

# Section 1

## Introduction

The City of Portland (the City) developed this Natural Hazard Mitigation Action Plan in an effort to reduce future loss of life and property resulting from natural disasters. It is impossible to predict exactly when these disasters will occur, or the extent to which they will affect the City. However, with careful planning and collaboration among public agencies, private sector organizations, and citizens within the community, it is possible to minimize the losses that can result from natural disasters.

A natural disaster occurs when a natural hazard impacts people or property and creates adverse conditions within a community. Natural hazards include: floods, earthquakes, volcanic eruption, extreme weather, and wildfire. Each has the potential to harm people or property.<sup>i</sup> This plan focuses on the natural hazards that could affect the City of Portland, Oregon. Portland's topography, the presence of streams and its proximity to the Cascade Range and the Columbia Gorge play a large role in determining which natural hazards affect the City. Portland is subject to and has been affected by flooding, landslides, earthquakes, wildfires, windstorms, extreme winter storms, and volcanic eruption in the past. The historic impacts of these hazards have resulted in economic loss and damaged infrastructure in and around the City.

### Why Develop a Mitigation Plan?

The dramatic increase of the costs associated with natural disasters over the past decades has fostered interest in identifying and implementing effective means of reducing vulnerability. This natural hazard mitigation plan is intended to assist the City of Portland in reducing its risk from natural hazards by identifying resources, information, and strategies for risk reduction. It will also help to guide and coordinate mitigation activities throughout the City. The City received funds to develop the plan from the Hazard Mitigation Grant Program (HMGP) and the Flood Mitigation Assistance grants, both Federal Emergency Management Agency (FEMA) grant programs. The City of Portland provided the additional funds for the plan's development from its General Fund.

In 2000, the Federal Emergency Management Agency issued the Disaster Mitigation Act of 2000, commonly known as DMA 2000. Under this Act, states, communities, and tribal governments must complete FEMA-approved natural hazard mitigation plans to be eligible for certain federal assistance.<sup>ii</sup> This plan will address the federal criteria outlined in FEMA Interim Final Rule 44 CFR Part 201. Upon

acceptance by FEMA, the City of Portland will gain eligibility for the Pre-Disaster Mitigation Grant Program, the Hazard Mitigation Grant Program funds, and Flood Mitigation Assistance program funds.

The plan is non-regulatory in nature, meaning that it does not set forth any new policy. It does, however, provide: (1) a foundation for coordination and collaboration among agencies and the public in the City of Portland; (2) identification and prioritization of future mitigation activities; and (3) assistance in meeting federal planning requirements and qualifying for assistance programs. The mitigation plan works in conjunction with other City plans and programs including the Comprehensive Land Use Plan, Comprehensive Emergency Management Plan, and the Capital Improvement Plan as well as the State of Oregon Natural Hazard Mitigation Plan.

The plan provides a set of actions to prepare for and reduce the risks posed by natural hazards through education and outreach programs, the development of partnerships, and implementation of preventative activities such as land use or watershed management programs. The actions described in the plan are intended to be implemented through existing plans and programs within the City.

The plan will set the stage for a concerted and managed effort to identify ways to reduce loss, to meet the Disaster Mitigation Act of 2000 requirements, and prioritize action items for benefit/cost analysis.

## Why Natural Hazard Mitigation?

What is natural hazard mitigation? Natural hazard mitigation is defined as permanently reducing or alleviating the losses of life, property, and injuries resulting from natural hazards through long and short-term strategies. Example strategies include planning, policy changes, programs, projects, and other activities. Mitigation is the responsibility of individuals, private businesses and industries, state and local governments, and the federal government.<sup>iii</sup>

Engaging in mitigation activities provides jurisdictions with a number of benefits including reduced loss of life, property, essential services, critical facilities, economic hardship, reduced short-term and long-term recovery and reconstruction costs, increased cooperation and communication within the community through the planning process and increased potential for state and federal funding for recovery and reconstruction projects.

## Who Will the Plan Affect?

Ultimately, the benefactors of mitigation efforts are the citizens and businesses of Portland. The plan affects the City of Portland and a portion of its urban service area. It protects those who live, work, and visit Portland. While this plan does not establish mandates for the City, it does provide a viable framework for planning for natural hazards. The resources and background information in the plan are applicable citywide, and the goals and recommendations can lay groundwork for

the development and implementation of local mitigation activities and partnerships.

## Policy Framework for Natural Hazards in Oregon

Planning for natural hazards is an integral element of Oregon's statewide land use planning program, which began in 1973. All Oregon cities and counties have comprehensive plans and implementing ordinances that are required to comply with the statewide planning goals. The challenge faced by state and local governments is to keep this network of local plans coordinated in response to the changing conditions and needs of Oregon communities.

Statewide land use planning Goal 7: Areas Subject to Natural Hazards, calls for local plans to include inventories, policies, and ordinances to guide development in hazard areas. Goal 7, along with other land use planning goals, has helped to reduce losses from natural hazards.

The primary responsibility for the development and implementation of risk reduction strategies and policies lies with local jurisdictions. However, resources exist at the state and federal levels. Some of the key agencies in this area include Oregon Emergency Management (OEM), Oregon Building Codes Division (BCD), Oregon Department of Forestry (ODF), Oregon Department of Geology and Mineral Industries (DOGAMI), and the Department of Land Conservation and Development (DLCD).

The Disaster Mitigation Act of 2000 (DMA 2000) is the latest federal legislation addressing mitigation planning. The legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur. As such, the Act established a Pre-Disaster Mitigation Program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP). Section 322 of the Act specifically addresses mitigation planning at the state and local levels. It identifies new requirements that allow HMGP funds to be used for planning activities, and increases the amount of HMGP funds available to states that have developed a comprehensive, enhanced mitigation plan prior to a disaster. States and local communities must have approved mitigation plans in place in order to qualify to receive post-disaster HMGP funds. Mitigation plans must demonstrate that their proposed mitigation measures are based on a sound planning process that accounts for the risk to the individual and their capabilities.

Oregon Emergency Management (OEM) is working with FEMA and local governments statewide to coordinate activities with *the Partnership* and the Oregon Pre-Disaster Mitigation program in a manner which will:

- assist in achieving the broad goals of both programs
- assist communities in addressing the requirements of the new Federal Rule.

To accomplish these goals, *the Partnership* and the Oregon Pre-Disaster Mitigation program promote a collaborative partnership approach to mitigation planning and activities that encourage inter-governmental coordination, foster public-private partnerships, and build local capacity to develop risk reduction strategies and activities.

## Plan Methodology

The City of Portland Natural Hazard Mitigation Plan was developed using a planning process created by the Community Service Center's Oregon Natural Hazard Workgroup at the University of Oregon.<sup>iv</sup> The planning process was designed to: (1) result in a plan that is DMA 2000 compliant; (2) coordinate this plan with the State's Natural Hazard Mitigation Plan and Partners for Disaster Resistance & Resilience: Oregon Showcase State Initiative; and (3) build a network within the City government and organizations that can play an active role in plan implementation. Following is a summary of major activities included in the planning process.

### Steering committee:

At the request of Mayor Vera Katz, the project steering committee convened approximately every four to six weeks (a total of five meetings) to guide the development of this plan. The committee played a vital role in developing the mission and goals for the mitigation plan. The committee consisted of representatives of public and private agencies and organizations in the City of Portland, including:

- Miguel Ascarrunz, Director and Elise Marshall, Assistant Director, City of Portland Office of Emergency Management
- City of Portland Commissioner Dan Saltzman
- Dr. Ron Tammen, Steering Committee Chair, Portland State University, Hatfield School of Government
- Dr. Vicki McConnell, State Geologist, Department of Geology and Mineral Industries
- Bonny McKnight, Citywide Landuse Group and Neighborhood Coalitions
- Meryl Redisch, Executive Director, Audubon Society of Portland
- Don Eggleston, Principal, SERA Architects
- Myron Burr, Environmental Manager, Siltronic Corporation
- Dan Caufield, Planning and Operations Manager, Tri-Met
- Wade Lange, Sr. Property Manager, Ashforth Pacific Inc.
- Gil Kelley, Director, Bureau of Planning
- Ray Kerridge, Director, Bureau of Development Services
- Dean Marriott, Director, Bureau of Environmental Services
- Ed Wilson, Chief, Bureau of Fire and Rescue

- Jeanne Nyquist, Director, Bureau of Maintenance
- Mort Anoushirivani, Director, Bureau of Water Works
- Brant Williams, Director, Portland Office of Transportation

## **Hazard Specific Subcommittees:**

The City of Portland recognized the importance of establishing a collaborative planning process to develop both short-term and long-term risk reduction strategies with strong ties to the City existing programs and divisions of governance. Therefore, the City developed five hazard specific subcommittees composed of individuals and specialists with natural hazard mitigation understanding and responsibilities from city bureaus, state agencies, and community organizations in and around Portland. The subcommittees were able to provide insight on community issues, policies and programs related to natural hazards and developed a list of current mitigation activities that are being implemented by the various organizations, in addition to identifying potential future actions items.

The committee consisted of representatives of public and private agencies and organizations in the City of Portland, including:

### **Severe Weather**

- Dave Harrington, Chair, Portland Office of Transportation and Maintenance
- Ken Carlson, Eric Thomas, and Phil Burkart, Bureau of Development Services
- Bryan McNerney, City Forester, Parks and Urgan Forestry
- John McGregor, Bureau of Environmental Services
- Lt. Allen Oswalt, Bureau of Fire and Rescue
- Michael Armstrong, Office of Sustainable Development
- Mike Stuhr and Mary Leung, Bureau of Water
- Steve Todd, National Weather Service
- Dan Caufield, Tri-Met

### **Earthquake**

- Jed Sampson, Chair, Bureau of Development Services
- Deborah Stein, Bureau of Planning
- Mary Ellen Collentine, Bureau of Water
- Gary Ott, Bureau of Environmental Services
- Bruce Walker and Judy Crockett, Office of Sustainable Development
- Mike Speck, Bureau of Fire and Rescue
- Calvin Lee and Bill Long, Portland Office of Transportation

- Kenny Asher, Portland Development Commission
- Don Eggleston, SERA Architects
- Dan Caufield, Tri-Met
- Dr. Vicki McConnel, Department of Geology and Mineral Industries
- Gail Dreckman, Bonneville Power Administration

### **Flood**

- Daniela Cargill, Chair, Bureau of Environmental Services
- Chris Wanner, Bureau of Water
- Bill Freeman, Bureau of Development Services
- Fred Wearn, Portland Development Commission
- Christ Payne, Harbor Master, Portland Fire and Rescue
- Chris Scarzello, Bureau of Planning
- Fred Burckhardt, Portland Office of Transportation
- Dave Henricks, Multnomah County Drainage District

### **Wildfire**

- Richard Haney, Chair, Portland Fire and Rescue
- Roberta Jortner, Bureau of Planning
- George Helm, Rebecca Esau, Bureau of Development Services
- Dennis Kessler and Chris Wanner, Bureau of Water
- Andi Curtis, Bureau of Environmental Services
- Mark Wilson and Charley Davis, Parks and Recreation
- Kevin Williams, Portland Office of Transportation
- Mitch Luckett, Audubon Society of Portland
- Karen Trombley, Tryon Creek State Park
- Louisa Evers, Bureau of Land Management

### **Landslide**

- Liane Welch, Chair, Portland Office of Transportation
- Tom Caulfield, Portland Office of Transportation
- Tricia Sears and Bill Freeman, Bureau of Development Services
- Deborah Lev, Parks and Recreation
- Mark Braun and Barbara George, Bureau of Environmental Services
- B.C. Bob Ferrington, Bureau of Fire and Rescue
- Sallie Edmunds, Bureau of Planning

- Tim Collins, Bureau of Water
- Mitch Lockett, Audubon Society of Portland
- Bonny McKnight, Neighborhood Landuse
- Dr. Scott Burns, Portland State University, Department of Geology

## **State and federal guidelines and requirements for mitigation plan:**

The City’s research team reviewed natural hazard mitigation plans from other jurisdictions, current FEMA planning requirements, the FEMA Pre-Disaster Mitigation Program requirements, and the National Flood Insurance Program’s Community Rating System. Statewide reference materials consisted of community and county mitigation plans, including:

- Metro’s Regional Hazard Mitigation Policy and Planning Guide
- Oregon Natural Hazards Workgroup, Plan Framework (ONHW)
- City of Beaverton Natural Hazard Mitigation Plan
- Washington County Natural Hazard Mitigation Plan
- Clackamas County Natural Hazard Mitigation Plan
- *Planning for Natural Hazards: Oregon Technical Resource Guide (DLCD)*
- *Natural Hazard Mitigation Plans: An Evaluation Process (OEM)*
- State of Oregon Natural Hazards Mitigation Plan (OEM)
- Post-Disaster Hazard Mitigation Planning Guidance for State and Local Governments (OEM)
- Partners for Disaster Resistance & Resilience: Oregon Showcase State Initiative’s Community Planning Resources

The City of Portland plan builds upon above listed resources and is based upon the University of Oregon’s Oregon Natural Hazards Workgroup, plan framework and collaborative planning process.

## **Hazard specific research:**

Prior to convening the sub-committees, a research team from Tetrattech developed the HAZUS-MH program and completed the hazard profile and assessment. The team worked with data collection professionals from a variety of Portland agencies to compile the metadata that became the basis for risk assessment in the plan. The hazard reviewed the data and research on five hazards: flood, landslide, earthquake, severe weather, and wildfire. Research materials came from state agencies including Oregon Emergency Management, Department of Geology and Mineral Industries, Department of Land Conservation and Development, Bureau of Community Development, Metro Regional Government Data Research Department, Portland State University Department of Metropolitan Studies, the U.S. Census, and Oregon

Department of Forestry. Historical records from local agencies served as the main source of information on the past impacts of hazards in the community. The subcommittees identified current mitigation activities, resources and programs, and potential action items from research material, input from the steering committee.

## Plan Organization

### How do I use the plan?

Each section of the mitigation plan provides specific information and resources to assist people in understanding the City and the hazard-specific issues facing citizens, businesses, and the environment. Combined, the sections work together to create a mitigation plan that guides the mission to reduce risk and prevent loss from future natural hazard events. This plan structure enables people to use the section(s) of interest to them.

### Chapter I: Mitigation Action Plan

#### Executive Summary: Five-Year Action Plan

The *Five-Year Action Plan* provides an overview of the mitigation plan mission, goals, and action items. The plan action items are included in this section, and address multi-hazard issues, as well as hazard-specific activities that can be implemented to reduce risk and prevent loss from future natural hazard events.

#### Section 1: Introduction

The Introduction briefly describes historical events that have impacted the area, mitigation planning, and the methodology used to develop the plan. It also includes information about the steering committee's role, how stakeholders provided input.

#### Section 2: Community Profile

The Community Profile briefly describes the City in terms of demographic, economic, and development trends as well as geography and environment, housing, and transportation.

#### Section 3: Risk Assessment Summary

This Risk Assessment provides information about Portland's natural hazard risk assessment. It is general in scope, providing background on the process of producing risk assessments as well as an overview of Portland's risk information. Complete risk assessment information for each of the hazards identified in this plan can be found in Appendix C.

#### Section 4: Mitigation Plan Vision, Mission, Goals, and Action Items Overview

This Plan Vision provides information on the process used to develop the goals and action items in the plan. It also describes the framework that focuses the plan on developing successful mitigation strategies.



## **Section 5: Multi-Hazard Action Items**

This section provides information on goals and action items that address all the natural hazards in the mitigation plan.

## **Section 6: Plan Implementation, Maintenance and Public Participation**

This section provides information on the implementation, monitoring, and evaluation and updating of the plan and finally, the role of the public.

## **Chapter II: Hazard Specific Information**

Four chronic hazards and one catastrophic hazard are addressed in this plan. Chronic hazards occur with some regularity and may be predicted through historic evidence and scientific methods. The chronic hazards addressed in the plan include:

- *Section 7: Flood*
- *Section 8: Landslide*
- *Section 10: Extreme Weather*
- *Section 11: Wildfire*

Catastrophic hazards do not occur with the frequency of chronic hazards, but can have devastating impacts of life, property, and the environment. The one catastrophic hazard presented in the plan is:

- *Section 9: Earthquake*

Each of the hazard specific sections includes information about historical impacts, risk assessments, specific community issues, and action items, and local resources associated with the hazard.

## **Chapter III: Resources**

The plan appendices are designed to provide users of the City of Portland Natural Hazard Mitigation Plan with additional information to assist them in understanding the contents of the mitigation plan, and potential resources to assist them with implementation.

### **Appendix A: Economic Analysis of Natural Hazard Mitigation Projects**

This Appendix describes the Federal Emergency Management Agency's (FEMA) requirements for benefit cost analysis in natural hazards mitigation, as well as various approaches for conducting economic analysis of proposed mitigation activities.

### **Appendix B: Documentation of Planning Process**

This Appendix provides background information about the meetings, presentations, and other outreach that have supported the planning process.

### **Appendix C: City of Portland HAZUS-MH Risk Assessment Report**

This Appendix provides a list of acronyms for city, county, regional, state and federal agencies and organization that may be referred to within the City of Portland Natural Hazard Mitigation Plan.

## Appendix D: Capability Assessment Matrix

This Capability Assessment is designed to assess the operations, readiness, and capabilities of those organizations associated with the plan's action items to assess which items in the prioritized list can be implemented using existing resources and which items require outside funding. It can be used to help the DPC answer the question, "Does the coordinating agency have the capability needed to implement the action item?"

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### Section Endnotes

<sup>i</sup> Federal Emergency Management Agency. 2002. *How-To Guide #2: Understanding Your Community's Risks; Identifying Hazards; and Determining Risks*.

<sup>ii</sup> DMA 2000, State and Local Plan Criteria: Mitigation Planning Workshop for Local Governments, <[http://www.fema.gov/fima/planning\\_toc4.shtml](http://www.fema.gov/fima/planning_toc4.shtml)>

<sup>iii</sup> Massachusetts Department of Environmental Management. 1999. "Hazard Mitigation: Managing Risks, Lowering Costs.

<http://www.state.ma.us/dem/programs/mitigate/whatis.htm> Accessed 8/2/02

<sup>iv</sup> More information on the Oregon Natural Hazards Workgroup can be found at <http://darkwing.uoregon.edu/~onhw> Accessed 8/25/04