Hazard Mitigation Plan 2018

City of Everett, WA

City of Everett

Hazard Mitigation Plan

2018

Prepared for:
City of Everett
2801 Oakes Ave, Everett WA 98201

Prepared by:

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Authorizations

FEMA Letter

Steering Committee Members

The Everett HMP Steering Committee met three times. They approved the goals and schedule, voted on a risk ranking, vetted action items and reviewed the final draft plan. Steering Committee members also participated in community meetings and in interviews.

STEERING COMMITTEE MEMBERS			
Name	**Affiliation**	**Name**	**Affiliation**
Ashlie-Vinke, Erik	Economic Alliance Snohomish County	Kaman, Hil	Everett Admin - Public Health/Safety
Bailey, Jennifer	Public Works	Key, Tim	Fire
Bailey, Rick	Public Works	Lark, Chris	Facilities
Baxter, George	Transit	LaVelle, Sarah	OEM
Baxter, Kathleen	Public Works	Lee, Tony	Building Official
Bodrak, Gilbert	Providence	Leonard, Bob	Parks
Boekelman, Katie	Boeing	Linder, Brent	GIS
Bolerjack, Bob	Everett Admin - Gov. Affairs	Ludden, Jim	Everett ACS
Burns, William	Red Cross	Marshall, Judah	Everett Clinic
Cademarti, Tony	Motor Vehicles	McClure, Wendy	Neighborhoods
Cummings, Lori	Parks	McMullin, Lanie	Everett Admin - Economic Dev.
Curtis, Katie	Snohomish Health District	Moen, Grant	Public Works
Davis, Dave	Public Works	Munro, Megan	Safety Official
Diaz, Flora	Legal	Nasr, Souheil	Public Works
Dittoe, Steve	SNOPAC	Nunes, Russ	Everett Community College
Doniger, Rachael	OEM	Paschal, Steven	Naval Station Everett
Dooley, Curt	Everett Clinic	Pembroke, Meghan	Everett Admin - Comms Dir.
Dorris, Rick	Everett Housing Authority	Postma, Jeanette	IT
Dvorak, Bob	Senior Center	Ringo, Molly	Everett Public Schools
Frederiksen, Glynis	Animal Shelter	Rose, Diana	Marysville Emergency Management
Fudge, David	Police	Sadler, Mark	Public Works
Fulton, Debra	Mukilteo School District	Sass, Ryan	Public Works
Giffen, Allan	Planning	Shagam, Don	Transit
Goforth, Steve	Fire	Stainer, Brent	OEM
Grayson, Kayla	WSDOT	Steigerwald, Cindy	Mukilteo School District
Hellyer, Steven	IT	Stewart, Karen	Planning
Holdsworth, John	Snohomish County DEM	Venturo, Jim	Fire
Hudson, Jaimee	Neighborhoods	Williams, Doug	Snohomish County PUD
Kaftanski, Paul	Everett Admin - Executive Dir.		

Council Resolution

Executive Summary

What Is the Hazard Mitigation Plan?

This Hazard Mitigation Plan is designed to reduce risks while supporting and advancing the values of Everett stakeholders. In developing this plan, the City of Everett recognized its engaged residents and community organizations, trusted local government, and successful business community. The planning process recognized the Waterfront and Port as a global trade hub, home to the US Navy and a marina, with planned new development. It recognized the value of Everett's location on Possession Bay and the Snohomish River and how residents and visitors enjoy its shorelines, parks, and forests. The public planning process was built on preserving and advancing these expressed values.

Downtown Everett at dusk. Photo Credit: City of Everett

The 2017 Hazard Mitigation Plan (HMP) and the 2017 Hazard Inventory and Vulnerability Analysis (HIVA) are based on the City of Everett's current priorities and available data regarding hazards. This is the third HMP and HIVA reports, building upon the 2006 and 2011 reports.

The 2017 HMP was developed through an extensive public process described in Chapter 2. This process generated action items to be addressed by the City of Everett and its partners in the coming five-year cycle. Action items are specific projects and programs carried out by city departments and their partners to improve resiliency. These action items are grouped by strategy area and are explained in full detail in Chapter 3. A summary matrix of all the action items is provided at the end of this section.

In Chapter 4, the status of the 2011 HMP action items is reviewed and examples are given of the positive work being done by the City and its partners. Concluding this chapter is a section with examples of hazards mitigation references in Everett's Comprehensive Plan. Chapter 5 provides guidance for implementing, monitoring, and updating the HMP. Appendices cover public process meeting materials, public online survey results, a risk methodology, potential funding sources, a list of definitions and acronyms, and a matrix of action items grouped by lead agency.

The public process approach was driven by Appreciative Inquiry (AI) methods applying storytelling to a World Café format. AI focuses on identifying what people value about Everett and what contributes to their human wellbeing. Past and current efforts to improve resiliency are celebrated and built upon. This approach encourages creative engagement and supports progress by building on the positive core rather than dysfunction.[1]

The World Café process allows for face-to-face conversations to take place in small groups. Storytelling was used as a means for participants to discuss what they valued and how what they valued addressed daily community life as well as disaster mitigation. Resiliency concepts were incorporated into these discussions. Resiliency is defined as the ability to absorb a disturbance and to recover more quickly and with fewer losses. Being resilient allows communities, ecosystems, and the built environment to respond to hazard events with better outcomes. Rather than building back as before, resiliency is about building back better from lessons learned and creating a process that enables the community to reorganize following destructive changes.

1 Freitag, Robert et al. 2015. Whole Community Resilience: An Asset-Based Approach to Enhancing Adaptive Capacity Before A Disruption. *Journal of the American Planning Association*, 80:4, 324-335.

Hazard Risk Ranking

This HMP covers a range of hazards as determined by the Steering Committee based on information in the Hazard Inventory and Vulnerability Analysis (HIVA). In 2006, 2011, and 2017, earthquakes were identified as the primary hazard. Washington is second to California for earthquake threat in the nation. This is the hazard ranking determined by the Steering Committee at the April 5, 2017 meeting:

1. Earthquakes
2. Flooding
3. Severe Storms
4. Climate Change
5. Landslides
6. Hazardous Materials / Pandemics / Fire (all tied)
7. Volcanic Eruptions
8. Cyber Incidents
9. Tsunami & Seiche

Goals

As will be shown in the section below, the Risk Ranking and Goals were established by the Steering Committee and Goals direct the HMP strategy areas and action items. The following Goals were proposed, discussed, and endorsed by the Steering Committee at the April 5, 2017 meeting:

1. Protect public health, welfare, and public safety.
2. Ensure continuity of critical facilities and infrastructure, corresponding operations of local government, and a vital economy.
3. Foster coordination and communication amongst public and private organizations.
4. Protect the quality of the natural environment.
5. Minimize losses to existing and future properties.
6. Increase initial post-event self-reliance.

Risk Assessment and Storytelling

The risk assessment planning process followed a storytelling format. Storytelling makes the effort to identify mitigation action items more interesting, relevant, and practical. Twelve meetings were held with residents, businesses, non-profits, and government staff. All meetings began with participants providing a description their respective Everett community and defining what they valued. This discussion was followed with the Project Team introducing a change into their story. All stories require a dramatic event and this was provided by a natural hazard event. Lastly, participants came up with risk reduction suggestions that supported what they valued and appreciated. These suggestions were discussed in interviews and further researched.

Valued Positive Core

Participants in the meetings and interviews expressed what they considered to be Everett's strengths and assets. Mitigation action items arose from this positive core and the risks from natural hazards. The positive core areas were similar to and corroborate those generated by the 2011 HMP public process. The following areas are the valued positive core that will be described in Chapter 2.

- ✔ Strong and Trusted Government
- ✔ Community Emergency Response Support
- ✔ Economic and Population Growth
- ✔ Landscape

Risks from Natural Hazards

Identified risks are a product of hazards and their associated impacts. Earthquakes, flooding, severe storms, climate change, and landslides were determined by the Steering Committee to represent the probable hazards with the greatest impacts. The 2017 Hazard Inventory and Vulnerability Analysis (HIVA) describe these risks in detail. The following areas are where risk reduction is needed and will be described further in Chapter 2.

- ✔ Isolation
- ✔ Vulnerable Structures
- ✔ BNSF Tunnel
- ✔ Industry Dependence
- ✔ Waterfront and Port Exposure

Strategy Areas

Action items arose from the storytelling process and flowed from what participants valued and appreciated. This includes the Steering Committee's risk ranking assessment and goals. The action items are organized into five general strategy areas.

Infrastructure: This strategy area supports Everett's positive efforts to replace, upgrade, and increase the redundancy of infrastructure systems while improving disaster response capabilities.

Buildings: This strategy area helps to assure vulnerable buildings become safer through code driven triggers and incentives along with trainings for post-disaster assessments.

Trainings and Exercises: This strategy area supports the positive work Everett has done to prepare residents and the workforce to overcome isolation, reduced services, and barriers to recovery.

Planning: This strategy area seeks to incorporate opportunities into the planning process to reduce risk and support disaster recovery while advancing the community vision.

Waterfront and Port: This strategy area seeks to reduce the isolation of the Waterfront and Port while increasing the ability of entities to function initially with limited resources and support services.

2017 Hazard Mitigation Plan Action Items

The following table summary lists all the action items from the 2017 HMP. Action items are grouped under the related strategy area heading.

2017 HAZARD MITIGATION PLAN ACTION ITEMS	
Item	**Description**
INFRASTRUCTURE	
IN1	Implement an earthquake early warning system in key locations throughout the City.
IN2	Support efforts to improve the resiliency of major transportation corridors I-5, US 2, and SR 529.
IN3	Set up dedicated city funding for intermediate-size bridge repair projects.
IN4	Complete an assessment of post-earthquake response to repairing the in-city water system.
IN5	Implement recommendations from the 2012 Water Supply Risk Assessment and the forthcoming Regional Water Supply Resiliency Study.
IN6	Complete an assessment of the need for backup generators at water pump sites and secure funding for generator gaps.
IN7	Complete an assessment of the City's fueling infrastructure with recommendations for improvements.

2017 HAZARD MITIGATION PLAN ACTION ITEMS	
Item	**Description**
INFRASTRUCTURE	
IN8	Build a fiber communication and data loop connecting City Emergency Operations Center.
IN9	Complete an assessment of the earthquake response of the Regional Wastewater Treatment Plant building and siphons.
IN10	Complete an assessment of critical sewer pipelines with recommendations for improvements.
IN11	Acquire Port Gardner Wet Weather Facilities to provide additional combined sewer and stormwater capacity.
IN12	Plan to build a backup transmission line to provide redundant water supply to Reservoir #3.
BUILDINGS	
BD1	Construct a backup water supply source for Providence Regional Medical Center Everett.
BD2	Complete an assessment of unreinforced masonry (URM) buildings with recommendations for protecting public safety.
BD3	Seismically retrofit or rebuild critical city facilities including the Public Works building.
BD4	Implement cross-departmental Post-Disaster Building Safety Assessment Training on a repeating cycle.
BD5	Create an Earthquake Home Foundation Retrofit Program for homes not secured to their foundations.
BD6	Implement non-structural mitigation measures in city facilities.
EXERCISES AND TRAININGS	
ET1	Improve Fire Department emergency response capabilities on the Waterfront to address the plans for new housing, public attractions and businesses.
ET2	Train and encourage existing volunteers and community groups to do outreach and participate in community preparedness planning.
ET3	Develop a City of Everett Continuity of Operations Plan (COOP) program that assesses each department's status and encourages next steps.
ET4	Assist local businesses and non-profits with business continuity planning and exercises.
ET5	Identify more Emergency Cooling Centers and inform the public.
ET6	Perform a Smith Island Exercise.
PLANNING	
PL1	Create a basic Post-Disaster Recovery Framework.
PL2	All long-range plans should include a recovery framework and a review of potential hazards.
PL3	Continue to embed hazards mitigation into the Comprehensive Plan and related codes and ordinances.
PL4	Develop a proposal for a gravel, gated emergency-use-only access ramp from Smith Island to I-5.
PL5	Identify potential emergency access routes to neighborhoods and determine what is required to implement them.
PL6	Explore the potential of small commercial hubs in neighborhoods without such hubs.
WATERFRONT AND PORT	
WP1	Work with BNSF Railway to keep Bond Street open for emergency access to the Port.
WP2	Fund increased systems connections to existing large capacity backup generator.
WP3	Create a Waterfront Climate Change Plan for long-term adaptation.
WP4	Identify Temporary Outdoor Gathering Areas.
WP5	Complete an assessment of the potential for tsunami gathering areas on Jetty Island.

Chapter 1: Introduction

Why Prepare This Plan?

The Federal Disaster Mitigation Act (DMA) of 2000 (Public Law 106-390), commonly known as the 2000 Stafford Act Amendments, was approved by Congress on October 10, 2000. This Act requires state and local governments to develop Hazard Mitigation Plans as a condition of federal grant assistance. Prior to 2000, federal legislation provided funding for disaster relief, recovery, and some hazards mitigation planning. The DMA improves upon the planning process to emphasize the importance of mitigation, encouraging communities to plan for disasters before they occur.

Hazard mitigation can be seen as any action taken to eliminate or reduce the long-term risk to human life and property from natural hazards. This is a key element of emergency management, along with preparedness, response, and recovery. Mitigation improves resilience. Resilience is defined as the ability to absorb disturbance and to recover more quickly and with fewer losses.

The Everett Hazard Mitigation Plan (HMP) helps to protect the social, built and natural assets valued by Everett's residents. This includes health, safety, and an evolving future community vision. Planning, based on continual review and improvement, can reduce the adverse impact of disasters and increase resilience. Fewer lives, homes, businesses, and ecosystems will be lost. Mitigation also produces many ancillary benefits for the community.

The HMP is based on the Hazard Inventory and Vulnerability Analysis (HIVA) that was updated by the Office of Emergency Management. The HIVA provided information on possible disaster events in Everett determined to be most important by the Steering Committee. The process of hazards identification and vulnerability analysis serve as a basis for the development of strategy areas. These strategy areas deal with specific hazards events, allocation of resources, and the setting of priorities and standards for public safety. See Chapter 3 for a description of strategy areas and the associated action items.

Purpose and Scope

The Hazard Mitigation Plan (HMP) is designed to reduce risks while supporting the values of Everett residents and stakeholders. The HMP describes the mitigation action items generated by the public process, researched by the Project Team, and vetted by the Steering Committee. The plan includes the following sections:

- Description of the public process undertaken to update the HMP.
- Identification and ranking of hazards along with a methodology for determining risk.
- Description of mitigation action items and associated preparedness, response, and recovery measures.
- Prioritization of mitigation action items.
- Measures for monitoring, evaluating, and updating the plan.
- Appendices on the public process, the online survey, a risk rating methodology, potential funding sources and a list of definitions and acronyms.

Plan Criteria, Authority, and Adoption

This plan provides information addressing what the Steering Committee defined as the primary hazards affecting Everett. This plan is designed to meet requirements of the DMA 2000 and the Washington Administrative Code (WAC 118-30-060 (1)). This plan is formally adopted by the Everett City Council and promulgated by the Mayor. This plan is applicable for all agencies, organizations, entities, and individuals within the boundaries of the city limits, including city departments and divisions.

Risk Ranking

The 2017 Steering Committee suggested the following ranking of hazards. The matrix below compares the results of the ranking by the 2017 and 2011 Steering Committees.

HAZARDS RISK RATING BY STEERING COMMITTEE		
Hazards	2017 Ranking	2011 Ranking
Earthquakes	1	1
Flooding	2	6
Severe Storms	3	2
Climate Change	4	4
Landslides	5	8
Hazardous Materials	6	7
Pandemics	6	3
Fire	6	5
Volcanic Eruptions	7	10
Cyber Incidents	8	n/a
Tsunami & Seiche	9	9

Further discussion of terrorism and technological (human caused) disaster mitigation, with the exception of hazardous materials included here, will be addressed in the City of Everett's Terrorism Annex of the Comprehensive Emergency Management Plan (CEMP), which is maintained as confidential information in accordance with the Revised Code of Washington (RCW) 42.56.420 (1) (a). The focus of the HMP is on natural hazards, therefore, cyber incidents are not addressed in this plan. Cyber incidents are included in the ranking above because it came up during the public process for the Steering Committee meeting on April 5, 2017.

Goals

The Steering Committee proposed, discussed, and endorsed the following six goals. These are the same goals as 2011 except for the addition of Goal 6. The following mitigation goals guided the 2017 HMP:

1. Protect public health, welfare, and public safety.
2. Ensure continuity of critical facilities and infrastructure, corresponding operations of local government, and a vital economy.
3. Foster coordination and communication amongst public and private organizations.
4. Protect the quality of the natural environment.
5. Minimize losses to existing and future properties.
6. Increase initial post-event self-reliance.

HIVA

The Hazard Inventory and Vulnerability Analysis (HIVA) is a companion document to this Hazard Mitigation Plan. The Plan describes the hazards that Everett could face and their potential impacts to the City. The information in the HIVA is used to drive discussions about risk reduction.

Chapter 2: Planning Process

The Approach to Public Process

Public input into hazards planning is essential. Residents and other interested populations of Everett are key advocates for mitigation planning. Action items need resident support to be carried out. Public participation is required by federal regulations and state guidelines. The Hazard Mitigation Plan (HMP) helps to educate residents about risks and opportunities. The goal is to make Everett both more secure and resilient.

The University of Washington's Institute for Hazard Mitigation Planning and Research (referred to as the Project Team) worked with the Everett's Office of Emergency Management (OEM). OEM did outreach for each of the meetings that were then led by the Project Team. Feedback and potential action items were solicited. A series of interviews was conducted along with research to refine and confirm draft action items. The HMP is the product of this collaborative process of meetings and interviews. The final action items were those that arose directly out of stakeholder discussions.

The Project Team used an asset-based Appreciative Inquiry (AI) approach with storytelling. Appreciative Inquiry encourages participants to identify the "positive core" of strengths, assets, and values.[1] The usual practice is often to begin with a focus on hazards and risks. Starting with a focus on the positive core rather than dysfunctions encourages broader discussion. This results in more creative and achievable actions. Meetings were organized in World Café format that allow everyone to participate and encourage face-to-face conversations.

Neighborhood Meeting. Photo Credit: Project Team

All community and department meetings began by identifying what the organization valued, what they were most proud of, what defined their community, and what assets were responsible for what they valued.[2] A catastrophic event was introduced such as an earthquake or flood. Participants determined the impact to the associated assets. They were then asked to come up with alternative ways of assuring their values would survive the event despite damage to the associated assets.

The process used for public and organization meetings alike had three storytelling phases beginning with developing a story context, introducing a shock, and concluding with a story resolution with risk reduction and opportunities for enhancement measures.

1. Stories have a context. Developing a story context required communities and organizations to identify what they valued most and the assets responsible for what they valued. The Appreciative Inquiry process provides a framework for finding out what participants value. This involves looking at why they live, work, and recreate in Everett. Participants identified the social, built, and natural "capitals" that support what they value. An example of a type of social capital would be a community organization like the YMCA or the Girl Scouts.[3] Built capital

1 Bushe, G.R. 2013. The Appreciative Inquiry Model. In Kessler, E. (ed.) *The Encyclopedia of Management Theory.* Sage Publications.

2 Freitag, Robert et al. 2009. *Floodplain Management: A New Approach for a New Era.* Island Press. P10.

3 Aldrich, Daniel R. (2012) *Building Resilience: Social Capital in Post Disaster Recovery*. University of Chicago Press, P31.

includes things such as bridges, roads, and the historic downtown. And natural capital encompasses things such as the shorelines, parks, and forests. Capitals often overlap. A water reservoir is both natural and built capital with the maintenance crews being a form of social capital.

2. Stories are about change and include a dramatic event. In these stories, change was the result of shocks from disasters, hazards, and risk scenarios. The particular hazards driving the story varied depending on the meeting. Often, the dramatic event was an earthquake that damaged buildings, caused landslides and impacted organizations. The hazards and risks were provided by the Hazard Inventory and Vulnerability Analysis (HIVA) report and the hazards ranking by the Steering Committee.

3. Stories also have a resolution. Participants identified strategies that reduce risks and make use of opportunities arising from the changes/shocks. In this case, resolutions are the approaches and tools required to assure community values following a hazard event. Seismically upgraded water transmission lines reduce the risks of earthquake damage. If a capital was compromised and was not available to support what the community valued, participants were encouraged to identify alternative capitals. For example, if bridges were damaged in an earthquake, participants could identify trails that provide alternate access.

The neighborhood meeting and the first two Steering Committee meetings used a World Café format to broaden the AI storytelling process described above. This required participants to be divided into smaller table groups. For the neighborhood workshop, each group represented a specific neighborhood cluster. For the Steering Committee, groups were based on specific focus areas. Table groups had discussions following the three AI storytelling rounds described above. After each round, all but one team member rotated clockwise to the neighboring table. One participant stayed behind to brief the new group. The goal of the rotation was to give an opportunity for all to enrich the discussion. The participant remaining behind was expected to summarize all comments and report to the larger group after each round or at the end of all the rounds.

One-on-one phone interviews also followed the described AI approach. Efforts to build resilience are an ongoing task. It is key to celebrate progress and build upon positive past efforts. The time of interviewees and their dedication is valued. Interviews were vital to shaping action items and making sure they are relevant, accurate and enabled the Project Team to research suggestions. Interviewees first received an email of the meeting minutes and draft action items. Next, emails with specific action items to review were sent to individuals. After interviewee comments were integrated, the action items were sent out again for comment. Concluding this process, a draft HMP was circulated and the last Steering Committee provided more opportunities for comment.

Brief Summary of Meetings

	Meeting Title	Date	Time	Location
1	Steering Committee # 1	4.5.17	9:30am - 11:30am	Legion Hall
2	Public Works Infrastructure	4.10.17	1:00pm - 3:00pm	Public Works Center
3	Historical Commission URMs	4.25.17	6:30pm - 9:00pm	Van Valey House
4	Neighborhood	5.13.17	10:00am - 3:00pm	Horizon Elementary School
5	Port	5.16.17	9:30am - 11:30am	Waterfront Center
6	Smith Island	5.24.17	12:00pm - 1:00pm	Animal Shelter Meeting Room
7	Downtown Business	6.14.17	9:30am - 11:00am	Everett Performing Arts Center
8	Steering Committee # 2	6.15.17	2:00pm - 3:30pm	Waterfront Center
10	Planning Department	7.5.17	9:00am - 10:00am	Everett City Hall
11	Steering Committee # 3	9.27.17	10:00am - 12:00pm	Legion Hall
12	Open House	10.17.17	5:30am - 7:30pm	Everett Main Library

Public feedback was gathered through the following venues:

- Three Steering Committee meetings were held to inform and gain approval from City of Everett stakeholders about the goals, progress, and action items from the public process.
- A Neighborhood Workshop brought together residents to talk about how to make their neighborhoods more resilient.
- Workshops were held with the Port of Everett, Smith Island tenants, the Public Works Department, the Planning Department, and Downtown Businesses. A presentation on unreinforced masonry (URM) buildings was made to the Everett Historical Commission. Meeting Minutes were sent out to participants.
- A series of in-depth phone interviews were set up with participants to get feedback on proposed action items.
- An online survey was sent out to reach people who did not attend the public meetings but wanted to give feedback.
- An Open House was held to share findings with the public.

Meeting Descriptions

Steering Committee Meetings

The purpose of the Steering Committee meetings was to approve the project scope of work, review proposed action items, and review the final draft of the 2017 Hazard Mitigation Plan. Committee members come from government agencies, organizations, and businesses. The agendas for these meetings and list of attendees can be found in Appendix B.

First Meeting: This meeting followed a World Café format with storytelling as described above. Participants were grouped at four tables with each table focused on a planning area: Neighborhoods, Business District, Infrastructure, and the Port. There were three rounds with note-takers at each table. At the end of each round, a spokesperson from each table reported the findings. The Project Team provided presentations on hazards specific to Everett and the overall planning and public process. Participants voted on priority of hazards to be addressed. The Steering Committee also approved the work plan and goals.

Second Meeting: The meeting began with a presentation by the Project Team discussing the public meetings to date and what was valued by community and seen as threats. Emphasis was given to the isolation of Everett following an earthquake and how this could be mitigated by strong partnerships and a community vision. The Project Team presented all the draft action items. The meeting then followed a World Café format with participants grouped at four tables. The four tables each focused on one of the following topics: Social Capital, Built Capital, Natural Capital, and New Development. Action items were grouped by table topic. The participants moved between tables in three rounds and reported out at the end of the whole process. The Steering Committee reviewed and commented on the proposed draft action items.

Table discussions at the second Steering Committee Meeting. Photo Credit: Project Team

Third Meeting: This meeting began with a presentation of an overview of the completed public process. The Project Team presented the goals, hazards, hazard rankings, strategies and

action items. The meeting then followed a World Café format with participants grouped at four tables. The four tables each focused on one of the following strategy areas: Infrastructure, Buildings, Exercises and Trainings, Planning/ Waterfront, and Port. Each table reviewed the action items and made suggestions for ranking them. The participants moved between tables in three rounds. For the third round, participants returned to their original table and the table facilitator reported the combined results to the whole room. The Steering Committee reviewed the action items and commented on relative order of ranking and funding.

Neighborhood Meeting

The neighborhood meeting focused on community values compromised by probable hazard events and concluded with stories on how to make their respective neighborhoods more resilient. This workshop followed a World Café format enhanced by storytelling. Participants were grouped by neighborhoods: North End, Central Everett, Port Gardner Bay, and South of 526. For all three rounds the groups moved through the storytelling process. For the last round, groups rotated to tables with a focus on either: Built Capital, Natural Capital, Social Capital, or Future Vision. The Project Team made presentations on the results from the Steering Committee 1 meeting, the overall process, hazards, and personal preparedness. Lunch was served halfway through the workshop. After the workshop, draft action items were researched and developed and sent out to participants along with meeting minutes for comment. See Appendix B for meeting minutes and other public process materials.

Workshops with Agencies and Organizations

Workshops were held with the Port, Smith Island, City Infrastructure, and Downtown Businesses. These workshops began with a discussion of what the organization valued followed by brief discussion of hazard issues specific to each audience. Participants generally sat at tables in a U-shaped configuration. As with the Steering Committee and Neighborhood meetings, they went through three rounds discussing what they liked and disliked, what would happen after a disaster, and how to make Everett more resilient. After the workshop, meeting minutes and draft action items were sent to participants for comment.

In addition, the Project Team delivered a presentation on unreinforced masonry (URMs) buildings to the Everett Historical Commission. Staff from the City of Seattle also shared their findings from their 5-year stakeholder process on developing policy for retrofitting URMs. See Appendix B for meeting minutes and other public process materials.

Interviews

In-depth phone interviews were conducted with members of the following groups: Public Works Department, Planning and Community Development Department, Snohomish PUD, Building Division, IT Department, Office of Emergency Management, The Boeing Company, The Economic Alliance of Snohomish County and others. The individuals in these groups were generous with their time and expertise.

These interviews were held after the meeting minutes had been sent out. Participants were often emailed specific questions about only the action items that related to their work. The phone interviews usually began with an overview of the purposes and public process. Interviews allowed for vetting and refining action items.

Online Survey

An online survey consisting of 18 questions was opened to the public over the summer. The Office of Emergency Management and the Communications and Community Engagement Department advertised the survey. The survey was similar to the one used for the 2011 HMP and results of both surveys are compared in the Appendix. Respondents were queried about hazards, support for certain mitigation measures, and their level of personal preparedness. For online survey, results see Appendix C.

Open House

The Open House was held at the Everett Public Library. Printed maps of all the neighborhoods with associated hazard information were printed and on display. Representatives from the Office of Emergency Management and the Project Team answered questions from residents.

Valued Positive Core

As described above, the risk assessment process followed an asset-based Appreciative Inquiry storytelling format. Participants in the public meetings and interviews expressed what they considered to be Everett's strengths and assets. Mitigation action items arose from this positive core and the risks from natural hazards. The positive core areas were similar to and corroborate those generated by the 2011 HMP public process. The following is the valued positive core:

Strong and Trusted Government

City employees demonstrated a commitment to improving resiliency and addressing vulnerabilities in infrastructure systems. They understand the challenges of recovery after a major event and that residents depend on these vital services. At public meetings, residents thought that the City was addressing hazard concerns and appreciated investments in the road and water systems. The Public Works Department replaced the aging Broadway Bridge in 2015, and the Grand Avenue Pedestrian Bridge Overpass is nearing completion. The Office of Emergency Management works closely with residents and other departments to build preparedness and partnerships.

Community Emergency Response Support

OEM manages Community Emergency Response Team (CERT) training and Map Your Neighborhood (MYN) and supports the establishment of neighborhood caches and communication hubs. OEM has trained over 650 students in CERT and will conduct a Spanish CERT class in 2017. At the neighborhood meeting, residents said they valued the CERT and MYN programs. At the downtown business meeting, people felt that the downtown was more resilient because services were distributed rather than concentrated. Residents and employees felt these attributes and programs support emergency response and recovery.

Economic and Population Growth

Everett added 1,500 people last year, according to the Planning and Community Development Department. The Puget Sound Regional Council (PSRC) has estimated significant growth for Everett. Participants in the public process felt that new residents contribute to Everett's economy. Growth can provide added revenues to fund public safety and hazard mitigation. New development can incorporate safety features and improved access. Everett is fortunate to have a strong manufacturing base. The Boeing Company, supporting vendors, the Port, and railways, were understood to be a critical link with regional and global supply chains and operations. Participants also mentioned some challenges of growth such a shortage of affordable housing and increases in the homeless population.

Landscape

At the neighborhood meeting, residents appreciated the amenities offered by their coastlines, waterfront, parks, and trails. They also valued the unreinforced masonry (URM) historic buildings. The Planning and Community Development Department highlighted Everett's strong regulations for building on steep slopes, maintaining protective buffers, and providing public education about risks. In meetings and interviews with the Public Works Department and Building Division, it was discussed how hard soils benefit buildings and infrastructure during earthquakes. Many of Everett's neighborhoods are located on hard soils. Homes, other structures, and infrastructure located on these harder soils incur less damage from ground shaking. The more vulnerable areas with softer soils are located along the coastal floodplains, bluffs, and drainages. Softer soils tend to shift and even liquefy in earthquakes resulting in much greater damage. Everett's western coastal neighborhoods are on land vulnerable to ground shaking, mobility, liquefaction, and isolation.

Risks from Natural Hazards

Risks are a product of hazards and their associated impacts. Earthquakes, flooding, severe storms, climate change, and landslides were determined by the Steering Committee to represent the probable hazards with the greatest impacts. The 2017 Hazard Inventory and Vulnerability Analysis (HIVA) describe these risks in detail. The following are areas where risk reduction is needed:

Isolation

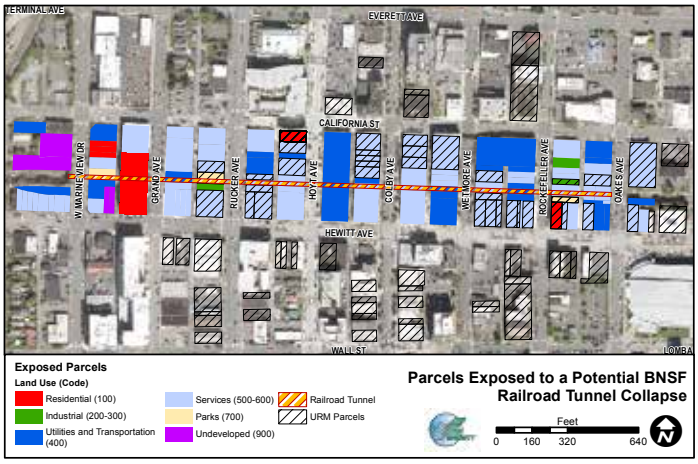
Everett is a peninsula surrounded on three sides by water. This location increases the likelihood of isolation. Similarly, many neighborhoods can be isolated and become virtual islands. This theme was mentioned at many of the public meetings and interviews. At the Smith Island meeting, organizations and businesses talked about their shared resources to deal with isolation. They also requested an exercise to build resiliency. Earthquakes, high storm-driven surges and river flooding are all events that could isolate Smith Island. At the downtown business meeting, participants discussed how businesses could provide gathering places and services in the aftermath of a disaster. During the Waterfront and Port meeting, participants talked about working with BNSF Railway to open Bond Street for emergency access. Everett has strong neighborhoods and a diverse transportation network to buffer the impacts of isolation. Through emergency planning and trainings, period of isolation can be prepared for and risks reduced. The 2017 HMP recommends infrastructure upgrades, exercises, and improvements in response planning.

Vulnerable Structures (Unreinforced Masonry and other Pre-Code Structures)

Everett has a large number of unreinforced masonry (URMs) buildings mostly built prior to World War II. These attractive structures contribute to Everett's unique character and some are historic landmarks. Everett also has a large inventory of homes built prior to 1972, before codes required bolting homes to foundations. There is also a variety of other pre-code structures. This vulnerability will increase as buildings age and population increases. In public meetings and interviews, the issue of vulnerable structure was discussed with the Office of Emergency Management, the Planning and Community Development Department, the Historical Commission, the Building Division, and with neighborhoods and downtown businesses. Various action items in this report propose upgrading structures, improving evacuation, and developing plans to build back better.

Burlington Northern Santa Fe (BNSF) Railway Downtown Tunnel

The BNSF Railway tunnel, running beneath much of the central business district, represents a major risk. The tunnel is over one hundred years old. It is thought to be of timber construction and later lined with concrete. In 1989, the tunnel tracks were lowered but it is unknown if other improvements were made at that time. The tunnel is owned, operated, and maintained by BNSF Railway. There are many unreinforced masonry (URMs) buildings above the tunnel. The tunnel is likely to collapse along with the buildings above during a strong earthquake. The 2017 Hazard Inventory and Vulnerability Analysis (HIVA) includes a map showing the potential impact zone of collapse. This issue was presented at the Historical Commission meeting as part of the larger discussion of unreinforced masonry (URM) buildings and was also discussed in other meetings and interviews.



Properties and City streets located above the BNSF Railway Downtown Tunnel that are exposed to the impacts of a tunnel collapse. Map Credit: City of Everett GIS

Industry Dependence

Everett is fortunate to retain a strong manufacturing sector lead by The Boeing Company. Everett is dependent for a large proportion of its tax base on this sector. Manufacturing relies on a network of good roadways, railways, seaports, and airports. Everett would face significant economic harm if a major disaster impacted this sector and the transportation network. The regional efforts to replace the US 2 westbound trestle bridge and study the SR 529 drawbridges can strengthen the transportation network. Interviews with The Boeing Company and the Economic Alliance of Snohomish County representatives included discussion of the importance of a resilient transportation network and business continuity planning.

Waterfront and Port Exposure

The Waterfront and Port face a variety of hazards including earthquake-related ground-shaking, soil liquefaction, hazardous material spills, tsunamis, and seiches. In the coming decades, the Port will also be impacted by climate change and related increases in severe weather and sea level rise (SLR). Fortunately, the rate of SLR is among the slowest in the nation. The new waterfront development is incorporating climate change impacts into the future design and construction guidance. With new development there will be opportunities to improve emergency services and access while addressing expected climate change impacts. In meetings and interviews, the Port is working to improve access and backup systems. Planned improvements to the South Terminal can also benefit resiliency.

Pedestrian Bridge to the Waterfront. Photo Credit: City of Everett

Chapter 3: 2017 Action Items

At the core of the Hazard Mitigation Plan are the action items developed through the previously described public process. The 2017 action items will guide mitigation activities by the City of Everett government and partners for the next five years. This plan can support city budget allocation requests and grant applications. Some items will continue on because they are recurring, represent major projects or require more funding and staffing. A disaster during this period may also result in changes to the plan.

This section begins with an explanation of how action items are evaluated along with goals and strategy areas. The action items are grouped under five larger strategy areas. Each action item is explained in detail and includes information supporting prioritization. The format of these action items parallels that used in the 2011 document. The primary difference is that this plan combines items for the sake of clarity. Strategy area titles have also been modified slightly.

Evaluation Process

The Project Team identified five strategy areas, described below, to achieve mitigation goals as determined by the Everett Steering committee. Each of the five strategies includes a number of implementable action items (the equivalent of FEMA's Strategies). Each action item has a responsible agency, benefit/cost analysis, and timeline, as described below. As part of this process, existing plans, studies, reports, and technical information were reviewed and incorporated into the action items.

Responsible Agency

Completion of each action item requires a responsible department, agency, or outside entity. Some action items list only one group, and others name multiple groups working together. The first listed group is often primarily responsible for the action item.

Benefit/Cost Analysis

Each action item underwent a basic benefit/cost comparison and was assigned a cost or benefit of high, medium, or low, based on the following criteria:

Benefit:
Low = Less than one million dollars of damage prevented.
Medium = Between one and ten million dollars of damage prevented.
High = More than ten million dollars of damage prevented.

Cost:
Low = Within Everett's existing budget.
Medium = Less than one million dollars of additional funds required.
High = More than one million dollars of additional funds required.

Benefit estimates were made based on the frequency of the hazardous event, longevity of the benefit, and the discounted present value of the future damages prevented. Per FEMA requirements, the estimation of benefits did not include the value of human lives or consideration of lost cultural value.

Timeline

The timeline for each action item considered probability and availability of funding, as well as time to plan, obtain approvals, and implement. Once implemented, some action items will be recurrent and ongoing. The timeline

measures are defined below:

Short: Less than six months
Medium: Six months to two years
Long: More than two years

Prioritization

Action items are listed under each strategy by their relative priority. Priority for action items was also based on highest Benefit/Cost. The importance of the risk addressed also impacted priority ratings. Action items that could be done relatively quickly were also given elevated priority.

Risk Ranking

The Steering Committee did a risk ranking as shown in the Introduction and Executive Summary. The Project Team used a risk ranking methodology as shown in Appendix E. The results of both were largely in agreement.

Potential Funding Sources

Action items that cannot be funded entirely by the City's budget (those with a cost rating of medium or high) may be eligible for external funding programs. Appendix E lists federal, state, and local programs that could provide grant funding or reduce costs. Some action items have also identified private/public partnerships to offset funding costs, will use volunteers or student interns to reduce costs, or will utilize existing studies or programs.

Goals

The plan uses six mitigation goals that help to select, develop and prioritize action items. These goals also provide a framework to judge the effectiveness of the action items. During the 2006 update, the Steering Committee agreed to adopt the first five goals. In 2011, the Steering Committee again adopted these goals, without change. In 2017, the Steering Committee again adopted the same five goals with the addition of a sixth new goal addressing recovery. The 2017 goals are as follows:

1. Protect public health, welfare, and public safety.
2. Ensure continuity of critical facilities and infrastructure, corresponding operations of local government, and a vital economy.
3. Foster coordination and communication amongst public and private organizations.
4. Protect the quality of the natural environment.
5. Minimize losses to existing and future properties.
6. Increase initial post-event self-reliance (new 2017 goal).

Strategy Areas

Action items arose from the storytelling public process and flowed from what participants valued and appreciated. This includes the Steering Committee's risk-ranking assessment and goals. The action items are organized into five general strategy areas.

- Infrastructure
- Buildings
- Trainings and Exercises
- Planning
- Waterfront and Port

Infrastructure

Infrastructure action items support Everett's positive efforts to replace, upgrade and increase the redundancy of infrastructure systems while improving disaster response capabilities.

Everett is served by water, sewer and transportation infrastructure, among others. These critical systems can all be damaged in an earthquake or compromised by other hazards. These systems are extensive and interconnected. Failures in one system can have impacts on the others. The capability of infrastructure systems to withstand hazards and be restored to service is critical to both immediate and long-term recovery. These action items seek to support improvements and the related assessments of Everett's primary infrastructure systems.

Item	Action Items	Responsible Agency	Benefits	Cost	Benefits / Cost	Timeline	Priority
IN1	Implement an earthquake early warning system in key locations throughout the City.	Office of Emergency Management, Public Works Department	H	U	H	LG	H
IN2	Support efforts to improve the resiliency of major transportation corridors I-5, US 2, and SR 529.	Public Works Department, Washington Department of Transportation	H	L	H	LG	H
IN3	Set up dedicated city funding for intermediate-size bridge repair projects.	Public Works Department	H	L	H	M	H
IN4	Complete an assessment of post-earthquake response to repairing the in-city water system.	Public Works Department	H	L	H	M	H
IN5	Implement recommendations from the 2012 Water Supply Risk Assessment and the forthcoming Regional Water Supply Resiliency Study.	Public Works Department	H	U	H	LG	H
IN6	Complete an assessment of the need for backup generators at water pump sites and secure funding for generator gaps.	Public Works Department	M	L	M	M	M
IN7	Complete an assessment of the City's fueling infrastructure with recommendations for improvements.	Facilities Department, Motor Vehicles Division	H	M	M	M	H
IN8	Build a fiber communication and data loop connecting City Emergency Operations Center.	Public Works Department	H	L	H	LG	H
IN9	Complete an assessment of the earthquake response of the Regional Wastewater Treatment Plant building and siphons.	Public Works Department	H	L	H	M	H
IN10	Complete an assessment of critical sewer pipelines with recommendations for improvements.	Public Works Department	H	L	H	LG	H
IN11	Acquire Port Gardner Wet Weather Facilities to provide additional combined sewer and stormwater capacity.	Public Works Department	H	H	H	M	H
IN12	Plan to build a backup transmission line to provide redundant water supply to Reservoir #3.	Public Works Department	H	H	H	LG	H
H = High, M = Medium, L = Low, S = Short, LG = Long, U = Unknown							

IN1: Implement an Earthquake Early Warning System in key locations throughout the City of Everett.

There are several places in the City that could benefit from a warning system. These areas include buildings and streets above the BNSF Railway downtown tunnel, the Port, Jetty Island, and homes near steep slopes. For certain types of earthquakes, a warning system might give people enough time to get out or get to a safe location.

The BNSF Railway tunnel running below the downtown is a big concern. This tunnel was built around 1900 and is well over a hundred years old. It is thought to be of timber construction and later lined with concrete. In 1989, the tunnel tracks were lowered but it is unknown if there were other improvements. The tunnel is owned, operated, and maintained by BNSF Railway.

There are many unreinforced masonry (URMs) buildings above the tunnel. The 2017 Hazard Inventory and Vulnerability Analysis (HIVA) shows a map of the impact zone after collapse. In a strong earthquake, the tunnel might collapse along with the buildings above. Hazardous materials also pass through this tunnel. A warning system might be of value here.

Jetty Island, accessible to the public during the summer, is a popular park only reached by boat or ferry. Most of the island is low elevation and could be impacted by a tsunami or seiche caused by an earthquake. A warning system could be beneficial in helping those on the island get to a safe area.

The City of Everett has just become a beta user with the ShakeAlert system and is also exploring pilot projects. ShakeAlert is run by the United States Geological Survey (USGS). USGS is working to develop effective earthquake warning systems.

Responsible Agency: Office of Emergency Management, Public Works Department, Port
Events: Earthquake, Tsunami, Landslide, Hazardous Materials

IN2: Support efforts to improve the resiliency of major transportation corridors I-5, US 2, and SR 529.

The City of Everett relies on the major transportation corridors for residents, employees, and businesses. Isolation and the associated continuity of government and business operations are major concerns. These corridors are critical links in Boeing's regional, national, and global supply chains. Each of these corridors has vulnerable sections including portions above soils that could liquefy in an earthquake. The Public Works Department is not responsible for these corridors but they can continue to work with partners to support needed improvements.

The City of Everett, Snohomish County, and the City of Lake Stevens are asking the Washington Department of Transportation (WSDOT) to replace the US 2 westbound trestle bridge. This bridge is key for people that commute to work in Everett. During rush hour, this bridge carries heavy traffic. An earthquake could threaten this weak link and partially cut off city access. Workers could have trouble getting in or out. Replacing this bridge will strengthen a key transit corridor.

SR 529 is another key route for the City of Everett. Workers, residents and freight use this road. The drawbridges over the river may be a weak point. The drawbridges help connect Smith Island to Everett. Smith Island is home to the Regional Wastewater Treatment Plant. To improve access to this area, WSDOT will be building the I-5/SR 529 full interchange project. By studying the SR 529 drawbridges, WSDOT can take further steps to improve the resiliency of this route. In an earthquake, there is concern that Everett and Smith Island could be cut off.

Responsible Agency: Public Works Department, Washington Department of Transportation
Events: Earthquake, Severe Weather, Fire, Hazardous Materials

IN3: Set up dedicated city funding for intermediate-size bridge repair projects.

The Public Works Department does a great job on large capital replacement/renovation projects and daily bridge maintenance. But intermediate-size bridge repair projects are a gap. The department is trying to get a budget line item set up to fill the gap. Bridges connect neighborhoods, recreation, and places of work. Bridges carry residents, workers, freight, and emergency response crews. Bridges are a key part of the transit network. The City already has a strong track record for inspections and repairs. Building on this success will help Everett to better withstand earthquakes and get more service life out of its bridges.

Responsible Agency: Public Works Department
Events: Earthquake, Severe Weather, Fire, Flooding, Hazardous Materials, Landslide

IN4: Complete an assessment of post-earthquake response to repairing the in-city water system.

The Public Works Department already stores pipe sections in strategic places along their water transmission lines. In an earthquake, these sections will be right next to where they are needed, thereby reducing the need to order and transport parts. The department would now like to study the in-city water system and look for ways to improve response and recovery. The study might consider: what repairs to prioritize, likely places of failure, types of piping and where to store them, among other issues. Water is a key service to get back on line after a disaster. Restoring basic water service will help the city retain residents and businesses.

Responsible Agency: Public Works Department
Events: Earthquake

IN5: Implement recommendations from the 2012 Water Supply Risk Assessment and the forthcoming Regional Water Supply Resiliency Study.

In 2012, the Water Supply Risk Assessment was completed by the Public Works Department. The work generated by that assessment is already underway.

The Public Works Department is part of the Regional Water Supply Forum along with other Puget Sound water utilities. The forum will also issue a Regional Water Supply Resiliency Study shortly after the completion of the 2017 HMP. When this study is issued, the department should implement what makes sense for Everett. This is a great opportunity to build on the momentum from the forum. Working together to share ideas and build partnerships is key for resilient utilities.

Responsible Agency: Public Works Department
Events: Earthquake

Seismically upgraded water transmission lines. Photo Credit: City of Everett Public Works Department

IN6: Complete an assessment of the need for backup generators at water pump sites and secure funding for generator gaps.

Everett is making good progress in providing backup power to key pump sites. Generators keep pumps working after a power outage. This is one way to make the water system more resilient. The Public Works Department can do a study to see where generators are most needed and then get funding. The department applied for a Hazard Mitigation Grant to get a generator for the pump at Reservoir #3 and has been selected as an "alternate project." This is an action item that was also in the 2006 HMP.

Responsible Agency: Public Works Department
Events: Earthquake, Severe Weather, Fire, Flooding, Hazardous Materials, Landslide

N7: Complete an assessment of the City's fueling infrastructure with recommendations for improvements.

The City of Everett owns and maintains a fueling infrastructure system consisting of both diesel and gasoline fuel types and diesel exhaust fluids. This system is critical for city vehicles to support response and recovery efforts. The 10 fueling locations include:

- 1 Motor Vehicle Division fuel island with the majority of the City's fuel (diesel, gasoline, and diesel exhaust fluids)
- 5 Fire Stations (1 station has gasoline and diesel, all others only diesel)
- 2 Golf Courses: Legion and Walter Hall (diesel and gasoline)
- 1 Park: Kasch (diesel)
- 1 Utility: Water Filtration in Sultan (diesel)

This system is aging and has pending equipment obsolescence. This reduces the capacity of the system to respond to disaster. Complete an assessment to determine the condition of the fueling system with recommendations for specific improvements to increase resiliency.

Responsible Agency: Facilities Department, Motor Vehicles Division
Events: Earthquake, Severe Weather, Fire, Flooding, Hazardous Materials, Landslide, Tsunami, Volcano

N8: Build fiber communication and data loop connecting City Emergency Operations Center.

The City has fiber lines for communication and data connecting a number of the City's critical buildings and infrastructure. In 2018, a project will bring the fiber communication to the South Precinct of the City Emergency Operations Center (EOC). In the future, the fiber lines should loop back to City Hall to provide redundancy.

Responsible Agency: Public Works Department
Events: Earthquake

IN9: Complete an assessment of the earthquake response of the Regional Wastewater Treatment Plant building and siphons.

Sewage treatment is a key service to get back on line after a disaster. Assessments of both the treatment plant facility and siphons will contribute to system resiliency.

There are older portions of the treatment plant that lack pier support. Piers help anchor and support a building during an earthquake. The plant is located on soils that could liquefy in an earthquake. The department is looking into

upgrading older portions of the plant.

Five siphons run below the Snohomish River and connect to the Wastewater Plant. In an earthquake, those siphons could break. The underwater siphons could spill sewage and be difficult to repair. This would impact not just Everett but other parts of Snohomish County. Sewage in the river could impact human health, fish, and plants. Assessing the siphons will provide information about how they will perform in an earthquake. Upgrades can be made if needed.

Responsible Agency: Public Works Department
Events: Earthquake

N10: Complete an assessment of critical sewer pipelines with recommendations for improvements.

The South End interceptor and Mukilteo Beach interceptor convey untreated sewer flows from south Everett toward the wastewater plan. These pipes provide sewer service to a large portion of City residents. There is no redundant system in place to provide sewer service to this portion of the City if either of these sewer lines failed. Many of the City's sewer force mains also have no redundancy and convey sewage for long distances. Portions of these sewer lines are located within landslide hazard areas and other vulnerable locations.

Complete an assessment to determine the condition of critical sewer pipelines with recommendations for specific improvements to increase resiliency.

Responsible Agency: Public Works Department
Events: Earthquake

IN11: Acquire Port Gardner Wet Weather Facilities to provide more combined sewer and stormwater capacity.

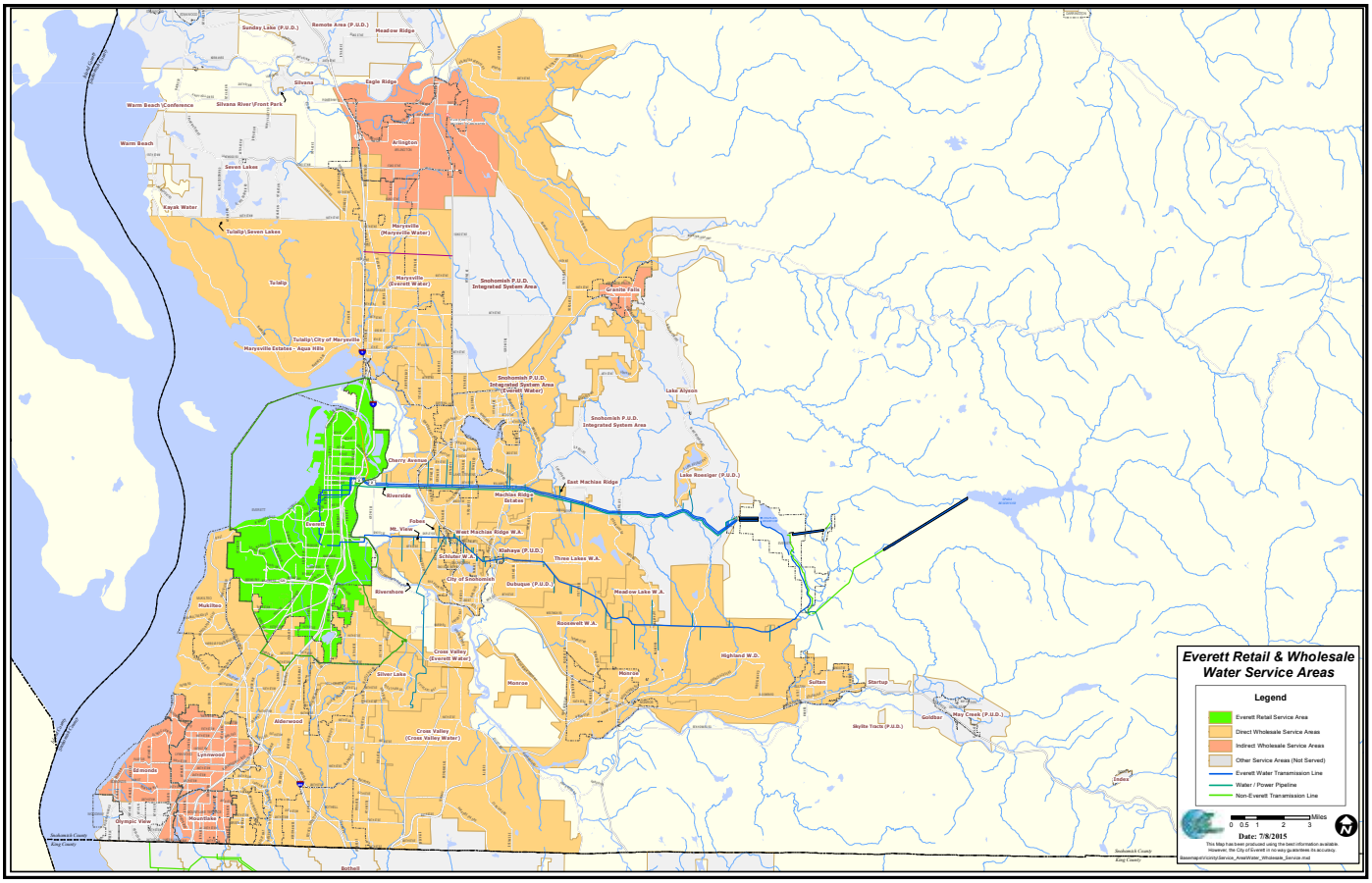
The Port Gardner site offers added combined sewer storage and stormwater treatment capacity along with access to a deep-water outfall. This project is one way to deal with increased intensity of rain events. Climate change can bring more severe storms and wetter winters. Heavier volumes of rain fall in shorter periods of time. This can overwhelm the City's system that was not built for such heavy rains. This can result in flooding and the release of combined sewer overflow discharges and untreated stormwater into local waters. This project will help the system to be more resilient to growing stresses.

Responsible Agency: Public Works Department
Events: Earthquake, Severe Weather, Climate Change, Flooding, Tsunami

IN12: Plan to build a backup transmission line to provide redundant water supply to Reservoir #3.

Everett has three water transmission lines to the north. Only one water transmission line goes to the south. The south line was built in 1965 and travels over soils that can liquefy in an earthquake. This line also serves a growth area in southwest Snohomish County. A redundant source of water supply to Reservoir #3 will provide valuable backup and make it easier to upgrade the old line. This carries forward an action item from the 2011 HMP.

Responsible Agency: Public Works Department
Events: Earthquake



Everett Retail and Wholesale Water Service Area. Everett's water system also serves other localities. Map Credit: City of Everett

Buildings

Buildings action items help to assure vulnerable buildings become safer through code-driven triggers and incentives along with trainings for post-disaster assessments.

After California, Washington is second for earthquake risk in the nation. Many of those involved in creating this plan lived through the 2001 Nisqually Earthquake and also participated in the statewide 2016 "Cascadia Rising" exercise. Their experiences have enriched this planning process. Everett has an aging building stock, including critical facilities, that are vulnerable to earthquakes. The following action items seek to upgrade the existing building stock while improving disaster response and recovery.

Item	Action Items	Responsible Agency	Benefits	Cost	Benefits/ Cost	Timeline	Priority
BD1	Construct a backup water supply source for Providence Regional Medical Center Everett.	Public Works Department, Providence Regional Medical Center Everett	H	L	H	LG	H
BD2	Complete an assessment of unreinforced masonry (URM) buildings with recommendations for protecting public safety.	Building Division, Fire Department, Historical Commission, Planning and Community Development Department, Facilities Department, Office of Emergency Management	H	L	H	M	H
BD3	Seismically retrofit or rebuild critical city facilities including the Public Works building.	Facilities Department, Parks Department, Public Works Department	H	H	H	LG	H
BD4	Implement cross-departmental Post-Disaster Building Safety Assessment Training on a repeating cycle.	Office of Emergency Management, Facilities Division, Parks Department, Office of Emergency Management	M	L	H	M	M
BD5	Create an Earthquake Home Foundation Retrofit Program for homes not secured to their foundations.	Building Division	M	L	H	M	M
BD6	Implement non-structural mitigation measures in city facilities.	Office of Emergency Management, Facilities Department, Public Works, Parks and Community Services Department	M	L	L	M	M
H = High, M = Medium, L = Low, S = Short, LG = Long, U = Unknown							

BD1: Construct a backup water supply source for Providence Regional Medical Center Everett.

In an earthquake, critical facilities can lose water service. Hospitals are among the most vitally impacted by loss of water service. After a disaster, the demands on hospitals are huge and urgent.

Public Works and Providence Hospital have begun discussing a backup water supply. One option is an onsite well. Other options are a dedicated earthquake-resistant supply line from Reservoir #2 or from the City-owned wells at Legion golf course.

Responsible Agency: Public Works Department, Providence Regional Medical Center
Events: Earthquakes

BD2: Complete an assessment of unreinforced masonry (URM) buildings with recommendations for protecting public safety.

Everett has hundreds of URM buildings. URM buildings are often very attractive (many are historical landmarks) that add much to Everett's unique character as noted by those who participated in the public process. These older buildings often provide affordable housing and spaces for small businesses and non-profits. Some of these buildings have been well maintained while others have been neglected. In an earthquake, this class of buildings would be among the first to fail. Parapets and portions of walls could fall onto sidewalks and roadways.

Everett has many unreinforced masonry buildings that add to the unique character of the city. Photo Credit: Wikimedia Commons

Seattle has just completed a five-year stakeholder-driven process to suggest approaches for dealing with over 1000 Seattle URM buildings. Their effort could benefit Everett. Everett could undertake a similar approach. The City could begin with an inventory of URM buildings. An assessment could include secondary hazards such as by unbraced parapets located along major walking and transit routes. The City might also look at how to protect historical landmarks and City-owned URM buildings. The Old Fire Station #2 Training Facility is an attractive URM building that was seismically retrofitted in 2013. This vulnerability will only grow as buildings age and the city becomes dense. Previous HMPs addressed URM buildings but significant action was not taken.

Responsible Agency: Building Division, Fire Department, Historical Commission, Planning and Community Development Department, Facilities Department, Office of Emergency Management
Events: Earthquakes

BD3: Seismically retrofit or rebuild critical city facilities including the Public Works building.

After an earthquake, city facilities may be damaged. If facilities are upgraded or new, they will receive less damage. Facilities built prior to current codes may be badly damaged in a big earthquake. There are certain facilities that are mission critical. These facilities provide essential services that are vital for recovery. The Public Works building does not meet current seismic standards. This facility is the staging area for work crews that repair water, sewer, and transportation systems.

A key first step is to assess the seismic condition of city owned facilities. The majority of the critical buildings on the Public Works 3200 Cedar Street site have been evaluated for seismic and structural stability. A priority ranking of all City buildings would include the importance of a facility to response and recovery. The Old Fire Station #2 Training Facility, Office of Emergency Management, and Fire Department warehouse were all seismically upgraded in 2013.

Responsible Agency: Facilities Department, Parks Department, Public Works Department
Events: Earthquakes

BD4: Implement cross-departmental Post-Disaster Building Safety Assessment Training on a repeating cycle.

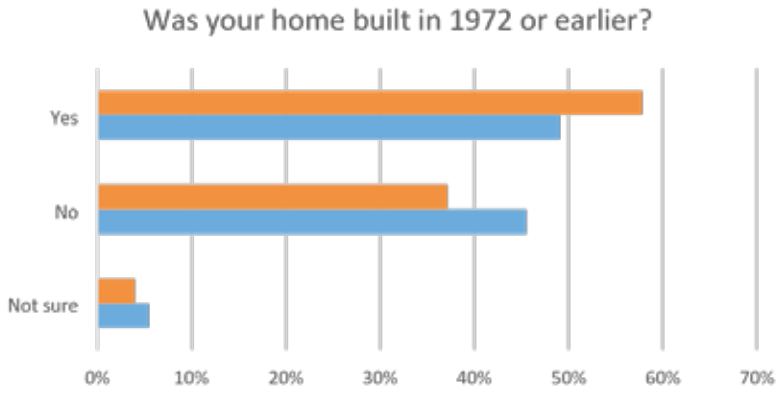
After an earthquake, it is critical to assess if buildings remain safe. Some buildings may be too dangerous; others may be damaged but safe to occupy. But until an assessment is done, a building cannot be used. This is why it is so vital to have enough inspectors. A lack of inspectors will draw out recovery and prevent safe buildings from being put back in use. Everett's Building Division is small. There is insufficient staff to assess hundreds of buildings after a major earthquake.

There are many ways to greatly boost capacity. In September 2011, several hundred Everett city employees had ATC 20 training. Since that time, people have retired and moved on. It is time to offer a new training that recurs on a cycle. With additional training, department staff could assess building conditions following an event. The American Institute of Architects (AIA), the Structural Engineer Association of Washington (SEAW), and Everett Community College could support these efforts. Another helpful reference is the *Post-Disaster Safety Assessment Program (SAP) Development for the State of Washington.*[1]

Responsible Agency: Building Division, Facilities Department, Parks Department, Office of Emergency Management
Events: Earthquakes

BD5: Create an Earthquake Home Foundation Retrofit Program for homes not secured to their foundations.

Prior to 1972, codes did not require homes to be bolted to their foundations. There is a huge inventory of pre-1972 homes in Everett. In an earthquake, some of the homes could bump off their foundations and be damaged in other ways. Injuries can also result. This problem may worsen with an aging housing stock. The Building Division supports Earthquake Awareness Week and shares information with the public. The division charges no plan review fees for foundation retrofit permits. But, few residents apply for these permits.



2017 and 2011 Online Survey results for date of home construction in the City of Everett. Chart Credit: Project Team

A program could boost public awareness through workshops and media. Ways to lower homeowner costs include

1 Freitag, Robert and Swanson, David. 2014. *Report: Post-Disaster Safety Assessment Program (SAP). Development for the State of Washington: Volunteer Emergency Worker and Non-Governmental Organization Capabilities Research Study and Workshop.* Emergency Management Division, State of Washington.

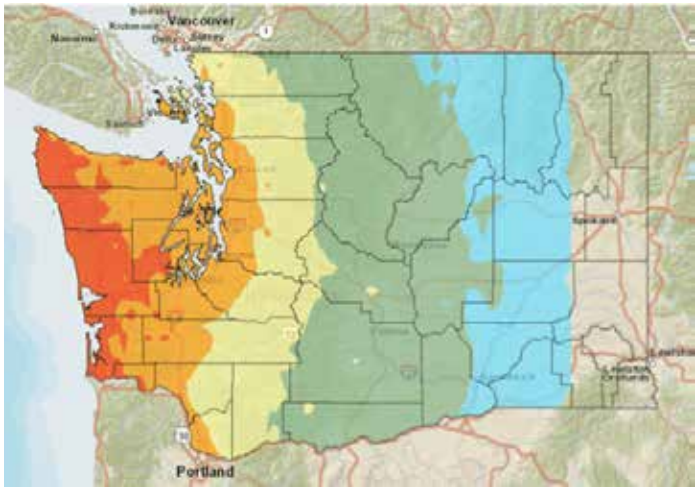
free coaching and site visits, pre-designed prescriptive plan sets, and a vetted list of contractors. Working with the insurance companies could also help support incentives. This is an action item from the 2006 and 2011 HMPs.

Responsible Agency: Building Division
Events: Earthquakes

BD6: Implement non-structural mitigation measures in city facilities.

In an earthquake, objects that are not secured shake, move, and fall. Falling objects can cause injury and damage. Designing buildings to resist earthquakes is one part of the puzzle. But securing what is inside buildings is the other piece of the puzzle. Such measures are called non-structural mitigation. These include bolting shelves to walls and fastening heavier items to shelves.

Non-structural mitigation measures are inexpensive and efficient. Emphasis should be placed on buildings with high occupancy, important records, dangerous chemicals, and important fragile items. Because items are moved around and staff turns over, education campaigns should occur on an annual basis. Such education can be included with general emergency preparedness events.



Shaking impacts from a Cascadia subduction zone earthquake. Warmer coolers represent greater intensity. Chart Credit: Washington State Seismic Hazards Catalog

This action item includes educating facility managers about the risks. Facilities can be assessed and a cost assigned to each measure. Priority measures can then be implemented. The Public Works Department has implemented a program to secure office equipment and materials in the Public Works Building, the Water Filtration Plant and the Wastewater Treatment Facility. This is an action item in the 2006 and 2011 HMPs.

Responsible Agency: Office of Emergency Management, Facilities Department, Public Works Department, Parks and Community Services Department
Events: Earthquakes

Exercises and Trainings

Exercises and Trainings action items support the positive work Everett has done to prepare residents and the workforce to overcome isolation, reduced services, and barriers to recovery.

Neighbors, employees, and emergency staff are key to response and recovery. Trainings provide people with valuable skills and knowledge. Exercises build relationships and make people aware of gaps and shared resources. Without this background, organizations and residents may respond poorly to a disaster. Avoidable mistakes and a tragic lack of coordination can be the result. The following action items seek to improve preparedness through exercises and trainings.

Item	Action Items	Responsible Agency	Benefits	Cost	Benefits/ Cost	Timeline	Priority
ET1	Improve Fire Department emergency response capabilities on the Waterfront to address the plans for new housing, public attractions, and businesses.	Fire Department, Office of Emergency Management	H	L	H	M	H
ET2	Train and encourage existing volunteers and community groups to do outreach and participate in community preparedness planning.	Office of Emergency Management, Office of Neighborhoods	M	L	M	M	M
ET3	Develop a City of Everett Continuity of Operations Plan (COOP) program that assesses each department's status and encourages next steps.	Office of Emergency Management, All City Departments	H	L	H	M	H
ET4	Assist local businesses and non-profits with business continuity planning and exercises.	Office of Emergency Management, Everett District Station Alliance, Business Improvement District Area, Economic Alliance of Snohomish County, Boeing, Planning and Community Development Department	M	L	M	M	M
ET5	Identify more Emergency Cooling Centers and inform the public.	Office of Emergency Management, Communications Department	L	L	L	M	L
ET6	Perform a Smith Island Exercise.	Office of Emergency Management	M	L	M	M	M
H = High, M = Medium, L = Low, S = Short, LG = Long, U = Unknown							

ET1: Improve Fire Department emergency response capabilities on the Waterfront to address the plans for new housing, public attractions, and businesses.

New development will boost the number of people who live, work and recreate at the Waterfront. Improving Fire Department emergency response will better serve new and current residents. This is key because the waterfront could be partly cut off in a disaster. The railway tracks and SR 529 are below slopes that could be impacted by earthquakes. The new Grand Avenue Pedestrian Bridge Overpass will provide another connection to the waterfront. New development can also help new create access and sheltering opportunities. This action item will help to improve public safety.

Responsible Agency: Fire Department, Office of Emergency Management
Events: Earthquake, Severe Weather, Fire, Flooding, Hazardous Materials, Landslide, Tsunami

ET2: Train and encourage existing volunteers and community groups to do outreach and participate in community preparedness planning.

The Office of Emergency Management (OEM) and the Office of Neighborhoods often work with volunteers. OEM has built a strong network of active residents. OEM will focus on continuing to build the CERT and MYN programs. Establishing community caches and communication hubs is also a priority. This is a strong base to build upon. With more training, volunteers can help with outreach to interested groups. Vulnerable populations can be one focus of this work. Neighborhoods with strong networks of volunteers are better prepared to respond and recover from disasters.

Responsible Agency: Office of Emergency Management, Office of Neighborhoods
Events: All Hazards

A representative of the Everett Office of Emergency Management talking with a member of the public. Photo Credit: City of Everett OEM

ET3: Develop a City of Everett Continuity of Operations Plan (COOP) program that assesses each department's status and encourages next steps.

All City departments benefit from Continuity of Operations Planning (COOP). Some departments have already put a lot of work into their plans. Other departments are just getting started. This action item would help departments to update and expand existing plans or develop new ones. Departments would also be encouraged to exercise plans. Exercises reveal resources and gaps. Exercises help staff get familiar with preparedness and response. Plans can emphasize personal preparedness and how employees get to work or work remotely after a disaster. Plans can also address post-disaster housing for employees and out-of-town contract workers (e.g., setting up agreement with local hotels). Exercises can help the Office of Emergency Management identify and catalog inter-departmental resources to be used in planning and response.

Responsible Agencies: Office of Emergency Management, All City Departments, Port
Events: All Hazards

ET4: Assist local businesses and non-profits with business continuity planning and exercises.

Everett is fortunate to have a diversity of local businesses and non-profits. These establishments provide vital services, products, jobs, and tax revenues. For example, Boeing has important facilities in Everett and relies on a system of local contractors. There are also health clinics, restaurants, repair shops, retail stores, thrift stores, and counseling services.

Large companies tend to have business continuity plans but small- to medium-sized companies may not. After disasters, businesses can be under great fiscal strain and fail. When businesses fail, the recovery can take much longer. Small local businesses are often the most vulnerable.

Businesses, non-profits, and local business groups can work together and pool resources for preparedness. It is possible to survive a disaster and even find opportunities in recovery and rebuilding. Basic education and guest speakers can raise the topic. Any business group can put this on their monthly meeting agenda or link it to other agenda items. Large companies can help educate their suppliers.

Businesses benefit from emergency plans. Ad Credit: See above

Responsible Agency: Office of Emergency Management, Everett District Station Alliance, Business Improvement District Area, Economic Alliance of Snohomish County, The Boeing Company, Planning and Community Development Department
Events: All Hazards

ET5: Identify more Emergency Cooling Centers and inform the public.

During the last several heat waves, Everett has worked to educate the public. Cooling centers include the Everett Station Lobby, Everett Libraries, Everett Mall, and the Senior Center. In the last twenty years, the trend has been a growing record number of hot days across the country. This trend is expected to continue and worsen. The smoke and ash from forest fires in Canada and the US covered this area twice in the summer of 2017. This added an air-quality health risk to already hot weather. Drier and hotter summers also support a trend of more forest fires.

By identifying additional centers and getting the word out, vulnerable populations such as the elderly and young children can be better prepared. Since many cooling centers are closed at night, it would be good to identify ones that can stay open all night. Cooling centers with ventilation systems can address air quality issues.

Responsible Agency: Office of Emergency Management, Communications and Community Engagement Department
Events: Severe Weather, Fire

ET6: Perform a Smith Island Exercise.

Smith Island could be cut off after an earthquake. Storms and flooding can also isolate the island. At a public meeting on May 24th, 2017, tenants exhibited support for an exercise. Tenants of the island include local businesses, the regional animal shelter, and the regional Wastewater Treatment Plant. Exercises can reveal resources and gaps (e.g., the Wastewater Plant has a satellite phone they can share and local businesses have firefighting equipment). Exercises also build relationships. Smith Island residents can work together to increase resiliency.

Responsible Agency: Office of Emergency Management
Events: Earthquakes, Severe Weather, Climate Change, Fire, Flooding

Planning

Planning action items seek to incorporate opportunities into the planning process to reduce risk and support disaster recovery while advancing the community vision.

Hazard Mitigation Planning needs to be considered within the context of comprehensive plan elements. Land use, shorelines, housing, transportation, capital facilities and utilities, economic development, urban design, and parks and recreation are all impacted by hazards. Addressing hazard risks can be as much a primary driver of the planning process as economic growth and other key factors. Planning should also support disaster recovery that maximizes opportunities to make improvements and relocate at-risk development while advancing the community vision. The following action items support a more resilient response and recovery through planning and access improvements.

Item	Action Items	Responsible Agency	Benefits	Cost	Benefits/ Cost	Timeline	Priority
PL1	Create a basic Post-Disaster Recovery Framework.	Office of Emergency Management, Office of the Mayor, Public Works, Facilities, Building Division, Planning and Community Development Department, and others	H	L	M	M	H
PL2	All long-range plans should include a recovery framework and a review of potential hazards.	Planning and Community Development Department	H	L	H	M	H
PL3	Continue to embed hazards mitigation into the Comprehensive Plan and related codes and ordinances.	Planning and Community Development Department	H	L	H	M/ LG	H
PL4	Develop a proposal for a gravel, gated emergency-use-only access ramp from Smith Island to I-5.	Office of Emergency Management, Public Works	M	L	M	M	M
PL5	Identify potential emergency access routes to neighborhoods and determine what is required to implement them.	Office of Emergency Management, Public Works Department, Planning and Community Development Department	M	L	L	M	M
PL6	Explore the potential of small commercial hubs in neighborhoods without such hubs.	Planning and Community Development Department	L	L	L	LG	L
H = High, M = Medium, L = Low, S = Short, LG = Long, U = Unknown							

PL1: Create a basic Post-Disaster Recovery Framework.

A basic recovery framework will allow Everett to have a more effective and focused response to a disaster. It will allow the recovery process to advance elements of the Comprehensive Plan. This basic document outlines a decision-making process, who is involved, and what plans should be consulted. This document can lay out how the comprehensive plan and community visioning objectives will be met while seeking to reduce suffering in the aftermath of an event. Because it is all the more difficult to do such planning after an event, putting together a basic framework can provide valuable guidance. The exercise of putting together and revising such a framework will stimulate valuable thinking and coordination.[1] [2]

Responsible Agency: Office of Emergency Management, Office of the Mayor, Public Works Department, Facilities Department, Building Division, Planning and Community Development Department and others
Events: All Hazards

PL2: All long-range plans should include a recovery framework and a review of potential hazards.

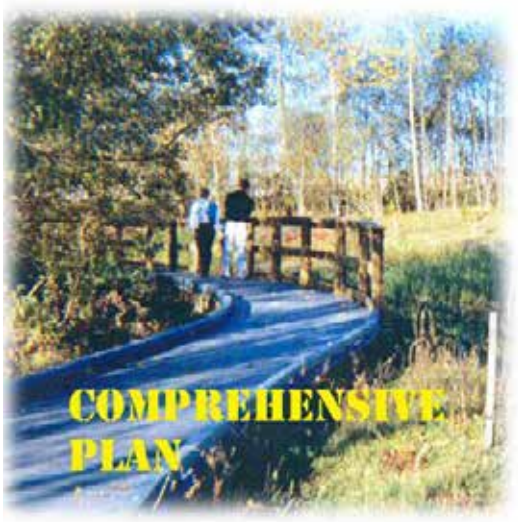
Long-range plans should consider the potential impacts of disaster events. Earthquakes, in particular, could have a significant impact on Everett's downtown. Everett has hundreds of unreinforced masonry (URMs) buildings that are vulnerable to earthquakes. The BNSF Railway tunnel under downtown may collapse in a major earthquake. By including hazards, long-range planning can support quicker recovery and building back better. Hazard events result in both losses and opportunities. By anticipating some of the impacts, long-range plans can be more responsive and flexible when it matters most.

Responsible Agency: Planning and Community Development Department
Events: All Hazards

PL3: Continue to embed hazards mitigation into the Comprehensive Plan and related codes and ordinances.

The City of Everett's 2015-2035 Comprehensive Plan references hazards and the Hazard Mitigation Plan (HMP). In 2015, Everett was ahead of many jurisdictions in adding a climate change section. Building on this good work, there are still many opportunities to further embed hazard information.

Hazard planning is a part of overall planning. The Critical Areas Ordinance ("CAO," Chapter 19.37 EMC) seeks to protect nature from human impacts. The HMP seeks to protect people from natural impacts. Steep slopes are sensitive natural areas and potential hazards for people. The HMP and CAO complement each other. Another example is shorelines. Shorelines are impacted by sea-level rise and more severe storms. Shorelines are also sensitive ecologies. Floodplain regulations and hazards are yet a third example.



Everett Comprehensive Plan. Image Credit: City of Everett

In the past two decades there has been a dramatic rise in natural disasters in America. Hurricanes Katrina, Sandy, and Harvey show how important land use and hazard planning are for

1 Johnson, Laurie and Olshansky, Robert. 2016. *After Great Disasters: How Six Countries Managed Community Recovery. Policy Focus Report.* Lincoln Institute of Land Policy.

2 Cage, Jane. 2013. *Joplin Pays It Forward: Community Leaders Share Our Recovery Lessons.* Jane Cage.

protection of people and nature.[3] [4]

Responsible Agency: Planning and Community Development Department
Events: All Hazards

PL4: Develop a proposal for a gravel, gated emergency-use-only access ramp from Smith Island to I-5.

Smith Island could be isolated after a major earthquake. Severe weather and flooding could also cut-off the island. SR 529 is the major transit corridor linking the island that could be impacted. Possible locations for a gated, gravel access ramp to I-5 should be explored. This ramp would be for emergency use only.

Responsible Agency: Office of Emergency Management, Public Works Department
Events: Earthquake, Severe Weather, Climate Change, Fire, Flooding, Tsunami

PL5: Identify potential emergency access routes to neighborhoods and determine what is required to implement them.

Neighborhoods could be isolated after an earthquake event. Roads and bridges may provide limited or no access. Identifying alternate emergency access routes now will greatly aid response. This includes identifying the needed materials, equipment and permissions.

Responsible Agency: Office of Emergency Management, Public Works Department
Events: Earthquake, Severe Weather, Fire, Flooding, Hazardous Materials, Landslide, Tsunami

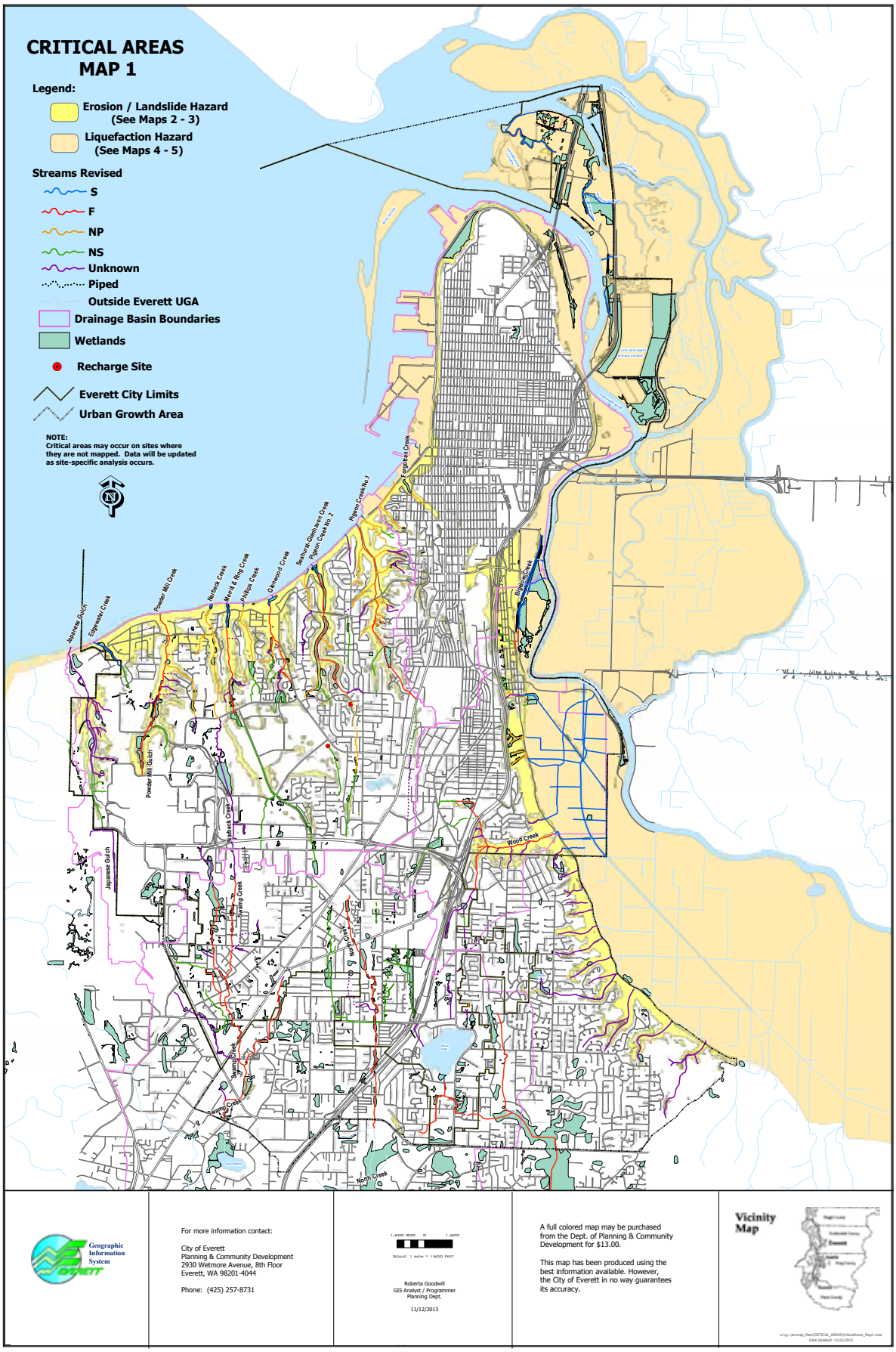
PL6: Explore the potential of small commercial hubs in neighborhoods without such hubs.

Neighborhood commercial hubs can be a gathering place after a disaster. Places such as corner stores can be identified as locations where people can meet and even buy basic supplies. Like local religious and public buildings, these can be used as places to meet and share information and resources. Explore where these hubs would make sense and would be supported by neighborhoods. One potential area is the neighborhoods east of I-5.

Responsible Agency: Planning and Community Development Department
Events: All Hazards

3 Schwab, James. 2010. *Hazard Mitigation: Integrating Best Practices into Planning. Planning Advisory Service Report Number 560.* American Planning Association.

4 *Integrating Hazard Mitigation Into Local Planning: Case Studies and Tools for Community Officials*. March 1, 2013. Federal Emergency Management Agency



Critical Areas such as steep slopes and floodplains are usually also hazard areas. Map Credit: City of Everett GIS

Waterfront and Port

Waterfront and Port action items seek to reduce isolation while increasing the ability of entities to function initially with limited resources and support services.

The Waterfront and the Port of Everett are critical to the City, County, and State. The Port is part of a global supply chain linked by ships, BNSF Railway, Interstate 5, and Paine Airfield. The Port is critical to Boeing's operations. The Waterfront includes recreation areas, marinas, Jetty Island, shorelines and railroad tracks. The Waterfront also includes the US NAVY and new residential and retail development. This area is vulnerable to isolation by a variety of hazards. The following action items seek to make the Waterfront and Port more resilient.

Item	Action Items	Responsible Agency	Benefits	Cost	Benefits/ Cost	Timeline	Priority
WP1	Work with BNSF Railway to keep Bond Street open for emergency access to the Port.	Port of Everett	H	L	M	M	H
WP2	Fund increased systems connections to existing large capacity backup generator.	Port of Everett	M	M	M	LG	M
WP3	Create a Waterfront Climate Change Plan for long-term adaptation.	Planning and Community Development Department, Port of Everett, NAVY, BNSF Railway	H	L	H	LG	H
WP4	Identify Temporary Outdoor Gathering Areas.	Port of Everett, Office of Emergency Management, Fire Department	L	L	L	M	L
WP5	Complete an assessment of the potential for tsunami gathering areas on Jetty Island.	Office of Emergency Management, Parks and Community Services, Port of Everett	L	L	L	M	L
H = High, M = Medium, L = Low, S = Short, LG = Long, U = Unknown							

WP1: Work with BNSF Railway to keep Bond Street available for emergency access to the Port.

The Port of Everett wishes to work with BNSF Railway to keep Bond Street open for emergency access only. The Port has limited access points and faces potential isolation after a disaster. Securing Bond Street as an alternate access will support emergency response efforts.

Responsible Agency: Port of Everett
Events: Earthquake, Severe Weather, Fire, Flooding, Hazardous Waste, Landslide, Tsunami

BNSF Railway tracks are located between the edge of downtown and the Port of Everett. Photo Credit: City of Everett

WP2: Fund increased systems connections to existing large capacity backup generator.

In a power outage, the Port has limited backup power to run some basic systems. There is a large capacity generator in the Waterfront Center that could be connected to more systems. Additional funds are needed for the hookups. Making use of extra generator capacity will increase Port resiliency.

Responsible Agency: Port of Everett
Events: Earthquake, Severe Weather, Fire, Flooding, Hazardous Waste, Landslide, Tsunami

WP3: Create a Waterfront Climate Change Plan for long-term adaptation of critical functions.

The recent Waterfront development planning is being designed with climate change in mind. The current ground elevation will be raised to account for the more immediate sea level rise (SLR) estimates. The height of Port docks, however, is fixed and may represent the most valuable Port asset. The Port is about to begin work on strengthening the South Terminal and has added more crane capacity. The Waterfront also includes shorelines and infrastructure that will be impacted by climate change.

Planning for climate change impacts will help make the Waterfront and Port resilient far into the future. The Northwest experiences some of the slowest rates of SLR in the nation. In the coming decades, the Waterfront and Port will need to monitor SLR and plan accordingly. The University of Washington's Sea Grant Program can help provide specific information about the coastal impacts of climate change in Everett. This action item builds on a related 2011 HMP action item.

Responsible Agency: Planning and Community Development Department, Port of Everett, Public Works, NAVY, BNSF Railways
Events: Climate Change, Severe Weather, Flooding, Hazardous Materials, Landslide

WP4: Identify Temporary Outdoor Gathering Areas.

As the Port develops, there will be new opportunities to increase resiliency. At this time, the Port does not have Fire and Police service on site. Most structures are not suitable to shelter in after an earthquake. After a disaster, people may gather for a short time at the Port before moving up into shelters in the city. Identifying some outdoor gathering areas now will be help response efforts after a disaster.

Responsible Agency: Port of Everett, Office of Emergency Management, Fire Department
Events: Earthquake, Severe Weather, Fire, Flooding, Hazardous Materials, Landslide

WP5: Complete an assessment of the potential for tsunami gathering areas on Jetty Island.

Jetty Island is a popular park reached by public ferry that is open only during the summer. Jetty Island could be impacted by tsunamis or seiches. Most of the island is low elevation and is only accessible by ferry. Current tsunami inundation maps show that not all of Jetty Island will be inundated. One of the areas of higher ground could be fortified to serve as a gathering area. An assessment could explore various options.

Responsible Agency: Office of Emergency Management, Parks and Community Services, Port of Everett
Events: Earthquake, Tsunami

Chapter 4: Mitigation Progress

This section reviews the progress on action items from the 2011 Hazard Mitigation Plan. There is also a description of the achievements of various departments, agencies, and other groups towards building resiliency for Everett. Developing resiliency is an ongoing and evolving mission, and victories and progress should be celebrated and built upon.

2011 Mitigation Action Items Status

The 2017 HMP update considered the 2011 action items that were not completed or partially completed. The status of the 2011 action items are as follows:

2011 HAZARD MITIGATION PLAN ACTION ITEMS STATUS		
Item	**2011 HMP Action Item**	**Status (as of September 2017)**
Education and Outreach		
E1	Create educational materials targeted to age-specific groups of residents.	Ongoing. Some age groups have been addressed.
E2	Prepare informational items for residents focusing on: 1) the importance of and responsibility to clear sidewalks, 2) heat waves, 3) activities that exacerbate landslides, and 4) water use reduction.	Ongoing. The City does outreach around Cooling Centers during heat waves (continued in 2017 action items). Educational material is provided to those considering development on lots with steep slopes and development codes are strict. The Public Works Department has a water meter program and rain barrel program to promote water use reduction.
E3	Establish programs to encourage residents to perform structural and non-structural retrofits to brace their property against seismic hazards.	Ongoing. Washington Department of Archaeology and Historic Preservation (DAHP) awarded the City a 2017 grant to identify and assess conditions of select historic buildings that includes seismic retrofits. Significant work remains to be done on this action item that will be carried forward to 2017.
Built Environment / Vulnerable Structures		
BE1	Create a database of the critical facilities in Everett.	Ongoing. The Public Works Department has a database of their infrastructure systems. The Office of Emergency Management and the Steering Committee are working to redefine the definition for critical facilities and further identify them.
BE2	Increase the resiliency and redundancy of the water system serving Everett and Snohomish County.	Ongoing. The Public Works Department has made progress on improving resiliency of the water system. A project aimed at providing a redundant water supply pipeline to Reservoir #3 will be carried forward as an action item.
BE3	Study the impact of earthquake and landslide hazards on the reservoirs in Everett.	Addressed in Dam Safety inspections and Emergency Action Plans (EAP). Also, a geotechnical engineer from Geoengineers accompanied City staff on 2015 reservoir dam inspections. Replacement of Reservoir #2 is under design and will be completed in part to mitigate this risk.

2011 HAZARD MITIGATION PLAN ACTION ITEMS STATUS		
Item	**2011 HMP Action Item**	**Status (as of September 2017)**
Built Environment / Vulnerable Structures		
BE4	Create a database of Everett's unreinforced masonry (URMs) buildings and pre-seismic building code structures.	Ongoing. A basic spreadsheet of URMs is on file. See status for E3.
BE5	Implement non-structural mitigation measures in facilities controlled by the City of Everett.	Ongoing. A program intended to provide systems to secure office equipment and materials has been implemented at the Public Works Department work spaces at 3200 Cedar, the Water Filter Plant, and the Waste Water Treatment Facility. Significant work is required to extend this action item to all city-owned facilities. This is carried forward as a 2017 action item.
Neighborhood Networks		
N1	Develop an incentive-based program to encourage implementation of Map Your Neighborhood (MYN) programs in all Everett neighborhoods.	No specific incentive-based program has been implemented but many neighborhoods have recently begun neighborhood MYN planning. MYN planning efforts are part of the 2017 action items.
N2	Identify neighborhood emergency gathering places and heating and cooling center locations during neighborhood association meetings.	Done. Gathering, heating, and cooling places have been identified. Locations can be expanded. This item, in a modified version, is carried forward as a 2017 action item.
N3	Establish neighborhood-level hazard and emergency planning.	Ongoing. Some neighborhoods have set up communication hubs and caches. This item is carried forward as a 2017 action item.
N4	Coordinate CERT training through neighborhood associations.	Ongoing. The CERT program is actively managed and is part of the 2017 action items.
N5	Establish neighborhood websites to serve as an information dissemination outlet for each neighborhood.	Ongoing. Some neighborhoods are using websites, and some are using Facebook instead.
Environment and Sustainability		
EV1	Implement existing and new floodplain regulations that comply with the NMFS Biological Opinion.	Ongoing. City of Everett approved by FEMA as a "Door #2" jurisdiction recognizing that local regulations meet the requirements of the NMFS Biological Opinion.
EV2	Complete a study to determine Everett's greenhouse gas emissions, and implement reasonable goals for greenhouse emissions reduction.	Ongoing. The City completed a study on the municipal carbon footprint. The Public Works Department and Everett Transit have a goal for all-electric fleet; the city fleet is hybrids with a few electric buses.
EV3	Update the completed habitat assessment as it relates to floodplains in Everett.	Ongoing. Planning Director Interpretation No. 2011.1 was revised in 2012 requiring preparation of habitat assessments and habitat management plans related to listed species and impacts from floodplain development.

2011 HAZARD MITIGATION PLAN ACTION ITEMS STATUS		
Item	**2011 HMP Action Item**	**Status (as of September 2017)**
Environment and Sustainability		
EV4	Work with Snohomish County to develop a plan for Low Impact Development and increased storage in the Snohomish River watershed, and to coordinate development of regulations on the river.	A Phase II NPDES jurisdiction, the City of Everett adopted Ecology's 2014/2012 Stormwater Management Manual for Western Washington as the City's Stormwater Management Manual on January 1, 2017. These manuals increase the LID and Green Stormwater Infrastructure requirements for new development.
EV5	Identify brownfield sites and plan their clean up and reuse.	In 2013, the City was awarded a $400,000 grant to inventory, characterize, assess and conduct cleanup planning for a community-wide inventory of hazardous and petroleum substances brownfield sites. Several brownfield sites have been identified by the City and the Port of Everett, and clean up at some of these sites is being planned or underway.
EV6	Monitor Everett's capacity to address expected increases in magnitude and frequency of severe weather events.	Severe storms occur yearly and, in 2015, there were two storms that got a Presidential Declaration. The City is tracking these events and has gotten experience in responding to them.
EV7	Provide a vegetated river walk along the coastal floodplain.	Ongoing. Consistent with the City's adopted Shoreline Public Access Plan, developers and the Port of Everett are constructing a paved 10-foot-wide trail with vegetated shoulders as adjacent projects are approved. The long-range vision is to have a continuous trail around the entire peninsula. The Port of Everett dedicates 2% of capital improvement projects within shoreline areas for improving public access to the waterfront.
Communication		
C1	Enable city officials to text during an emergency.	Done.
C2	Create targeted information and services for non-English language groups.	Ongoing. Completed on event-specific translations. A CERT class was offered in Spanish in the fall of 2017. Public safety workshops were also held in areas such as Casino Road where Spanish is frequently spoken.
C3	Increase the modes and amount of communications to residents on preparedness topics and emergency alert systems.	Ongoing. This is a continually renewing task. New focus is on 14 days of preparedness.
C4	Create a system for businesses on which they can update their operating status and available supplies after a disaster.	This action item, in modified form, is carried forward into 2017.
C5	Work with local businesses to disseminate emergency information and supplies to residents	See item C4 above.

2011 HAZARD MITIGATION PLAN ACTION ITEMS STATUS		
Item	**2011 HMP Action Item**	**Status (as of September 2017)**
Isolation / Transportation		
IT1	Identify and rank Everett bridges in terms of their importance for: connectivity, population served, role in temporary relocation of residents, and availability of alternative routes.	Done and ongoing. Bridges are inspected and tracked as part of the National Bridge Inventory System (NBIS) that includes a biennial inspection protocol, structural sufficiency ranking, and bridge database. They are replacing bridges with the lowest Structural Sufficiency Number (SSN) in 2015. The Public Works Department is currently proceeding with plans to replace, renovate, or reinforce bridges along our Mukilteo Boulevard, subject to funding. Two bridges on this corridor are vulnerable that serve neighborhoods that would be subject to "islanding" in the event of a multiple bridge loss scenario.
IT2	Encourage businesses and city departments to create a work-from-home plan as well as a staggered transportation plan to decrease congestion and encourage continuity of business operations during a crisis.	Ongoing. The Office of Emergency Management is currently working on an alternate transportation plan. See C4.
IT3	Identify crucial pathways that may become impassible in the case of a hazard, and determine ways to harden them.	Ongoing. This work is in progress and will be included, in modified form, in the 2017 action items.
IT4	Identify areas that are vulnerable to isolation during various specific hazards.	Done. A list of areas with more than 20 homes and only one street connection has been generated. See IT3.
IT5	Increase access to adequate healthcare, especially to particularly vulnerable areas.	Ongoing. All major healthcare areas have multiple access routes. Further study could map areas with concentrations of vulnerable populations.
Port Preparedness		
P1	Create a Port-specific Hazard Mitigation Plan.	Ongoing. The Port has conducted exercises around hazardous materials spills.
P2	Create a pedestrian evacuation plan for the Port.	Ongoing. The Grand Avenue Overpass Pedestrian Bridge will increase access to the Port. This item is addressed, in a modified form, in the 2017 action items.
P3	Include structural hardening in the Port Master Plan update.	Ongoing. The Port is moving forward with planned improvements on the South Terminal.
P4	Map possible sea level rise and monitor it near the Port of Everett	Not done. This will be addressed, in a modified form, in the 2017 action items.

Everett's Positive Progress

The City of Everett and its partners have made positive progress in building resilience. Resiliency building is a continual and renewing project. The more resiliency is integrated with the routine activities of organizations, the greater the chance of implementation. Organizational accomplishments were gathered through meetings along with the phone interviews and follow-up emails. This is not intended to be complete but it is meant to show examples of the positive work being done.

The Office of Emergency Management (OEM)

- OEM trained over 650 students in CERT and will conduct Spanish CERT class in fall 2017. They expanded the CERT emergency worker program, distributed the CERT Field Operation Guide, and drilled in coordination with the Fire Department. OEM also conducted National Weather Service Weather Spotter training for volunteers.

- OEM is working on a system with Registered Emergency Workers to have engineers, architects, and others pre-identified and with pre-established contracts to do building assessments with the authority of the City of Everett Building Official in disasters. The City also hosted a large ATC 20 training workshop.

- OEM updated the Comprehensive Emergency Management Plan. They continued conducting Everett Emergency Management Liaison Meetings to include internal and external partners. OEM conducted an Emergency Operations Center (EOC) exercise with key departmental personnel. OEM established a Phase I EOC for low-level monitoring of events/incidents.

- OEM gained IPAWS credentials for public alerting. They established a social media presence. OEM also established Everett's Auxiliary Communications Service (ACS) as an Emergency Worker group. They moved to a 14-day readiness message and communicated to public and partners.

- OEM set up shipping containers to store emergency supplies for the Fire Department and Animal Shelter. They also set up a Chempack location for storage of critical medication. OEM submitted for Public Assistance for two large windstorms in 2015.

- OEM/Old Fire Station #2 Training Building and Fire Warehouse were seismically retrofitted in 2013.

- OEM became a beta user for the ShakeAlert earthquake early warning system.

Public Works Department (PW)

- PW replaced the bridge (Broadway) with the lowest Structural Sufficiency Number (SSN) in 2015. They are moving forward with plans to replace, renovate, or reinforce bridges along our Mukilteo Boulevard, subject to funding. Two bridges on that corridor are vulnerable. These bridges serve neighborhoods that would be subject to "islanding" in the event of a multiple bridge loss scenario.

- PW contracts with Snohomish County Public Works Bridge Inspection Group (fulltime dedicated staff) and with 3rd party structural engineers to do bridge inspections, load ratings, and updates. When looking at potential bridge replacement, PW brings in a 3rd party structural engineer for a second opinion.

- PW has a strong program for funding ongoing road maintenance. This ensures roads are not allowed to fall into disrepair and degrade rapidly. Ongoing maintenance extends the service life of roads.

- The City of Marysville, City of Everett, and Port of Everett are working on a Connecting Washington-funded project with WSDOT. The project name is the I-5 / SR 529 Freeway Interchange project. Funding is scheduled

between now and 2023.

The New Broadway Bridge completed in 2015. Photo Credit: City of Everett Public Works Department

- PW worked with Washington State Department of Transportation (WSDOT) and the Federal Highway Administration (FHWA) to create an access point in the I-5 sound wall at 75th Street. In the event of an isolating disaster, this would provide access to the Valley View neighborhood.

- Grand Avenue Pedestrian Bridge Overpass will soon be completed. This bridge provides pedestrian access to and from the Waterfront, over the railroad tracks, as well as carrying vital utility services.

- PW is working with Everett Transit and the City's transit fleet to introduce hybrid and electric vehicles. This action supports the study done to quantify and reduce the City's carbon footprint.

- The Water Filtration Plant is in the middle of a seismic upgrade. Seismically hardening the operations building will be completed by the end of September 2017. Design has started on replacing the electrical backup system. There is already diesel storage on-site for generators. There is also 2-3 weeks storage for treatment chemicals.

- PW is part of the Regional Water Supply Forum. In addition to putting out a Water Supply Resiliency Assessment Study, the forum has built awareness and partnerships. Sister utilities in Seattle, Tacoma and the east side could assist Everett and vice versa.

- The water system has manual valves that can isolate reservoirs and sections of the distribution system. There has also been some scenario modeling of what would need to be shut down and when.

- By 2020, the over 100-year-old Reservoir #2 will be replaced with a new reservoir. Semi-automatic shut-off valves are being explored.

- In 2007-12, sections of two northern transmission lines were replaced and most all of these two pipelines have been replaced. Across the liquefiable Snohomish River basin, Transmission lines 2 and 3 sit on pile caps atop 100 feet deep piles. This design is much more seismically resilient. There is space on these caps for the third northern transmission line when it is upgraded at a later date. PW has also completed a risk assessment study in 2012 of the water supply and transmission systems and have a planned capital improvement program to address seismic and other hazards.

- A new cross-tie connecting the northern and southern transmission lines is planned for 2021-22.

- PW applied for a Hazard Mitigation Grant to get a generator for the pump at Reservoir #3 and has been selected as an 'alternate project.' PW does have a generator replacement program and plan.

- The City's Smith Island Regional Wastewater Plant is studying potential seismic upgrades and standby power systems.

- PW recommends securing Wet Weather Facilities to provide additional sewer and stormwater storage and treatment capacity.

- PW is completing the Surface Water Comprehensive Plan; the first such update to separated basin plans in 35 years. Future work may include condition-based evaluations. The City has been diligent with infrastructure and development reviews so flooding is minimal. The City has also made investments in green stormwater infrastructure to alleviate stormwater from the combined sewer system.

- PW has completed the raising and widening of the flood control dikes that protect the Wastewater Treatment Plant on Smith Island to an elevation of 15ft NAVD88. This was part of an extensive, multiple-decade planning, permitting, construction, and monitoring process. To mitigate for impacts from the dike improvements, PW engaged the Seattle District Corps of Engineers in the joint construction of a 93-acre tidal habitat restoration site east of the treatment ponds on Smith Island. The PW portion of the restoration site entailed 58 acres. Of that, 21 acres was compensatory mitigation for impacts to freshwater wetlands from construction of new setback dikes and improvement of the existing dikes, with the balance of the 37 acres to be used as advanced mitigation for future construction and repairs of the treatment plant and dikes. Future work may include raising the operational dikes for the wastewater treatment ponds to the same height to provide more capacity to handle wet weather flows from the combined sewer system.

Planning and Community Development Department (PD)

- The Planning and Community Development Department has steep slope regulations that require a geotechnical engineer and buffers. Vegetation clearing requires a covenant. Education is provided about steep slopes.

- The Eclipse Mill Park will be a new 3-acre park on the Snohomish River. This project provides connection to the river, restoration and a buffer for flooding. This project augments the City's natural capital.

- The Planning and Community Development Department was ahead of many jurisdictions in adding a climate change and sustainability element to their comprehensive plan. This section includes references to hazards and the Hazard Mitigation Plan.

- The Planning and Community Development Department worked with the Waterfront Place Development. The design incorporated the 100-year projected sea level rise worst case scenario.

Site of the new Eclipse Mill Park. Photo Credit: City of Everett Department of Planning and Community Development

- The City of Everett is in good standing with the National Flood Insurance Program with few properties located in the floodplain. New floodplain development such as the Riverside Redevelopment project is being mitigated for flooding impacts.

Building Division (BD)

- BD assisted in the last Post-Disaster Building Assessment training. They are working with the OEM and CERT on a system to report earthquake damage.

- BD supports earthquake safety week and waives plan review fees for permits to secure homes to their foundations.

Information Technology (IT)

- IT is partnering with Snohomish County and Verizon to ensure that emergency response (police, fire and utilities) have guaranteed bandwidth during an event.

- IT is also setting up capability to run their operations from the South Precinct Building during and after a disaster if needed.

- IT enabled text messaging on City cellphones. Text messages have proven to have a better chance of getting through than voice calls in disasters.

Port of Everett

- Backup generators were installed to power radiation monitors and limited services in security and administration buildings.

- The South Terminal upgrading project has gone out to bid. Two mobile cranes were purchased.

Everett's Neighborhoods

- Some neighborhoods set up caches of supplies. The neighborhoods include: Pinehurst, Harborview-Seahurst-Glenhaven, Viewridge-Madison. Boulevard Bluffs, Bayside, Valley View, and Port Gardner are working on caches. Some of the neighborhoods also have communication hubs.

- The Office of Neighborhoods continues to offer matching funds for preparedness efforts.

Snohomish County Public Utility District (PUD)

- PUD will be bringing on line a new control center in Arlington that is on a micro-grid with solar and diesel generators. This center is a backup for Everett. Both Arlington and the other control center meet seismic standards.

- The power system has important redundancy. There are three connections to the Bonneville Power Administration transmission system. PUD facilities are distributed throughout the County and not concentrated in one place.

- PUD conducts a variety of exercises with staff including FEMA training, simulations of a Culmback Dam failure, and regional Cascadia Rising drills. During major storms, staff gain experience in emergency response as the electrical system experiences widespread outages.

- PUD has mutual aid agreements with other utilities and private contractors. They encourage their health and safety, water, sewer, and other utility partners to have backup power for their mission critical facilities. They also engage in extensive customer education.

- PUD has a distribution automation system in place for parts of the grid. This system can restore power more quickly and do so without someone being on site. This could be helpful in earthquakes when certain facilities may be unreachable.

- PUD has a battery storage system in Everett's downtown. This system helps with scheduling and leveling out demand. This is also an opportunity to test new innovative systems on a small scale.

Everett's Comprehensive Plan and Hazards

Everett's Comprehensive Plan includes references to hazards. The 2017 action items encourage additional efforts to embed hazards mitigation planning into all planning documents. Hazards mitigation planning needs to be considered within the context of comprehensive plan elements. Land use, shorelines, housing, transportation, capital facilities and utilities, economic development, urban design, and parks and recreation are all impacted by hazards.

Addressing hazard risks can be as much a primary driver of the planning process as economic growth and other key factors. Planning should also support disaster recovery that maximizes opportunities to make improvements and relocate at-risk development while advancing the community vision. The following examples come from Everett's Comprehensive Plan.

Chapter 2: Land Use Element

- "Promote a land use pattern that will protect the functions and values of critical areas, and prevent hazardous conditions." (Objective 2.15.2)

- "Because the potential for landslides, erosion, and drainage impacts increases when development occurs on or adjacent to steep slopes, the City shall adopt regulations for development of steep slopes which lessen the risk and prevent the occurrence of such problems." (Policy 2.15.3)

Chapter 3: Shoreline Land Use

- "Discourage new development in shoreline areas that would be harmed by flood conditions, or which would create or intensify flood hazard impacts on other properties." (Objective 3.5.1)

- "Minimize impact to shoreline ecological functions and ecosystem-wide processes when flood protection measures are necessary to prevent flood damages." (Objective 3.5.4)

Chapter 4: Housing Element

- "Initiate a strong and proactive housing code enforcement program in order to reduce the amount of substandard housing, promote renovation of homes in need of repair and rehabilitation, and preserve available housing stock." (Policy 4.2.2)

- "Promote awareness of techniques and emergency management mitigation plans to eliminate or reduce property losses due to natural disasters." (Policy 4.13.3)

Chapter 5: Transportation Element

- "Reduce disaster-related impacts to transportation systems by coordinating response planning and developing strategies for prevention, mitigation and recovery." (Goal 2.18)

Chapter 6: Capital Facilities

- "Identify infrastructure vulnerabilities due to extreme storm events and sea level rise and plan for appropriate changes." (Policy 6.5.4)

Chapter 8: Urban Design Element

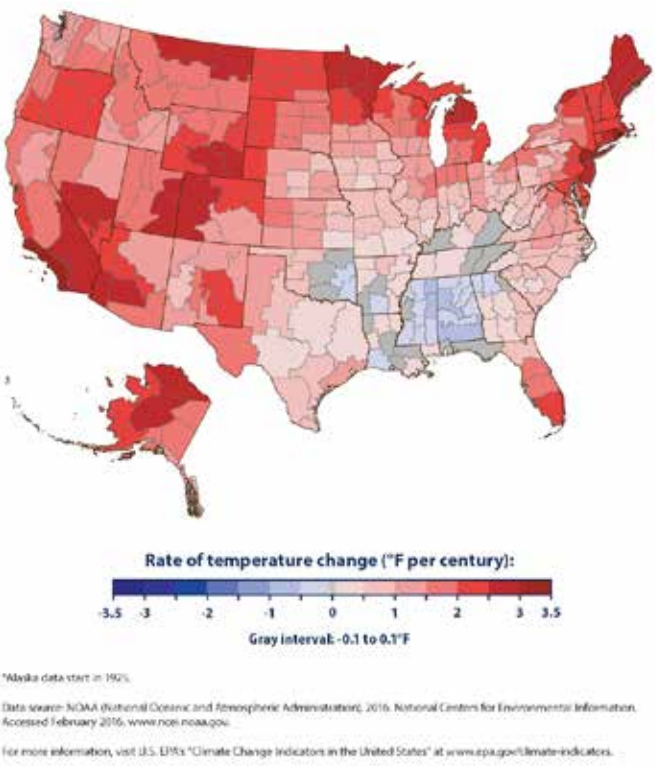
- "Prioritize preservation of historic buildings in enforcement of building safety and maintenance codes." (Policy 8.2.8)

Chapter 10: Climate Change and Sustainability

- "As City plans and regulations (Comprehensive GMA, Shoreline Master Program, Sewer, Water, Surface Water, Hazard Mitigation Plans; land use codes, floodplain regulations, building codes, etc.) are updated, new information on climate change and its impacts should be reviewed and incorporated as appropriate." (Policy 10.24)

- "Map the potential impacts of sea level rise in Everett. Evaluate a range of sea level rise scenarios from 1' to at least 3' by the end of the century. Continue to monitor the latest information on sea level rise to adjust scenarios." (Policy 10.28)

- "Evaluate the risk to valuable environmental resources from sea level rise, such as loss of beach and marsh habitats and inundation of Jetty Island, and evaluate options to compensate for impacts to these resources." (Policy 10.31)



Rate of Temperature Change in the United States from 1901-2015. Map Credit: Environmental Protection Agency

Chapter 5: Plan Implementation

The Office of Emergency Management (OEM) will be responsible for monitoring, evaluating, and updating the Everett Hazard Mitigation Plan (HMP). OEM will work with stakeholders and the HMP Steering Committee for the update process.

As President Eisenhower said: "Plans are nothing; planning is everything." Continuing to talk and work with departments, partners, and the public will refresh this plan. The HMP should be a living document that supports and directs ongoing actions and funding.

Plan Review Schedule

OEM will initiate an annual electronic assessment of progress. An update and an in-person meeting will occur in the third year of the update cycle, devoted to reviewing the progress of the HMP action items. The fourth annual meeting will begin the five-year update process. The monthly Emergency Management Liaison meetings will assist with this work.

OEM will also provide an update to City Council in the third year of the update cycle.

After each meeting, the Steering Committee will have three months to update the plan before submitting it to the State Hazard Mitigation Officer for review of any substantial changes.

OEM and the HMP Steering Committee will be responsible for:

- Assuring the appropriate implementation of the Five-Year HMP. The Steering Committee will hear progress reports on the action items by the responsible departments and agencies.
- Identifying further support and funding and assessing barriers to implementation.
- Evaluating action items to assure that they reflect current hazard and risk analyses, development trends, code changes, and perceptions.
- Reviewing the HMP in relationship to other plan updates, such as the Capital Improvement Plan, Comprehensive Plan, or Comprehensive Emergency Management Plan. Ensuring other plan updates embed references to the HMP and are responsive to hazards.
- Assuring a continuing role for public comment and involvement as the plan evolves.
- Regularly reviewing the goals to see if they still fit the changing situation in Everett.
- Recording suggestions for future action items and mitigation strategies.
- Reassessing the plan in light of any major hazard event. The HMP Steering Committee will convene shortly after any major event to review all applicable data and to consider the risk assessment, plan goals, and action items given the effects of the hazard event.
- Giving all new Steering Committee members an orientation on the history and progress status of the HMP.

Criteria of Evaluating Plan

The HMP Steering Committee is responsible for evaluating the plan. Evaluation should include the following questions:

- Do the goals continue to address expected conditions in Everett?
- Is the risk assessment still appropriate, or has the nature or magnitude of the hazard and vulnerability changed?
- Are current resources and funding sufficient for getting action items done?
- Are departments and agencies working to achieve the assigned action items?
- Has progress on the action items been adequate?
- What problems and barriers have there been in working on action items?
- Has the public been adequately involved? Are their comments being heard?

Implementation through Existing Programs

The City of Everett currently has several mechanisms to guide development, including the following:

- Comprehensive land use planning as required by the Washington State GMA
- Shoreline Master Program for development and activities on "shorelines of the state" as required by Washington State Shoreline Management Act (SMA)
- Critical Areas Regulations
- Floodplain Overlay Districts and Regulations
- NPDES regulations to manage stormwater
- Capital improvement planning
- Building codes

Each of these mechanisms can also help meet the goals of the HMP. After the city officially adopts the HMP, it will implement action items, where appropriate, into these existing processes, plans, and codes.

Hazards mitigation for new construction is integrated into the City of Everett planning process. This ensures that all relevant city departments are included. At the planning meetings, each department outlines requirements that the applicant must meet to proceed with the proposal. This process ensures that the applicable codes, ordinances, and rules are enforced in all new projects.

After adoption of the HMP update, the city will ensure that they have addressed any newly identified hazard risks in their comprehensive plans and land use regulations. The Planning and Community Development Department will continue to conduct periodic reviews of the city comprehensive plan and land use policies and analyze any plan amendments. Action items in the 2017 HMP support this aim.

The city building division is responsible for administering the building codes. Various city departments create capital improvement programs (CIP) and review them regularly. The CIP is another venue to help meet HMP goals. The

Emergency Management Liaison Committee will work with city departments to identify capital improvement projects that are consistent with the HMP goals and action items.

Public Involvement

To support continued public involvement, OEM will oversee the following:

1. All of the public libraries, police and fire stations, and appropriate agencies will catalogue and keep copies of the plan on hand. The plan contains the address and phone number of the City of Everett employee responsible for keeping track of plan public comments.

2. The plan will be posted on the city's website. The website will display an email address and phone number the public can use for giving feedback.

Public meetings will be held as needed to provide a forum for giving feedback. OEM will set meeting schedules and dates and use city resources to publicize and host this meeting. Within six months of a major disaster event, OEM will hold a public meeting to ensure that the public can express concerns, opinions, and ideas about the disaster event.

Capability Assessment

The Capabilities Assessment addresses a community's current capacity to address risks from potential hazard events. Everett has a number of strengths in terms of addressing natural hazards through preparedness, response, and recovery. The City of Everett has valuable capacities that will be critical during and after a hazard event. These capabilities include local services, a sense of community and support from the FEMA. These capabilities are listed below.

Public Outreach

The City of Everett has a strong sense of community. There are nineteen neighborhood associations dedicated to addressing community-scale issues of public safety and development.

In addition to emergency response capabilities, the Everett Fire Department (EFD) provides fire prevention inspections, fire investigation, and technical plan review through its Fire Prevention Division. The Fire Prevention, Special Operations, and Emergency Medical Service divisions deliver public education.

The Communications and Community Engagement team, which includes the Director of Communications as well as the Office of Neighborhoods, have access to traditional news and social media for mobile outreach. The Office of Neighborhoods has increased contact with non-geographic communities to support public education by OEM (CERT and MYN volunteers).

The Everett Police Department (EPD) has a Public Information Office whose mission is to provide timely release of information to the public on matters of public safety. The department provides periodic web and radio updates.

Enforcement

Floodplain management is addressed through the NFIP, FEMA, and the zoning code of Everett. The Code Compliance Department is responsible for enforcing various chapters of the Municipal Code that address public health and safety issues, including regulations related to rubbish, other nuisances, removal of vegetation, zoning, housing, dangerous buildings, environmental violations, and junk vehicles on private property.

Enforcement actions are taken both proactively and in response to incoming complaints. Code Compliance works in partnership with the people of Everett and coordinates with the Legal Department, Police Department, Fire

Department, Building Division, Planning and Community Department, Office of Neighborhoods, Public Works, and Parks and Community Services Department.

Support Following a Presidential Disaster Declaration

There is considerable support for risk reduction measures following a federal declaration. Some of the more significant options include:

- The federal Hazard Mitigation Grant Program (HMGP) offers assistance for a wide range of mitigation projects following a presidential declaration. Eligibility is restricted to projects that have gone through a comprehensive hazards mitigation planning process.

- The Small Business Administration will fund eligible mitigation measures to qualified owners of damaged homes.

- Outreach is available through Disaster Recovery Centers through FEMA.

- Benefit/Cost Mitigation support is available from FEMA on infrastructure repair. To break the damage-rebuild-damage cycle, FEMA Region 10 is encouraging communities to:

1. Institute mitigation measures that take advantage of multi-hazard, multi-objective approaches whenever possible.

2. Strengthen existing infrastructure and facilities to better withstand the next disaster.

3. Ensure that communities address natural hazards through comprehensive planning.

4. FEMA can support cost-effective mitigation of infrastructure following a Federal Declaration. FEMA has published a manual on the subject.

Appendix A: Steering Committee Meetings

Steering Committee # 1 Meeting Agenda

April 5th, 2017
9:30am – 11:30am
Legion Hall, Everett

Agenda

1. Welcome & Introductions
2. Purpose of Meeting & HMP Process
3. Presentation on Hazards impacting Everett
4. Explanation of Group World Café Story-Telling Exercise
5. Round 1 & Report Out: (Prior to Disaster): Identify Community Setting and Providers of Human Wellbeing
6. Round 2 & Report Out: (Post Disaster): Tell Story and Identify what Providers remain after a Disaster
7. Round 3 & Report Out: (Recovery Period): Retell Story, Identify how Providers adapt and how the Community Vision evolves
8. Confirmation of Approach
9. Future Meetings
10. Voting on Hazards Risk Rankings & Conclusion

Steering Committee # 2 Meeting Agenda

June 15th, 2017
2:00pm – 3:30pm
Waterfront Center, Everett

Agenda

1. Welcome & Orientation
2. Scope of Work & Progress
3. Reducing Risk Through Story-Telling: Values, Threats and Vulnerabilities
4. Assets to Build Upon, Partnerships to Strengthen and a New Normal Vision
5. Mitigation Goals
6. Brief Description of all the Draft Action Items
7. Explanation of World Café review of the action items.
8. Round 1: Comment on action items at each table.
9. Round 2: People move to a different table. Again, comments are gathered.
10. Report Out: People return to their original table. The facilitator shares results with the whole group.
11. Next Steps & Conclusion

Steering Committee # 3 Meeting Agenda

September 27th, 2017
10:00pm – 12:00pm
Legion Hall, Everett

Agenda

1. Welcome
2. 2017 HMP Process:

- Public Meetings
- Hazards Ranking
- Online Survey Results
- Goals
- Strategies
- Action Items

3. Break
4. Explanation of World Café review of the action items.
5. Round 1: Suggestions for implementation and ranking action items.
6. Round 2: Suggestions for implementation and ranking action items.
7. Report Out: People return to their original table. The facilitator shares results with the whole group.
8. Closing Remarks & Next Steps

City of Everett Hazard Mitigation Plan
Steering Committee
April 5, 2017, 9:30 - 11:30 a.m.
Legion Hall, 145 Alverson Blvd, Everett

Check	Name (PLEASE PRINT)		Email	Dept/Agency	Group
	Bailey	Jennifer		Public Works	Infrastructure
KB	Baxter	Kathleen		Public Works	Infrastructure
	Baxter	George		Transit	
✓	Bodrak	Gilbert		Providence	Business / Downtown
✓	Boekelman	Katie		Boeing	Business / Downtown
✓	Bolerjack	Bob		Everett Admin -Gov. Affairs	Business / Downtown
✓	Burns	William		Red Cross	Residential
✓	Cademarti	Tony		Motor Vehicles	Residential
MC	Calvert	Mike		Fire	Business / Downtown
CC	Corcoran	Cristin		Snohomish Health District	Port and Industrial
	Cummings	Lori		Parks	
	Davis	Dave		Public Works	
✓	Diaz	Flora		Legal	Port and Industrial
✓	Dittoe	Steve		SNOPAC KARL CHRISTIAN	B
✓	Doniger	Rachael		OEM	
	Dooley	Curt		Everett Clinic	Residential
	Dorris	Rick		Everett Housing Authority	
✓	Dvorak	Bob		Senior Center	Residential
	Frederick	Shawn		Healthcare Coalition	
✓	Frederiksen	Glynis		Animal Shelter	Residential
✓	Fudge	David		Police	Business / Downtown
	Fulton	Debra		Mukilteo School District	B
✓	Giffen	Allan		Planning	
	Haley	Meg		Public Works	Infrastructure
✓	Hellyer	Steven		IT	Business / Downtown
JH	Holdsworth	John		Snohomish County DEM	INFRA
	Hudson	Jaimee		Neighborhoods	
	Jacobson	James R.		Army Corps of Engineers	
	Kaftanski	Paul		Everett Admin - Executive Dir.	
	Kaman	Hil		Everett Admin - Public Health/Safety	
✓	LaVelle	Sarah		OEM	
✓	Lee	Tony		Building Official	Business / Downtown
✓	Linder	Brent		GIS	Infrastructure
✓	Ludden	Jim		Everett ACS	P
✓	Marshall	Judah		Everett Clinic	Business / Downtown
✓	McClure	Wendy		Neighborhoods	Residential
	McMullin	Lanie		Everett Admin - Economic Dev.	

City of Everett Hazard Mitigation Plan
Steering Committee
April 5, 2017, 9:30 - 11:30 a.m.
Legion Hall, 145 Alverson Blvd, Everett

Check	Name (PLEASE PRINT)		Email	Dept/Agency	Group
	McNulty	Leroy		Fire	Port and Industrial
	Moen	Grant		Public Works	
	Munro	Megan		Saftey Official	Port and Industrial
	Nunes	Russ		Everett Community College	R
	Paschal	Steven		Naval Station Everett	Port and Industrial
	Pembroke	Meghan		Everett Admin - Comms Dir.	Port and Industrial
	Petersen	John		Parks	Residential
	Pierce-Magdalik	Erin		Boeing	
	Postma	Jeanette		IT	Port and Industrial
	Ringo	Molly		Everett Public Schools	Residential
	Rose	Diana		Marysville Emer. Managment	Infrastructure
	Sadler	Mark		Public Works	Infrastructure
	Sass	Ryan		Public Works	
	Shagam	Don		Transit	Infrastructure
	Stainer	Brent		OEM	
	Steigerwald	Cindy		Mukilteo School District	Residential
	Stewart	Karen		Planning	R
	Williams	Doug		Snohomish County PUD	Infrastructure
	Cole	Ken		POE	P

City of Everett Hazard Mitigation Plan
Steering Committee, 2nd Meeting
June 15, 2017, 2:00 - 3:30 p.m.
Port of Everett, 1205 Craftsman Way, Everett

Check	Name		Email	Dept/Agency
	Bailey	Jennifer		Public Works
	Baxter	Kathleen		Public Works
	Baxter	George		Transit
	Bodrak	Gilbert		Providence
	Boekelman	Katie		Boeing
	Bolerjack	Bob		Everett Admin -Gov. Affairs
	Burns	William		Red Cross
	Cademarti	Tony		Motor Vehicles
	Calvert	Mike		Fire
	Corcoran	Cristin		Snohomish Health District
	Cummings	Lori		Parks
	Davis	Dave		Public Works
	Diaz	Flora		Legal
	Dittoe	Steve		SNOPAC
	Doniger	Rachael		OEM
	Dooley	Curt		Everett Clinic
	Dorris	Rick		Everett Housing Authority
	Dvorak	Bob		Senior Center
	Frederick	Shawn		Healthcare Coalition
	Frederiksen	Glynis		Animal Shelter
X	Fudge	David		Police
	Fulton	Debra		Mukilteo School District
	Giffen	Allan		Planning
	Grayson	Kayla		WSDOT
	Haley	Meg		Public Works
	Hellyer	Steven		IT
	Holdsworth	John		Snohomish County DEM
	Hudson	Jaimee		Neighborhoods
	Kaftanski	Paul		Everett Admin - Executive Dir.
	Kaman	Hil		Everett Admin - Public Health/Safety
	LaVelle	Sarah		OEM
	Lee	Tony		Building Official

City of Everett Hazard Mitigation Plan
Steering Committee, 2nd Meeting
June 15, 2017, 2:00 - 3:30 p.m.
Port of Everett, 1205 Craftsman Way, Everett

Check	Name		Email	Dept/Agency
	Linder	Brent		GIS
	Ludden	Jim		Everett ACS
	Marshall	Judah		Everett Clinic
	McClure	Wendy		Neighborhoods
	McMullin	Lanie		Everett Admin - Economic Dev.
	McNulty	Leroy		Fire
	Moen	Grant		Public Works
	Munro	Megan		Saftey Official
	Nunes	Russ		Everett Community College
	Paschal	Steven		Naval Station Everett
	Pembroke	Meghan		Everett Admin - Comms Dir.
	Petersen	John		Parks
	Postma	Jeanette		IT
	Ringo	Molly		Everett Public Schools
	Rose	Diana		Marysville Emer. Managment
	Sadler	Mark		Public Works
	Sass	Ryan		Public Works
	Shagam	Don		Transit
	Stainer	Brent		OEM
	Steigerwald	Cindy		Mukilteo School District
	Stewart	Karen		Planning
	Williams	Doug		Snohomish County PUD
	If your name is not listed, please print it below.			
	Gonzales, Paul			Transit
	Bidfried Michael			UW
	Nguyen, Lan			UW
	Fred Bonham			fteds@portofeverett.com
	KARL CHRISTIAN			SNOPAC
	Scott Pool			PARKS
	Lisa Bergman			Red Cross
	Edward MADDREY			Port of Everett

City of Everett Hazard Mitigation Plan
Steering Committee, 3rd Meeting
September 27, 2017, 10:00 am - 12:00 p.m.
Legion Hall, 145 Alverson Blvd, Everett

Check	Last Name	First Name	Email	Dept./Agency
	Ashlie-Vinke	Erik		Economic Alliance Snohomish County
	Bailey	Jennifer		Public Works
	Bailey	Rick		Public Works
	Baxter	George		Transit
	Baxter	Kathleen		Public Works
	Bodrak	Gilbert		Providence
	Boekelman	Katie		Boeing
	Bolerjack	Bob		Everett Admin -Gov. Affairs
	Burns	William		Red Cross
	Cademarti	Tony		Motor Vehicles
	Cummings	Lori		Parks
	Curtis	Katie		Snohomish Health District
	Davis	Dave		Public Works
	Diaz	Flora		Legal
	Dittoe	Steve		SNOPAC
	Doniger	Rachael		OEM
	Dooley	Curt		Everett Clinic
	Dorris	Rick		Everett Housing Authority
	Dvorak	Bob		Senior Center
	Frederiksen	Glynis		Animal Shelter
	Fudge	David		Police
	Fulton	Debra		Mukilteo School District
	Giffen	Allan		Planning
	Goforth	Steve		Fire
	Gordon	Fred		Port of Everett
	Grayson	Kayla		WSDOT
	Hellyer	Steven		IT
	Holdsworth	John		Snohomish County DEM
	Hudson	Jaimee		Neighborhoods
	Kaftanski	Paul		Everett Admin - Executive Dir.
	Kaman	Hil		Everett Admin - Public Health/Safety
	Key	Tim		Fire
	Lark	Chris		Facilities

City of Everett Hazard Mitigation Plan
Steering Committee, 3rd Meeting
September 27, 2017, 10:00 am - 12:00 p.m.
Legion Hall, 145 Alverson Blvd, Everett

Check	Last Name	First Name	Email	Dept./Agency
	LaVelle	Sarah		OEM
	Lee	Tony		Building Official
	Leonard	Bob		Parks
	Linder	Brent		GIS
	Ludden	Jim		Everett ACS
	Madura	Ed		Port of Everett
	Marshall	Judah		Everett Clinic
	McClure	Wendy		Neighborhoods
	McMullin	Lanie		Everett Admin - Economic Dev.
	Moen	Grant		Public Works
	Munro	Megan		Saftey Official
	Nasr	Souheil		Public Works
	Nunes	Russ		Everett Community College
	Paschal	Steven		Naval Station Everett
	Pembroke	Meghan		Everett Admin - Comms Dir.
	Postma	Jeanette		IT
	Ringo	Molly		Everett Public Schools
	Rose	Diana		Marysville Emer. Managment
	Sadler	Mark		Public Works
	Sass	Ryan		Public Works
	Shagam	Don		Transit
	Stainer	Brent		OEM
	Steigerwald	Cindy		Mukilteo School District
	Stewart	Karen		Planning
	Venturo	Jim		Fire
	Williams	Doug		Snohomish County PUD
	If your name is not listed, please add it below:			
	FREITAG	BOB		OW
	GODFRIED	MICHAEL		OW
	NGUYEN	LAN		OW

Appendix B: Neighborhood and Other Meetings

The Everett Neighborhood Workshop for Risk Reduction Efforts (May 25th, 2017)

On a Saturday in May, 25 residents representing the 19 Everett Neighborhoods were assembled in a workshop to recommend risk reduction measures. They were grouped into four neighborhood groups and met for four hours. As with all other Everett hazards mitigation planning meetings, the process followed an Appreciative Inquiry storytelling process. Each neighborhood group participated in three rounds of storytelling.

Round 1 began with each group developing the context to their neighborhood story by listing the values that made their community great along with what would make it even better. Capitals (Built, Natural and Social) were assigned as providers of these identified values. Groups were encouraged to begin their discussion with "once upon a time there was a neighbor that..."

Following Round 1, natural hazards were introduced as change agents. Earthquakes were emphasized as the biggest threat and tsunamis the least per recommendations by the project Steering Committee.

Round 2 talked about the "New Normal" following such a change. Neighborhood groups could select one or more change agent (e.g., earthquake, flooding, landslides...). As with Round 1, groups continued their "once upon a time..." story line by added a change element (i.e. Flood, Hazardous Material Spill) to their story. The setting was after the disaster and inventoried those "capitals" that were still functional. The new normal story was built from this "capital."

During Round 3 participants changed their group designation. Three groups were reassigned to discuss various "capitals." A fourth group was assigned to discuss how adapting to this new normal could build on the community vision. In other words, how can hazards mitigation measures also achieve the vision of the comprehensive plan for Everett's future?

The Everett recovery story (as transcribed from workshop presentations and notes):

Round 1 – The Context: (What? Once upon there was a community...)

What do you value: Everett is an attractive, affordable city with strong work opportunities and services. It has a responsive government with safe neighborhoods. Everett has strong Community Emergency Response Teams (CERT) and Map Your Neighborhood (MYN) programs. However, Everett could improve a dangerous intersection at 19th street, revitalize downtown, take better care of nature and improve local transportation. The harbor is a key part of Everett's character providing recreation and jobs. The city has a lack of affordable housing and struggles with growing poverty and homelessness.

The risk: Earthquakes are the greatest natural risk. After an event many public services will remain functional, particularly the responsiveness of city government. The Navy will also be able to provide assistance. Existing natural resources, such as firewood, gardens and the sea will also support the community. Services are also within walking or biking distance for many neighborhoods.

Round 2 - The New Normal (Now what? Conflict? And then...):

After an event, the availability of these services does not mean that Everett will be the same. This "new" Everett will rely more on the larger community and social connections. Institutions such as the YMCA, Boys and Girls Club, Churches, Neighborhood Watch and Map Your Neighborhood groups will get stronger. More residents will walk, bike, or take public transit. Many unreinforced masonry buildings and homes built before earthquake codes will not be functional.

Round 3 – The Future: (Now what?)

After an earthquake, residents will be of a joint mind in creating a new community that remains an attractive, affordable community close to employment opportunities and services with a responsive government and safe neighborhoods. Residents will maintain the stronger post-event collaborative environment. Many organizations and volunteer opportunities will join existing ones like CERT, MYN, and YMCA.

Everett is close to the water with great views, access to the beach, and public green spaces. The benefits provided by Everett's natural areas will be better appreciated. There will be more protected areas, parks, and pea patches. Programs to address bluff stabilization, steep slopes and low-impact development will get more support.

Damaged brick buildings and older homes will be rebuilt to withstand earthquakes. There will be support to retrofit older, still undamaged, buildings. The city will support mixed-use neighborhoods, promote urban villages, and improve public transit, walking, and biking paths. The city will be more resilient, green, and better connected.

'Draft' action items arising from the workshop include:

- Map Your Neighborhood / CERT: Build upon the MAP Your Neighborhood (MYN) and Community Emergency Response Teams (CERT) programs. Train citizens and community and civic organizations concerning preparedness tools including the importance of 14 days of self- sufficiency. [Office of Emergency Management]

- Isolation: Exercise neighborhood emergency access alternatives. [Office of Emergency Management]

- Increase neighbor connectivity: The City future vision encourages public transit alternatives along with walkable and bikeable neighborhoods. [Planning and Community Development Dept., Public Works Dept., Transit]

- Home Retrofit: Consider instituting a home retrofit program to secure pre-1972 homes to their foundations for bracing against a seismic event. [Building Dept.]

- Neighborhood Hubs: Establish and expand community hubs, targeting neighborhoods that may be isolated, to store equipment that also provide a place to gather after a disaster. [Office of Neighborhoods]

- Gardens and pea patches: Plant more community gardens and raise awareness of Project Harvest and community food banks. [Office of Neighborhoods]

- Low Impact Development: Expand the use of Low Impact Development (LID) approaches both for new development and as a retrofit. [Public Works Dept., Planning and Community Development Dept.]

- Clustering Density: The City's future vision focuses growth within urban villages. New development could have a low-risk profile: seismic performance standards incorporated into design along with LID approaches, open space, and accommodating LEED guidance. [Planning and Community Development Dept.]

"Draft" action items arising from other workshops that impact neighborhoods:

- URM Strategy: Develop a strategy to address unreinforced masonry (URM) buildings structural vulnerabilities including developing and inventory of URMS and begin meeting with stakeholders. [Buildings Dept., Planning and Community Development Dept.]

- System decentralization: As systems (Water, Power, Sewage) are repaired, modernized / upgraded, or maintained assess possibility of decentralization energy systems. [Public Works Dept.]

- Recovery Framework: Develop a recovery framework to enable the city to both recover from a disaster and exploit opportunities to achieve city planning objectives. [Office of Emergency Management, Planning and

Community Development Dept.]

- Warning System: Provide an earthquake warning system for the buildings and public above the BNSF tunnel under downtown, neighborhoods above steep slopes and the rail corridor, the Port, and Jetty Island. [Office of Emergency Management, Public Works Dept.]

- Seismic consideration in redevelopment design. Redevelopment plans such as those prepared for the central business district, historic preservation, and Port redevelopment should consider risk reduction as a design driver. [Building Dept.]

- Stabilize vulnerable slopes: Stabilize bluffs and slopes above rail corridor near Port including Rucker Hill. [Planning and Community Development Dept., Public Works Dept.]

The Public Works Department Infrastructure Workshop for Risk Reduction Efforts (April 10th, 2017)

On Monday April 10th, ten participants from Everett Public Works and Snohomish County PUD were assembled in a workshop to recommend risk reduction measures. They sat at tables grouped in a horseshoe configuration and met for 2 hours. The discussion followed a modified asset based Appreciative Inquiry format. Participants gave feedback in three rounds. The University of Washington ran the workshop with assistance from Everett's Office of Emergency Management.

Round 1 asked each participant to identify agency mission critical functions and talk about what they liked and disliked. Round 2 asked each participant which mission critical functions would be vulnerable to an event. Round 3 asked each participant to think about how infrastructure systems could be more resilient and how would they be redesigned after an event.

Round 1 – What do you like and dislike about Everett's infrastructure systems?

Everett is blessed with a plentiful, clean local water supply that is mostly gravity fed. The water system has already done some key projects to increase resilience such as the building of redundant pipelines and strategically warehousing pipe replacement parts. Everett's wastewater system could discharge into the Puget Sound and into a containing lagoon if the wastewater system failed. Everett has good connectivity across the city's street grid and to the south as well as newly rebuilt overpass at the Port. Interstate 5 (I-5) has recently been significantly improved and there are many ramps to and from the City of Everett.

Everett's water system could be improved by having emergency pumps in key locations, redundant distribution pipelines, flexible joints on pipes and replacement of caste-iron pipes. Everett's wastewater system lacks redundancy in the pipe network, and the wastewater treatment plant is near sea level. Bridges connecting some of Everett's neighborhoods are vulnerable as are portions of major roads such as the I-5 Snohomish River Bridge, the westbound US Highway 2 (US-2) trestle bridge, and State Route 529 (SR-529). All these major roads are at capacity during rush hour.

Round 2 – What parts of Everett's infrastructure systems would be vulnerable during and after an emergency event?

Everett's water system could be subject to "bleeding" at ruptured primary pipelines and requires shut-off valves to be installed. With the loss of the central electrical system, pumps would not operate for both the water and wastewater systems. If the water system is temporarily disabled, there is concern about how residents would obtain potable water, particularly at key institutions such as the hospital.

Everett's wastewater plant could be disabled in an event resulting in the dumping of sewage into local waters. The wastewater plant is located on Smith Island. Smith Island is vulnerable to isolation (with the failure of the SR 529 bridge), potential flooding and long-term climate change impacts.

Some of Everett's neighborhoods could be isolated in an event due to bridge failure. There could also be failures on I-5, US 2, and SR 529 that could temporarily isolate the City of Everett. An important consideration, related to isolation, is the many people who work in Everett but live outside the City. The BNSF tunnel that runs beneath the downtown would likely collapse in an event impacting the buildings and street grid above ground. BNSF may move to quickly clear debris and also use alternative routes. After an event, re-establishing Boeing's connection to the Port and other regional facilities is also critical.

Round 3 – How could infrastructure systems be improved to increase resiliency and how would they be rebuilt differently in the aftermath of an event?

After a major event, the wastewater system could be redesigned to greatly reduce pumping and eliminate the risk of flooding. In addition, the containment lagoon could be further strengthened to provide storage if the treatment plant was disabled.

Building on past investments, the water system could do new projects to enhance system resiliency as outlined above. Everett can continue to develop low-impact development projects that handle stormwater on-site. The feasibility of using decentralized systems at a parcel and district scale can also be further explored.

Everett's bridges can be prioritized and retrofitted over time. Coordination with the Washington Department of Transportation (WSDOT) can improve the resiliency of critical transportation routes. These efforts would improve the resilience of Boeing's supply chain and benefit connected local subcontractors.

The Public Works Building was identified as a key facility that needs to be seismically upgraded or rebuilt. This building serves as the operations center and staging area for work crews that would be responsible for repairing Everett's damaged infrastructure after an event. Other critical city facilities in need of seismic upgrading should be identified and prioritized. Some city facilities are located in unreinforced masonry (URMs) buildings that are in need of seismic upgrading.

Specific "draft" action items arising from the workshop include:

- Seismic Retrofit Public Works building: Seismic retrofit critical City facilities beginning with the Public Works building. [Facilities Dept., Public Works Dept.]

- Transportation: 1) Plan to retrofit vulnerable bridges that could lead to neighborhood isolation; 2) Identify alternate foot and bike paths to be used by neighborhoods isolated in a disaster; 3) Work with WSDOT on US 2 (west bound trestle bridge), SR 529 and I-5 vulnerabilities (soils). [Public Works Dept.]

- Wastewater safe-to-fail strategy: Develop a "safe to fail" not merely a "fail safe" approach for Waste Water containment, discharges, and processing. [Public Works Dept.]

- Water distribution shut off: 1) Provide shut-off valves to isolate system elements and prevent "bleeding" and flooding; 2) Plan for redundant water transmission line to the south; 3) Continue investment in flexible joints and replacing cast iron pipes. [Public Works Dept.]

- System decentralization: As systems (Water, Power, Sewage) are repaired, modernized / upgraded, or maintained assess possibility of decentralization energy systems. [Public Works Dept.]

- Back up power to pump stations: Provide backup power for selected water and wastewater pump stations. [Public Works Dept.]

- Everett's internal phone system: Add capacity so it can be re-directed/switched. [IT, Public Works Dept.]

- Verizon Tower: Harden [Public Works Dept.]

Specific "draft" action items arising from other workshops that involve infrastructure:

- Power exchange: 1) Determine Port transformer vulnerability and capacity demands; 2) Exploit co- benefits of ships connecting to Port power. Ability may be mandated in future. [Public Works Dept., Snohomish PUD, Port]

- Alternative Port access: Develop an agreement between BNSF, City and Port to keep Hewitt Street and Bond Street available as alternate access to the Port. [Port, Public Works Dept., Planning and Community Development Dept.]

- Isolation: Exercise neighborhood emergency access alternatives. [Office of Emergency Management]

- Stabilize vulnerable slopes: Stabilize bluffs and slopes above rail corridor near Port including Rucker Hill. [Public Works Dept., Planning and Community Development Dept.]

- Implement non-structural mitigation measures in facilities controlled by the City of Everett. [Facilities Dept.]

- Smith Island alternative Access: Create an alternate emergency gravel access ramp to I-5 from Smith Island. [Public Works Dept., Planning and Community Development Dept.]

- URM Strategy: Develop a strategy to address URM structural vulnerabilities including developing an inventory of URMs and begin meeting with stakeholders. [Building Dept., Planning and Community Development Dept.]

- Hospital water source: Provide for an alternate water source for hospital. [Office of Emergency Management, Public Works]

- Warning System: Provide an earthquake warning system for buildings and public spaces above the BNSF tunnel under downtown, neighborhoods above steep slopes and the rail corridor, the Port and Jetty Island. [Office of Emergency Management, Public Works Dept.]

The Smith Island Workshop for Risk Reduction Efforts (May 24th, 2017)

On Wednesday May 24th, seven members of various Smith Island organizations and businesses met to recommend risk reduction measures. They sat at tables grouped in a U-shaped configuration and met for one hour. The discussion followed a modified asset-based Appreciative Inquiry format. Participants gave feedback in three rounds. The University of Washington ran the workshop with assistance from Everett's Office of Emergency Management.

Participants were asked to identify organizational or business mission critical functions and talk about opportunities and concerns. Participants were also asked which mission critical functions would be vulnerable to earthquakes, flooding, and climate change impacts. The workshop concluded by identifying positive steps to could make Smith Island more resilient.

What do you value and what are you concerned about for organizations and businesses on Smith Island?

The Wastewater Treatment Plant is developing emergency plans around emergency repairs and storing supplies of food and water on-site that could help other island residents. The Treatment Plant also has a satellite phone system that would be helpful to island tenants after an event. Buse Timber has long experience with the flooding conditions and is a member of the Dike District: they also have water trucks in case of fire. Buse Timber also has a night watchman on duty when other island tenants have no personnel on-site. The Sno-Chip/Dunlap Towing business has staff on-site 18-hours daily (4 days a week) and some fire fighting capacity. The park has a low-development profile and can accommodate flooding. All participants demonstrated interest in working together to improve Smith Island's

emergency response.

Participants were concerned about access to Smith Island: the State Route 529 (SR 529) bridge is old and vulnerable and there is currently no access to Interstate 5 (I-5). As the impacts of climate change increase over the decades, flooding may become more severe and frequent. The Wastewater Treatment Plant is near sea level and flood control is their biggest issue. The Animal Shelter has no alternative power source and they provide services to an additional 11 jurisdictions and unincorporated Snohomish County. Buse Timber's site is at a low elevation on the island.

What would be vulnerable on Smith Island during and after an emergency event?

Participants are concerned about Smith Island's vulnerability to isolation. After an earthquake event, the SR 529 bridge might fail and there is no emergency access road from I-5 onto the island. Emergency support would more likely be from Marysville than Everett with the loss of the bridge access, although water access may be another limited option. The Wastewater Plant has no staff onsite in the evenings. If the plant failed, sewage would be discharged directly into the river.

How could Smith Island become more resilient?

Participants supported providing an emergency gravel access road from I-5 to Smith Island that would compensate for the loss of the SR-529 bridge. They also supported doing an emergency exercise to identify gaps and increase awareness and connections. Monitoring the river elevation, revised flood maps, and frequency and severity of floods will provide useful planning information to all tenants.

The generally low-intensity, dispersed development on Smith Island makes sense given its location in the floodplain and a liquefaction zone: this is an appropriate model going forward. As an example, Buse Timber and Sno-Chip utilize bulk materials processing, staging and storage that are good uses for a low-elevation island subject to flooding.

Specific "draft" action items arising from the workshop include:

- Smith Island alternative access: Create an alternate emergency gravel, gated access ramp to I-5 from Smith Island. [Public Works Dept., Planning and Community Development Dept.]
- Smith Island exercise: Hold emergency exercises on Smith Island to better share resources following a disaster. Create a coordinating group among all the resident stakeholders. [Office of Emergency Management]
- Climate Change Impacts: Monitor climate change impacts to Port and Smith Island. Begin building a staged, phased adaptation approach. [Public Works Dept.]
- Isolation: Exercise neighborhood emergency access alternatives. [Office of Emergency Management]

Specific "draft" action items arising from other workshops that impact Smith Island:

- System decentralization: As systems (Water, Power, Sewage) are repaired, modernized / upgraded, or maintained assess possibility of decentralization energy systems. [Public Works, Smith Island tenants]
- Wastewater safe-to-fail strategy: Develop a "safe to fail" not merely a "fail safe" approach for Wastewater containment, discharges and processing. [Public Works]
- Backup power to pump stations: Provide backup power for selected water and wastewater pump stations. [Public Works]
- Recovery Framework: Develop a recovery framework to enable the city to both recover from a disaster and exploit opportunities to achieve community planning objectives. [Office of Emergency Management, Planning

and Community Development Dept.]

- Water distribution shut off: 1) Provide shut-off valves to isolate system elements and prevent "bleeding" and flooding; 2) Plan for redundant water transmission line to the south; 3) Continue investment in flexible joints and replacing caste iron pipes. [Public Works]

- Transportation: 1) Plan to retrofit vulnerable bridges that could lead to neighborhood isolation; 2) Identify alternate foot and bike paths to be used by neighborhoods isolated in a disaster; 3) Work with WSDOT on US 2 (westbound trestle bridge), SR 529 and I-5 vulnerabilities (soils). [Public Works]

The Port of Everett Workshop for Risk Reduction Efforts (May 16th, 2017)

On Tuesday May 16th, a workshop was held with people involved with the Port of Everett to recommend risk reduction measures. Participants sat at tables grouped in a U-shaped configuration for a 1.5-hour meeting. The discussion followed a modified asset based Appreciative Inquiry format. Participants gave feedback in three rounds. The University of Washington ran the workshop with assistance from Everett's Office of Emergency Management.

Participants were asked to identify mission critical functions and talk about opportunities and concerns. Participants were also asked which mission critical functions would be most vulnerable after an event. The workshop ended with suggestions about how to make the Port more resilient.

What do you value and what are you concerned about with the Port?

Everett, in many ways, is a city defined by its port. The Port of Everett is a deepwater port with rail and trucking connections. The Port serves as a critical economic transit hub for Snohomish County and beyond. This hub is critical to Boeing's supply chain as well as other businesses. The Navy can assist with recovery after an event. The Port is also a key part of Everett's waterfront and quality of life. There is a marina, fishing dock, and extensive public trails. Jetty Island is a popular park with 50,000 visitors a year. The Port also played an important role in cleaning up the waterfront and managing stormwater. Recently, an overpass connecting the Port was rebuilt.

The Port depends on the electric grid to power cranes for loading and unloading ships. Emergency power is not sufficient to run the cranes although two smaller diesel cranes (that run on wheels) are available. More electrical capacity will be required if ships are mandated to "plug-in" while docked and to serve new residential and hotel development. There is currently no police and fire station facilities at the Port. BNSF has blocked off two alternative access points at Bond and Hewitt Streets and the city is currently working to re-open one of those access points.

What would be vulnerable during and after an emergency event?

In the event of an earthquake, key transportation routes to the Port could fail. State Route 529 (SR 529) could be blocked by slides. The BNSF Railway tunnel through downtown would likely collapse in an earthquake requiring clearing, although an alternate route could be used in the interim. The rail corridor is below steep slopes with homes that could be blocked by landslides. The impacts on access could halt or slow the movement of freight and emergency vehicles. Fixing and clearing key routes will be essential after an event.

Without electricity, the cranes would not work except for the smaller, more limited, diesel cranes. Backup power is only enough to supply basic administrative functions. If severely damaged, it could take up to two years to replace the Port's primary transformers. A loss of power and other systems could stop or delay payroll and the Longshoremen's Union will not work without pay.

Buildings may be damaged enough to be unusuable as shelter and, the same is true for boats that people live on in the marina. Areas of refuge where people can gather and find shelter are needed.

How can the Port be more resilient and evolve to meet challenges and opportunities?

As the Port develops, improving access and electrical systems will provide many benefits. Adding new transformers and on-site decentralized systems will provide needed backup power. Securing alternate access, hardening the rail corridor, and adding a warning system for homes on the slopes will both improve access and safety.

Sea level rise and more extreme weather also present challenges for the Port in the coming decades. Monitoring weather and water levels, similar to Seattle's efforts in the Duwamish, can help in future planning. New development can also adapt to change through elevating structures and building berms and boardwalks. As the Port invests in updating their docks for bigger container ships, such concerns can guide design choices.

The Port and City can also do emergency exercises to identify gaps and seek ways to involve BNSF Railway and the Longshoremen's Union. Such exercises may reveal options for improving firefighter and police access after an event.

"Draft" action items arising from the workshop include:

- Alternative Port access: Develop an agreement between BNSF, City and Port to keep Hewitt Street and Bond Street available as alternate access to the Port. [Port, Public Works Dept., Planning and Community Development Dept.]

- Power exchange: 1) Determine Port transformer vulnerability and capacity demands; 2) Exploit co- benefits of ships connecting to Port power. Ability may be mandated in future. [Port, Public Works Dept., Snohomish PUD]

- Port areas of refuge: Establish designated areas of refuge at the Port. [Port]

- Port Exercise: Conduct an exercise with Port stakeholders to determine sharable assets, vulnerabilities, and gaps involving Port, BNSF Railway, Longshoremen's Union and City of Everett. [Port, Office of Emergency Management]

- Structural fire response exercise: Conduct a Police / Fire Department exercise to assure a correlated response capability for the Port. [Port, Office of Emergency Management]

- Climate Change Impacts: Monitor climate change impacts to Port and Smith Island. Begin building a staged, phased adaptation approach. [Port, Public Works Dept.]

- Warning System: Provide an earthquake warning system for buildings and public spaces above the BNSF tunnel under downtown, neighborhoods above steep slopes and the rail corridor, the Port and Jetty Island. [Office of Emergency Management, Public Works Dept.]

"Draft" action items arising from other workshops that impact Smith Island:

- System decentralization: As systems (Water, Power, Sewage) are repaired, modernized / upgraded, or maintained assess possibility of decentralization energy systems. [Public Works]

- Stabilize vulnerable slopes: Stabilize bluffs and slopes above rail corridor near Port including Rucker Hill. [Public Works, Planning and Community Planning Dept.]

The Everett Downtown Business Workshop for Risk Reduction Efforts (June 14th, 2017)

On Wednesday June 14th, members of Everett's businesses, organizations, and government met in a workshop to recommend risk reduction measures. Participants sat at tables in a horseshoe shaped configuration and met for 1.5 hours at the Everett Performing Arts Center. The discussion followed a modified asset-based Appreciative Inquiry format. Participants gave feedback in three rounds. The University of Washington ran the workshop with assistance

from Everett's Office of Emergency Management.

Participants were asked to identify business or organizational mission critical functions and talk about opportunities and concerns. Participants were also asked which critical functions would be vulnerable to an event such as an earthquake. The workshop ended by breaking into two groups and coming up with positive steps to make the downtown more resilient.

What do you value and what are your concerns for organizations and businesses in the downtown?

Everett has a diversity of businesses, non-profits and agencies located throughout the downtown that provide valuable services to the public. The decentralization of various services has benefits in an emergency. There are many opportunities for businesses to develop partnerships. Everett also has few tall buildings that would be particularly vulnerable in a subduction zone earthquake. The Office of Emergency Management and Fire Station have been seismically retrofitted.

Everett is vulnerable to isolation after an earthquake. Since most of the people who work in Everett live outside the City, isolation presents unique challenges. Everett also has a large number of un-reinforced masonry (URMs) buildings constructed prior to World War II that are vulnerable.

What would be vulnerable in the downtown during and after an emergency event?

If an earthquake occurred during working hours, many employees would not be able to leave the City, conversely, a non-working hours event would create difficulties for critical staff trying to get back into the City. Participants expressed concern about protecting their staff and making sure evacuation procedures were clearly understood. There was also concern about key emergency personnel being able to get back into the City after an emergency event.

In an earthquake event, the large number of URM buildings would be damaged, drop debris onto the streets and would likely be uninhabitable. Many of these buildings house businesses, nonprofits and government agencies. As a result, there would be a need for alternate work and meeting places. In addition, the BNSF railroad tunnel that runs beneath the downtown would likely also collapse and impact the buildings above the tunnel.

How could the downtown become more resilient and what would be rebuilt differently after an event?

Temporary isolation of the City does not have to be a problem particularly if local businesses, nonprofits, and agencies have planned ahead. For local businesses, it may even be an opportunity to work together and build goodwill by providing key services to stranded people. The 2006 Hanukkah Eve Windstorm provides a good local example of such resilience and mutual aid. Fire stations, stores, restaurants, bars, parks and other places could become important gathering spaces after an event.

In the aftermath of such a disaster, the City should strive to work as much as possible with local rather than outside contractors. This can help rebuild the city's economic resilience by supporting local businesses. With the loss of many URM structures and the collapse of the downtown tunnel, Everett could rebuild to seismic standards in ways that restore and even enhance the vitality of the downtown such as Santa Cruz did after the 1989 Loma Prieta Earthquake. In rebuilding, one participant noted, it is important to adhere to building codes while expediting the process.

Specific "draft" action items arising from the workshop include:

- COOP planning: Assure that all City governmental elements have and have exercised a Continuity of Operations Plan (COOP). [Office of Emergency Management, All City Depts.]

- Seismic consideration in redevelopment design. Redevelopment plans such as those prepared for the central business district, historic preservation and Port redevelopment must consider risk reduction as a design driver. [Building Dept., Planning and Community Development Dept.]

Specific "draft" action items arising from other workshops that impact Businesses:

- Recovery Framework: Develop a recovery framework to enable the City to both recover from a disaster and exploit opportunities to achieve planning objectives. [Office of Emergency Management, Planning and Community Development Dept.]

- Warning System: Provide an earthquake warning system for buildings and public spaces above the BNSF tunnel under downtown, neighborhoods above steep slopes and the rail corridor, the Port and Jetty Island. [Office of Emergency Management, Public Works]

- URM Strategy: Develop a strategy to address URM structural vulnerabilities including developing and inventory of URMs and begin meeting with stakeholders. [Building Department, Planning and Community Development Dept.]

- System decentralization: As systems (Water, Power, Sewage) are repaired, modernized / upgraded, or maintained assess possibility of decentralization energy systems. [Public Works Dept.]

- Hospital water source: Provide for an alternate water source for hospital. [Office of Emergency Management, Public Works]

- Implement non-structural mitigation measures in facilities controlled by the City of Everett. [Facilities]

- Backup power to pump stations: Provide backup power for selected water and wastewater pump stations. [Public Works Dept.]

- IT/Communications: Upgrade internal government phone system. [IT, Public Works Dept.]

- Seismic Retrofit Public Works building: Seismic retrofit critical city facilities beginning with the Public Works building. [Facilities Dept., Building Department]

- Transportation: 1) Plan to retrofit vulnerable bridges that could lead to neighborhood isolation; 2) Identify alternate foot and bike paths to be used by neighborhoods isolated in a disaster; 3) Work with WSDOT on US 2 (westbound trestle bridge), SR 529, and I-5 vulnerabilities (soils). [Public Works Dept.]

- Seismic consideration in redevelopment design. Redevelopment plans such as those prepared for the central business district, historic preservation and Port redevelopment must consider risk reduction as a design driver. [Building Dept.]

- Post-Disaster Building Safety Assessment: Develop a Post-Disaster Safety Assessment Program (SAP) Development, that takes advantage of professional (AIA, SEAW, ASCE, WABO...) volunteer emergency workers and non-governmental, organization capabilities to determine building safety following an earthquake. [Building Department, Office of Emergency Management]

- Isolation: Exercise neighborhood emergency access alternatives. [Office of Emergency Management]

- Verizon Tower: Harden. [Public Works Dept.]

City of Everett Hazard Mitigation Plan
Infrastructure Meeting

April 10, 2017, 1:00 - 3:00 p.m.

Spada Conference Room, 3200 Cedar St, Everett

Name		Email	Dept/Agency
Bailey	Jennifer		Public Works
Baxter	Kathleen		Public Works
Davis	Dave		Public Works
Doniger	Rachael		OEM
LaVelle	Sarah		OEM
Miller	Jim		Public Works
Moen	Grant		Public Works
Nasr	Souheil		Public Works
Sadler	Mark		Public Works
Sass	Ryan		Public Works
Stainer	Brent		OEM
Tarry	Richard		Public Works
Williams	Doug		Snohomish County PUD
Godfried	Michael		
Bob	Freitag		

Location: **Van Valey House 2130 Colby Avenue Everett, WA**

Time: 6:30 p.m.

Date: Tuesday April 25, 2017

Meeting Agenda

1. Introduction of Commission
2. Citizen Comments
3. Approval of Minutes for February 28, 2017 Meeting
4. Approval of Minutes for March 25, 2017 Meeting
5. Additions to Agenda

6. BOLA Architects – 2017 Grant for Downtown Buildings Assessment
   Presentation of building assessment project with preliminary review of buildings and First Draft Report/Toolkit.

7. UW Presentation on Hazards from Unreinforced Masonry Buildings
   Presentation from Professor Bob Freitag, University of Washington.

8. Brown Awards Update

9. Commissioner Comments

10. Project Updates

11. Future Agenda Items
    - Metro Everett Presentation (May)
    - Metro Everett Building Survey
    - Work Program Projects

12. Other Business

13. Adjourn

Staff Contact: Paul Popelka 425.257.7155 ppopelka@everettwa.gov

We strive to provide special accommodations for individuals with disabilities. Please contact our office three business days before the meeting if special accommodations are needed. The City is in compliance with Title VI of the Civil Rights Act of 1964 and Restoration Act of 1987 and related statutes and regulations in all its programs and activities.

City of Everett Hazard Mitigation Plan
Community Meeting
May 13, 2017, 10:00 a.m. - 3:00 p.m.
Horizon Elementary School, 222 W Casino Road, Everett

	Name (PLEASE PRINT)	Neighborhood or Organization	IF YOU WOULD LIKE TO RECEIVE NOTIFICATIONS Email
1	DENNIS DILDAY	6SIT NEIGHBORHOOD	
2	TOM NORCOTT	HSC NEIGHBORHOODS	
3	J.T. DRAY	NW NEIGHBORHOOD	
4	RICHARD McMANUS	SILVER LAKE	
5	Jim Grieco	Twin Creeks	
6	Russ Hunes	NW Neighborhood	
7	Scott Bader	Riverside	
8	DORY KERST	DELTA	
9	Della Scott	Port Gardner	
10	Colleen Norcott	HSC Neighborhood	
11	Debbie McPherson	" "	
12	Hugh Beauregard	CERT	
13	Megan Kaputa	Glenwood	
14	Douglas McCullough	GLACIER VIEW	
15	Eddie Williams	RED CROSS	
16	Karen Stewart	View Ridge	
17	Babelle de Mozenette	UW	
18	Ben Peabody	UW	
19	Abdi Ahmed	UW	

City of Everett Hazard Mitigation Plan
Community Meeting
May 16, 2017, 9:30 - 11:30 a.m.
Port of Everett, Blue Heron Room, 1205 Craftsman Way, Everett

	Name (PLEASE PRINT)	Organization	Email
1	SARAH LAVELLE	EVERETT OEM	
2	Brent Stainer	Everett OEM	
3	STEVE PASCHAL	NAVAL STATION EVERETT	
4	Karen Stewart	Everett	
5	Kathleen Baxter	Everett PW	
6	Fred Gordon	Port of Everett	
7	Lisa Berryman	Red Cross	
8	Catherine Soper	POA of Everett	
9	Edward MADURA	Port of Everett	
10	John Holdsworth	SnoCo DEM	
11	Maya Lamprion	Port of Everett	
12	Rachael Dengler	Everett OEM	
13	BOB FREITAG	UW	
14	MICHAEL GODFRIED	UW	
15	ISABELLE de MOZENGTTE	UW	
16	BEN PEABODY	UW	
17	ABDI AHMED	UW	
18	ADAM	UW	
19			

City of Everett Hazard Mitigation Plan
Smith Island Meeting

May 24, 2017, 12:00 - 1:00 p.m.
Everett Animal Shelter, 333 Smith Island Road, Everett

	Name (PLEASE PRINT)	Organization	Email
1	SARAH LAVELLE	EVERETT OEM	
2	BOB FREITAG	U W	
3	Michael Godfried	U W	
4	Glynis Frederiksen	Animal Services	
5	Dee Cordell	Animal Services	
6	JOHN SMIT	Water Pollution Control Fac.	
7	TOM JENSON	SNO-RIVER CWIP Reload DUNLAP TOWING	
8	Jammie Anderson	Bush Timber	
9	Diana Martin	Base Timber	
10	John Petersen	Everett Parks	
11	BRENT STAMER	EVERETT OEM	
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City of Everett Hazard Mitigation Plan
Everett Businesses Disaster Resilience Workshop
June 14, 2017, 9:30 - 11:00 a.m.
Everett Performing Arts Center, 2710 Wetmore Ave, Everett

	Name (PLEASE PRINT)	Organization	Email
1	SARAH LaVoie	EVERETT OEM	
2	Michael Godfried	UW	
3	Rachael Doniger	OEM	
4	Michael Fearnehough	consultant	
5	Katie Curtis	Sno Health Dist	
6	Angela Merculief	Skotdal Real Estate	
7	Carla Hogan	Assistance League	
8	Karen Stewart	Everett Plng.	
9	Lane McMath	CDE	
10	BOB FREITAG	UW	
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City of Everett Hazard Mitigation Plan
Everett Planning Department Meeting
July 5, 2017, 9:00 - 10:00 a.m.
Wall Street Building, 8th Floor, 2930 Wetmore Ave, Everett

	Name (PLEASE PRINT)	Organization	Email
1	SARAH LAVELLE	EVERETT OEM	
2	Allan Giffen	Everett Planning Dept	
3	David Stalheim	" "	
4	Karen Stewart	Everett Environmental Planner	
5	Michael Godfried		
6	Bob Freitag		
7			
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City of Everett Hazard Mitigation Plan
Open House
October 17, 2017 - 5:30 - 7:30 p.m.
Everett Main Library, 2702 Hoyt Ave, Everett

	Name (PLEASE PRINT)	If you would like to receive updates, please leave your email address.
1	Mike Leighton	
2	Hugh Beauregard.	
3	Janet Leighton	
4	ARLEIGH MOVITZ	
5	Bill Bartley	
6	Mousso Aboud	
7	Norma Howdal	
8	JILL RYAN	
9	GIM QUONG	
10	Betsy Case	
11	Judy & Pete MacDORAN	
12	[illegible]	
13	Richard Hill	
14	Liz Vogeli	
15	Elizabeth Mullen	
16	Debbie McPherson	
17	DORY KERST	
18	[illegible]	
19		
20		
21		

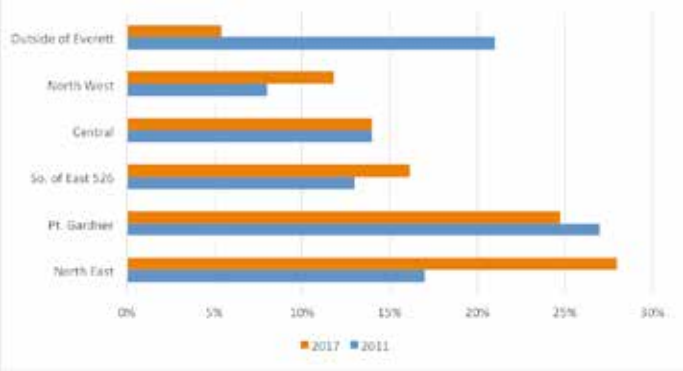
Appendix C: Online Survey Results

The 2017 and 2011 online surveys asked many of the same questions. The results for both surveys are compared side by side in the charts that follow. The online surveys were advertised, and anyone could reply. The results are useful but not a representative sampling of Everett's population. In the 2017 survey, 99 people responded. The survey ran from July 12 to September 12, 2017. The 2011 survey had 154 respondents.

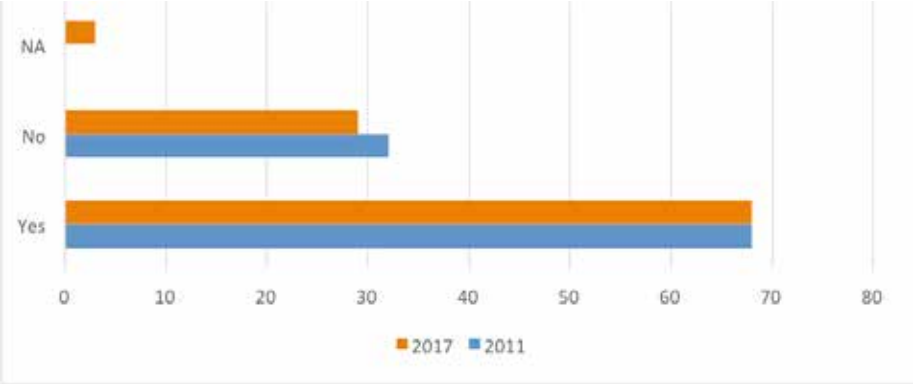
Everett Hazard Mitigation Plan Online Survey

Please complete this survey to help us update Everett's 2017 Hazard Mitigation Plan. This information will help us to see how prepared Everett is for disasters and how we can improve. This survey has 18 questions and may take 5-10 minutes to finish. Thank you for your time.

1. Where in Everett do you live?



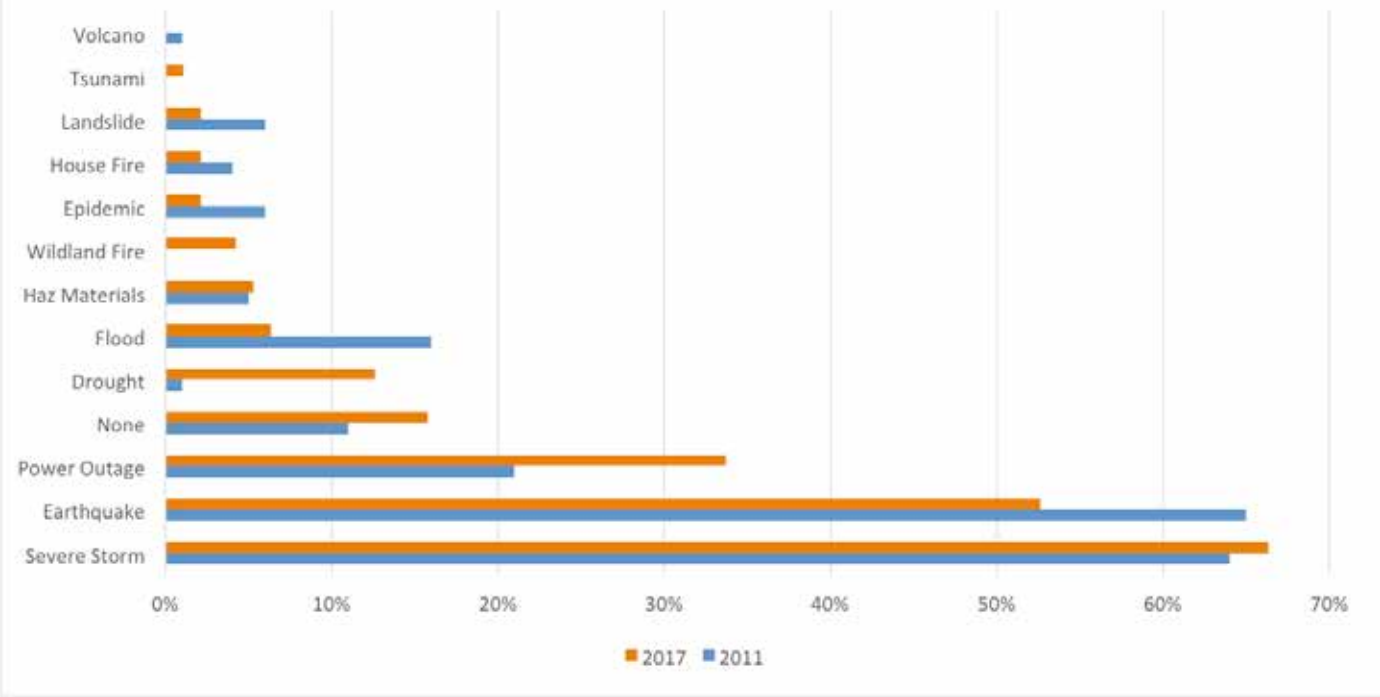
2. Do you work in Everett? (Yes / No)



3. What hazards has your family experienced in the past 20 years in Everett? Check all that apply.

- ❑ Earthquake
- ❑ Landslide
- ❑ Flood
- ❑ Wildfire
- ❑ House Fire
- ❑ Epidemic/Pandemic
- ❑ Drought
- ❑ Tsunami/Seiche
- ❑ Volcano Related Hazards

- ❑ Hazardous Materials Release
- ❑ Extended Power Outage
- ❑ Severe Storm (snow, ice, wind)
- ❑ None

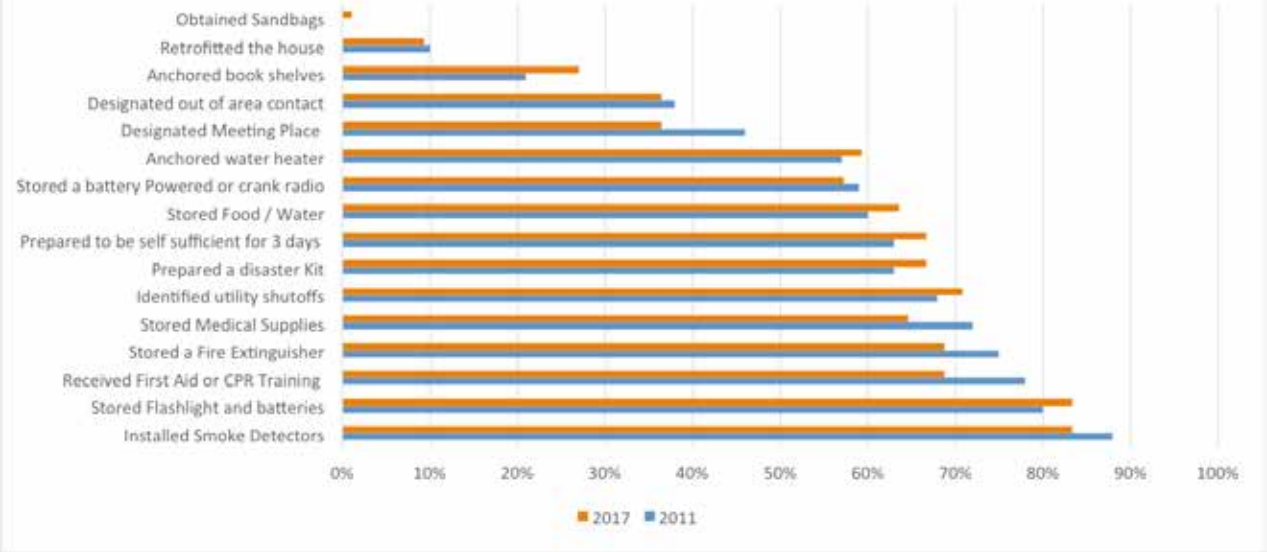


Other? Please specify. (Fill in the text box)
Home invasions (twice); sewage back up; Not in this state though; Chemical fire fumes; Haven't lived here that long; Heavy Rain; Catastrophic house flood; Coal dust on surfaces in my house; Only in the neighborhood three years; Fallen trees blocking roadways

4. Which of the following steps has your household taken to prepare for a natural hazard event?

- ❑ Received first aid/CPR training
- ❑ Received CERT training
- ❑ Participated in Map Your Neighborhood
- ❑ Made a fire escape plan
- ❑ Designated a meeting place
- ❑ Identified utility shutoffs
- ❑ Obtained sandbags
- ❑ Prepared a disaster supply kit
- ❑ Prepared to be self sufficient for 3 days or more
- ❑ Installed smoke detectors on each building level
- ❑ Stored food and water (including baby and pet)
- ❑ Stored flashlights and batteries
- ❑ Stored a battery-powered or crank radio
- ❑ Stored a fire extinguisher
- ❑ Stored medical supplies (first aid kit, medications)
- ❑ Designated an out-of-area contact
- ❑ Anchored shelved to walls
- ❑ Anchored water heater
- ❑ Retrofitted the house (like anchored house to foundation)

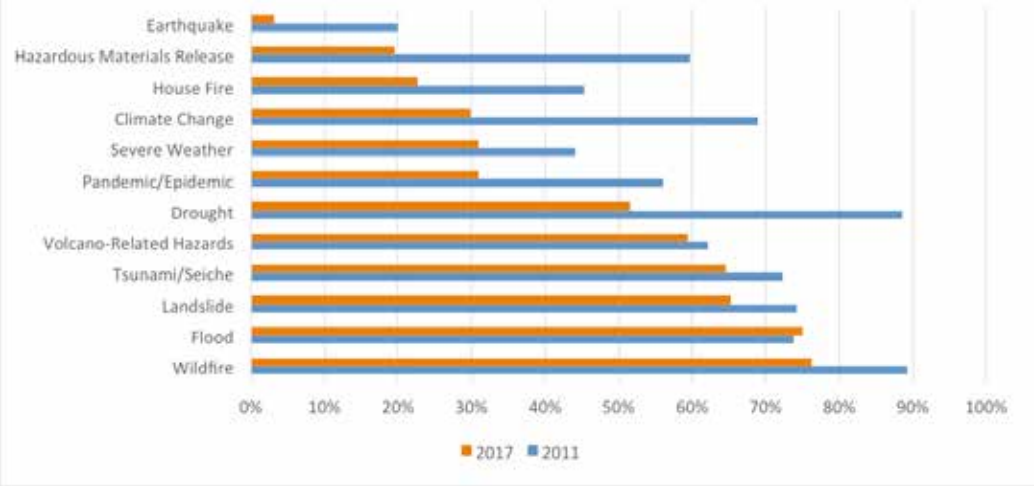
5. If not selected above, explain any steps you have taken to prepared your household for potential hazards. (Fill in the text box)

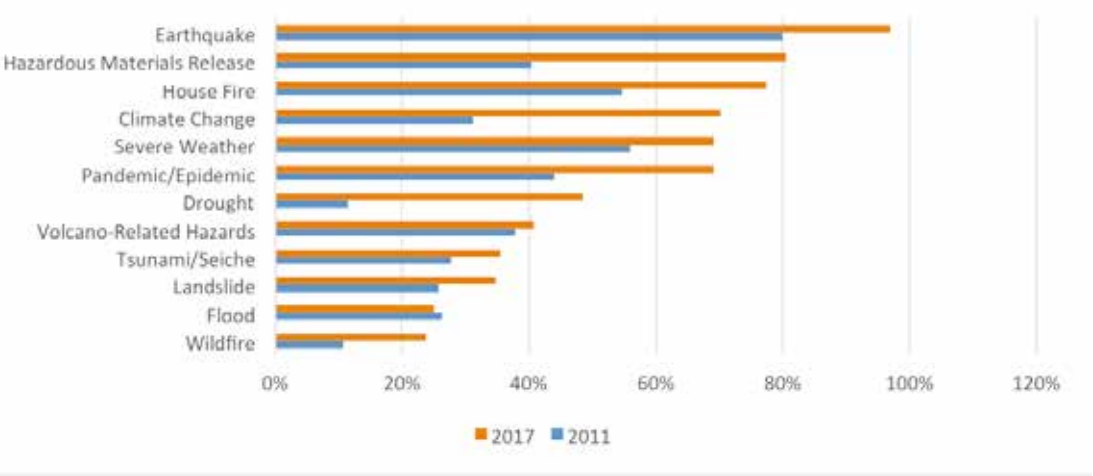


earthquake insurance; emergency kits in car and at work; I live in an apartment that takes care of most of these items already.; "Identified safe areas for earthquakes and high wind/tornado events. (Away from windows, shelter in door frames.); Generator; Need to discuss out of area contact.; Obtained HAM radio license; Properly stored hazardous chemicals.; We have an RV and stocked it with supplies, in addition to our other emergency rations.

6. How concerned are you about the following natural hazards in Everett? (Not Concerned/Concerned/Very Concerned)

- Earthquake
- Severe Weather
- Climate Change
- Drought
- House Fire
- Wildfire
- Tsunami/Seiche
- Pandemic/Epidemic
- Flood
- Volcano-Related Hazards
- Hazardous Materials Release





7. If not listed above, what other potential natural hazards are you concerned about? (Fill in the text box)

Terrorism and "Lone Wolf" mass shootings; Crack heads; Chronic environmental hazards, such as pollution from the tire fire, the waterfront, and weather impacts on the septic system; Water system contamination; Nuclear or other attack. We are on the west coast (closest to Russia and North Korea) and have a navy base here; Wild animal threats; Fire due to railcar carrying oil; Train disaster/explosion or derailment; Sink holes; civil unrest following disaster; civil unrest

8. Check all the methods below that you use to help you prepare for emergency situations.

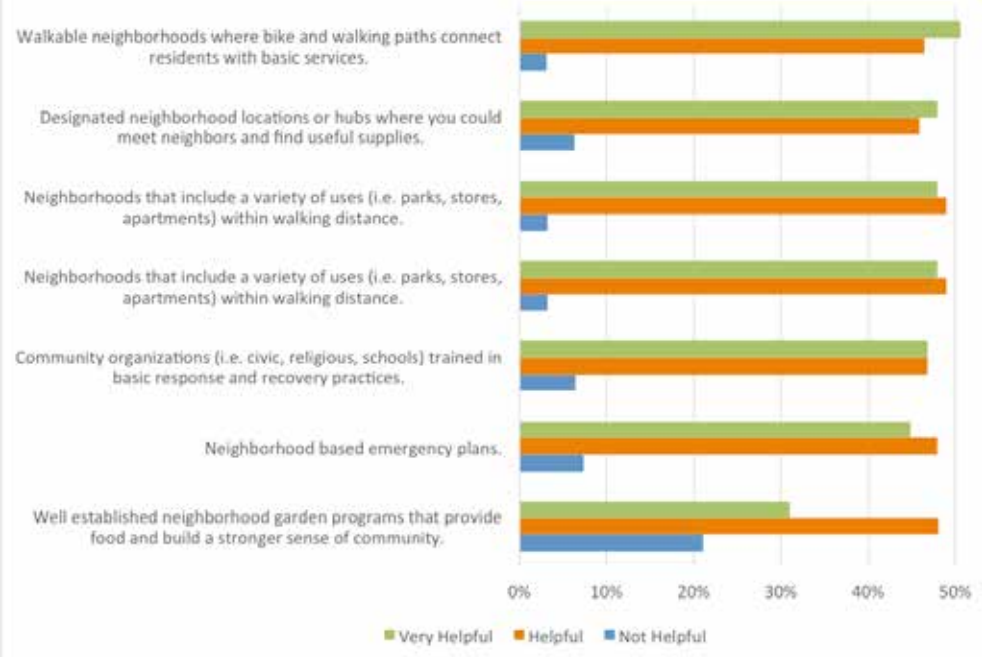
- ❑ Emergency preparedness information from a government source
- ❑ Prior experience with one or more disaster situations
- ❑ Locally-provided news or other media information
- ❑ Schools and other academic institutions
- ❑ Attended meetings about disaster preparedness
- ❑ Community Emergency Response Team (CERT) training
- ❑ American Red Cross training
- ❑ Fair booth

Other? Please specify. (Fill in the text box)

LDS website, SCA (medieval reenactment) participation, defensive training, solar power system; Amateur radio ability to operate off-grid; Social media; Scouting, Employer; Internet; Common sense and camping/backpacking experience; Wendy McClure and the city prepared center!; Emergency Drill; MOFA; Work preparedness.

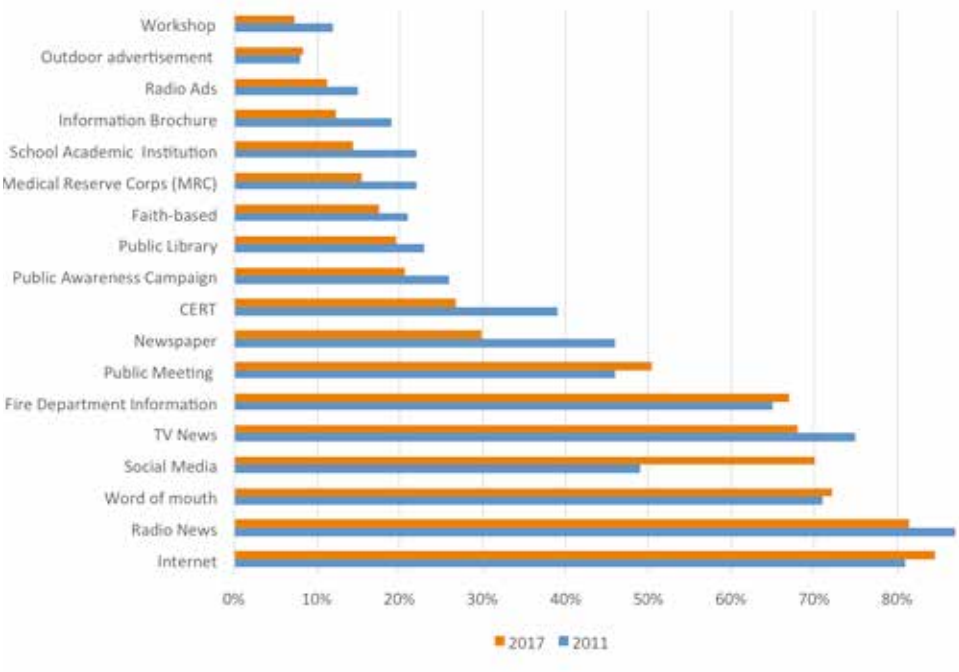
9. How helpful would it be to have the following in place during or immediately following an emergency event? (Not Helpful/Helpful/Very Helpful)

- Designated neighborhood locations or hubs where you could meet neighbors and find useful supplies.
- Neighborhood based emergency plans.
- Community organizations (i.e. civic, religious, schools) trained in basic response and recovery practices.
- Neighborhoods that include a variety of uses (i.e. parks, stores, apartments) within walking distance.
- Walkable neighborhoods where bike and walking paths connect residents with basic services.
- Well established neighborhood garden programs that provide food and build a stronger sense of community.



10. Check all the communications methods that you would use during or immediately following an emergency event.

- ❑ Newspaper
- ❑ Telephone book
- ❑ Informational brochure
- ❑ City newsletter
- ❑ Public meeting
- ❑ Workshop
- ❑ School/academic institution
- ❑ TV news
- ❑ TV ads
- ❑ Radio news
- ❑ Radio ads
- ❑ Internet
- ❑ Social media
- ❑ Outdoor advertisement
- ❑ Fire department/rescue information
- ❑ Faith-based organization
- ❑ CERT class information
- ❑ Public awareness campaign
- ❑ Book
- ❑ Public library

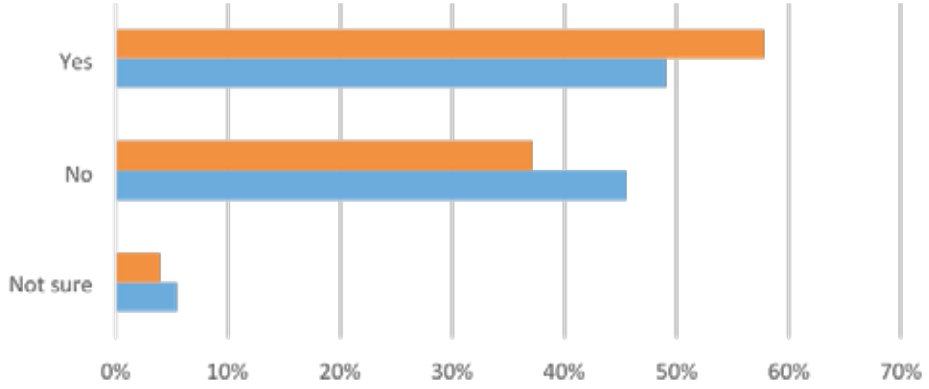


- ❑ American red cross information
- ❑ Medical Reserve Corps (MRC) information
- ❑ Word of mouth
- ❑ Other (specify below)

Other? Please specify.

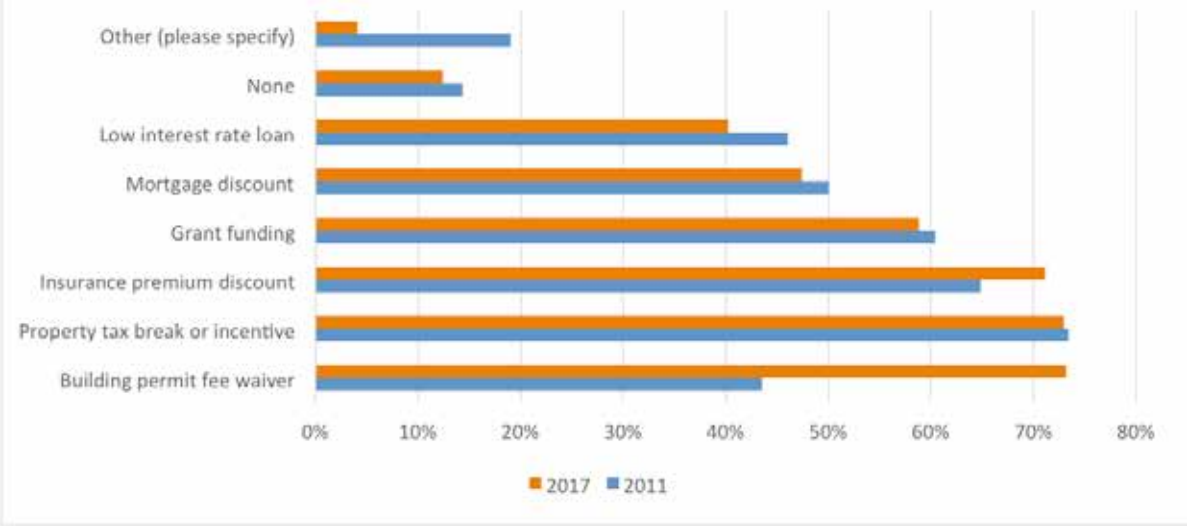
Amateur Radio; Any and all; CB radio, neighborhood watch groups; Communication plan and contact tree; HAM radio, FRS radio, cell phone/text; I doubt a workshop will occur immediately following a catastrophe. Advertising?; We're on word-of-mouth here. Some of these are providers, not methods; MYN information; Neighborhood meeting; What communication would be available?

11. Was your home build in 1972 or earlier? (Yes/No/Not sure) Building codes since 1972 have required homes to be secured to their foundations.



12. Check all the items that would encourage you to spend money to retrofit you home to protect against natural hazards.

- ❑ Building permit wee waiver
- ❑ Insurance premium discount
- ❑ Mortgage discount
- ❑ Property tax break or incentive
- ❑ Low interest rate loan
- ❑ Grant funding
- ❑ None
- ❑ Other (specify below)

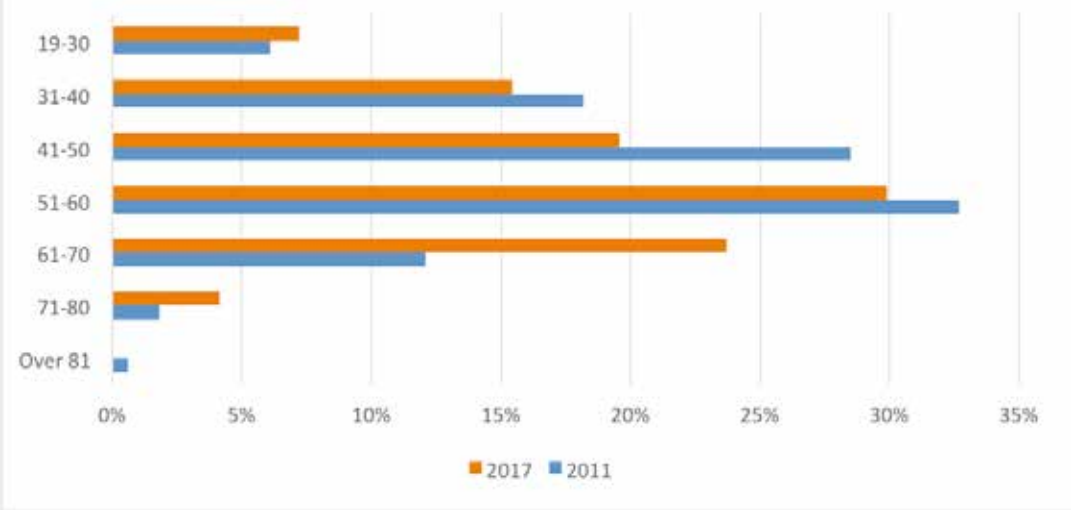


Other? Please specify. (Fill in the text box)

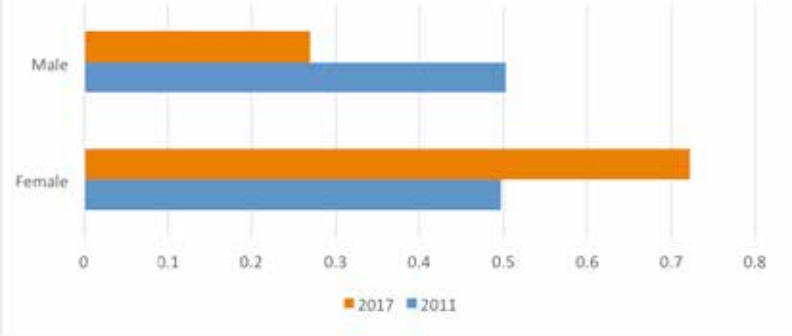
I rent an apartment so these are not options; I rent; Instead of decreasing property tax to incentivize it, take volunteers to raise them in order to have their homes retrofitted, like was done with the backwater prevention devices; I rent; Already done; Referral sources; Easy ways to find services/contractors; free assessments; Ours is a townhouse. Group decision; Too extensive; Reliable, fare priced contractors to do retrofit projects

13. Age:

- ❑ 18 or under
- ❑ 19-30
- ❑ 31-40
- ❑ 41-50
- ❑ 51-60
- ❑ 61-70
- ❑ 71-80
- ❑ Over 81



14. Gender: (Male/Female)

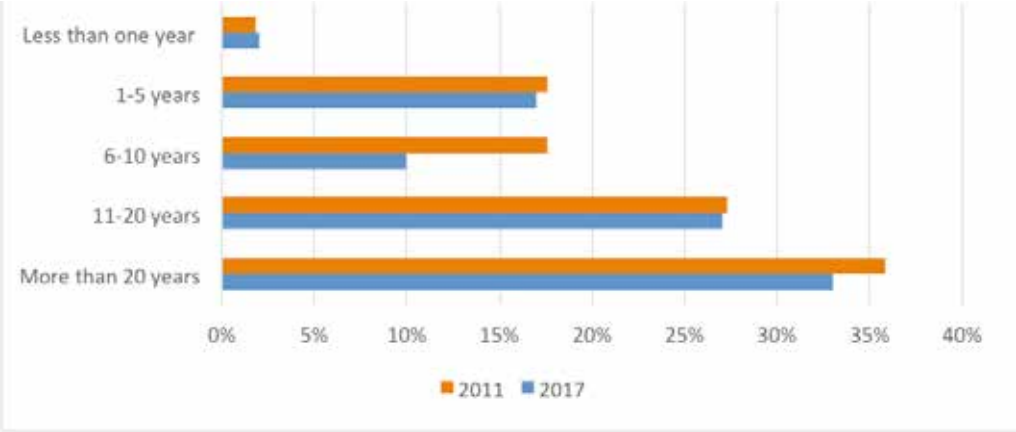


15. Primary language spoken in your household: (Fill in the text box)

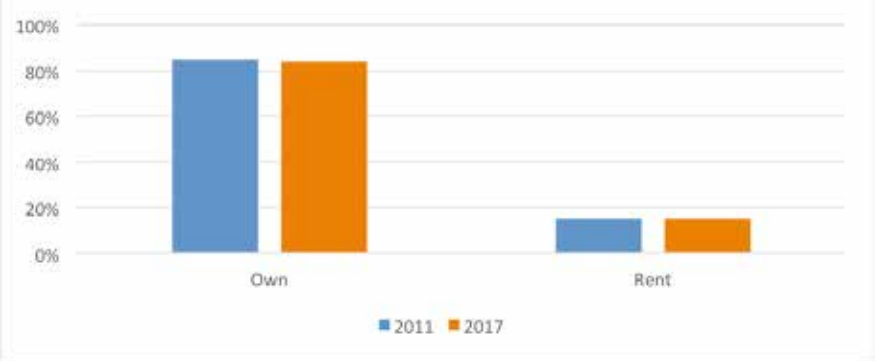
All speak English as primary language in 2017. Only 2 people spoke Spanish as the primary language in the 2011 survey.

16. Years lived in Everett?

- ❑ Less than 1 year
- ❑ 1-5 years
- ❑ 6-10 years
- ❑ 11-20 years
- ❑ More than 20 years



17. Do you own or rent your place of residence? (Own/Rent)



18. Please add any additional comments. (Fill in the text box)

Please include information from and for senior citizens and the disabled. Senior Centers would be a good place for information before & during emergencies; Did I lose sight of the man-made hazards? Rail is our biggest problem. Puget Sound ships may be a threat but low-threshold as dissipation is likely before reaching our shores; Civic group building assistance; Conduct more emergency practice drills, teach emergency prep in schools, involve Boy Scouts and other youth activities!!; My main concerns are the many bridges and slopes. If those fail and roads become impassable, pockets of the City are cut off, not only via car, but potentially via foot traffic as well. This includes earthquake and landslide, but also fallen trees due to weather; Our community needs more opportunities for partnership with government agencies; We love living in Everett!; How may I get involved?; Varying number of residents at our home, including small child and pets!; Planning to move farther North within 24 months, away from Seattle population.

Appendix D: Risk Rating Methodology

Hazards Ranking

The Hazard Mitigation Steering Committee ranked hazards in order of most to least concern, as follows:

1. Earthquakes
2. Flooding
3. Severe Storms
4. Climate Change
5. Landslides
6. Hazardous Materials / Pandemics / Fire (all tied)
7. Volcanic Eruptions
8. Cyber Incidents
9. Tsunami & Seiche

The above ranking was based on the Steering Committee members' impression of the threat of each hazard. The focus of the HMP is on natural hazards, therefore, cyber incidents are not addressed in this plan. Cyber incidents are included in the ranking above because it came up during the public process for the Steering Committee meeting on April 5, 2017.

The Project Team put together a basic ranking formula based on probability of occurrence and the impact on these four categories:

1. People
2. The Built Environment (BE - which includes public and private property and infrastructure)
3. The Economy
4. The Natural Environment (NE)

The ranking formula is not meant to provide precise calculations. Rather, the formula is an attempt to help think through the impacts of hazard events.

Probability of Occurrence

The probability of occurrence of a hazards event is a basic estimate of how often the event could occur within a given time period. This is based on recorded past hazards events that have occurred in the area, and the forecast of the event occurring in the future.

To rate the probability of occurrence, the Project Team determined a probability factor for each hazard, which was based on yearly values. The numerical value assigned to each category would then be used to determine risk rating of each hazard. These were allotted as follows:

- High: Hazard event is likely to occur within five years (Numerical value 3)
- Medium: Hazard event is likely to occur within fifty years (Numerical value 2)
- Low: Hazard event in not likely to occur within fifty years (Numerical value 1)

Table 1: Probability of Hazards

Hazards Event	Probability	Numerical Value
Earthquakes	Medium	2
Severe Storms	High	3
Pandemics	Low	1
Climate Change	Medium	2
Fire	Medium	2
Flooding	High	3
Hazardous Materials	Medium	2
Landslides	High	3
Tsunami & Seiche	Low	1
Volcanic Eruptions	Low	1

Impact

The impact of each hazard was divided into four categories: impact to people, impact to the built environment (which includes public and private property and infrastructure), impact to the economy, and impact to the natural environment. These categories were also assigned weighted values. Impact to people was given a weighted factor of 3 and impacts to the built environment, natural environment, and economy were given a weighted factor of 2.

Impact to People

- High: Hazard event seriously affects more than 100 people (Numerical value 3)
- Medium: Hazard event seriously affects 26-100 people (Numerical value 2)
- Low: Hazard event seriously affects 0-25 people (Numerical value 1)

Table 2: Impact to People from Hazards

Hazards Event	Probability	Numerical Value	Multiplier
Earthquakes	High	3	3
Severe Storms	High	3	3
Pandemics	High	3	3
Climate Change	High	3	3
Fire	Low	1	3
Flooding	Medium	2	3
Hazardous Materials	Medium	2	3
Landslides	Medium	2	3
Tsunami & Seiche	Medium	2	3
Volcanic Eruptions	Low	1	3

Impact to the Built Environment

- High: Hazard event is likely to cause significant damage to public and private property and critical infrastructure of Everett and the region (Numerical value 3)

- Medium: Hazard event is likely to cause significant damage to public and private property and critical infrastructure of Everett only (Numerical value 2)

- Low: Hazard event is likely to cause some damage to public and private property and critical infrastructure in small areas of Everett (Numerical value 1)

Table 3: Impact to Built Environment from Hazards

Hazards Event	Probability	Numerical Value	Multiplier
Earthquakes	High	3	2
Severe Storms	Low	1	2
Pandemics	Low	1	2
Climate Change	High	3	2
Fire	Low	1	2
Flooding	Medium	2	2
Hazardous Materials	Low	1	2
Landslides	Medium	2	2
Tsunami & Seiche	Medium	2	2
Volcanic Eruptions	Low	1	2

Impact to the Economy

- High: Hazard event causing damages over $10 million (Numerical value 3)

- Medium: Hazard event causing damages between $1 and $10 million (Numerical value 2)

- Low: Hazard event causing damages less than $1 million (Numerical value 1)

Table 4: Impact to the Economy from Hazards

Hazards Event	Probability	Numerical Value	Multiplier
Earthquakes	Medium	3	2
Severe Storms	Medium	2	2
Pandemics	Low	1	2
Climate Change	Low	1	2
Fire	Medium	2	2
Flooding	Low	1	2
Hazardous Materials	Medium	2	2
Landslides	Medium	2	2
Tsunami & Seiche	Low	1	2
Volcanic Eruptions	Low	1	2

Impact to the Natural Environment

- High: Hazard event is likely to cause significant damage to the natural environment in Everett, if not the entire region (Numerical value 3)

- Medium: Hazard event is likely to cause significant damage to the natural environment in Everett only (Numerical value 2)

- Low: Hazard event is likely to cause some damage to the natural environment in Everett (Numerical value 1)

Table 5: Impact to the Natural Environment

Hazards Event	Probability	Numerical Value	Multiplier
Earthquakes	Medium	2	2
Severe Storms	Low	1	2
Pandemics	Low	1	2
Climate Change	High	3	2
Fire	Low	1	2
Flooding	Low	1	2
Hazardous Materials	Low	2	2
Landslides	Medium	1	2
Tsunami & Seiche	High	3	2
Volcanic Eruptions	High	3	2

Risk Rating

The risk rating for each hazard was determined by multiplying the assigned numerical value for probability of occurrence to the weighted numerical value of the impact. The following equation is meant to be an attempt at calculating a risk rating:

*Risk Rating = Probability of Occurrence * Impact (people + built environment (BE) + economy + natural environment (NE))*

Table 6: Risk Rating

Hazards Event	Probability	Impact				Total Impact	Risk
		People	BE	Economy	NE		
Earthquakes	2	9	6	6	4	25	50
Severe Storms	3	9	2	4	2	17	51
Pandemics	1	9	2	2	2	15	15
Climate Change	2	9	6	2	6	23	46
Fire	2	3	2	4	2	11	22
Flooding	3	6	4	2	2	14	42
Hazardous Materials	2	6	2	4	4	16	32
Landslides	3	6	4	4	2	16	48
Tsunami & Seiche	1	6	4	2	6	18	18
Volcanic Eruptions	1	3	2	2	6	13	13

The risk rating formula, the Steering Committee rankings and other sources of information on local hazards were used to help focus mitigation strategies. The 2017 Steering Committee ranking of hazards and the risk rating formula were largely in agreement.

The highest-risk ratings, such as earthquakes, landslides, flooding, and severe weather, warrant major mitigation programs. Attention to preparedness, response, and recovery is also necessary until the mitigation program has been implemented. The medium-risk ratings, such as fire and hazardous materials, warrant modest program effort. The low-risk ratings, such as volcano and tsunami/seiche, warrant no special mitigation effort, although inexpensive or all-hazards preparedness, response, and recovery measures may be warranted.

Appendix E: Potential Funding Sources

This list of funding sources was developed under the Obama Administration. Under the new administration, these funding sources are in flux. The Steering Committee will need to review and check the status of funding sources in the coming years.

Federal Emergency Management Agency (FEMA)

- *Hazard Mitigation Grant Program (HMGP):* Grants to Local Jurisdictions and Private Nonprofits for implementing long-term hazard mitigation measures following a major disaster declaration.
- *Flood Mitigation Assistance (FMA):* Grants to Local Jurisdictions for pre-disaster mitigation to help reduce or eliminate the long-term risk of flood damage to structures insurable under the National Flood Insurance Program (NFIP).
- *Pre-Disaster Mitigation (PDM):* Grants to Local Jurisdictions and Private Nonprofits for Hazard Mitigation Planning and the implementation of mitigation projects prior to a disaster event.
- *Public Assistance Program (Infrastructure):* Grants to Local Jurisdictions and Private Nonprofits to repair damaged infrastructure and public facilities, and help restore government or government-related services. Mitigation funding is available for work related to damaged components of the eligible building or structure.
- *Risk Mapping, Assessment, and Planning (Risk MAP) Program:* Technical and planning assistance for identifying, assessing, communicating, and mitigating risk.
- *National Earthquake Hazards Reduction Program (NEHRP):* Technical and planning assistance for activities associated with earthquake hazards mitigation.

Department of Defense - US Army Corps of Engineers (USACE)

- *Aquatic Ecosystem Restoration:* Direct support for carrying out aquatic ecosystem restoration projects that will improve the quality of the environment.
- *Channel Renovation:* Planning, Design, and other Technical Assistance for certain projects in navigable streams and tributaries. Projects can include the removal of snags and other debris, the clearing and straightening of channels, and renovation of navigable streams by nonstructural methods to improve drainage, water quality, and wildlife habitat.
- *Project Modifications for Improvement of the Environment:* Provides for ecosystem restoration by modifying structures and/or operations or water resources projects constructed by the USACE, or restoring areas where a USACE project contributed to the degradation of an area.

Environmental Protection Agency (EPA)

- *Clean Water Act Section 319 Grants (Nonpoint Source Management Program) and State Centennial Clean Water Grant Program:* Grants to States to implement non-point source programs, including support for nonstructural watershed resource restoration activities and urban storm water runoff activities. The State Department of Ecology runs a combined application and funding cycle for these grants.

- *Wetland Program Development Grants:* Grants to support the development and enhancement of State and tribal wetlands protection programs.

- *Puget Sound Watershed Management Assistance Grants:* Grants to local governments and special purpose districts for help in integrating watershed protection and land use decisions.

- *Puget Sound Scientific Studies and Technical Investigations Assistance Grants:* Grants to local government agencies, public and private institutions of higher education, and public interest entities located within the greater Puget Sound Basin. Provides funding for integrating flood hazard management plans with information and approaches for identifying, evaluating, and incorporating environmental restoration opportunities.

- *State Water Pollution Control Revolving Fund Loan Program:* Loans at actual or below-market interest rates to help build, repair, relocate, or replace wastewater treatment plants. Can also fund nonpoint source, watershed protection or restoration, and estuary management projects.

Housing and Urban Development (HUD)

- *Community Development Block Grant (CDBG) State Administered Program:* Grants to States to develop viable communities (e.g., housing, a suitable living environment, expanded economic opportunities) in non-entitled areas, for low- and moderate-income persons. The Imminent Threat Grant (a sub grant of the CDBG) provides funding for emergency needs that pose a serious, immediate threat to public health and safety.

- *Disaster Recovery Assistance:* Grants to fund gaps in available recovery assistance after disasters (including mitigation). Subject to supplemental funding by Congress after disasters.

- *Public Housing Capital Fund Emergency/Natural Disaster Funding:* Funding to public housing agencies for modernization needs resulting from natural disasters (including elevation, flood proofing, and retrofit).

- *Section 108 Loan Guarantee Program:* Loan guarantees to public entities for community and economic development (including mitigation measures).

National Resources Conservation Service (NRCS)

- *Emergency Watershed Protection Program:* Technical and financial assistance for relief from imminent hazards in small watersheds, and to reduce vulnerability of life and property in small watershed areas damaged by severe natural hazard events. (Can be opened for both a Presidentially declared and locally declared disaster.)

- *Wetlands Reserve Program:* Financial and technical assistance to protect and restore wetlands through easements and restoration agreements.

US Department of Transportation (USDOT)

- *Federal Highways Bridge Program:* Grants to Local Jurisdictions for locally owned bridge repair and rehabilitation projects, including those for seismic retrofitting and scour mitigation.

National Oceanic and Atmospheric Administration (NOAA)

- *Pacific Coastal Salmon Recovery Fund:* Funding to States for acquisition projects to help protect, restore, and conserve Pacific salmon and steelhead populations and their habitats.

- *Coastal Community Planning and Development and other Coastal Management Training:* Planning assistance for planners, elected officials, developers, business leaders, and other local decision-makers that provides examples and strategies for implementing alternative development principles in coastal communities and introduces the importance of natural hazard resilience.

Economic Development Association (EDA)

- *Economic Adjustment Assistance Program:* Grant funding to assist with the long-term economic recovery of communities, industries, and firms adversely impacted by disasters.

Fish and Wildlife Service (FWS)

- *Partners for Fish and Wildlife:* Financial and technical assistance to private landowners interested in pursuing restoration projects affecting wetlands and riparian habitats.

- *North American Wetland Conservation Fund:* Cost-share grants to stimulate public/private partnerships for the protection, restoration and management of wetland habitats.

- *National Coastal Wetlands Conservation Grant Program:* Funding for acquisition, restoration, or enhancing coastal wetlands and adjacent uplands to provide long-term conservation. Mitigation linkage: protection against flooding.

City of Everett

- *Neighborhood Matching Funds:* Funding for neighborhood projects including those focused on community preparedness.

Appendix F: Definitions and Acronyms

Definitions

Appreciative Inquiry: An approach that builds on the values, strengths and assets of organizations and communities to support continual improvement and resilience. This approach supports a public planning process that works towards a shared future community vision.

Benefit: A realized opportunity.

Built Capital: Things built by humans that include bridges, buildings, dams, and machinery.

Critical Infrastructure: Any roads and bridges; emergency response facilities; utilities such as water, electricity, and sewer; and other facilities critical to the health and welfare of the population that are especially important following a hazard event.

Disaster: A realized risk.

Emergency Preparedness: The steps taken to continuously prepare for human needs during or after an event. Examples of preparedness measures include having enough water and food on hand, or having a plan to reconnect with family members should a disaster occur.

Geographic Information System (GIS): A computer software application that relates physical features on the earth to a database. It is mainly used for mapping and analysis. This plan used GIS analysis.

Hazard: Any large-scale event, either natural or human-caused, that has the potential to cause damage to property or endanger human life.

Mitigation: The Federal Emergency Management Agency (FEMA) defines mitigation as "actions that reduce or eliminate the long-term risk to people and property from the effects of hazards."[1] Examples can be structural or non-structural, including municipal or county code that requires earthquake retrofitting or requires higher regulatory standards for new development in floodplains. Mitigation can also include coalition building among organizations to improve their ability to educate the public about risk.

Natural Capital: Natural features that provide ecosystem services and natural resources including forests, wetlands, mangroves, soil, sand dunes, agriculture, and fossil fuels.

Opportunity: A positive outcome from the combined interactions of a change event (such as a natural hazard), vulnerability (such as a residential unit), and capabilities (such as mitigation grants).

Project Planning Team: The researchers and coordinators from the Institute for Hazard Mitigation Planning and Research at the University of Washington who completed this plan.

Resilience: The ability to absorb a disturbance and to recover more quickly and with fewer losses.

Risk: A function of population or property exposure, its vulnerability to a hazard, and the frequency with which that hazard occurs.

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1 Federal Emergency Management Agency. (2000). *FEMA Document 364: Planning for a Sustainable Future: the Link Between Hazard Mitigation and Livability.*

Social Capital: Networks and associations of human relationships that include service providers, regular festivals and gatherings, clubs, and faith-based organizations.

Vulnerability: Any structures and systems in the path of a hazard.

Acronyms

ALS	Advanced Life Support	PGA	Peak Ground Acceleration
BLS	Basic Life Support	PSE	Puget Sound Energy
BNSF	Burlington Northern/Santa Fe	PTWC	Pacific Tsunami Warning Center
CCD	Census County Division	PUD	Public Utility District
CERT	Community Emergency Response Team	R	Richter
DMA	Disaster Mitigation Act	RCW	Revised Code of Washington
DRAC	Disaster Reconstruction Assistance Center	SARA	Superfund Amendments and Reauthorization Act
EERT	Employee Emergency Response Team	SCT	Snohomish County Tomorrow's
EFD	Everett Fire Department	SEPA	State Environmental Policy Act
EHS	Extremely Hazardous Substances	SERC	State Emergency Response Commission
EPCRA	Emergency Planning and Community Right-to-Know Act	SERS	Snohomish County Emergency Radio System
EPD	Everett Police Department	SMA	Everett Management Act
ESA	Endangered Species Act	SNODEM	Snohomish County Department of Emergency Management
FEMA	Federal Emergency Management Agency	SNOPAC	Snohomish County Police State & Auxiliary Service Center
FIRM	Flood Insurance Rate Map	SR 99	State Route 99
GIS	Geographic Information System	SR 529	State Route 529
GMA	Growth Management Act	TPQ	Threshold Planning Quantity
HIVA	Hazard Inventory and Vulnerability Analysis	TWS	Tsunami Warning System
HMGP	Hazards Mitigation Grant Program	UBC	Uniform Building Code
HMP	Hazard Mitigation Plan	UGA	Urban Growth Area
I-5	Interstate 5	US 2	United States Highway 2
IBC	International Building Codes	USGS	United States Geological Survey
IPT	Industrial Pretreatment	WAC	Washington Administrative Code
LEPC	Local Emergency Planning Committee	WSDNR	Washington State Department of Natural Resources
LPG	Liquefied Petroleum Gas	WSDOE	Washington State Department of Ecology
MLLW	Mean Low Water	WSDOH	Washington State Department of Health
MM	Modified Mercalli	WRIA	Water Resource Inventory Area
MPH	Miles Per Hour	WSDOH	Washington State Department of Health
NEHRP	National Earthquake Hazards Reduction Program	WSDOT	Washington State Department of Transportation
NFIP	National Flood Insurance Program		

Appendix G: Action Items Sorted by Lead Agency

This table sorts 2017 action items by the lead agency to allow departments to easily find their action items. Some action items also require the assistance of other agencies and entities. This information is provided in the report in the full descriptions of action items in Chapter 3.

2017 HAZARD MITIGATION PLAN ACTION ITEMS BY LEAD AGENCY			
Item	**Description**	**Lead Agency**	**Support Agency**
BUILDING DIVISION			
BD2	Complete an assessment of unreinforced masonry (URM) buildings with recommendations for protecting public safety.	Building Division	Fire Department, Historical Commission, Planning and Community Development Department, Facilities Department, Office of Emergency Management
BD5	Create an Earthquake Home Foundation Retrofit Program for homes not secured to their foundations.	Building Division	n/a
FACILITIES DEPARTMENT			
BD3	Seismically retrofit or rebuild critical city facilities including the Public Works building.	Facilities Department	Parks Department, Public Works Department
IN7	Complete an assessment of the City's fueling infrastructure with recommendations for improvements.	Facilities Department	Motor Vehicles Division
FIRE DEPARTMENT			
ET1	Improve Fire Department emergency response capabilities on the Waterfront to address the plans for new housing, public attractions and businesses.	Fire Department	Office of Emergency Management
OFFICE OF EMERGENCY MANAGEMENT			
IN1	Implement an earthquake early warning system in key locations throughout the City.	Office of Emergency Management	Public Works Department
BD4	Implement cross-departmental Post-Disaster Building Safety Assessment Training on a repeating cycle.	Office of Emergency Management	Facilities Division, Parks Department, Office of Emergency Management
BD6	Implement non-structural mitigation measures in City facilities.	Office of Emergency Management	Facilities Department, Public Works, Parks and Community Services Department
ET2	Train and encourage existing volunteers and community groups to do outreach and participate in community preparedness planning.	Office of Emergency Management	Office of Neighborhoods
ET3	Develop a City of Everett Continuity of Operations Plan (COOP) program that assesses each department's status and encourages next steps.	Office of Emergency Management	All City Departments

2017 HAZARD MITIGATION PLAN ACTION ITEMS BY LEAD AGENCY			
Item	**Description**	**Lead Agency**	**Support Agency**
OFFICE OF EMERGENCY MANAGEMENT			
ET4	Assist local businesses and non-profits with business continuity planning and exercises.	Office of Emergency Management	Everett District Station Alliance, Business Improvement District Area, Economic Alliance of Snohomish County, Boeing, Planning and Community Development Department
ET5	Identify more Emergency Cooling Centers and inform the public.	Office of Emergency Management	Communications Department
ET6	Perform a Smith Island Exercise.	Office of Emergency Management	n/a
PL1	Create a basic Post-Disaster Recovery Framework.	Office of Emergency Management	Office of the Mayor, Public Works, Facilities, Building Division, Planning and Community Development Department and others
PL4	Develop a proposal for a gravel, gated emergency-use-only access ramp from Smith Island to I-5.	Office of Emergency Management	Public Works Department
PL5	Identify potential emergency access routes to neighborhoods and determine what is required to implement them.	Office of Emergency Management	Public Works Department, Planning and Community Development Department
WP5	Complete an assessment of the potential for tsunami gathering areas on Jetty Island.	Office of Emergency Management	Parks and Community Services, Port of Everett
PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT			
PL2	All long-range plans should include a recovery framework and a review of potential hazards.	Planning and Community Development Department	n/a
PL3	Continue to embed hazards mitigation into the Comprehensive Plan and related codes and ordinances.	Planning and Community Development Department	n/a
PL6	Explore the potential of small commercial hubs in neighborhoods without such hubs.	Planning and Community Development Department	n/a
WP3	Create a Waterfront Climate Change Plan for long-term adaptation.	Planning and Community Development Department	Port of Everett, NAVY, BNSF Railway
PORT OF EVERETT			
WP1	Work with BNSF Railway to keep Bond Street open for emergency access to the Port.	Port of Everett	n/a
WP2	Fund increased systems connections to existing large capacity backup generator.	Port of Everett	n/a
WP4	Identify Temporary Outdoor Gathering Areas.	Port of Everett	Office of Emergency Management, Fire Department

2017 HAZARD MITIGATION PLAN ACTION ITEMS BY LEAD AGENCY			
Item	**Description**	**Lead Agency**	**Support Agency**
PUBLIC WORKS DEPARTMENT			
IN2	Support efforts to improve the resiliency of major transportation corridors I-5, US 2, and SR 529.	Public Works Department	Washington Department of Transportation
IN3	Set up dedicated city funding for intermediate-size bridge repair projects.	Public Works Department	n/a
IN4	Complete an assessment of post-earthquake response to repairing the in-city water system.	Public Works Department	n/a
IN5	Implement recommendations from the 2012 Water Supply Risk Assessment and the forthcoming Regional Water Supply Resiliency Study.	Public Works Department	n/a
IN6	Complete an assessment of the need for backup generators at water pump sites and secure funding for generator gaps.	Public Works Department	n/a
IN8	Build a fiber communication and data loop connecting City Emergency Operations Center.	Public Works Department	n/a
IN9	Complete an assessment of the earthquake response of the Regional Wastewater Treatment Plant building and siphons.	Public Works Department	n/a
IN10	Complete an asssessment of critical sewer pipelines with recommendations for improvements.	Public Works Department	n/a
IN11	Acquire Port Gardner Wet Weather Facilities to provide additional combined sewer and stormwater capacity.	Public Works Department	n/a
IN12	Plan to build a backup transmission line to provide redundant water supply to Reservoir #3.	Public Works Department	n/a
BD1	Construct a backup water supply source for Providence Regional Medical Center Everett.	Public Works Department	n/a