

Section 3

Mitigation Strategy

This section discusses the City of Beaverton’s strategy for reducing or avoiding the long-term vulnerabilities and potential impacts of the hazards identified in the risk assessment. It consists of three main components; mitigation goals, mitigation actions, and an implementation plan for the action items- as identified by the *Local Mitigation Planning Handbook* (FEMA, 2013). These provide the framework to identify, prioritize, and implement Beaverton’s action items in order to reduce the risk to hazards.

The 2003 City of Beaverton Natural Hazard Mitigation Plan included 46 mitigation actions to reduce the risk to life, property, and community systems. As part of the 2011 and 2018 update processes, the Steering Committee reviewed the plan mission and goals, including a comparison with current state mitigation goals. In addition, the committee reviewed the actions, activities and projects that took place between 2003 and 2018.

Mitigation Plan Mission

The mission of the Beaverton Natural Hazards Mitigation Plan is to assist in reducing risk, preventing loss, and protecting life, property, and the environment from future natural hazard events. The plan fosters coordinated partnerships and the development of multi-objective strategies for reducing the risks posed by natural hazards.

Mitigation Plan Goals

Beaverton’s Natural Hazards Mitigation Plan goals are based on the goals established by Washington County in their Natural Hazards Mitigation Plan. The City’s project steering committee reviewed the county’s goals and made recommendations during a meeting on February 11, 2003, for adapting them to the City’s needs. These goals were subsequently reviewed and approved by the Steering Committee for the 2011 NHMP update and in 2017 for this current plan update.

The plan goals help to guide the direction of future activities aimed at reducing risk and preventing loss from natural hazards. The goals listed here serve as checkpoints as agencies and organization begin implementing mitigation action items. Meetings with the project steering committee, stakeholder interviews, a household and business survey, as well as a focus group served as methods to obtain input and identify priorities in developing goals for reducing risk and preventing loss from natural hazards in Beaverton.

The following are the resulting goals for the City of Beaverton's Natural Hazards Mitigation plan.

Goal 1: Develop and Implement Strategies to Protect Human Life, Commerce, Property, and Natural Systems from Natural Hazards

1. Implement strategies to help reduce insurance losses and repetitive claims for chronic hazard events while promoting insurance coverage for catastrophic hazards.
2. Evaluate applicable city guidelines, codes, and permitting processes regarding how they address natural hazard mitigation.
3. Link watershed planning, natural resource management, and land use planning with natural hazard mitigation strategies to protect vital habitat and water quality.
4. Preserve and rehabilitate natural systems to serve natural hazard mitigation functions.
5. Continuously develop and update natural hazard related datasets.

Goal 2: Improve Partnerships for Communication and Coordination

1. Develop and implement natural hazard education and outreach programs to increase awareness among citizens; local, city, and regional agencies; non-profit organizations; and businesses.
2. Strengthen communication, coordination and collaboration among public agencies, citizens, non-profit organizations, and businesses working in natural hazard risk reduction.

Goal 3: Enhance Emergency Services

1. Strengthen emergency operations by increasing communication, collaboration and coordination among public agencies, non-profit organization, and businesses.
2. Coordinate natural hazard mitigation strategies, where appropriate, with emergency operations plans and procedures.

Goal 4: Ensure Implementation of Mitigation Strategies

1. To implement natural hazard mitigation strategies, develop and continue partnerships and promote leadership within local and regional public agencies; citizens; non-profit organizations; and businesses.
2. Ensure consistency between city, county, regional, and state mitigation strategies.
3. Consistently, seek diverse funding and resource partnerships for future mitigation efforts.

Mitigation Plan Action Items

The mitigation plan identifies short and long-term action items developed through data collection and research, along with the public participation process. Action items address both multi-hazard (MH) and hazard specific issues for the hazards addressed in this plan. To facilitate implementation, each action item includes information on timeline, coordinating and partner organizations, ideas for implementation, and plan goals addressed.

Timeline. In the initial NHMP, action items were identified as being short-term or long-term and included an estimate of the timeline for implementation. *Short-term action items* (ST) were activities that city departments may implement with existing resources and authorities within one to two years. *Long-term action items* (LT) may require new or additional resources and/or authorities, and may take between one and five years to implement.

During the initial plan review cycle in 2011, the Natural Hazards Mitigation Plan Steering Committee reclassified the Action items into four categories:

- On-going – Action Items that are by nature continuous or actions that are being worked on; but are not to the point where they are fully incorporated into City operations, plans, or regulations.
- Current Plan Cycle – Action Items that could be accomplished during the 5 years before the next scheduled plan revision.
- Future Plan Cycle – Action Items that are not likely to be started or accomplished in the 5 year before the next scheduled plan revision
- Completed – Action Items that have been completed or items that are not realistically achievable or practical for the city to do (Example: Long-Term Volcano #1- Map and model ash fall.

These four categories were validated in the 2018 process.

Coordinating Organization. The coordinating organization is the public agency with regulatory responsibility to address natural hazards, or that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring, and evaluation. The coordinating organization for all action items within the Beaverton plan will be the City of Beaverton.

Internal Partners: Internal partner organizations are departments within the City that may be able to assist in the implementation of action items by providing relevant resources to the coordinating organization.

External Partners: External partner organizations can assist the City in implementing the action items in various functions and may include local, regional, state, or federal agencies, as well as local and regional public and private sector organizations.

Ideas for Implementation: Each action item includes ideas for implementation and potential resources. This information offers a transition from theory to practice. These possible actions serve as a starting point for this plan. This component of the action items is dynamic as some ideas may be not feasible and new ideas can be added during the plan maintenance process. (For more information on how this plan will be implemented and evaluated, see Section 4). These possible actions are only suggestions for ways to implement the plan goal. Some of these items may prove to be unrealistic and others more refined ideas may be identified and added to the plan. Possible actions include things such as collaboration with relevant organizations, grant programs, tax incentives, human resources, education and outreach, research, and physical manipulation of buildings and infrastructure. A list of potential resources outlines what organization or agency will be most qualified and capable to perform the implementation strategy. Potential resources often include utility companies, non-profits, schools, and other community organizations.

Plan Goals Addressed. The plan goals addressed by each action item are identified as a means for monitoring and evaluating how well the mitigation plan is achieving its goals following implementation.

The steering committee has identified potential funding sources for each priority action item (listed on Action Item Form within Appendix A). Example funding sources can include: the federal Pre-Disaster Mitigation and Flood Mitigation Assistance Programs; state funding sources such as the Oregon Seismic Rehabilitation Grant Program; or local funding sources such as capital improvement or general funds. An action item may also have multiple funding sources.

Action Item Development Process

The majority of the action items were first created during the initial planning processes. During this process, maps were developed of local vulnerable populations, facilities, and infrastructure in respect to each identified hazard. Review of these maps generated discussion around potential actions to mitigate impacts to the vulnerable areas. The Oregon Partnership for Disaster Resilience (OPDR), who we contracted with for the development of the initial plan, provided guidance in the development of action items by presenting and discussing actions that were used in other communities. OPDR also took note of ideas that came up in steering committee meetings and drafted specific actions that met the intent of the steering committee. All actions were then reviewed by the steering committee, discussed at length, and revised as necessary before becoming a part of this document. The action items are reviewed regularly by the Steering Committee and are revised as needed during the plan updates. When identified additional action items are added.

Methodology for Prioritizing Plan Action Items

Methodology for Prioritizing Plan Action Items

To prioritize the plan's action items the City of Beaverton utilized a multi-tiered approach. First the plan goals were prioritized. Second, the natural hazards identified in the community were prioritized based on the hazard risk assessments used in the City of Beaverton's Emergency Operations Plan (EOP). Using the outcome of these two activities each action item was tallied according to a point system in a third step in order to determine its relative priority within the plan. The prioritized list of action items serves simply as a starting point for the implementation of mitigation activities.

The Hazard Mitigation Steering Committee and the leadership of the City of Beaverton have the option to implement any of the action items at any time. This allows the committee to consider mitigation strategies as new opportunities arise, such as funding for action items that may not be of highest priority. The following is the method by which the Hazard Mitigation Steering Committee will prioritize the plan action items.

Step 1: Prioritizing Plan Goals

To accomplish this task the Hazard Mitigation Steering Committee examined and voted on the importance of each of the plan's four goals. The steering committee was led through a "dot prioritization" activity to determine the relative priority of each goal. Steering committee members were given 4 different colored adhesive "dots". Each "dot" had a number assigned to it ranging from 1 to 4 points (four being the highest value). They were asked to place a single "dot" on each of the plan goals, whereby ranking the importance of each goal in making Beaverton more disaster resilient. The steering committee was asked to rank the goals regardless of how easy each goal would be to accomplish. After the vote, their priorities, the "dots" and their associated points were tallied and the results are as follows:

Highest Priority (31 Points) – Goal 1: Develop and Implement Activities to Protect Human Life, Commerce, Property and Natural Systems

2nd Highest Priority (23 Points) – Goal 4: Ensure Implementation of Mitigation Activities

3rd Highest Priority (16 Points) – Goal 3: Enhance Emergency Services

4th Highest Priority (10 Points) – Goal 2: Improve Partnerships for Communication and Coordination

The Natural Hazard Mitigation Plan Steering Committee validated the prioritized list of goals through a similar process conducted by email.

Step 2: Prioritizing Community Hazards

The second step in prioritizing the plan's action items was to examine which hazards they are associated with and where these hazards rank in terms of community risk.

To re-evaluate the rankings of the hazards, *Tab B – Beaverton Hazard Analysis*, to the City's Emergency Response and Recover Plan, Basic Plan was utilized. That hazard analysis provides a systematic investigation of potential emergencies/disasters by analyzing history, vulnerability, and probability. The hazard analysis was updated in 2017 using a methodology originally developed by FEMA, and currently required by Oregon Emergency Management's (OEM). The methodology determines the relative risk by applying severity ratings to four

criteria; History, Vulnerability, Maximum Threat, and Probability. According to this analysis, the natural hazards identified in this plan were ranked in the following order or priority: Severe Weather – Windstorm, Severe Weather – Winter Storm, Earthquake, Flood, Volcanic Eruption (Ash Fall), Drought, Landslides and Debris flow, and then Wildfire.ⁱⁱ

Table 4-1. City of Beaverton Hazard Rankingsⁱ

City of Beaverton	Hazard Score
Severe Weather – Windstorm	208
Severe Weather – Winter Storm	203
Earthquakes	203
Flood	188
Volcano (Ash Fall)	178
Drought	155
Landslides and Debris flow	86
Wildland Fire*	58
Maximum score possible for each hazard = 240	
Sources: City of Beaverton Hazard Analysis 2016	
*Wildland Fire is not covered in the City's NHMP	

Step 3: Tallying the Priorities of Plan Goals and Hazards

A prioritized list of action items were developed based on how the goals and hazards were ranked in Steps 1 and 2. In developing the prioritized list – each action

item was examined according to the plan goals addressedⁱⁱⁱ and what priority those goals were assigned. In this first step, action items were assigned the following number of points for addressing each goal.

- 4 Points – Goal 1: Develop and Implement Activities to Protect Human Life, Commerce, Property and Natural Systems
- 3 Points – Goal 4: Ensure Implementation of Mitigation Activities
- 2 Points – Goal 3: Enhance Emergency Services
- 1 Point – Goal 2: Improve Partnerships for Communication and Coordination

Action items that address multiple goals were assigned points for all of the goals that they address.

Depending on which hazards each action item addresses the following point system will be assigned to each:

- 10 Points – Multi-Hazard*
- 6 Points – Earthquake
- 5 Points – Severe Weather
- 4 Points – Flood
- 3 Points – Volcanic Eruption
- 2 Points – Landslides
- 1 Point - Wildfire

*Multi-Hazard action items are assigned the most points due to the fact they address multiple hazards.

The points assigned to each action item depend on which hazard they address. These points are then combined with the points assigned to each item based on the goals addressed as detailed in step one to arrive at an Action Item Priority Score noted in the Action Item Matrix included in Appendix A. Higher scores indicate higher priorities. The point totals for step one

were combined with the point totals in step two to create a number by which each action item is prioritized.

Step 4: Action Item Implementation

While numeric values can be assigned to the individual action items other factors have a direct impact on whether these items will be implemented including:

- Regional impacts – Any actions taken would have to be done on a county-wide or regional basis,
- Costs – the cost of action items may exclude it from being implemented or it will only be feasible under a grant award.
- Political/Policy – Some recommendations may run contrary to the direction set by the City’s elected officials or strategic plans.

The Emergency Management Program, supported by the City’s Natural Hazards Mitigation Plan Steering Committee, has been monitoring the implementation of action items. During the latest round of plan review and update the Natural Hazards Mitigation Plan Steering Committee divided the Action Items into four categories:

- On-going – Action Items are being worked on; but are not to the point where they are fully incorporated into City operations, plans, or regulations.
- Current Plan Cycle – Action Items that could be accomplished during the 5 years before the next scheduled plan revision.
- Future Plan Cycle – Action Items that are not likely to be started or accomplished in the 5 year before the next scheduled plan revision
- Completed – Action Items that have been completed

Mitigation plan activities may be considered for funding through state and federal grant programs, including the Federal Emergency Management Agency’s Hazard Mitigation Grant Program and Pre-Disaster Mitigation Competitive Grant Program, as funds are made available. Action items address both multi-hazard (MH) and hazard specific issues for the hazards addressed in this plan.

In examining the feasibility of funding for action items, a benefit-cost analysis will be conducted for all structural mitigation projects. See Appendix E for more information on this process.

ⁱ City of Beaverton Emergency Operations Plan, Basic Plan, Tab B-Hazard Analysis.

ⁱⁱ The methodology determines the relative risk by applying severity ratings to four criteria;

- History (H) – how often the event has occurred at a level requiring EOC activation or disaster declaration. (WF=2)
- Vulnerability (V) – the percentage of the population and property likely to be affected by the incident under an “average” occurrence. (WF=5)

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- Maximum Threat (M) – the highest percentage of population and property that could be impacted under a worst-case scenario. (WF=10)
 - Probability (P) – the likelihood of another occurrence within a specified period of time. (WF=7)

The Severity Rating (SR) was determined by applying a numeric value based on low (1 to 3), medium (4 to 7), and high (8 to 10) for each of the four criteria. The Severity Ratings for each area was then multiplied by a pre-designated Weight Factor (WF):

- History = 2
- Vulnerability = 5
- Maximum Threat = 10
- Probability = 7

The final score, or rating, is the sum of the numeric values of the four criteria.

Final Score = H(WF x SR) + V(WF x SR) + M(WF x SR) + P(WF x SR)

ⁱⁱⁱ The Hazard Mitigation Steering Committee had previously identified which goals were covered by which action items.