

Chapter 2.0

Mitigation Strategy: Goals, Objectives, and Initiatives

Vision:

All sectors of the community work together to create a disaster resilient region.

As this is a multi-jurisdictional plan, the goals and objectives are applicable to every partner that adopts it. Moreover, each partner has other comprehensive or strategic plans containing safety and security-related goals, policies, or measures that may be integral to their community’s hazard mitigation planning process. This plan offers a regional context for how local governments can work together, which can expand each partner’s existing hazard reduction strategies to achieve disaster resiliency within their community or organization.

Introduction

The mitigation strategy is this plan’s call to action. It is the planning partners’ blueprint for reducing losses and impacts from the hazards identified in the risk assessment. The plan’s goals are the overarching principles that communities will base their mitigation decision-making upon. The objectives supply a range of measurable steps that can meet the goals. The plan’s initiatives are specific projects and activities that each jurisdiction identifies, prioritizes, and commits to implementing as a long-term investment in building and maintaining a stronger, more disaster resilient community. Together the goals, objectives, and initiatives form the region’s and each partner’s mitigation strategy.



Goals and Objectives

The goals translate the plan's Guiding Policies (Chapter 6) into a more detailed framework for hazard mitigation decision-making. Five goals serve to protect what is most important to the community: people; infrastructure; property; environment; and economy. Four goals are critical for achieving the plan's vision – the effort required to create a disaster resilient region: building community support; expanding understanding of hazards; implementing effective mitigation strategies; and increasing community awareness.

The objectives define actions or results that can be translated into measurable terms and specific assignments for implementation. Each mitigation initiative identified in the core plan and in the plan partners' annexes tie to one or more objectives.

1. Protect life

- A. Design, build, operate, and maintain disaster resistant communication systems that provide emergency notifications and instructions.
- B. Decrease the impacts of hazards on at risk individuals or special needs populations.¹
- C. Address emergency evacuation needs, prioritizing areas of the community where mitigation strategies are ineffective or cost prohibitive.

- D. Train and equip emergency service providers to effectively respond to hazard events.

2. Protect infrastructure

- A. Maintain and upgrade roads, bridges, and other transportation infrastructure and services to withstand the effects of hazards without prolonged operational disruptions.
- B. Maintain and upgrade utility systems and services to withstand the effects of hazards.
- C. Maintain or replace public buildings such as offices, schools, and other facilities to withstand the effects of hazards.
- D. Strengthen or relocate critical facilities or create protective spaces or infrastructure around them so they are not significantly affected by the effects of hazards

3. Protect property

- A. Minimize the number of properties that are situated in hazard prone locations.
- B. Protect and preserve vital records, data, information technology systems, and facility contents.
- C. Safeguard objects or places that have cultural or historic significance.

¹ Special Needs Populations: Populations whose members may have additional needs before, during, and after an incident in functional areas, including but not limited to: maintaining independence, communication, transportation, supervision, and medical care. Individuals in need of additional response assistance may include those who have disabilities; who live in institutionalized settings; who are elderly; who are children; who are from diverse cultures; who have limited English proficiency or are non-English speaking; or who are transportation disadvantaged. Glossary, National Response Framework.

4. Protect the environment

- A. When possible, use mitigation strategies that preserve ecological functions of natural systems.
- B. Consider mitigation actions that restore natural systems that provide protective measures to surrounding properties.
- C. Continue evaluating the effectiveness of Critical Areas Ordinances and development regulations and revise as necessary to ensure development does not occur in areas prone to hazards or changing environmental conditions that threaten public safety.
- D. Support efforts to increase local jurisdictions' abilities to appropriately respond to hazardous material releases.

5. Sustain the economy

- A. Develop and maintain efforts to prepare recovery plans.
- B. Focus on mitigation strategies that protect medical treatment centers, employment centers, commercial districts, and schools.
- C. Coordinate with regional, state, and federal agencies to identify and prioritize continuity of operations on lifeline transportation corridors and systems.
- D. Strengthen public-private partnerships to reinforce or establish redundancy for critical supply systems.

- E. Develop and maintain continuity of operations plans for essential public safety services.

6. Build community support

- A. Coordinate and provide leadership in the hazard mitigation planning process among local, tribal, state, and federal government entities.
- B. Engage residents, businesses, employers, medical centers, utility companies, subject matter experts, community, and faith-based organizations as partners to help identify opportunities to strengthen the region's hazard resilience.
- C. Update the region's Hazards Mitigation Plan every five years, or sooner if necessary to respond to emerging threats.

7. Expand understanding of hazards

- A. Monitor and evaluate precipitation, groundwater, and stream flow levels, and survey flood high water marks.
- B. Partner with state and federal agencies, colleges, universities, and non-governmental organizations to participate in modeling programs to map high risk hazard areas.
- C. Participate in regional or statewide disaster scenario exercises to assess mitigation, preparedness, response, and recovery capacities, and apply lessons learned to mitigation activities.

- D. Develop a better understanding of the location and mitigation needs of vulnerable and special needs populations within the communities.
- E. Document, share, and act on lessons learned following disaster events.

8. Implement effective mitigation strategies

- A. Focus mitigation efforts on the region's greatest risks and vulnerabilities.
- B. Integrate adopted mitigation strategies into other planning documents such as response plans, comprehensive plans, strategic plans, Critical Areas Ordinances, Capital Facility Plans, zoning code, and development regulations.
- C. Apply for federal mitigation assistance grants and leverage other funding sources to finance mitigation projects.

9. Increase public awareness

- A. Develop and sustain ongoing communication campaigns with residents, customers, businesses, and other stakeholders about the known risks of hazard events and the actions that community members or organizations can take to prevent or minimize losses.
- B. Conduct broad outreach activities to engage all sectors of the community in the hazards mitigation planning process.

Revisions to Goals and Objectives

During the 2014-2016 plan update process, the Hazard Mitigation Workgroup made substantial revisions to the original goals and objectives to better reflect the needs of mitigation planning in the region. The original goals and objectives remained unchanged through the 10 years of the first two plans. The intent of many of the original goals remain, but were rewritten and reorganized to omit goals and objectives that concentrated on emergency response oriented outcomes. While response and mitigation activities have complementary benefits, mitigation activities are this plan's primary focus. The mitigation workgroup also cited the benefits of aligning the region's goals with the state's hazards mitigation goals. As a result of the changes, every mitigation initiative in this plan was reviewed and updated to reflect its relationship to the updated goals and objectives.



Relationship with the Washington State Enhanced State Hazard Mitigation Plan

The Washington State Enhanced Hazard Mitigation Plan provides guidance for hazard mitigation planning statewide. The mission of the state plan is to “Reduce the adverse impacts and losses caused by natural hazard events.”¹ The Thurston region’s goals and objectives are specific to the needs of local communities, but consistency is established with the state plan to effectively coordinate mitigation activities between the state and the region as shown in Table 2.01.

Table 2.0.1: Washington State Enhanced Hazards Mitigation Plan Goals and Objectives

State Goals	State Objectives	Thurston Region Objectives
Protect Life	1.1 Improve systems that provide warning and emergency communications.	1A
	1.2 Develop or amend laws so they effectively address hazard mitigation.	4C, 8B
	1.3 Reduce the impacts of hazards on vulnerable populations.	1B, 7D, 8A
	1.4 Strengthen state and local building code enforcement	8B
	1.5 Train emergency responders.	1D, 7C
Protect Property	2.1 Protect assets, particularly critical assets.	2A,B,C,D; 3A,C
	2.2 Protect and preserve facility contents.	3B
	2.3 Reduce repetitive and severe repetitive losses, including those caused by flooding.	3A
Promote a Sustainable Economy	3.1 Provide incentives for mitigation initiatives.	
	3.2 Continue critical business operations.	5C,D,E
	3.3 Form partnerships to leverage and share resources.	
Protect the Environment	4.1 Develop hazard mitigation policies that protect and improve the environment.	3A,B
Increase Public Preparedness for Disasters	5.1 Improve the understanding of natural hazards and the risk they pose.	7A,B
	5.2 Improve hazard information, including databases and maps.	7B
	5.3 Improve public knowledge of hazards and protective measures so individuals appropriately respond during hazard events.	9A,B
	5.4 Develop new policies to enhance hazard mitigation initiatives.	

Progress Toward Goals and Objectives

The region's planning partners have made steady progress toward fulfilling mitigation goals and objectives. Although the original plan set a goal fulfillment date of 2025, most of the plan objectives will require continuous efforts throughout the region. Hazards mitigation planning is a process that requires multiple stakeholders to continuously monitor, evaluate, and revise the plan as appropriate. Planning partnerships must be maintained and communities must continue to invest in projects and their planning capabilities to succeed.



The successful outcome of many of the plan's objectives will be measured by progress made in the locally adopted mitigation initiatives. Some will take considerable time and resources to complete, but evidence of progress is apparent for several jurisdictions in fulfilling the region's objectives. The following accomplishments have made communities in Thurston County more disaster resilient:

1. **Protect life** – On September 1, 2016, eight communities including Bucoda, Lacey, Olympia, Rainier, Tenino, Tumwater, Yelm and Thurston County launched the operation of an Emergency Alert System. The system is capable of pushing emergency text messages to both subscribers and non-subscribers over a wide or narrow area. The system can also

issue flood, severe weather, and other hazard warnings to subscriber residents, businesses, and property owners within the affected area. Over 7,400 people have registered to receive notifications.

2. **Protect infrastructure** – Several plan partners performed seismic retrofits to essential facilities or constructed new ones. The City of Olympia constructed a new city hall, Thurston County constructed a new Emergency Coordination Center, and the Evergreen State College completed a seismic retrofit of its "A-Dormitory" student residence building. Thurston County applied for a Hazard Mitigation Grant Program grant to elevate three homes on the Deschutes River. The Chehalis Flood Authority

awarded the county a grant to elevate four to six homes in February 2017.

3. **Protect property** – In 2015, Thurston County prepared a repetitive (flood) loss analysis for the entire unincorporated area of the county. Residents and property owners at risk of potential flooding or repetitive flooding were provided information about flood insurance and protective measures to reduce flood losses.
4. **Protect the environment** – In December, 2015 and March 2016, Thurston County used grant funds to demolish and remove two homes and structures along the Deschutes and the Nisqually Rivers. Both properties were at risk of river flooding and embankment erosion. The original owners still own the property, however their deeds prohibit future improvements to the properties. As such, they will remain open space, in perpetuity. In 2016, Thurston County, Lacey, Olympia, and Tumwater updated and adopted their Design and Drainage Control Manuals, zoning codes, and development regulations to make low impact development (LID) the common and preferred approach to stormwater management. LID will improve water quality and reduce risks for urban flooding. The county and the cities also updated their Critical Areas Ordinances to protect wetlands and prevent new development from occurring in geologically hazardous areas. In 2016, the City of Tumwater adopted the Endangered Species Act version of the model floodplain ordinance.
5. **Sustain the economy** – Thurston County, the cities, and other transportation stakeholders participated in the Puget Sound Regional Catastrophic Preparedness Plan. Communities worked together to develop a transportation annex and identified measures to mitigate and prioritize the recovery of the transportation system in the event of a major catastrophe. Between 2011 and 2013, Thurston Regional Planning Council (TRPC) convened a Blue Ribbon Economic Development Panel as part of its Sustainable Thurston Development Plan and identified 38 actions to strengthen the region’s economy. A public safety panel identified 26 actions to promote public safety, 17 of which are related to disaster mitigation and resiliency.
6. **Build community support** – The Thurston Region updated its Hazards Mitigation Plan for the third time. The Emergency Management Council of Thurston County invited 39 cities, tribes, colleges, fire districts, school districts, and other special districts to participate in the mitigation planning process.
7. **Expand understanding of hazards** – Thurston County continues to strengthen its water resources program by expanding its network of monitoring stations. In 2012, the region acquired its first set of earthquake and flood HAZUS-MH model scenarios, enabling the region to

estimate losses from these hazard events. The results of this data are incorporated into this plan. The region's planning partners continue working with the Federal Emergency Management Agency (FEMA) and stakeholders on the Risk MAP process to delineate the Deschutes, Lower Chehalis, and Nisqually river basins, and the coastal area flood risks. In 2016, TRPC launched a planning process to develop a Thurston Climate Adaptation Plan (see Chapter 3.1: Capability Assessment). The planning process performed and documented a Vulnerability Assessment.

- 8. Implement effective mitigation strategies** – Communities struggle with securing adequate funding to implement a wide array of community priorities, not just hazard mitigation projects. This plan continues to exhibit some initiatives that border more on disaster preparedness and response activities than mitigation. The hazard mitigation planning process is one of the few opportunities for multiple partners to convene to discuss hazards and natural disasters.

Naturally, conversations gravitate toward the entire emergency management spectrum. However, the plan's partners find value in documenting and institutionalizing emergency preparedness and response activities in their mitigation plan as it is the only plan, for some communities, that documents some form of hazard response. Each mitigation initiative in this plan includes information about its implementation status.



- 9. Increase public awareness** – Thurston County distributes an annual flood bulletin to residents in flood affected areas. The Emergency Management Council of Thurston County convened six Executive Disaster and Recovery Seminars over the last three years. The hazards mitigation planning process reached out to community members at community events, through social media, press releases, and an open house. The process used an innovative GIS story map to allow people to explore their community hazards on their own from a computer or mobile device. The City of Olympia hosted

numerous public meetings to inform and engage community members on the risks of climate change and the impacts of sea level rise.

Mitigation Activities

This plan identifies seven categories of mitigation activities. These categories were created during the development of the original plan and were reviewed by the Hazards Mitigation Workgroup during the plan update process. The Workgroup members believe the categories sufficiently cover the range of possible projects included in the plan. Each initiative in this plan fulfills one or more of the following categories:

1. **Public Outreach and Information:**

Information delivered in a variety of formats intended to inform and educate community members, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include websites, outreach projects, real estate disclosure, fairs and expos, and school-age and adult education programs.

2. **Plan Coordination and Implementation:**

Activities that support a jurisdiction's hazards mitigation planning process and implementation strategy within their organization and in conjunction with neighboring jurisdictions and relevant stakeholders.

3. **Data Collection and Mapping:**

Actions that relate to the process of gathering and analyzing new data and then mapping

or utilizing the information in such a manner that it improves communities' ability to make informed decisions about increasing their disaster resilience.

4. **Development Regulations:**

Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and stormwater management regulations.

5. **Hazard Preparedness:**

Advance actions that protect people and property during and immediately after a disaster or hazard event. These could include developing or improving warning systems, emergency response services, and the stockpiling of supplies and materials.

6. **Hazard Damage Reduction:**

Actions that involve the modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.

7. **Critical Facilities Replacement/Retrofit:**

Activities targeted specifically at protecting or replacing critical or essential facilities.

Mitigation Initiatives

Central to this plan and the mitigation strategy are the specific projects or activities the planning partners will implement. When implemented, most of these activities – referred to as mitigation initiatives – will have a long-term sustained effect on reducing the loss of life and property from hazardous events.

Most of the plan initiatives will require significant investments in planning, design, and construction or implementation, and may take years to complete. The desired outcomes of this plan are that communities:

- Achieve a greater awareness of their risks;
- Develop a list of practical mitigation activities that are eligible for federal mitigation grants and other funding programs; and
- Implement mitigation activities.

The plan contains two sets of mitigation initiatives:

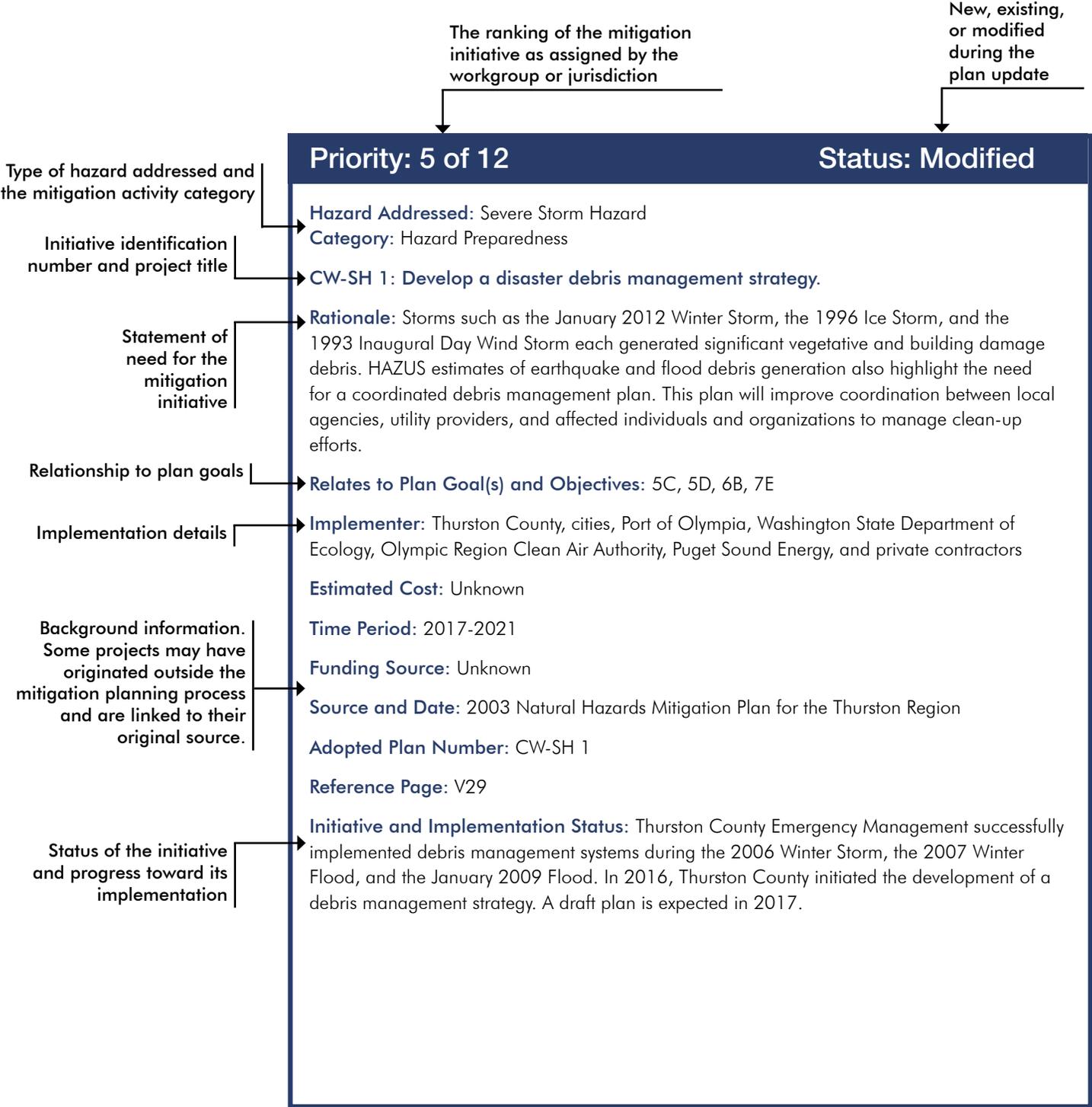
1. **Countywide Mitigation Initiatives:** Identified by members of the Hazards Mitigation Workgroup, these actions are beneficial across the region or significant portions involving more than one jurisdiction. These activities will be overseen by the Emergency Management Council and will require coordination with multiple stakeholders. Thurston County Emergency Management will play a major role in their implementation. This chapter contains these initiatives.

2. **Jurisdiction Initiatives:** Each jurisdiction identifies actions that are specific to their community and takes responsibility for implementing those actions. Each jurisdiction's annex contains these initiatives.

Mitigation Initiative Format

To support organization, every initiative in the plan follows a consistent format that includes: title, rationale or problem statement, priority, hazard addressed, project category, related Goals and Objectives, department or project lead, estimated cost, estimated timeline for implementation, potential funding sources, relationship to other community planning documents – if applicable – and implementation status. Refer to Figure 2.0.1 to view the layout of the mitigation initiative content.

Figure 2.0.1 Sample Mitigation Initiative



Countywide Mitigation Initiatives

The plan contains 12 countywide initiatives that, if implemented, would enhance the region’s understanding of the hazards identified in the risk assessment and help reduce risks to people and property across the county. These initiatives will require continuous coordination among this plan’s existing and future partners over the five-year life of this plan and beyond. Most of these activities are carried over from the previous plan as more work is necessary and some of the data collection and mapping activities constitute ongoing work programs.

The order of implementation may vary from the identified priority due to changing hazard conditions or the criteria of available grant programs. The federal mitigation grant programs are competitive and the highest priority projects aren’t necessarily the appropriate project to submit for any given call for projects.

Table 2.0.2: Summary of Countywide Mitigation Initiatives

Priority	ID-Number	Category	Countywide Mitigation Initiatives
1	CW-MH 4	Hazard Damage Reduction	Create a lifeline transportation route GIS map for the Thurston Region and integrate the data into the Thurston County Emergency Operations Plan and other local planning needs.
2	CW-MH 7	Hazard Preparedness	Strengthen interjurisdictional asset management capabilities.
3	CW-MH 6	Public Information	Develop and maintain a hazards mitigation public outreach strategy.
4	CW-FH 1	Data Collection and Mapping	Develop emergency evacuation routes and update Comprehensive Emergency Management Plans for potential catastrophic dam failure.
5	CW-SH 1	Hazard Preparedness	Develop a disaster debris management strategy.
6	CW-WH 1	Data Collection and Mapping	Map the region’s high risk wildland urban interface communities.
7	CW-MH 1	Data Collection and Mapping	Inventory essential facilities and assets to support hazard mitigation planning and emergency management.
8	CW-EH 2	Data Collection and Mapping	Enhance earthquake modeling capacity and integrate into emergency management work programs.
9	CW-MH 11	Data Collection and Mapping	Inventory and assess sheltering facilities.
10	CW-MH 9	Data Collection and Mapping	Map transportation infrastructure that is subject to frequent flooding or is prone to landslide hazards.
11	CW-MH 10	Plan & Coordination Implementation	Develop and adopt a Climate Adaptation Plan.
12	CW-MH 8	Hazard Preparedness	Strengthen the capabilities to establish and maintain situational awareness of health and medical system and resource coordination during an emergency.

Priority: 1 of 12**Status: Modified****Hazard Addressed:** Multi-Hazard**Category:** Hazard Damage Reduction

CW-MH 4: Create a lifeline transportation route GIS map for the Thurston Region and integrate the data into the Thurston County Emergency Operations Plan and other local planning needs.

Rationale: A “lifeline” transportation route database will assist inspectors with prioritization of post hazard-event transportation facility evaluation and hasten the restoration or redirection of emergency service routes. This effort will focus on essential corridors necessary for public safety. Route and asset information will be mapped in a GIS. Planning will identify key attributes to support field inspections and assessments. Long term maintenance of the database will be considered.

Relates to Plan Goal(s) and Objectives: 1C, 2A, 5C

Implementer: Thurston County Public Works and Emergency Management, cities, Intercity Transit, tribes, school districts, TRPC, and other regional transportation stakeholders

Estimated Cost: Unknown

Time Period: 2017-2021

Funding Source: Unknown

Source and Date: 2003 Natural Hazards Mitigation Plan for the Thurston Region

Adopted Plan Number: CW-MH 4

Reference Page: V25

Initiative and Implementation Status: This was the top ranked initiative in 2009 and 7 of 10 in the 2003 plan. Thurston County transportation stakeholders worked together to develop a Transportation Recovery Annex for the Puget Sound Catastrophic Preparedness plan, but this effort focused on state routes. While Thurston County maintains a comprehensive database of the region’s road network, no work has been performed to develop a local network “lifeline” map that would prioritize post disaster recovery efforts. In 2016, TRPC solicited data from local agencies on road segments prone to flooding and landslides. This data was compiled into GIS and shared with public works departments.

Priority: 2 of 12

Status: Existing

Hazard Addressed: Multi-Hazard

Category: Hazard Preparedness

CW-MH 7: Strengthen interjurisdictional asset management capabilities.

Rationale: During disasters, supplemental and/or specialized resources are often in demand by one or more affected communities. Understanding what resources are available and how to acquire them in a timely manner can minimize losses. This initiative proposes a coordinated phased approach to: 1) Convene partners to identify appropriate resources; 2) Establish an online inventory system and create a process to procure resources; and 4) Maintain the system. This tool will streamline resource requests, tracking, and allocation. Examples of shared assets include specialized teams, personnel, and equipment.

Relates to Plan Goal(s) and Objectives: 1D, 5D

Implementer: Thurston County Emergency Management, cities, fire districts, school districts, and other regional stakeholders

Estimated Cost: \$50,000

Time Period: 2017-2021

Funding Source: Unknown

Source and Date: 2009 Natural Hazards Mitigation Plan for the Thurston Region

Adopted Plan Number: CW-MH 7

Reference Page: 5-17

Initiative and Implementation Status: This initiative was introduced in the 2009 plan update process. It was amended during the 2014-2016 plan update to describe a phased implementation approach. Planning partners reiterated the importance and usefulness of this initiative.

Priority: 3 of 12**Status: Existing****Hazard Addressed:** Multi-Hazard**Category:** Public Information**CW-MH 6: Develop and maintain a hazards mitigation public outreach strategy.**

Rationale: Ongoing public outreach and education for hazard mitigation activities is necessary to engage and inform all sectors of the community to become more disaster resilient.

Messaging will focus on opportunities for households, businesses, and major employers to minimize losses from hazards that threaten the region. Information will be disseminated through a variety of electronic and printed resources, and provided at the annual Emergency Preparedness Expo and other community events.

Relates to Plan Goal(s) and Objectives: 5B, 8A, 8B**Implementer:** Thurston County Emergency Management Council, school districts, colleges and universities, and other regional stakeholders**Estimated Cost:** \$100,000 (Note: \$20,000 Annually)**Time Period:** 2017-2021**Funding Source:** Grants, Emergency Management Council funds, and other local funding**Source and Date:** 2009 Natural Hazards Mitigation Plan for the Thurston Region**Adopted Plan Number:** CW-MH 6**Reference Page:** 5-20

Initiative and Implementation Status: Thurston County Emergency Management regularly attends neighborhood meetings to share resources and information about hazards. TRPC created a GIS hazards story map for the 2016 Emergency Preparedness Expo and the Hazards Mitigation Plan Open House. TRPC staff hosted a hazard mitigation booth at all three expos in 2014-2016. Additional funding resources are required to develop a formal multi-hazards public education program. Other ongoing activities include Thurston County's participation in the Community Ratings System. In 2016, Thurston County became a class II community for its flood mitigation activities, including public outreach.

Priority: 4 of 12

Status: Modified

Hazard Addressed: Flood Hazard

Category: Data Collection and Mapping

CW-FH 1: Develop emergency evacuation routes and update Comprehensive Emergency Management Plans for potential catastrophic dam failure.

Rationale: Emergency Action Plans are available for the Skookumchuck and the Alder and La Grande Dams. Communication protocols between the dam operators and essential emergency management and public safety personnel exist, however there are no established protocols for notifying affected residents and property owners in Thurston County. This effort will develop evacuation plans to identify routes, signage, coordination with staging areas, alert and public information notification systems, and sheltering.

Relates to Plan Goal(s) and Objectives: 1A, 1C, 1D, 5C, 8B

Implementer: Thurston County Emergency Management and regional stakeholders

Estimated Cost: Unknown

Time Period: 2017-2021

Funding Source: Unknown

Source and Date: 2003 Natural Hazards Mitigation Plan for the Thurston Region

Adopted Plan Number: CW-FH 1

Reference Page: V15

Initiative and Implementation Status: This initiative was priority 4 of 9 in the 2009 plan. It was amended during the 2014-2016 plan update process to focus on developing evacuation routes and updating Comprehensive Emergency Management Plans. In 2016, communities in Thurston County subscribed to an alert and notification system, AlertSense. This system enables emergency managers and other authorities to push warnings with instructions to targeted areas in the community through land-line phones, cell phones, text messaging, email, and social media. Dam flood inundation data is available from the Emergency Action Plans. Additional resources are necessary to process this data in a GIS to conduct a vulnerability assessment. Upon completion of this task, this data will assist stakeholders with developing evacuation plans.

Priority: 5 of 12**Status: Modified****Hazard Addressed:** Severe Storm Hazard**Category:** Hazard Preparedness**CW-SH 1: Develop a disaster debris management strategy.**

Rationale: Storms such as the January 2012 Winter Storm, the 1996 Ice Storm, and the 1993 Inaugural Day Wind Storm each generated significant vegetative and building damage debris. HAZUS estimates of earthquake and flood debris generation also highlight the need for a coordinated debris management plan. This plan will improve coordination between local agencies, utility providers, and affected individuals and organizations to manage clean-up efforts.

Relates to Plan Goal(s) and Objectives: 5C, 5D, 6B, 7E**Implementer:** Thurston County, cities, Port of Olympia, Washington State Department of Ecology, Olympic Region Clean Air Authority, Puget Sound Energy, and private contractors**Estimated Cost:** Unknown**Time Period:** 2017-2021**Funding Source:** Unknown**Source and Date:** 2003 Natural Hazards Mitigation Plan for the Thurston Region**Adopted Plan Number:** CW-SH 1**Reference Page:** V29

Initiative and Implementation Status: Thurston County Emergency Management successfully implemented debris management systems during the 2006 Winter Storm, the 2007 Winter Flood, and the January 2009 Flood. In 2016, Thurston County initiated the development of a debris management strategy. A draft plan is expected in 2017.

Priority: 6 of 12

Status: Existing

Hazard Addressed: Wildland Fire Hazard

Category: Data Collection and Mapping

CW-WH 1: Map the region’s high risk wildland urban interface communities.

Rationale: The methodology for determining risk for wildfire relies on outdated analysis performed by the Washington State Department of Natural Resources (DNR) that forms the basis of the wildland urban interface fire risk assessment in this plan. Local protection fire districts need updated data and maps that reflect areas of the community that are at risk for wildland fires. This information would assist communities in developing wildfire protection plans, community education, and mitigation activities.

Relates to Plan Goal(s) and Objectives: 1B, 3A, 7B

Implementer: Thurston County Association of Fire Chiefs, DNR, Emergency Management Council, and TRPC.

Estimated Cost: 50,000.

Time Period: 2017-2021

Funding Source: Grants and in-kind staff resources from local fire districts and community development and planning departments.

Source and Date: 2009 Natural Hazards Mitigation Plan Adopted Plan Number: CW-WH 1

Reference Page: 5-20

Initiative and Implementation Status: Thurston County is not identified as a high wildfire priority area and is not presently eligible for DNR’s Community Assistance Grant Program. Regional partners will continue working with the Thurston County Fire Chiefs Association to explore additional data sources for mapping wildland urban interface communities. In 2016, TRPC prepared wildland fire urban interface maps for its Climate Adaptation Plan Vulnerability Assessment. This data will be evaluated for future updates to assess risk in the wildland fire hazard profile.

Priority: 7 of 12**Status: Existing****Hazard Addressed:** Multi-Hazard**Category:** Data Collection and Mapping**CW-MH 1: Inventory essential facilities and assets to support hazard mitigation planning and emergency management.****Rationale:** The region continues to grow and critical infrastructure information changes. Maintaining an accurate and comprehensive critical infrastructure database can serve a variety of essential operational and planning functions in the region.**Relates to Plan Goal(s) and Objectives:** 2D, 6C, 8A**Implementer:** Thurston County Emergency Management and regional Stakeholders**Estimated Cost:** \$15,000 to develop. Will require annual maintenance.**Time Period:** 2017-2021**Funding Source:** Unknown**Source and Date:** 2003 Natural Hazards Mitigation Plan for the Thurston Region**Adopted Plan Number:** CW-MH 1**Reference Page:** V19**Initiative and Implementation Status:** This initiative was ranked 7 of 9 in the 2009 plan. Significant progress has been made on this initiative. In 2012 and 2015, TRPC coordinated data collection efforts with hazard mitigation partners to compile and update a critical infrastructure database. The current efforts have been completed on an as needed basis, but should be formalized to improve the reliability and the availability of current data to support mitigation planning and vulnerability assessments using GIS and tools such as HAZUS multi-hazard modeling software.

Priority: 8 of 12

Status: Modified

Hazard Addressed: Earthquake Hazard

Category: Data Collection and Mapping

CW-EH 2: Enhance earthquake modeling capacity and integrate into emergency management work programs.

Rationale: Very few tools and resources are available to communities to assess vulnerabilities from the effects of earthquakes. The region will continue efforts to use HAZUS multi-hazard modeling software to evaluate the impacts of earthquakes on population, infrastructure, and services. The region will partner with Washington State Emergency Management Division and FEMA Region X to explore opportunities to build local capacity to build, operate, and maintain a HAZUS model to support mitigation planning and other emergency support functions.

Relates to Plan Goal(s) and Objectives: 1D, 1C, 7B, 7C, 7D, 8B

Implementer: Thurston County Emergency Management and other regional Stakeholders

Estimated Cost: Unknown

Time Period: 2017-2021

Funding Source: Unknown

Source and Date: 2003 Natural Hazards Mitigation Plan for the Thurston Region

Adopted Plan Number: CW-EH 2

Reference Page: V15

Initiative and Implementation Status: This initiative was identified as priority 8 of 9 in the 2009 plan. Thurston County and TRPC worked with FEMA Region X and provided essential facility data to support the development of a series of HAZUS earthquake model scenarios. The results of these scenarios are included in the earthquake risk assessment. Additional support from FEMA and Washington State is necessary to support staff training to build, operate, and maintain local HAZUS models or to develop a statewide framework for building regional models in coordination with local governments. More research is necessary to determine the scope and cost of developing, running, and maintaining a HAZUS model for the Thurston Region.

Priority: 9 of 12

Status: New

Hazard Addressed: Multi-Hazard
Category: Data Collection and Mapping

CW-MH 11: Inventory and assess sheltering facilities.

Rationale: People are often temporarily displaced from their homes during and after disaster events. Communities in Thurston County have identified facilities such as schools that may serve as emergency shelters, however there is no comprehensive inventory of such facilities and their characteristics. A countywide assessment of sheltering facilities will collect information such as capacity, availability of restrooms, kitchens, backup generators, and other sheltering requirements. This information will assist emergency managers with planning and supporting sheltering asset management and operations during disaster events.

Relates to Plan Goal(s) and Objectives: 1B, 6B, 9B

Implementer: Thurston County Emergency Management, cities, school districts, and other regional stakeholders

Estimated Cost: \$25,000

Time Period: 2017-2021

Funding Source: TBD

Source and Date: 2017 Hazards Mitigation Plan

Adopted Plan Number: N/A

Reference Page: N/A

Initiative and Implementation Status: The Hazards Mitigation Workgroup identified this initiative during the plan update process.

Priority: 10 of 12

Status: New

Hazard Addressed: Multi-Hazard

Category: Data Collection and Mapping

CW-MH 9: Map transportation infrastructure that is subject to frequent flooding or is prone to landslide hazards.

Rationale: Numerous road segments and culverts are subject to flooding or the effects of landslides during periods of above normal rainfall. These facilities are routinely closed for public safety, resulting in temporary or prolonged detours that delay travelers and the delivery of emergency services. Public Works maintenance crews have first-hand knowledge of these locations, but they are not systematically mapped. Developing a GIS database of these facilities would assist with planning transportation projects and mitigating potential hazardous situations. This data would also be used for assessing vulnerability and increased risks to transportation infrastructure from the effects of climate change. This initiative's activities will consist of data collection, mapping, and vulnerability analysis.

Relates to Plan Goal(s) and Objectives: 2A, 2B, 8B

Implementer: TRPC and regional stakeholders

Estimated Cost: \$12,000

Time Period: 2016-2017

Funding Source: National Estuary Program and Watershed Protection and Restoration Grant and TRPC Regional Transportation Program Funding

Source and Date: 2017 Hazards Mitigation Plan

Adopted Plan Number: N/A

Reference Page: N/A

Initiative and Implementation Status: This is a new initiative and progress is already underway. This task is being completed under the development of a Thurston Climate Adaptation Plan. This plan will assess climate change vulnerabilities, risks, and impacts and identify adaptation strategies and actions for Thurston County communities in watersheds that drain to the Puget Sound. The Climate Adaptation Plan is expected to be completed by the end of 2017. Likely, the vulnerability analysis and impacts will lead to the development of flood and landslide mitigation projects as part of future updates to this plan.

Priority: 11 of 12**Status: New****Hazard Addressed:** Multi-Hazard**Category:** Plan Coordination and Implementation**CW-MH 10: Develop and adopt a Climate Adaptation Plan.**

Rationale: Preparing for and adjusting to the effects of a warming world — is now “unavoidable,” the Intergovernmental Panel on Climate Change (IPCC) — the United Nations’ climate research arm — concluded in its 2007 climate assessment. Even the most stringent efforts to reduce greenhouse gases “cannot avoid further impacts of climate change in the next few decades,” the report explained. TRPC received a U.S. EPA National Estuary Program (NEP) grant administered by the Washington State Department of Commerce to draft a watershed-based climate adaptation plan that will recommend actions Thurston County stakeholders could take to prepare for and cope with floods, droughts, wildfires, and other climate change-exacerbated hazards in the decades ahead. The planning work — which began in late 2015 and will conclude in late 2017 — includes: researching and analyzing climate change projections; assessing regional climate change vulnerabilities and risks; developing adaptation strategies and conducting benefit-cost analyses; and, presenting TRPC policymakers a draft plan with adaptation recommendations.

Relates to Plan Goal(s) and Objectives: 4A, 4B, 4C, 5B, 7D, 8B**Implementer:** TRPC and regional stakeholders**Estimated Cost:** \$270,000**Time Period:** 2015-2017**Funding Source:** National Estuary Program grant and TRPC Regional Transportation Program funding (funding secured)**Source and Date:** Creating Places Preserving Spaces, a Sustainable Development Plan for the Thurston Region**Adopted Plan Number:** E-2.1**Reference Page:** 211**Initiative and Implementation Status:** The adaptation plan’s vulnerability analysis will lead to flood and landslide mitigation projects that will be included in future updates to this plan.

Evaluation of Mitigation Initiatives: This is a new initiative and progress will be reported in the next plan update cycle.

Priority: 12 of 12

Status: Modified

Hazard Addressed: Multi-Hazard

Category: Hazard Preparedness

CW-MH 8: Strengthen the capabilities to establish and to maintain situational awareness of health and medical system and resource coordination during an emergency.

Rationale: Prior to an emergency, the public health and health care system in Thurston County must work together to meet the needs of residents. The accurate coordination of information supports decision making processes of local, state, tribal, and private sector partners to carry out effective response measures to reduce harm and exposure to residents.

Partner's use of an information system will provide multi-agency coordination and better assessment of risk, so effective mitigation and response strategies can be implemented. Resources available include patient movement tools such as Region 3 Healthcare Preparedness Coalition Disaster Medical Coordination Center, National Disaster Medical System, and Washington State Disaster Medical Control Center.

Relates to Plan Goal(s) and Objectives: 1D, 5B, 5D

Implementer: Thurston County Health and Social Services Department of Health 7 Region 3 Healthcare Preparedness Coalition

Estimated Cost: Unknown

Time Period: 2017-2021

Funding Source: Grants and Local Match

Source and Date: 2009 Natural Hazards Mitigation Plan for the Thurston Region

Adopted Plan Number: CW-MH 8

Reference Page: 5-24

Initiative and Implementation Status: This initiative was ranked 9 of 9 in the 2009 plan, and was revised to include additional partners that will be responsible for its implementation.

Identification and Preparation of Mitigation Initiatives

Much of this plan is devoted to describing the hazard mitigation planning process, identifying and describing what hazards threaten our communities, and assessing the vulnerabilities or risks from impacts of these hazards. All this information serves as the foundation for informing and developing a mitigation strategy. Thurston Regional Planning Council provided guidance to the Hazards Mitigation Workgroup members who in turn facilitated and guided their jurisdiction's initiative identification process.

Thurston Regional Planning Council provided numerous resources to assist the planning partners with their initiative development process including:

- Updated Risk Assessment
- Hazard delineation maps
- Population, employment, key assets, and other land use hazard exposure analysis tables
- An online GIS "story map" of local infrastructure and assets impacted by hazards
- Updated draft copy of the plan's Goals and Objectives
- A copy of their previous annex with the initiatives
- An updated mitigation initiative form with instructions

- FEMA's "Local Mitigation Planning Handbook"
- FEMA's "Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards"
- A benefit cost review worksheet

The process for evaluating vulnerabilities and identifying a range of alternative mitigation actions to reduce actual and potential hazard exposure varied among jurisdictions depending on their capabilities and resources. In general, workgroup members collaborated with staff and or committees within their jurisdictions that were most familiar with their infrastructure, facilities, key assets, and services, within their incorporated boundaries or service areas. Local planning partners referenced a variety of jurisdiction-specific resources such as their comprehensive plans, strategic plans, emergency management plans, capital facility plans, after action review debriefings, other planning documents, and local knowledge to compile existing mitigation activities. Jurisdictions also considered existing initiatives from the previous plan, and identified new and original initiatives identified as part of this plan's update process.

Benefit Cost Review

A benefit-cost review assists jurisdictions to select mitigation initiatives that warrant inclusion in their mitigation plan, thus allowing them to focus their efforts on practicable solutions. The benefit-cost review needs to be comprehensive to the extent that it can evaluate the monetary as well as the non-monetary benefits and costs associated with each action such as quality

of life, community support, or environmental benefits. Plan partners performed a benefit-cost review for each of the initiatives considered for their strategy. This simple and subjective assessment shows whether the costs are reasonable compared to the probable benefits.

Identifying the project that offers the greatest impact for the lowest cost isn't necessarily always the right solution for the entities involved. The benefit-cost review tool can help point out which activities might better align with a community's values. The tool is useful in comparing a range of mitigation actions to solve a particular problem. For example, a jurisdiction could consider alternative mitigation activities for a home that is in a flood plain and is subject to repetitive flooding. The jurisdiction performs a benefit-cost review for three different activities: 1. Help the owner elevate the home above base-flood elevation; 2. Provide relocation assistance to move the home to higher

ground, out of the flood plain; or 3. Buy the property from the home owner and remove all the structures from the flood plain. Each option includes varying measurable benefits as well as unique challenges that should be evaluated to select the best solution.

The participating jurisdictions used a "Mitigation Action Evaluation Worksheet" for the benefit-cost review. This worksheet follows a process with criteria offered in FEMA's "Local Mitigation Handbook." Using the mitigation categories as a starting point, the jurisdiction ranked two or more mitigation activities for their benefits and costs across several criteria by assigning points to the project in each category using the values shown below:

Benefits		Neutral	Costs	
+2	+1	0	-1	-2
Great benefits/ highly effective or high chance of implementation	Moderate effectiveness or good chance of implementation	Not applicable or neutral	Not effective or somewhat challenging to implement	Could cause indirect adverse effects or is very difficult to implement

For each of the projects listed on a worksheet, the following criteria were assigned a positive or negative score:

- **Life safety.** How effectively will the action protect lives and prevent injuries?
- **Property protection.** How significant will the action be at eliminating or reducing damage to structures and infrastructure?
- **Technical.** Is the mitigation action technically feasible? Is it a long-term solution? Eliminate actions that, from a technical standpoint, will not meet the goals.
- **Political.** Does the public support the mitigation action? Is there the political will to support it?
- **Legal.** Does the community have the authority to implement the action?
- **Environmental.** What are the potential environmental impacts of the action? Will it comply with environmental regulations?
- **Social.** Will the proposed action adversely affect one segment of the population? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?
- **Administrative.** Does the community have the personnel and administrative capabilities to implement the action and maintain it, or will outside help be necessary?
- **Local champion.** Is there a strong advocate for the action or project among local departments and agencies who will support the action's implementation?
- **Other community objectives.** Does the action advance other community objectives, such as capital improvements, economic development, environmental quality, or open space preservation? Does it support the policies of the comprehensive plan?

Jurisdictions tallied the score at the end of the project row. The project that earned a high score offers a high benefit with minimal implementation challenges. Conversely, a project with a low score offers fewer benefits and greater implementation challenges.

*Find examples of Hazard Mitigation Workgroup and planning partner forms and tools in **Appendix B**.*

Prioritization of Countywide Initiatives

For the plan update, the Hazard Mitigation Workgroup used a numerical ranking process to sort the countywide initiatives from highest to lowest priority. Each member of the workgroup used an online survey to perform an initial independent ranking of the initiatives to reflect their priorities. They shared the preliminary results at the next workgroup meeting. The workgroup then discussed the benefits and the significance of each initiative related to the plan's Goals and Objectives and the needs of the region. All the initiatives were subsequently re-prioritized in a workgroup setting to resolve competing priorities. After three iterations of member ranking, the workgroup reached consensus. Table 2.0.2 reflects the results of the countywide mitigation initiative prioritization process.

Prioritization of Jurisdictions' Mitigation Initiatives

Each jurisdiction prioritizes their mitigation activities based on their needs, local conditions, and community values. In general, they are prioritized according to their overall benefit to the community and their relationship to the plan's goals and objectives. Each community describes their mitigation initiative prioritization process in their annex.

Endnotes

¹ Washington State Emergency Management Division. 2014. Washington State Enhanced Mitigation Plan, Element C: Mitigation Strategy

