

Thurston County Communities Natural Hazards and Resiliency Survey

Results



HAZARDS MITIGATION PLAN FOR THE THURSTON REGION

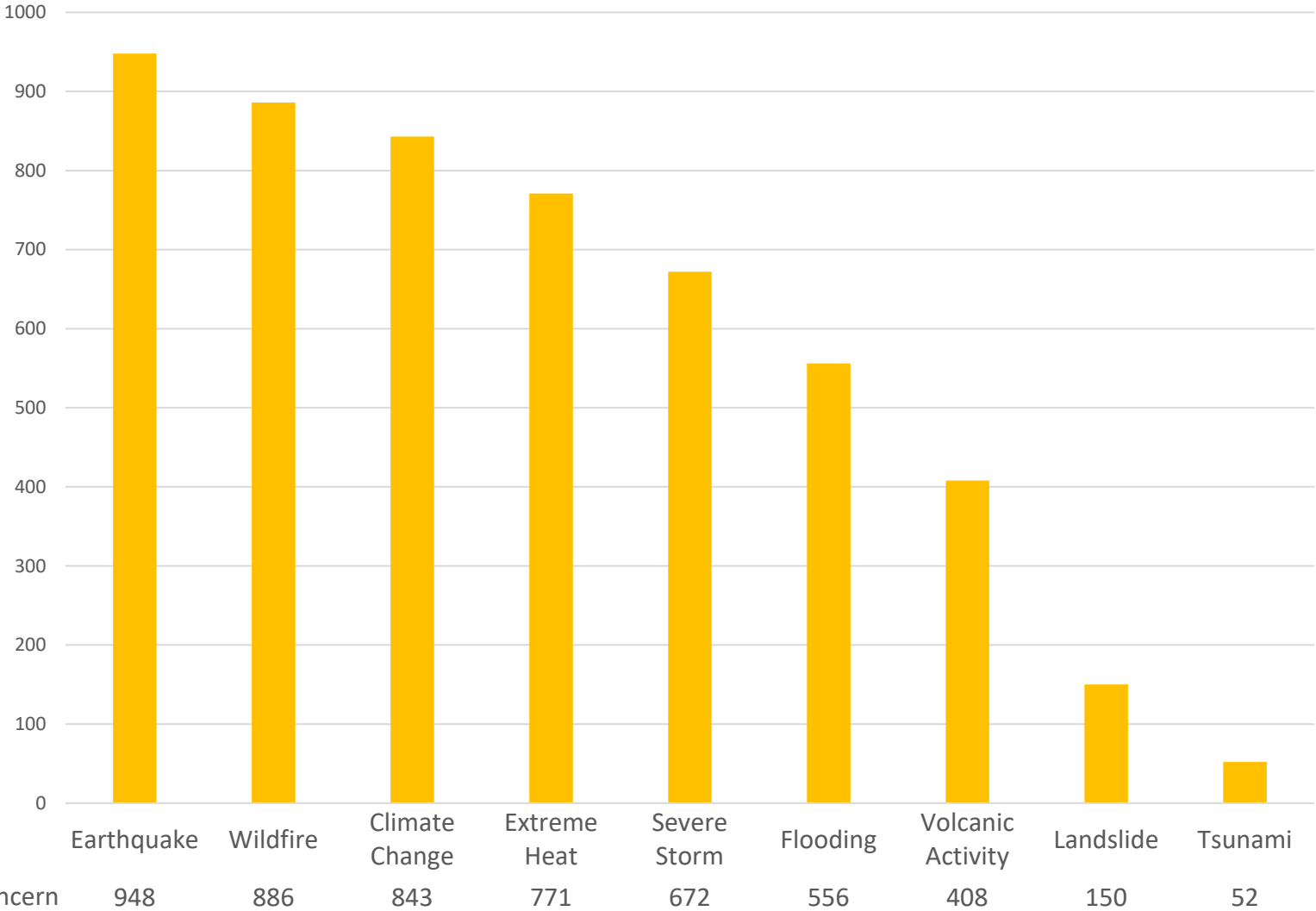


Community	Responses
Bucoda	9
Lacey	96
Olympia	187
Rainier	7
Tenino	7
Tumwater	55
Yelm	16
Unincorporated Thurston County	188
Outside Thurston County	9
No Response	100
Total Responses	668

Survey Participation



Level of Concern on Hazards



How concerned are you about the effects of the following natural hazards impacting your community?



- Very Concerned, +2
- Somewhat Concerned, +1
- No Opinion, 0
- Not Concerned, -1

Top 3 Hazards by Community



Bucoda

Landslide
Tsunami
Flooding

Lacey

Earthquake
Extreme Heat
Severe Storm

Olympia

Climate Change
Earthquake
Extreme Heat

Rainier

Earthquake
Wildfire
Extreme Heat

Tenino

Wildfire
Extreme Heat
Earthquake

Tumwater

Earthquake
Climate Change
Wildfire

Yelm

Wildfire
Earthquake
Volcanic Activity

Thurston County

Wildfire
Earthquake
Climate Change



How does the respondents' ranked hazards in your community compare to your sense of concern?

- Right on the mark
- A little off the mark
- Way off the mark
- Not sure

28 Disasters in Thurston County since 1953



12 Floods



9 Severe Storms



2 Biological



2 Earthquake



1 Coastal Storm



1 Fire



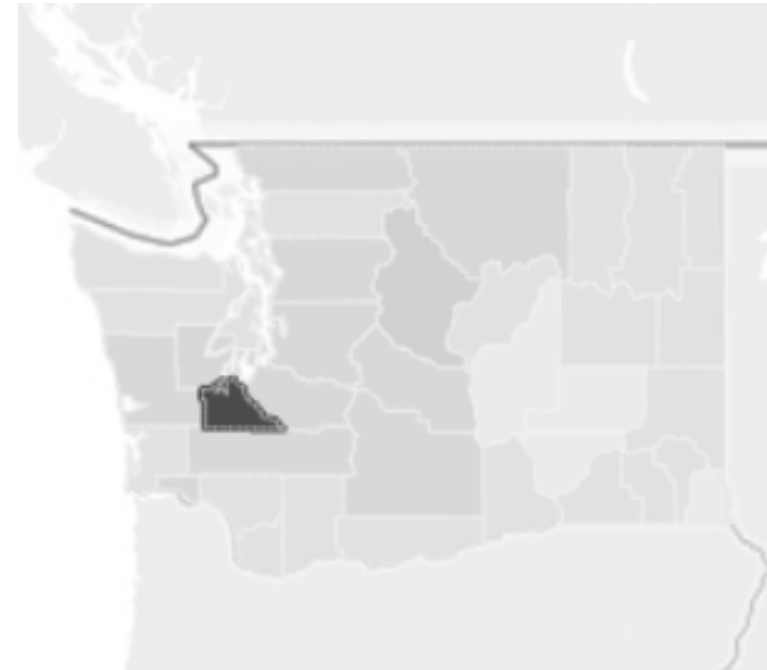
1 Volcano

Disaster Breakdown

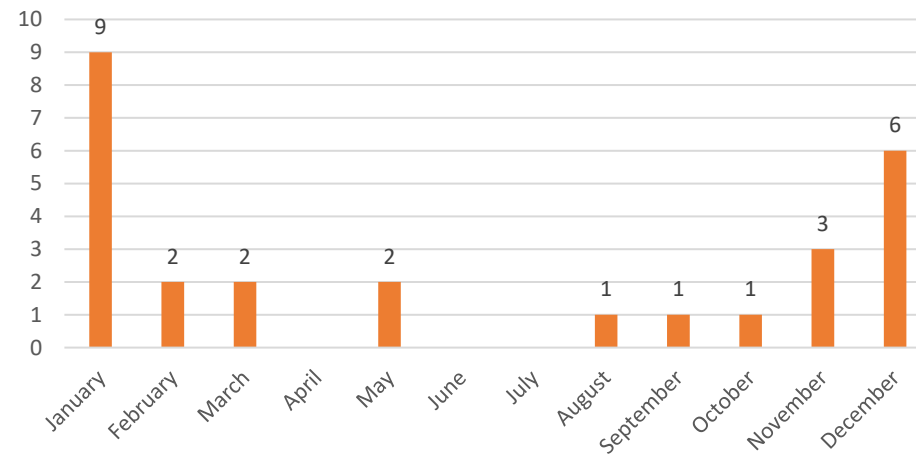
25 Major Disaster Declarations

2 Emergency Declarations

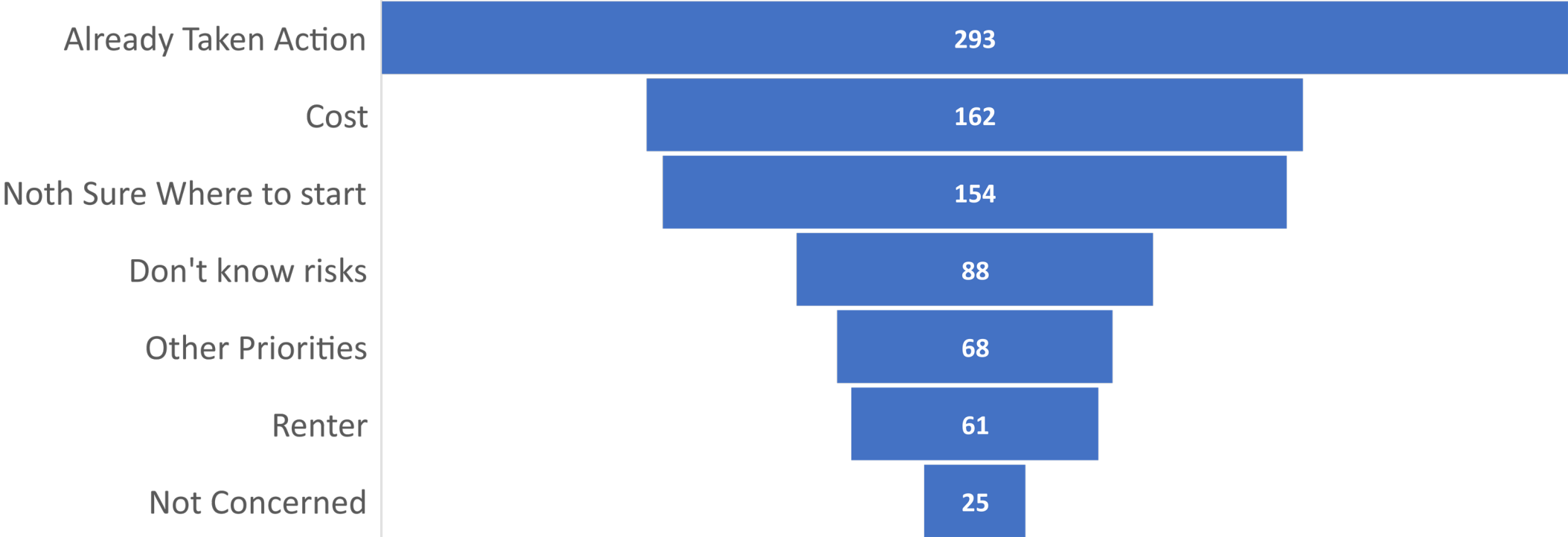
1 Fire Management Declarations



When Disasters Occur

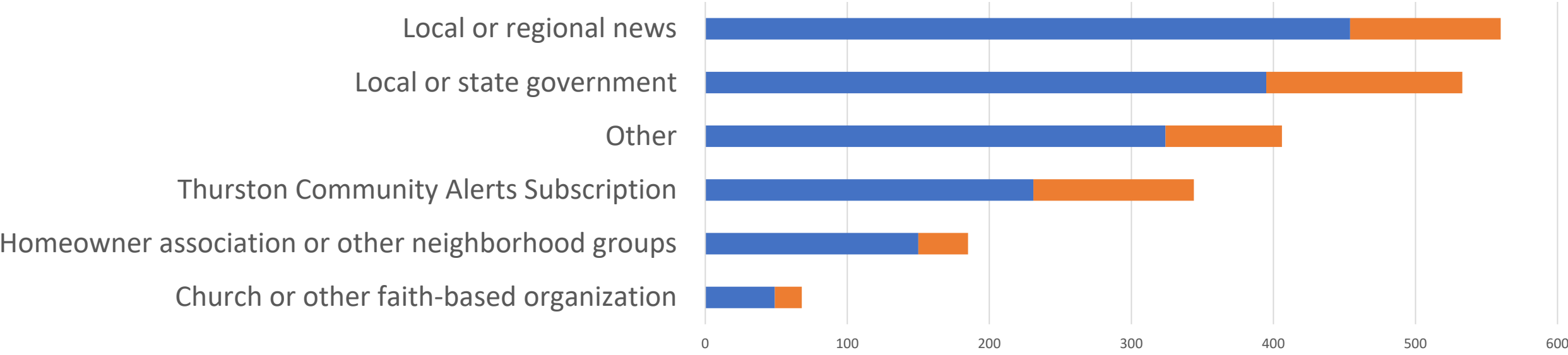


What barriers prevent you from taking steps to achieve greater personal preparedness for natural disasters, or to reduce your household's risks from the impacts of hazards?



How do you currently receive information about hazards in your community? How would you prefer to receive information?

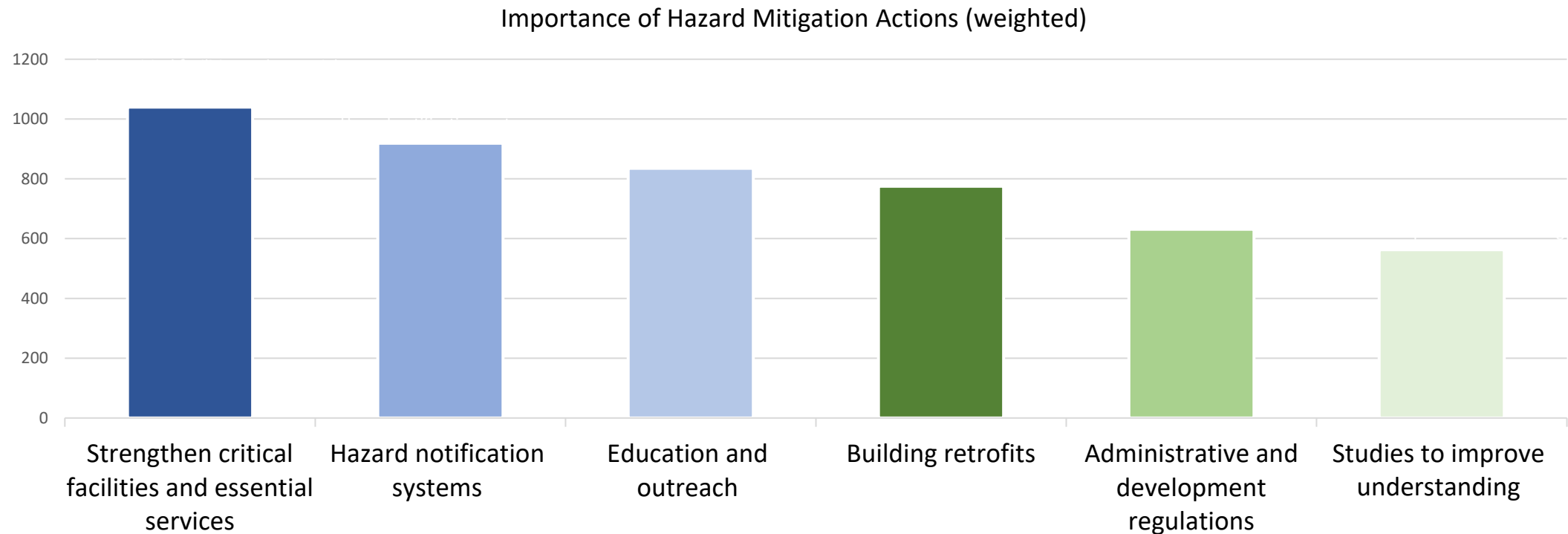
Hazard Communication Preferences



	Church or other faith-based organization	Homeowner association or other neighborhood groups	Thurston Community Alerts Subscription	Other	Local or state government	Local or regional news
Currently Use	49	150	231	324	395	454
Prefer to Use	19	35	113	82	138	106

How important is it to you for local governments to focus on the following hazard reduction activities?

Very Important +2; Somewhat Important +1, No Opinion 0, Not Important -1



Appendix A – Specific Vulnerabilities by Geographic Area

(Countywide feedback examples)

Location	Description	Affected People	Solutions
Forested areas around Thurston County in general. We certainly have beautiful forests surrounding us. Wildfire is by far my biggest and most immediate concern. As well, soil erosion and rising waters along our Puget Sound coastline.	<p>In the summers when it gets too dry and hot, we are sitting tinderbox.</p> <p>Rising waters in general will be affecting our downtown and coastal areas.</p>	Wildfire really will affect everyone who is near its path.	<p>Both concerns are hard to address. Controlling our rising waters is something we can address by slowing the warming of our environment and planet, which means less carbon footprints in general, across the world.</p> <p>Diminishing wildfire concerns is something I am curious to learn more about. I try to clear brush around areas I know of and can gain access to. But is there more we can do?</p>
Homes and businesses without air conditioning are all vulnerable to extreme heat, especially in neighborhoods without large trees to provide more effective shade.	Without shade and/or air conditioning people could overheat in their homes: heat stroke.	The elderly and People who are less likely or able to leave their homes to seek coolness elsewhere. Those without cars and living several blocks from a bus stop.	Trying to establish more shade trees in neighborhoods to create cooler microclimates. Neighborhood block watch type work to know those in your neighborhood and be able to check up on those who may be more vulnerable.

Appendix B: Additional Notes

Is there anything else you would like to share about improving disaster resiliency in your community?

169 people offered feedback

Notes

County and city governments need to work much more closely together to address these issues. Both need to get past their viewpoint of project by project approval, and look at the entire system, and what it needs to function properly to withstand disasters.

Public funds to those who can't afford to have basic preparations

Not sure if a lot of the current summer road construction projects can also include road improvements to prevent flood impacts.

Instead of talking need to start doing. Hazards have been the same for ever. Do something and do not put the burden on the tax payer. Quit throwing money into other useless projects.

I'd like to see more local government led coordination of neighborhood-level preparation for disasters.

Are economic development directors at the table?

Make this initiative a priority with Thurston County.

We need to do more to deal with climate change in our community.

Risk Assessment

For the purposes of hazard mitigation planning, risk is the potential for damage or loss created by the intersection of natural hazards with people and assets such as buildings, infrastructure, natural and cultural resources.

FEMA Risk Assessment Requirements

A plan must include or provide a description of the type of all natural hazards that can affect the jurisdiction.

- A rationale if omitting any natural hazard that is commonly recognized to affect the participants in the planning area.
- Information on the location for each identified hazard
- The extent (severity level expressed in scientific scales) of the hazards that affect the planning area
- Information on previous hazard events (an emphasis on significant events)
- The probability of future events

For multi-jurisdictional plans, when hazard risks differ across the planning area, the plan must specify the unique and varied risk information for each jurisdiction and their assets outside the planning area

Risk Assessment Requirement (cont.)

A plan must include or provide a summary of the jurisdiction's vulnerability of each participant to the identified hazards. Includes current and future assets.




- **Assets include:**
 - People (including underserved and socially vulnerable)
 - Structures (including facilities, lifelines, and critical infrastructure)
 - Systems (including networks and capabilities)
 - Natural, historic, and cultural resources
 - Activities that have value to the community
- **The potential impacts on each participating jurisdiction and its identified assets, and account for:**
 - Effects of Climate Change
 - Changes in population patterns or makeup of socially vulnerable populations
 - Changes in land use and development


For multi-jurisdictional plans, when hazard risks differ across the planning area, the plan must specify the unique and varied risk information for each jurisdiction and their assets outside the planning area

Hazards in the Plan



Risk Assessment – location, extent, previous occurrences, future probability, vulnerability, and impacts

- Earthquake 
- Flood 
- Dam Failure (new) 
- Landslide
- Severe Storms
- Volcanic Activity
- Wildland Fire

 HAZUS Multi-hazard modeling scenarios

Where relevant, the effects of climate change are factored into the risk assessment

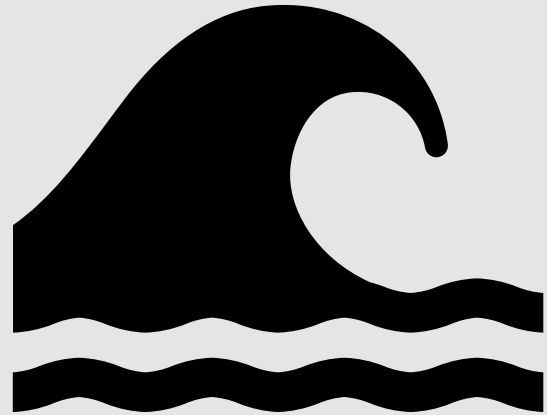
Other Hazards – Lack risk characterization, defined and profiled

- Critical Shortage
- Cyber Attack
- Drought
- Epidemic
- Hazardous Materials Release
- Heat Wave/Extreme Heat*
- Space Weather/Geomagnetic Storm
- Terrorist Attack
- Tsunami*

*Risk Assessment candidates

Hazard Modeling Scenarios

(in HAZUS-Multi-Hazard)



Earthquake

- Cascadia Subduction Zone 9.0
- Nisqually 6.8
- Seattle Fault 7.5

Flood

- 50-year
- 100-year
- 500-year
- High Groundwater Exposure analysis
- Sea-level rise

Dam Failure

- Nisqually Dam Inundation
- Trans Alta Dam Inundation

Hazard Exposure Analysis

Landslides

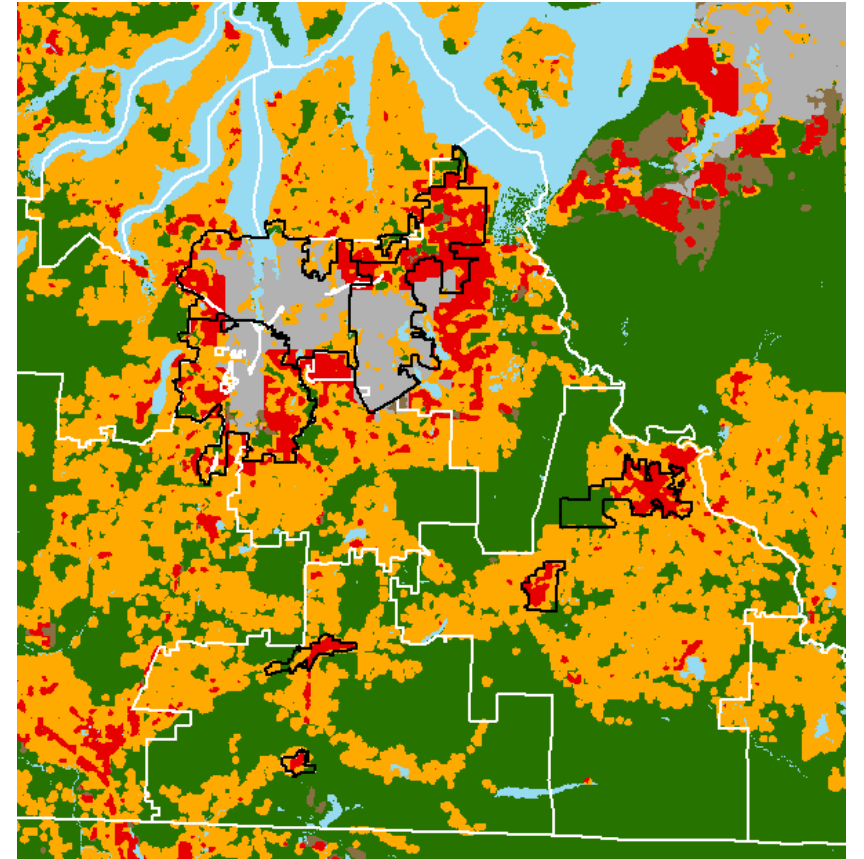
- DNR's mapped landslides
- Slopes >40%

Wildland Fire

- Washington DNR
 - Interface – High, Medium, and Low Structure Densities
 - Intermix High, Medium, and Low Structure Densities
- Pacific Northwest Region Wildfire Risk Assessment
 - Burn Probability
 - Flame Length

Volcanic Activity

- USGS lahar inundation zone
- USGS tephra fallout zone



Extreme Heat Hazards



Impacts

- Creates urban heat island effect and jeopardizes health and safety of
 - Vulnerable populations
 - Outdoor laborers
- Increases
 - Risk for drowning
 - Emergency call volumes
 - Exposure to emergency responders
 - Demand on municipal water resources
 - Conditions for algal blooms
 - Conditions for wildland fire
 - Stress to livestock
- Disruptions to power, water, transportation, industry productivity
- Decreases industry and agricultural productivity

Response Activities

- Cooling centers
- Welfare checks
- Water delivery drives
- Water restrictions (landscape irrigation, car washing)
- Outdoor activity restrictions

Mitigation Activities

- Increase urban tree canopy
- Adopt workplace heat injury prevention standards
- Adopt Regulatory requirements for AC on new construction
- Airconditioning and insulation retrofits, roofing materials (green/cool roofing products)
- Ongoing safety education about exposure reduction
- Backup generators for water systems

How should we include Extreme Heat in the basic plan?

- Add to the Other Hazards list (definition and profile)
- Include an Extreme Temperatures hazard in Severe Storms (expand on both heat and cold: probability, severity, historic incidents, risk rating).
- Add Extreme Heat as a stand-alone hazard in the risk assessment

Plan partners can include any hazard in their annex and perform a risk assessment with a rating that varies from the basic plan.





How should we include Tsunami in the basic plan?

- Add to the Other Hazards list (definition and profile)
- Add Tsunami hazard description to both the Earthquake and Landslide hazards (probability, severity, historic incidents, risk rating).
- Add Tsunami as a stand-alone hazard in the risk assessment.