

# Appendix B

## Capability Assessment Documentation

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# Hazard Mitigation Capability Self-Assessment Questionnaire

Each community has unique capabilities, including authorities, policies, programs, staff, funding, and other resources available to accomplish mitigation and reduce long-term vulnerability. By reviewing the existing capabilities in your jurisdiction, your planning team and the Hazard Mitigation Planning Workgroup can identify capabilities that currently reduce disaster losses or could be used to reduce losses in the future.

Please work with others in your organization if you are unsure how to answer any of the questions. This assessment includes 20 questions and should take approximately 30 minutes. If you have any questions, please contact Paul Brewster at 360-741-2526 or [brewstp@trpc.org](mailto:brewstp@trpc.org).

## Questions

### **General Information**

1. Please select your organization type.
  - a. Tribe
  - b. City or County
  - c. School District or Education Partner
  - d. Fire District
  - e. Special Purpose Utility District
  - f. Transit Agency
  - g. Port
  - h. College/University
  - i. Other
2. Please list your name, position, organization, and email address.
  - a. Open answer
3. Has your organization previously adopted a FEMA approved Hazard Mitigation Plan?
  - a. Yes
  - b. No

4. As part of the 4<sup>th</sup> Edition Hazard Mitigation Plan for the Thurston Region update process, is your organization planning to produce and adopt an annex to the Hazards Mitigation Plan for the Thurston Region?
  - a. Yes
  - b. No
  - c. Maybe

### ***Hazard Mitigation Capabilities***

5. How do you rate your organization's leadership (elected officials and management) support for participating in the Hazard Mitigation Plan Update?
  - a. Strongly supportive
  - b. Supportive
  - c. Somewhat supportive
  - d. Isn't supportive
6. How do you rate your organization's familiarity with Hazard Mitigation Planning?
  - a. Very familiar
  - b. Familiar
  - c. Somewhat familiar
  - d. Unfamiliar
7. Does your jurisdiction periodically review its progress, opportunities, and challenges with implementing your adopted mitigation strategy?
  - a. Yes
  - b. No
  - c. Not sure
8. Does your jurisdiction have any means to measure any changes to your organization's resiliency or vulnerability to any hazards? (e.g., rate of occurrence of destructive hazard events, tracking new development in vulnerable areas, the rate of occurrence of first responder incidents related to natural disasters)
  - a. Yes – please describe
    - i. Open answer
  - b. No
  - c. Not sure

9. Does your organization conduct any policy maker or public education or outreach to keep your community informed about hazards and how your community can continue to be involved in the mitigation planning process? (e.g., informational brochures, webpages, hazard preparedness presentations, community meetings or workshops)
- a. Yes – please describe
    - i. Open answer
  - b. No
  - c. Not sure
10. CITIES & COUNTIES ONLY – Is there staff who can document how your jurisdiction is using any of the following regulatory acts to strengthen your community’s hazard mitigation policies or strategies? If so, please include their name and email address.
- State Environmental Policy Act (SEPA)
  - Building Code
  - Fire Code
  - Clean Air Act
  - Clean Water Act
  - Endangered Species Act (ESA)
  - Washington Floodplain Management Law (WAC 173-158, RCW 86.16)
  - Shoreline Management Act
  - Growth Management Act
  - Watershed Management Act
  - Critical Areas Ordinances
- a. Yes – include name and email
    - i. Open answer
  - b. No
  - c. Not sure
11. CITIES & COUNTIES ONLY – Does your jurisdiction participate in the National Flood Insurance Program (NFIP)?
- a. Yes
  - b. No
  - c. Not sure

12. CITIES & COUNTIES ONLY – If yes to NFIP, is there staff who can document how your community maintains compliance with the NFIP (e.g. last community assistance visit, strategies to address repetitive losses and severe repetitive losses, etc.)? If so, please include their name and email address.
- a. Yes – include name and email
    - i. Open answer
  - b. No
  - c. Not sure
13. CITIES & COUNTIES ONLY – Is there staff who can document how your jurisdiction regulates development in or near floodplains? If so, please include their name and email address.
- a. Yes – include name and email
    - i. Open answer
  - b. No
  - c. Not sure
14. What other tools and opportunities come to mind that could support your organization’s capability to perform hazard mitigation planning?
- a. Open answer
15. What obstacles does your organization encounter with implementing hazard mitigation programs, and projects? (Select all that apply)
- a. Limited community support
  - b. Political barriers
  - c. Lack of funding
  - d. Lack of knowledge/expertise within the organization
  - e. Lack of staff time
  - f. Other (open answer)

**Regional Planning Process**

16. Is your organization able to provide TRPC information about your physical assets such as critical and capital facilities and building inventory in support of developing a risk assessment?
- a. Yes
  - b. No
  - c. Not sure

17. Please check all the expertise that you plan to include on your organization's planning team.

- a. Public information office/Communications
- b. Planning/Community development
- c. Fire services
- d. Police services
- e. Emergency management
- f. Stormwater management
- g. Building code enforcement
- h. Transportation (roads/bridges)
- i. Public works/Operations and Maintenance
- j. Other – please describe
  - i. Open answer

18. What types of outreach activities could your organization perform to inform your public/constituents about the hazard mitigation plan update process? (Select all that apply)

- a. Council/Board/Commission meeting announcements
- b. Email notifications
- c. Social media posts
- d. Newspaper articles
- e. Radio announcements
- f. Television or internet videos
- g. Public events
- h. Utility insert
- i. Newsletter
- j. Other (open answer)

19. Please rate your perceived vulnerability to various hazards. This will help inform which hazards should be considered in the risk assessment.

Hazards/Threats	Low Vulnerability	Moderate Vulnerability	High Vulnerability
Civil Unrest			
Climate Change			
Critical shortage			
Cyber attack			
Dam Failure			
Disease			
Drought			
Earthquake			
Extreme heat			
Flooding			
Hazardous Materials Incident			
Landslide			
Severe storm/weather			
Space weather/Solar wind			
Terrorism			
Tsunami			
Volcanic			
Wildland fire			

20. Would your organization be interested in attending annual or semi-annual hazard mitigation meetings to build regional connections and discuss mitigation strategy progress?

- a. Yes
- b. No

# Strengths, Weaknesses, Obstacles, and Opportunities (SWOO) Assessment Questions

A Strengths, Weaknesses, Obstacles, and Opportunities (SWOO) Assessment can assist communities with identifying both weaknesses and opportunities for strengthening resiliency through collaborative partnerships at the regional level and for each jurisdiction. Section I assesses regional risk management activities to support the development of the core Hazard Mitigation Plan. Section II assesses individual jurisdiction activities that can support annex development.

Rate each capability statement in sections I and II as a strength, weakness, not applicable, or don't know. For statements that are city and county regulatory functions, special purpose districts may select "not applicable."

*Example responses for each statement*

Strength     Weakness     Not applicable     Don't Know

A. What jurisdiction do you represent?

## 1. Regional Risk Reduction Partnerships and Activities

### ***Emergency Management***

1. Emergency management roles and responsibilities are clearly defined for agencies in the Thurston County region.
2. There is strong and ongoing emergency management collaboration and coordination between the tribes, cities, county, special purpose districts, neighboring jurisdictions, state, and federal agency partners.
3. All relevant stakeholders are actively engaged in strengthening the region's resiliency to natural and other technological hazards.

### ***Hazard Mitigation Planning***

4. Natural hazards are adequately mapped within the Thurston County region.
5. Planning partners are knowledgeable about hazards and their impacts.
6. Planning partners have an effective regional planning framework to share information, resources, and enhance hazard mitigation planning capabilities.
7. Planning partners are involved in implementing the countywide mitigation strategy to improve the region's resiliency to natural hazards.

### ***Public Awareness and Information Accessibility***

8. Thurston County residents have a good understanding of natural hazards and their risks to people, property, and the environment.
9. Thurston County residents know where to find information about hazards.
10. There is strong public support for hazard mitigation within Thurston County.
11. Appropriate and timely emergency warning systems are in place.

## **2. Jurisdiction Hazard Mitigation Activities**

### ***Hazard Mitigation Planning***

12. Your jurisdiction is highly capable of assessing and mitigating risk from natural hazards.
13. Your jurisdiction has a policy framework to equitably prioritize mitigation actions that benefit your community's socially vulnerable populations.
14. Your jurisdiction has the capability to account for the effects of climate change, changes in population, and changes in land use patterns to assess your hazard risks.
15. Your jurisdiction has an effective mitigation strategy to address your highest risk hazards.
16. Your jurisdiction actively seeks funding and resources to implement your priority mitigation actions.

### ***Land Use Regulations***

17. Your jurisdiction enforces its building and public safety codes, ordinances, and standards to reduce hazard risks in your community.
18. Current land uses within identified hazard areas are appropriate for the risk posed by each hazard.
19. Areas that provide natural resource protection are identified and protected within your jurisdiction (e.g. zoning codes, critical areas ordinances, and Shoreline Master Program).

### ***Flood Prevention Programs***

20. Your jurisdiction currently has adopted policies, codes, and regulations that prevent development from occurring inside your special flood hazard areas.
21. Existing flood control systems are effective and well maintained.
22. There is a coordinated program to maintain drainage systems free of debris.
23. Your jurisdiction has an effective program to inform your residents about flood insurance.

### ***Public Awareness and Information Accessibility***

24. Your jurisdiction has an ongoing public outreach strategy to engage the public about efforts to reduce your jurisdiction's risks from natural hazards.

# Strengths, Weaknesses, Obstacles, and Opportunities (SWOO) Assessment Results

*Prepared by Thurston Regional Planning Council, March 31, 2023*

## Purpose

The Federal Emergency Management Administration (FEMA) requires local governments to assess their existing capabilities to understand how best they can support their hazard mitigation strategy. Each agency must also describe their ability to expand and improve the identified capabilities to achieve their mitigation objectives. The Strengths, Weaknesses, Obstacles, and Opportunities (SWOO) Assessment offers the Thurston Region Hazard Mitigation Workgroup planning partners a framework to evaluate their capabilities and identify potential actions to achieve mitigation goals in alignment with FEMA hazard mitigation planning requirements.

## Responses

In March 2023, 13 agencies and stakeholders from the Thurston Hazard Mitigation Planning Workgroup responded to an online SWOO survey. Respondents were instructed to rate their familiarity with 25 emergency management and hazard mitigation planning activities/program statements as an area of “strength”, “weakness”, “not applicable”, or “don’t know.” Special Purpose districts were advised they could respond “not applicable” to questions that were specific to municipal land use and regulatory roles and authorities.

Section 1 (statements 1-11) assessed countywide or multijurisdictional risk management activities to support the development of the core Hazard Mitigation Plan. Section 2 (statements 11-24) assessed individual jurisdiction capabilities to support mitigation actions and annex development. Statements 18-24 were specific to the county and cities.

## Respondents

<p><b>Emergency Dispatch</b> TCOMM 911</p> <p><b>Fire Districts</b> FD 1 &amp; 11 West Thurston Regional Fire Authority FD 6 &amp; SE Thurston Fire Authority FD 8 South Bay Fire FD 9 McLane Black Lake Fire</p> <p><b>Transit</b> Intercity Transit</p>	<p><b>School Districts</b> Tumwater School District</p> <p><b>Utility</b> Thurston PUD</p> <p><b>Municipalities</b> City of Lacey City of Olympia (2 responses) City of Tumwater City of Yelm Thurston County (3 responses)</p>
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## Results

A breakdown of the responses is shown for each statement on the pages that follow.

### Key Findings for Section I, Regional Hazard Mitigation Capabilities

- More effort is needed to actively engage relevant stakeholders in hazard mitigation planning.
- Natural hazards are adequately mapped.
- Planning partners are knowledgeable about hazards and their impacts.
- Most planning partners believe there is an effective regional planning framework for hazard mitigation and are involved in implementing the countywide mitigation strategy.
- More effort is needed to improve residents’ understanding of natural hazards and their risks and their means to access useful information.
- Most planning partners are uncertain if there is strong public support for hazard mitigation.
- More effort is needed to communicate how existing emergency warning systems are operated and evaluated.

## Key Findings for Section II, Jurisdictional Hazard Mitigation Capabilities

- Most planning partners stated they are capable of assessing and mitigating their hazard risks.
- Only half of the partners have a policy framework to prioritize actions that benefit socially vulnerable populations.
- More effort is needed to account for the impacts of climate change for hazard risk assessments.
- Most partners are capable of accounting for changes in population and land use patterns to assess their jurisdiction's risks.
- Most partners believe they have an effective mitigation strategy for their highest risks and are actively seeking funding and resources to implement priority actions.
- Most municipal partners enforce building codes, ordinances, and standards and have appropriate land use designations to reduce their community's risks.
- More effort is needed to inform residents about flood insurance.
- More effort is needed to engage the public about efforts to reduce risks after plans are approved.

## How to use the Results

Planning partners that rated statement with “weakness” or “don’t know” should identify opportunities to strengthen their capabilities. A list of potential actions to support this effort is presented.

This assessment should be used in tandem with the “Mitigation Catalog” and [FEMA’s Mitigation Ideas](#) handbook to consider a range of mitigation actions that can reduce risks and strengthen capabilities to support implementation of the jurisdictions’ mitigation strategies.

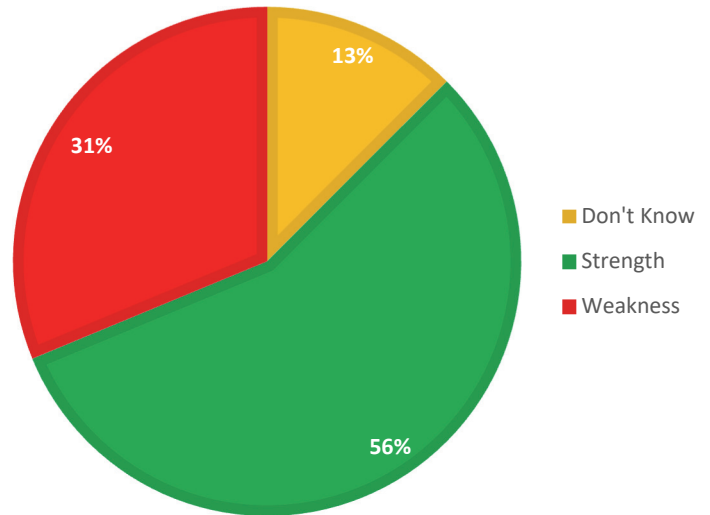
## Section 1. Regional Hazard Mitigation Capability Assessment

### 1. Emergency management roles and responsibilities are clearly defined for agencies in the Thurston County region.

**ASSESSMENT:** The municipalities believe emergency management roles and responsibilities are clearly defined, however TCOMM 911 and the Fire Service agencies believe this area is a weakness.

#### Potential Actions

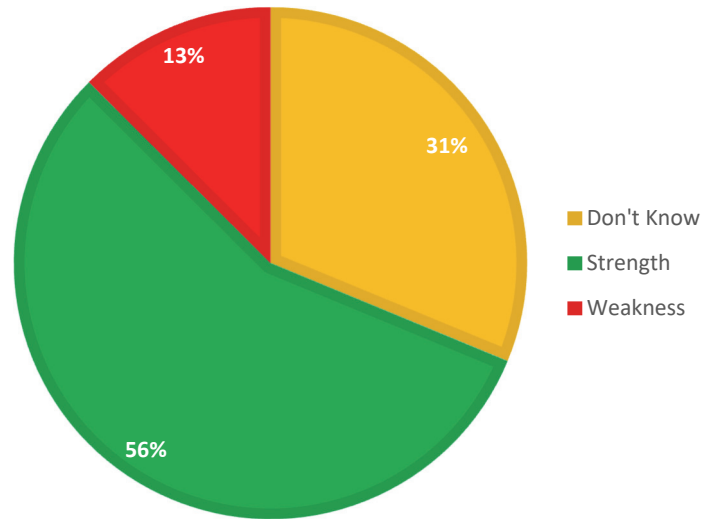
1. Broaden stakeholder involvement in updates to Comprehensive Emergency Management Plans.
2. Conduct training/exercises to build awareness among a broader set of planning partners.
3. Convene joint meetings between the Emergency Management Council, TCOMM 9-1-1 and Fire Chiefs Association and other emergency management partners to strengthen understanding of key roles and responsibilities.



TCOMM 911	Weakness
FD 1 & 11 West Thurston Regional Fire Authority	Weakness
FD 6 & SE Thurston Fire Authority	Weakness
FD 8 South Bay/LEPC	Weakness
FD 9 McLane Black Lake	Weakness
City of Lacey	Strength
City of Olympia	Strength
City of Olympia	Strength
City of Tumwater	Don't Know
City of Yelm	Strength
Thurston County	Strength
Thurston County	Strength
Thurston County	Strength
Tumwater School District	Strength
Intercity Transit	Strength
Thurston PUD	Don't Know

**2. There is strong and ongoing emergency management collaboration and coordination between the tribes, cities, county, special purpose districts, neighboring jurisdictions, state, and federal agency partners.**

**ASSESSMENT:** The majority of the respondents believe there is strong ongoing emergency management coordination and collaboration. Five partners responded they don't know, and two Fire Service partners believe this is a weakness.



**Potential Actions**

1. Create and provide routine orientations/introductions for new staff/positions to become familiar with and network with emergency managers and emergency service providers.
2. Review and update websites to provide easier access to information, plans, and staff contact information.

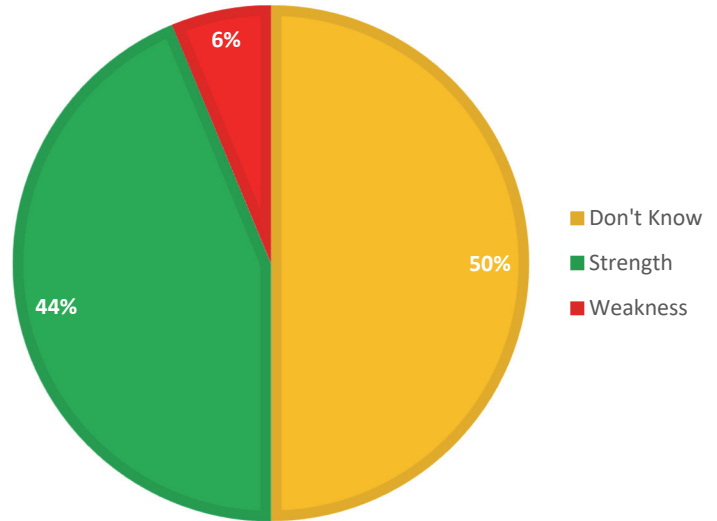
TCOMM 911	Don't Know
FD 1 & 11 West Thurston Regional Fire Authority	Don't Know
FD 6 & SE Thurston Fire Authority	Strength
FD 8 South Bay/LEPC	Weakness
FD 9 McLane Black Lake	Weakness
City of Lacey	Strength
City of Olympia	Don't Know
City of Olympia	Strength
City of Tumwater	Don't Know
City of Yelm	Strength
Thurston County	Strength
Thurston County	Strength
Thurston County	Don't Know
Tumwater School District	Strength
Intercity Transit	Strength
Thurston PUD	Strength

**3. All relevant stakeholders are actively engaged in strengthening the region’s resiliency to natural and other technological hazards.**

**ASSESSMENT:** Half the partners responded they don’t know if relevant stakeholders are actively engaged in strengthening the regions’ resiliency to hazards.

**Potential Actions**

1. Convene an annual meeting of the Hazard Mitigation Planning Workgroup to review progress on countywide mitigation actions and share updates on local implementation efforts.
2. Perform direct outreach to stakeholders to solicit their feedback on risk assessment and mitigation strategy development.
3. Create webpage that reports on the implementation status of all jurisdictions’ mitigation actions.
4. Periodically invite state and federal agency staff to present information about hazards. Thurston County Emergency Management regularly invites speakers to its winter and summer hazards seminar. The Emergency Management Council regularly invites speakers to its Executive Seminars.



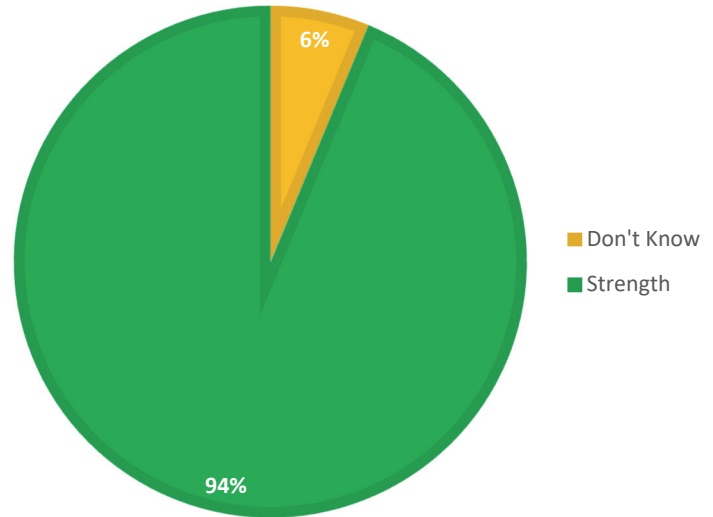
TCOMM 911	Don't Know
FD 1 & 11 West Thurston Regional Fire Authority	Strength
FD 6 & SE Thurston Fire Authority	Don't Know
FD 8 South Bay/LEPC	Weakness
FD 9 McLane Black Lake	Don't Know
City of Lacey	Strength
City of Olympia	Don't Know
City of Olympia	Strength
City of Tumwater	Don't Know
City of Yelm	Strength
Thurston County	Strength
Thurston County	Don't Know
Thurston County	Strength
Tumwater School District	Don't Know
Intercity Transit	Don't Know
Thurston PUD	Strength

**4. Natural hazards are adequately mapped within the Thurston County region.**

**ASSESSMENT:** The majority of the plan partners believe natural hazards are adequately mapped.

**Potential Actions**

1. The Hazard Mitigation Planning Workgroup was briefed on the Washington Department of Natural Resources Landslide Hazard Mapping Program. Cities and the County can apply to this program to map and update landslide hazard information.
2. Continue seeking opportunities to map areas of the community that are at risk of wildland fire hazards.



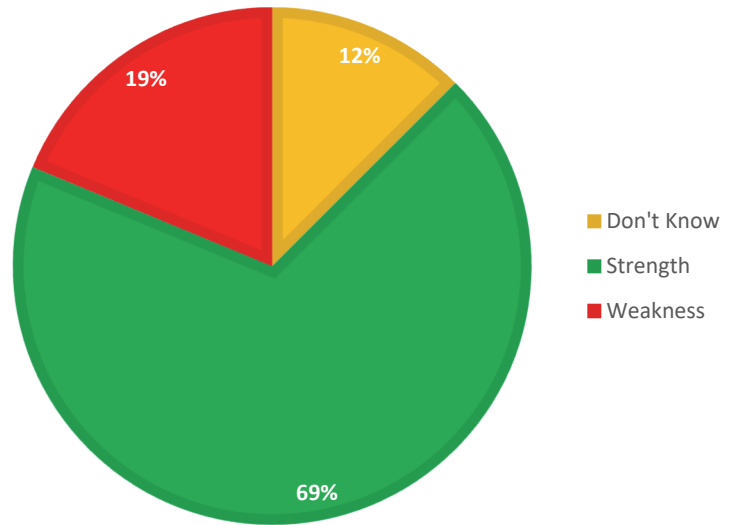
TCOMM 911	Don't Know
FD 1 & 11 West Thurston Regional Fire Authority	Strength
FD 6 & SE Thurston Fire Authority	Strength
FD 8 South Bay/LEPC	Strength
FD 9 McLane Black Lake	Strength
City of Lacey	Strength
City of Olympia	Strength
City of Olympia	Strength
City of Tumwater	Strength
City of Yelm	Strength
Thurston County	Strength
Thurston County	Strength
Thurston County	Strength
Tumwater School District	Strength
Intercity Transit	Strength
Thurston PUD	Strength

**5. Planning partners are knowledgeable about hazards and their impacts.**

**ASSESSMENT:** The majority of the partners are knowledgeable about hazards and their impacts.

**Potential Actions**

Planning partners are encouraged to become familiar with the *Thurston Region Hazards Mitigation Plan* and the *Washington State Enhanced Hazard Mitigation Plan* for information about hazards and impacts that threaten Thurston County.

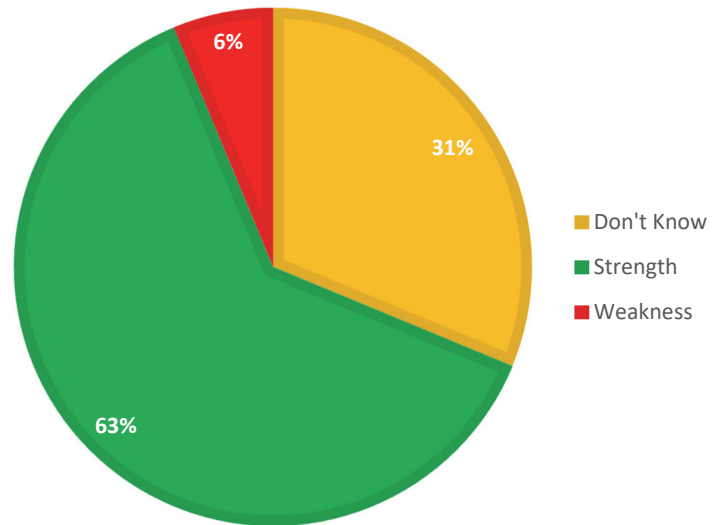


TCOMM 911	Weakness
FD 1 & 11 West Thurston Regional Fire Authority	Weakness
FD 6 & SE Thurston Fire Authority	Strength
FD 8 South Bay/LEPC	Don't Know
FD 9 McLane Black Lake	Don't Know
City of Lacey	Strength
City of Olympia	Strength
City of Olympia	Strength
City of Tumwater	Strength
City of Yelm	Strength
Thurston County	Weakness
Thurston County	Strength
Thurston County	Strength
Tumwater School District	Strength
Intercity Transit	Strength
Thurston PUD	Strength

**6. Planning partners have an effective regional planning framework to share information, resources, and enhance hazard mitigation planning capabilities.**

**ASSESSMENT:** The majority of the partners believe there is an effective regional planning framework to support hazard mitigation planning.

The Thurston Region has convened a Hazard Mitigation Planning Workgroup to develop and update the region’s plan since 2003. In 2022-2023, partners are updating the fourth edition.



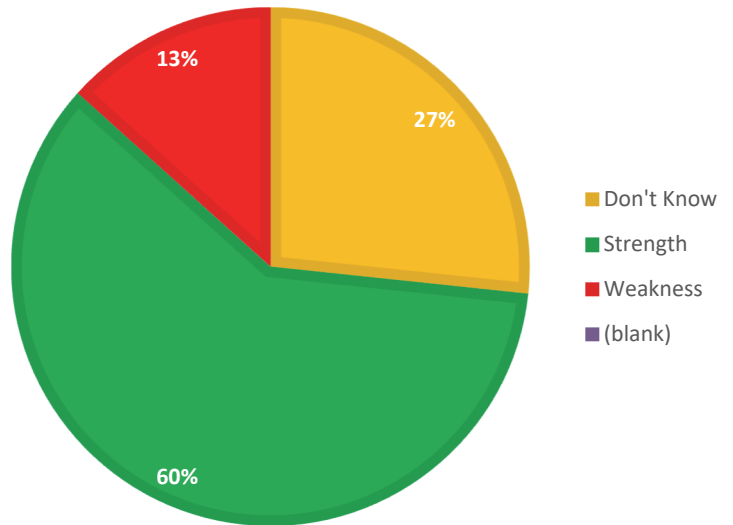
**Potential Actions**

1. Identify other strategies to engage planning partners to update the region’s plan and document it in the plan maintenance section.
2. Conduct an After-Action Review or postmortem at the end of the planning process to document what worked well and areas that can be improved.

TCOMM 911	Don't Know
FD 1 & 11 West Thurston Regional Fire Authority	Don't Know
FD 6 & SE Thurston Fire Authority	Don't Know
FD 8 South Bay/LEPC	Strength
FD 9 McLane Black Lake	Strength
City of Lacey	Strength
City of Olympia	Don't Know
City of Olympia	Strength
City of Tumwater	Don't Know
City of Yelm	Strength
Thurston County	Strength
Thurston County	Strength
Thurston County	Strength
Tumwater School District	Weakness
Intercity Transit	Strength
Thurston PUD	Strength

**7. Planning partners are involved in implementing the countywide mitigation strategy to improve the region’s resiliency to natural hazards.**

**ASSESSMENT:** The majority of the partners believe there is strong involvement in implementing the countywide mitigation strategy, however there are six partners who are unfamiliar with the level of involvement or believe it needs work.



**Potential Actions**

1. Convene an annual meeting of the Hazard Mitigation Planning Workgroup to monitor and report on progress on countywide mitigation actions.
2. Expand stakeholder involvement in shaping, implementing, and evaluating the countywide mitigation actions.

TCOMM 911	Don't Know
FD 1 & 11 West Thurston Regional Fire Authority	Strength
FD 6 & SE Thurston Fire Authority	Don't Know
FD 8 South Bay/LEPC	Weakness
FD 9 McLane Black Lake	
City of Lacey	Strength
City of Olympia	Don't Know
City of Olympia	Strength
City of Tumwater	Strength
City of Yelm	Strength
Thurston County	Weakness
Thurston County	Strength
Thurston County	Strength
Tumwater School District	Don't Know
Intercity Transit	Strength
Thurston PUD	Strength

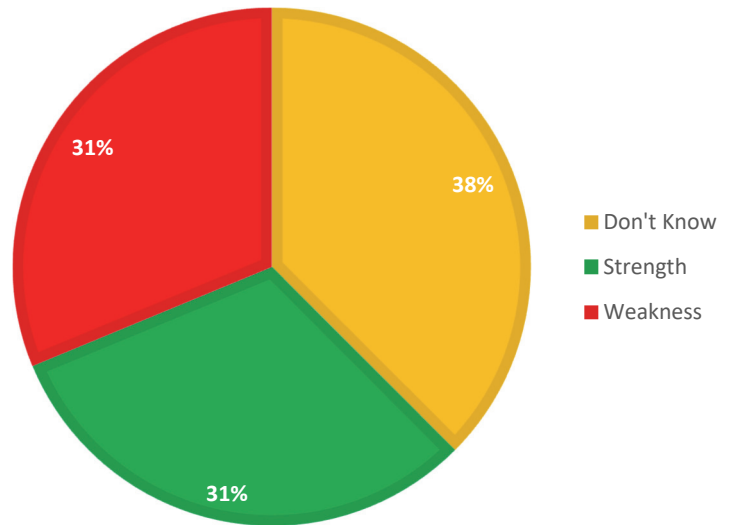
**8. Thurston County residents have a good understanding of natural hazards and their risks to people, property, and the environment.**

**ASSESSMENT:** Respondents are divided about residents’ understanding of hazards and their risks to the community about one-third each as a weakness, strength, or don’t know. In general, partners agree that public education and outreach is an area that can always be improved.

The Thurston County Emergency Management Council and other emergency services partners host an annual Emergency Preparedness Expo. Historically, these events were effective opportunities to inform the public about hazards and their risks. Covid 19 paused this well-attended event over the last three years. It is resuming to an in-person event in September 2023.

**Potential Actions**

1. Using a variety of media and modes of communication, create an ongoing public education campaign about hazard risks and steps that residents and businesses can take to reduce their losses.
2. Make information about hazards and preparedness accessible at other non-emergency community events such as festivals and other community planning projects.
3. Partner with community outreach specialists and Public Information Officers to routinely promote hazard mitigation and preparedness information.



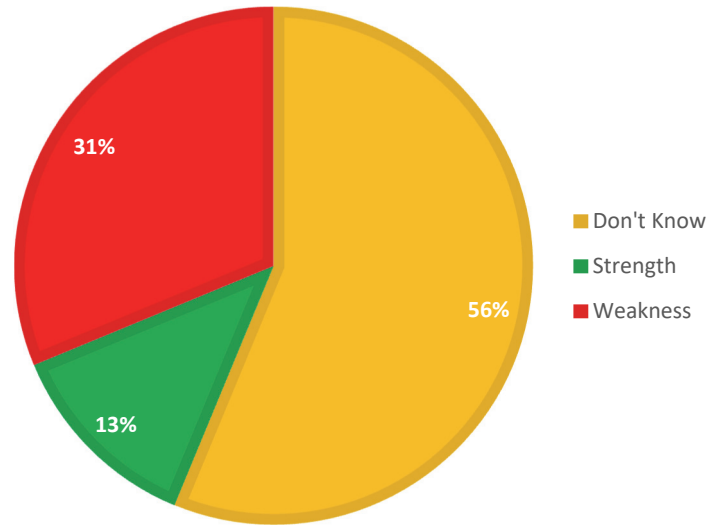
TCOMM 911	Don't Know
FD 1 & 11 West Thurston Regional Fire Authority	Strength
FD 6 & SE Thurston Fire Authority	Don't Know
FD 8 South Bay/LEPC	Weakness
FD 9 McLane Black Lake	Don't Know
City of Lacey	Strength
City of Olympia	Strength
City of Olympia	Strength
City of Tumwater	Don't Know
City of Yelm	Weakness
Thurston County	Weakness
Thurston County	Weakness
Thurston County	Weakness
Tumwater School District	Don't Know
Intercity Transit	Strength
Thurston PUD	Don't Know

**9. Thurston County residents know where to find information about hazards.**

**ASSESSMENT:** The majority of partners don't know or believe more work is needed to improve residents' access to hazard information.

**Potential Actions**

1. Create and maintain a one-stop countywide multi-hazard website to inform residents and businesses about their risks and steps they can take to reduce losses.
2. Attend community events, use existing newsletters, utility bill inserts, and other forms of messaging to educate community members about hazards.

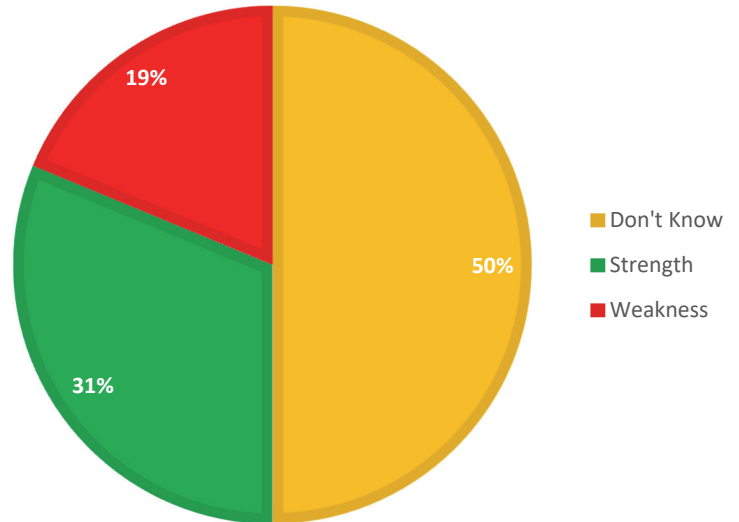


FD 1 & 11 West Thurston Regional Fire Authority	Weakness
FD 6 & SE Thurston Fire Authority	Weakness
FD 8 South Bay/LEPC	Don't Know
FD 9 McLane Black Lake	Don't Know
City of Lacey	Don't Know
City of Olympia	Don't Know
City of Olympia	Strength
City of Tumwater	Don't Know
City of Yelm	Weakness
Thurston County	Strength
Thurston County	Don't Know
Thurston County	Weakness
Tumwater School District	Weakness
Intercity Transit	Don't Know
Thurston PUD	Don't Know

### 10. There is strong public support for hazard mitigation within Thurston County.

**ASSESSMENT:** The majority of partners are uncertain about public support for hazard mitigation within the community.

In Summer 2022, TRPC conducted a multi-language countywide hazards and resiliency survey. It included 12 questions about perceived risk and preferred mitigation activities. Nearly 670 people participated in the survey and rated strengthening critical facilities and essential services as their highest priority, hazard notification systems as second, and education and outreach as third.



#### Potential Actions

1. Periodically survey or poll residents and businesses about their perceived risks and support for mitigation actions that can make the community safer.
2. Invite neighborhood associations, community organizations, and interested stakeholders to participate in focus group to assess public preferences for mitigation strategies.

TCOMM 911	Don't Know
FD 1 & 11 West Thurston Regional Fire Authority	Weakness
FD 6 & SE Thurston Fire Authority	Don't Know
FD 8 South Bay/LEPC	Don't Know
FD 9 McLane Black Lake	Strength
City of Lacey	Don't Know
City of Olympia	Don't Know
City of Olympia	Don't Know
City of Tumwater	Don't Know
City of Yelm	Weakness
Thurston County	Strength
Thurston County	Strength
Thurston County	Weakness
Tumwater School District	Strength
Intercity Transit	Don't Know
Thurston PUD	Strength

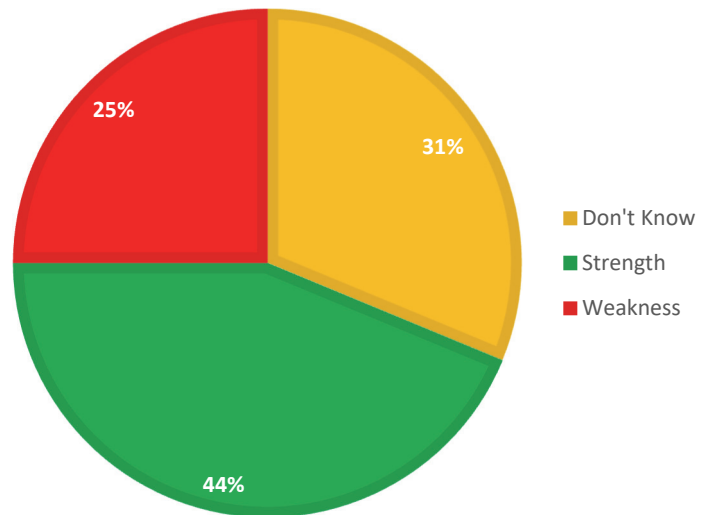
**11. Appropriate and timely emergency warning systems are in place.**

**ASSESSMENT:** Only seven partners reported that appropriate and timely warning systems are in place, five don't know, and four believe it needs improvement.

Thurston County currently uses the TC Alert System: <https://www.thurstoncountywa.gov/alert-and-notification>.

**Potential Actions**

1. Expand public awareness of the subscriber alert system.
2. Conduct subscriber surveys to assess users' satisfaction with the alert notification system.
3. Regularly coordinate emergency managers and responders to assess the operation and effectiveness of the alert notification system.



FD 6 & SE Thurston Fire Authority	Don't Know
FD 8 South Bay/LEPC	Strength
FD 9 McLane Black Lake	Strength
City of Lacey	Strength
City of Olympia	Strength
City of Olympia	Strength
City of Tumwater	Don't Know
City of Yelm	Weakness
Thurston County	Strength
Thurston County	Don't Know
Thurston County	Don't Know
Tumwater School District	Weakness
Intercity Transit	Strength
Thurston PUD	Don't Know

## Section 2 – Individual Agency Hazard Mitigation Planning Capability Assessment

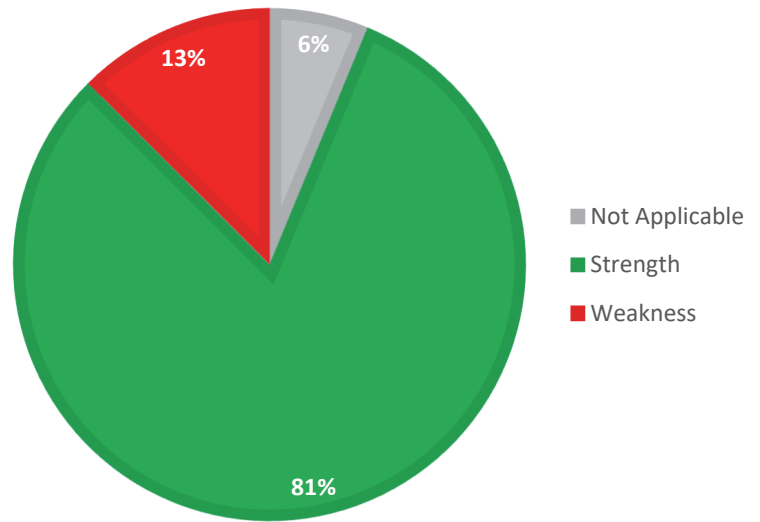
### 12. Your jurisdiction is highly capable of assessing and mitigating risk from natural hazards.

**ASSESSMENT:** The majority of the partners rate their jurisdiction is capable of assessing and mitigating hazards.

#### Potential Actions

1. Assign and maintain a team of staff to develop the technical capacity to integrate hazard mitigation planning into plans, policies, and procedures.
2. Attend FEMA hazard mitigation planning training courses.
3. Prepare an annual presentation for boards, commissions, and councils.

Educate and engage planning commissions and similar formalized member appointed panels to formulate mitigation planning recommendations for policy makers.



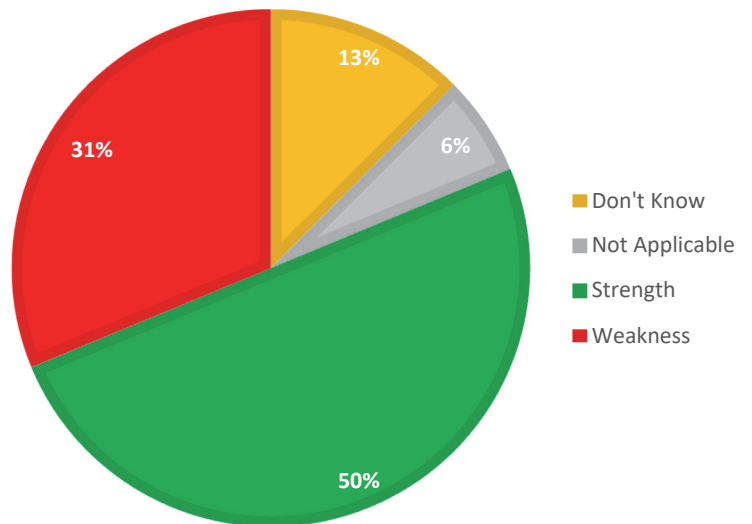
TCOMM 911	Not Applicable
FD 1 & 11 West Thurston Regional Fire Authority	Strength
FD 6 & SE Thurston Fire Authority	Strength
FD 8 South Bay/LEPC	Strength
FD 9 McLane Black Lake	Weakness
City of Lacey	Strength
City of Olympia	Strength
City of Olympia	Strength
City of Tumwater	Strength
City of Yelm	Strength
Thurston County	Strength
Thurston County	Weakness
Thurston County	Strength
Tumwater School District	Strength
Intercity Transit	Strength
Thurston PUD	Strength

**13. Your jurisdiction has a policy framework to equitably prioritize mitigation actions that benefit your community’s socially vulnerable populations.**

**ASSESSMENT:** Most municipalities, transit, and utilities report they are capable of equitably prioritizing mitigation actions for socially vulnerable populations.

Both the Centers for Disease Control Social Vulnerability Index on Hazards and the Washington State Department of Health Washington Tracking Network provide useful mapping tools to understand community social and health vulnerabilities :

- <https://www.atsdr.cdc.gov/placeandhealth/svi/index.html>;
- <https://doh.wa.gov/data-and-statistical-reports/washington-tracking-network-wtn/topic-list>



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FD 1 & 11 West Thurston Regional Fire Authority	Weakness
FD 6 & SE Thurston Fire Authority	Weakness
FD 8 South Bay/LEPC	Strength
FD 9 McLane Black Lake	Weakness
City of Lacey	Strength
City of Olympia	Strength
City of Olympia	Strength
City of Tumwater	Don't Know
City of Yelm	Strength
Thurston County	Don't Know
Thurston County	Strength
Thurston County	Weakness
Tumwater School District	Weakness
Intercity Transit	Strength
Thurston PUD	Strength

**14. Your jurisdiction has the capability to account for the effects of climate change to assess your hazard risks.**

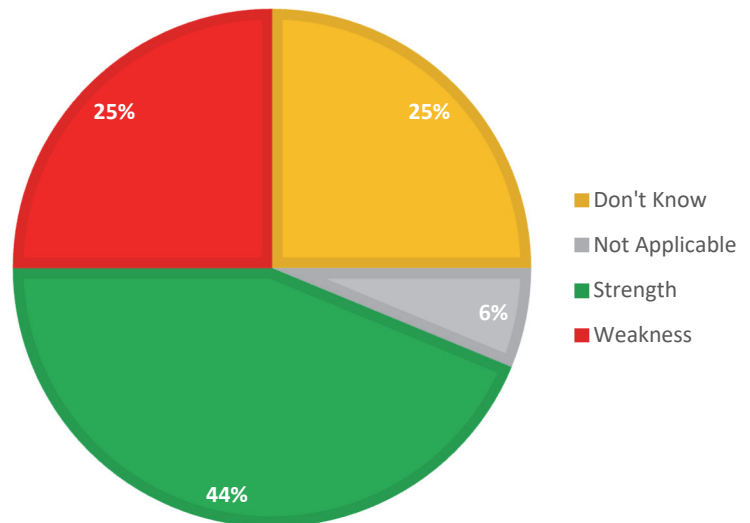
**ASSESSMENT:** There is variability in the planning partners’ capabilities to account for the effects of climate change to assess hazard risks.

There are resources to assist communities understanding of the effects of climate change on Pacific Northwest communities:

- University of Washington Climate Impacts Group (UWCIG) Special Publications, including information on westside wildfires: <https://cig.uw.edu/resources/special-reports/>
- UW CIG Interactive Climate Mapping for a Resilient Washington – includes data and maps on climate forecast data: <https://cig-wa-climate.nkn.uidaho.edu/>
- TRPC’s 2018 Climate Adaptation Plan and Vulnerability Assessment: <https://www.trpc.org/580/Thurston-Climate-Adaptation-Plan>

**Potential Actions**

1. Offer training to staff to improve their knowledge and develop technical expertise to prepare for and respond to climate change impacts.
2. Factor climate impacts into the planning of operations and the coordination of disaster response and recovery activities among first-responders, including public health, law enforcement, fire service, and emergency medical services personnel.



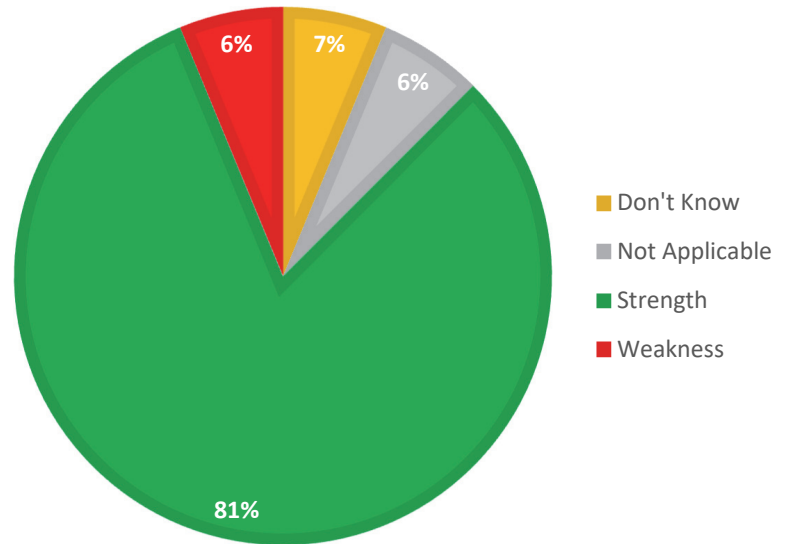
TCOMM 911	Not Applicable
FD 1 & 11 West Thurston Regional Fire Authority	Strength
FD 6 & SE Thurston Fire Authority	Strength
FD 8 South Bay/LEPC	Weakness
FD 9 McLane Black Lake	Weakness
City of Lacey	Don't Know
City of Olympia	Strength
City of Olympia	Strength
City of Tumwater	Strength
City of Yelm	Don't Know
Thurston County	Strength
Thurston County	Don't Know
Thurston County	Weakness
Tumwater School District	Weakness
Intercity Transit	Strength
Thurston PUD	Don't Know

**15. Your jurisdiction has the capability to account for the changes in population and land use patterns to assess your hazard risks.**

**ASSESSMENT:** The majority of partners have the capability to account for changes in population and land use patterns to assess risks.

TRPC summarizes US Census and American Community Survey data to assist communities in analyzing changes in population. For more information, visit: <https://www.trpc.org/391/The-Profile-Thurston-County-Statistics-D>

The Thurston County GeoData Center produces several map and data products to assist communities with evaluating land use: <https://www.thurstoncountywa.gov/departments/geodata-center>



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FD 9 McLane Black Lake	Strength
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City of Olympia	Don't Know
City of Olympia	Strength
City of Tumwater	Strength
City of Yelm	Strength
Thurston County	Strength
Thurston County	Strength
Thurston County	Strength
Tumwater School District	Strength
Intercity Transit	Strength
Thurston PUD	Weakness

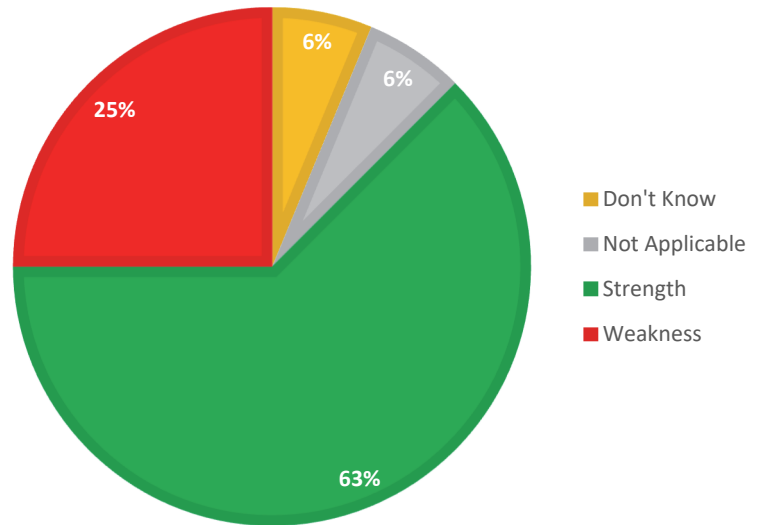
**16. Your jurisdiction has an effective mitigation strategy to address your highest risk hazards.**

**ASSESSMENT:** The majority of the partners responded that they have effective mitigation strategies.

Local governments are required to update their hazard mitigation plans every five years to assess changes in conditions, risks, and capabilities. The plan update process is the opportune time to evaluate a strategy for its effectiveness in bolstering resiliency and reducing potential losses.

Hazard Mitigation Workgroup Members have access to resources to help them consider a range of mitigation actions to formulate their strategy:

- FEMA Mitigation Ideas: [https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas\\_02-13-2013.pdf](https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas_02-13-2013.pdf)
- Mitigation Catalog: <https://app.box.com/s/x6kygopte9j495my850ifqawxgfi56z2/file/1169677344253>



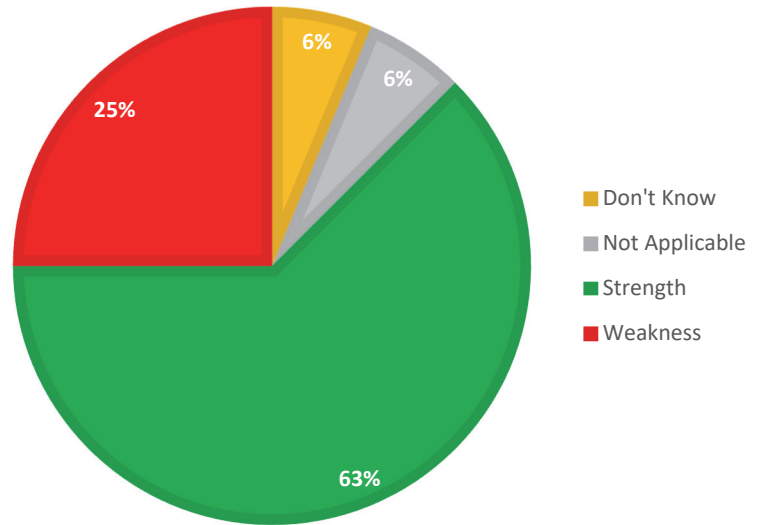
TCOMM 911	Not Applicable
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FD 6 & SE Thurston Fire Authority	Weakness
FD 8 South Bay/LEPC	Strength
FD 9 McLane Black Lake	Strength
City of Lacey	Strength
City of Olympia	Strength
City of Olympia	Strength
City of Tumwater	Strength
City of Yelm	Weakness
Thurston County	Weakness
Thurston County	Don't Know
Thurston County	Strength
Tumwater School District	Strength
Intercity Transit	Strength
Thurston PUD	Strength

**17. Your jurisdiction actively seeks funding and resources to implement your priority mitigation actions.**

**ASSESSMENT:** The majority of the partners are capable of seeking funding and resources for mitigation actions.

**Potential Actions**

1. Convene a state or FEMA sponsored regional workshop for local governments to receive training and instruction on mitigation grant application development
2. Participate in federal grant programs training
3. Subscribe to FEMA Region X email messaging services and attend FEMA mitigation grant program webinars



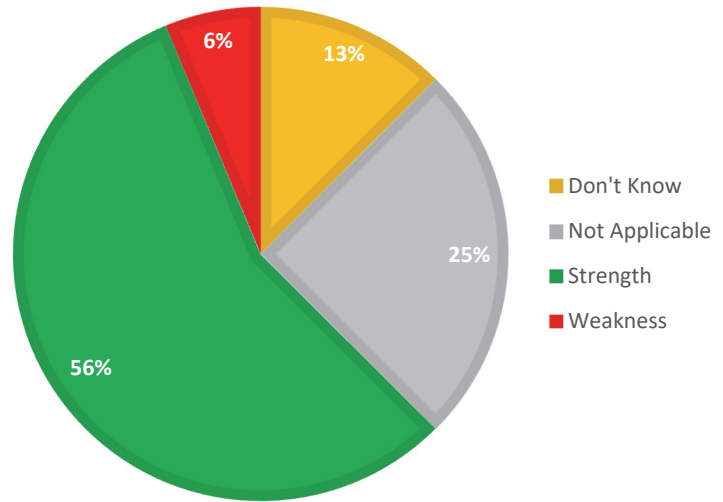
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City of Olympia	Strength
City of Olympia	Strength
City of Tumwater	Strength
City of Yelm	Weakness
Thurston County	Strength
Thurston County	Don't Know
Thurston County	Weakness
Tumwater School District	Strength
Intercity Transit	Don't Know
Thurston PUD	Strength

**18. Your jurisdiction enforces its building and public safety codes, ordinances, and standards to reduce hazard risks in your community.**

**ASSESSMENT:** The majority of the planning partners have the capability to enforce building codes and other ordinances to reduce risks.

**Potential Actions**

1. Build and maintain an interdisciplinary hazard mitigation planning team with staff expertise from all organizational departments.
2. Conduct a systemic review of existing policies, codes, regulations, and procedures to ensure they don't interfere with implementation of hazard mitigation strategies.



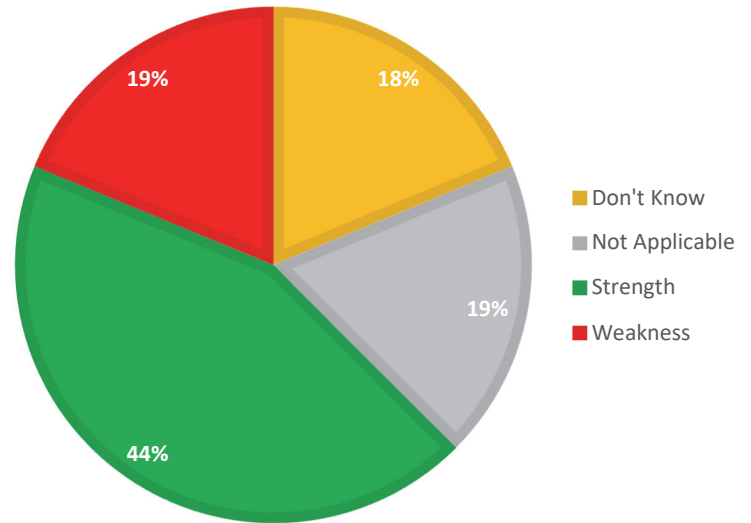
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City of Olympia	Strength
City of Tumwater	Strength
City of Yelm	Don't Know
Thurston County	Strength
Thurston County	Strength
Thurston County	Strength
Tumwater School District	Not Applicable
Intercity Transit	Strength
Thurston PUD	Strength

**19. Current land uses within identified hazard areas are appropriate for the risk posed by each hazard.**

**ASSESSMENT:** The cities and county are the jurisdictions with land use authority. Most of the municipal planning partners rate their land uses are appropriate for the risks posed by each hazard.

**Potential Actions**

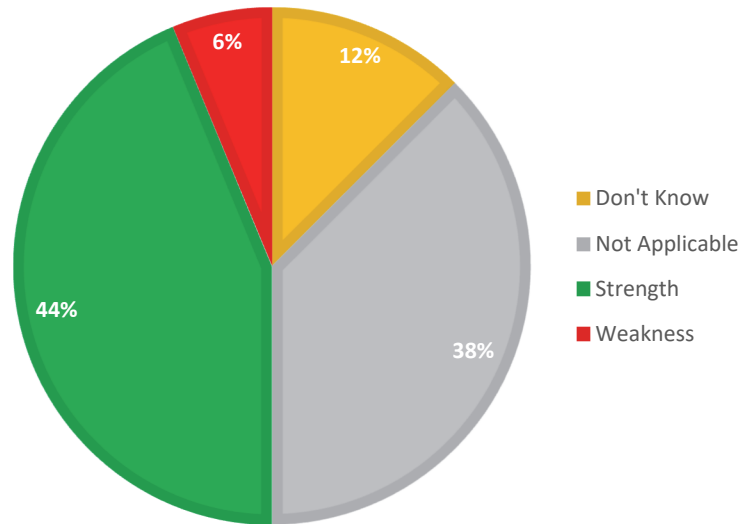
Review Comprehensive Plans and zoning code and consider revisions, where appropriate, to integrate policies and land use regulations that improve community resilience to natural hazards.



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City of Olympia	Strength
City of Tumwater	Strength
City of Yelm	Strength
Thurston County	Strength
Thurston County	Don't Know
Thurston County	Weakness
Tumwater School District	Not Applicable
Intercity Transit	Strength
Thurston PUD	Strength

**20. Areas that provide natural resource protection are identified and protected within your jurisdiction (e.g. zoning codes, critical areas ordinances, and Shoreline Master Program).**

**ASSESSMENT:** The majority of municipal planning partners believe they have adequate codes and policies to protect natural resource areas.



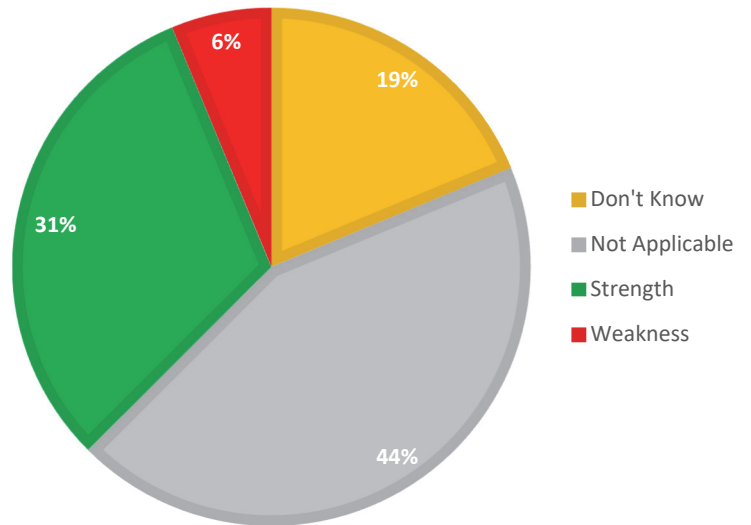
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City of Olympia	Strength
City of Tumwater	Strength
City of Yelm	Strength
Thurston County	Strength
Thurston County	Don't Know
Thurston County	Weakness
Tumwater School District	Not Applicable
Intercity Transit	Not Applicable
Thurston PUD	Not Applicable

**21. Your jurisdiction currently has adopted policies, codes, and regulations that prevent development from occurring inside your special flood hazard areas.**

**ASSESSMENT:** Only four municipalities rank their special flood hazard area policies, codes, and regulations as sufficient to prevent development.

**Potential Actions**

1. Review and amend, as necessary, Comprehensive Plans, Critical Areas Ordinances, Zoning Codes, and Development Regulations to prevent flood losses and strengthen flood plain functions.
2. Develop a comprehensive flood management plan.
3. Participate in the National Flood Insurance Program Community Rating System.



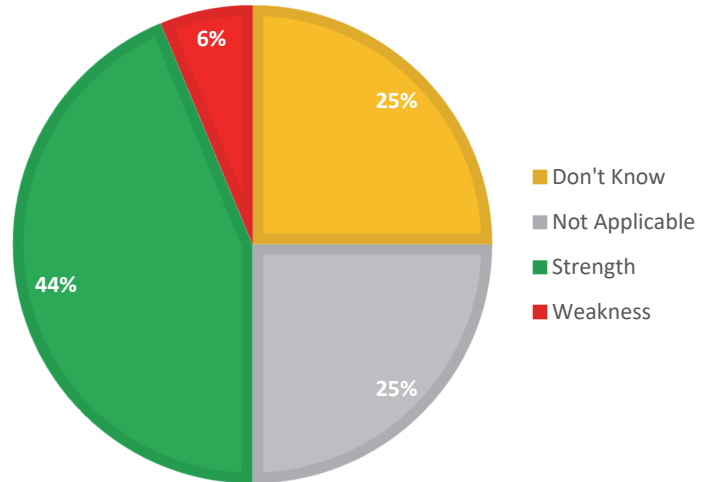
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City of Lacey	Strength
City of Olympia	Not Applicable
City of Olympia	Strength
City of Tumwater	Strength
City of Yelm	Strength
Thurston County	Don't Know
Thurston County	Don't Know
Thurston County	Weakness
Tumwater School District	Not Applicable
Intercity Transit	Not Applicable
Thurston PUD	Not Applicable

**22. Existing flood control systems are effective and well maintained.**

**ASSESSMENT:** The majority of municipal planning partners believe existing flood control systems are effective and well maintained, however other planning partners are unfamiliar with this.

**Potential Actions**

1. Produce an annual report about the state of flood control systems to increase public awareness about ongoing flood control activities.
2. Summarize flood system maintenance activities in an annual flood bulletin.



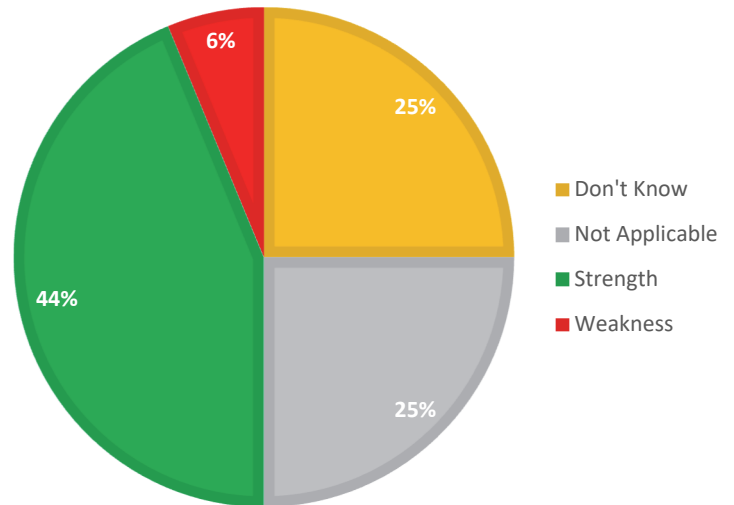
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City of Tumwater	Strength
City of Yelm	Strength
Thurston County	Strength
Thurston County	Don't Know
Thurston County	Weakness
Tumwater School District	Don't Know
Intercity Transit	Strength
Thurston PUD	Not Applicable

**23. There is a coordinated program to maintain drainage systems free of debris.**

**ASSESSMENT:** Most of municipal plan partners believe they have programs to maintain drainage systems free of debris.

**Potential Actions**

Establish a program to monitor and maintain drainage systems to reduce flood impacts.



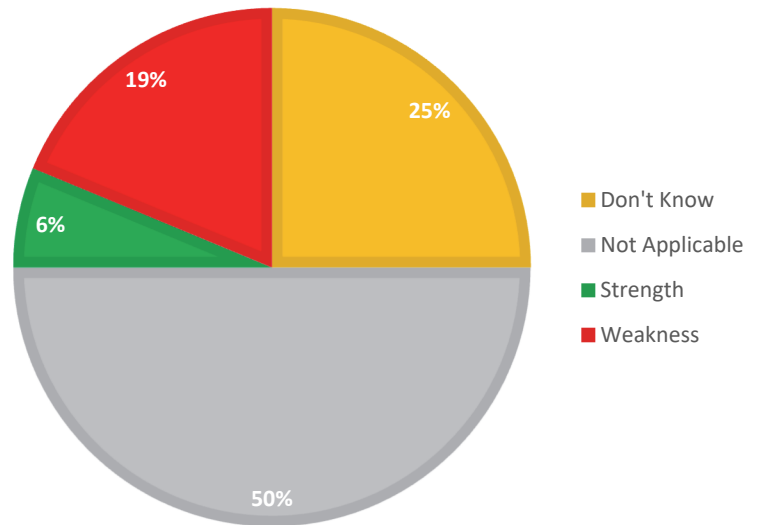
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City of Olympia	Strength
City of Tumwater	Strength
City of Yelm	Strength
Thurston County	Don't Know
Thurston County	Strength
Thurston County	Weakness
Tumwater School District	Don't Know
Intercity Transit	Strength
Thurston PUD	Not Applicable

**24. Your jurisdiction has an effective program to inform your residents about flood insurance.**

**ASSESSMENT:** Most plan partners are unaware of their flood insurance information programs or believe their current programs may be inadequate.

**Potential Actions**

1. Create a website to inform residents about the benefits of National Flood Insurance.
2. Host community events or workshops to inform residents in flood prone neighborhoods how to acquire flood insurance.



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City of Lacey	Don't Know
City of Olympia	Don't Know
City of Olympia	Strength
City of Tumwater	Don't Know
City of Yelm	Not Applicable
Thurston County	Weakness
Thurston County	Don't Know
Thurston County	Weakness
Tumwater School District	Not Applicable
Intercity Transit	Not Applicable
Thurston PUD	Not Applicable

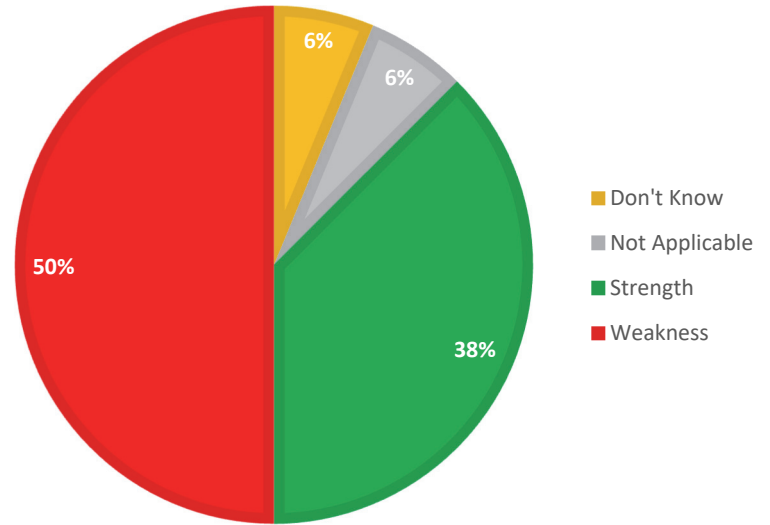
**25. Your jurisdiction has an ongoing public outreach strategy to engage the public about efforts to reduce your jurisdiction’s risks from natural hazards.**

**ASSESSMENT:** Eight plan partners rate ongoing public outreach strategies to reduce risks from natural hazards as a weakness.

FEMA requires that local governments describe a process for the community to participate in plan maintenance after the plan is approved.

**Potential Actions**

1. Establish a community-based mitigation plan advisory committee.
2. Create a webpage with links to the plan/annex, staff contact information, and an online comment submission form.
3. Publish an annual report on the status of the hazard mitigation strategy and create a social media campaign to highlight major accomplishments.
4. Host an annual online meeting to present implementation outcomes and offer a question-and-answer session.
5. Conduct mini polls to solicit public feedback on the plan.



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City of Olympia	Weakness
City of Olympia	Strength
City of Tumwater	Don't Know
City of Yelm	Weakness
Thurston County	Strength
Thurston County	Weakness
Thurston County	Weakness
Tumwater School District	Weakness
Intercity Transit	Strength
Thurston PUD	Weakness

# Hazard Mitigation Catalog

## Thurston County Hazard Mitigation Plan

### Catalog of Risk Reduction Measures

Risk is defined as being a function of the:

- Hazard
- Exposure
- Vulnerability and
- Capability

Risk can be reduced through mitigation by manipulating the hazard, reducing exposure to the hazard, reducing the vulnerability and/or increasing capability. And, where mitigation is not yet possible, the risk can be reduced through preparation, response or/and recovery. This list is not meant to be exhaustive, but to inspire thought.

Hazard Category			
Dam Failure			
Risk Reduction Measures	Manipulate Hazard	Reduce Exposure	Increase Capability
Personal Scale	None	1. Relocate out of Dam Failure Inundation areas.	1. Educate your self on risk reduction to the dam failure hazard. 2. Learn the evacuation routes for a dam failure event. 3. Educate yourself on early warning procedures.
Corporate Scale	1. Remove Dams 2. Remove levees 3. Strengthen Dams/levees	1. Replace earthen dams with harden structures	1. Educate your employees on the probable impacts of a dam failure. 2. Develop a COOP
Government Scale	1. Remove Dams 2. Remove levees 3. Strengthen Dams/levees	1. Replace earthen dams with harden structures 2. Relocate critical facilities out of Dam Failure/Inundation areas. 3. Promote open space land use in designated Dam Failure/Inundation areas.	1. Create scenario based Dam Failure/Inundation area maps. 2. Enhance Emergency Operations Plan to include a dam failure component. 3. Institute monthly communications checks with dam operators. 4. Inform the public on risk reduction techniques 5. Adopt real-estate disclosure requirements for the re-sale of property located within Dam Failure/Inundation areas. 6. Establish early warning systems downstream of high hazard dams.

Hazard Category				
Earthquake				
Risk Reduction Measures	Manipulate Hazard	Reduce Exposure	Reduce Vulnerability	Increase Capability
Personal scale	None	<ol style="list-style-type: none"> <li>1. Locate outside of hazard area (off soft soils)</li> </ol>	<ol style="list-style-type: none"> <li>1. Retrofit structure (anchor house structure to foundation)</li> <li>2. Secure household items that can cause injury or damage such as water heaters, bookcases, and other appliances</li> <li>3. Build to higher design</li> </ol>	<ol style="list-style-type: none"> <li>1. Practice "drop, cover and hold"</li> <li>2. Develop household mitigation plan, such as creating a retrofit savings account, communication capability with outside, 72 hr self-sufficiency during an event</li> <li>3. Increase capability by having cash reserves for reconstruction</li> <li>4. Become informed on the hazard and risk reduction alternatives available</li> <li>5. Develop a post-disaster action plan for your household.</li> </ol>
Corporate scale	None	<ol style="list-style-type: none"> <li>1. Locate/relocate mission critical functions outside hazard area where possible.</li> </ol>	<ol style="list-style-type: none"> <li>1. Build redundancy for critical functions/facilities</li> <li>2. Retrofit critical buildings/areas housing mission critical functions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adopt higher standard for new construction – Consider "performance based design" when building new structures</li> <li>2. Increase capability by having cash reserves for reconstruction</li> <li>3. Inform your employees on the possible impacts of earthquake and how to deal with them at your work facility</li> <li>4. Develop a Continuity of Operations Plan (COOP)</li> </ol>
Government	None	<ol style="list-style-type: none"> <li>1. Locate critical facilities or functions outside of hazard area where possible</li> </ol>	<ol style="list-style-type: none"> <li>1. Harden infrastructure</li> <li>2. Provide redundancy for critical functions</li> <li>3. Implement higher regulatory standards</li> <li>4. Adopt the International Building Code</li> </ol>	<ol style="list-style-type: none"> <li>1. Produce more accurate hazard maps</li> <li>2. Provide technical information and guidance</li> <li>3. Enact tools to help manage development in hazard areas: tax incentives, information elements in Capital Improvements Plan (CIP)</li> <li>4. Include retrofitting/replacement of critical system</li> <li>5. Develop strategy to take advantage of post disaster opportunities</li> <li>6. Warehouse critical infrastructure components such as pipe, power line, and road repair material</li> <li>7. Develop and adopt a Continuity of Operations Plan (COOP)</li> <li>8. Initiate triggers guiding improvements such as: (&lt; 50% substantial damage/improvements)</li> <li>9. Further enhance seismic risk assessment to target high hazard buildings for mitigation opportunities.</li> <li>10. Develop a post disaster action plan that includes a grant funding and debris removal components</li> </ol>

Hazard Category			
Flood			
Risk Reduction Measures	Manipulate Hazard	Reduce Exposure	Increase Capability
Personal scale	<ol style="list-style-type: none"> <li>1. Clear stormwater drains and culverts</li> </ol>	<ol style="list-style-type: none"> <li>1. Locate outside of hazard area</li> <li>2. Elevate utilities above BFE</li> <li>3. Institute low impact development techniques on property</li> </ol>	<ol style="list-style-type: none"> <li>1. Retrofit structure (elevate house above BFE)</li> <li>2. Elevate items with house above BFE</li> <li>3. Build new homes above BFE</li> <li>4. Floodproof non-residential structures</li> </ol>
Corporate scale	<ol style="list-style-type: none"> <li>1. Clear stormwater drains and culverts</li> </ol>	<ol style="list-style-type: none"> <li>1. Locate business critical facilities or functions outside hazard area</li> <li>2. Institute low impact development techniques on property</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase capability by having cash reserves for reconstruction</li> <li>2. Support and implement hazard disclosure for the sale/re-sale of property in identified risk zones</li> <li>3. Solicit "cost-sharing" through partnerships with private sector stake holders on projects with multiple benefits</li> </ol>
Government	<ol style="list-style-type: none"> <li>1. Clear stormwater drains and culverts</li> <li>2. Dredging, levee construction, providing retention areas...</li> <li>3. Structural flood control: levee's, dams, channelization, revetments</li> <li>4. Construct regional stormwater control facilities</li> </ol>	<ol style="list-style-type: none"> <li>1. Locate/re-locate critical facilities outside of hazard area</li> <li>2. Acquire or relocate identified repetitive loss properties</li> <li>3. Promote open space uses in identified high hazard areas via techniques such as: PUD's, easements, setbacks, greenways, sensitive area tracks</li> <li>4. Adopt land development criteria such as PUD's, Density transfers, clustering</li> <li>5. Institute low impact development techniques on property</li> <li>6. Acquire vacant land or promote open space uses in developing watersheds to control increases in runoff</li> </ol>	<ol style="list-style-type: none"> <li>1. Produce more accurate flood hazard maps</li> <li>2. Provide technical information and guidance</li> <li>3. Enact tools to help manage development in hazard areas (stronger controls, tax incentives, information, enforcement of the NFIP)</li> <li>4. Incorporate retrofitting/replacement of critical system elements in CIP</li> <li>5. Develop strategy to take advantage of post disaster opportunities</li> <li>6. Warehouse critical infrastructure components</li> <li>7. Develop and adopt a Continuity of Operations Plan (COOP)</li> <li>8. Join Community Rating System (CRS) program</li> <li>9. Maintain existing data as well as gather new data needed to define risks and vulnerability</li> <li>10. Training for staff and decision-makers in floodplain management</li> </ol>
Hazard Category			
Flooding			
Risk Reduction Measures	Manipulate Hazard	Reduce Exposure	Increase Capability
Government			<ol style="list-style-type: none"> <li>11. Create a building and elevation inventory of structures in the floodplain</li> <li>12. Develop and implement a public information strategy</li> <li>13. Charge a hazard mitigation fee on all new permits to create a hazard mitigation funding source for initiatives or grant cost share requirements</li> <li>14. Develop a Flood Task Force</li> <li>15. Participate in the Flood Control Districts Basin Opportunity fund program</li> <li>16. Integrate floodplain management policies into other planning mechanisms within the planning area</li> </ol>

Risk Reduction Measures	Hazard Category			
	Landslide/Avalanche			
	Manipulate Hazard	Reduce Exposure	Reduce Vulnerability	Increase Capability
Personal scale	<ol style="list-style-type: none"> <li>1. Stabilize slope (de-water, armor toe)</li> <li>2. Reduce weight on top of slope</li> <li>3.) Minimize vegetation removal and the addition of impervious surfaces</li> </ol>	<ol style="list-style-type: none"> <li>1. Locate structures outside of hazard area (off unstable land and away from slide-run out area)</li> </ol>	<ol style="list-style-type: none"> <li>1. Retrofit homes on steep slopes</li> </ol>	<ol style="list-style-type: none"> <li>1. Institute warning system and develop evacuation plan</li> <li>2. Increase capability by having cash reserves for reconstruction</li> <li>3. Educate yourself on risk reduction techniques for landslide hazards</li> </ol>
	<ol style="list-style-type: none"> <li>1. Stabilize slope (de-water, armor toe)</li> <li>2. Reduce weight on top of slope</li> <li>3.) Minimize vegetation removal and the addition of impervious surfaces</li> </ol>	<ol style="list-style-type: none"> <li>1. Locate structures outside of hazard area (off unstable land and away from slide-run out area)</li> </ol>	<ol style="list-style-type: none"> <li>1. Retrofit at risk facilities</li> </ol>	<ol style="list-style-type: none"> <li>1. Institute warning system and develop evacuation plan</li> <li>2. Increase capability by having cash reserves for reconstruction</li> <li>3. Develop a COOP</li> <li>4. Educate your employees on the potential exposure to landslide hazards and your emergency response protocol</li> </ol>
	<ol style="list-style-type: none"> <li>1. Stabilize slope (de-water, armor toe)</li> <li>2. Reduce weight on top of slope</li> <li>3.) Minimize vegetation removal and the addition of impervious surfaces</li> </ol>	<ol style="list-style-type: none"> <li>1. Acquire properties located in high risk landslide areas</li> <li>2. Adopt land use policies that prohibit the placement of habitable structures in high risk landslide areas</li> <li>3.) Minimize vegetation removal and the addition of impervious surfaces</li> </ol>	<ol style="list-style-type: none"> <li>1. Adopt higher regulatory standards for new development within unstable slope areas</li> <li>2. Armor/retrofit critical infrastructure from the impact of landslides</li> </ol>	<ol style="list-style-type: none"> <li>1. Produce better hazard maps</li> <li>2. Provide technical information and guidance</li> <li>3. Enact tools to help manage development in hazard areas: better land controls, tax incentives, information</li> <li>4. Develop strategy to take advantage of post-disaster opportunities</li> <li>5. Warehouse critical infrastructure components</li> <li>6. Develop and adopt a Continuity of Operations Plan (COOP)</li> <li>7. Educate the public on the landslide hazard and appropriate risk reduction alternatives</li> </ol>
Government				

Hazard Category				
Tsunami/Seiche				
Risk Reduction Measures	Manipulate Hazard	Reduce Exposure	Reduce Vulnerability	Increase Capability
Personal scale	None	1. Locate outside of hazard area	1. Apply personal property mitigation techniques to your home such as anchoring your foundation and foundation openings to allow flow through.	1. Develop and practice a household evacuation plan. 2. Support/Create a Tsunami Working Group 3. Educate your self on the risk exposure from the Tsunami hazard and ways to minimize that risk.
Corporate scale	None	1. Locate structure or mission critical functions outside of hazard area whenever possible	1. Mitigate personnel property for the impacts of Tsunami	1. Develop and practice a corporate evacuation plan 2. Support/Create a Tsunami Working Group 3. Educate your employees on the risk exposure from the Tsunami hazard and ways to minimize that risk
Government	1. Build wave abatement structures (e.g. the "jacks" looking structure designed by the Japanese)	1. Locate structure or functions outside of hazard area whenever possible. 2. Strengthen infrastructure for Tsunami impacts 3. Relocate identified critical facilities located in Tsunami high hazard areas	1. Adopt Higher regulatory standards that will provide higher levels of protection to structures built in a Tsunami inundation area 2. Utilize Tsunami mapping once available, to guide development away from high risk areas through land use planning 3. Construct local vertical evacuation structures	1. Create a probabilistic Tsunami/Seiche map for the planning area 2. Provide incentives to guide development away from hazard areas 3. Develop a tsunami warning and response system 4. Provide residents with tsunami inundation maps 5. Join NOAA's Tsunami Ready program 6. Develop and communicate evacuation routes 7. Enhance the public information program to include risk reduction options for the tsunami hazard

Risk Reduction Measures	Hazard Category Severe Storm/Weather			
	Hazard	Exposure	Vulnerability	Capability
Personal scale	None	None	<ol style="list-style-type: none"> <li>1. Insulate house</li> <li>2. Provide redundant heat and power</li> <li>3. Insulate structure</li> <li>4. Plant appropriate trees near home and power lines ("Right tree, right place" National Arbor Day Foundation Program)</li> </ol>	<ol style="list-style-type: none"> <li>1. Trim or remove trees that could affect power lines</li> <li>2. Promote 72 hour self-sufficiency</li> <li>3. Obtain a NOAA wether radio</li> <li>4. Obtain an emergency generator</li> </ol>
Corporate Scale	None	None	<ol style="list-style-type: none"> <li>1. Relocate critical infrastructure, such as power lines, underground</li> <li>2. Reinforce or relocate critical infrastructure such as powerlines so that it meets performance expectations.</li> <li>3. Install tree wire</li> </ol>	<ol style="list-style-type: none"> <li>1. Trim or remove trees that could affect power lines</li> <li>2. Create redundancy</li> <li>3. Equip your facilities with a NOAA weather radio</li> <li>4. Equip vital facilities with emergency power sources</li> </ol>
Government	None	None	<ol style="list-style-type: none"> <li>1. Strengthen infrastructure (such a locating utilities under ground)</li> <li>2. Trimming trees back from power lines</li> <li>3. Designate snow routes and strengthen critical road sections and bridges</li> </ol>	<ol style="list-style-type: none"> <li>1. Support programs such as "Tree Watch" that proactively manage problem areas by use of selective removal of hazardous trees, tree replacement, etc</li> <li>2. Establish and enforce building codes that require all roofs to withstand snow loads</li> <li>3. Improve communication alternatives</li> <li>4. Modify land use and environmental regulations to support vegetation management activities that improve reliability in utility corridors</li> <li>5. Modify landscape and other ordinances to encourage appropriate planting near overhead power, cable, and phone lines</li> <li>6. Establish formal mutual aid agreements</li> <li>7. Provide NOAA weather radios to the public</li> </ol>

Risk Reduction Measures	Hazard Category			
	Manipulate Hazard	Reduce Exposure	Reduce Vulnerability	Increase Capability
Personal scale	None	1. Relocate outside of hazard area, such as lahar zones	None	1. Develop and practice a household evacuation plan
Corporate scale	None	1. Locate mission critical functions outside of hazard area, such as lahar zones whenever possible	1. Build redundancy for critical facilities and functions	1. Develop and practice an employee evacuation plan
Government	1. Lava flow diversion structures (only limited success experienced)	1. Locate critical facilities and functions outside of hazard area, such as lahar zones, whenever possible	1. Build redundancy for critical facilities and functions	1. Public outreach, awareness 2. Support detailed wind/ashfall studies 3. Install a volcano warning system similar to that for Mt. Rainier

Risk Reduction Measures	Hazard Category Wildfire			
	Hazard	Exposure	Vulnerability	Capability
Personal scale	Clear potential fuels on property; dry, overgrown underbrush, diseased trees	<ol style="list-style-type: none"> <li>1. Create and maintain defensible space around structures</li> <li>2. Reduce exposure -- Locate outside of hazard area</li> <li>3. Mow regularly</li> </ol>	<ol style="list-style-type: none"> <li>1. Create and maintain defensible space around structures and infrastructure, provide water on site</li> <li>2. Use fire-retardant building materials</li> <li>3. Create defensible spaces around your home</li> </ol>	<ol style="list-style-type: none"> <li>1. Employ "Firewise" techniques to safeguard your home</li> <li>2. Identify alternative water supplies for fire fighting</li> <li>3. Install/replace roofing material with non-combustible roofing materials</li> <li>1. Support "Firewise" community initiatives</li> </ol>
	Clear potential fuels on property; dry underbrush, diseased trees	<ol style="list-style-type: none"> <li>1. Create and maintain defensible space around structures and infrastructure</li> <li>2. Reduce exposure -- Locate outside of hazard area</li> </ol>	<ol style="list-style-type: none"> <li>1. Create and maintain defensible space around structures and infrastructure, provide water on site</li> <li>2. Use fire-retardant building materials</li> </ol>	<ol style="list-style-type: none"> <li>2. Create /establish stored water supplies to be utilized for fire fighting</li> </ol>
Corporate scale	Clear potential fuels (dry underbrush, diseased trees) on land that can trigger and maintain wildfires 2. Implement "Best Management Practices" on public lands	<ol style="list-style-type: none"> <li>1. Create and maintain defensible space around structures and infrastructure</li> <li>2. Reduce exposure -- Locate outside of hazard area</li> </ol>	<ol style="list-style-type: none"> <li>1. Create and maintain defensible space around structures and infrastructure</li> <li>2. Use fire-retardant building materials</li> <li>3. Higher regulatory standards</li> <li>4. Biomass reclamation initiatives</li> </ol>	<ol style="list-style-type: none"> <li>1. Establish/improve public outreach and education efforts</li> <li>2. Possible Weapons of Mass Destruction (WMD) funds available to enhance fire capability in High Risk areas</li> <li>3. Identify and create emergency vehicle access in high hazard areas</li> <li>4. Seek alternative water supplies in urban wildland interface areas</li> <li>5. Become a "Firewise" community</li> <li>6. Utilize academia to study impacts/solutions to wildfire risk</li> <li>7. Establish/maintain mutual aid agreements between Fire Service Agencies</li> <li>8. Create/implement wildfire protection plans</li> </ol>
		<ol style="list-style-type: none"> <li>1. Create and maintain defensible space around structures and infrastructure</li> <li>2. Reduce exposure -- Locate outside of hazard area</li> <li>3. Enhance building code to include use of fire resistant materials in high hazard areas</li> </ol>	<ol style="list-style-type: none"> <li>1. Create and maintain defensible space around structures and infrastructure</li> <li>2. Use fire-retardant building materials</li> </ol>	<ol style="list-style-type: none"> <li>1. Establish/improve public outreach and education efforts</li> <li>2. Possible Weapons of Mass Destruction (WMD) funds available to enhance fire capability in High Risk areas</li> <li>3. Identify and create emergency vehicle access in high hazard areas</li> <li>4. Seek alternative water supplies in urban wildland interface areas</li> <li>5. Become a "Firewise" community</li> <li>6. Utilize academia to study impacts/solutions to wildfire risk</li> <li>7. Establish/maintain mutual aid agreements between Fire Service Agencies</li> <li>8. Create/implement wildfire protection plans</li> </ol>
Government				