



Washington State Enhanced Hazard Mitigation Plan Annual Report 2021

February 2022

Climate Impacts at the Forefront

This year, we made new progress in updating the State Enhanced Hazard Mitigation Plan (SEHMP) before its expiration date in September 2023. Washington also made great, strategic use of the multiple hazard mitigation funding opportunities that came into our state. This year also saw the impacts of climate change at the forefront of our mitigation work all year long, with multiple interagency efforts to address climate resilience and dedicated funding to mitigate the impacts of climate-related hazards.

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Progress on the SEHMP update

Like local hazard mitigation plans, our state plan is due for a comprehensive update every five years. Our next expiration date comes in September of 2023. We reported on the grant application we were developing to fund the update in the 2020 Annual Report, and this year we submitted that application under the Hazard Mitigation Grant Program (HMGP) round for DR-4539 with an estimated budget of \$376,000. These funds will be used to bring the update entirely in-house, giving the state additional oversight of the planning process, risk and vulnerability assessment, and mitigation strategy development. These funds will also be used to increase local-level engagement during the update, with plans to engage directly with local emergency managers, mitigation practitioners, academia, tribal governments and nonprofits involved in hazard mitigation. We will also be developing a website dedicated to the SEHMP with interactive features, information about hazard risks and vulnerabilities around the state, and an ability to engage with us about the plan itself.

Efforts toward the 2023 SEHMP this year included a lot of data collection and organization, particularly geospatial data for use in our GIS-based approach to hazard analysis we're pursuing this time around. We also spent a considerable amount of time ensuring our spatial analysis methods are valid and appropriate. We tested our approach using wildfire location data (thanks to DNR's excellent dataset available [here](#)) and have already received some illuminating results about the ways wildfire risk may be changing over time. Members of EMD's Mitigation & Recovery section are set to publish these results in an upcoming issue of the

International Journal for Disaster Risk Science. They will also be included in the 2023 SEHMP.

Our hazard analysis approach for 2023 consists of four phases:

1. Hazard characterization: Where did hazards occur? Have occurrence locations changed over time? Are there any hazard "hot spots"?
2. Identification of hazard causes: Why are hot spots located where they are?
3. Prediction of future occurrences: What do current hot spots tell us about where disasters might occur in the future?
4. Social and structural vulnerability: Are vulnerable people and assets located in hazard-prone areas? What makes them susceptible to disaster impacts?

Interagency coordination

We continued implementing the 2018 SEHMP's Mitigation Strategy, primarily through active and strategic interagency coordination to identify state-level mitigation projects and funding opportunities, which is directly related to Goal 1 in the 2018 SEHMP. Statewide efforts toward mitigation this year included regular gatherings of the Hazard Mitigation Working Group, Interagency Climate Adaptation Network, Washington Silver Jackets, and two climate change proviso task forces coordinated by the state's Department of Commerce and Office of Financial Management. These climate change task forces will result in improved guidance on addressing climate-related natural hazards in local comprehensive plans as well as recommendations to the Legislature for funding climate resilience efforts around the state.

Other tangible projects include the Office of the Chief Information Officer's development of a natural hazards-specific data portal (more below), and WA Sea Grant's nearing completion of its study into parcel-scale sea level rise vulnerability.



2021 Hazard Mitigation Assistance grant rounds

Building Resilient Infrastructure and Communities

This year saw millions of dollars come into the state for hazard mitigation. Among the most significant accomplishments is Washington's great success in the national competition for FEMA's 2020 Building Resilient Infrastructure and Communities (BRIC) grant round. We received news in early 2021 that Washington secured more than \$61 million worth of federal funding in the 2020 BRIC round – first in the nation for per capita mitigation dollars and second in total dollars awarded. The bulk of that funding will go toward two vital disaster resilience efforts on our Pacific coast: a vertical evacuation structure in Westport and the construction of the North Shore Levee in Hoquiam. Also receiving funding is a flood mitigation project for the Kittitas County Waste Transfer Station.

The 2021 BRIC round opened on August 10, with full applications due to EMD for review on November 8. Of the 104 pre-applications we received, 11 were invited to apply, totaling more than \$130 million of mitigation projects. With submission of those applications due to FEMA in early 2022, we hope to report further BRIC successes in the next Annual Report.

Hazard Mitigation Grant Program

Washington received two storm-related disaster declarations in March and April, triggering two HMGP rounds that were managed concurrently – DRs 4584 and 4593, worth an estimated \$10 million. The state also had 8 Fire Management Assistance Grants (FMAGs) because of wildfires this summer, which triggered an HMGP Post Fire round worth \$8.3 million.

In September, the Biden administration announced all 50 states will receive an HMGP round for the COVID-19 disaster (DR-4481). For Washington, this means an influx of \$100 million of mitigation funds. In its announcement, the White House included a request for states to apply most of these funds to climate-related natural hazards and social vulnerabilities (more on that [here](#)), and we intend to do just that. EMD's Mitigation section held multiple ad hoc meetings with state agency representatives from the Departments of Ecology, Natural Resources, Commerce, Health, Transportation, WA Sea Grant and University of Washington regarding climate-hazard mitigation projects, goals and ideas. We also engaged directly with local governments via webinars about the opportunity. Pre-applications were due on November 30, and we received 140 from state and local agencies, totaling an astounding \$1.4 billion in climate-related mitigation projects. EMD invited 60 to submit full applications, worth an estimated \$725 million, reflecting just how competitive this round will be. We hope to report on successful project awards in next year's Annual Report.

Washington State Conservation Commission sponsors fire resilience trainings

The Washington State Conservation Commission sponsored several fire preparedness and resilience trainings during 2021 with the goal of providing robust and diverse training opportunities for professionals working in the field of wildfire preparedness and recovery. The Commission sponsored seven of the National Fire Protection Association's "Assessing Structure Ignition Potential from Wildfire Trainings" (ASIP) with attendance focused on various geographic regions of the state. More than 150 attendees participated in these ASIP trainings overall, and the trainings were taught by the National Fire Protection Association. The Commission also sponsored a Post-Fire Risk Mitigation and Assessment Training titled "World of Wildfire". This training was developed and delivered by the Okanogan Conservation District with 36 individuals attending. The final training sponsored by the Commission this year was titled "Outreach Strategies for Community Wildfire Preparation and Recovery". This training was developed and delivered by Conservation Commission and Lincoln County Conservation District staff and had 22 individuals in attendance. These trainings were attended by staff from conservation districts, state agencies, federal agencies, tribes, fire districts, local governments and non-governmental organizations.



Port of Bellingham's Tsunami Maritime Response and Mitigation Strategy

EMD's Hazards and Outreach team completed the first [Tsunami Maritime Response and Mitigation Strategy](#) (TMRMS) in the state for the Port of Bellingham this year. The Port of Bellingham TMRMS was built upon established maritime guidance from the National Tsunami Hazard Mitigation Program (NTHMP) that has been used to create maritime strategies in California, Oregon and Alaska. EMD expanded these existing strategies to create a maritime strategy that is not only tailored to the Washington coast's unique tsunami threat, but also includes detailed, actionable recommendations for both tsunami response and mitigation and site-specific tsunami mapping.

The strategy includes specific mitigation and response actions that the port can take to improve tsunami resilience. Port-specific tsunami inundation and current velocity modeling was completed by the University of Washington and the WA Sea Grant. The Washington Geological Survey (WGS) produced a suite of maps and graphics for the project including a modeled minimum water depth map, a first for the inner coast of Washington. These response and mitigation actions can help save lives, make the port more resilient and reduce the time it takes for the port to recover.

Pacific Coast Vertical Evacuation Gap Assessment Completed

EMD's Hazard and Outreach team, in partnership with UW's Institute for Hazard Mitigation Planning and Research, completed an [assessment of vertical evacuation structure \(VES\) needs](#) for the state's three most vulnerable Pacific coast counties (Pacific, Grays Harbor and Clallam). The team used their findings, combined with the 2010 Project SafeHaven reports, to develop four vertical evacuation options for each study location. Each community option was accompanied by maps showing proposed VES locations and minutes to high ground, satellite or street view photos of the proposed locations, the number of people within a 15-25-minute walk to high ground and charts comparing this data for all four options in an easily readable format.

Now that this assessment has been completed, Washington has a much more accurate idea of how many VESs it will take to ensure the most vulnerable communities on the Pacific coast can quickly evacuate in the event of a Cascadia tsunami. Now the real work begins at the local level – designing, planning and funding each VES project to transform the assessment's findings from wish list to reality.

Tsunami inundation and current velocity maps published by WGS

WA Geological Survey (WGS) released new tsunami modeling results from a large magnitude 9.0 Cascadia subduction zone megathrust earthquake scenario for the Puget Sound and adjacent waters. The results include [16 supplemental map sheets](#) showing maximum tsunami inundation, estimated first wave arrival times, and current speeds for locations extending from the Washington–Canada Border to the southern extent of the Puget Sound. These are the first published tsunami hazard maps for many areas within the Puget Sound region using a Cascadia subduction zone scenario. The intent of the modeling is to encourage hazard planning and increase community resilience in Puget Sound and its adjacent waterways. The WGS recommends using this modeling as a tool to assist with emergency preparation and evacuation planning prior to a Cascadia subduction zone event.

Summary of findings

According to the WGS, the first tsunami waves generated by the offshore earthquake in the Pacific Ocean would travel through the Strait of Juan de Fuca and reach Whidbey Island within 90 minutes, causing large waves to travel north into the Strait of Georgia and south into the Puget Sound. The tsunami would arrive within 2-4 hours after the earthquake for most locations in Puget Sound (and the first wave may not necessarily be the largest). Some locations would experience inundation depths greater than 10 feet, and some waterways would experience destructive current speeds more than nine knots. Tsunami wave activity would likely continue more than 14 hours and remain hazardous to maritime operations for more than 24 hours.



Natural Hazards Data Portal project

The Office of the Chief Information Officer (OCIO) was tasked by the Legislature to develop a common data sharing platform for public organizations in Washington to host and share sensitive natural hazards mitigation geospatial data to assist with state hazard risk and resilience mapping/analysis. A secure common platform will provide sensitive (category 2 and 3) natural hazard mitigation data in standardized and compatible formats for use by the organizations and protect sensitive data needed for risk analyses.

Currently, there is no common platform for state, local and higher-education organizations to share existing state geospatial data on natural hazards risks. A lack of data in standardized and compatible formats results in organizations maintaining individual sets of data, creating redundant processes and leads to inconsistencies in how data is reported.

This project will provide consistent natural hazards data needed to map and analyze natural hazard risks and vulnerabilities around the state more accurately and improve information sharing and interagency coordination. The Legislature has identified \$724,000 in funding to create this common platform and established an expectation for the data platform to be available by June 30, 2023. Work on the project began in July 2021. To find out more about the project, contact State GIS Coordinator Joanne Markert (joanne.markert@ocio.wa.gov) or GIS Data Administrator Kirk Davis (kirk.davis@ocio.wa.gov).

Local mitigation activity in 2021

Local hazard mitigation planning

Local mitigation planning continued across Washington in 2021, maintaining our track record of statewide participation in mitigation planning. Multiple counties, representing dozens of cities, towns and special purpose districts, received FEMA approval for their mitigation plans – including Asotin, Snohomish, Stevens and Whatcom Counties. Others made excellent progress toward completing their plan updates, including Cowlitz, Okanogan, Pacific, Skamania and Thurston Counties. Each of these plans are expected to be finished in 2022.

City of Westport vertical evacuation structure

Westport's vertical evacuation structure (VES) was mentioned above as one of the successful projects from BRIC 2020. Part of what led to its success in the national competition was the leveraging of an "advance assistance" Pre-Disaster Mitigation grant from 2018, which the city used for the engineering design and benefit cost analysis in the successful BRIC project. It's a great example of the benefits of advance assistance grants.

Jefferson County Snow Creek Road culvert upsizing

This project was awarded in March and is currently being implemented using HMGP funds. The purpose of the project is to replace an undersized culvert that has been repeatedly blocked with debris, threatening to wash out 14,000 cubic yards above Lake Leland and a private residence. The upsizing of the culvert will reduce a significant hazard to the public, private property and the environment.

King County Raging River property buyout

This project was awarded in February and is funded under HMGP DR-4539. The goal of the project is to acquire a particularly hazardous parcel, which became a landslide hazard after a 2020 flood on the Raging River eroded portions of the bank. The project will remove the residential structure now precariously close to the bank's edge and revegetate the space with native plants.



Priorities for 2022

2023 SEHMP Update

In 2022, the deadline for the 2023 SEHMP update looms larger than ever. With the grant award in hand, our priorities for this year are to focus heavily on updating the risk and vulnerability assessment (also called our Hazard Inventory and Vulnerability Assessment) as well as the mitigation strategy via the Hazard Mitigation Working Group.

Efficient, strategic use of HMA funds

With the massive influx of HMA funding coming into the state, and with no indication of fewer disasters occurring in our future, it has become more important than ever to make sure Washington is capitalizing on every opportunity to strategically reduce our hazard risks and protect our critical assets and people. Although the updated SEHMP will be a vital component of this more efficient use of HMA funding, we are not waiting until 2023 to get started. In 2022, EMD's Mitigation team will work to institutionalize mitigation-mindedness across EMD's programs and state agencies. Through ongoing conversations with our statewide partners, we can be more ready than ever to leverage our mitigation dollars and make a serious dent in reducing our hazard risks and vulnerabilities.

Flood risk reduction

Storms in late 2021 and early 2022 led to multiple flooding disasters that included several cascading impacts, such as stream channel migration, mudslides, and erosion. These events reiterated that flooding is one of the most prevalent natural hazards in Washington and deserves our attention. In 2022, we'll be prioritizing flood risk reduction in our grant rounds and in our update to the SEHMP.

This report was developed by the Mitigation & Recovery Section of the Washington Emergency Management Division. For more information about the material presented in this report, please contact the State Mitigation Strategist, Kevin Zerbe, at kevin.zerbe@mil.wa.gov or (253) 370-5432.

