

Section 5

Multi-Hazard Action Items

This section describes mitigation measures that are not specific to only one hazard. There are several potential impacts that are common among more than one of the five hazards covered in this plan. Structural damage, for example, can be caused by earthquakes, high-winds, or landslides. At the same time, there are mitigation measures and potential action items that are applicable to more than one hazard. Implementation of multi-hazard mitigation measures will increase a community's hazard resilience regardless of which hazard might strike.

What is the threat to Portland?

While remote, the potential exists that the city could experience the impacts of two different natural hazards at the same time. Additionally, several of the natural hazards that may occur would have the same or similar impacts on property, infrastructure, and lives. Addressing these multi-hazard items together rather than by hazard offers a more practical, coordinated, and cost effective approach than trying to address them within each hazard.

Mitigation Plan Goals and Existing Activities

The mitigation plan goals and action items are derived from a review of city, county, regional, state, and national natural hazards mitigation plans and planning literature with guidance from the Portland Natural Hazards Mitigation Steering Committee. The mitigation plan establishes five goals:

1. Identify risk level and evaluate Portland's vulnerability to natural hazards.
2. Implement activities to protect human life, property and natural systems.
3. Promote public awareness, engage public participation, and enhance partnerships through education, outreach and coordination of a diverse and representative group of the City's population.
4. Establish a disaster resilient economy.
5. Build and support the capacity and commitment to continuously become less vulnerable to hazards.

Existing Mitigation Activities

Existing mitigation activities include current and on-going mitigation programs and activities that are designed to reduce loss from hazard events. These programs are implemented by city, county, regional, state, federal agencies, utilities and/or other organizations. In Portland, existing mitigation activities include a capital improvement plan, emergency operations centers, emergency response and recovery plan, transportation and comprehensive plan, and educational programs. Additional existing mitigation measures are described in the hazard specific sections of Chapter Two of this plan.

Multi-Hazard Mitigation Action Items

Multi-hazard action items are those activities that cut across the five hazards in the mitigation plan: flood, severe weather, wildfire, landslide, and earthquake. The multi-hazard actions were created as part of the process of developing the hazard-specific action items found in Chapter Two of this plan. Five subcommittees (one committee for each hazard) comprised of representatives from City bureaus worked to develop both the hazard-specific and the multi-hazard action items.

There are eight short-term and five long-term multi-hazard action items described below. Each action item is followed by ideas for implementation, which can be used by the steering committee and local decision makers in pursuing strategies for implementation.

Multi-Hazard Mitigation Action Items

The multi-hazard mitigation action items provide direction on specific activities that organizations, businesses, and residents in the City of Portland can undertake to reduce risk and prevent loss from multi-hazard events. Each action item includes an estimate of the timeline for implementation. *Short-term action items* (ST) are activities that city bureaus may implement with existing resources and authorities. *Long-term action items* (LT) require new or additional resources and/or authorities.

Short Term Actions

ST-MH#1: Continue to involve the public in updating the Natural Hazard Mitigation Plan

Key Issues Addressed

- The general public is an important stakeholder in natural hazard mitigation planning; involving them in the planning process will lead to a more realistic and responsive plan.
- Public participation is also a requirement of the Federal Emergency Management Agency.

Ideas for Implementation

- Design and implement a system for collecting public comment through the Portland Office of Emergency Management website and other public forums.
- Incorporate comments from the website into Portland's Natural Hazard Mitigation Plan action items.
- Continue outreach to the public regarding mitigation activities and plan updates, and incorporate these comments into the yearly review of the plan.

Coordinating Organization:	Portland Office of Emergency Management, Bureau of Planning
Internal Partners:	All bureaus
External Partners:	The public
Level of Immediate Capability:	High
Estimated Timeline:	Ongoing
Plan Goals Addressed:	Build and support the capacity and commitment to continuously become less vulnerable to hazards; Promote public awareness, engage public participation, and enhance partnerships through education, outreach and coordination of a diverse and representative group of the City's population.

ST-MH#2: Form a committee to identify and coordinate critical transportation (street and highway) networks.

Key Issues Addressed

- The identification of critical transportation networks before a disaster event can improve the efficiency of response and reduce impacts on public safety and commercial traffic following a disaster. Currently, several different bureaus maintain critical transportation networks; improved coordination would be useful in a major event.
- Hazard events can affect general transportation routes (including public transit routes), especially in a situation in which evacuation is necessary. These changes should be coordinated with emergency transit route planning to avoid conflict; information about changes should be efficiently communicated to the public.

Ideas for Implementation

- Form a committee to identify transportation networks that would be used in any event that involved road closures, such as severe weather, earthquake, or flood. Prioritize debris clearance from that route.
- Research existing committee findings from committees such as the Intelligent Transportation System and the Regional Emergency Transportation Route committee of REMTEC.
- Coordinate emergency standard operating procedures and plans between natural disaster responder organizations in the Portland metro region and TriMet, to coordinate and expedite decision-making during emergencies. For example, coordinate re-opening of disrupted streets, roads, and bridges with the restoration of disrupted transit service.

- Collaborate with TriMet to develop communications and dispatch capability to (1) immediately implement changes to transit routes and service due to disruption of streets roads, bridges, and light rail transit tracks during and following a natural disaster, and (2) immediately provide transit service change update information to the public. Improve TriMet’s service information systems including transit station changeable message sign displays, and telephone-based and internet-based systems.
- Relate emergency routes to the emergency transportation work that Regional Emergency Management Technical Committee (REMTEC), Oregon Department of Transportation, and Washington Department of Transportation have completed, as well as to seismic emergency transportation routes in City Public Works Annex.

Coordinating Organization: Portland Department of Transportation, Bureau of Maintenance

Internal Partners: Bureaus of Planning, Fire & Rescue, Police, Parks and Recreation, Urban Forestry

External Partners: Tri-Met, Pacific Corp, PGE, Multnomah County, Metro, REMTEC, BOMA, Pacific Power and Light

Level of Immediate Capability: High

Estimated Timeline: 1-3 years

Plan Goals Addressed: Implement activities to protect human life, property and natural systems; Identify risk level and evaluate Portland’s vulnerability to natural hazards; Build and support the capacity and commitment to continuously become less vulnerable to hazards.

ST-MH#3: Improve enforcement of state recommendations to prohibit essential facilities in hazard areas.

Key Issues Addressed

- Essential facilities, such as police and fire stations and hospitals, must be available in times of disasters. These buildings must meet higher building design standard in the Oregon Structural Specialty Code.

Ideas for Implementation

- Develop an all-hazard map for essential facility siting review.
- Develop review process to include representatives of essential facilities operations.
- Provide guidelines to builder to include worst case scenario continuity plan and benefit cost analysis of location relative to life and dollar loss due to building inoperability.

Coordinating Organization: Bureau of Development Services

Internal Partners: Portland Office of Emergency Management; Fire Bureau, Police, Governmental Affairs, Portland Development Commission, Bureau of Governmental Services

External Partners: State Building Code Division

Level of Immediate Capability: High

Estimated Timeline: 1 – 3 years

Plan Goals Addressed: Establish a disaster resilient economy; Implement activities to protect human life, property and natural systems; Build and support the capacity and commitment to continuously become less vulnerable to hazards.

ST-MH#4: Revise Portland’s Comprehensive Plan to address natural hazards including, but not limited to, floods, landslides, earthquakes, wildland fires, and winter storms.

Key Issues Addressed

- Many natural hazard loss reduction measures can be implemented through land use changes and regulations. Portland’s Comprehensive Plan should include a section of action items that reflect this.

Ideas for Implementation

- During the next comprehensive plan update process, consider the inclusion of appropriate action items for the Natural Hazard Mitigation Plan.
- Consider action items might be appropriate to consider for inclusion in Portland’s Comprehensive Plan.

General Comments

- Portland’s next comprehensive plan update is just beginning.
- Currently, the Comprehensive Plan does have actions that relate to natural hazard loss reduction, but they are spread throughout the many chapters of the plan.

Coordinating Organization: Bureau of Planning

Internal Partners: Portland Office of Emergency Management

External Partners: Department of Land Conservation and Development, Neighborhood and Business Associations

Level of Immediate Capability: High

Estimated Timeline: 1-3 years

Plan Goals Addressed: Build and support the capacity and commitment to continuously become less vulnerable to hazards; Identify risk level and evaluate Portland's vulnerability to natural hazards; Build and support the capacity and commitment to continuously become less vulnerable to hazards.

ST-MH#5: Review Portland's Hazard Mitigation Plan to ascertain which actions will also benefit terrorism prevention programs.

Key Issues Addresses

- Natural and anthropogenic (human-caused) hazards can have very similar impacts on the ground. Additionally, funding available to states for assessment of terrorist threats may be leveraged to assess impacts from natural hazards.

Ideas for Implementation,

- Review needs assessment for terrorism grant process and compare to it to the mitigation plan and HAZUS MH report to find areas of overlap.
- As funding becomes available to mitigate either natural or anthropogenic disasters, consider opportunities to leverage that funding to meet multiple goals.

General Comments

- Actions found to benefit both natural and human-caused hazards may be highly ranked in the cost/benefit analysis and prioritized for funding and implementation.

Coordinating Organization: POEM

Internal Partners: Bureaus of Fire & Rescue, Police, and Transportation

External Partners: Multnomah Co. Emergency Management and Public Health

Level of Immediate Capability: High

Estimated Timeline: 1 year

Plan Goals Addressed: Build and support the capacity and commitment to continuously become less vulnerable to hazards; Identify risk level and evaluate Portland's vulnerability to natural hazards; Promote public awareness, engage public participation, and enhance partnerships through education, outreach, and coordination

ST-MH#6: Acquire Light Detection and Ranging (LIDAR) images of the Portland Metro area and the Bull Run Watershed.

Key Issues Addressed

- LIDAR images are a tool for mapping faults, locating recent fault movement, steep slopes, flood plains and landslides. Land use planning and design can consider findings of the high-resolution maps that can better determine appropriate building practices for highlighted locations.

Ideas for Implementation

- Partner with Department of Geology and Mineral Industries, USGS and other local cities and counties to lower costs of data collection.
- Partner with outside business organizations whose customers could benefit from the information, such as the insurance industry and contractors.
- Currently the initial set up for mapping the Portland metropolitan area is established which creates a savings for subsequent flyovers.
- The cost for LIDAR maps is about \$525 per square mile.

General Comments

- Tryon Creek State Park has been LIDAR mapped and as a result the creek bed revealed is greater than previously understood.
- The lower Columbia River is due to be flown this winter.

Coordinating Organization: Portland Office of Emergency Management

Internal Partners: Corporate GIS, Bureau Environmental Services, Fire and Rescue, Bureau of Water, Portland Office of Transportation

External Partners: Multnomah County, Oregon Department of Geology and Mineral Industries, USGS, Institute of Business and Home Safety

Level of Immediate Capability: High

Estimated Timeline: 1 year

Plan Goals Addressed: Identify risk level and evaluate Portland's vulnerability to natural hazards; Build and support the capacity and commitment to continuously become less vulnerable to hazards.

ST-MH#7: Use findings from Portland's Risk Assessment (HAZUS-MH) to enhance the existing debris removal plan.

Key Issues Addressed

- Portland's Risk Assessment defines areas of Portland that could be most impacted by disaster and therefore have the largest impacts from debris following a major hazard event. The Risk Assessment could be used to focus the debris removal plan.

Ideas for Implementation

- Review HAZUS MH findings relative to City's capabilities post disaster and proposed mitigative actions.
- Recommend actions to be included into debris removal plan that will lessen the loss of property (decrease debris to be removed) and the health hazards possible from debris.
- Review building age and construction along emergency routes to ascertain which will have the greatest amounts of debris and outflow of people.

General Comments

- A regional disaster debris removal plan is currently being developed through Metro in collaboration with the professional hauling agencies and county agencies.
- Sustainable Development is responsible for coordination of Debris Removal for the City of Portland.
- Transportation system stability is key to debris removal

Coordinating Organization: Bureau of Sustainable Development

Internal Partners: Portland Office of Emergency Management, Portland Office of Transportation, Maintenance, Bureau of Environmental Services

External Partners: Multnomah County Health Department; Metro

Level of Immediate Capability: Medium

Estimated Timeline: 1 to 3 years

Plan Goals Addressed: Identify risk level and evaluate Portland's vulnerability to natural hazards; Implement activities to protect human life, property and natural systems.

ST-MH#8: Create a mitigation mapping committee.

Key Issues Addressed

- Currently, bureaus are not collaborating in the process of creating and using hazard maps. Increased inter-bureau communication about data sources and availability would save time and money, and increase the impact that maps could have for mitigation purposes.

Ideas for Implementation

- Develop committee.
- Identify maps which exist and which are needed and their purpose.
- Partner with DOGAMI, Metro, local partners and USGS to obtain funding for completion of mapping and technology transfer of information.
- Coordinate LIDAR (Light Imaging and Radar Detection) mapping projects and the dissemination of LIDAR data.
- Create a timeline for update and a criteria-based process for use as justification, key notations, meta data used, accessibility, classes for instruction in development and use.

General Comments

- Mapping allows for a visual explanation that, using the approved data, can validate the need and justify a cause.
- Mapping can be used prior to, during and post disaster to establish a variety of needs, resources and costs.
- HAZUS MH is a case in point, of a program not accepted into the fold of maps are known about that can focus on hazard related issues.

Coordinating Organization:	Portland Office of Emergency Management, Corporate GIS
Internal Partners:	Bureau of Environmental Services, Portland Department of Transportation, Bureau of Development Services, Fire Bureau, Water Bureau
External Partners:	Department of Geology and Mineral Industries, Multnomah County Drainage District, METRO
Level of Immediate Capability:	Medium

Estimated Timeline:	2 years
Plan Goals Addressed:	Identify risk level and evaluate Portland's vulnerability to natural hazards; Build and support the capacity and commitment to continuously become less vulnerable to hazards.

ST-MH#9: Partner with utilities as they ensure continuity of service to the City of Portland.

Key Issues Addressed

- Without electricity, commerce, health and the continuity of services to the population are threatened. Bonneville Power Administration, Portland General Electric and Pacific Power are three utilities that provide electrical power, manage transmission of electrical power and on whom the City of Portland is dependent upon for electrical sustenance.

Ideas for Implementation

- Ask for a report by the Regional Utility Focus Group (REMTEC Sub-Committee) to the Disaster Policy Council.
- Partner with utilities to develop mitigation strategies.
- Investigate the seismic performance of an unequal leg transmission tower compared to an equal leg tower.
- Assure that the potential for liquefaction at river crossings to interrupt power is addressed.

Coordinating Organization: Portland Office of Emergency Management

Internal Partners: Disaster Policy Council, Mitigation Sub-Committee leaders; Cable and Franchise

External Partners: Regional Emergency Management Technical Committee (REMTEC) Utility Focus Group, PGE, PacifiCorps, NW Natural Gas

Level of Immediate Capability: Medium

Estimated Timeline: 2 to 4 years

Plan Goals Addressed: Establish a disaster resilient economy

ST-MH#10: Develop a city employee emergency response plan to assure that city employees know what is expected of them so that services are continued.

Key Issues Addressed

- In a disaster, employees need to know how to protect themselves as well as their family and their job
- There is no city employee response plan that is readily known at all levels
- Although training has been given periodically, for emergency response teams to the Emergency Operations Center, Floor Warden, Building Evacuation or Family Preparedness, these programs are disjointed and do not fulfill the employee need.

Ideas for Implementation

- Marketing committee membership should be mandatory on employee plan.
- Each bureau should be represented in the planning process.
- Employees should receive recognition for participation in trainings by City Council and awards given for measure of involvement.
- Training of floor wardens and first responder teams should be ongoing.

General Comments

- While some plans are in place, they are not institutionalized, nor are they coordinated across bureaus.

Coordinating Organization: Portland Office of Emergency Management

Internal Partners: Disaster Policy Council; Human Resources, OMF, Bureau of General Services, Fire and Rescue, Police, Emergency Communications

External Partners: American Red Cross

Level of Immediate Capability: Medium

Estimated Timeline: 2-4 years

Plan Goals Addressed: Promote public awareness, engage public participation and enhance partnerships through education, outreach and coordination of a diverse and representative group of the City's population.

Long Term Action Items

LT-MH#11: Develop a public outreach program to raise awareness of hazard risk.

Key Issues Addressed

- It is essential for the City to have a broad public outreach and information program so that its residents are aware of the potential hazards and how to avoid or respond to them. Coordinating this outreach effort would leverage resources and allow for a more comprehensive approach.

Ideas for Implementation

- Identify City public outreach professionals who might be involved in this process.
- Develop a mitigation marketing outreach team.
- Develop a mitigation marketing plan to identify areas where coordinated efforts could maximize outreach impact.
- Incorporate with internal City employee/family training and seasonal campaigns of statewide agencies.
- Identify business partners for outreach opportunities.

Coordinating Organization: Portland Office of Emergency Management

Internal Partners: All bureaus

External Partners: Red Cross, State and other local emergency management programs, SBA, regional partners, Portland Public Schools

Level of Immediate Capability: Medium

Estimated Timeline: 3 to 5 years

Plan Goals Addressed: Promote public awareness, engage public participation, and enhance partnerships through education, outreach and coordination of a diverse and representative group of the City's population.

LT-MH#12: Increase the responsiveness of the emergency permitting procedures for post-hazard event periods through development of a procedural plan and the purchase of a mobile permitting van.

Key Issues Addressed

- When recovering from a hazard event, property owners need to have the ability to quickly and legally rebuild damaged structures.

Ideas for Implementation

- Though some emergency permitting is currently in place, a procedural plan should be developed.
- Consult with businesses and contractors to maximize applicability, use, and awareness of emergency permitting procedures.
- Improve existing emergency permitting through the purchase of “mobile permitting vans;” these could be deployed after an emergency to provide permits on-site to property owners. When not in use during emergencies, these vans could be used for outreach.

General Comments

- Identified in 1996 Flood Action Plan and Landslide Mitigation Report: Summary of Bureau Assignments, Recommendation #3.
- Landslides in Environmental Overlay Zones memo (dated 12/9/02) identifies procedures for landslides that occur in environmental overlay zones. Referenced contact Staff are from Site Development and Land Use Services in the Bureau of Development Services.
- Level of capability hinges on difficulty with information technology issues and funding for permit process.

Coordinating Organization: Bureau of Development Services

Internal Partners: Portland Office of Transportation, Bureau of Maintenance, Bureau of Environmental Services, Water Bureau, Risk Management

External Partners: Neighborhood associations, local businesses

Level of Immediate Capability: Medium

Estimated Timeline: 3-5 years

Plan Goals Addressed: Establish a disaster resilient economy; Build and support the capacity and commitment to continuously become less vulnerable to hazards.

LT-MH#13: Develop citywide vegetation protection/planting goals, policies, plans, and implementing tools. Coordinate with vegetation management strategy development for wildfire, flood, and landslide hazard mitigation.

Key Issues Addressed

- Vegetation helps retain stormwater, reduce erosion, slow floodwaters, act as a wind break, and can, when appropriate vegetation is planted and maintained, can reduce the likelihood of wildfires.

Ideas for Implementation

- Through the Comprehensive Plan, goals, policies, existing landscaping and tree standards or through the stormwater regulations, require a percentage tree canopy cover and percentage understory vegetation for proposed development. Coordinate with watershed plan development and with vegetation management strategy development for wildfire and landslide hazard mitigation.
- Provide financial incentives or stormwater bill fee structure credits to retain trees; increase stormwater fees when trees are removed.
- Implement a graduated stormwater fee that encourages property owners to reduce/limit impervious surfaces and retain trees.

General Comments

- This action has been implemented in areas with environmental or greenway zones only; some elements of other hazard plans may impact vegetation retention and possibly exacerbate flooding or contribute to increased runoff.

Coordinating Organization: Bureau of Planning, Bureau of Environmental Services

Internal Partners: Bureaus of Development Services, Parks and Recreation; Fire & Rescue, Office of Neighborhood Involvement

External Partners: Friends of Trees, Audubon Society of Portland, Nursery Associations, nursery owners

Level of Immediate Capability: Low, no funding identified

Estimated Timeline: 3-5 years

Plan Goals Addressed: Implement activities to protect human life, property and natural systems; Build and support the capacity to continuously become less vulnerable.