey was used by the Steering Committee to help inform their risk assessment and mitigation strategies and was incorporated into several sections of the Community Profile (Volume II, Appendix D).

During the public review period there were several comments received that have been integrated into revisions of the NHMP. OPDR, the County Emergency Manager, and members of the Steering Committee also provided final edits and other updates to the NHMP prior to the public review period as reflected in the final document. The County Emergency Manager

solicited public comment on both the NHMP and the Community Wildfire Protection Plan (CWPP) on four different local radio stations.

COAD Engagement

The community lifelines listed on the Hood River County EMS Webmap were informed by a Community Asset Mapping process OPDR facilitated between September and November 2024. OPDR partnered with Hood River County, Wasco County, the Columbia Gorge Community Organizations Active in Disaster (COAD), and public and private stakeholders throughout the Columbia Gorge region to conduct a pilot process where community members were asked to submit important assets for both hazard mitigation and recovery purposes. The resulting assets collected by this ground-up stakeholder engagement approach included an array of data submitted via ArcGIS's Survey123 tool such as location, reasons for importance, and urgency of repair in the aftermath of a natural hazard event. These assets - which included churches, grocery stores, and public parks - were subsequently incorporated into the Hood River County EMS Webmap.

Website Posting

The draft NHMP was made available for public comment for 15 days from November 19 to December 4, 2024. Members of the public were encouraged to send their feedback to an email address created for this project: NHMP@hoodrivercounty.gov.

This information was shared on Hood River County social media platforms and posted on the Hood River County Emergency Management website (see Figure C-1).

Figure C-1 Website Posting for Public Comment

Over the past year, Hood River County Emergency Management has been working to update the County's Natural Hazards Mitigation Plan.

We worked with Oregon's Departments of Forestry, Emergency Management, Geology and Mineral Industries, and Transport; the cities and ports of Hood RIver and Cascade Locks, special districts, fire departments, and all County departments to create a comprehensive document.

This work was funded by a FEMA grant, and was developed in partnership with the Oregon Partnership for Disaster Resilience.

The plan outlines community risk for natural hazards and actions local agencies can take to reduce risks BEFORE the next wildfire, winter storm, flood or earthquake.

For this plan we added two new hazards: extreme heat and air quality / smoke.

The team ranked the natural hazards by both the liklihood of an event and its impact to the community:

1. Wildfire
2. Winter storm
3. Drought
4. Extreme heat
5. Crustal earthquake
6. Air quality / smoke
7. Landslide / debris flow
8. CSZ event
9. Windstorm
10. Flood
11. Volcanic event

You can read the draft NHMP here as well as the annexes for the other jurisdictions that participated.

- NHMP Volume I-II DRAFT
- City of Cascade Locks Addendum DRAFT
- City of Hood River Addendum DRAFT
- HRC Library District Addendum DRAFT
- HRC School District Addendum DRAFT
- Port of Cascade Locks Addendum DRAFT
- Port of Hood River Addendum DRAFT
- West Side RFPD Addendum DRAFT

We are seeking feedback! If you have comments about the plan, or think we have missed something, please email: NHMP@hoodriverCounty.gov

Comments received before December 5, 2024 will be integrated into the plan.

Comments received after that date will be integrated into the next update.

Hood River County Steering Committee

Steering Committee members possessed familiarity with the community and hazard characteristics of Hood River County. The Steering Committee guided the update process through NHMP mission and goal confirmation, hazard risk assessment completion, action item review and development, and other information sharing. The Steering Committee met formally on the following dates (virtually, unless otherwise indicated):

Meeting #1: January 26, 2024 – Kickoff
The Steering Committee was provided updates on hazard mitigation planning and the NHMP update process and timeline. They also began brainstorming potential mitigation projects.

Meeting #2: February 28, 2024
The Steering Committee made changes to the NHMP mission and goals, drafted the public engagement plan, and reviewed recent hazard history and demographic developments.

Meeting #3: April 3, 2024
The Steering Committee completed the NHMP goal update, confirmed the public engagement plan, and began developing the hazard risk assessment.

Meeting #4: May 1, 2024 – In-Person
The Steering Committee continued work on the hazard risk assessment and began identifying community lifelines and potential mitigation projects on maps of the County and both cities. This meeting was held in-person at the Hood River County Building in the City of Hood River.

Meeting #5: May 22, 2024
The Steering Committee was provided an update on the public survey before completing the hazard risk assessment, continuing work on community lifeline identification, and starting to brainstorm projects for the mitigation strategy.

Meeting #6: June 26, 2024
The Steering Committee was provided with a presentation from DOGAMI regarding their landslide risk mapping project in the County. They also completed the mitigation strategy, including action item prioritization, and continued discussing community lifelines.

Meeting #7: September 17, 2024 – In-Person
The Steering Committee completed a final review of the mitigation strategy and was provided information on potential funding opportunities for mitigation projects.

In addition to the meetings listed above, there were numerous informal meetings and email exchanges between the County, OPDR, Steering Committee members, and other local, state, and federal agencies. For jurisdiction-specific Steering Committee meetings, see the applicable addenda in Volume III.

The following pages contain copies of each meeting agenda (without any attachments or supplmental presentations).

UNIVERSITY OF OREGON

HOOD RIVER PROJECT KICK-OFF CALL

Meeting: **Hood River NHMP/CWPP Update: Project Kick-Off**
Date: **1/26/2024**
Time: 3:30 – 4:30pm
Location: Zoom

Meeting Goals:

- Introduction of UO Team to Steering Committee members
- Discuss project scope, key deliverables and deadlines, and capabilities assessment.
- Confirm next steps and recurring meetings for Steering Committee.

I. Introductions **10 minutes**
   a. UO Team (Oregon Partnership for Disaster Resilience)
   b. Steering Committee

II. Project Background **15 minutes**
   a. Goals and uses of NHMP and CWPP
   b. Process for and benefits from updating both plans and required public engagement
   c. Requirements of the Steering Committee

III. Jurisdictional Addenda (NHMP) **10 minutes**
   a. Brief overview of initial information gleaned from capabilities assessments and what else we need
   b. Share plan to schedule in-depth follow-up calls with each jurisdiction to discuss assessments, risk identification, and mitigation projects

IV. Brainstorming Activity **20 minutes**
   a. What natural hazards are you concerned about in Hood River County?
   b. What natural hazards are you concerned about in your jurisdictions? How do these differ from the county at large?
   c. What mitigation projects or plans are needed?

V. Next Steps **5 minutes**
   a. Brief overview of project timeline
   b. Setting time for recurring monthly virtual meetings

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HOOD RIVER NHMP/CWPP STEERING COMMITTEE

Meeting: **Hood River NHMP/CWPP Steering Committee: February Meeting**
Date: **2/28/2024**
Time: 11:00am – 12:00pm
Location: Zoom

Meeting Goals:

- Confirm NHMP mission and goals
- Review draft public engagement plan
- Discuss recent hazard history and key demographic information

I. Review of Kickoff Meeting **5 minutes**
   a. Reminder to fire/water/special districts to join NHMP via addenda

II. NHMP: Mission and Goals **15 minutes**
   a. Evaluate 2018 NHMP Mission and Goals and decide whether any changes are needed, including the addition of an equity goal

III. Public Engagement Plan **15 minutes**
   a. Confirm plan for NHMP & CWPP public engagement

IV. Recent Hazard History **10 minutes**
   a. Review list of disaster declarations for Hood River County

V. Key Demographic Information **10 minutes**
   a. Discuss major developments since 2018, including:
      i. Population growth and associated trends
      ii. Impacts on vulnerable populations (e.g., non-English speakers, renters, disabled people, and seniors)

VI. Next Steps **5 minutes**
   a. **Next meeting: Wednesday, April 3, from 11am – 12pm**
   (note: there are two April meetings in lieu of a March meeting)

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HOOD RIVER NHMP/CWPP STEERING COMMITTEE

Meeting: **Hood River NHMP/CWPP Steering Committee: April Meeting**
Date: **4/3/2024**
Time: 11:00am – 12:00pm
Location: Zoom

Meeting Goals:

- Review NHMP goal statements and survey distribution plan
- Begin discussion on hazard risk assessment
- Confirm future virtual/in-person meeting schedule

I. Review of Kickoff Meeting **15 minutes**

a. Reminder to special districts to join NHMP via addenda **by Friday 4/5**
b. Confirmation of NHMP goal statements and survey distribution plan

II. Hazard Risk Assessment **35 minutes**

a. Presentation on the 2018 Hood River County NHMP Hazard Risk Assessment and 2021 DOGAMI risk report
b. Initial conversation on potential changes

III. Scheduling **5 minutes**

a. Discussion of proposed in-person meeting(s) for both the Steering Committee (May 1) and individual jurisdictions (April 30 – May 2)

IV. Next Steps **5 minutes**

a. **Next meeting: Wednesday, May 1, from 11am – 12pm** (note: there is a second May meeting on Wednesday, May 22)
b. **Please confirm interest in creating an NHMP addenda by Friday 4/5**

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HOOD RIVER NHMP/CWPP STEERING COMMITTEE AGENDA

Meeting: **Hood River NHMP/CWPP Steering Committee: May Meeting**
Date: **5/1/2024**
Time: 11:00am – 12:30pm
Location: Board of Commissioners Conference Room
601 State Street, Hood River, OR 97031
Teams

Meeting Goals:

- Provide update on NHMP/CWPP update progress
- Complete hazard risk assessment
- Begin identification of community lifelines and mitigation strategies

I. Introductions and Progress Review **10 minutes**

a. Introduce new members of the Steering Committee
b. Provide overview of project progress so far, including any preliminary public survey results

II. Hazard Risk Assessment **30 minutes**

a. Discuss and confirm ratings for history, probability, vulnerability, and maximum threat for each hazard identified in the risk assessment

III. Community Lifeline/Mitigation Strategy Identification **45 minutes**

a. Review relevant maps of the county (e.g., community lifelines/ critical infrastructure, hazard risk, etc.)
b. Identify additional community lifelines and potential mitigation actions

IV. Next Steps **5 minutes**

a. **Next CWPP Meeting: Monday, May 6, from 2 – 3:30pm**
b. **Next NHMP meeting: Wednesday, May 22, from 11am – 12pm**

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HOOD RIVER NHMP/CWPP STEERING COMMITTEE AGENDA

Meeting: **Hood River NHMP/CWPP Steering Committee: Second May Meeting**
Date: **5/22/2024**
Time: 11:00am – 12:00pm
Location: Zoom

Meeting Goals:

- Provide update on NHMP/CWPP update progress and initial survey results
- Present information on and examples of mitigation projects in Oregon
- Discuss status of and next steps for community lifeline mapping/identification

I. Progress Update **15 minutes**

a. Provide update on project so far, including preliminary survey results

II. Mitigation Strategy **30 minutes**

a. Presentation on mitigation project criteria from OEM, FEMA, and DOGAMI as well as previous successes in Oregon
b. Review updated Hazard Vulnerability Assessment and table of mitigation actions identified in 2018 NHMP

III. Community Lifelines **10 minutes**

a. Discuss status of community lifeline mapping/identification and next steps for interaction

IV. Next Steps **5 minutes**

a. **Next NHMP meeting: Wednesday, June 26, from 11am – 12pm**

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HOOD RIVER NHMP/CWPP STEERING COMMITTEE AGENDA

Meeting: **Hood River NHMP/CWPP Steering Committee: June Meeting**
Date: **6/26/2024**
Time: 11:00am – 12:00pm
Location: Zoom

Meeting Goals:

- Provide information regarding DOGAMI landslide risk project
- Update countywide mitigation strategy
- Discuss next steps for community lifeline mapping

I. DOGAMI Landslide Risk **20 minutes**

a. Presentation from Bill Burns with DOGAMI regarding landslide risk mapping project for Hood River County

II. Mitigation Strategy **30 minutes**

a. Review and prioritize mitigation actions identified in 2018 NHMP and in 2024 Steering Committee / jurisdictional meetings

III. Community Lifelines **5 minutes**

a. Discuss opportunity for community lifeline mapping/identification

IV. Next Steps **5 minutes**

a. **Next NHMP meeting: Expected to occur in late August/September**

UNIVERSITY OF OREGON

HOOD RIVER NHMP/CWPP STEERING COMMITTEE AGENDA

Meeting: **Hood River NHMP/CWPP Steering Committee: September Meeting**
Date: **9/17/2024**
Time: 10:00 – 11:00am
Location: Board of Commissioners Conference Room
601 State Street, Hood River, OR 97031
Teams

Meeting Goals:

- Provide update on NHMP/CWPP update progress
- Discuss final public survey results
- Review funding sources and action item forms
- Confirm mitigation strategy

I. NHMP/CWPP Update Progress **5 minutes**
   a. Brief update on 2024 NHMP/CWPP update status, including jurisdictional addenda

II. Public Survey Results **20 minutes**
   a. Present data from public survey and discuss potential impacts on NHMP/CWPP plan components

III. Funding Projects **20 minutes**
   a. Present sample funding opportunities and action item forms

IV. Mitigation Strategy **15 minutes**
   a. Review and confirm mitigation strategy

Appendix D: Community Profile

This appendix describes Hood River County from several perspectives to help define and understand the county's sensitivity and resilience to natural hazards. Sensitivity and resilience indicators are identified through the examination of community capitals which include natural environment, social/demographic capacity, economic, physical infrastructure, community connectivity, and political capital. These community capitals can be defined as resources or assets that represent all aspects of community life. When paired together, community capitals can influence the decision-making process to ensure that the needs of the community are being met, as shown in Figure D-1.

Sensitivity factors can be defined as those community assets and characteristics that may be impacted by natural hazards, (e.g., special populations, economic factors, and historic and cultural resources). Community resilience factors can be defined as the community's ability to manage risk and adapt to hazard event impacts (e.g., governmental structure, agency missions and directives, and plans, policies, and programs).

- Political Capacity
- Natural Environment Capacity
- Social/Demographic Capacity
- Economic Capacity
- Physical Infrastructure Capacity
- Community Connectivity Capacity

The Community Profile describes the sensitivity and resilience to natural hazards of Hood River County and its incorporated cities, as they relate to each capacity. It provides a snapshot of the time when the plan was developed and will assist in developing a more resilient community. The information in this section, along with the hazard assessments in Volume I, Section 2, should be used as the local level rationale for the risk reduction actions identified in Volume I, Section 3. The identification of mitigation strategies to reduce the county's sensitivity and increase its resiliency assists in reducing overall disaster risk.

Figure D-1 Understanding Risk

Source: Oregon Partnership for Disaster Resilience.

The U.S. Census delineates areas of settled population concentrations that are identifiable by name but are not legally incorporated as Census Designated Places (CDPs). There are 3 CDPs in Hood River County, as shown in Table D-1 and Map D-1.

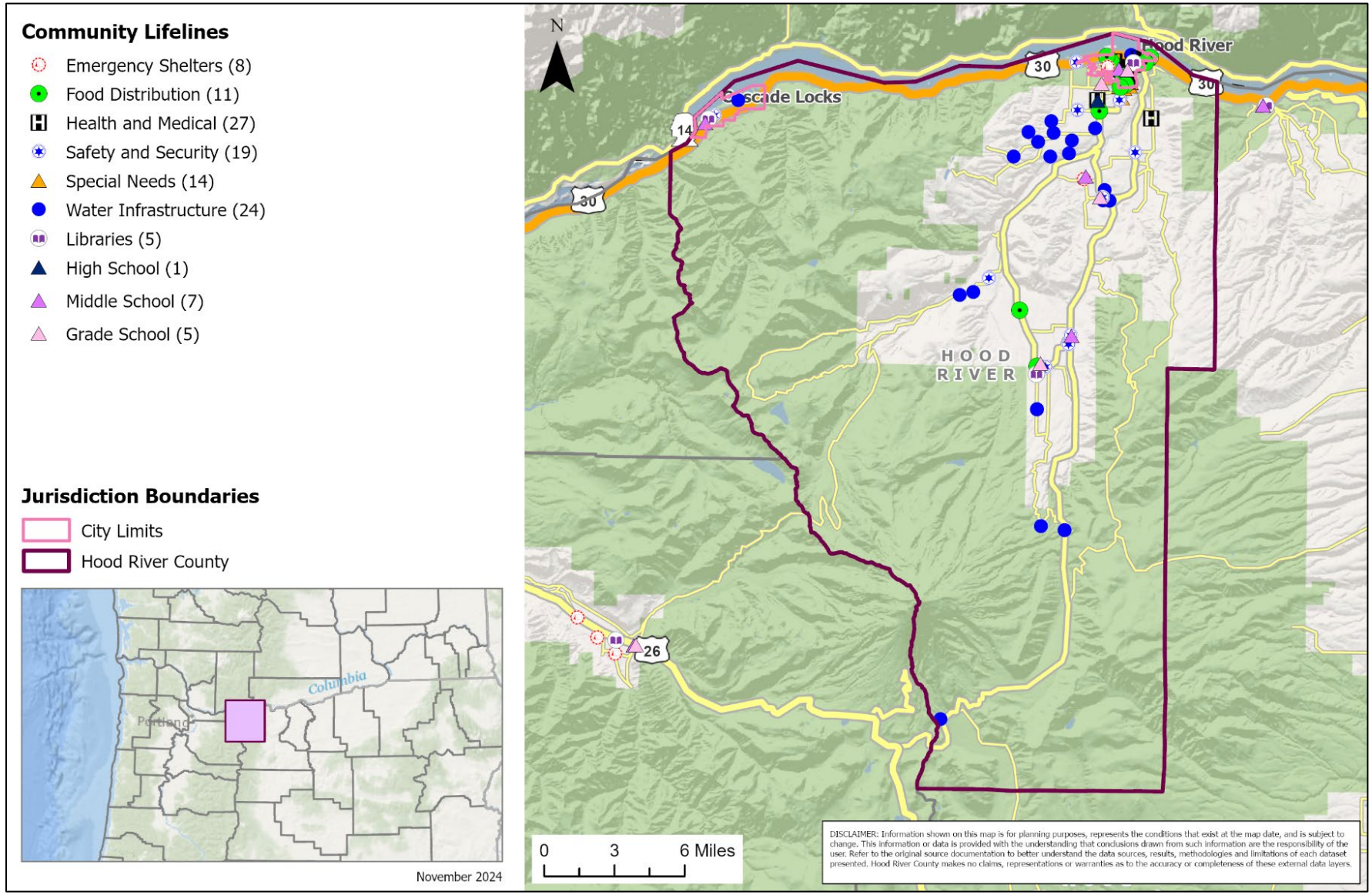
Table D-1 List of Hood River County Cities and Census Designated Places

Incorporated Cities	Unincorporated Census Designated Places
Cascade Locks	Mount Hood
Hood River	Odell
	Parkdale

Source: U.S. Census Bureau Tiger Lines Files.

The remainder of this appendix will provide detailed information for the unincorporated communities and summarized data for the incorporated cities. Detailed information for both incorporated cities participating in this NHMP – Cascade Locks and Hood River – is provided within each city's addendum in Volume III.

Map D-1 Hood River County Cities and Community Lifelines



Source: Mapping by OPDR.

Political Capacity

Political capacity is recognized as the government and planning structures established within the community. In terms of hazard resilience, it is essential for political capital to encompass diverse government and non-government entities in collaboration, as disaster losses stem from a predictable result of interactions between the physical environment, social and demographic characteristics and the built environment.[50] Resilient political capital seeks to involve various stakeholders in hazard planning and works towards integrating the Natural Hazard Mitigation Plan with other community plans, so that all planning approaches are consistent.

Government Structure

Hood River County is governed by the Board of Commissioners and a home rule charter. The County Administrator's Office works for the Board of Commissioners to facilitate service delivery in all county programs. The County Administrator serves as the Chief Executive Officer of the county and is responsible for providing overall direction to county departments and programs consistent with the policy established by the Board of Commissioners. The Board of Commissioners has five seats, including a chair and representatives from four county districts. All Commissioners are part time, and all are elected positions. The Board of County Commissioners normally meets on the third Monday of each month at 601 State Street in the City of Hood River to conduct county business.

The building at 601 State Street houses many of the departmental offices for Hood River County, including the County Administrator, 911, Emergency Management/Emergency Operations Center (EOC,) Community Development, Budget and Finance, Human Resources, Records and Assessment, Countywide Century Link communications hub and space for public meetings.

The County Courthouse at 301 State Street houses the Hood River Sherrif's Office, State offices for the Circuit Court, the District Attorney, the Juvenile Department, the Community Corrections Department, and the Hood River County Prevention Dept. Hood River County Public Works, Parks and Building Services, and Forestry Departments are housed in separate buildings at 918 18th Street, co-located with Hood River City Public Works.

The Emergency Management Department, the Sheriff's Office, Public Works, Hood River Administration, and the Board of Commissioners are responsible for ensuring that essential countywide services are restored quickly after an emergency or disaster according to its County COOP (Continuity of Operations) plan. Beyond this, Community Development and all County departments have some degree of responsibility in building overall community resilience. Each plays a role in ensuring that the county functions after an emergency or disaster and the needs of the population are met after an incident. Some divisions and departments of Hood River County government that have a more prevalent role in hazard mitigation include:

[50] Mileti, D. (1999). Disaster by Design: A Reassessment of Natural Hazards in the United States. Washington D.C.: Joseph Henry Press.

- County Administrator's Office: The County Administrator's Office works with the Board of Commissioners to facilitate service delivery across county departments and programs. The County Administrator serves as the county's Chief Executive Officer, providing overall direction consistent with the policy established by the Board of Commissioners and overseeing Budget & Finance and Human Resources as well as Department Directors that serve as essential support and deliver community services in emergencies.
- Sheriff's Office: The Sheriff's Office provides public safety services, primarily law enforcement services, for the entirety of Hood River County except for the City of Hood River. The Office oversees Patrol (including marine), Criminal Investigations, Animal Control, 911 Communications, Emergency Management and Search and Rescue and serves as Incident Command in the event of emergencies and disasters.
- Emergency Management: Hood River County's Emergency Management coordinates agency and community preparedness, mitigation, response and recovery for all natural and man-made emergencies and disasters. This division recruits and manages staff for the EOC, serves as direct support and coordination for Incident Command, and offers direct communication to state (OEM- Oregon Office of Emergency Management) and federal (FEMA) emergency response agencies. This division is state/federal EMPG funded. The EOC coordinates activities to mitigate, prepare for, respond to, and recover from major emergencies or disasters for all cities and communities in the County. The County Sheriff's Office and the County Administrator administer the Emergency Management program. The County Emergency Manager manages the EOC team. The Emergency Management system and EOC includes cities, service districts, volunteers, nonprofits, schools, government agencies at all levels and other organizations with emergency responsibilities collaboratively serving to prioritize county needs and request additional emergency support when local services are overwhelmed.
- Public Works: County's Public Works performs routine road and bridge maintenance; emergency response to road hazards and disasters; engineering; surveying; regulation, inspection and administration of work and development within or associated with the public road right of way; fleet management. The department manages construction and maintenance of 225 miles of roadway, 29 bridges and culverts, signs, and guardrails, including pavement maintenance, gravel road grading, ditch, and culvert cleaning, brushing, snow and ice removal, bridge maintenance, sign maintenance, ditch cleaning, and tree trimming efforts. In 2018 and 2019, the Public Works Department will be mapping culverts to develop a culvert replacement plan. The Public Works Department and its employees have important information and can help to prioritize projects for mitigation and should be a key partner in implementation as well.
- Public Health: Specialized health and nursing staff helps prevent disease, injury, premature death, and disability; promoting healthy lifestyles, behaviors, and environment. The team also responds to disasters, disease outbreaks and epidemics supporting the EOC and County Administration and local health care needs and facilities. Furthermore, the state-funded Health Security, Preparedness and Response Program (HSPRP) develops plans and procedures to better prepare local communities to respond, mitigate, and recover from all public health emergencies.

- Fair Grounds: These serve as a year-round entertainment venue but are also used as a staging site for fire response efforts and could be a vital emergency shelter following a disaster. Includes animal housing; large pens; infrastructure assets; office buildings; and community meetings areas as well as large open fields for staging areas.
- Community Development: The planning department promotes economic prosperity and diversity while maintaining the county's environmental quality and is primarily responsible for comprehensive land use planning and zoning in Hood River County, as well as for county building codes, code compliance, economic development, Geographical Information Technology (GIS), information technology, and veterans' services. The department's policies give a direction to planning, establish priorities for action, serve as a basis for future decisions, provide a standard by which progress can be measured, and promote a sense of community for an improved quality of life.
- Hood River County Prevention Department: This department receives and manages grant resources to help children and families in the community. They offer bilingual services and support the EOC as staff in emergencies. Because this department is in frequent contact with families and children, often thought of as vulnerable populations due to increased sensitivity to the impacts of hazard incidents, it should be a natural partner in mitigation actions for outreach efforts and to build the county's awareness of the needs of children and families.

Hood River County experiences chronic underfunding and most departments are operating with limited staff and resources. The County relies on state or federal funds for operations; these funds are often allocated to specific purposes (Sheriff's Office, Forestry, etc.), limiting applicability to mitigation projects. Local taxes and fees are limited by popular vote.

Regulatory Context: Oregon Statewide Planning Goal 7

Since 1973, Oregon has maintained a strong statewide program for land use planning. The foundation of that program is a set of 19 statewide planning goals that express the state's policies on land use and on related topics, such as citizen involvement, land use planning, and natural resources.

Most of the goals are accompanied by "guidelines," which are suggestions about how a goal may be applied. Oregon's statewide goals are achieved through local comprehensive planning. State law requires each city and county to adopt a comprehensive plan and the zoning and land-division ordinances needed to put the plan into effect. The local comprehensive plans must be consistent with the statewide planning goals. Plans are reviewed for such consistency by the state's Land Conservation and Development Commission (LCDC). When LCDC officially approves a local government's plan, the plan is said to be "acknowledged." It then becomes the controlling document for land use in the area covered by that plan.

Statewide Planning Goal 7

Goal 7: Areas Subject to Natural Disasters and Hazards has the overriding purpose to "protect people and property from natural hazards." Goal 7 requires local governments to adopt comprehensive plans (inventories, policies and implementing measures) to reduce risk to people

and property from natural hazards. Natural hazards include floods, landslides, earthquakes, tsunamis, coastal erosion, and wildfires.

To comply with Goal 7, local governments are required to respond to new hazard inventory information from federal or state agencies. The local government must evaluate the hazard risk and assess the:

- frequency, severity, and location of the hazard;
- effects of the hazard on existing and future development;
- potential for development in the hazard area to increase the frequency and severity of the hazard; and
- types and intensities of land uses to be allowed in the hazard area.

Local governments must adopt or amend comprehensive plan policies and implementing measures to avoid development in hazard areas where the risk cannot be mitigated. In addition, the siting of essential facilities, major structures, hazardous facilities, and special occupancy structures should be prohibited in hazard areas where the risk to public safety cannot be mitigated. The state recognizes compliance with

Goal 7 for coastal and riverine flood hazards by adopting and implementing local floodplain regulations that meet the minimum National Flood Insurance Program (NFIP) requirements.

Goal 7 Planning Guidelines

In adopting plan policies and implementing measures for protection from natural hazards, local governments should consider:

- the benefits of maintaining natural hazard areas as open space, recreation, and other low density uses;
- the beneficial effects that natural hazards can have on natural resources and the environment; and
- the effects of development and mitigation measures in identified hazard areas on the management of natural resources.
- Local governments should coordinate their land use plans and decisions with emergency preparedness, response, recovery, and mitigation programs.

Goal 7 Implementation Guidelines

Goal 7 guides local governments to give special attention to emergency access when considering development in identified hazard areas.

- Consider programs to manage stormwater runoff to address flood and landslide hazards.
- Consider non-regulatory approaches to help implement the goal.
- When reviewing development requests in high-hazard areas, require site specific reports, appropriate for the level and type of hazard. Reports should evaluate the risk to the site, as well as the risk the proposed development may pose to other properties.
- Consider measures exceeding the NFIP.

Existing Plan & Policies

Communities often have existing plans and policies that guide and influence land use, land development and population growth. Whenever possible, the Hood River County plans and policies seek and take advantage of opportunities to integrate hazard information and risk.

The Hood River County NHMP includes a range of recommended action items that, when implemented, should reduce the county's vulnerability to natural hazards. Many of these recommendations are consistent with the goals and objectives of the county's existing plans and policies. Linking existing plans and policies to the NHMP helps identify what resources already exist that can be used to implement the action items identified in the Plan. The following are a list of plans and policies already in place in Hood River County:

- Hood River County Comprehensive Land Use Plan
  - Adopted: February 1984; Amended: September 2011
- Hood River County Emergency Operations Plan
  - Original Release: 2006; Updated: December 2015; currently in revision
  - Cities of Cascade Locks and Hood River also adopted in August 2012
- Hood River County Continuity of Operations Plan
  - Adopted: August 2015; currently in revision
- Hood River County Hazard Identification and Vulnerability Analysis
  - Developed: November 2011 (Updated with information and analysis from the Hazard Annexes and Risk Assessment sections of this Natural Hazards Mitigation Plan)
- Hood River County Zoning Ordinances
  - Adopted: February 21, 1984, Revised: December 2016
- Subdivision Ordinance: Article 18
- Floodplain Ordinance: Article 44
- Natural Hazard specific ordinances: Articles 42, 43, 45
- Interstate 84 Exit 63 & 64 Interchange Area Management Plan
  - Adopted December 2011
- Columbia Gorge National Scenic Area Management Plan
  - Prepared: June 2005. Amended September 2011. In July 2016, the Columbia River Gorge Commission began its 10-year technical review and update process for the Management Plan
- Hood River County Transportation System Plan
  - Adopted: July 2003, Amended November 2011
  - Includes rock fall protection priorities
- Hood River County Community Wildfire Protection Plan
  - Adopted: 2006, Updated: 2013, 2025
- Mt. Hood Coordination Plan
  - Prepared: September 2005, current June 2013
- Parks and Recreation Capital Facilities Master Plan
  - Adopted: November 1998, Revised: April 8, 2005; currently in revision
- Hood River County Bicycle Plan

    - Adopted: February 2010
- Hood River County Forestry Department Recreation Trail System Master Plan
    - Adopted: December 2010
- Hood River County Forestry Department Forest Management Plan
    - Adopted: August 2015, updated 2018
- Hood River County Energy Plan
    - Adopted: March 2018
- Hood River County Building Codes
    - Updated in alignment with Oregon state started and regularly enforced
- I-84 Closure Plan (Oregon Department of Transportation)
    - Currently in draft form

Mutual Aid Agreements

Counties often rely on the resources and personnel of neighboring jurisdictions during disaster situations. Hazards often cross political boundaries, requiring cooperation between jurisdictions for emergency management. To facilitate collaboration, Hood River County participates in numerous mutual aid agreements with neighboring jurisdictions, which provide sufficient means for the county to request help from other agencies.

Synthesis

Hood River County has strong collaborations between public, private and cross-industry sectors and has integrated hazard information and risks into relevant plans and policies. The County Planning Commission and Board of County Commissioners are active and are aware of hazard risks. However, staff resources and available funds limit possible mitigation actions. It is essential for political capital to encompass diverse government and non-government entities in collaboration, as disaster losses stem from a predictable result of interactions between the physical environment, social and demographic characteristics, and the built environment.

Natural Environment Capacity

Natural environment capacity is recognized as the geography, climate, and land cover of the area such as, urban, water and forested lands that maintain clean water, air, and a stable climate.[51] Natural resources such as wetlands and forested hill slopes play significant roles in protecting communities and the environment from weather-related hazards, such as flooding and landslides. However, natural systems are often impacted or depleted by human activities adversely affecting community resilience.

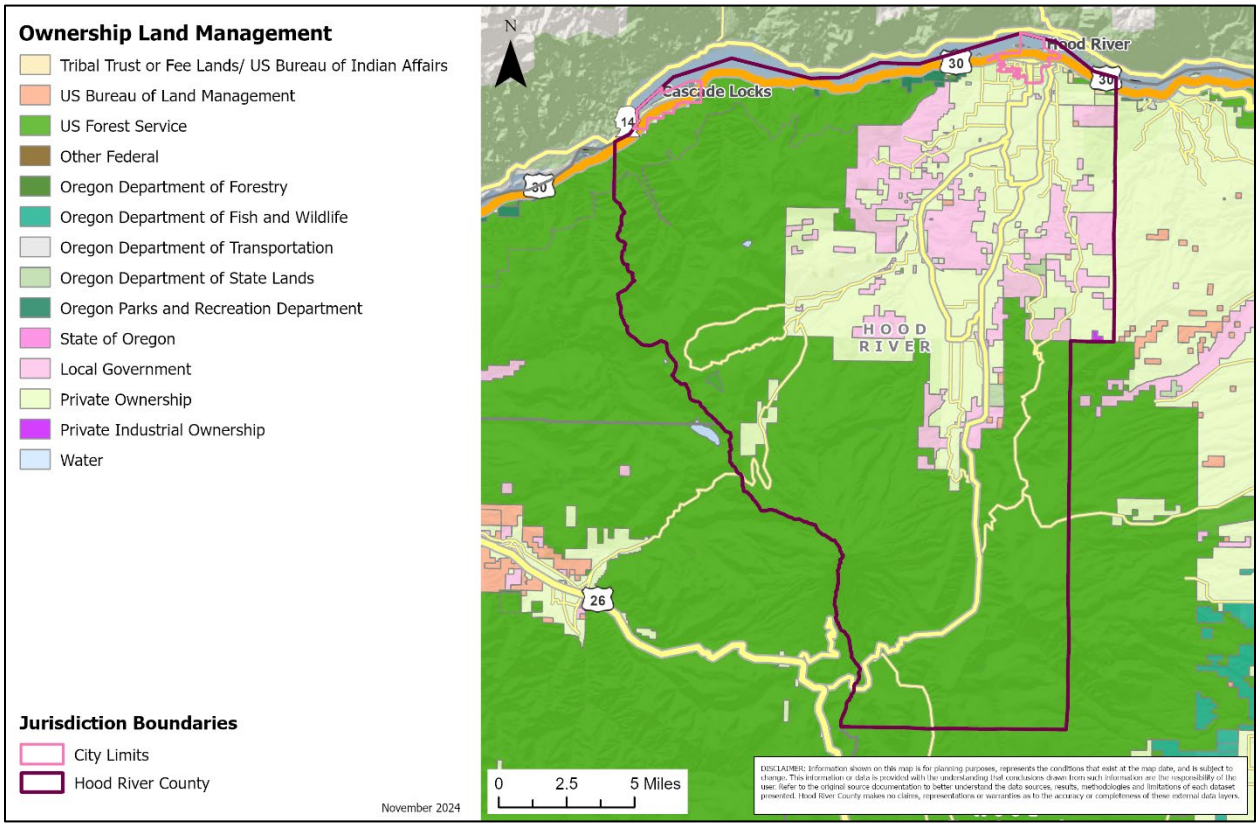
Geography

Hood River County, located in the north central section of Oregon in the Columbia Gorge, has a land area of 533 square miles, making it the second smallest county in the state in terms of geographic area. Its dimensions are a length of 32 miles from north to south, and a width varying from 23 miles, in the north, to 10.5 miles in the extreme south. It is situated on the eastern edge of Oregon's Cascade Range and west of the Umatilla Plateau, bounded by Mt Hood and the Mt Hood National Forest to the south, and the Columbia River to the north. The majestic snowcapped Mt. Hood in the southwest portion of the county, and the Columbia River Gorge to the north, provide the stunning backdrop that has made Hood River one of the most unique and beautiful places in the Northwest. The County is characterized by extreme weather, diverse terrain, and multiple recurring natural hazards. The northern boundary of the Columbia River also marks the boundary between Oregon and Washington.

Oregon, like most of the Western States, is largely owned by the federal government with a vast majority of federal lands administered by the United States Forest Service (USFS). In Hood River County, 27% of the land is privately owned (roughly 90,000 acres), while the remaining 73% is held publicly. Most of this land – 62% – is owned by the US Forest Service (roughly 208,000 acres).[52] Land owned by the USFS arcs from the west of Hood River County to the southeast and is primarily designated as the Mt Hood National Forest. Much of the private land in the county is either agricultural land or forest, and the entire county is classified as rural except for land within the City of Hood River. See Map D-2 for more detailed information.

[51] Mayunga, J. (2007). *Understanding and Applying the Concept of Community Disaster Resilience: A Capital-Based Approach.* Summer Academy for Social Vulnerability and Resilience Building.
[52] Loy, W. G., Allan, S., Meacham, J. E., & Buckley, A. R. (2001, January). *Atlas of Oregon.* University of Oregon Press/OSU Press.

Map D-2 Hood River County Land Ownership



Source: Mapping by OPDR.

Hood River County is a relatively compact physiographic unit, primarily situated in the Middle Columbia Basin. The Hood River Valley, occupying the bottom of the Hood River drainage basin, is 20 miles long, four to eight miles wide, and a graben (lying between two faults). Local relief separates the valley into two distinct units known as the Lower and Upper Valleys. The Lower Valley, the larger unit, extends about six miles southward from the Columbia River to Middle Mountain, a traverse ridge about 2,000 feet in elevation. A low ridge encloses a small bench of a few thousand acres on the north flank of Middle Mountain known as Middle Valley. The Upper Valley, located south of Middle Mountain, is approximately seven miles long and four miles wide and rises southward in elevation from 1,500 to 3,000 feet.

The surface of the entire valley was modified by glacial action. A till sheet of varying thickness was laid down over the floor and subsequently reworked by glacial melt waters and forerunners of the present rivers. The soil pattern is directly related to the nature of the local till and the action of water. Variations range from silt loam laid down in the quiet waters of a lake in the bottom lands of the Lower Valley, to loams derived from weathering of glacial outwash materials and gravelly sandy loams derived from stream deposits. In portions of the Upper Valley, soils deriving from recent volcanic ash deposits cover many outwash terraces.

Rivers

Most of Hood River County is within the drainage basin of the Hood River. The Hood River system rises on the slopes of Mt. Hood and flows north to join the Columbia River at the City of Hood River, a river distance of 39 miles and a fall of 7,500 feet from source to mouth.

Columbia River Basin

The Columbia River Basin is North America's fourth largest basin, draining a 259,000 square mile basin that includes territory in seven states (Oregon, Washington, Idaho, Montana, Nevada, Wyoming, and Utah) and one Canadian province (British Columbia). The river flows for more than 1,200 miles, from the base of the Canadian Rockies in southeastern British Columbia to the Pacific Ocean at Astoria, Oregon, and Ilwaco, Washington. The Columbia is a snow-charged river that seasonally fluctuates in volume. Its annual average discharge is 160 million acre-feet of water with the highest volumes between April and September and the lowest from December to February. From its source at 2,650 feet above sea level, the river drops an average of more than two feet per mile, but in some sections, it falls nearly five feet per mile.

The Columbia River is a complex waterway which includes regular activity of barges, windsurfers, boaters, strong currents, and windy conditions as it passes by Hood River County. It flows directly alongside the major transportation corridor I-84 and a major east-west railway (Union Pacific). The Columbia River Basin is the most hydroelectrically developed river system in the world. There are more than 250 reservoirs and around 150 hydroelectric projects in the basin, including 18 mainstream dams on the Columbia and its main tributary, the Snake River.

The US Army Corps of Engineers (the Corps) and the Bureau of Reclamation (USBR) are the owners and operators of the 31 federally owned hydro projects on the Columbia and Snake Rivers. The Bonneville Power Administration (BPA) markets and distributes the power generated from these federal dams and from Columbia Generating Station. BPA also owns and operates about 75% of the Pacific Northwest's transmission system. The dams and the electrical system are known as the Federal Columbia River Power System (FCRPS). Collectively, the Corps, USBR, and BPA generate power, protect fish and wildlife, control floods, provide irrigation and navigation, and sustain cultural resources.

Hood River

The Hood River drains 339 square miles (217,340 acres) of Hood River County and consists of three main forks (West, Middle, and East) that converge into the mainstem Hood River near River Mile 12.0 (along the Dee Highway, by Dead Point Creek Falls). The drainage contains approximately 400 miles of perennial stream channel of which an estimated 100 miles is accessible to anadromous fish. The Hood River Watershed has been fully evaluated and described in the Hood River Watershed Assessment.[53]

[53] Hood River Watershed Group. (1999, December). *Hood River Watershed Assessment.* Hood River Soil & Water Conservation District. https://hoodriverwatershed.org/wp-content/uploads/2019/10/Watershed-Councils_300_DOC_HoodR_WSassess_1999.pdf.

Five tributaries of the three forks are fed by glacial sources that drain approximately one third of the total glacial ice on Mt. Hood. During high flows, large amounts of bedload and sediment are transported in these tributaries and in the mainstem. Glacial melt increases water turbidity in the form of suspended silt and glacial flour during summer and early fall. Glacial sediment is more prevalent in the Middle and East Forks and Hood River mainstem, while glacial sediment in the West Fork is contributed by a single small tributary, Ladd Creek. Natural disturbances that contribute significant amounts of sediment to stream channels include landslides and debris torrents that originate on glacial moraines and steep slopes of Mt Hood.

Typical of many Cascade mountain streams, the hydrology of Hood River County is characterized by highly variable stream flow and rapid storm runoff. The mean annual flow for water year 2016 in the Hood River is 1,063 cubic feet per second (cfs) at Tucker Bridge (River Mile 6.1). Mean monthly flows in water year 2016 range from 274 cfs in August to a high of 1,895 cfs in March. Snowmelt generally begins during April. Many tributaries have very low summer flows, while tributaries with glacial sources maintain higher flows. Natural disturbances occurring in the Hood River watershed include floods, fires, mudflows, landslides, and insect and botanical disease epidemics. Rain-on-snow floods are common disturbance events. Periodically, natural dams created by terminal moraines at receding glaciers on Mt. Hood break and cause floods and debris flows; many of these events are triggered by intense rainstorms. Landslides are common but not frequent events.

Temperature, Precipitation, and Topography

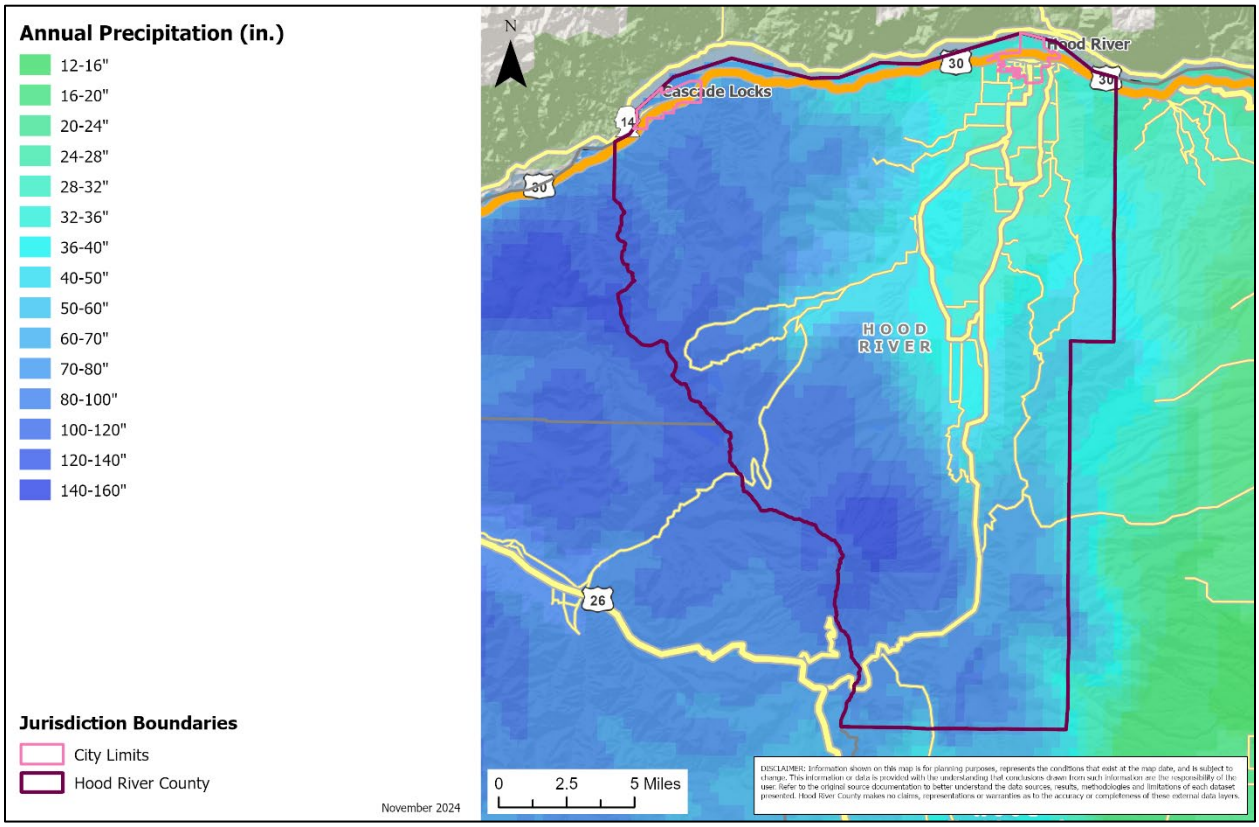
The Hood River Valley lies in a transitional zone between the marine-influenced climates west of the Cascade Mountains and the dry-continental climate of the intermountain region. Local topography create marked differences in average temperature and precipitation between the Lower and Upper Valleys, and between the east and west of the County. The Columbia River Gorge is a near sea-level water gap through which marine, often warm, air flows from the west.

The County's topography creates local differences in wind patterns; unstable climatic conditions are found in the Columbia River Gorge as a result. Contact between continental and maritime air masses produces strong wind patterns. Prevailing winds are north-westerly in summer and north-easterly in winter but are highly variable. Winds are less dominant away from the Columbia Gorge due to the Cascade Mountains. Reliable 20-30 mile per hour winds with occasional extreme gusts draw many wind sport recreationalists throughout summer.

Strong marine influences also reflect the occurrence of precipitation, more than half of which falls from November through February. The County has an average growing season of 183 days. The County is temperate in climate, with summer temperatures ranging from 50-81 degrees and winter temperatures ranging from 27-41 degrees. Average annual precipitation equals 30.6 inches per year but varies significantly throughout the County. The City of Cascade Locks receives more than twice the rainfall than the City of Hood River. Snowfall amounts averaged 36.0 inches per year with the highest amounts occurring in December and January. Note that snowfall averages are from over a hundred years of observation and thus may not be representative of current climate trends. Like rain, snowfall varies significantly throughout the County, from over a

hundred inches at Mt. Hood to zero or near zero by the Columbia River.[54] Map D-3 depicts precipitation across the County.

Map D-3 Precipitation in Hood River County



Source: Mapping by OPDR.

The current climate is changing, however, and the impacts from those changes can be examined in relationship to natural hazards. For more information on the influence of climate change on existing natural hazard events, see the Oregon Climate Change Research Institute's *Climate Change Influence on Natural Hazards in Eight Oregon Counties: Overview of County Reports.*[55]

Synthesis

Natural capital is essential in sustaining all forms of life, including human life, and plays an underrepresented role in natural hazard community resiliency planning. With four distinct mild seasons, diverse terrain, and its proximity to the Columbia Gorge, Hood River County has historically dealt with habitual severe storms and wildfires, drought, flooding, and recurring landslides. Managing natural capitals with hazards in mind can increase the County's resiliency.

[54] U.S. Climate Data. (2024). *Hood River County; Cascade Locks; Hood River.* https://www.usclimatedata.com/climate/cascade-locks/oregon/united-states/usor0434.

[55] Oregon Climate Change Research Initiative (2018, August). *Climate Change Influence on Natural Hazards in Eight Oregon Counties: Overview of County Reports.* https://www.oregon.gov/lcd/CL/Documents/OCCRI_PDM16_AllCountyOverview2018.pdf.

Social/Demographic Capacity

Social/demographic capacity is a significant indicator of community hazard resilience. The characteristics and qualities of the community population such as language, race and ethnicity, age, income, educational attainment, and health are factors that can influence the community's ability to cope, adapt to and recover from natural disasters. Population vulnerabilities can be reduced or eliminated with proper outreach and community mitigation planning.

Note: The U.S. Census Bureau American Community Survey 2018-2022 data used for this analysis has varying levels of reliability depending on geographic area, demographic group, and types of data. County- and city-level data is relatively reliable, but some Census Designated Place (CDP)-level data is less reliable. These figures are primarily used for estimation and to develop a general understanding of the demographics of a location and should not be mistaken for precise figures.

Population

According to Portland State University's Population Research Center, the population of Hood River County was 23,984 on July 1, 2022, a slight decrease from the 2016 population of 24,735. The population in the State of Oregon increased by 5% from 2016 to 2022, while the population of Hood River County decreased by 3%. The county is primarily rural and currently ranks as the 27th most populated in the State of Oregon out of 36 counties.[56] The population of the county is slightly less than neighboring Wasco County but significantly larger than Sherman County, both of which lie to the east of Hood River County and share similar social, economic, and geographic characteristics.

The largest city in Hood River County is Hood River, with a population of 8,378; this is an 8% increase from 2016. Cascade Locks, the other incorporated city, has a population of 1,399, which represents a 12% growth from 2016. The three CDPs in the county are Odell (3,003), Mount Hood (360), and Parkdale (213), with the former two growing 21% and 51% since 2016, while the latter has shrunk 60% from 2016. The remaining portion of the county lying outside the two incorporated cities and three CDPs had a population of 10,541 in 2022, which is a 16% decrease since 2016.

Table D-2 describes the population change in Hood River County and each of the five jurisdictions between 2016 and 2022.

[56] Population Research Center. (2023, April). Annual Population Estimates. Portland State University. https://www.pdx.edu/population-research/.

Table D-2 Change in Population, 2016-2022

Jurisdiction	2016		2022		Change (2016-2022)		
	Number	Percent	Number	Percent	Number	Percent	AAGR
Oregon	4,076,350	100%	4,281,851	100%	205,501	5%	0.8%
Sherman County	1,795	<1%	1,938	<1%	143	8%	1.3%
Wasco County	26,700	1%	26,794	1%	94	<1%	0.1%
Hood River County	24,735	1%	23,894	1%	-841	-3%	-0.6%
Cascade Locks	1,250	5%	1,399	6%	149	12%	1.9%
Hood River	7,760	31%	8,378	35%	618	8%	1.3%
Mount Hood CDP*	238	1%	360	2%	122	51%	7.1%
Odell CDP*	2,478	10%	3,003	13%	525	21%	3.3%
Parkdale CDP*	528	2%	213	1%	-315	-60%	-14.0%
Not Within a CDP	12,481	50%	10,541	44%	-1,940	-16%	-2.8%

Source: Population Research Center. (2023, April). *Annual Population Estimates.* Portland State University. https://www.pdx.edu/population-research/.
*PSU data was not available for CDPs, so data from the American Community Survey was used instead: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A00001. Total Population.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

Population size itself is not an indicator of vulnerability. More important is the location, composition, and capacity of the population within the community. Research by social scientists demonstrates that human capital indices such as language, race, age, income, education, and health can affect the integrity of a community and thus impact resilience to natural hazards.

Tourists

Tourists are not counted in population statistics; therefore, they are considered separately in this analysis. Tourism activities in Hood River County focus on outdoor activities (hiking/backpacking, water sports, snow sports, etc.), touring (traveling to experience scenic beauty, history, and culture), and special events (such as fairs or festivals). Table D-3 shows the estimated number of person-nights in private homes; hotels, motels, and short-term vacation rentals (STVRs); and other types of accommodations. Between 2016 and 2022, approximately half of all visitors to Hood River County lodged in hotels, motels, and STVRs, with about one-third staying in private homes and the remaining visitors staying on other accommodations (such as campgrounds). The drop in visitors and shift to private homes in 2020 is due to COVID-19 pandemic, but as the 2022 figures indicate, tourism has rebounded to nearly pre-pandemic levels.

Tourists are often at greater risk during a natural disaster because of unfamiliarity with evacuation routes, communication outlets, or even the type of hazard that may occur. Knowing where the region's visitors are staying is also useful when developing outreach materials; educated residents will likely transfer some information to visitors, but tourists staying at hotels, motels, or STVRs are less likely to benefit from local preparedness outreach.[57]

[57] MDC Consultants (2017, August). *When Disaster Strikes: Promising Practices.* https://www.mdcinc.org/wp-content/uploads/2017/08/When-Disaster-Strikes-Promising-Practices-Low-Income-Families-and-Communities.pdf.

Table D-3 Annual Visitor Estimates in Person Nights

Type of Stay	2016		2018p		2020		2022p	
	Person-Nights (thousands)	Percent	Person-Nights (thousands)	Percent	Person-Nights (thousands)	Percent	Person-Nights (thousands)	Percent
All Overnight	970	100%	1,015	100%	826	100%	931	100%
Hotel/Motel/STVR*	480	49%	526	52%	281	34%	473	51%
Private Home	303	31%	301	30%	421	51%	306	33%
Other	187	19%	188	19%	124	15%	152	16%

Source: 2016 and 2018 data: Dean Runyan Associates. (2019, March). *Oregon Travel Impacts: Statewide Estimates 1992-2018p. Oregon* Tourism Commission. https://industry.traveloregon.com/wp-content/uploads/2019/04/OREconomicImp18_DeanRunyan.pdf.
2020 and 2022 data: Dean Runyan Associates (2023, May). *The Economic Impact of Travel: Oregon 2022p (preliminary).* Travel Oregon. https://industry.traveloregon.com/wp-content/uploads/2023/06/OR_2022_2023-05-24.pdf.
*STVR = short-term vacation rentals.

Vulnerable Populations

Vulnerable populations include those with access and functional needs and may include seniors, people with disabilities, and children, as well those people living in poverty, who often experience the impacts of natural hazards and disasters more acutely. Vulnerability exists for migrant short-term workers for the agricultural industry in Hood River County. Hazard mitigation that targets the specific needs of these groups has the potential to greatly reduce their vulnerability. Examining the reach of hazard mitigation policies to special needs populations may assist in increasing access to services and programs. FEMA's Office of Equal Rights addresses this need by suggesting that agencies and organizations planning for natural hazards identify special needs populations, make recovery centers more accessible, and review practices and procedures to remedy any discrimination in relief application or assistance.

Language Barriers

Special consideration should be given to populations who do not speak English as their primary language. Language barriers can be a challenge when disseminating hazard planning and mitigation resources to the public, and it is less likely they will be prepared if special attention is not given to language and culturally appropriate outreach techniques.

There are many languages spoken throughout Hood River County, but the two most common are English and Spanish. Though most people in the county are proficient in English, 13% of residents – 2,909 people – speak limited or no English, a much higher share than the statewide figure of 5%. Mount Hood CDP has the highest proportion of residents who speak limited or no English (42%, or 138 people), while Hood River has the largest number (9%, or 681 people). See Table D-4 for more detailed information on language barriers in the county.

Table D-4 Language Spoken at Home

Jurisdiction	Population 5 years and over	English Only		Multiple Languages		Limited or No English	
		Number	Percent	Number	Percent	Number	Percent
Oregon	4,013,618	3,401,404	85%	612,214	15%	212,163	5%
Hood River County	22,606	16,109	71%	6,497	29%	2,909	13%
Cascade Locks	1,358	1,318	97%	40	3%	4	<1%
Hood River	7,774	6,068	78%	1,706	22%	681	9%
Mount Hood CDP	326	82	25%	244	75%	138	42%
Odell CDP	2,799	1,140	41%	1,659	59%	575	21%
Parkdale CDP	213	150	70%	63	30%	15	7%
Not Within a CDP	10,136	7,351	73%	2,785	27%	1,496	15%

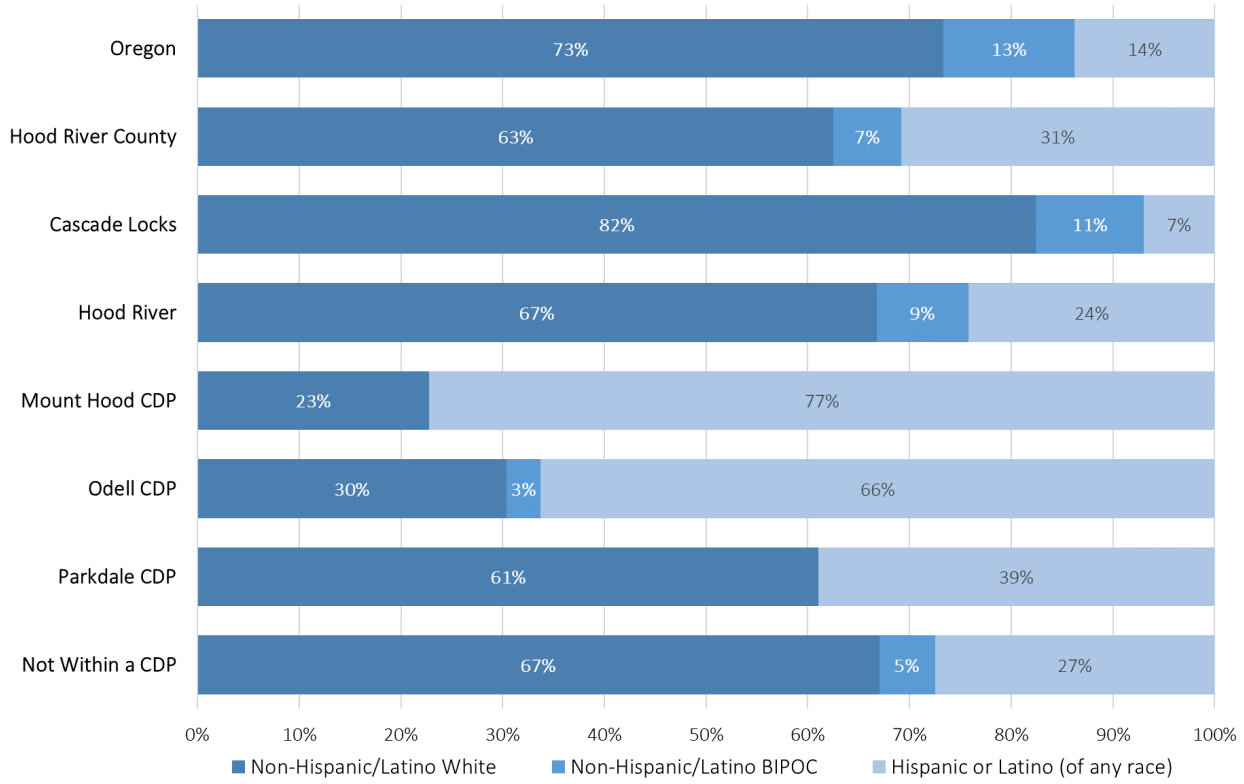
Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *ACS22_5yr:C16001. Language Spoken At Home For The Population 5 Years And Over.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

Race and Ethnicity

The impact in terms of loss and the ability to recover may also vary among minority population groups following a disaster. Studies have shown that racial and ethnic minorities can be more vulnerable to natural disaster events. This is not reflective of individual characteristics; instead, historic patterns of inequality along racial or ethnic divides have often resulted in minority communities that are more likely to have inferior building stock, degraded infrastructure, or less access to public services. Figure D-2 displays Oregon and Hood River County's population by race and Hispanic or Latino ethnicity.

Approximately two-thirds (63%) of Hood River County's non-Hispanic/Latino population is racially white/Caucasian, with nearly another third (31%) of residents being Hispanic or Latino (any race). Cascade Locks has the largest percentage of non-Hispanic/Latino Black, Indigenous, and People of Color population (BIPOC) (11%), followed by Hood River (9%). The largest Hispanic or Latino (any race) population by share is in the Mount Hood (77%) and Odell (66%) CDPs, though Hood River has the largest Hispanic or Latino (any race) population by total individuals (2,006 people, or 24%).

Figure D-2 Non-Hispanic/Latino White, BIPOC, and Hispanic or Latino Populations



Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A04001. Hispanic or Latino by Race.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

It is important to identify specific ways to support all portions of the community through hazard mitigation, preparedness, and response. Culturally appropriate and effective outreach can include both methods and messaging targeted to diverse audiences. This includes connecting with historically disenfranchised populations through already trusted sources as well as providing preparedness handouts and presentations in the languages spoken by the population.

Age

One significant figure that can influence a region's social/demographic capacity is the age of the population. In 2022, 17% of the county population is 65 and older, while 18% is under the age of 15 (see Table D-5). Both figures are nearly identical to statewide figures of 18% and 17%, respectively. The county age dependency ratio[58] is 54.4, slightly higher than the statewide figure of 53.8. The only notable outliers are Hood River, with a ratio of 47.6, and the Mount Hood and Parkdale CDPs, with ratios of 83.7 and 139.3 respectively. The overall county age dependency ratio indicates a slightly higher percentage of dependent aged people to that of working age.

[58] The age dependency ratio is derived by dividing the combined under 15 and 65-and-over populations by the 15-to-64 population and multiplying by 100. A number close to 50 indicates about twice as many people are of working age than non-working age. A number that is closer to 100 implies an equal number of working age population as non-working age population. In other words, a higher number indicates greater sensitivity.

Table D-5 County Population by Age

Jurisdiction	Total	< 15 Years Old		15 to 64 Years Old		> 64 Years Old		Age Dependency Ratio
		Number	Percent	Number	Percent	Number	Percent	
Oregon	4,229,374	705,391	17%	2,750,725	65%	773,258	18%	53.8
Hood River County	23,965	4,353	18%	15,520	65%	4,092	17%	54.4
Cascade Locks	1,418	195	14%	906	64%	317	22%	56.5
Hood River	8,292	1,559	19%	5,617	68%	1,116	13%	47.6
Mount Hood CDP	360	102	28%	196	54%	62	17%	83.7
Odell CDP	3,003	820	27%	1,886	63%	297	10%	59.2
Parkdale CDP	213	12	6%	89	42%	112	53%	139.3
Not Within a CDP	10,679	1,665	16%	6,826	64%	2,188	20%	56.4
2044								
Hood River County	28,108	4,390	16%	17,534	62%	6,184	22%	60.3

Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A01001. Age.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.
2044 Estimate: Population Research Center. (2023, December 10). *Region 3: Northwest Oregon Results (Preliminary) - Hood River.* Portland State University Oregon Population Forecast Program. https://www.pdx.edu/population-research/population-forecasts.

The age profile of an area has a direct impact both on what actions are prioritized for mitigation and how response to hazard incidents is carried out. School age children rarely make decisions about emergency management. Therefore, a larger youth population in an area will increase the importance of outreach to schools and parents on effective ways to teach children about fire safety, earthquake response, and evacuation plans. Furthermore, children are more vulnerable to the heat and cold, have few transportation options, and require assistance to access medical facilities. Older populations may also have special needs prior to, during, and after a natural disaster, including requiring assistance in evacuation due to limited mobility or health issues. Additionally, older populations may require special medical equipment or medications, and can lack the social and economic resources needed for post-disaster recovery.

Families and Living Arrangements

The U.S. Census Bureau defines households in two ways: by type of living arrangement and by family structure. A householder may live in a “family household” (a group related to one another by birth, marriage, or adoption living together), in a “non-family household” (a group of unrelated people living together), or alone. Family households and householders who live alone are both vulnerable in the event of a natural disaster and may require assistance in evacuating.

As shown in Table D-6, Hood River County is predominately comprised of family households (64%), though Hood River has a nearly even split between family and non-family households (51% to 49%). Hood River also has the highest share of householders living alone (37%, or 1,357 households), followed by Cascade Locks (30%), while the areas of the county that are not within a CDP have the highest share of householders over the age of 65 who are living alone (14%).

Table D-6 Household by Type, Including Living Alone

		Family Households		Householder Living Alone		Householder Living Alone (age 65+)	
Jurisdiction	Total	Estimate	Percent	Estimate	Percent	Estimate	Percent
Oregon	1,680,800	1,042,388	62%	470,385	28%	203,513	12%
Hood River County	9,039	5,757	64%	2,614	29%	1,098	12%
Cascade Locks	639	418	65%	193	30%	70	11%
Hood River	3,640	1,872	51%	1,357	37%	463	13%
Mount Hood CDP	107	98	92%	0	0%	0	0%
Odell CDP	768	656	85%	89	12%	29	4%
Parkdale CDP	96	51	53%	24	25%	11	11%
Not Within a CDP	3,789	2,662	70%	951	25%	525	14%

Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A10025. Housing Units by Household Type (Including Living Alone) and Age of Householder.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

Table D-7 shows household structures for families with children. Just over one-third (35%) of all households within the county are married couples that have children. Mount Hood CDP has the highest share of single-parent households (47%), though Hood River has the largest number of single-parent households (521, or 28%). These populations will likely require additional support during a disaster and will inflict strain on the response system if improperly managed.

Table D-7 Married-Couple and Single Parent Families with Children

	Total Households	Married-Couple with Children		Single Parent with Children	
Jurisdiction	Estimate	Estimate	Percent	Estimate	Percent
Oregon	1,042,388	311,418	30%	146,350	14%
Hood River County	5,757	2,003	35%	889	15%
Cascade Locks	418	95	23%	55	13%
Hood River	1,872	567	30%	521	28%
Mount Hood CDP	98	19	19%	46	47%
Odell CDP	656	356	54%	117	18%
Parkdale CDP	51	5	10%	0	0%
Not Within a CDP	2,662	961	36%	150	6%

Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *ACS22_5yr:B11004. Family Type By Presence And Age Of Related Children Under 18 Years.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

Table D-8 identifies the percentage of individuals and age cohort groups that are below the poverty level. Throughout the county, about 1,558 people or 7% of individuals – including 1% of children and 1% people over the age of 65 – live below the federal poverty level. This figure is well below the statewide poverty rate of 12%, though Hood River (10%) and Mount Hood CDP (53%) have higher and significantly higher rates, respectively. Of these individuals, nearly 3% live in deep poverty, with incomes below 50% of the federal poverty level.[59]

[59] Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A13004. Ratio of Income in 2020 to Poverty Level.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

Table D-8 Poverty Rates by Age

Jurisdiction	Total Population in Poverty		Children Under 18 in Poverty		18 to 64 in Poverty		65 or over in Poverty	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Oregon	494,158	12%	112,868	3%	314,454	7%	66,836	2%
Hood River County	1,558	7%	279	1%	1,005	4%	274	1%
Cascade Locks	96	7%	20	1%	67	5%	9	1%
Hood River	798	10%	111	1%	532	6%	155	2%
Mount Hood CDP	192	53%	62	17%	130	36%	0	0%
Odell CDP	143	5%	55	2%	49	2%	39	1%
Parkdale CDP	0	0%	0	0%	0	0%	0	0%
Not Within a CDP	329	3%	31	<1%	227	2%	71	1%

Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A13003A. Poverty Status in 2020 for Children Under 18; SE:A13003B. Poverty Status in 2020 for Population Age 18 to 64; SE:A13003C. Poverty Status in 2020 for Population Age 65 and Over.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

Affluent communities are more likely to have both the collective and individual capacity to rebound from a hazard event more quickly, while impoverished communities and individuals may not have this capacity – leading to increased vulnerability. Wealth can help those affected by hazard incidents to absorb the impacts of a disaster more easily. Conversely, poverty, at both an individual and community level, can drastically alter recovery time and quality.[60]

Research suggests that lack of wealth contributes to social vulnerability because individual and community resources are not as readily available. Affluent communities are more likely to have both the collective and individual capacity to rebound more quickly from a hazard event, while impoverished communities and individuals may not have this capacity –leading to increased vulnerability. Wealth can help those affected by hazard incidents to absorb the impacts of a disaster more easily. Conversely, poverty, at both an individual and community level, can drastically alter recovery time and quality.[61]

Income

As Table D-9 demonstrates, the median household income across Hood River County in 2022 was $80,254, a 16% increase in real incomes from the inflation-adjusted 2016 figure. This is slightly higher than the statewide median household income of $76,632. Odell CDP has the highest median household income, at $82,768, and though Cascade Locks has the lowest figure in the county – at $62,195 – it has grown 57% from the inflation-adjusted 2016 figure. Parkdale CDP is the only jurisdiction with a drop in median household income between 2016 and 2022, with income decreasing by 25%. Note that 2022 data for Mount Hood CDP was not available.

[60] Cutter, S. L., Boruff, B. J., & Shirley, W. L. (2003, May 19). Social Vulnerability in Environmental Hazards. *Social Science Quarterly, 84*(2): 242-261. https://doi.org/10.1111/1540-6237.8402002.

[61] Ibid.

Table D-9 Median Household Income

Jurisdiction	Median Household Income		Percent Change
	2016*	2022	
Oregon	$65,042	$76,632	18%
Hood River County	$69,085	$80,254	16%
Cascade Locks	$39,613	$62,195	57%
Hood River	$58,568	$70,791	21%
Mount Hood CDP	$50,366	-	-
Odell CDP	$68,447	$82,768	21%
Parkdale CDP	$90,920	$68,333	-25%
Not Within a CDP	-	-	-

Source: Social Explorer: American Community Survey 5-Year Estimates (2016). *SE:A14006. Median Household Income (In 2022 Inflation Adjusted Dollars).* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.
2022 data: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A14006. Median Household Income (In 2022 Inflation Adjusted Dollars).* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.
*2016 dollars are adjusted for inflation to match value in 2022 using Consumer Price Index of 1.221.

Household income and poverty status are indicators of social/demographic capacity and the stability of the local economy. However, while household income can be used to compare economic areas, it does not reflect how the income is divided among the area residents. To address this, Table D-10 shows the distribution of household income for 2016 and 2022.

Between 2016 and 2022, the share of households in the county making $75,000 and more per year rose 5%, with cohorts in this bracket making up 40% of the county population. Households making less than $75,000 per year decreased 5.1%, representing an overall shift in the county population towards larger income cohorts.

Table D-10 Household Income

Household Income	2016*		2022		Change in Share	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
Less than $15,000	466	6%	517	6%	-484	-0.7%
$15,000-$29,999	929	11%	865	10%	-1,471	-1.5%
$30,000-$44,999	1,072	13%	938	10%	-1,130	-1.3%
$45,000-$59,999	973	12%	827	9%	-1,179	-1.3%
$60,000-$74,999	984	12%	1,008	11%	452	-0.3%
$75,000-$99,999	1,119	14%	1,292	14%	1,385	0.1%
$100,000-$199,999	1,991	24%	2,435	27%	6,131	2.5%
$200,000 or more	679	8%	1,157	13%	4,577	2.4%

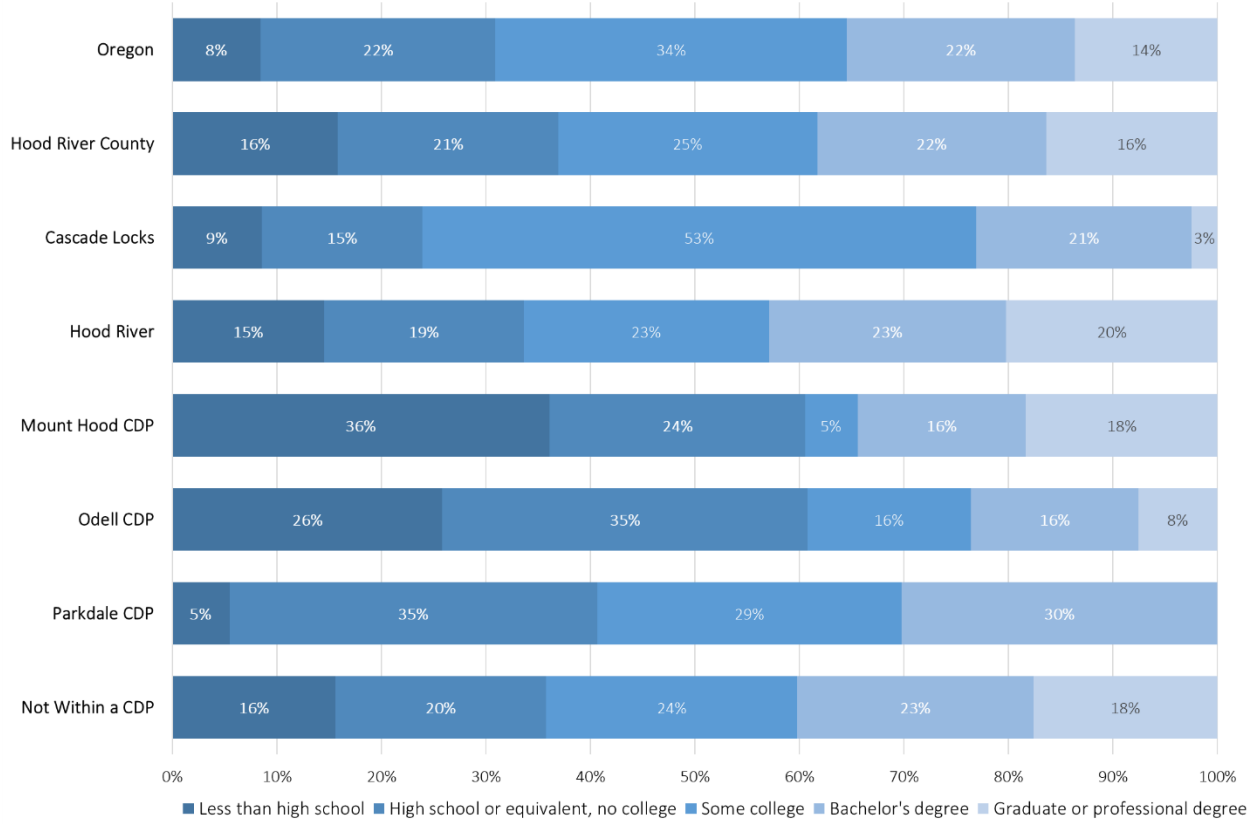
Source: Social Explorer: American Community Survey 5-Year Estimates (2016). *SE:A14001. Household Income (In 2022 Inflation Adjusted Dollars).* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.
2022 data: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A14001. Household Income (In 2022 Inflation Adjusted Dollars).* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.
*2016 dollars are adjusted for inflation to match value in 2022 using Consumer Price Index of 1.221.

Education

Educational attainment of community residents is also identified as an influencing factor in sociodemographic capacity. Educational attainment often reflects higher income and therefore higher self-reliance. Widespread educational attainment is also beneficial for the regional economy and employment sectors as there are potential employees for professional, service, and manual labor workforces. An oversaturation of either highly educated residents or low educational attainment can have negative effects on the resiliency of the community.

As Figure D-3 illustrates, 84% of the Hood River County population over 25 years of age has graduated from high school or received a high school equivalency, with 22% going on to earn a bachelor's or higher degree. Parkdale CDP (95%) and Cascade Locks (91%) have the highest percentage of high school graduates, while Mount Hood CDP (36%) and Odell CDP (26%) have the highest percentage of people without a high school degree.

Figure D-3 Educational Attainment, 25 Years and Over



Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A12001. Educational Attainment for Population 25 Years and Over.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

Health

Individual and community health play an integral role in community resiliency, as indicators such as health insurance, people with disabilities, dependencies, houselessness, and crime rate paint an overall picture of a community's well-being. These factors translate to a community's ability to prepare, respond to, and cope with the impacts of a disaster.

The Resilience Capacity Index recognizes that those who lack health insurance or are impaired with sensory, mental, or physical disabilities have higher vulnerability to hazards and will likely require additional community support and resources.[62] While 2,200 residents (7%) of Hood River County lacks health insurance, this figure is much lower in Cascade Locks (2%). The 18 to 64 age cohort has the largest share of individuals without health insurance at 14% countywide (Table D-11). The ability to provide services to the uninsured populations may burden local providers following a natural disaster.

Table D-11 Health Insurance Coverage

Jurisdiction	Total Population	Without Health Insurance							
		Total		< 18 Years Old		18 to 64 Years Old		> 64 Years Old	
		Number	Percent	Number	Percent*	Number	Percent*	Number	Percent*
Oregon	4,187,842	272,563	7%	31,225	3%	237,262	9%	4,076	1%
Hood River County	23,852	2,200	9%	220	4%	1,974	14%	6	<1%
Cascade Locks	1,418	31	2%	4	2%	27	3%	0	0%
Hood River	8,241	877	11%	43	2%	834	16%	0	0%
Mount Hood CDP	360	46	13%	0	0%	46	23%	0	0%
Odell CDP	3,003	408	14%	125	12%	283	17%	0	0%
Parkdale CDP	213	33	15%	0	0%	33	40%	0	0%
Not Within a CDP	10,617	805	7%	48	2%	751	12%	6	<1%

Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A20002. Health Insurance by Age. U.S.* Census Bureau. https://www.socialexplorer.com/explore-tables.
*Percent describes share of age group.

Table D-12 describes the estimated disability status of the population by age cohort. Approximately 12% of the Hood River County population identify with one or more disabilities, with the share rising to as high as 21% in Cascade Locks. Countywide, 38% of those 65 years of age and older are disabled, which is slightly higher than the statewide figure of 34%. Depending on the disability an individual has, they may require assistance in the event of an evacuation.

[62] Foster, K. A. (2014). *Resilience Capacity Index, Disaster Resilience Measurements: Stocktaking of Ongoing Efforts in Developing Systems for Measuring Resilience.* United Nations Development Programme. https://www.preventionweb.net/files/37916_disasterresiliencemeasurementsundpt.pdf.

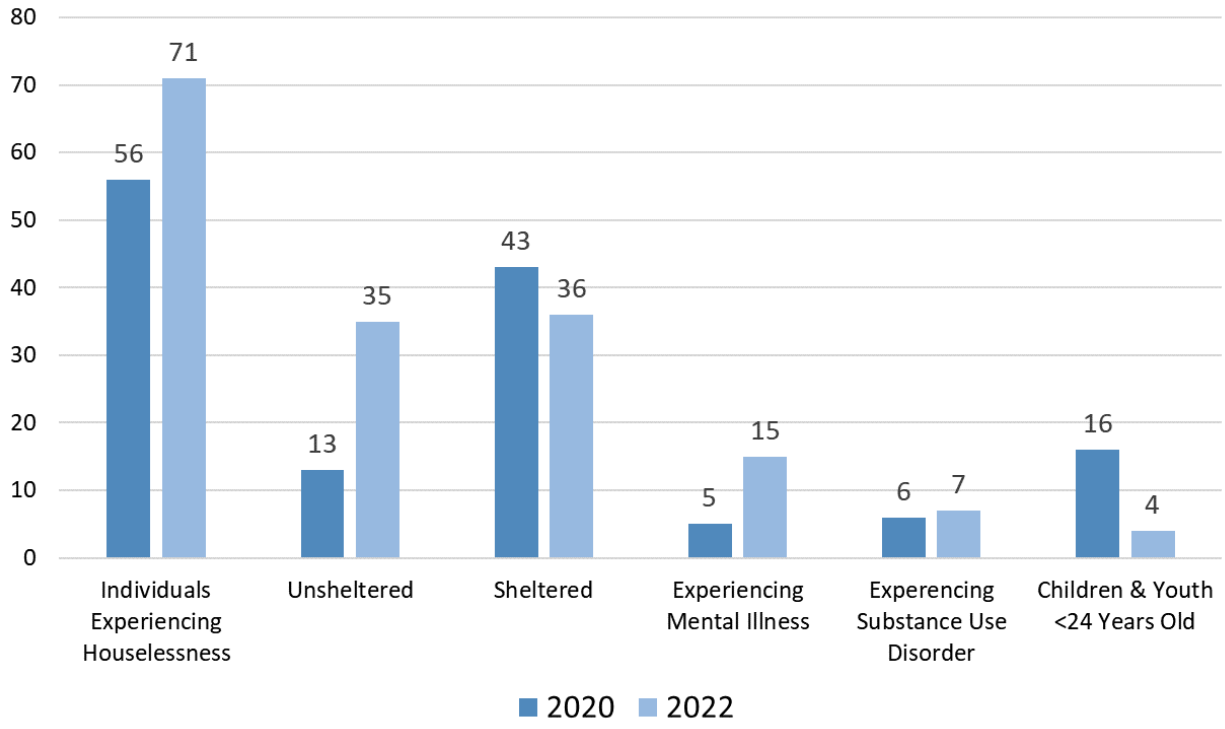
Table D-12 Disability Status by Age Group

Jurisdiction	Population	With a disability		Under 18 years with a disability		18 to 64 years with a disability		65 years and over with a disability	
	Estimate	Estimate	Percent	Estimate	Percent*	Estimate	Percent*	Estimate	Percent*
Oregon	4,187,842	625,076	15%	44,044	5%	319,326	12%	261,706	34%
Hood River County	23,852	2,891	12%	326	6%	1,040	7%	1,525	38%
Cascade Locks	1,418	303	21%	0	0%	83	9%	220	69%
Hood River	8,241	1,060	13%	100	5%	495	9%	465	44%
Mount Hood CDP	360	0	0%	0	0%	0	0%	0	0%
Odell CDP	3,003	403	13%	143	13%	133	8%	127	43%
Parkdale CDP	213	34	16%	0	0%	0	0%	34	30%
Not Within a CDP	10,617	1,091	10%	83	4%	329	5%	679	31%

Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *ACS22_5yr:B18101. Sex By Age By Disability Status.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.
*Percent describes share of age group.

Each year in January, the U.S. Department of Housing and Urban Development requires states to conduct a point-in-time count identifying the number of unhoused individuals and key characteristics about them. Figure D-4 displays the results of the 2020 and 2022 counts. In 2022, there were 71 individuals in Hood River County who identify as unhoused, a 27% increase from 2020. Over this period, which includes the COVID-19 pandemic, the number of unhoused people without shelter and those experiencing mental illness in the county rose significantly, while the number of unhoused children and youth under the age of 24 dropped sharply.

Figure D-4 Unhoused Point-in-Time Count



Source: Mid-Columbia Community Action Council. (2022, March 21). *Wasco, Hood River, Sherman Counties See 50% Increase In People Experiencing Houselessness.* Columbia Community Connection News. https://columbiacommunityconnection.com/the-dalles/wasco-hood-river-sherman-counties-see-50-increase-in-people-experiencing-houselessness.

Unhoused people have few resources, especially during an emergency. In the event of a natural disaster, it will be the responsibility of the county, cities, and local nonprofits to provide services such as shelter, food, and medical assistance. It is key to identify how to communicate with these populations, since traditional means of communication may not be appropriate or available.

Household Characteristics

As Table D-13 indicates, 13% of households in the county receive SNAP benefits. These households may lack necessary quantities of food during an isolating event or evacuation.

Table D-13 Households Receiving SNAP Benefits

Jurisdiction	Total Households	Total Households Receiving SNAP		Share of Households Receiving SNAP with Children Under 18		Share of Households Receiving SNAP with Adults Over 60	
		Number	Percent	Number	Percent	Number	Percent
Oregon	1,680,800	250,423	15%	101,123	6%	97,351	6%
Hood River County	9,039	1,215	13%	476	5%	631	7%
Cascade Locks	639	223	35%	21	3%	160	25%
Hood River	3,640	533	15%	148	4%	333	9%
Mount Hood CDP	107	65	61%	65	61%	0	0%
Odell CDP	768	93	12%	65	8%	33	4%
Parkdale CDP	96	0	0%	0	0%	0	0%
Not Within a CDP	3,789	301	8%	177	5%	105	3%

Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *ACS22_5yr:B22001. Receipt Of Food Stamps/Snap In The Past 12 Months By Presence Of People 60 Years And Over For Households; ACS22_5yr:B22002. Receipt Of Food Stamps/Snap In The Past 12 Months By Presence Of Children Under 18 Years By Household Type For Households.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

Countywide, 2% of occupied households (both owner- and renter-occupied), and 13% of renter-occupied households, have no vehicle available to them (Table D-14). The percentage of all households without a vehicle is highest in areas that are not within a CDP (4%); for renter-occupied households, the share is greatest in Hood River (18%). Vehicle access is key to evacuating quickly and safely; households without access may face delays or require assistance.

Table D-14 Vehicles Available (All Households and Renter Occupied)

Jurisdiction	Occupied Housing			Renter Occupied Housing		
	Housing Units	No Vehicle (Percent)	Two (or more) Vehicles (Percent)	Housing Units	No Vehicle (Percent)	Two (or more) Vehicles (Percent)
Oregon	1,062,522	2%	74%	618,278	15%	41%
Hood River County	6,170	2%	78%	2,869	13%	42%
Cascade Locks	481	0%	76%	158	9%	30%
Hood River	1,904	1%	69%	1,736	18%	30%
Mount Hood CDP	88	0%	48%	19	0%	0%
Odell CDP	714	0%	92%	54	0%	67%
Parkdale CDP	75	0%	85%	21	0%	0%
Not Within a CDP	2,908	4%	81%	881	4%	68%

Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *ACS22_5yr:B25044. Tenure By Vehicles Available.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

Synthesis

Social/demographic capacity is a significant indicator of county hazard resiliency. Due to the population and geographic dispersion of Hood River County's residents – spread between the cities of Hood River and Cascade Locks and the other, more rural areas of the county – resiliency and hazard mitigation efforts can be harder to manage. The characteristics and qualities of the population such as age, race, education, income, and health and safety are significant factors that can influence the county's ability to cope, adapt to, and recover from natural disasters. The status of social/demographic capacity indicators can have long term impacts on the economy and stability, ultimately affecting future resiliency of Hood River County.

One important factor to consider is that a large share of county residents (13%, or nearly 3,000 people) are not proficient in English. Language barriers will often make it difficult to reach populations of residents who do not speak English. Resiliency efforts need to focus on targeting these populations as they will be most vulnerable and may have trouble knowing what to do in the event of a disaster.

Additional Hood River County social/demographic factors to consider include:

- The countywide population has dropped 3% between 2016 and 2022; this decrease is concentrated in the rural areas of the county, as both Cascade Locks and Hood River have increased in population (12% and 8% respectively);
- The region is visited by nearly 2.5 million tourists annually,[63] who require education and preparedness before a hazard and special attention during one, as they can clog transportation corridors due to lack of local knowledge;
- Between 2016 and 2022, the share of households making $100,000 or more increased significantly, now accounting for 40% of the county population; and
- In 2022, there were 71 individuals in the county who identify as unhoused, a 27% increase from 2020 – these individuals will also require special attention in both hazard preparedness and evacuation efforts as well as outreach and education.

Highlighting the above factors and looking at the broader social/demographic capacity of Hood River County is important as they affect the resiliency of the county and help determine target areas and vulnerable populations for increased notification on mitigation and resiliency efforts.

[63] Destination Analysts (2023). *Oregon Visitor Profile Report – Mt. Hood/Columbia River Gorge: 2021-2022.* Travel Oregon. https://www.ci.sandy.or.us/sites/default/files/fileattachments/economic_development/page/9051/travel-oregon-visitor-profile-2021-22-mt-hood-columbia-river-gorge-memo-of-findings-1.pdf.

Economic Capacity

Economic capacity refers to the financial resources present, and revenue generated, in the community to achieve a higher quality of life. Income equality, housing affordability, economic diversification, employment, and industry are measures of economic capacity. However, economic resilience to natural disasters is far more complex than merely restoring employment or income in the local community. Building a resilient economy requires an understanding of how the component parts of employment sectors, workforce, resources, and infrastructure are interconnected in the existing economic picture. Once any inherent strengths or systematic vulnerabilities become apparent, both the public and private sectors can act to increase the resilience of the local economy.

Regional Affordability

The evaluation of regional affordability supplements the identification of social/demographic capacity indicators, i.e., median household income, and is a critical analysis tool to understanding the economic status of a community. This information can capture the likelihood of individuals' ability to prepare for hazards, through for example retrofitting homes or purchasing insurance. If the community reflects high-income inequality or housing cost burden, the potential for homeowners and renters to implement mitigation can be drastically reduced. Therefore, regional affordability is a mechanism for generalizing the abilities of community residents to get back on their feet without federal, state, or local assistance.

Income Equality

Income equality is a measure of the distribution of economic resources, as measured by income, across a population. It is a statistic defining the degree to which all persons have a similar income. Table D-15 illustrates Hood River County's level of income inequality using the Gini index, a measurement that ranges from zero to one. A value of zero indicates perfect equality (all households have the same income) while a value of one indicates perfect inequality (only one household has any income).[64]

The countywide Gini index is 0.46, with most of the jurisdictions within the county falling just below this figure. Mount Hood CDP has the lowest inequality by this metric, with a Gini index of 0.26. Based on social science research, the region's cohesive response to a hazard event may be affected by the distribution of wealth in communities that have less income equality.[65]

[64] Ibid.

[65] Ibid.

Table D-15 Regional Income Inequality

Jurisdiction	Income Inequality Coefficient
Oregon	0.46
Hood River County	0.45
Cascade Locks	0.37
Hood River	0.48
Mount Hood CDP	0.26
Odell CDP	0.33
Parkdale CDP	0.31
Not Within a CDP	-

Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A14028. Gini Index of Income Inequality.* U.S.
Census Bureau. https://www.socialexplorer.com/explore-tables.

Housing Affordability

Housing affordability is a measure of economic security gauged by the percentage of an area's households who are "cost-burdened" and are paying greater than 30% of their income on housing.[66] Table D-16 displays the percentage of homeowners and renters reflecting housing cost burden across Hood River County. Countywide, 39% of homeowners with a mortgage and 38% of renters are cost burdened, with both figures below the statewide levels of 42% and 48% respectively. Cascade Locks has the highest share of cost-burdened homeowners at 49%, while Hood River has the highest share of cost-burdened renters, also at 49%.

In general, households that spends more of their income on housing have proportionally fewer resources and less flexibility for alternative investments in times of crisis.[67] This disparity imposes challenges for a community recovering from a disaster as housing costs may exceed the ability of residents to repair or move to a new location. These populations may live paycheck to paycheck and are extremely dependent on their employer; in the event their employer is also impacted by a natural disaster, it will further the detriment experienced by these households.

[66] Ibid.

[67] Ibid.

Table D-16 Households Spending Less Than 30% of Income on Housing

Jurisdiction	Owners		Renters
	With Mortgage	Without Mortgage	
Oregon	42%	21%	48%
Hood River County	39%	19%	38%
Cascade Locks	49%	17%	33%
Hood River	26%	29%	49%
Mount Hood CDP	0%	52%	0%
Odell CDP	41%	11%	33%
Parkdale CDP	0%	49%	0%
Not Within a CDP	-	-	-

Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A10040. Mortgage Status by Selected of Household Income in the Past 12 Months (Dollars); SE:B18002. Residents Paying More Than 30% or at least 50% of Income on Rent.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

Economic Diversity

Economic diversity is a general indicator of an area's fitness for weathering difficult financial times. One method for measuring economic diversity is through use of the Herfindahl Index, a formula that compares the composition of county and regional economies with those of states or the nation. Using the Herfindahl Index, a diversity ranking of 1 indicates the county with the most diverse economic activity compared to the state, while a ranking of 36 corresponds with the least diverse county economy.

Table D-17 describes the Herfindahl Index scores for Hood River County and two other counties in the region, Sherman, and Wasco. Since 2016, Hood River County's state rank has risen from 33rd to 28th, indicating a more diverse economy, and county employment has grown 7% over the same period.

Table D-17 Regional Herfindahl Index Scores

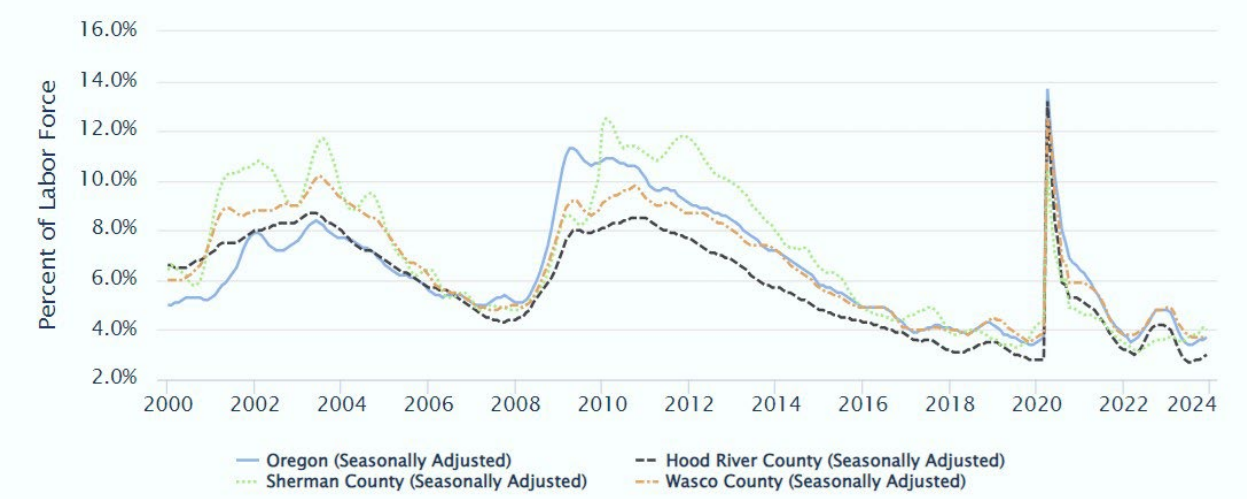
County	2016			2022			Change in State Rank
	Employment	Number of Industries	State Rank	Employment	Number of Industries	State Rank	
Hood River	11,663	169	33	12,451	178	28	5
Sherman	434	31	35	651	42	34	1
Wasco	9,506	160	16	9,450	162	30	-14

Source: Brian Rooney. (personal communication, February 2024). Oregon Employment Department; Nick Beleiciks. (personal communication, June 2022). Oregon Employment Department.

Employment and Wages

According to the Oregon Employment Department (Figure D-5), unemployment in Hood River County has declined since 2020, when unemployment spiked nationwide due to the COVID-19 pandemic. The county's seasonally adjusted unemployment rate at the end of 2023 was 3%, which continues the recent trend of the county's rate being lower than both the state of Oregon (3.7%) and other counties in the region (4.0% in Sherman County and 3.7% in Wasco County).

Figure D-5 Unemployment Rate



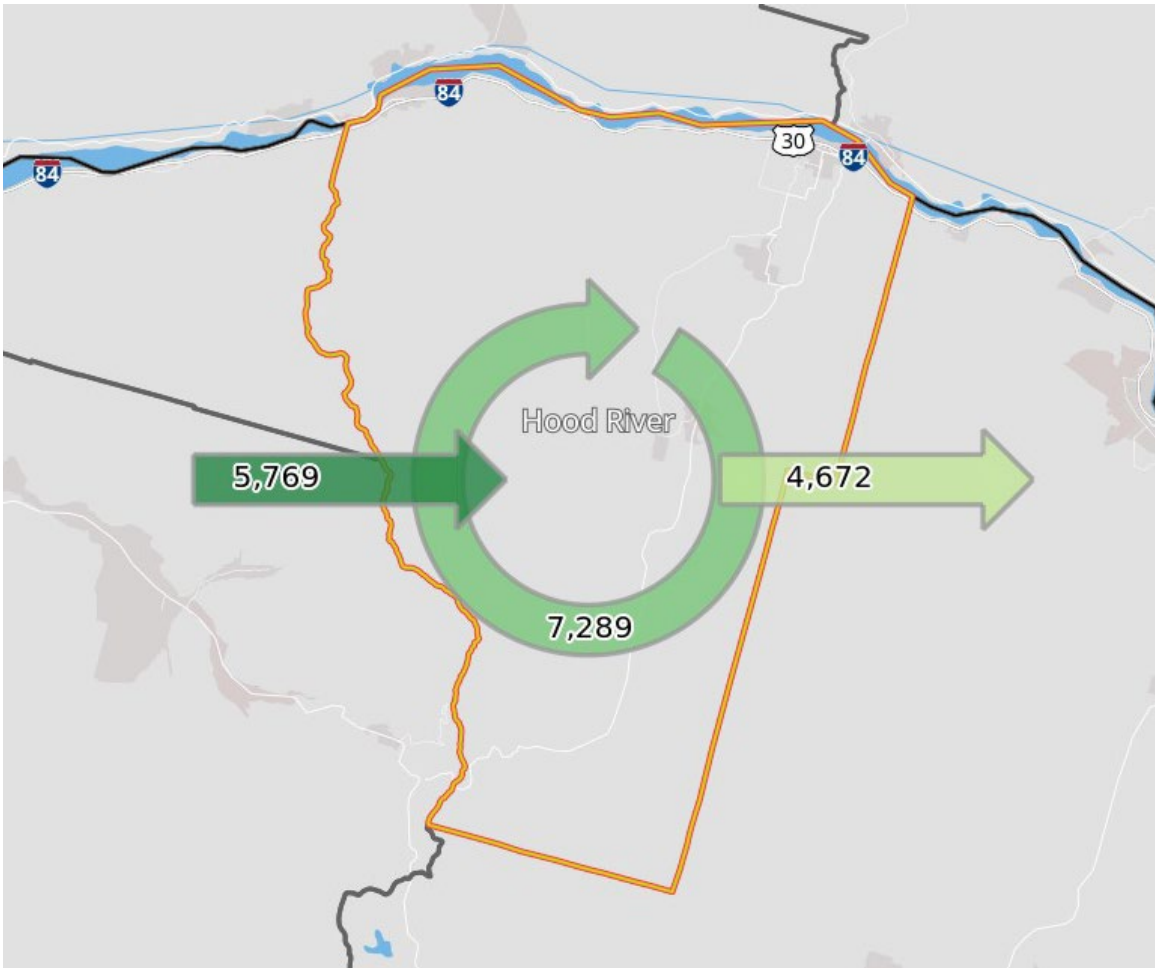
Source: QualityInfo.org. (2023). *Unemployment Rates (LAUS): Oregon, Hood River County, Sherman County, Wasco County.* Oregon Employment Department. Retrieved February 26, 2024, from https://www.qualityinfo.org/uesti.

Labor and Commute Shed

Most hazards can happen at any time during the day or night. It may be possible to give advance warning to residents and first responders who can take immediate preparedness and protection measures, but the variability of hazards is one part of why they can have such varied impact. A snowstorm during the workday will have different impacts than one that comes during the night. During the day, a hazard has the potential to segregate the population by age or type of employment (e.g., school children at school or office workers in downtown areas). This may complicate some aspects of initial response such as transportation or the identification of wounded or missing. Conversely, a hazard at midnight may occur when most people are asleep and unable to receive an advance warning through typical communication channels. The following labor and commute shed analysis is intended to document where Hood River County residents work and where people who work in Hood River County reside.

Employers in Hood River County employ more than 13,000 workers from both inside and outside the county. Figure D-6 shows the county's labor and commute shed, illustrating that about 56% of workers live and work in the county (7,289), while the remaining 44% come from outside the county (5,769). Additionally, 39% of county residents (4,672) work outside of the county.

Figure D-6 Hood River County Labor Shed



Source: OnTheMap. (2021). *Hood River County.* U.S. Census Bureau. Retrieved February 26, 2024, from https://onthemap.ces.census.gov/.

Table D-18 shows where workers who reside in Hood River County are employed. Of nearly 12,000 jobs, just over one-quarter of Hood River County employed residents work in Hood River; 6% each work in Odell CDP, Portland, and The Dalles; 1% work in Cascade Locks; and the remaining 54% work in other jurisdictions that lie outside the county.

Table D-18 Commute Shed (Where Workers Who Live in Hood River County are Employed)

Jurisdiction	Number of Jobs	Share
All Jurisdictions	11,961	100%
Hood River	3,302	28%
Odell CDP	698	6%
Portland	673	6%
The Dalles	672	6%
Salem	151	1%
Bend	135	1%
Bingen, WA	135	1%
White Salmon, WA	124	1%
Gresham	123	1%
Cascade Locks	112	1%
All Other Locations	5,836	49%

Source: OnTheMap. (2021). *Hood River County.* U.S. Census Bureau. Retrieved February 26, 2024, from https://onthemap.ces.census.gov/.

Table D-19 shows where workers live who work in Hood River County. Of more than 13,00 jobs, nearly one-fifth of Hood River County workers live in Hood River; 7% each live in The Dalles or Odell CDP; 4% live in Portland; 3% live in Cascade Locks; 1% live in Mount Hood CDP; and the remaining 61% live in other jurisdictions that lie outside the county.

Table D-19 Labor Shed (Where Workers Who are Employed in Hood River County Live)

Jurisdiction	Number of Jobs	Share
All Jurisdictions	13,058	100%
Hood River	2,347	18%
The Dalles	929	7%
Odell CDP	884	7%
Portland	492	4%
Cascade Locks	374	3%
Chenoweth CDP	167	1%
White Salmon, WA	145	1%
Gresham	104	1%
Mount Hood CDP	89	1%
Carson CDP, WA	86	1%
All Other Locations	7,441	57%

Source: OnTheMap. (2021). *Hood River County.* U.S. Census Bureau. Retrieved February 26, 2024, from https://onthemap.ces.census.gov/.

Workers can be impacted during a disaster to varying levels based upon their means of transportation to work. Commuters who use motorized vehicles and public transportation that rely upon maintained roads, bridges, and other infrastructure may be delayed or unable to travel if infrastructure is impacted during an event (for example, earthquakes or heavy winter storms).

Table D-20 shows that 74% of Hood River County commuters utilized motorized vehicles (cars, trucks, vans, or motorcycles) either alone or by carpooling, with an additional 9% biking or walking and 1% using public transportation. The remaining 16% of county workers did not commute but instead worked from home. Hood River has the greatest share of workers who biked or walked to work (19%), while the areas that do not lie within a CDP have the largest share of workers who work from home (18%).

Table D-20 Means of Transportation to Work

Jurisdiction	Workers (16 and older)	Drove Alone	Carpooled	Public Transportation (Percent)	Bike/Walked (Percent)	Worked at Home (Percent)
Oregon	2,007,255	67%	9%	3%	2%	15%
Hood River County	12,605	61%	13%	1%	9%	16%
Cascade Locks	757	63%	16%	0%	6%	15%
Hood River	4,395	54%	7%	2%	19%	17%
Mount Hood CDP	118	76%	16%	0%	0%	8%
Odell CDP	1,497	82%	13%	0%	0%	3%
Parkdale CDP	100	79%	0%	0%	10%	11%
Not Within a CDP	5,738	60%	17%	0%	4%	18%

Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A09005. Means of Transportation to Work for Workers 16 Years and Over.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

Mitigation activities are needed at the business level to ensure the health and safety of workers and limit damage to industrial infrastructure. Employees are highly mobile, commuting from all over the surrounding area to industrial and business centers. As daily transit rises, there is an increased risk that a natural hazard event will disrupt the travel plans of residents across the region and hinder the ability of the economy to meet the needs of residents and businesses.

Industry

Key industries are those that represent major employers and are significant revenue generators. Different industries face distinct vulnerabilities to natural hazards, as illustrated by this section. Identifying key industries in the region enables communities to target mitigation activities towards those industries' specific sensitivities. It is important to recognize that the impact that a natural hazard event has on one industry can reverberate throughout the regional economy.

This is of specific concern when the businesses belong to the basic sector industry. Basic sector industries are those that are dependent on sales outside of the local community; they bring money into a local community via employment. The farm and ranch, information, and wholesale trade industries are all examples of basic industries. Non-basic sector industries are those that are dependent on local sales for their business; these include retail trade, construction, and health services.

Employment by Industry

Economic resilience to natural disasters is particularly important for the major employment industries in the region. If these industries are negatively impacted by a natural hazard, such that employment is affected, the impact will be felt throughout the regional economy. Thus, understanding and addressing the sensitivities of these industries is a strategic way to increase the resiliency of the entire regional economy.

Table D-21 identifies employment by industry in Hood River County. The industry sectors in the county with the largest share of the workforce are Leisure and Hospitality (16.9%); Trade, Transportation, & Utilities (15.4%); and Natural Resources and Mining (14.9%).

Table D-21 Total Non-Farm Employment by Industry

Employment Sector	2022				Percent Change in Employment (2016-2022)
	Firms	Employees	Percent Workforce	Average Wage	
Total Payroll Employment	1,498	13,802	100%	$48,404	4%
Total Private	1,448	12,478	90.4%	$47,187	4%
Natural Resources and Mining	199	2,060	14.9%	$33,130	-16%
Construction	125	494	3.6%	$55,294	30%
Manufacturing	85	1,819	13.2%	$53,575	9%
Trade, Transportation & Utilities	217	2,131	15.4%	$43,274	9%
Wholesale Trade	62	483	3.5%	$65,147	18%
Retail Trade	132	1,485	10.8%	$33,965	11%
Information	29	134	1.0%	$85,263	-5%
Financial Activities	68	216	1.6%	$66,761	-11%
Professional and Business Services	213	1,019	7.4%	$86,444	5%
Education and Health Services	204	1,911	13.8%	$56,029	27%
Leisure and Hospitality	142	2,327	16.9%	$29,017	5%
Other Services	98	328	2.4%	$37,483	-26%
Private Non-Classified	68	37	0.3%	$74,018	-
Total Government	51	1,324	9.6%	$59,882	4%
Federal	8	121	0.9%	$72,396	11%
State	8	90	0.7%	$62,493	-36%
Local	35	1,114	8.1%	$58,258	9%

Source: QualityInfo.org. (2023). *Covered Employment and Wages (QCEW): Hood River County.* Oregon Employment Department. https://www.qualityinfo.org/ewind.

Hood River County relies on both basic and non-basic sector industries, and it is important to consider the effects each may have on the economy following a disaster. Basic sector businesses have a multiplier effect on a local economy that can spur the creation of new jobs, some of which may be non-basic. The presence of basic sector jobs can help speed local recovery; however, if basic sector production is hampered by a natural hazard event, the multiplier effect could be experienced in reverse. In this case, a decrease in basic sector purchasing power results in lower profits and potential job losses for non-basic businesses that are dependent on them.

Synthesis

Regional economic capacity refers to the present financial resources and revenue generated in the community to achieve a higher quality of life. Forms of economic capital include income equality, housing affordability, economic diversification, employment, and industry. The current and anticipated financial conditions of a community are strong determinants of community resilience, as a strong and diverse economic base increases the ability of individuals, families, and the county to absorb disaster impacts for a quick recovery.

The current and anticipated financial conditions of a community are strong determinants of community resilience, as a strong and diverse economic base increases the ability of individuals, families, and the community to absorb disaster impacts for a quick recovery. The county's economy has grown since 2016. It is important to consider what might happen to the county economy if the largest revenue generators and employers are impacted by a disaster. Strategies and actions to reduce vulnerability from an economic focus are imperative and should focus on risk management for the county's dominant industries.

The physical expansion of local agriculture and forest industries are limited by topographic constraint, ever-evolving state and federal polices, and increasing negative impacts of climate change. Hood River County's agricultural industry is historically characterized by seasonal employment fluctuations, which in the past have caused the county to appear to have a high unemployment rate. Moreover, an increasing number of orchards continue to partition their holdings or tracts to maximize residential development opportunities or take advantage of non-traditional agri-tourism and commercial types of activities in conjunction with agriculture. The world-class scenic and recreational attributes of the Columbia Gorge also draw a large influx of visitors and recreationalists to the area and region, especially during the summer months.

Several industries, including Trade, Transportation, & Utilities as well as Education and Health Services, saw significant increases in employment from 2016 to 2022. However, another top industry, Natural Resources and Mining, dropped over the same period. It is important for the county to consider the economic impacts that affect its residents in the event of a disaster. Strategies and actions to reduce vulnerability from an economic focus are imperative and should focus on risk management for the county's dominant industries.

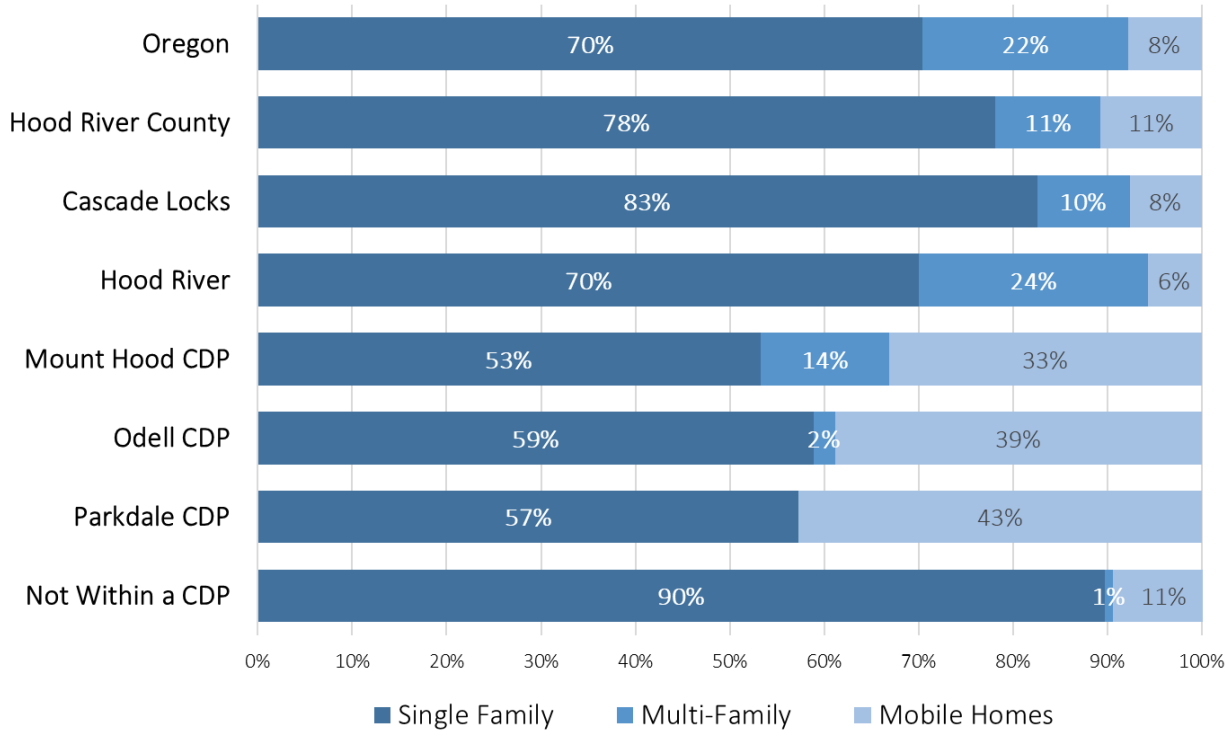
Physical Infrastructure Capacity

Physical infrastructure capacity refers to the built environment and infrastructure that supports the community. The various forms, quantity, and quality of built capital mentioned above contribute significantly to community resilience. Physical infrastructures, including housing as well as utility and transportation lifelines, are critical during a disaster and are essential for proper functioning and response. The lack or poor condition of infrastructure can negatively affect a community's ability to cope, respond and recover from a natural disaster.

Housing

Figure D-7 identifies the types of housing most common throughout the county. The type that is of most interest are mobile homes (including RVs, vans, and boats), which account for 11% of housing countywide and up to 43% in Parkdale CDP, 39% in Odell CDP, and 33% in Mount Hood CDP. Mobile homes are particularly vulnerable to certain natural hazards, such as windstorms, and special attention should be given to securing the structures, because they are more prone to wind damage than wood-frame construction. In other natural hazard events, such as earthquakes and floods, moveable structures like mobile homes are more likely to shift on their foundations and create hazardous conditions for occupants.

Figure D-7 Housing Profile



Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A10032. Housing Units in Structure.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

Aside from location and type of housing, the year that a given structure was built has implications. In the 1970's, FEMA began assisting communities with floodplain mapping as a response to administer the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Upon receipt of floodplain maps, communities started to develop floodplain management ordinances to protect people and property from flood loss and damage. Housing within the floodplain is generally less vulnerable to flood if it was built after the implementation of floodplain development ordinances.

The National Flood Insurance Program's (NFIP's) Flood Insurance Rate Maps (FIRMs) delineate flood-prone areas. They are used to assess flood insurance premiums and to regulate construction so that in the event of a flood, damage is minimized. For more information about the flood hazard, NFIP, and FIRMs, please refer to Flood Hazard section of the Risk Assessment.

Seismic building standards were codified in Oregon building code starting in 1976, with more rigorous building code standards passed in 1992 that accounted for the Cascadia earthquake fault.[68] Therefore, homes built before 1992 are more vulnerable to seismic events. The Oregon Department of Geology and Mineral Industries (DOGAMI)'s interpretation of state building code histories and evolution is shown in Table D-22.

Table D-22 Oregon's Seismic Design Level Benchmark Years

Building Type	Year Built	Design Level	Basis
Single Family Dwelling (including Duplexes)	Prior to 1976	Pre Code	Interpretation of Judson (2012)
	1976-1991	Low Code	
	1992-2003	Moderate Code	
	2004-present	High Code	
Manufactured Housing	Prior to 2003	Pre Code	Interpretation of OR BCD 2002 Manufactured Dwelling Special Codes (Oregon Building Codes Division, 2002)
	2003-2010	Low Code	
	2011-present	Moderate Code	Interpretation of OR BCD 2010 Manufactured Dwelling Special Codes Update (Oregon Building Codes Division, 2010)
All other buildings	Prior to 1976	Pre Code	Interpretation of Business Oregon Benefit-Costs Analysis Tool (Business Oregon, 2015, p. 24)
	1976-190	Low Code	
	1991-present	Moderate Code	

Source: Williams, M. C. & Madin, I. P. (2021). *Natural Hazard Risk Report for Hood River County, Oregon.* Oregon Department of Geology and Mineral Industries. https://pubs.oregon.gov/dogami/ofr/O-21-05/Hood_River_County_Natural_Hazard_Risk_Report.pdf.

Table D-23 lists the number of building by code level in Hood River County as categorized by DOGAMI. More than half (52%) of buildings, or 7,466 buildings, are identified as pre-code for seismic design.

[68] State of Oregon Building Codes Division (2012, February 7). *Earthquake Design History: A Summary of Requirements in the State of Oregon*. https://www.oregon.gov/bcd/codes-stand/Documents/inform-2012-oregon-sesmic-codes-history.pdf.

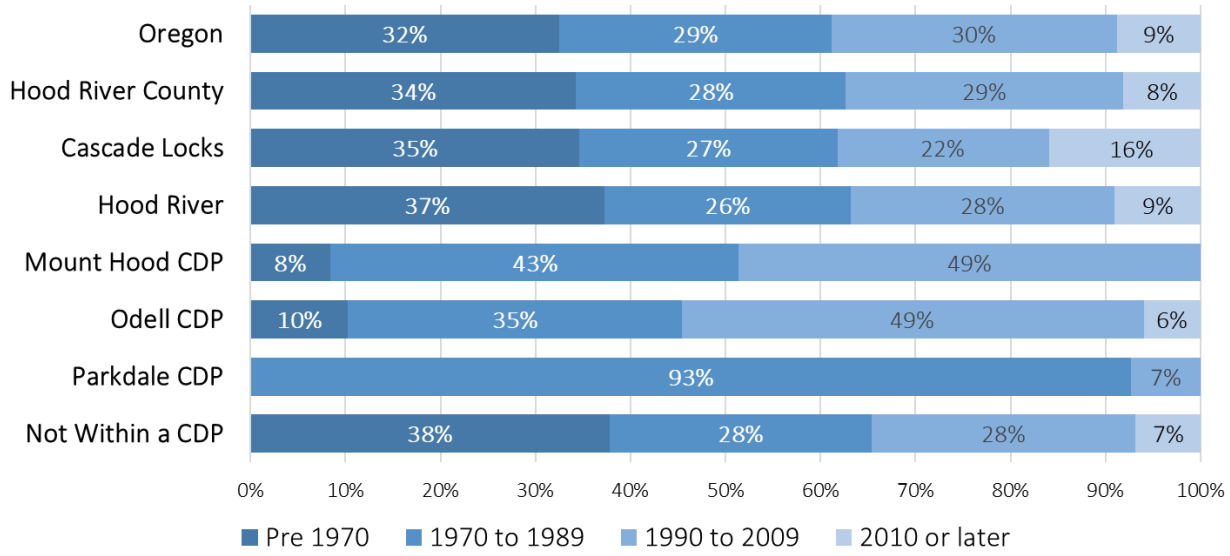
Table D-23 Buildings by Seismic Design Level

Seismic Design Level	Number of Buildings	Building Percent
Pre Code	7,466	52%
Low Code	2,119	15%
Moderate Code	3,330	23%
High Code	1,479	10%
Total	**14,394**	**100%**

Source: Williams, M. C. & Madin, I. P. (2021). *Natural Hazard Risk Report for Hood River County, Oregon.* Oregon Department of Geology and Mineral Industries. https://pubs.oregon.gov/dogami/ofr/O-21-05/Hood_River_County_Natural_Hazard_Risk_Report.pdf.

Figure D-8 shows that, countywide, 34% of the housing stock was built prior to 1970, before the implementation of floodplain management ordinances and seismic design levels. The greatest share of pre-1970, pre-code housing can be found in the areas not within a CDP (38%) and in Hood River (37%).

Figure D-8 Year Structure Built: All Housing



Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A10032. Housing Units in Structure.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

Infrastructure Profile

Physical infrastructure such as dams, roads, bridges, railways, and airports support Hood River County communities and economies. Critical facilities are those facilities that are vital in government response and recovery activities and are important to consider as there can be serious secondary impacts to such facilities when disrupted. Critical facilities and infrastructure can be a wide range of things depending on the social, environmental, economic, and physical makeup of the area under consideration.

Such facilities can include emergency services, communication services, transportation systems, government facilities, healthcare and public health facilities, information technology, water services, and energy generation and transmission. Due to the fundamental role that infrastructure plays both pre- and post-disaster, special attention in the context of creating more resilient communities is important. The information provided in this section will outline important infrastructures throughout Hood River County which provides a basis for informed decisions about how to reduce the county's infrastructural vulnerabilities to natural hazards.

Unless otherwise noted, the language in this section is adapted from the 2020 Oregon NHMP.[69]

Utility Lifelines

Utility lifelines are the resources the public relies on daily, including electricity, fuel, and communication lines. If these lifelines fail or are disrupted, the essential functions of the community can become severely impaired. Lifelines are closely related to physical infrastructure, including dams and power plants, as they transmit power generated by these facilities. The network of transmission lines and other lifelines running through the county may be vulnerable to severe natural hazards, such as windstorms, winter storms, and earthquakes.

Electric Power Systems

Electricity transmission lines running through the Columbia Gorge region are operated by Pacific Power and the Bonneville Power Administration (BPA), the two entities that primarily facilitate local energy production and distribution in the area. Power is delivered to numerous sites throughout the county at BPA and PacifiCorp substations, where it is further disseminated into the area through local distribution lines operated by Hood River Electric and Internet Co-op and the City of Cascade Locks, which delivers water and electric utilities in the city.

Pacific Power serves customers in Southern Washington, Oregon, Northern California, Eastern Idaho, Utah, and Wyoming, including parts of Hood River County and other communities in the Columbia Gorge. Hood River Electric Co-op, a nonprofit customer-owned utility company, provides electricity to customers in Hood River County, administering electricity produced by the BPA. The Hood River Co-op serves nearly 4,000 accounts owned by more than 2,700 members. Delivery of energy is from three BPA points of power delivery through more than 270 miles of distribution line. The City of Cascade Locks purchases electricity directly from the BPA and serves a 27-mile area on the Columbia River Highway from Wyeth to Bridal Veil, which includes 50 miles of primary transmission line and 10 miles of secondary transmission line.

The electric power system is central to community function. The impacts of power loss are large: residential, commercial, and public customers are all heavily dependent on electric power for normal functioning. Furthermore, other utility systems, especially water and wastewater systems, are heavily dependent on electric power for normal operations. Loss of electric power may have large impacts on affected communities, especially if outages are prolonged.

[69] 2020 Oregon Natural Hazard Mitigation Plan. (2020). *Chapter 2: Risk Assessment - Region 5: Mid-Columbia, Infrastructure.* State Interagency Hazard Mitigation Team. https://www.oregon.gov/lcd/NH/Documents/Approved_2020ORNHMP_11_RA5.pdf.

Natural Gas Systems

A gas distribution line crosses the Columbia River into Hood River County near the City of Hood River. The distribution line is fed by a larger natural gas transmission line, the Williams Northwest Pipeline, that borders the northern bank of the Columbia River in Washington, which is controlled by Cascade Natural Gas. NW Natural Gas also distributes natural gas to communities in Oregon and southwest Washington. They operate a service center in The Dalles which serves the City of Hood River and surrounding communities.

Most of the natural gas Oregon uses originates in Alberta, Canada, and Avista Utilities owns the main natural gas transmission pipeline, the Gas Transmission Northwest (GTN) pipeline. This pipeline runs through Wasco, Gilliam, Morrow, and Umatilla Counties and may be vulnerable to severe, but infrequent, natural hazards, such as earthquakes, which could disrupt service to natural gas consumers across the region.

Natural gas transmission and distribution pipes are not usually affected by flooding, because the pipes are pressurized. However, compressor stations may be subject to inundation damage or loss of electrical power to run electrical and mechanical equipment. Transmission and distribution pipes are also subject to rupture in slide areas and in earthquakes. Buried utility pipes are very subject to failure in small ground movements. Movements as small as an inch or two are often sufficient to break the pipes, especially for older cast-iron pipe which is more brittle than welded steel or polyethylene pipe.

Telecommunications Systems

Telecommunications infrastructure includes television, telephone, broadband internet, radio, and amateur radio (ham radio). Hood River County lies in Region 5, which is part of the Columbia Gorge Operational Area that includes Hood River, Wasco, Sherman, and Gilliam counties in Oregon as well as Klickitat and Skamania Counties in Washington. There is a memorandum of understanding between the Oregon counties ensuring that any of the four counties can launch emergency messages throughout the entire region by contacting the Oregon Emergency Response System (OERS), which in turn creates emergency messages to send out to communities statewide. Hood River County operates an Emergency Alert System (known as a “reverse 911”) through email and text services.

Landline telephone, mobile wireless telephone, and broadband service providers serve Region 5. Broadband technology including mobile wireless is provided in the region via five primary technologies: cable, digital subscriber line (DSL), fiber, fixed wireless, and mobile wireless. Internet service is readily available throughout most parts of the region with a smaller number of providers and service types available in the southern parts of the region, south of I-84.

Radio is readily available throughout the county and can be accessed through car radios, emergency radios, and home sound systems. Radio is a major communication tool for weather and emergency messages; the county’s radio transmitters are KHRV-FM; 90.1 MHZ; and Hood River, OPB Radio Network. Amateur radio, or ham radio, is a service provided by licensed amateur radio operators (hams) and is a last effort method of communicating when normal systems are down or at capacity. Radio Amateur Civil Emergency Services is a special phase of amateur radio recognized by FEMA that provides radio communications for civil/hazard preparedness purposes. The official ham emergency station call for Hood River County is K7VEW.

Buried communications (copper and fiber optic) and cable television cables are usually flexible enough to accommodate several feet of ground movement before failure. While major landslides may rupture such cables, minor settlements or small slides are not nearly as likely to impact such cables as they are to break buried gas or water pipes. Such lines typically perform relatively well in earthquakes.

Above ground communications and cable television cables are subject to wind-induced failures from tree falls and pole failures. However, such failures are less common than failures of electric power lines. The better performance of communications cables arises in part because the electrical cables are always highest on the poles, thus a falling branch is usually first resisted by the power cables. Additionally, because the voltage levels in communications cables are much lower than those in power cables, the communication cables are not subject to "burn down" or shorting if wind-swayed cables touch each other or get too close.

Potable Water

The drinking water supply in the county is drawn from a combination of surface, well, and spring sources. Surface water is drawn from rivers and smaller tributaries which are often backed up by groundwater that is drawn from an aquifer when surface water levels get low, especially in summer months. Water quality in the region's municipal supply is high. Chemical and fuel spills are a concern when surface waterways intersect with or parallel major roadways. Water quality could be threatened as older or damaged well infrastructure may not filter coliform and other bacteria as effectively as newer infrastructure.

Rural residents draw water from surface water, groundwater wells, or springs. Surface water is usually used for irrigation, and wells are used as backup source. Groundwater wells serve residential needs. In rural areas storage ponds or small dams are sometimes created on private land to provide additional on-site drinking water storage. Water quality for rural residents is primarily affected by nitrates from agricultural activities and by low flow levels, which can increase the density of pollutants.

Surface sources for drinking water are vulnerable to pollutants caused by natural hazards and non-point sources, such as stormwater runoff from roadways, agricultural operations, timber harvest, erosion, and sedimentation. In general, state water quality rules and plans and the Confined Animal Feeding Operations (CAFO) program provide some protection. However, the CAFO program is designed to provide water quality protection for up to a certain design storm, not for a major flood or other natural hazard event. In addition, the data defining the design storm needs to be updated to provide the intended protection. Landslides, flood events, earthquakes, and liquefaction can cause increased erosion and sedimentation in waterways.

Underground water supplies and aging or outdated infrastructure—such as reservoirs, treatment facilities, and pump stations—can be severed during a seismic event. Rigid materials such as cast iron may snap under the pressure of liquefaction. Flexible materials such as polyvinyl chloride (PVC) and ductile iron may pull apart at joints under the same stresses. This infrastructure damage could result in a loss of water pressure in municipal water supply systems, limiting access to potable water and leading to unsanitary conditions that threaten human health and limit fire suppression. Lack of water can also impact the manufacturing sector. If transportation infrastructure is impacted by a hazard, repairs to water infrastructure will be delayed.

Stormwater and Wastewater Systems

Wastewater systems are highly vulnerable to flood impacts. Rising water may cause collection pipes to back up and overflow. Intrusion of stormwater into collection systems may result in flows that exceed treatment plant capacities, resulting in release of untreated or partially treated flows. Lift stations and treatment plants are also subject to loss of function due to electric power outages, with resulting overflows or releases. Collection pipes are also subject to breakage due to landslides. However, such impacts are not particularly common since most wastewater collection systems are in more urbanized areas with only selected areas subject to slides. Wastewater pipes are, however, subject to breakage in earthquakes. Wastewater treatment plants are also subject to seismic damage to the building and to process and control equipment.

There are four community sewer systems in the county. The cities of Hood River and Cascade Locks each have a community sewer system, as do Parkdale and Odell CDPs. The City of Hood River has over 40 miles of sewer mains and appurtenant facilities and it has a wastewater treatment plant with a capacity of 3 million gallons per day located at the west end of the Port of Hood River. The City of Cascade Locks has a wastewater treatment plant located about 1,000 feet west of Herman Creek on the south bank of the Columbia River.

Hood River County residents are served by Hood River Garbage, Inc., which picks up garbage and recycling. Recyclables are primarily sent to a facility in Vancouver, WA, though facilities throughout the Portland metropolitan area are used as needed. Garbage is brought to the Northern Wasco County Sanitary Landfill.

Dams

Dams are manmade structures built to impound water. Dams are built for many purposes including water storage for potable water supply, livestock water supply, irrigation, or fire suppression. Other dams are built for flood control, recreation, navigation, hydroelectric power or to contain mine tailings. Dams may also be multifunctional, serving two or more of these purposes. These critical infrastructure pieces not only protect water resources used for drinking, agriculture, and recreation, but they also protect downstream development from inundation.

The National Inventory of Dams (NID), which is maintained by the United States Army Corps of Engineers, is a database of over 90,000 dams in the United States. The NID does not include all dams in the United States. Rather, the NID includes dams that are deemed to have a high or significant hazard potential and dams deemed to pose a low hazard if they meet inclusion criteria based on dam height and storage volume. Low hazard potential dams are included only if they meet either of the following selection criteria: exceed 25 feet in height and 15 acre-feet of storage; or exceed 6 feet in height and 50-acre feet of storage. There are many thousands of dams too small to meet the NID selection criteria. However, these small dams are generally too small to have significant impacts if they fail and thus are generally not considered for purposes of risk assessment or mitigation planning.

This NID potential hazard classification is solely a measure of the probable impacts if a dam fails. Thus, a dam classified as High Potential Hazard does not mean that the dam is unsafe or likely to fail. The level of risk (probability of failure) of a given dam is not even considered in this classification scheme. Rather, the High Potential Hazard classification simply means that there are people at risk downstream from the dam in the inundation area if the dam were to fail.

Dams assigned to the high hazard potential classification are those where failure or mis-operation will probably cause loss of human life. Failure of dams in the high classification will generally also result in economic, environmental or lifeline losses, but the classification is based solely on probable loss of life. Of the seven (7) dams in Hood River County, one is classified as high hazard: the Clear Branch Dam, also known as the Laurance Lake Dam (see Table D-24). This dam is not eligible for FEMA's Rehabilitation of High Hazard Potential Dam grant program, according to correspondence with the Oregon Water Resources Department in December 2024.

Dams assigned to the significant hazard potential classification are those where failure or mis-operation results in no probable loss of human life but can cause economic loss, environmental damage, or disruption of lifeline facilities. Significant hazard potential dams are often located in predominantly rural or agricultural areas. There are two significant hazard dams in Hood River County (see Table D-24).

Dams assigned the low hazard potential classification are those where failure or mis-operation results in no probable loss of human life and low economic/environmental losses limited to the dam owner's property. There are four low hazard dams in Hood River County (see Table D-24).

Table D-24 Dam Inventory

Threat Potential	Number of Dams	Dam Name (storage in acre-feet)
High	1	Clear Branch - 5,290
Significant	2	Green Point-Upper (No. 2) - 900 Green Point-Lower (No. 1) - 275
Low	4	Ketchum - 780 Badger Lake (Hood River) - 650 Emil Creek Regional Dam - 11 Gehrig Dam No. 1 - 9
Total	**7**	

Source: Oregon Water Resources Department. (2024). *Dam Inventory Query: Hood River County.* http://apps.wrd.state.or.us/apps/misc/dam_inventory/; National Inventory of Dams. (2024). *Dams of the Nation: Hood River County.* U.S. Army Corps of Engineers. https://nid.sec.usace.army.mil/#/.

Dam failures can occur at any time in a dam's life; however, failures are most common when water storage for the dam is at or near design capacity. At high water levels, the water force on the dam is higher and the most common failure modes are likely to occur. Correspondingly, for any dam, the probability of failure is much lower when water levels are substantially below the design capacity for the reservoir. Dam failures can occur rapidly and with little warning; while most failures result in minor damage, the potential for severe damage still exists.

Railroads

Amtrak provides passenger rail service along the Columbia Gorge and eastward via the Empire Builder line. The Mount Hood, an Oregon Short Line railroad, also runs in the county. Rails are sensitive to icing from winter storms that can occur in the county. Disruptions in the rail system can result economic losses for the region. The potential for harm from rail accidents can also have serious implications for local communities, particularly if hazardous materials are involved.

Additionally, while not necessarily caused by natural hazards, train accidents such as derailments have also been a common incident in recent years. In June 2016, a train derailment in Mosier, four miles east of Hood River County, crippled transportation throughout the Gorge.

Airports

It is widely recognized that in the event of a natural disaster, public and private airports are important staging areas for emergency response activities. Public airport closures will impact the region's tourism industries, as well as the ability for people to leave the region by air. Businesses relying on air freight may also be impacted by airport closures.

Hood River County has no commercial service airports but has two privately owned airports and two that are publicly owned, including Hood River Airport and the Ken Jernstedt Airfield (helipad) at the Hood River Fire Department. The Portland International Airport in Portland is the only major commercial service airport near the county, but smaller regional airports are in Dallesport, WA, just across the Columbia River from The Dalles (The Dalles Airport, also known as the Columbia Gorge Airport); Yakima, WA, to the northeast; and Redmond, to the southeast. These airports would serve a key role in response to a major regional disaster. Airport access can be affected by many natural hazards, including wind and winter storms common to the region.

Ports

There are two ports within Hood River County: The Port of Cascade Locks and the Port of Hood River. The Port of Cascade Locks includes industrial land, a marine park, and the Bridge of the Gods. The Port of Hood River encompasses industrial land, business parks, the Hood River Marina and waterfront area, Hood River Airport, and the Hood River–White Salmon Bridge. Both Ports have individual addenda to this countywide NHMP.

Roads

The region's major expressway is Interstate 84 (I-84). It runs East/West through Hood River County and is the main passage for automobiles, buses and trucks traveling along the Oregon side of the Columbia River. I-84 is characterized by high volumes of commuters, tourists, and semi-truck traffic, and is the major East-West corridor connecting I-5 to eastern Oregon.

Other major highways that service this region include:

- Oregon Route 35 connects I-84 east of the City of Hood River with the communities of Pine Grove, Odell, and Mount Hood before merging with US Highway 26 near Government Camp to the Southwest.
- Oregon Route 281 runs south from US Highway 30 at the City of Hood River, passing through the communities of Windmaster and Parkdale before merging with Oregon Route 35 at the community of Mount Hood.
- Oregon Route 282 (the Dee Highway) splits from Oregon Route 281 between the City of Hood River and Parkdale, passing through the community of Odell and providing an alternate route to Oregon Route 35.
- US Highway 30 runs East/West along the northern border of Hood River County, sharing the same roadbed with I-84 except for a short section where US 30 travels through the City of Hood River.

Daily transportation infrastructure capacity in the region is only moderately stressed by maintenance, congestion, and oversized loads. However peak loads and congestion can materialize during holiday and recreational seasons. Natural hazard events tend to further disrupt automobile traffic and create gridlock. Congestion on primary roads is of particular concern in periods of natural disaster events and necessary emergency evacuation.

Bridges

Bridge failure can have both immediate and long-term implications in the response and recovery of a community after a natural hazard. Incapacitated bridges can disrupt traffic and exacerbate economic losses due to the inability to transport products and services in and out of the area, as well as complicate emergency response coordination and services. Because of earthquake risk, the seismic vulnerability of the county's bridges is of particular importance. Many of the county's bridges are part of the state and interstate highway system, which is maintained by the Oregon Department of Transportation (ODOT), or are part of regional and local systems, maintained by either the county or one of the county's Ports.

Table D-25 shows the structural condition of bridges in the region. A distressed bridge is a condition rating used by ODOT indicating that a bridge has been identified as having a structural or other deficiency, while a deficient bridge is a federal performance measure used for non-ODOT bridges; the ratings do not imply that a bridge is unsafe. The table shows that the county owns a higher percentage of bridges that are distressed and/ or deficient (7%), than does the state (2%). Neither of the two bridges owned by Ports – the Bridge of the Gods (owned by the Port of Cascade Locks) and the Hood River-White Salmon Bridge (owned by the Port of Hood River) – are categorized as distressed, though the Port of Hood River is pursuing over $500 million in funding to replace the latter bridge.[70]

Table D-25 Bridge Inventory

Bridge Owner	Number	Distressed	Percent Distressed
State	45	1	2%
County	15	1	7%
City	-	-	-
Port	2	0	0%
Total	62	2	3%

Source: 2020 Oregon Natural Hazard Mitigation Plan. (2020). *Chapter 2: Risk Assessment - Region 5: Mid-Columbia, Infrastructure.* State Interagency Hazard Mitigation Team. https://www.oregon.gov/lcd/NH/Documents/Approved_2020ORNHMP_11_RA5.pdf.

The Hood River County Public Works Department is responsible for maintenance of 29 bridges around the county. This includes the 15 National Bridge Inventory (NBI) bridges (20 feet or longer) identified in Table D-25 along with an additional 14 non-NBI bridges and large culverts (less than 20 feet long).

[70] Hood River-White Salmon Bridge Authority (2023). *About the project*. Port of Hood River. Retrieved March 3, 2024, from https://hoodriverbridge.org/about.

Synthesis

Built capacity refers to the built environment and infrastructure that support a community. The various forms of built capital mentioned above will play significant roles in the event of a disaster. Physical infrastructures, along with utility and transportation lifelines are critical during a disaster and are essential for proper functioning and response. Community resilience is directly affected by the quality and quantity of built capital and lack of, or poor condition of, infrastructure can negatively affect a community's ability to cope, respond, and recover from a natural disaster. Initially following a disaster, communities may experience isolation from surrounding cities and counties due to infrastructure failure. These conditions will force communities to rely on local and immediate resources, so it is important to identify critical infrastructures throughout the county as they may play crucial roles in the mitigation and recovery stages of a disaster.

It is important for the county to consider these numbers when producing mitigation and educational outreach materials as it is important to reach all populations, especially the ones who face a higher risk of damage. There are 21 dams throughout the county classified with a high threat potential. There are a variety of critical facilities located throughout county limits that in the event of a disaster can make communication efforts challenging. Several major highways run throughout the county, giving residents several alternative routes that may provide service access, or serve as evacuation routes, yet if these roads are destroyed it can isolate communities and make rescue efforts more challenging.

Community Connectivity Capacity

Community connectivity capacity places strong emphasis on social structure, trust, norms, and cultural resources within a community. In terms of community resilience, these emerging elements of social and cultural capital will be drawn upon to stabilize the recovery of the community. Social and cultural capitals are present in all communities; however, it may be dramatically different from one city to the next as these capitals reflect the specific needs and composition of the community residents.

Social Systems and Service Providers

Social systems include community organizations and programs that provide social and community-based services, such as employment, health, senior and disabled services, professional associations, and veterans' affairs for the public. In planning for natural hazard mitigation, it is important to know what social systems exist within the community because of their existing connections to the public. Often, actions identified by the plan involve communicating with the public or specific subgroups within the population (e.g., elderly, children, low income, etc.). The county can use existing social systems as resources for implementing such communication-related activities because these service providers already work directly with the public on several issues, one of which could be natural hazard preparedness and mitigation. The presence of these services is more predominantly located in urbanized areas of the county, this is synonymous with the general urbanizing trend of residents.

Listed below are three methods that social organizations located throughout Hood River County can use to become involved in hazard mitigation.

- Education and outreach – an organization could partner with the community to educate the public or provide outreach assistance on natural hazard preparedness and mitigation.
- Information dissemination – an organization could partner with the community to provide hazard-related information to target audiences.
- Plan/project implementation – an organization may have plans and/or policies that may be used to implement mitigation activities, or the organization could serve as the coordinator or partner organization to implement mitigation actions.

Civic Engagement

Civic engagement and involvement in local, state, and national politics are key indicators of community connectivity. Those who are more invested in their community may have a higher tendency to vote in elections. The county had 84% turnout in the 2020 general election, higher than statewide turnout.[71] Other indicators such as volunteerism and charitable contributions are examples of other civic engagement that may increase community connectivity.

[71] Hood River County. (2020, November 19). *Official Election Results Summary.* https://www.hoodrivercounty.gov/vertical/sites/%7B4BB5BFDA-3709-449E-9B16-B62A0A0DD6E4%7D/uploads/Official_Election_Results_Summary.pdf.

Cultural Resources

Libraries and Museums

Libraries and museums develop cultural capacity and community connectivity as they are places of knowledge and recognition, common spaces for the community to gather, and can serve critical functions in maintaining the sense of community during a disaster. They are recognized as safe places and reflect normalcy in times of distress.

The Hood River Library is the main library in the County; their primary facility is in the City of Hood River and they have satellite facilities in the City of Cascade Locks and in Parkdale. The Hood River County Library District, a special district, was created by a vote of the citizens of Hood River County on November 2, 2010, following the closure of the Hood River County Library, a department of Hood River County. The Library District is an independent unit of local government dedicated to library operation in Hood River County and is governed by an independent, unpaid Board of Directors elected by the local community. The Library District developed a jurisdictional addendum to this plan (see Volume III).

The History Museum of Hood River County, located in the City of Hood River, is an important source of history. The museum is also overseen by a private Board of Directors, with some funding from Hood River County, and has three stated purposes: hold in trust a collection of artifacts and documents relevant to Hood River County heritage; share the stories of these items through education, exhibits and discussion; and expand the understanding of Hood River County's heritage as it relates to the county's past, present and future.[72]

Historic Places

Historic and cultural resources such as historic structures and landmarks can help to define a community and may also be sources for tourism revenue. Protecting these resources from the impact of disasters is important because they have an important role in defining and supporting the community. Table D-26 identifies the 36 different National Historic Sites located throughout Hood River County by their distinction and function. Historic structures tend to be structurally fragile and unreinforced.

[72] The History Museum of Hood River County. (n.d.). *Mission & History.* Retrieved March 3, 2024, from https://www.hoodriverhistorymuseum.org/mission-history/.

Table D-26 Historic Places

Type of Structure	Number of Structures
Banks	2
Buildings, Halls, City Structures	7
Cabins, Estates, Farms, Houses, Huts, Lodges, Log Cabins	15
Churches	-
Historic Districts	2
Hotels	5
Parks	1
Ranger Stations	1
Schools	3
Total	**36**

Source: National Register of Historic Places. (n.d.). *Digital Archive on NPGallery: Hood River County.* National Park Service. https://npgallery.nps.gov/NRHP/.

Community Stability

Community stability is a measure of rootedness in place. It is hypothesized that resilience to a disaster stem in part from familiarity with place, not only for navigating the community during a crisis, but also accessing services and other supports for economic or social challenges.[73]

Residential Geographic Stability

Table D-27 estimates residential stability across the region. It is calculated by the number of people who have lived in the same house and those who have moved within the same county a year ago, compared to the percentage of people who have migrated into the region. Hood River County overall has a geographic stability rating of 95% (i.e., 95% of the population lives in the same house or moved within the county as they did one year ago). Mount Hood (100%) and Odell (99%) CDPs have the highest geographic stability, while Parkdale CDP (86%) has the lowest.

[73] Cutter, S. L., Boruff, B. J., & Shirley, W. L. (2003, May 19). Social Vulnerability in Environmental Hazards. *Social Science Quarterly, 84*(2): 242-261. https://doi.org/10.1111/1540-6237.8402002.

Table D-27 Regional Residential Stability

Jurisdiction	Population	Geographic Stability	Same House	Moved Within Same County
Oregon	4,190,769	93%	85%	8%
Hood River County	23,625	95%	89%	6%
Cascade Locks	1,405	94%	85%	9%
Hood River	8,204	92%	82%	10%
Mount Hood CDP	360	100%	100%	0%
Odell CDP	2,880	99%	95%	4%
Parkdale CDP	213	86%	86%	0%
Not Within a CDP	10,563	97%	94%	3%

Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A08001. Residence 1 Year Ago in the United States.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

Homeownership

Housing tenure describes whether residents rent or own the housing units they occupy. Homeowners are typically more financially stable but are at risk of greater property loss in a post-disaster situation. People may rent because they choose not to own, they do not have the financial resources for home ownership, or they are transient.

Collectively, 61% of the occupied housing units in Hood River County are owner-occupied, while another 28% are renter occupied (Table D-28). Odell (89%) and Parkdale (78%) CDP have the highest rate of owner-occupied units, while Hood River (43%) has a significantly higher rate of renter-occupied units than the rest of the county. Seasonal or recreational housing accounts for a small portion of housing units in Hood River County, equal to 4%, while vacant homes account for the remaining 7% of units.

Table D-28 Housing Tenure and Vacancy

Jurisdiction	Housing Units	Owner-occupied		Renter-occupied		Seasonal*		Vacant**	
		Estimate	Percent	Estimate	Percent	Estimate	Percent	Estimate	Percent
Oregon	1,818,599	1,062,522	58%	618,278	34%	56,489	3%	81,310	4%
Hood River County	10,131	6,170	61%	2,869	28%	401	4%	691	7%
Cascade Locks	745	481	65%	158	21%	35	5%	71	10%
Hood River	4,044	1,904	47%	1,736	43%	115	3%	289	7%
Mount Hood CDP	139	88	63%	19	14%	0	0%	32	23%
Odell CDP	800	714	89%	54	7%	0	0%	32	4%
Parkdale CDP	96	75	78%	21	22%	0	0%	0	0%
Not Within a CDP	4,307	2,908	68%	881	20%	251	6%	267	6%

Source: Social Explorer: American Community Survey 5-Year Estimates (2018-2022). *SE:A10032. Housing Units in Structure; ACS22_5yr:B25003. Tenure; ACS22_5yr:B25004. Vacancy Status.* U.S. Census Bureau. https://www.socialexplorer.com/explore-tables.

*Seasonal, recreational, or occasional housing units.

**Functional vacant units, computed by subtracting seasonal, recreational, and occasional units from vacant units.

Research shows that wealth increases resiliency and recovery from disasters.[74] Renters often do not have personal financial resources or insurance to assist them post-disaster. On the other hand, renters tend to be more mobile and have fewer assets at risk of natural hazards. In the most extreme cases, renters lack enough shelter options when lodging becomes uninhabitable or unaffordable post-disaster.

Synthesis

Hood River County has distinct social and cultural resources that work together to increase community connectivity and resilience. Sustaining social and cultural resources, such as social services and cultural events, may be essential to preserving community cohesion and a sense of place. The presence of larger communities with high geographic stability makes additional resources and services available for the public. However, it is important to consider that these amenities may not be equally distributed to the rural portions of the county and may produce implications for recovery in the event of a disaster.

In the long-term, it may be of specific interest to the county to evaluate community stability. A community experiencing instability and low homeownership may hinder the effectiveness of social and cultural resources, distressing community coping and response mechanisms.

[74] Cutter, S. L., Boruff, B. J., & Shirley, W. L. (2003, May 19). Social Vulnerability in Environmental Hazards. *Social Science Quarterly, 84*(2): 242-261. https://doi.org/10.1111/1540-6237.8402002.

Appendix E: Economic Analysis of Natural Hazard Mitigation Projects

This appendix was developed by the Oregon Partnership for Disaster Resilience (OPDR) at the University of Oregon's Institute for Policy Research & Engagement. It has been reviewed and accepted by the Federal Emergency Management Agency as a means of documenting how the prioritization of actions shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

The appendix outlines three approaches for conducting economic analyses of natural hazard mitigation projects. It describes the importance of implementing mitigation activities, different approaches to economic analysis of mitigation strategies, and methods to calculate costs and benefits associated with mitigation strategies. Information in this section is derived in part from: The Interagency Hazards Mitigation Team, *State Hazard Mitigation Plan*, (Oregon Department of Emergency Management, 2000), and Federal Emergency Management Agency Publication 331, *Report on Costs and Benefits of Natural Hazard Mitigation*. This section is not intended to provide a comprehensive description of benefit/cost analysis, nor is it intended to evaluate local projects. It is intended to (1) raise benefit/cost analysis as an important issue, and (2) provide some background on how an economic analysis can be used to evaluate mitigation projects.

Why Evaluate Mitigation Strategies?

Mitigation activities reduce the cost of disasters by minimizing property damage, injuries, and the potential for loss of life, and by reducing emergency response costs, which would otherwise be incurred. Evaluating possible natural hazard mitigation activities provides decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects.

Evaluating mitigation projects is a complex and difficult undertaking, which is influenced by many variables. First, natural disasters affect all segments of the communities they strike, including individuals, businesses, and public services such as fire, law enforcement, utilities, and schools. Second, while some of the direct and indirect costs of disaster damages are measurable, some of the costs are non-financial and difficult to quantify in dollars. Third, many of the impacts of such events produce "ripple-effects" throughout the community, greatly increasing the disaster's social and economic consequences.

While not easily accomplished, there is value from a public policy perspective, in assessing the positive and negative impacts from mitigation activities, and obtaining an instructive benefit/cost comparison. Otherwise, the decision to pursue or not pursue various mitigation options would not be based on an objective understanding of the net benefit or loss associated with these actions.

Mitigation Strategy Economic Analyses Approaches

The approaches used to identify the costs and benefits associated with natural hazard mitigation strategies, measures, or projects fall into three general categories: benefit/cost analysis, cost-effectiveness analysis and the STAPLE/E approach. The distinction between the three methods is outlined below:

Benefit/Cost Analysis

Benefit/cost analysis is a key mechanism used by the state Oregon Department of Emergency Management (OEM), the Federal Emergency Management Agency, and other state and federal agencies in evaluating hazard mitigation projects and is required by the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended.

Benefit/cost analysis is used in natural hazards mitigation to show if the benefits to life and property protected through mitigation efforts exceed the cost of the mitigation activity. Conducting benefit/cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later. Benefit/cost analysis is based on calculating the frequency and severity of a hazard, avoiding future damages and risk. In benefit/cost analysis, all costs and benefits are evaluated in terms of dollars, and a net benefit/cost ratio is computed to determine whether a project should be implemented. A project must have a benefit/cost ratio greater than 1 (i.e., the net benefits will exceed the net costs) to be eligible for FEMA funding.

Cost-Effectiveness Analysis

Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. This type of analysis, however, does not necessarily measure costs and benefits in terms of dollars. Determining the economic feasibility of mitigating natural hazards can also be organized according to the perspective of those with an economic interest in the outcome. Hence, economic analysis approaches are covered for both public and private sectors as follows.

Investing in Public Sector Mitigation Activities

Evaluating mitigation strategies in the public sector is complicated because it involves estimating all of the economic benefits and costs regardless of who realizes them, and potentially to a large number of people and economic entities. Some benefits cannot be evaluated monetarily, but

still affect the public in profound ways. Economists have developed methods to evaluate the economic feasibility of public decisions which involve a diverse set of beneficiaries and non-market benefits.

Investing in Private Sector Mitigation Activities

Private sector mitigation projects may occur on the basis of one or two approaches: it may be mandated by a regulation or standard, or it may be economically justified on its own merits. A building or landowner, whether a private entity or a public agency, required to conform to a mandated standard may consider the following options:

1. Request cost sharing from public agencies;
2. Dispose of the building or land either by sale or demolition;
3. Change the designated use of the building or land and change the hazard mitigation compliance requirement; or
4. Evaluate the most feasible alternatives and initiate the most cost effective hazard mitigation alternative.

The sale of a building or land triggers another set of concerns. For example, real estate disclosure laws can be developed which require sellers of real property to disclose known defects and deficiencies in the property, including earthquake weaknesses and hazards to prospective purchases. Correcting deficiencies can be expensive and time consuming, but their existence can prevent the sale of the building. Conditions of a sale regarding the deficiencies and the price of the building can be negotiated between a buyer and seller.

STAPLE/E Approach

Considering detailed benefit/cost or cost-effectiveness analysis for every possible mitigation activity could be very time consuming and may not be practical. There are some alternate approaches for conducting a quick evaluation of the proposed mitigation activities which could be used to identify those mitigation activities that merit more detailed assessment. One of those methods is the STAPLE/E approach.

Using STAPLE/E criteria, mitigation activities can be evaluated quickly by steering committees in a synthetic fashion. This set of criteria requires the committee to assess the mitigation activities based on the Social, Technical, Administrative, Political, Legal, Economic and Environmental (STAPLE/E) constraints and opportunities of implementing the particular mitigation item in your community. The second chapter in FEMA's How-To Guide "Developing the Mitigation Plan – Identifying Mitigation Actions and Implementation Strategies" as well as the "State of Oregon's Local Natural Hazard Mitigation Plan: An Evaluation Process" outline some specific considerations in analyzing each aspect. The following are suggestions for how to examine each aspect of the STAPLE/E approach from the "State of Oregon's Local Natural Hazard Mitigation Plan: An Evaluation Process."

Social: Community development staff, local non-profit organizations, or a local planning board can answer these questions.

- Is the proposed action socially acceptable to the community?
- Are there equity issues involved that would mean that one segment of the community is treated unfairly?
- Will the action cause social disruption?

Technical: The city or county public works staff and building department staff can answer these questions.

- Will the proposed action work?
- Will it create more problems than it solves?
- Does it solve a problem or only a symptom?
- Is it the most useful action in light of other community goals?

Administrative: Elected officials or the city/county administrator can answer these questions.

- Can the community implement the action?
- Is there someone to coordinate and lead the effort?
- Is there sufficient funding, staff, and technical support available?
- Are there ongoing administrative requirements that need to be met?

Political: Consult the mayor, city council or county board of commissioners, city or county administrator, and local planning commissions to answer these questions.

- Is the action politically acceptable?
- Is there public support both to implement and to maintain the project?

Legal: Include legal counsel, land use planners, risk managers, and city council or county planning commission members, among others, in this discussion.

- Is the community authorized to implement the proposed action? Is there a clear legal basis or precedent for this activity?
- Are there legal side effects? Could the activity be construed as a taking?
- Is the proposed action allowed by the comprehensive plan, or must the comprehensive plan be amended to allow the proposed action?
- Will the community be liable for action or lack of action?
- Will the activity be challenged?

Economic: Community economic development staff, civil engineers, building department staff, and the assessor's office can answer these questions.

- What are the costs and benefits of this action?
- Do the benefits exceed the costs?
- Are initial, maintenance, and administrative costs taken into account?
- Has funding been secured for the proposed action? If not, what are the potential funding sources (public, non-profit, and private?)
- How will this action affect the fiscal capability of the community?
- What burden will this action place on the tax base or local economy?
- What are the budget and revenue effects of this activity?
- Does the action contribute to other community goals, such as capital improvements or economic development?
- What benefits will the action provide? (This can include dollar amount of damages prevented, number of homes protected, credit under the CRS, potential for funding under the HMGP or the FMA program, etc.)

Environmental: Watershed councils, environmental groups, land use planners and natural resource managers can answer these questions.

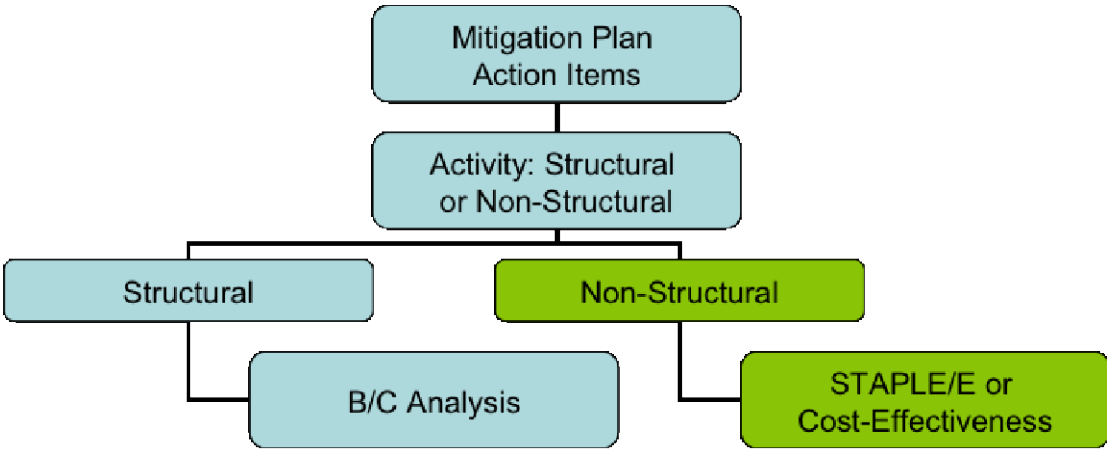
- How will the action impact the environment?
- Will the action need environmental regulatory approvals?
- Will it meet local and state regulatory requirements?
- Are endangered or threatened species likely to be affected?

The STAPLE/E approach is helpful for doing a quick analysis of mitigation projects. Most projects that seek federal funding and others often require more detailed benefit/cost analyses.

When to use the Various Approaches

It is important to realize that various funding sources require different types of economic analyses. Figure E-1 serves as a guideline for when to use the various approaches.

Figure E-1 Economic Analysis Flowchart



Source: Oregon Partnership for Disaster Resilience. 2005.

Implementing the Approaches

Benefit/cost analysis, cost-effectiveness analysis, and the STAPLE/E are important tools in evaluating whether to implement a mitigation activity. A framework for evaluating mitigation activities is outlined below. This framework should be used in further analyzing the feasibility of prioritized mitigation activities.

1. Identify the Activities

Activities for reducing risk from natural hazards can include structural projects to enhance disaster resistance, education and outreach, and acquisition or demolition of exposed properties, among others. Different mitigation projects can assist in minimizing risk to natural hazards, but do so at varying economic costs.

2. Calculate the Costs and Benefits

Choosing economic criteria is essential to systematically calculating costs and benefits of mitigation projects and selecting the most appropriate activities. Potential economic criteria to evaluate alternatives include:

- ***Determine the project cost.*** This may include initial project development costs, and repair and operating costs of maintaining projects over time.
- ***Estimate the benefits.*** Projecting the benefits, or cash flow resulting from a project can be difficult. Expected future returns from the mitigation effort depend on the correct specification of the risk and the effectiveness of the project, which may not be well known. Expected future costs depend on the physical durability and potential economic obsolescence of the investment. This is difficult to project. These considerations will also provide guidance in selecting an appropriate salvage value. Future tax structures and

rates must be projected. Financing alternatives must be researched, and they may include retained earnings, bond and stock issues, and commercial loans.

- *Consider costs and benefits to society and the environment.* These are not easily measured but can be assessed through a variety of economic tools including existence value or contingent value theories. These theories provide quantitative data on the value people attribute to physical or social environments. Even without hard data, however, impacts of structural projects to the physical environment or to society should be considered when implementing mitigation projects.
- *Determine the correct discount rate.* Determination of the discount rate can just be the risk-free cost of capital, but it may include the decision maker's time preference and also a risk premium. Including inflation should also be considered.

3. Analyze and Rank the Activities

Once costs and benefits have been quantified, economic analysis tools can rank the possible mitigation activities. Two methods for determining the best activities given varying costs and benefits include net present value and internal rate of return.

- *Net present value*. Net present value is the value of the expected future returns of an investment minus the value of the expected future cost expressed in today's dollars. If the net present value is greater than the projected costs, the project may be determined feasible for implementation. Selecting the discount rate, and identifying the present and future costs and benefits of the project calculates the net present value of projects.
- *Internal rate of return*. Using the internal rate of return method to evaluate mitigation projects provides the interest rate equivalent to the dollar returns expected from the project. Once the rate has been calculated, it can be compared to rates earned by investing in alternative projects. Projects may be feasible to implement when the internal rate of return is greater than the total costs of the project. Once the mitigation projects are ranked on the basis of economic criteria, decision-makers can consider other factors, such as risk, project effectiveness, and economic, environmental, and social returns in choosing the appropriate project for implementation.

Economic Returns of Natural Hazard Mitigation

The estimation of economic returns, which accrue to building or land owners as a result of natural hazard mitigation, is difficult. Owners evaluating the economic feasibility of mitigation should consider reductions in physical damages and financial losses. A partial list follows:

- Building damages avoided
- Content damages avoided
- Inventory damages avoided
- Rental income losses avoided
- Relocation and disruption expenses avoided
- Proprietor's income losses avoided

These parameters can be estimated using observed prices, costs, and engineering data. The difficult part is to correctly determine the effectiveness of the hazard mitigation project and the resulting reduction in damages and losses. Equally as difficult is assessing the probability that an event will occur. The damages and losses should only include those that will be borne by the owner. The salvage value of the investment can be important in determining economic feasibility. Salvage value becomes more important as the time horizon of the owner declines. This is important because most businesses depreciate assets over a period of time.

Additional Costs from Natural Hazards

Property owners should also assess changes in a broader set of factors that can change as a result of a large natural disaster. These are usually termed "indirect" effects, but they can have a very direct effect on the economic value of the owner's building or land. They can be positive or negative, and include changes in the following:

- Commodity and resource prices
- Availability of resource supplies
- Commodity and resource demand changes
- Building and land values
- Capital availability and interest rates
- Availability of labor
- Economic structure
- Infrastructure
- Regional exports and imports
- Local, state, and national regulations and policies
- Insurance availability and rates

Changes in the resources and industries listed above are more difficult to estimate and require models that are structured to estimate total economic impacts. Total economic impacts are the sum of direct and indirect economic impacts. Total economic impact models are usually not combined with economic feasibility models. Many models exist to estimate total economic impacts of changes in an economy. Decision makers should understand the total economic impacts of natural disasters in order to calculate the benefits of a mitigation activity. This suggests that understanding the local economy is an important first step in being able to understand the potential impacts of a disaster, and the benefits of mitigation activities.

Additional Considerations

Conducting an economic analysis for potential mitigation activities can assist decision-makers in choosing the most appropriate strategy for their community to reduce risk and prevent loss from natural hazards. Economic analysis can also save time and resources from being spent on inappropriate or unfeasible projects. Several resources and models are listed on the following page that can assist in conducting an economic analysis for natural hazard mitigation activities.

Benefit/cost analysis is complicated, and the numbers may divert attention from other important issues. It is important to consider the qualitative factors of a project associated with mitigation

that cannot be evaluated economically. There are alternative approaches to implementing mitigation projects. With this in mind, opportunity rises to develop strategies that integrate natural hazard mitigation with projects related to watersheds, environmental planning, community economic development, and small business development, among others. Incorporating natural hazard mitigation with other community projects can increase the viability of project implementation.

Resources

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Appendix F: Grant Programs and Resources

Introduction

There are numerous local, state, federal, and foundation funding sources available to support natural hazard mitigation projects and planning. The following section includes an abbreviated list of the most common funding sources that can be utilized by local jurisdictions in Oregon. Because grant programs often change, it is important to periodically review available funding sources for current guidelines and program descriptions.

This appendix is organized into five sections by type of funding source: local, state, federal (including both hazard mitigation and hazard mapping/technical support), and foundation.

Local

Local funding depends on the funding mechanisms a jurisdiction has authority to use. A few common types of funding for hazard mitigation projects include:

Capital Improvement Project

Many jurisdictions put together a set of their big-ticket items into a budget package called a Capital Improvement Project (CIP) budget or 'Capital Projects' budget. These projects usually have been on the organizational 'to do' list for some time or have gained priority status through another mechanism such as a planning, design, or strategic planning process. Once a project moves into this status, an array of budget tools can be deployed.

Deferred and Lifetime Maintenance Funding

Other considerations about how to use lines of funding essentially amount to either a future line of funding or a deficit (such as an unfunded mandate or deferred maintenance). Lifetime Maintenance funding is a component of a project that can be included in a CIP or other project budget. This includes the expected operations and maintenance (O&M) costs of the project, and it rolls those costs into the upfront costs so there is a budget available for them. The alternative to this is a piece of equipment or other asset that does not receive the maintenance it needs due to budget cuts, which then has a shorter life and thus a higher annual cost to the jurisdiction and its customers.

General Obligation Bond

A general obligation bond (GO bond) is a municipal bond backed solely by the credit and taxing power of the issuing jurisdiction rather than the revenue from a given project. General obligation bonds are issued with the belief that a municipality will be able to repay its debt obligation through taxation or revenue from projects. No assets are used as collateral. In Oregon Revised Statutes, the rules for issuing GO bonds are regulated by type of entity. For example, sanitary and water districts have a discrete set of rules specific to their authorities in 2020 ORS, Vol. 12, Chapter 450.

Road Fund

A "county road fund" means a separate fund in the county treasury designated to receive deposit of revenues that are dedicated to roads or road improvements. The county road fund must be used in establishing, laying out, opening, surveying, altering, improving, constructing, maintaining and repairing county roads and bridges on county roads (with exceptions). See 2020 ORS, Vol. 10, Ch.238, Section 238.705.

Special Tax District

Some special districts, like Ports, may have the authority to create special tax levies, such as a "bond sinking fund", that is "a special tax upon all taxable real and personal property situated within the port. Such annual levy shall not exceed one-tenth of one percent." See 2020 ORS, Vol. 19, Ch. 777, Section 777.520.

State

AmeriCorps/Resource Assistance for Rural Environments, University of Oregon

https://rare.uoregon.edu/

The mission of the Resource Assistance for Rural Environments (RARE) AmeriCorps Program at the University of Oregon is to increase the capacity of rural communities to improve their economic, social, and environmental conditions, through the assistance of trained graduate-level members who live and work in communities for 11 months. Members assist communities and agencies in the development and implementation of plans for achieving a sustainable natural resource base and improving rural economic conditions while gaining community building and leadership skills.

Coastal Grants, DLCD

https://www.oregon.gov/lcd/OCMP/Pages/Grants.aspx

The Oregon Coastal Management Program (OCMP) at the Oregon Department of Land Conservation and Development (DLCD) announced a new National Oceanic and Atmospheric Administration (NOAA) funding opportunity in 2022 designed to build a Climate Ready Nation under the 2021 Bipartisan Infrastructure Law and available only through coastal management programs. The objective of this initiative is to increase resilience through landscape-scale habitat restoration and conservation in coastal ecosystems nationwide and promote coastal resilience in underserved coastal communities as well as those most vulnerable to climate impacts.

Community Grants, DLCD

https://www.oregon.gov/lcd/cpu/pages/community-grants.aspx

The DLCD Community Services Division offers grants to empower local and tribal governments to improve planning. The grants can pay to update comprehensive plans, modernize land use ordinances, or augment other planning activities. The general fund grant program, administered by the community services division, is funded by the Oregon legislature. Changes to the grant program can arise based on changes in state priorities, the economy, and other factors. In general, the funding follows the state's two-year budget cycle and is part of DLCD's budget.

Community Risk Reduction Grants, OSFM

https://www.oregon.gov/osfm/wildfire/pages/investments-for-oregon.aspx

Oregon State Fire Marshall (OSFM) grant programs provide the following funding sources:

Wildfire Season Staffing Grant

This grant program funds local fire agencies to hire additional firefighters for the fire season. This additional capacity allows fire agencies to respond to other calls, improving response times, and ultimately saving lives. This grant is usually offered annually.

Community Wildfire Risk Reduction Grant

This grant program is open to local governments, special districts, structural fire service agencies, and non-governmental organizations. The grant funds wildfire risk reduction projects, equipment, and staff. These projects will help protect people, property, and communities, preparing communities for wildfire impacts and creating a more fire-adapted Oregon.

This grant program is open to local governments, special districts, structural fire service agencies, and non-governmental organizations. This grant funds wildfire risk reduction projects, equipment, and staff.

2023 Oregon Fire Service Capacity Program

This grant program is for small- to medium-sized agencies that need more permanent firefighters and fire prevention staff. This grant is available to Oregon's local fire districts and departments for funds to support up to two firefighters and two fire prevention personnel.

This funding increases local on-duty capacity throughout the next three years; allows agencies to quickly mobilize to fight fires at the local, regional, and state (conflagration) levels; and better prepares communities to survive wildfires. More on-duty firefighters keep fires small before they can impact communities.

Emergency Shelter Grants and Supports, ODHS

https://www.oregon.gov/odhs/emergency-management/Pages/emergency-shelter.aspx

The Oregon Department of Human Services (ODHS) provides assistance for local governments, Tribal Nations, public education providers, non-profits, and faith-based organizations to address shelter needs for cleaner air shelters during wildfire smoke and other poor air quality events as well as both cooling and warming shelters.

Landscape Resiliency Program, ODF

https://www.oregon.gov/odf/pages/landscape-resiliency-program.aspx

This grant program was established through Senate Bill 762, Section 18 (2021) and funds landscape-scale projects that reduce wildfire risk on public and private forestlands and rangelands, and in communities near homes and critical infrastructure through restoration of landscape resiliency and reduction of hazardous fuels. Oregon Department of Forestry (ODF), with input from the Landscape Resiliency Project work group and the public, awarded $20 million for nine projects during the 2021–23 biennium.

Oregon State Weed Board Grant Program, ODA/OWEB

https://www.oregon.gov/ODA/programs/Weeds/Pages/GrantProgram.aspx

The Oregon Department of Agriculture (ODA) and the Oregon Watershed Enhancement Board (OWEB) work together to administer the ODA Noxious Weed Grant Program Lottery funded grant program. The implementation of a comprehensive watershed approach to integrated control of noxious weeds is the most effective strategy to minimize impacts and protect natural resources in Oregon from invasive noxious weeds. It is a priority of the Oregon State Weed Board (OSWB) to fund projects that restore and enhance fish and wildlife habitat, watershed functions, and native salmonid populations.

Oregon Watershed Enhancement Board Grant Programs

http://www.oregon.gov/OWEB/Pages/index.aspx

The Oregon Watershed Enhancement Board (OWEB)'s primary responsibilities are implementing projects addressing coastal salmon restoration and improving water quality statewide. However, grant projects can sometimes also benefit efforts to reduce flood and landslide hazards or recover from major wildfires. OWEB awards approximately $20 million in funding annually, with funding coming from the general fund, state lottery, timber tax revenues, license plate revenues, and angling license fees.

Resilience Hubs and Networks Grant, ODHS

https://www.oregon.gov/odhs/emergency-management/Pages/resilience-grants.aspx#faq

The Oregon Department of Human Services (ODHS)'s Office of Resilience and Emergency Management (OREM) developed a program to provide grants, support, and technical assistance for the planning and establishment of resilience hubs and networks in Oregon, as guided by HB 3409 (2023). Additional funding may be offered for resilience work in the future.

Seismic Rehabilitation Grant Program, Business Oregon

https://www.oregon.gov/biz/programs/SRGP/Pages/default.aspx

The Seismic Rehabilitation Grant Program (SRGP) is a competitive grant program that provides funding for the seismic rehabilitation of critical public buildings, particularly public schools and emergency services facilities.

Small Forestland Grant Program, ODF

https://www.oregon.gov/odf/pages/small-forestland-grant-program.aspx

The Small Forestland Grant Program (SFGP) provides competitively awarded grants to support small forestland owners' properties by reducing wildfire risk and creating resiliency on the landscape. The project must reduce the risk of high severity wildfire by treating hazardous fuels, in addition to other eligibility requirements. This annual grant program was established under SB 762 (2021) with additional funding provided via HB 5020 (2023).

Special Districts Association of Oregon Grant Directory

https://www.sdao.com/grant-resources

The Special Districts Association of Oregon (SDAO) provides a directory of funding resources available to special districts. Some of the programs relate only to specific types of districts, while others are broad in their scope.

Special Public Works Fund, Business Oregon

https://www.oregon.gov/biz/programs/SPWF/Pages/default.aspx

The Special Public Works Fund (SPWF) provides low-cost financing to eligible municipalities for planning, design, and construction of utilities and facilities essential to industrial growth, commercial enterprise, and job creation, including emergency projects needed due to a disaster.

State Preparedness and Incident Response Equipment, OEM

https://spire-geo.hub.arcgis.com/

Oregon HB 2687 (2017) established State Preparedness and Incident Response Equipment (SPIRE), a grant program to distribute emergency preparedness equipment to local governments and other recipients to decrease risk of life and property due to an emergency. Items purchased must qualify as capital assets, meaning individual items must cost at least $5,000. A total of $5 million is available to procure emergency preparedness equipment to help Oregon communities prepare, respond, and recover from emergencies. HB 2426 (2021) added Urban Search and Rescue (USAR) equipment to the list and required that USAR equipment receive the highest priority. For more information on the SPIRE program, contact OEM.SPIRE@oem.oregon.gov.

Volunteer Fire Capacity Grants, ODF

https://www.oregon.gov/ODF/AboutODF/Pages/GrantsIncentives.aspx

The Volunteer Fire Capacity (VFC) grant program is administered by the Oregon Department of Forestry (ODF) and funded through the US Forest Service (USFS). The objective of the VFC program is to improve the capacity and capability of rural and volunteer fire protection districts. These districts protect rural communities and play a substantial cooperative role in the suppression of wildland fires within or near federally managed lands. The VFC award is administered as a reimbursement award and offered annually.

Federal: Hazard Mitigation

Action, Implementation, and Mitigation Grant Program, USFS/COCO

https://co-co.org/get-involved/grants/aim-grant/

Coalitions and Collaboratives Inc. (COCO), a Colorado-based nonprofit co-sponsored by the US Forest Service (USFS) and the National Association of State Foresters, started the Action, Implementation, and Mitigation (AIM) Program to accelerate fire adaptation concepts and reduce the risk from wildfire across the U.S. by increasing capacity and on-the-ground work. COCO hopes to increase community resilience, restore fire-adapted ecosystems and create safer

conditions for residents and firefighters. This grant is available to organizations across the country for a wide variety of capacity-building activities, including personnel, planning efforts, and wildfire risk reduction work on non-federal lands. Grants are usually offered twice annually.

Assistance to Firefighters Grants, FEMA

https://www.fema.gov/grants/preparedness/firefighters/assistance-grants

The primary goal of the Assistance to Firefighters Grant (AFG) is to meet the firefighting and emergency response needs of fire departments and non-affiliated emergency medical service organizations. AFG has helped firefighters and other first responders obtain critically needed equipment, protective gear, emergency vehicles, training and other resources necessary for protecting the public and emergency personnel from fire and related hazards.

Staffing for Adequate Fire and Emergency Response (SAFER)

https://www.fema.gov/grants/preparedness/firefighters/safer

The Staffing for Adequate Fire and Emergency Response (SAFER) grant program is part of AFG and was created to provide funding directly to fire departments and volunteer firefighter interest organizations to help them increase or maintain the number of trained, "front line" firefighters available in their communities.

Fire Prevention and Safety (FP&S)

https://www.fema.gov/grants/preparedness/firefighters/safety-awards

The Fire Prevention and Safety (FP&S) grant program is part of AFG and supports projects that enhance the safety of the public and firefighters from fire and related hazards. The primary goal is to reduce injury and prevent death among high-risk populations.

Community Development Block Grant Program, HUD

https://www.hud.gov/program_offices/comm_planning/cdbg-dr

The Community Development Block Development Grant Program (CDBG) from the U.S. Department of Housing and Urban Development (HUD) promotes viable communities by providing decent housing; quality living environments; and economic opportunities, especially for low- and moderate-income persons. Eligible activities most relevant to natural hazards mitigation include ongoing, long-term recovery efforts like the acquisition of property for public purposes, construction/reconstruction of public infrastructure, and community planning activities. Under special circumstances, CDBG funds also can be used to meet urgent community development needs in the last 18 months which pose immediate threats to health and welfare.

Business Oregon

https://www.oregon.gov/biz/programs/CDBG/Pages/default.aspx.

In Oregon, non-metropolitan cities and counties in rural Oregon apply for and receive CDBG grants through Business Oregon. However, tribes, urban cities (Albany, Ashland, Beaverton, Bend, Corvallis, Eugene, Grants Pass, Gresham, Hillsboro, Medford, Portland, Redmond, Salem, and Springfield), and large counties (Clackamas, Multnomah, Washington, Marion) may receive funds directly from HUD.

Community Development Block Grant Mitigation Program

https://www.hud.gov/program_offices/comm_planning/cdbg-dr/cdbg-mit

Community Development Block Grant Mitigation Program (CDBG-MIT) funds pose a unique opportunity for eligible grantees to use this assistance in areas impacted by recent disasters to carry out strategic and high-impact activities to mitigate disaster risks and reduce future losses. CDBG-MIT defines mitigation as activities that increase resilience to disasters and reduce or eliminate the long-term risk of loss of life, injury, damage to and loss of property, and suffering and hardship by lessening the impact of future disasters. CDBG-MIT activities should align with other federal programs that address hazard mitigation to create a more cohesive effort at the federal, state, and local level.

Community Energy Programs, DOE

https://www.energy.gov/scep/community-energy-programs

Community Energy Programs (CEP) from the U.S. Department of Energy (DOE) provides support and resources to local and tribal governments, public schools, nonprofit organizations, workforce development groups, and other community-serving entities. The CEP includes a wide array of grant programs, several of which apply to hazard mitigation:

- Building Training and Assessment Centers: implementing modern building technologies.
- Energy Future Grants: providing support for local, state, and tribal government-led partnerships that advance clean energy.
- Revolving Loan Fund Grant Program: increasing energy efficiency and improving buildings.
- Technical Assistance for the Adoption of Building Energy Codes: updating building energy codes.
- Energy Efficiency and Conservation Block Grant Program: providing assistance to states, local governments, and tribes to further strategies for improving energy efficiency.
- Local Government Energy Program: supporting local governments and Tribes in implementing transformative clean energy projects and programs.
- Renew America's Schools: conducting energy efficiency improvements at public schools.
- Workforce Development and Business Owner Training Programs: helping to prepare workers to decarbonize buildings.

Community Wildfire Defense Grant, USFS

https://www.fs.usda.gov/managing-land/fire/grants/cwdg

The Community Wildfire Defense Grant Program (CWDG) is a grant program from the U.S. Forest Service (USFS) intended to help at-risk local communities and Tribes plan for and reduce wildfire risk. The 2021 Bipartisan Infrastructure Law authorized the $1 billion, five-year CWDG Program, which prioritizes at-risk communities in an area identified as having high or very high wildfire hazard potential; that are low-income; or have been impacted by a severe disaster that affects the risk of wildfire.

The program provides funding to communities to either develop and revise Community Wildfire Protection Plans (CWPPs) or implement projects described in a CWPP that is less than ten years old. The CWDG Program also helps communities in the wildland urban interface implement the three goals of the National Cohesive Wildland Fire Management Strategy:

- Restore and Maintain Landscapes: Landscapes across all jurisdictions are resilient to fire-related disturbances, in accordance with management objectives.
- Create Fire Adapted Communities: Human populations and infrastructure can better withstand a wildfire without loss of life and property.
- Improve Wildfire Response: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.

The CWDG Dashboard provides a nationally consistent data dashboard to help communities complete grant applications and for reviewers to score applications: https://wildfirerisk.org/cwdg-tool. In Oregon, the Oregon Department of Forestry manages the application process: https://www.oregon.gov/ODF/AboutODF/Pages/GrantsIncentives.aspx.

Dam Emergencies Collaborative Technical Assistance Program, FEMA

https://www.fema.gov/emergency-managers/risk-management/dam-safety/technical-assistance

The FEMA Planning for Dam Emergencies Collaborative Technical Assistance (CTA) Program aims to enhance the emergency preparedness of communities with dams through a variety of targeted sessions and resources. Continuous program evaluation is crucial for ensuring greater reach, engagement and impact on the dam safety community.

Disaster Loan Assistance, SBA

http://www.sba.gov/category/navigation-structure/loans-grants/small-business-loans/disaster-loans

There are four types of loans available from the U.S. Small Business Administration (SBA): home and personal property loans; business physical disaster loans; economic injury loans; and military reservist injury loans. When physical disaster loans are made to homeowners and businesses

following disaster declarations by the SBA, up to one-fifth (20%) of the loan amount can go towards specific measures taken to protect against recurring damage in similar future disasters.

Disaster Recovery Unit, DOE

https://www.ed.gov/disasterrelief

The Disaster Recovery Unit (DRU) coordinates disaster recovery work across the U.S. Department of Education (DOE). The DRU supports K-12 and higher education school communities to restore learning following a Federally declared natural disaster. Additionally, the DRU manages work with other U.S. government agencies to ensure effective and efficient use of DOE's natural disaster recovery resources.

Flood Mitigation Assistance Program, FEMA

http://www.fema.gov/flood-mitigation-assistance-program.

The goal of the Flood Mitigation Assistance (FMA) Program from the Federal Emergency Management Agency (FEMA) is to fund cost-effective measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other National Flood Insurance Program (NFIP) insurable structures. This includes:

- Reducing the number of repetitively or substantially damaged structures and the associated flood insurance claims;
- Encouraging long-term, comprehensive hazard mitigation planning;
- Responding to the needs of communities participating in the NFIP to expand their mitigation activities beyond floodplain development activities; and
- Complementing other federal and state mitigation programs with similar, long-term mitigation goals.

Applicants need a user profile approved by the State Hazard Mitigation Officer, which should be garnered well before the application period opens annually by contacting shmo@mil.state.or.us.

For Oregon Department of Emergency Management (OEM) grant guidance on Federal Hazard Mitigation Assistance from FEMA, visit:
https://www.oregon.gov/OEM/emresources/Grants/Pages/HMA.aspx.

Emergency Management Performance Grant, FEMA

https://www.fema.gov/grants/preparedness/emergency-management-performance

The Emergency Management Performance Grant (EMPG) provides state, local, tribal and territorial emergency management agencies with the resources required for implementation of the National Preparedness System and works toward the National Preparedness Goal of a secure and resilient nation. The EMPG's allowable costs support efforts to build and sustain core capabilities across the prevention, protection, mitigation, response and recovery mission areas.

Hazardous Fuels Transportation Assistance Grants, USFS

https://www.fs.usda.gov/managing-land/forest-management/products/hazardous-fuels-transport-assist-grants

Hazardous Fuels Transportation Assistance (HFTA) grants from the U.S. Forest Service (USFS) support projects that remove hazardous fuels from national forests and grasslands to a location where the materials may be used for various wood products and services. This program contributes to the USFS's Wildfire Crisis Strategy implementation by removing hazardous fuels from forests and supports local forest product facilities and rural economies.

HFTA grants are open to any entity engaged in the transportation of hazardous fuels from forests in or adjacent to national forests.

Hazard Mitigation Grant Program, FEMA

https://www.fema.gov/grants/mitigation

The Hazard Mitigation Grant Program (HMGP) provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. The HMGP involves a paper application which is first offered to the counties with declared disasters within the past year, then becomes available statewide if funding is still available.

National Dam Safety Program State Assistance Grant Program, FEMA

https://www.fema.gov/emergency-managers/risk-management/dam-safety/grants

The primary purpose of the National Dam Safety Program (NDSP) State Assistance Grant Program is to provide financial assistance to the states for strengthening their dam safety programs. States use NDSP funds for the following types of activities:

- Dam safety training for state personnel
- Increase in the number of dam inspections
- Increase in the submittal and testing of Emergency Action Plans
- More timely review and issuance of permits
- Improved coordination with state emergency preparedness officials
- Identification of dams to be repaired or removed
- Conduct dam safety awareness workshops and creation of dam safety videos and other outreach materials

Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation Discretionary Grant Program, DOT-FHWA

https://www.fhwa.dot.gov/environment/protect/discretionary/

The vision of the Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Discretionary Grant Program is to fund projects that address the climate crisis by improving the resilience of the surface transportation system, including highways, public transportation, ports, and intercity passenger rail. This grant program is administered by the Federal Highway Administration (FHWA) within the U.S. Department of Transportation (DOT).

Projects selected under this program should be grounded in the best available scientific understanding of climate change risks, impacts, and vulnerabilities. They should support the continued operation or rapid recovery of crucial local, regional, or national surface transportation facilities. Furthermore, selected projects should utilize innovative and collaborative approaches to risk reduction, including the use of natural infrastructure, which is explicitly eligible under the program. Also called nature-based solutions, these strategies include conservation, restoration, or construction of riparian and streambed treatments, marshes, wetlands, native vegetation, stormwater bioswales, breakwaters, reefs, dunes, and shade trees. They reduce flood risks, erosion, wave damage, and heat impacts while also creating habitat, filtering pollutants, and providing recreational benefits. Projects in the PROTECT Discretionary Grant Program have the potential to demonstrate innovation and best practices that State and local governments in other parts of the country can consider replicating.

Public Assistance Grant Program, FEMA

https://www.fema.gov/assistance/public

FEMA's Public Assistance Grant Program provides supplemental grants to state, tribal, territorial, and local governments, and certain types of private non-profits so communities can quickly respond to and recover from major disasters or emergencies. FEMA also encourages protecting these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.

Regional Catastrophic Preparedness Grant, FEMA

https://www.fema.gov/grants/preparedness/regional-catastrophic

The Regional Catastrophic Preparedness Grant Program (RCPGP) plays an important role in the implementation of the National Preparedness System. RCPGP supports the building of core capabilities essential to achieving the National Preparedness Goal of a secure and resilient nation by providing resources to close known capability gaps in Housing and Logistics and Supply Chain

Management, encouraging innovative regional solutions to issues related to catastrophic incidents, and building on existing regional efforts.

Safeguarding Tomorrow Revolving Loan Fund Program, FEMA

https://www.fema.gov/grants/mitigation/storm-rlf

The Safeguarding Tomorrow Revolving Loan Fund (RLF) program is authorized under Section 205 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act to provide capitalization grants to states, eligible federally recognized tribes, territories and the District of Columbia to establish revolving loan funds that provide hazard mitigation assistance for local governments to reduce risks from natural hazards and disasters. These low interest loans allow jurisdictions to reduce vulnerability to natural disasters, foster greater community resilience, and reduce disaster suffering.

Wildfire Smoke Preparedness in Community Buildings Grant Program, EPA

https://www.epa.gov/indoor-air-quality-iaq/wildfire-smoke-preparedness-community-buildings-grant-program

Wildfire Smoke Preparedness in Community Buildings is a federal grant program from the U.S. Environmental Protection Agency (EPA) to enhance community wildfire smoke preparedness. The program can provide grants to States, federally recognized Tribes, public pre-schools, local educational agencies, and non-profit organizations for the assessment, prevention, control, and/or abatement of wildfire smoke hazards in community buildings and related activities.

Federal: Hazard Mapping/Technical Support

Decision, Risk and Management Science Program, NSF

https://new.nsf.gov/funding/opportunities/decision-risk-management-sciences-drms

The Decision, Risk and Management Sciences Program (DRMS) from the U.S. National Science Foundation (NSF) supports scientific research directed at increasing understanding and effectiveness of decision making by individuals, groups, organizations and society. DRMS supports research with solid foundations in theories and methods of the social and behavioral sciences. This social and behavioral science research should advance knowledge, address fundamental scientific and societal issues and have strong, broader impacts.

Emergency Watershed Protection Program, USDA-NRCS

https://www.nrcs.usda.gov/programs-initiatives/ewp-emergency-watershed-protection

The Emergency Watershed Protection (EWP) Program, a federal emergency recovery program from the U.S. Department of Agriculture (USDA)'s Natural Resources Conservation Service (NRCS), helps local communities recover after a natural disaster strikes. This grant program offers technical and financial assistance to help local communities relieve imminent threats to life and property caused by floods, fires, windstorms and other natural disasters that impair a watershed. EWP does not require a disaster declaration by federal or state government officials for program assistance to begin.

Environmental Quality Incentives Program, USDA-NRCS

https://www.nrcs.usda.gov/programs-initiatives/eqip-environmental-quality-incentives

The Environmental Quality Incentives Program (EQIP) is the U.S. Department of Agriculture (USDA)'s Natural Resources Conservation Service (NRCS) flagship conservation program that helps farmers, ranchers and forest landowners integrate conservation into working lands. EQIP provides technical and financial assistance to agricultural producers and forest landowners to address natural resource concerns, such as:

- Improved water and air quality;
- Conserved ground and surface water;
- Increased soil health;
- Reduced soil erosion and sedimentation;
- Improved or created wildlife habitat; and
- Mitigation against drought and increasing weather volatility.

Local Infrastructure Hub

https://localinfrastructure.org/

The Local Infrastructure Hub is a national program designed to connect cities and towns with the resources and expert advice they need to access federal infrastructure funding to drive local progress, improve communities, and deliver results for residents. The program is run by a wide array of public organizations, most notable the National League of Cities and the U.S. Conference of Mayors.

National Coastal Zone Management Program, NOAA

https://coast.noaa.gov/czm/about/

The National Coastal Zone Management Program is administered by the National Oceanic and Atmospheric Administration (NOAA) and provides grants for the planning and implementation of coastal management programs that enhance and protect coastal resources and communities.

National Earthquake Hazard Reduction Program

https://www.nehrp.gov/

The National Earthquake Hazard Reduction Program (NEHRP) is the federal government's coordinated long-term nationwide program to reduce risks to life and property that result from earthquakes. There are four member agencies of NEHRP: the National Institute of Standards and Technology (NIST) – which is the lead agency for NEHRP – the Federal Emergency Management Agency (FEMA), the National Science Foundation (NSF), and the U.S. Geological Survey (USGS). NEHRP has four basic goals:

- Develop effective practices and policies for earthquake loss reduction and accelerate their implementation.
- Improve techniques for reducing earthquake vulnerabilities of facilities and systems.
- Improve earthquake hazards identification and risk assessment methods, and their use.
- Improve the understanding of earthquakes and their effects.

National Flood Insurance Program, FEMA

https://www.fema.gov/flood-insurance

The National Flood Insurance Program (NFIP) provides flood insurance to property owners, renters and businesses, and having this coverage helps them recover faster when floodwaters recede. The NFIP works with communities required to adopt and enforce floodplain management regulations that help mitigate flooding effects.

Flood insurance is available to anyone living in one of the almost 23,000 participating NFIP communities. Homes and businesses in high-risk flood areas with mortgages from government-backed lenders are required to have flood insurance.

NFIP Flood Maps

https://www.fema.gov/flood-maps

The NFIP also provides Flood Insurance Rate Maps (FIRMs) and floodplain management maps for all NFIP communities. An NFIP community is any place with at least a 1% chance of experiencing a flood each year.

National Landslide Hazards Reduction Program, USGS

https://www.usgs.gov/programs/landslide-hazards/science/national-landslide-preparedness-act

The National Landslide Preparedness Act (P.L. 116-323, 2021) authorized a national landslide hazards reduction program and a 3D elevation program within the U.S. Geological Survey (USGS). This broadened the already existing Landslide Hazards Program under the Natural Hazards Mission Area, and the 3D Elevation Program under the National Geospatial Program and required additional coordination with other federal agencies. The Act authorizes the National Landslide Hazards Reduction Program (NLHRP) to identify and understand landslide hazards and risks; reduce landslide losses; protect communities at risk; and help improve communication, emergency preparedness by coordinating with communities and entities responsible for infrastructure at risk.

National Tsunami Hazard Mitigation Program, NWS

https://www.weather.gov/nthmp/

The National Tsunami Hazard Mitigation Program (NTHMP), a part of the National Weather Service (NWS)'s Tsunami Program, is a coordinated U.S. national effort to mitigate the impact of tsunamis through public education, community response planning, hazard assessment, and warning coordination. NTHMP partner states are provided with financial assistance via grants that are the primary funding source for projects that further the efforts of the NTHMP and NOAA's TsunamiReady program. With this assistance, NTHMP partner states have substantially improved the products and services they provide to coastal communities in a cost-effective way.

Natural Hazards Mission Area, USGS

https://www.usgs.gov/mission-areas/natural-hazards

The U.S. Geological Survey (USGS) works with many partners to monitor, assess, and conduct targeted research on a wide range of natural hazards so that policymakers and the public have the understanding they need to enhance preparedness, response, and resilience. The USGS provides alerts and warning of geologic hazards as well as interactive maps and planning data.

North American Wetland Conservation, DOI-FWS

https://www.fws.gov/program/north-american-wetlands-conservation

The North American Wetland Conservation (NAWC) Fund provides cost-share grants to stimulate public/private partnerships for the protection, restoration, and management of wetland habitats in the United States, Canada, and Mexico. These grant programs are funded by the U.S. Fish and Wildlife Service (FWS) within the U.S. Department of the Interior (DOI).

Readiness and Environmental Protection Integration, DOD

https://www.repi.mil/

The Department of Defense's (DOD) Readiness and Environmental Protection Integration (REPI) program benefits the environment by conserving land near military installations and ranges. REPI engages in partnerships that often work across boundaries and protect working lands (e.g., farms, forests, ranches), wildlife habitat, water resources, natural spaces for recreational opportunities, and threatened and endangered species. REPI is involved in nature-based solutions that help installations prevent, prepare for, and recover from anticipated or unanticipated changes in environmental conditions.

Partners for Fish and Wildlife, DOI-FWS

https://www.fws.gov/program/partners-fish-and-wildlife

The Partners for Fish and Wildfire (PFW) program provides free technical and financial assistance to landowners, managers, tribes, corporations, schools and nonprofits interested in improving wildlife habitat on their land. The PFW program employs 220 biologists across all 50 states and territories who consult with landowners to help them conserve and improve wildfire habitats.

Planning Assistance to States, USACE

https://www.poa.usace.army.mil/Missions/Civil-Works-and-Planning/Planning-Assistance-to-States/

The Planning Assistance to States (PAS) program is offered through the U.S. Army Corp of Engineers (USACE. The PAS has two types of planning assistance: Technical Assistance and Comprehensive Plans. Any state, group of states, federally recognized tribe, or regional coalition of governmental entities may partner with USACE under the PAS program to prepare a Comprehensive Plan or receive other forms of technical assistance. Examples of past studies and activities completed under PAS include watershed planning, flood risk management, surface and groundwater quality, environmental conservation and restoration, water supply and demand, wetland delineations, stream assessments, and GIS mapping.

Rural Development Assistance, USDA

https://www.rd.usda.gov/programs-services/all-programs

The U.S. Department of Agriculture (USDA)'s Rural Development Assistance grant programs offer a wide variety of grants for rural communities, including for to supplement disaster relief and recovery as well as housing construction, infrastructure maintenance, economic development, health services, and energy needs.

Secure Rural Schools Program, USFS

https://www.fs.usda.gov/working-with-us/secure-rural-schools

The Secure Rural Schools program provides funding for schools, roads, and other municipal services to more than 700 counties across the U.S. and Puerto Rico. The program is funded by the U.S. Forest Service (USFS), with a portion of USFS funds generated through multi-use activities – such as grazing and timber production – being distributed to eligible counties to help maintain local roads and schools. Funds have been used for improvements to public schools and roads, infrastructure maintenance, and improving the health of watersheds and ecosystems.

Soil Survey, USDA-NRCS

https://www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/soil/soil-science

The U.S. Department of Agriculture (USDA)'s Natural Resources Conservation Service (NRCS) delivers science-based soil information to help farmers, ranchers, foresters, and other land managers effectively manage, conserve, and appraise their most valuable investment — the soil. The NRCS maintains soil surveys for counties and other areas that can assist with mitigation.

Wetlands Reserve Easements, USDA-NCRS

https://www.nrcs.usda.gov/programs-initiatives/wre-wetland-reserve-easements

The Wetlands Reserve Easements (WRE) program from the U.S. Department of Agriculture (USDA)'s Natural Resources Conservation Service (NRCS) protects and restores wetlands through easements and restoration agreements with private landowners.

Foundation

Center for Disaster Philanthropy

https://disasterphilanthropy.org/cdp-funds/our-grantmaking-process/

The Center for Disaster Philanthropy (CDP) grants support medium- and long-term recovery and resilience efforts in communities affected by natural and human-made hazards, including conflicts and humanitarian crises. With a focus on historically marginalized and at-risk populations, CDP prioritizes investments in local organizations to support a range of programs critical for individuals' and communities' recovery.

Oregon Community Foundation

https://oregoncf.org

The Oregon Community Foundation (OCF) provides grants and scholarships across Oregon. As a statewide community foundation, they work alongside donors, stewarding their priorities into

strategic giving to support diverse communities across Oregon, creating lasting, transformative change. OCF has five offices and professional advisors to assist donors in setting up advised funds to serve seven areas of impact: Arts and Culture; Economic and Community Vitality; Community Engagement; Education; Health and Well-being; Housing Stability; and Land and Nature.

Meyer Memorial Trust

https://mmt.org/

Since 1982, Meyer Memorial Trust has awarded grants and program-related investments totaling more than $814 million to more than 3,380 organizations around the Pacific Northwest. Today, the Meyer Memorial Trust focuses on work in Oregon in four areas Oregonians have identified as crucial to making the state better for all its residents: housing, education, the environment, and building stronger communities.

The Collins Foundation

https://www.collinsfoundation.org/welcome-collins-foundation

The Collins Foundation invests in Oregon nonprofits, both rural and urban, that are dedicated to improving quality of life and well-being for the people in their communities. As a funder and partner, The Collins Foundation is committed to the pursuit of equity, both in how resources are allocated across Oregon's diverse communities and how internal structures are shaped.

The Ford Family Foundation

https://www.tfff.org/grants/funding/

Grants aligned with the Ford Family Foundation Community impact area support conditions that help children and families thrive in rural communities. This includes focusing on local economies, social capital, community visioning and planning capacity, and public gathering spaces. Current grant funding examples related to hazard mitigation include community building and engagement efforts, community centers and convening spaces, rural health centers, disaster resiliency planning, and fire halls.

Appendix G: Survey

Purpose

To gather input from the Hood River County community, the Oregon Partnership for Disaster Resilience (OPDR) and Hood River County Emergency Management designed a survey to measure community perspectives on hazard awareness, preparedness, and mitigation.

The survey was developed on Qualtrics and was available online in both English and Spanish for approximately three months from May to July 2024. Members of the NHMP Steering Committee helped distribute this survey to County residents, County visitors, and those who work in the County via email, newsletters, and social media posts. An optional raffle prize of two emergency go-bags was offered to survey respondents who provided their emails.

A total of 222 responses were received as part of this survey. Since not all questions were answered by all respondents, and some respondents were flagged as potential bots, not every figure adds up to the full number of potential responses. All analysis was conducted by OPDR.

Key Takeaways

The following takeaways informed the development of the hazard analysis matrix in Volume I, Section 3 as well as the Mitigation Strategy in Volume I, Section 4:

- The top four hazards of concern are wildfire, air quality/smoke, winter storm, and extreme heat, aligning closely with the Steering Committee's risk assessment.
- The bottom four hazards for which respondents felt prepared are a volcanic event, landslide/debris flow, flood, and earthquake (crustal or Cascadia Subduction Zone), indicating key areas for the County to target in future outreach.
- Some respondents (28%) were concerned about traffic during an evacuation event inhibiting their ability to leave the area, highlighting the need for an improved countywide evacuation tool as identified in the Mitigation Strategy.
- Most respondents, however, said that they would evacuate during a hazard event and would go to a friend or family members home outside the area (79%), a hotel or motel (49%), staying in their vehicle or an RV (36%), or use an American Red Cross, church, or other community shelter (24%).
- More than a third of respondents (37%) felt either slightly or not at all informed about their community's programs for hazard mitigation and preparedness, highlighting another area for the County to target with future outreach.
- Nearly all respondents preferred to receive emergency information such as alerts digitally, including via text/cellphone alert (71%), emails (51%), online news (37%), and social media (30%)

Demographics

- Most respondents (82%) have lived in the County for at least five years, with a majority (61%) having lived in the County for at least ten years
- Over two-thirds of respondents (68%) live in the City of Hood River, with equal shares of 6-7% each from the City of Cascade Locks, the Parkdale community or living in another Oregon county or Washington state and community to work in Hood River County
- Respondent age was split between 45-54 (26%), 35-44 and 56-74 (each 20%), and 55-64 (17%). Fewer than one-fifth (16%) of respondents were either over the age of 75 or under the age of 35.
- Nearly all respondents (86%) identified their race/ethnicity as White, with another 6% identifying as Hispanic/Latinx and 4% identifying as American Indian/Alaska Native.
- Most respondents (84%) own their homes, with nearly half (43%) having a household income over $100,000 – but many (57%) stated they had trouble affording their homes.

Survey Results

The survey began with a brief introduction summarizing the goals of the project (supporting the development of Hood River County's NHMP as well as the CWPP in Volume IV) and provided the option for respondents to switch the survey language from English to Spanish. Only two (2) respondents chose to complete the survey in Spanish.

The remainder of this section provides the results of the community survey, organized into the five categories used to divide up the survey:

- Natural Hazard Perceptions: Questions focused on the perceptions of natural hazards present in the community.
- Natural Hazard Preparedness: Questions focused on the preparedness of respondents' households for disaster events.
- Responding to Disasters: Questions focused on the willingness of respondents to evacuate, where they might go, and what they were concerned about during and immediately after a disaster event.
- Community-Wide Strategies: Questions focused on identifying effective methods for the County and other organizations to both inform respondents about natural hazards and mitigate hazard risk.
- Demographics: Questions helped identify key information about respondents. This section was optional but completed by nearly all respondents.

Each table or figure summarizing results includes the number of respondents for that given question (represented by the notation "n=X", where X is equal to the number of respondents). Where relevant or where results may be unclear, a brief narrative is included highlighting key components of the question on which to focus.

Unless otherwise noted, "Earthquake" when referenced in question includes both a Crustal Earthquake and a Cascadia Subduction Zone (CSZ) event.

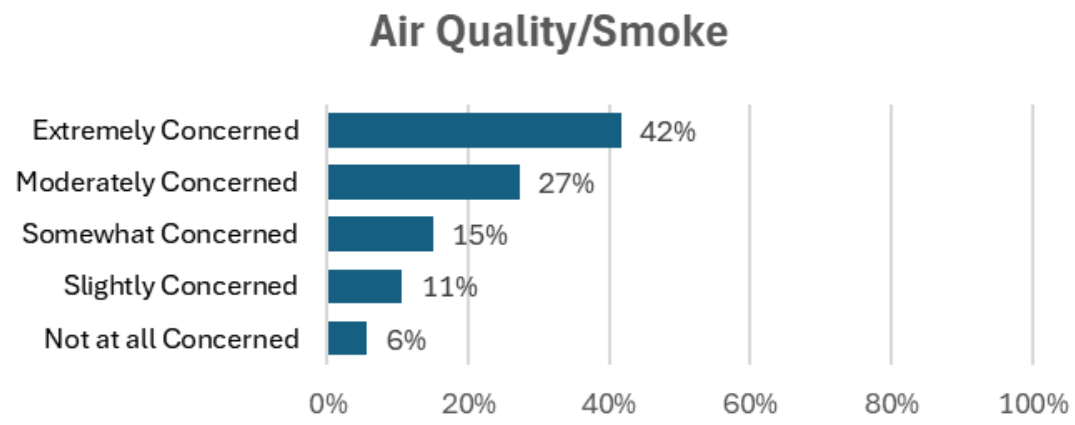
Natural Hazard Perceptions

Q1 asked respondents how concerned they were about hazards affecting the area where they live and/or work. To best represent concerns about each of the 11 hazards profiled in the NHMP, responses are broken down by hazard and arranged alphabetically.

The question also included an "Other" option, to which 33 people responded. The other options identified by respondents are not covered by NHMPs and included hazardous waste leakage, pollution, drinking water contamination, and political unrest.

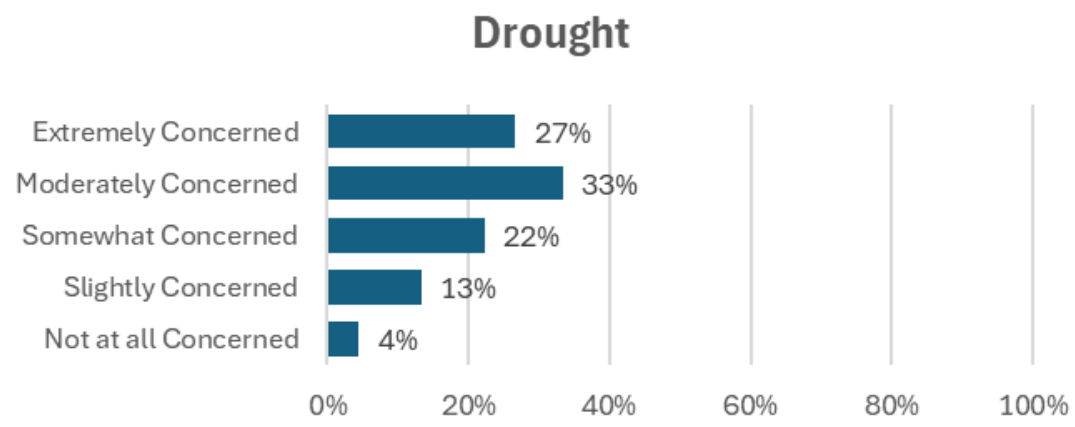
The top four hazards of concern from respondents are Wildfire, Air Quality/Smoke, Winter Storm, and Extreme Heat. Respondents were least concerned about Flood and a Volcanic Event.

Figure G-1 Air Quality/Smoke – Concerns



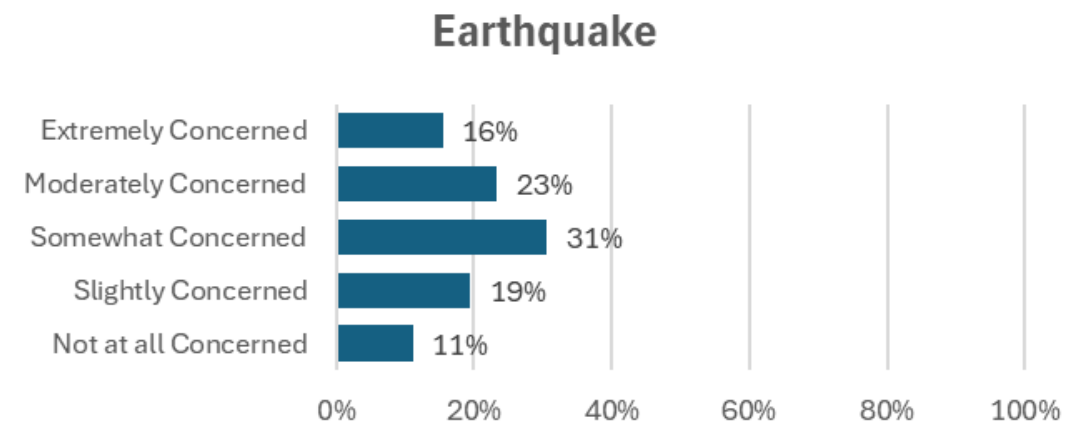
N=180

Figure G-2 Drought – Concerns



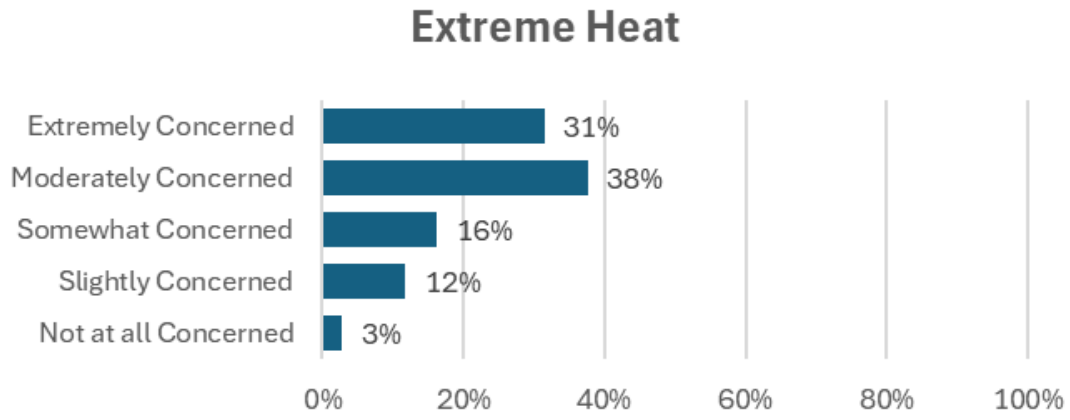
N=180

Figure G-3 Earthquake – Concerns



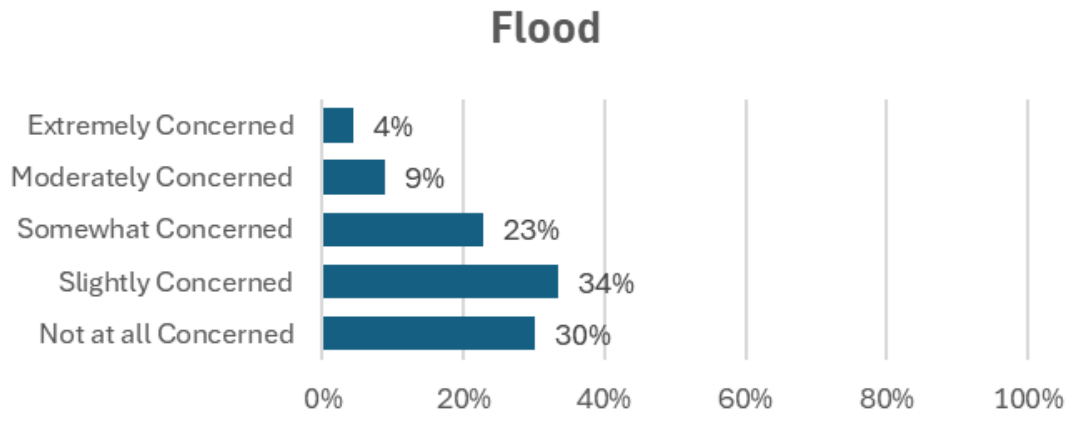
N=180

Figure G-4 Extreme Heat – Concerns



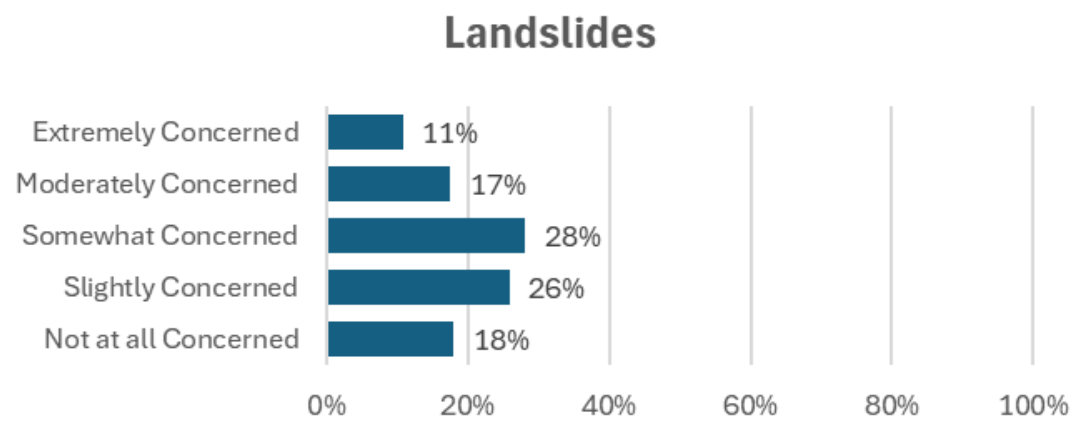
N=178

Figure G-5 Flood – Concerns



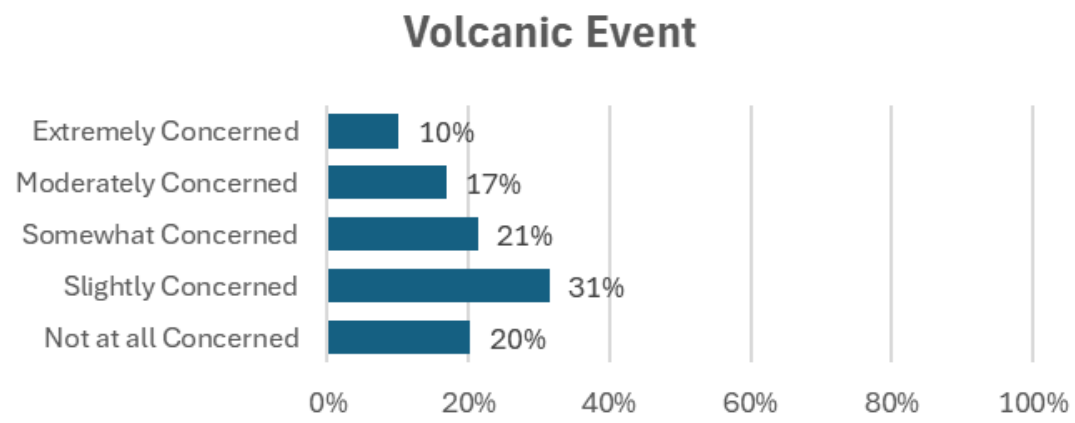
N=179

Figure G-6 Landslides – Concerns



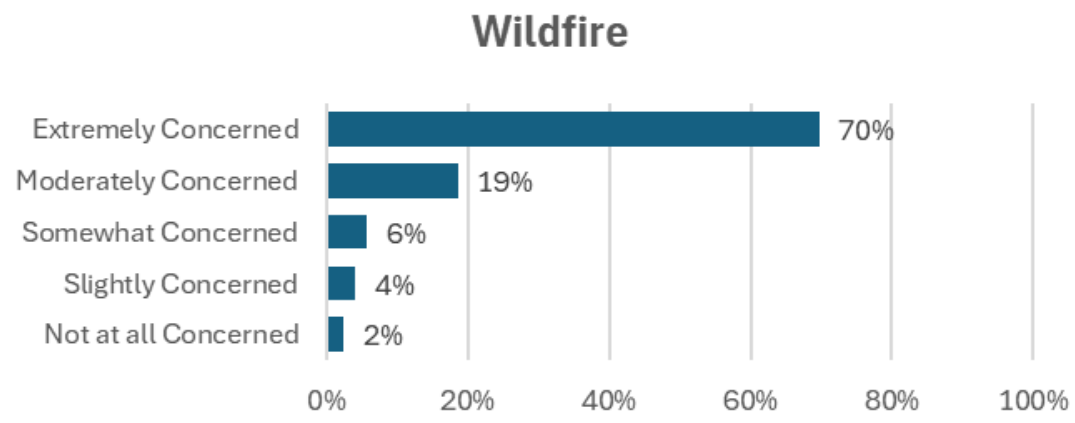
N=178

Figure G-7 Volcanic Event – Concerns



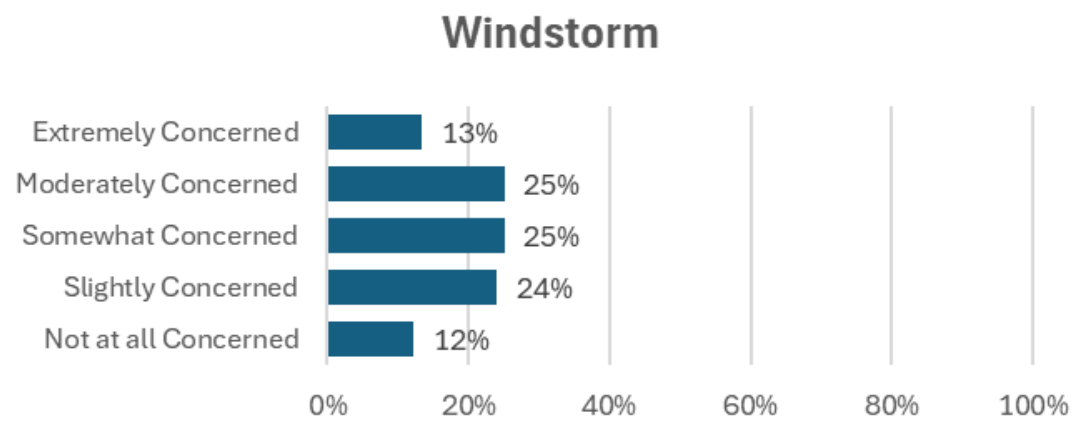
N=178

Figure G-8 Wildfire – Concerns



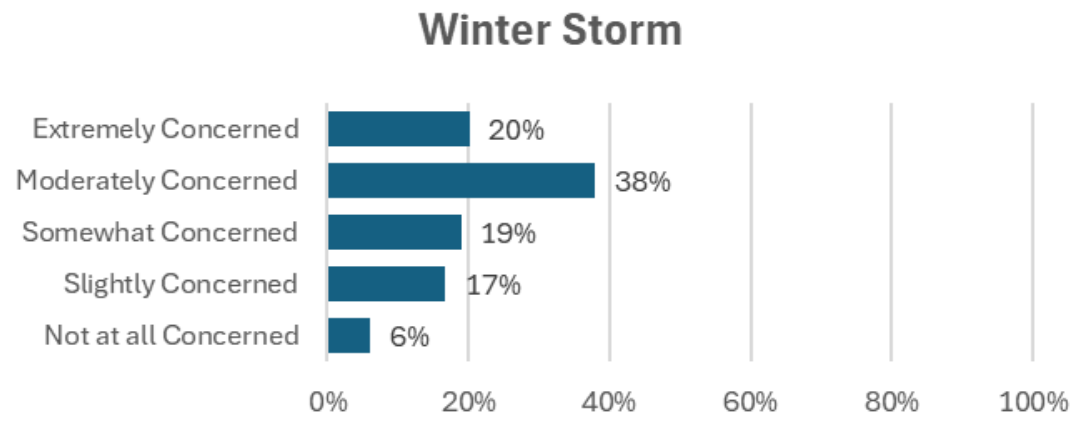
N=179

Figure G-9 Windstorm – Concerns



N=179

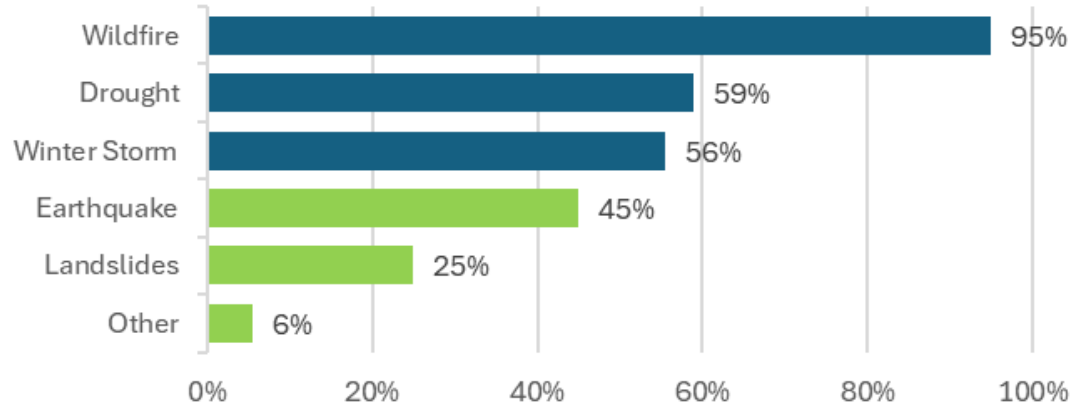
Figure G-10 Winter Storm – Concerns



N=179

Q2 listed the five hazards at the top of the 2018 NHMP's risk assessment (Wildfire, Drought, Winter Storm, Earthquake, and Landslides) and asked respondents to rank them from highest to lowest concern. Figure G-11 shows that the top three hazards (in blue) were Wildfire, Drought, and Winter Storm, while the bottom two hazards were Earthquake and Landslides.

Figure G-11 Top Natural Hazards of Concern

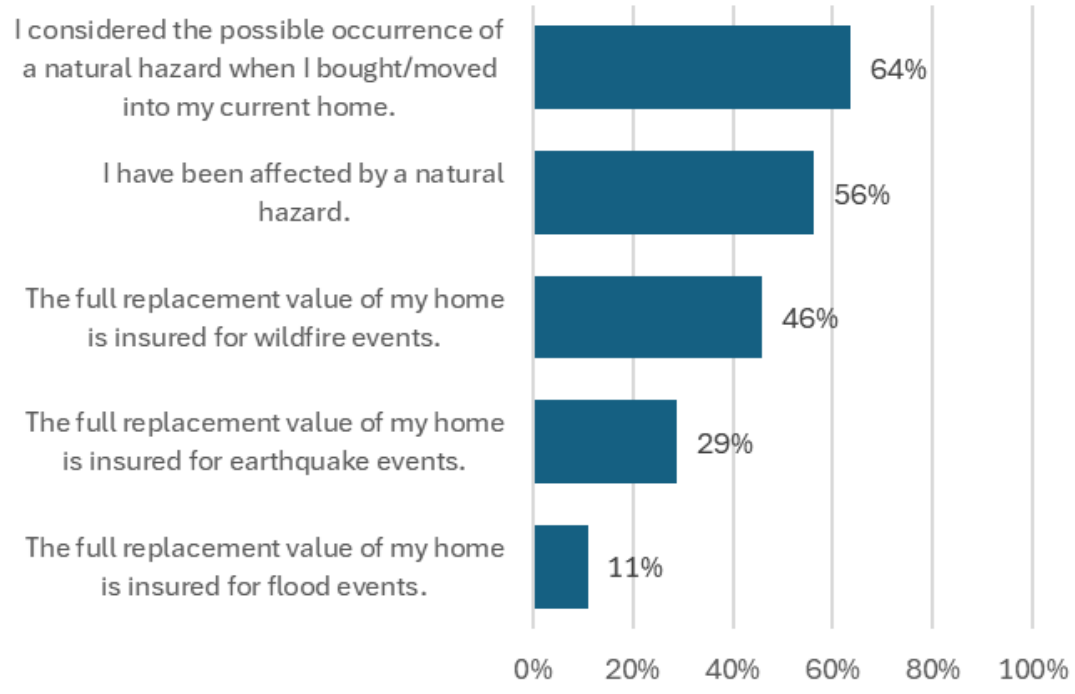


N=180

Natural Hazard Preparedness

Q3 asked respondents to select if any of five questions about hazard concerns applied to them. As Figure G-12 demonstrates, almost two-thirds of respondents (64%) stated that they considered the possible occurrence of a natural hazard when they bought or moved into their current home, while more than half (56%) said they had been affected by a natural hazard.

Figure G-12 Impacts of Natural Hazards

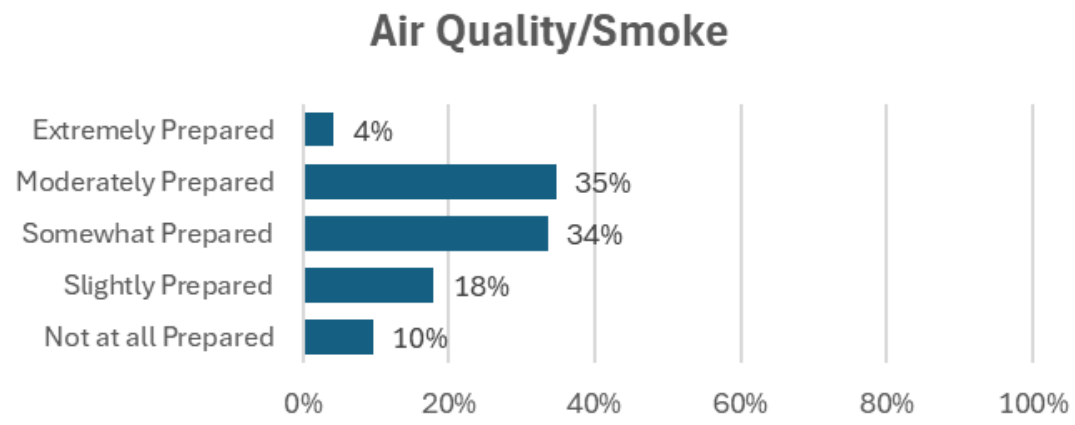


N=146

Q4 asked respondents how prepared they were for natural hazards. As with Q1, to best represent concerns about each of the 11 hazards profiled in the NHMP, responses are broken down by hazard and arranged alphabetically.

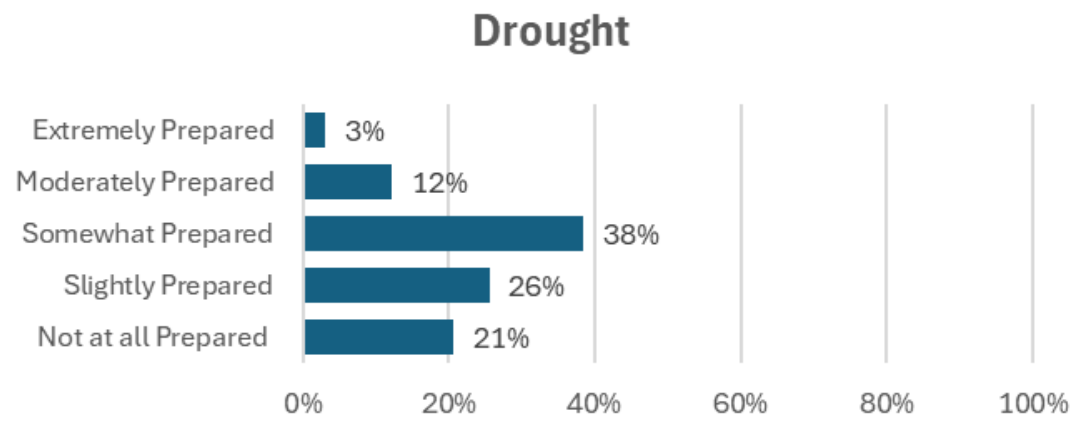
Respondents felt least prepared for a Volcanic Event, Landslide, Flood, and earthquake.

Figure G-13 Air Quality/Smoke – Preparedness



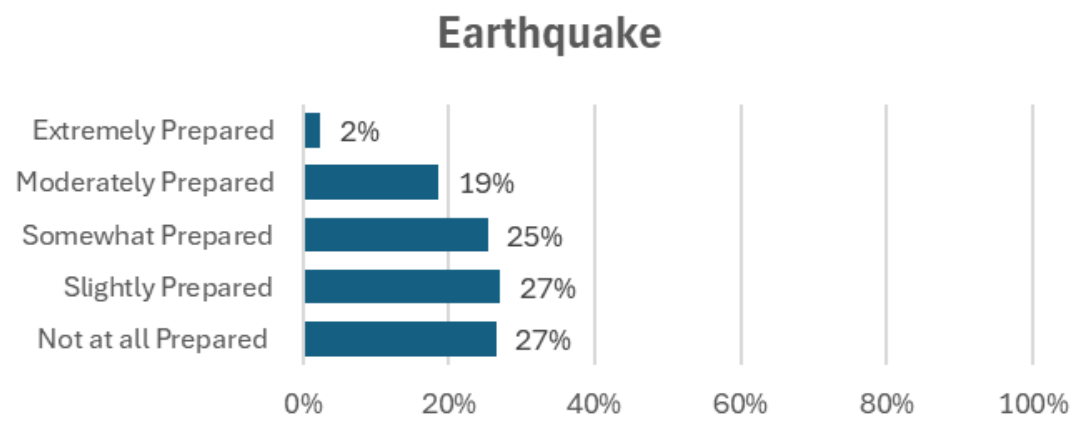
N=167

Figure G-14 Drought – Preparedness



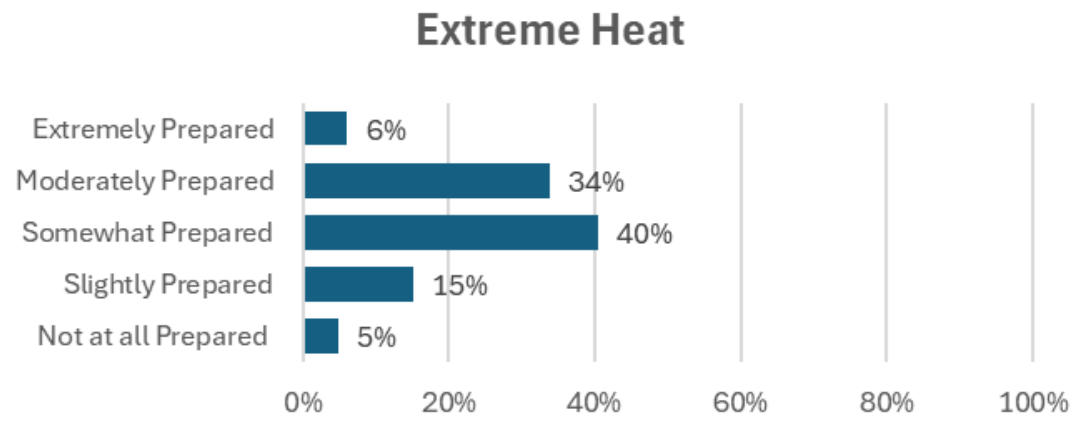
N=164

Figure G-15 Earthquake – Preparedness



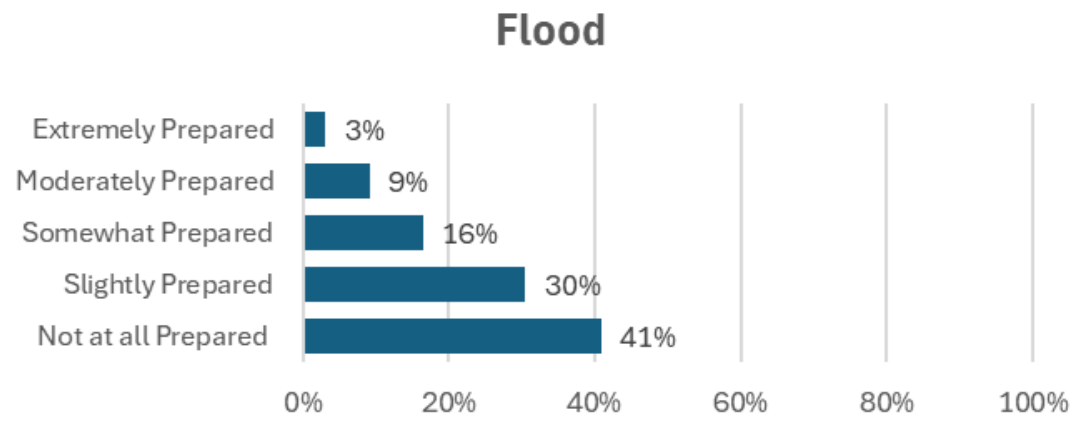
N=166

Figure G-16 Extreme Heat – Preparedness



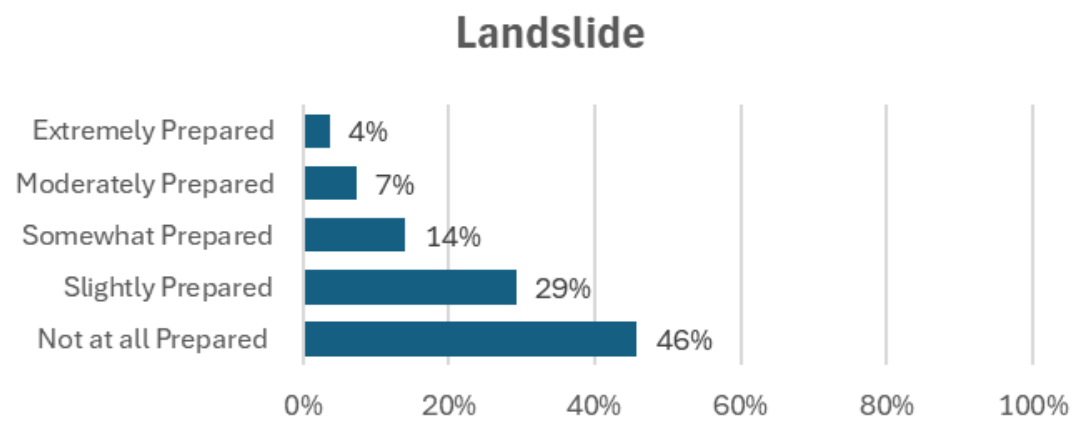
N=166

Figure G-17 Flood – Preparedness



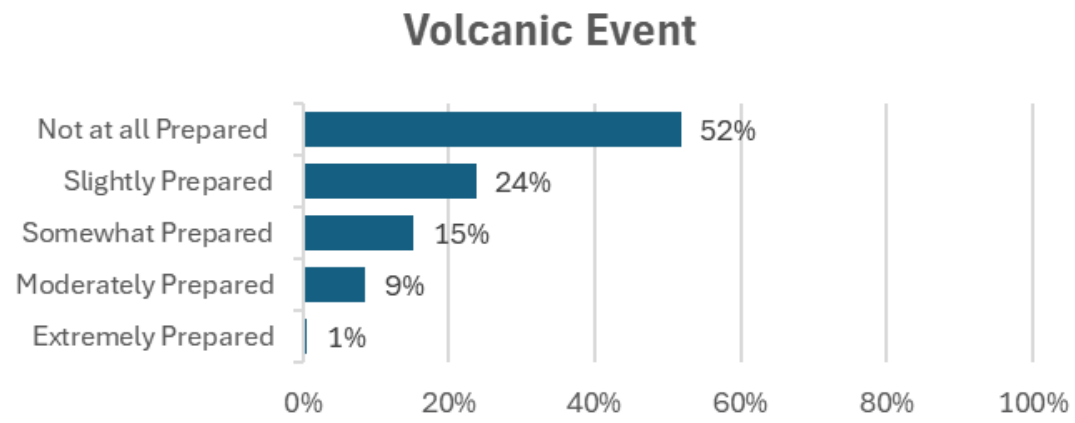
N=164

Figure G-18 Landslide – Preparedness



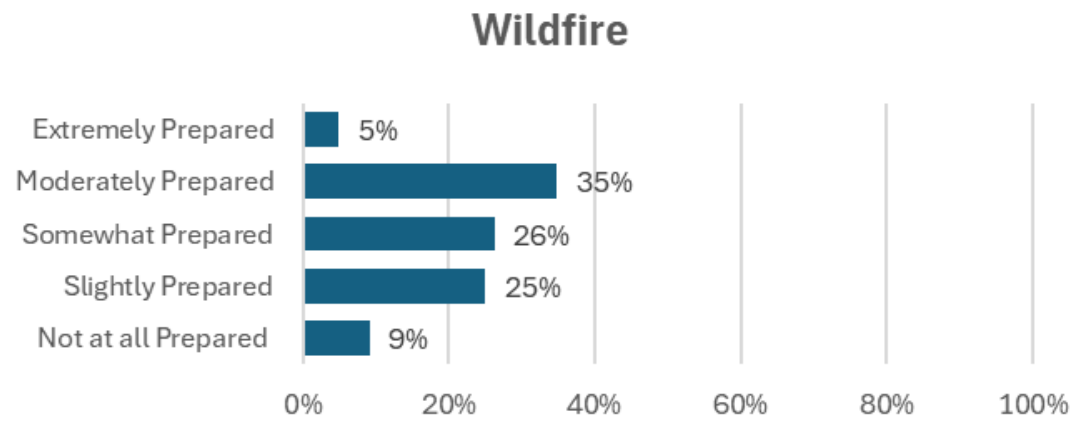
N=164

Figure G-19 Volcanic Event – Preparedness



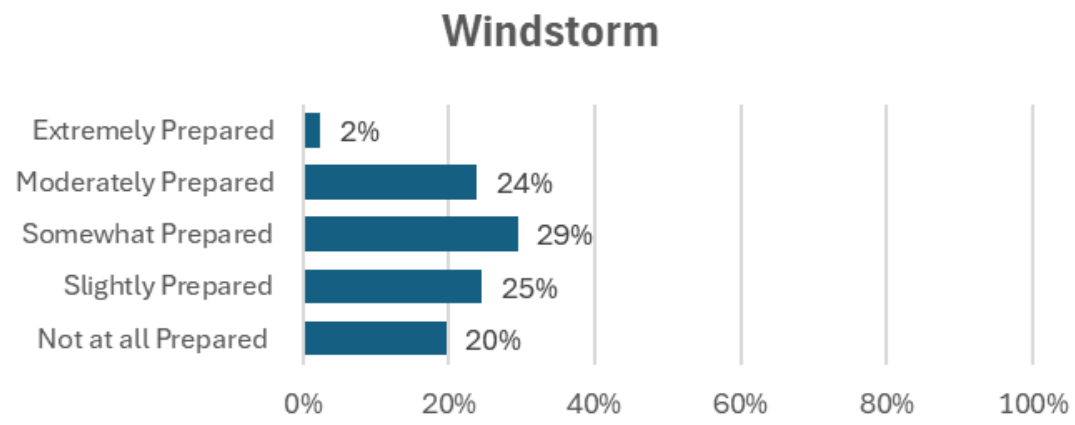
N=164

Figure G-20 Wildfire – Preparedness



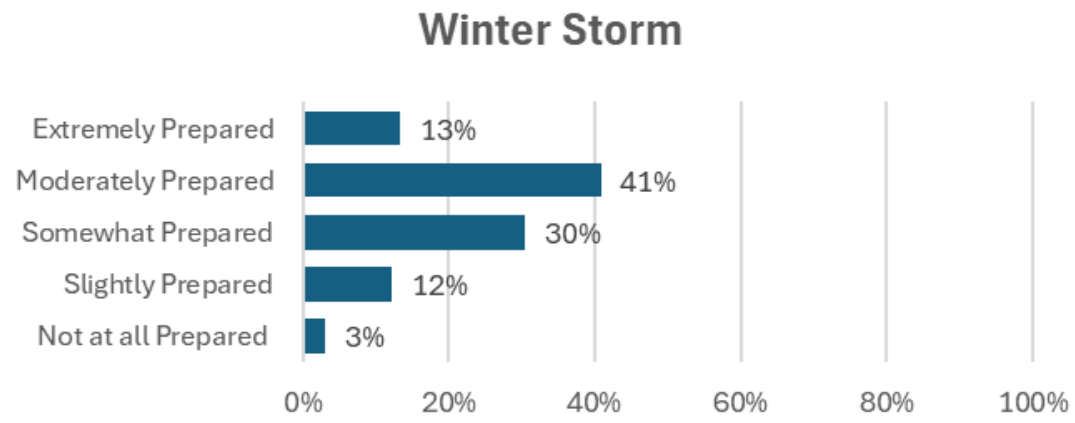
N=164

Figure G-21 Windstorm – Preparedness



N=163

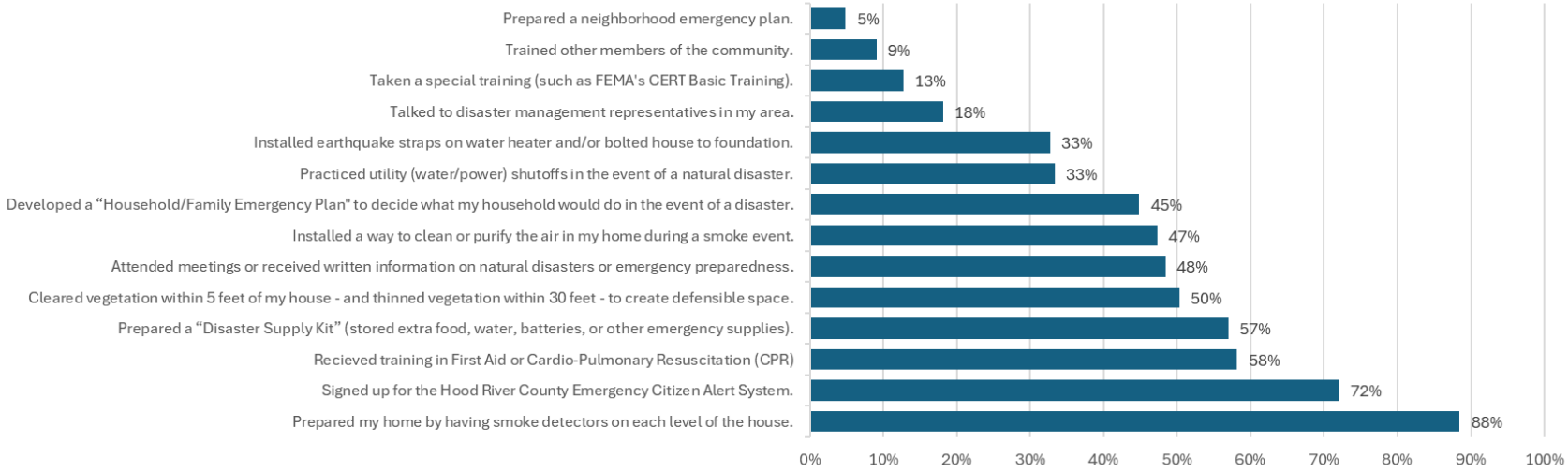
Figure G-22 Winter Storm – Preparedness



N=164

Q5 had respondents select options for what they have done to prepare for natural hazards (see Figure G-23). While nearly all respondents have installed smoke detectors on every level of their homes (88%) or signed up for the Hood River County Emergency Citizen Alert System (72%), only some have First Aid/CPR training (58%) or prepared a Disaster Supply Kit (57%).

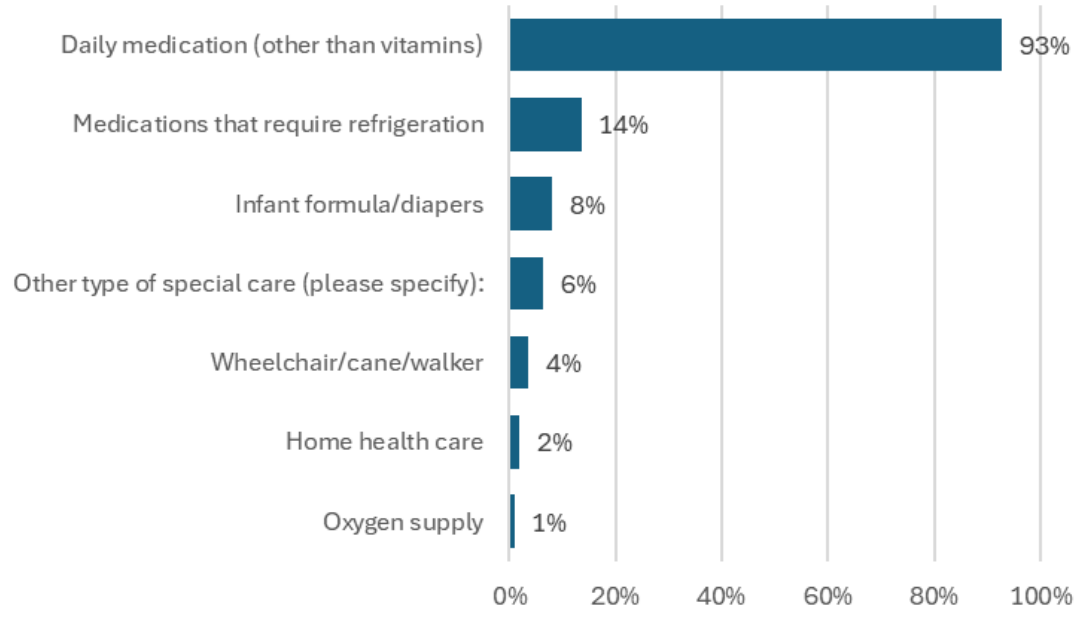
Figure G-23 Hazard Preparedness Measures



N=165

Q6 asked respondents what essential goods, services, and other items they or members of their household required (see Figure G-24).

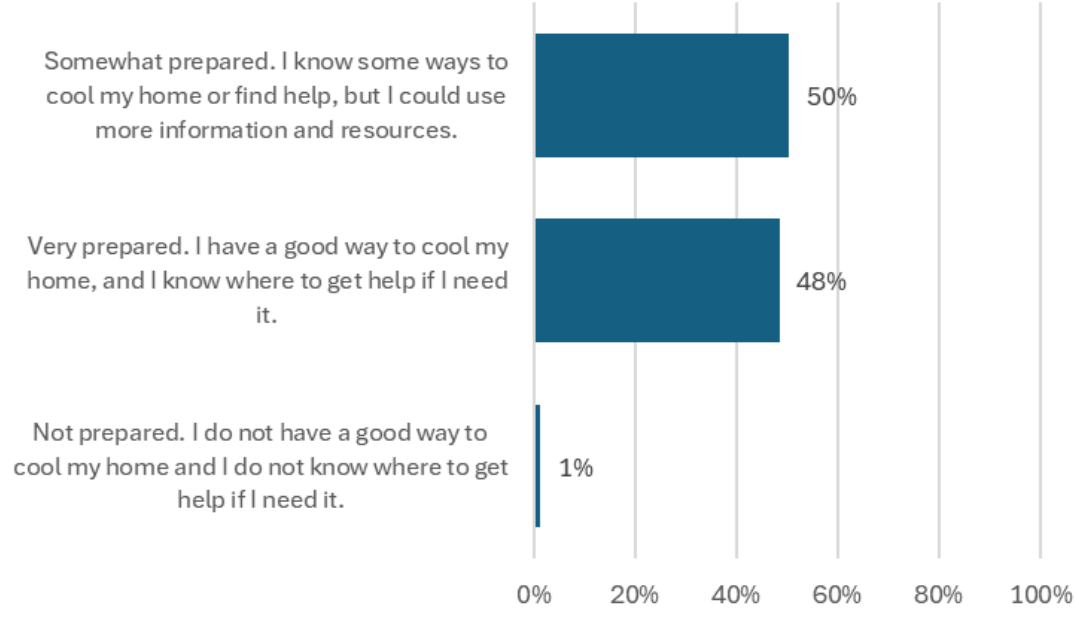
Figure G-24 Household Requirements



N=111

Q7 asked respondents how prepared they were for extreme heat events specifically, a hazard new to this update of the NHMP (see Figure G-25).

Figure G-25 Preparedness for Extreme Heat Events



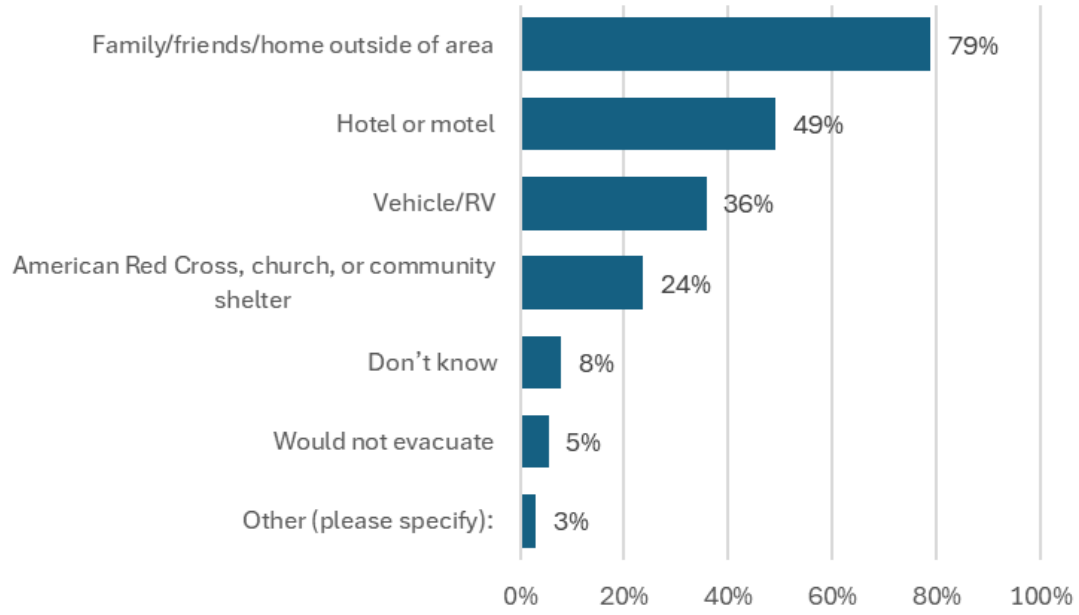
N=165

Responding to Disasters

Q8, Q9, Q10, and Q11 sought to ascertain respondents' feelings and preparedness level regarding a potential evacuation event due to a natural hazard. Some respondents (28%) were concerned about traffic during an evacuation event inhibiting their ability to leave the area, but most said they would evacuate and bring their pets with them (75%). Most respondents also said they would go to a friend or family members home outside the area (79%), a hotel or motel (49%), staying in their vehicle or an RV (36%), or use an American Red Cross, church, or other community shelter (24%) during an evacuation event.

Q8 asked respondents where they would go if they evacuated (Figure G-26).

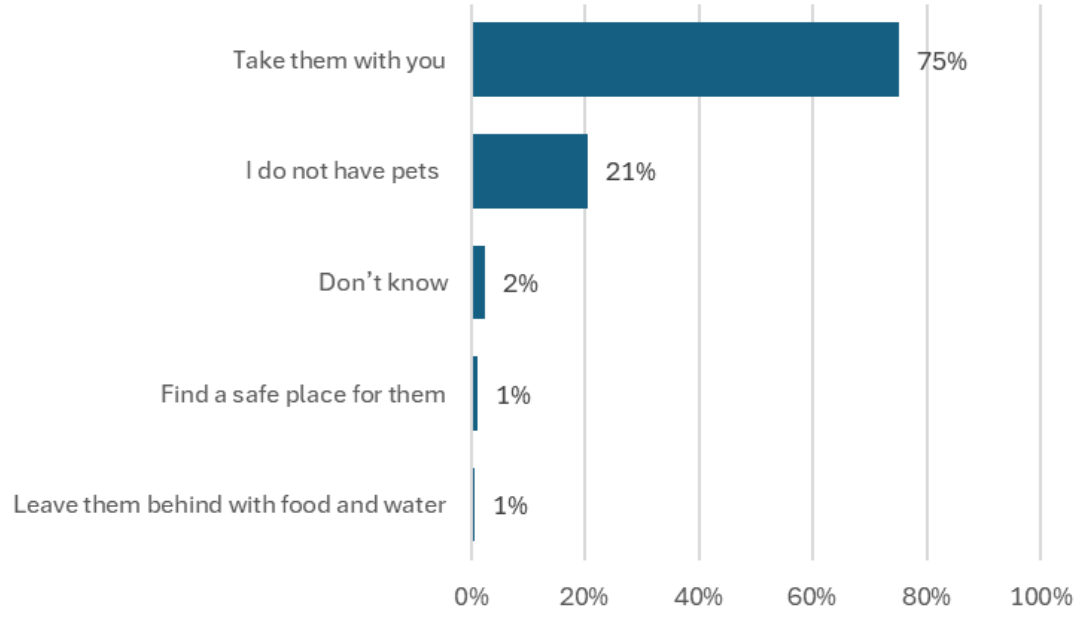
Figure G-26 Where Respondents Would Go If Asked to Evacuate



N=165

Q9 asked respondents what they would do with their pets if their household was asked to evacuate (Figure G-27).

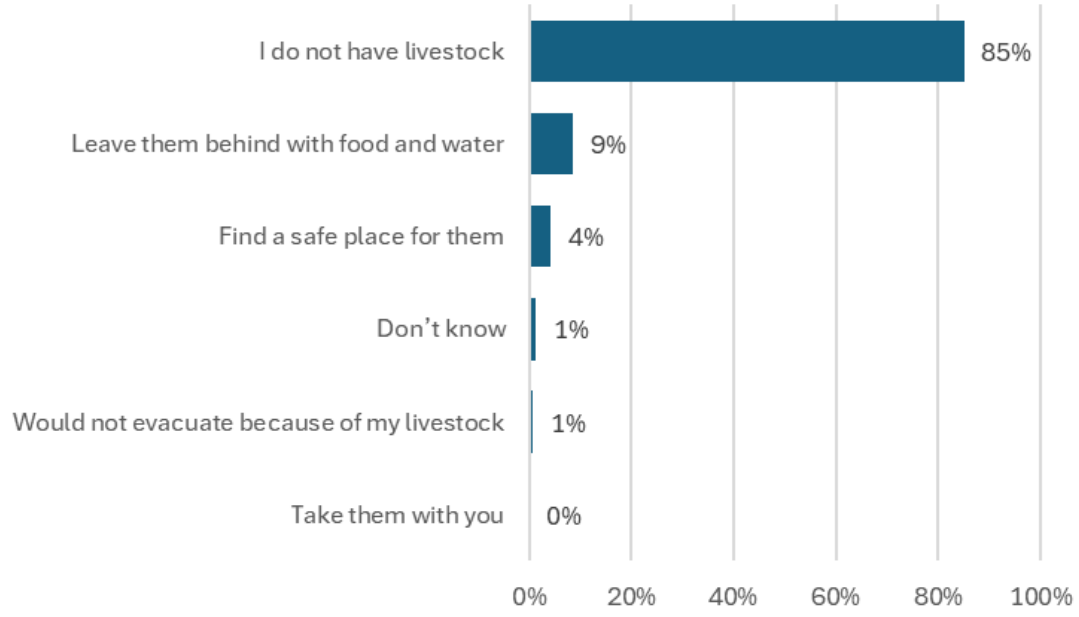
Figure G-27 What Respondents Would Do with Pets if Asked to Evacuate



N=165

Q10 asked respondents what they would do with their livestock (including horses, goats, and pigs) if their household was asked to evacuate (Figure G-28).

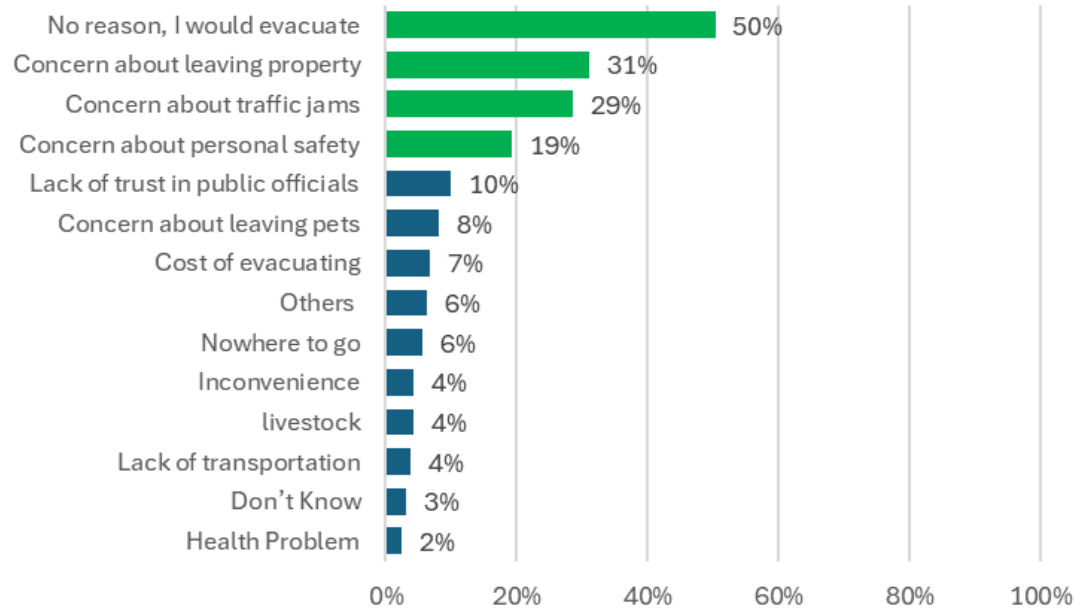
Figure G-28 What Respondents Would Do with Livestock if Asked to Evacuate



N=161

Q11 asked respondents to select up to three reasons that would prevent them from evacuating (Figure G-29).

Figure G-29 Main Reasons Preventing Respondents from Evacuating

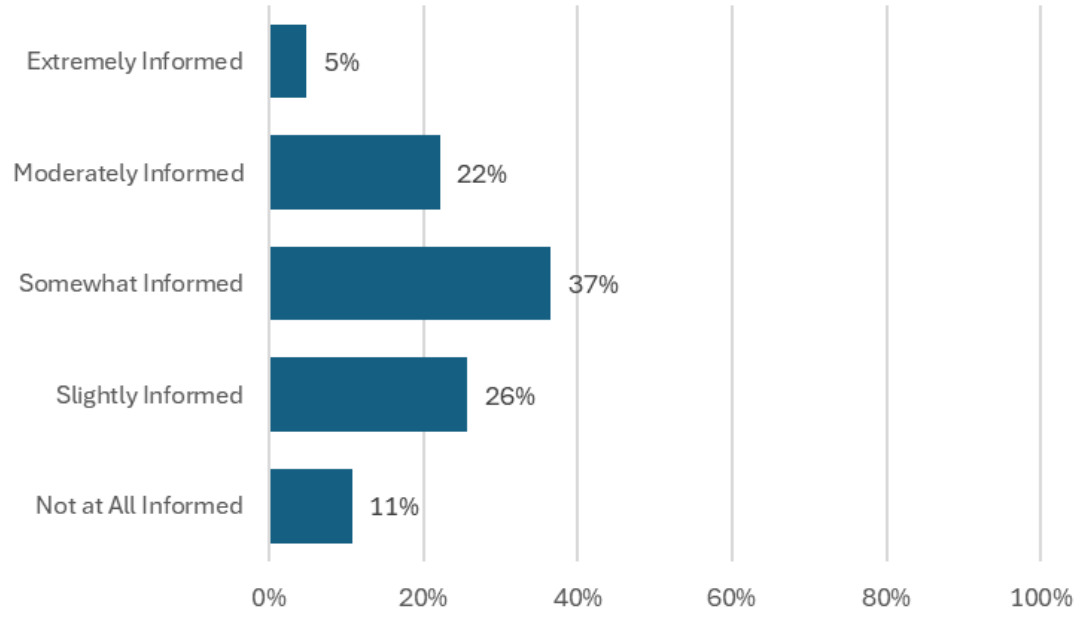


N=161

Community-Wide Strategies

Q12 asked respondents the degree to which they felt they were informed about their community's programs for natural hazard mitigation and disaster preparedness (Figure G-30). More than a third of respondents (37%) felt either slightly or not at all informed at all.

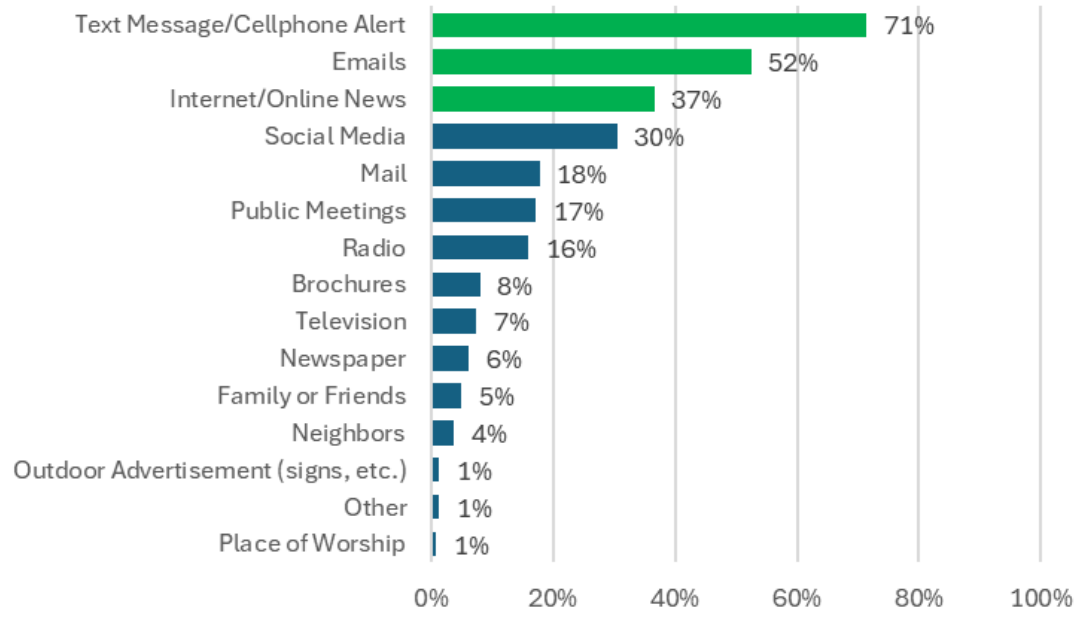
Figure G-30 Degree of Knowledge about Hood River County Hazard Mitigation/Preparedness



N=163

Q13 asked respondents to select up to three choices about how they prefer to receive information regarding disasters or emergency situations (Figure G-31). Nearly all respondents preferred to receive emergency information such as alerts digitally, including via text/cellphone alert (71%), emails (51%), online news (37%), and social media (30%).

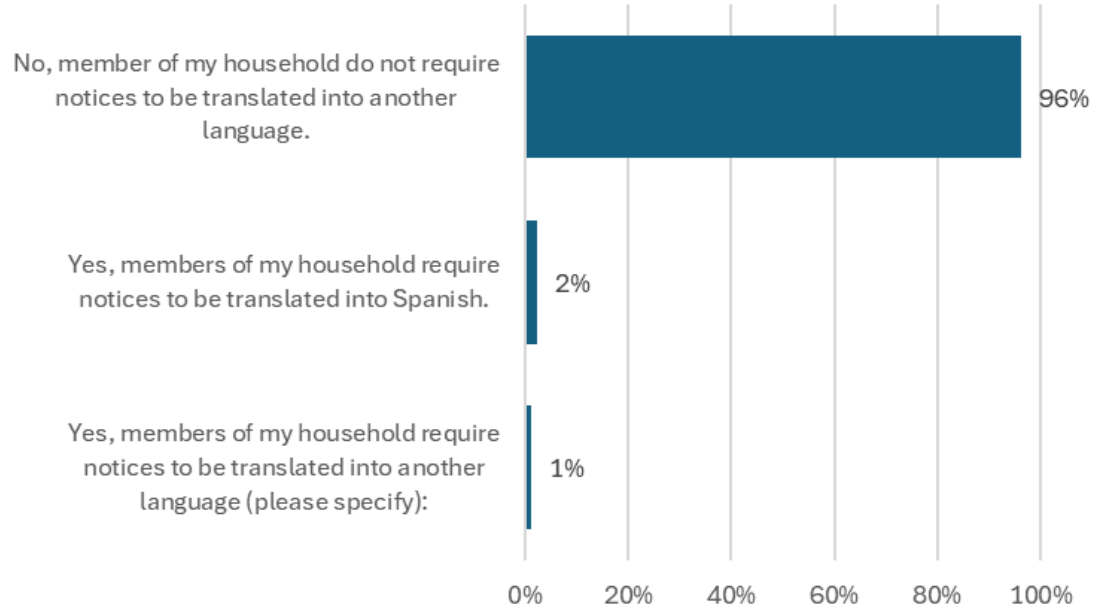
Figure G-31 Preferred Method for Receiving Emergency Information



N=164

Q14 asked respondents if members of their household would require translating emergency notices into languages other than English. The two languages requested by respondents for translation were Spanish and Braille.

Figure G-32 Do Members of Respondents' Households Require Translation of Emergency Notices into Other Languages?



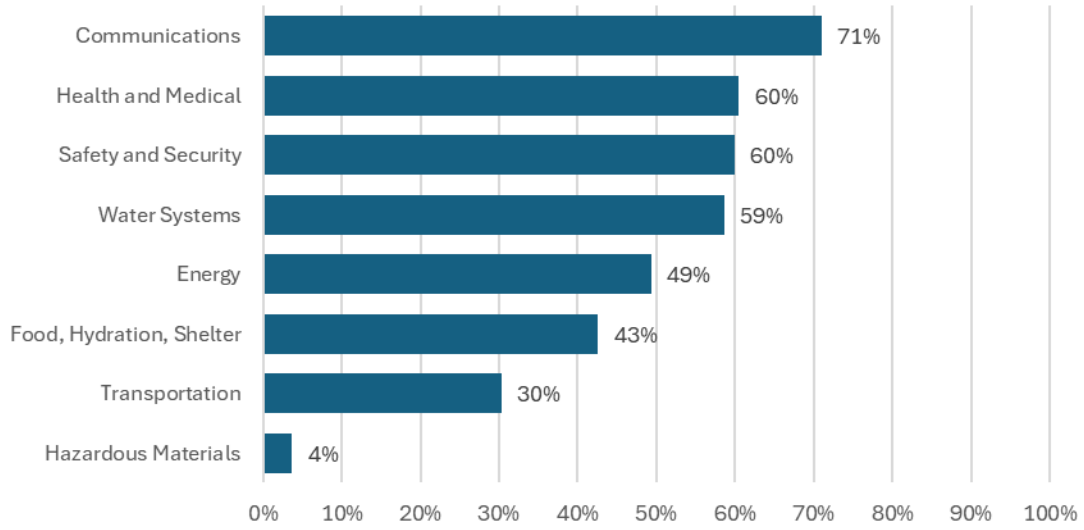
N=164

Q15 asked about FEMA's eight (8) categories of community lifelines,[75] which are services that enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security. Respondents were asked to identify which lifelines Hood River County should prioritize and could choose up to four options.

As Figure G-33 shows, the most popular choices were Communications (71%), Health and Medical (60%), Safety and Security (60%), and Water Systems (59%).

[75] Note: FEMA's community lifelines changed between distribution of the community survey and the completion of this NHMP, so the categories shown in Figure G-33 may differ slightly from FEMA's current categories.

Figure G-33 Prioritization of FEMA Community Lifelines



N=162

Finally, Q16 was an open-ended question that gave respondents a chance to share any other comments or suggestions to reduce natural hazard risks and improve disaster management and preparedness in Hood River County. All responses are listed below.

- *Yes - can we please get an update to the 2006 Emergency Wildfire Plan? And provide more resources so that neighborhoods know how to work together in the event of a disaster. It's also likely that cellphone towers may fail during extreme events - what's the backup plan?*
- *See if there is a way to speed up the reverse 911 texts/calls. When they have gone out previously they were sometimes hours after the event occurred. More detailed information helps people make better decisions.*
- *The bridge to white salmon seems like a clear bottleneck. It may be dramatic but I've worried about lahars flooding down the hood river/valley if mt hood ever erupted at a moments notice.*
- *No money for this program*
- *Reduce wildfire risk by closing trails and county forest lands to recreation each summer - timing determined by metrics indicating dangerously dry conditions.*
- *Prohibit private fireworks from June through November each year. Cancel public fireworks show when conditions warrant.*
- *Update evac plan*
- *We must have a plan for evacuating Hood River. I have never seen one, and I have looked. We all know what happened when the oil car derailment in Mosier happened: gridlock. The presentation that I saw from the County emergency management group referenced the event and stated that folks need to "get out early." We have to do better than that. I raised this issue with the HR cc, and the only response was that they would remind the community to sign up for the County Emergency Notification system, which, in my opinion, falls very short of what is needed. I have been very impressed with the City of*

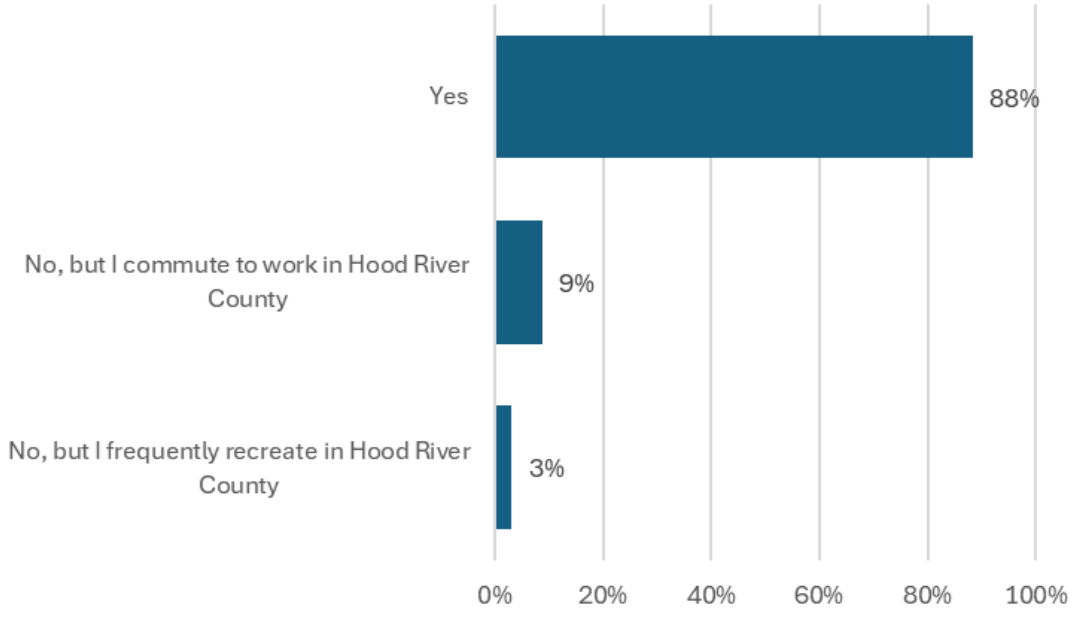
Ashland's work. They have an evacuation plan; they have the best information I have found about defensible space and hardening your home. The county and city need to get that type of information to people and a solid evacuation plan ASAP.

- *With railroad tracks running straight through wooded areas, with massive amounts of dry timber, dead brush…we are one single spark away from devastation. One could say this isn't "natural" disaster, but one would be wrong to say it, and it is WAY more likely than a drought or earthquake.*
- *Selective thinning and controlled burns on forest land.*
- *Improve awareness about available resources such as emergency alerts and shelters. I only learned about the emergency alert system sign up option by taking this survey.*
- *Development of a permanent fire line 1/2 mile wide in the county to protect the town.*
- *Make better use of the over 160 Licensed Ham operators in Hood River County, a resource that can provide help regardless of conditions. We're here to help!*
- *Our Community Wildfire Preparedness Plan dates from 2006. Our county hasn't applied for grants to address wildfire preparation issues. A substantial number of visitors on summer days are tourists who would have no idea where to evacuate to, and don't necessarily know the areas described as "westside" etc. We allow "camping" by homeless people in wooded areas which presents a wildfire risk. Creating a community team that begins to address these issues would be a start, particularly if newer members could be recruited to add their ideas (i.e. vs the usual "talking heads" of the county).*
- *Encourage neighborhood plans, for example a point person volunteer in each neighborhood who can be contacted for neighbors to report to. Then the contact person can have accurate head counts for the authorities so it's easier to tell if anyone is missing.*
- *Sprinklers for wildfires.*
- *Teach preparedness courses to high school kids as part of their curriculum. They can help guide, direct, and translate when needed.*
- *Identify specific neighborhoods, get people introduced and ask them to create an action plan - start with fire safety, earthquake preparedness and ""how to get out of town safely".*
- *Indian Creek when it's dry is an accident waiting to happen, especially the in-town part. I'm not sure what to do to mitigate fire risk there. The oil trains are another accident waiting to happen.*
- *Let's have a public get together at Columbia Center of the Arts Stage this Summer with the local Gorge folks that do the annual update on our climate and all that. …see you there, thanks for the cool study!*
- *Engaging with networks and groups in the Gorge for some sort of annual, coordinated disaster preparedness campaign/event. Piggyback on some of our bigger community and school events to distribute preparedness information. Distribute air filters to vulnerable or low-income community members. Continue to use social media, city newsletters, and newspaper for preparedness info.*
- *We should have an audible loud warning system like they have in Tsunami/tornado prone areas that alert people that something is happening or imminent. Also the text message alert system is crucial as not everyone watches broadcast television anymore but almost everyone has a cellphone.*

- *More funding for fire dept to educate neighborhoods about fire mitigation around their homes. More education/media about becoming Firewise.*
- *This should be presented in the schools, so our children grow up learning about this.*
- *Clear county owned land of debris that creates a higher risks in my area*
- *Limb up and thin overgrowth of trees throughout town.*
- *Encourage residential HOA's to be Firewise communities.*
- *Encourage residents and businesses to do property reviews based on Firewise practices.*
- *We need to be doing everything possible to reduce impacts to extreme weather changes from the climate emergency. We are not hardly doing anything yet. In fact, most of our population is making it worse by their daily choices.*
- *Stop allowing camping in county forest land (post canyon) during high wildfire danger.*
- *Prioritizing & communicating electrical grid shutoffs during high wind/high fire risk times.*
- *Keep the railroad industry accountable*
- *Bringing CERT or other community disaster education to the area through neighborhood/community groups.*
- *Find a way to get the information to all populations in the county in the event of a disaster.*
- *Lift people out of poverty*
- *Work closely with neighboring counties to help citizens that live and work in border towns (i.e. Cascade Locks) and might be affected by spillover from a disaster in another county.*

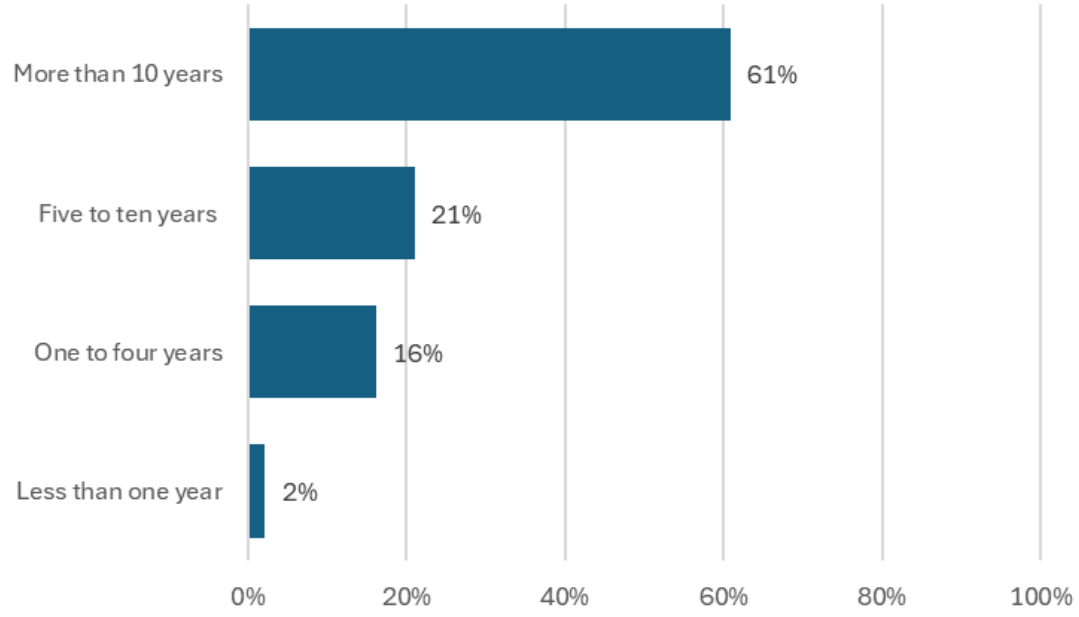
Demographics

Figure G-34 Do You Live in Hood River County?



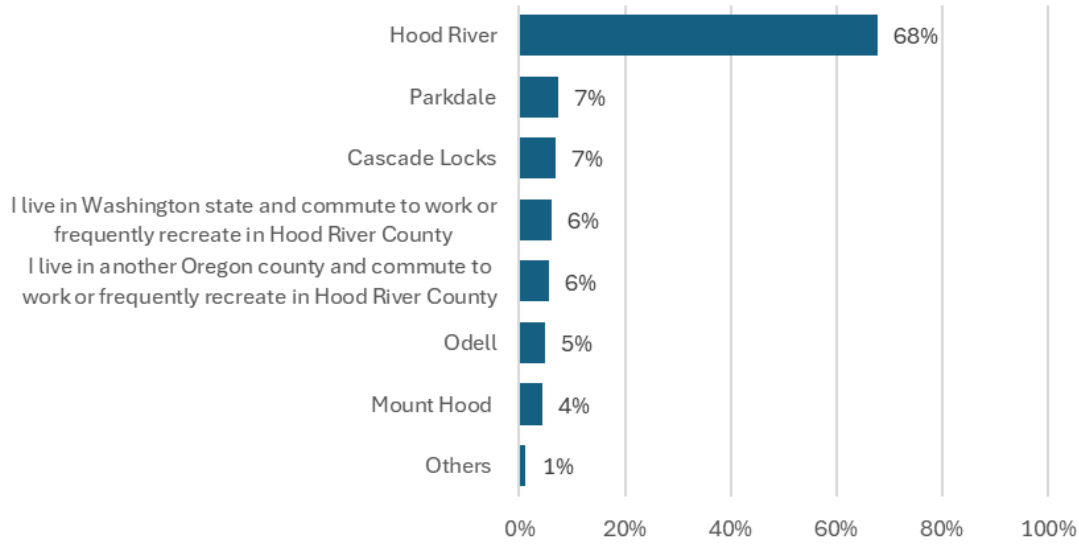
N=162

Figure G-35 How Long Have You Lived in Hood River County?



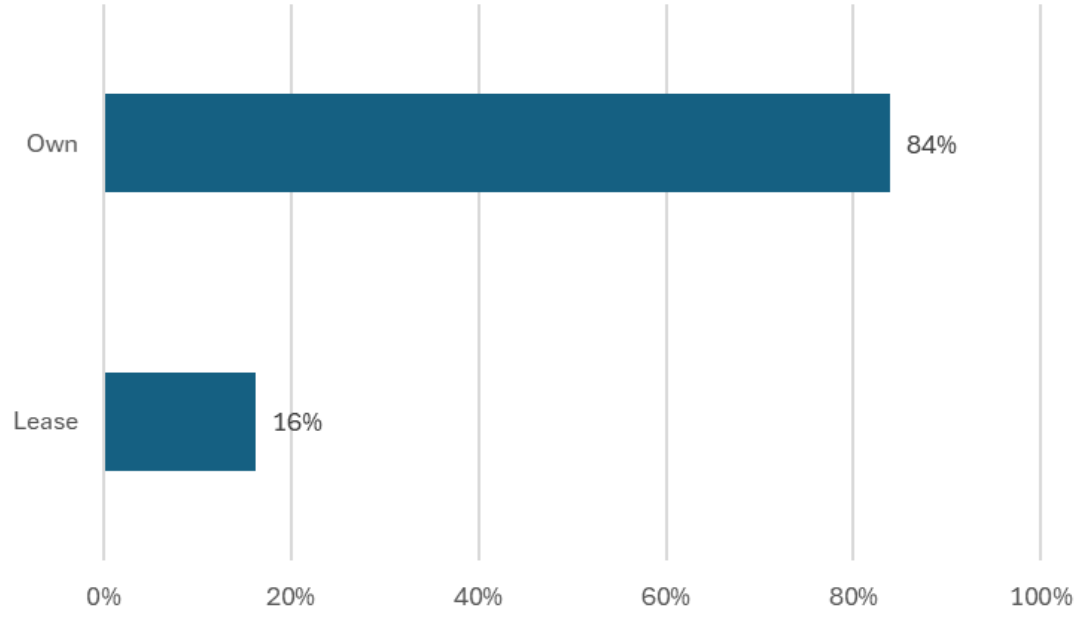
N=143

Figure G-36 Where in Hood River County Do You Live or Own Property?



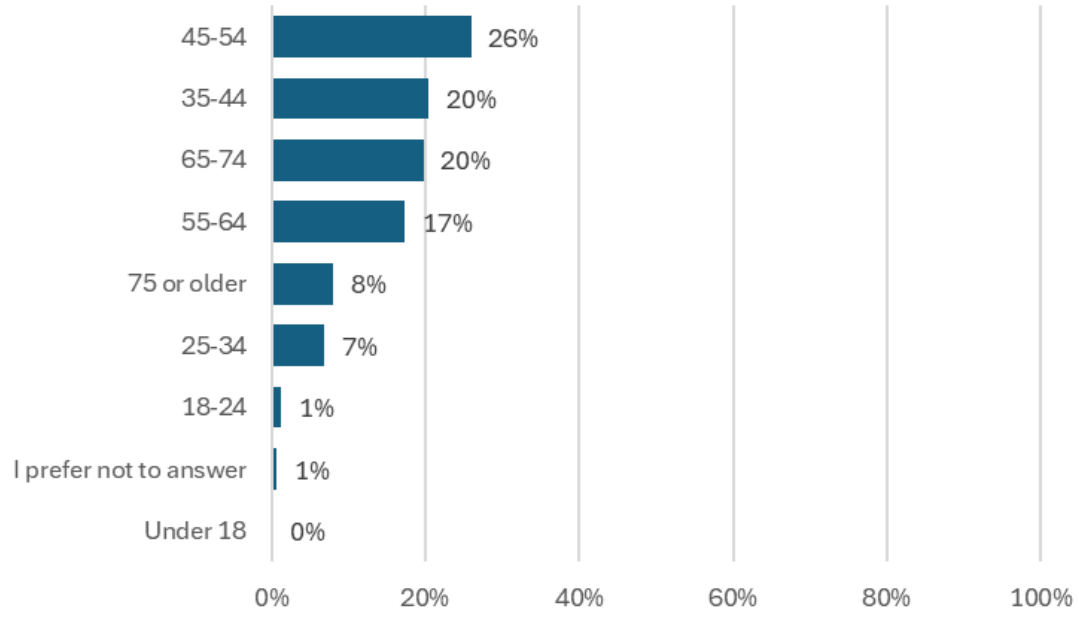
N=169

Figure G-37 Do You Lease or Own Your Private Residence?



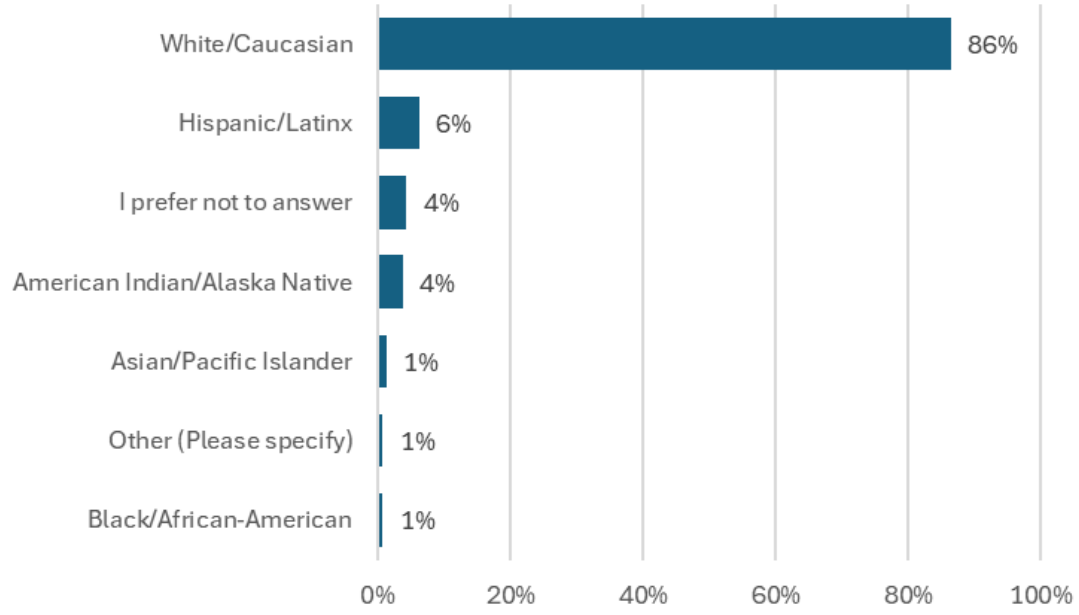
N=161

Figure G-38 Which Best Describes Your Age Group?



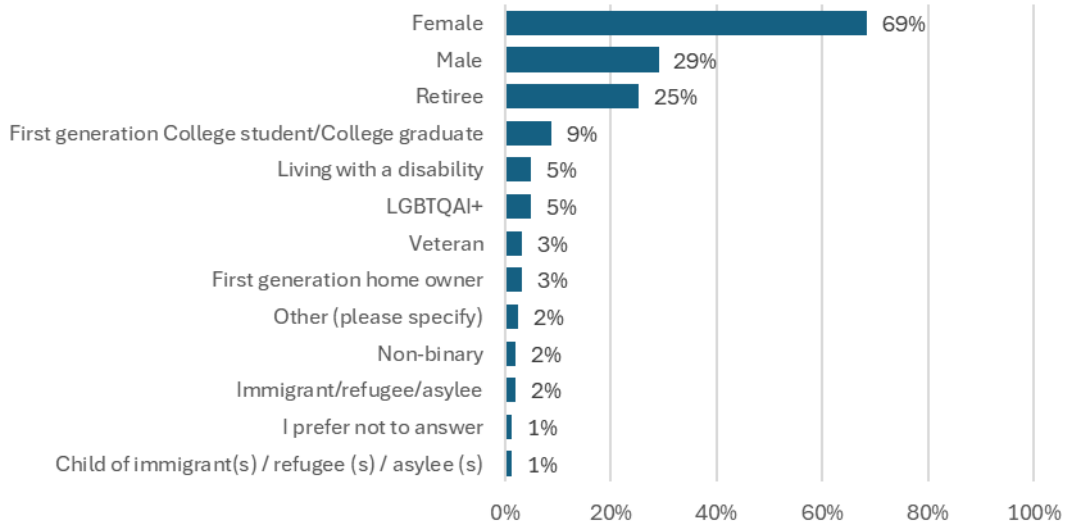
N=162

Figure G-39 Which Best Describes Your Race or Ethnic Background?



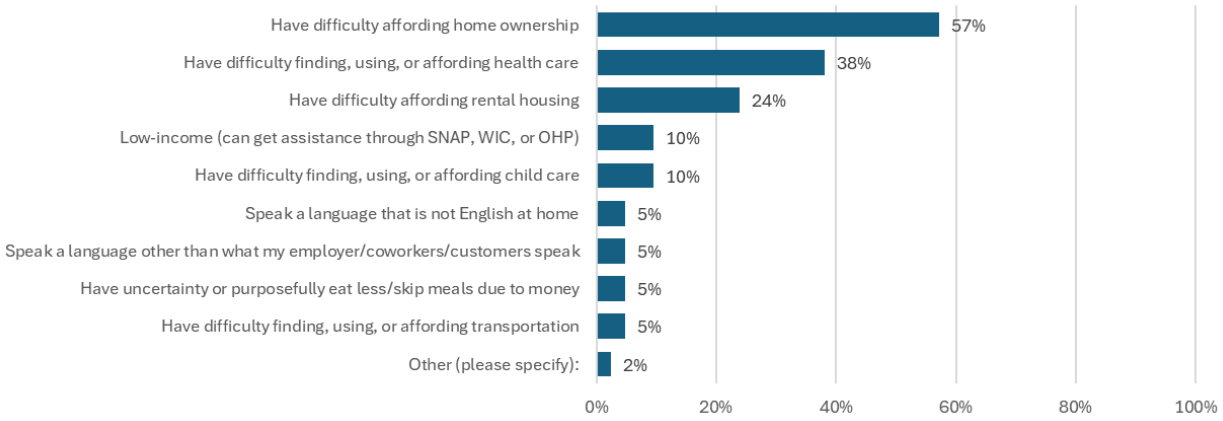
N=167
Note: this question was set as "select all that apply"

Figure G-40 What Do You Identify As, If Any?



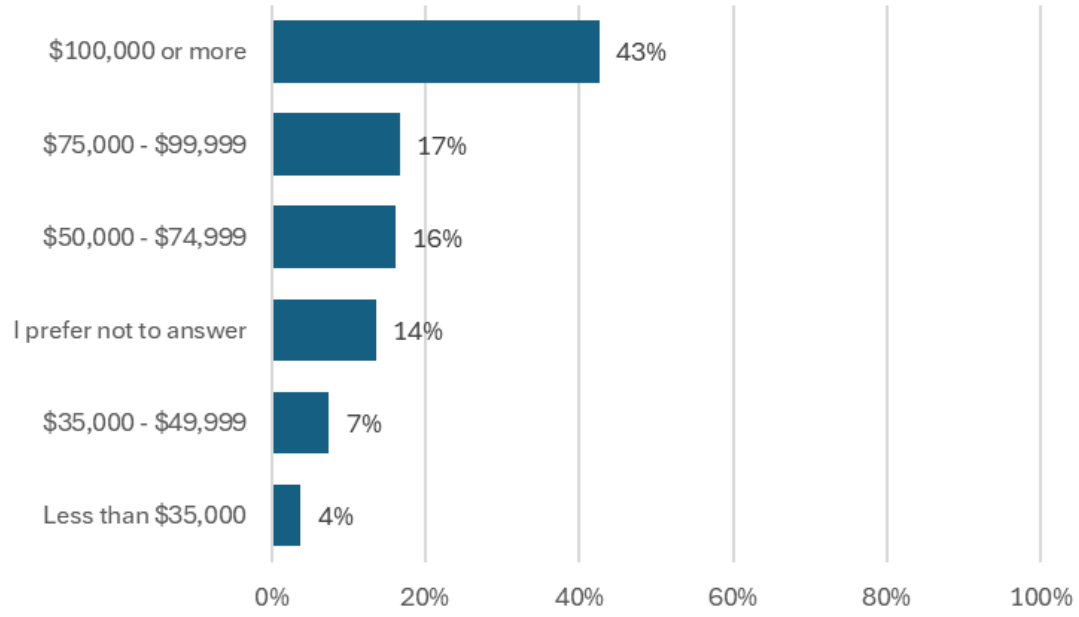
N=162
Note: this question was set as "select all that apply"

Figure G-41 What Applies to You, If Any?



N=42
Note: this question was set as "select all that apply"

Figure G-42 Which Best Describes The Combined Income of Your Household?



N=162