

Snohomish County Hazard Mitigation Plan – September 2020 Update

2021 Progress Report

Date this Report was Prepared: October 13, 2021

Name of Community: Snohomish County, WA

Name of Plan: Snohomish County Hazard Mitigation Plan – September 2020 Update

Date of Adoption of Plan: January 13, 2021

1. How can a copy of the original plan or area analysis report be obtained: please visit the Department of Emergency Management (DEM) office (720 80th Street SW, Building A, Everett, WA 98203) to view a hard copy. A navigable electronic version is available on our website at: <https://snohomishcountywa.gov/HMP>
2. Describe how this evaluation report was prepared and how it was submitted to the governing body, released to the media, and made available to the public: this report was prepared by DEM staff and participating planning partners. The report is being submitted to the County Council for review. This progress report is available for review by the media and the public. A locally published notice stating progress report availability and the location of the full plan will be released during the month of October 2021.
3. Provide a review of each recommendation or action item in the action plan or area analysis report, including a statement on how much was accomplished during the previous year: progress percentages, as applicable, are included under each action item.
4. Discuss why any objectives were not reached or why implementation is behind schedule: objectives for the plan are in-progress and were prioritized based on current projects, funding, and objectives. Additionally, the COVID-19 pandemic substantially impacted implementation timelines.
5. What are the recommendations for new projects or revised recommendations? Revised recommendations include multi-disciplinary approaches to risk reduction by identifying projects that also exist within programmed capital improvements, climate adaptation projects, and Growth Management. Additionally, revised recommendations include building actionable preparedness capabilities within jurisdictions to withstand hazard impacts and enhancing the social capital of communities to recover more quickly from disasters.
6. How did combined actions contribute to risk reduction? Due to the COVID-19 pandemic, capacity for completing projects and action items listed in the 2020 HMP Strategies was significantly reduced. Strategies with Action Item updates are discussed below.

HAZARD MITIGATION ACTION PLAN MATRIX

Project/Mitigation Measure Number: SnoCo-1 Adapt, retrofit, and/or develop redundancy in, critical infrastructure and systems located in high-hazard areas or that support response, recovery, or continuity of operations plans.

Actions:

Reduce risk to critical facilities in higher risk areas where relocation is not practicable and where life safety can be assured.

1. Support retrofitting to assure life safety and the functionality of critical facilities post disaster.
2. Elevate structures prone to increased frequency of flooding.
3. Determine the appropriate retrofitting approaches using best available science.
4. Conduct a seismic retrofit of the Snohomish County Courthouse complex (four buildings).
5. Implement structural and non-structural mitigation measures to reduce risk to vulnerable buildings and critical facilities at Paine Field Airport.
6. Retrofit, Rehabilitate or Replace Vulnerable Road and Bridge Facilities and Infrastructure Throughout Snohomish County
7. Protect wastewater facility from ground water infiltration
8. Seal wastewater pipes throughout system
9. Seal pump gallery at wastewater treatment facility.

Reduce risk to utility networks

10. Establish micro grids as disasters destroy original systems and as systems reaching the end of their design life.
11. Create coalition amongst municipalities and utility companies.
12. Bury above ground systems as elements are upgraded and where practicable.
13. Install backup generators where necessary.

Hazards Addressed: All

Goal(s): 1, 2, 3

Objective(s): 1.2, 1.5, 2.2, 2.3, 3.3

Lead Agency: Snohomish County Facilities Management (FM), Snohomish County Public Works (PW)

Secondary Agency(s): Snohomish County Department of Emergency Management (DEM), Snohomish County Planning and Development Services (PDS), Snohomish County Department of Conservation and Natural Resources (DCNR)

How does this project contribute to overall risk reduction? Two cities have enacted action items to seismically protect water infrastructure systems. Two cities added pump station capacity to reduce flood waters in developed areas, and one city constructed a berm with a bike/ped path to further protect the downtown area with the increased stormwater pump station capacity, comprehensively increasing flood protection of the downtown development and infrastructure.

How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval

Funding has not been secured for all projects but is grant eligible for existing grant program.

Possible implementation tools include -- Revenue sources: FEMA Hazard Mitigation Grants, General Fund, Airport Funds, Roads Fund, CIP Special Assessment Districts, and Assessment Fees.

Timeline: Ongoing

2021 Update: The City of Edmonds completed construction of the Dayton/SR 104 Stormwater Lift Station to reduce flooding in the downtown/waterfront area, and completed seismic retrofits to the Five Corners Water Reservoirs System. The City of Stanwood completed the SR 532 Flood Berm and Bike/Ped Path

in the summer of 2021 that will protect the downtown area from seasonal flooding. Stanwood also completed phase 1 of the Irvine Slough Pump Station, which added a new pump and bypass line so downtown waters will go directly to the Irving Slough Pump Station. The City of Monroe has completed replacing 700 feet out of a 1,000 lf project of vulnerable water main.

HAZARD MITIGATION ACTION PLAN MATRIX

Project/Mitigation Measure Number: SnoCo-2 Enhance and improve capital improvement programs, taxing, zoning, and development approaches to promote mitigation and reduce exposure/vulnerability to hazards.

Actions:

1. Promote development in low risk areas
 - a. Conduct a pre-disaster gap analysis for urban and transit centers to identify the required provisions that need to be in place before a disaster for the growth centers to function to their full supportive capability.
 - b. Develop approaches that reduce the pressure to develop or redevelop in high risk areas yet allow property owners to retain value to properties. (Purchase or transfer development rights from high risk areas that are not location-dependent to areas of minimal risk or where risks can be mitigated to tolerable levels.)
 - c. Require deferral permit fees for risk reducing development. (The local governments may even be able to secure alternative funding during the referral period and can perhaps reduce or waive the fees at the time of collection if they are not covered by private insurance.)
 - d. Offer expedited permitting and prioritization for development within a growth center. (This would encourage use of the TDR program by homeowners within vulnerable locations to relocate to safer areas where they would be given access to rapid permitting and perhaps other incentives. Reconstruction is an ideal time to mitigate future hazard damages.)
2. Support the retrofitting of structures in land uses that are location-dependent or where locating to lower risk areas is not practicable
 - a. Adopt higher building standards commensurate with higher risks (such as added flood freeboard) where practicable.
 - b. Evaluate the permitting process for opportunities to incentivize improved building practices.
3. Make greatest use of the post disaster environment to advance the comprehensive plan and increase community safety.
 - a. Consider more stringent building standards commensurate with higher risks (added flood freeboard) where practicable.
 - b. Work with or create (e.g. Map-Your-Neighborhood) neighborhood organizations within risk areas to discuss risk reduction mitigation measures.
 - c. Evaluate the permitting process for opportunities to incentivize improved building practices.
4. Seek land acquisition opportunities for open space use and preservation in areas of high vulnerability due to multiple risk exposure.

Hazards Addressed: Earthquake, Hazardous Materials, Weather Events, Flooding, Dam Failure, Wildfire, Mass Earth Movement, Volcano, Tsunami

Goal(s): 1, 2, 3, 4

Objective(s): 1.1, 2.2, 3.1, 4.1, 4.3, 4.4

Lead Agency: PDS, PW

Secondary Agency(s): Snohomish County Tomorrow (SCT), DPCR, FEMA

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| How does this project contribute to overall risk reduction? N/A, no feedback received. |
| How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval |
| Funding available through an ongoing project and meets existing grant eligibility requirements. Current implementation tools include Revenue: General Fund, FEMA Hazard Mitigation Grants, River Improvement Plan, REET, CIP, Grants Implementation tools to explore: Creation of special assessment districts, Assessment fees, Disincentive taxing (higher taxing in areas having higher risks and demanding greater County resources), and FEMA Hazard Mitigation Grants, Planning and zoning: Incentive zoning (Transfer or Purchase of Development rights, Contact zoning, Impact zones...), Rolling easements. |
| Timeline: Ongoing |
| 2021 Update: No feedback received. |

| HAZARD MITIGATION ACTION PLAN MATRIX |
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| Project/Mitigation Measure Number: SnoCo-3 Create and enhance coordinated public information programs that increase hazard awareness and that support actionable preparedness and mitigation measures and are inclusive of individuals with limited English proficiency and those with access and functional needs. |
| Actions: |
| <ol style="list-style-type: none"> 1. Encourage emergency preparedness kits (3 to 10 days survival) and programs (CERT, SNAP, etc.) <ol style="list-style-type: none"> a. Have an earthquake plan b. Store food and water c. Supply of medicine d. Emergency radio (NOAA weather radio) 2. Arrange household meeting place 3. Have hazards insurance 4. Designate evacuation plan 5. Know how to shut off gas/ water (earthquake) 6. Know first aid 7. Address concerns of elderly and infirm 8. Manage emergency communications 9. Store heavy objects on floor (earthquake) 10. Store critical objects above/outside of flood prone area (flooding) 11. Secure moveable items (earthquake) 12. Keep heavy objects off walls above and near beds (earthquake) 13. Secure objects (earthquake) 14. Retrofit home/office 15. Distribute risk information and hazard mapping on websites. 16. Map and maintain critical transportation routes. (government) 17. Maintain and improve hazard monitoring and early warning systems. (government) |
| Hazards Addressed: All |
| Goal(s): 1, 2, 3, 4 |
| Objective(s): 1.5, 2.1, 2.3, 3.2, 4.4 |
| Lead Agency: DEM |
| Secondary Agency(s): PW, HSD, SJD, WA EMD |

How does this project contribute to overall risk reduction? Due to COVID-19 public health protection measures, capacity for public outreach was limited. The County and 2 cities were able to provide limited in person outreach to assist the public with all hazards education, and coordinated WA EMD preparedness social media campaigns with supporting reposts.

How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval

Funding secured, available, is an ongoing project or meets existing grant eligibility requirements. Current implementation tools include: -- Revenue: General Fund, EMPG, SHSP, UASI grant funds. Possible implementation tools -- Revenues: Grants. Planning and Zoning: Hazard disclosure signage. Other: Partnering with private and not-for-profit organizations.

Timeline: Ongoing

2021 Update: DEM has been working with WA EMD to publish and distribute state preparedness resources including resources in Spanish. Due to COVID public outreach was limited, but DEM did stand-up information booths at National Night Out and the Evergreen State Fair. The City of Monroe provided disaster/hazard awareness and preparedness education at one community event. The Town of Index is reporting increased outreach to new residents regarding understanding of flood hazard impacts.

HAZARD MITIGATION ACTION PLAN MATRIX

Project/Mitigation Measure Number: SnoCo-4 Promote individual community's ability to respond and recover from an event through the developing of social capital and strengthening of community networks.

Actions:

1. Provide incentives, such as neighborhood grants, for high-risk neighborhoods to develop plans.
2. Promote a "Map-Your-Neighborhood" program.
3. Encourage meeting places within neighborhoods.
4. Connect neighborhoods by increasing walkability and increased connectivity of walkable and bikeable networks.
5. Inform and educate the public on hazard mitigation and preparedness via a County-operated website.

Hazards Addressed: All

Goal(s): 2, 3

Objective(s): 2.3, 3.1, 3.2, 3.3

Lead Agency: DEM

Secondary Agency(s): All

How does this project contribute to overall risk reduction? Encouraging communities to participate in the Map Your Neighborhood program is an efficient way to coordinate consistent State and Local Preparedness messaging as well as increasing their immediate, local capacity to prepare, mitigate and respond to all hazards.

How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval

Funding has been secured via EESCS and UASI grant funds

Timeline: Ongoing

2021 Update: Snohomish County continues to coordinate with WA EMD on the Map Your Neighborhood program and distribute resources when requested. The program will be shifted into a new program next year, and Snohomish County will modify outreach to the new program when implemented.

HAZARD MITIGATION ACTION PLAN MATRIX

Project/Mitigation Measure Number: SnoCo-5 Enhance and improve support for risk reduction programs and capabilities including supporting efforts through programs, processes, regulations, and funding.

Actions:

1. Develop Departmental continuity of operations plans and neighborhood-based continuity plans (small businesses and neighborhoods).
2. Apply for Hazard Mitigation Program grants to advance and complete Snohomish County projects
3. Coordinate with Planning processes and programs in PDS, PW and DCNR to support grant applications for funding department specific projects and to brief on DEM led projects
4. Attend SCT Meetings to provide subject matter expertise to capital and comprehensive planning processes and provide briefings on DEM led projects
5. Coordinate State and Federal Preparedness projects with relevant Snohomish County departments and SCT members.
6. Solar- powered community radio system
7. VHF regional emergency radio system
8. Protection of fiber optic cables

Hazards Addressed: All

Goal(s): 1, 2, 3, 4

Objective(s): 1.4, 1.5, 2.1, 2.3, 3.3, 4.1

Lead Agency: DEM

Secondary Agency(s): All

How does this project contribute to overall risk reduction? Deconflicting Critical Transportation routes between the State, County and local jurisdictions allows coordinated planning before a hazard occurs to identify corridors that may have different priorities for debris clearing, or no alternate routes for transportation corridors post-event instead of discovering the gaps during a disaster response. Developing and maintaining a County-wide Continuity of Operations Plan provides guidance for leadership and essential personnel on where to report and how to respond after a hazard event, including roles and responsibilities, tasks and redundancy of communication. The HamWAN project further increases communication redundancies, not only within Snohomish County Government, but also with ACS volunteers and potentially other regional agencies.

How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval

Funding has not been secured but may be HMP grant eligible.

Timeline: Ongoing

2021 Update: DEM has been working with PW and WA EMD to deconflict Priority Routes and provide Alternate Routes for Critical Transportation Corridors. DEM has worked with Snohomish County Departments to complete the Continuity of Operations Plan base plan, and has completed 85% of the Department Annexes. DEM has completed purchase of the HamWAN equipment needed to begin development of a Snohomish County network.

HAZARD MITIGATION ACTION PLAN MATRIX

Project/Mitigation Measure Number: SnoCo-6 Integrate HMP with other planning and regulatory documents and mechanisms through a coordinated County-wide approach while considering regional partners.

Actions:

1. Integrate the HMP with the following plans and mechanisms:
 - a. Comprehensive Plan
 - b. Capital Improvements Plan
 - c. Critical Areas Ordinances
 - d. Shoreline Master Plan
 - e. Other applicable mechanisms
2. Continue support, maintenance, improvement, and implementation of HMP.
 - a. Update hazard, risk, and vulnerability information incorporating best available science and enhanced technology.
 - b. Improve risk assessment and monitoring capabilities.
 - c. Use scenario planning methods to identify future potential risks within county.
 - d. Maintain a natural hazards informational website.
 - e. Monitor implementation of the plan by Planning Committee.
3. Support and increase local governments' capacity for hazard mitigation planning.
 - a. Increase technical capacity
 - b. Coordinate and provide technical assistance to jurisdictions for grant eligible projects.
4. Provide intergovernmental coordination and partnership opportunities.
5. All planning partners that committed to the update effort will formally adopt this plan once pre-adoption approval has been granted by Washington Emergency Management and FEMA Region X. Additionally; each planning partner will adhere to the plan maintenance protocol identified chapter 7 of the plan. All actions under this initiative will be coordinated by DEM.

Hazards Addressed: All

Goal(s): 1, 2, 3, 4

Objective(s): 1.1, 1.5, 2.2, 3.1, 3.3, 4.1, 4.2, 4.3, 4.4

Lead Agency: PDS, DEM

Secondary Agency(s):

How does this project contribute to overall risk reduction? Providing an All Hazards briefing for the Capital Improvement Program provides Leadership and Decision Makers with additional information when planning and siting future facilities and infrastructure, as well as helps identify existing ones that may require maintenance or improvements to withstand the risks of different hazards. Updating the GIS database with recent seismic modeling results provides a better perspective of potential damage to the local Critical Transportation System and impacts to Mass Care services and the Supply Chain.

How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval

Funding secured, available, is an ongoing project or meets existing grant eligibility requirements.

Possible implementation tools: General Fund Expenditures (Growth Management Act, Critical Areas Ordinance, Coastal Zone Management Area Plans, Capital Improvement Program, NFIP Community Rating System 510 Plans, Special Area and Functional Plans).

Timeline: Ongoing

2021 Update: DEM has been involved in the Capital Improvement Plan and has presented briefings to SCT and the Snohomish County Planning Commission. DEM has utilized GIS products from WA EMD

and FEMA to lead a regional effort to assess the effects of a 9.0 Cascadia Subduction Zone earthquake on the Critical Transportation, Critical Infrastructure, and Supply Chain systems.

| HAZARD MITIGATION ACTION PLAN MATRIX |
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| Project/Mitigation Measure Number: SnoCo-7 Develop and implement a County-wide risk reduction program that supports comprehensive, all-hazards strategies. |
| Actions: |
| <ol style="list-style-type: none"> 1. Scope stakeholders, objectives and goals for a County-wide risk reduction program 2. Activate and utilize the Disaster Resilience Committee to examine damage assessments from past Snohomish County hazard events and provide strategies for moving forward with reducing risk on a comprehensive level. 3. Activate recommended subcommittee teams of the Disaster Resilience Committee to perform stakeholder and public outreach, and develop a County-wide plan for risk reduction based on Best Available Science and damage assessments from past events. 4. Work with Regional Partners to coordinate regional mass care and transportation efforts and agreements. |
| Hazards Addressed: All |
| Goal(s): 1, 2, 3, 4 |
| Objective(s): 1.1, 1.2, 1.3, 1.4, 2.2, 3.3, 4.1, 4.3, 4.4, 4.5 |
| Lead Agency: DEM |
| Secondary Agency(s): All |
| How does this project contribute to overall risk reduction? N/A, no feedback received. |
| How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval |
| Funding has not been secured but is grant eligible for existing grant program. |
| Timeline: Not Started |
| 2021 Update: No Updates Provided |

| HAZARD MITIGATION ACTION PLAN MATRIX |
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| Project/Mitigation Measure Number: SnoCo-8 Provide incentives for eligible non-profits and private entities, including homeowners, to adapt to risks through structural and nonstructural mitigation measures. |
| Actions: |
| <ol style="list-style-type: none"> 1. Provide retrofitting information and technical expertise to organizations. 2. Develop special retrofitting loan packages with banks. 3. Work with neighborhood organizations to inform homeowners of retrofit options, through special purpose events such as block parties. 4. Develop home-based government loan and or grant programs for communities with higher risks. Use the best available science to: 5. Develop prioritization for acquisition. 6. Identify/develop financing mechanisms. |

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| Hazards Addressed: Earthquake, Hazardous Materials, Weather Events, Flooding, Dam Failure, Wildfire, Mass Earth Movement, Volcano, Tsunami |
| Goal(s): 2, 3 |
| Objective(s): 2.1, 2.2, 2.3, 3.1, 3.3 |
| Lead Agency: PDS, PW, DEM |
| Secondary Agency(s): Executive's Office, HSD, SHD |
| How does this project contribute to overall risk reduction? Continuing to provide incentives and assistance with home elevation projects to residents reduces structure damage and human casualties. |
| How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval |
| <u>Funding secured</u> , \$100,000 available, is an ongoing project or meets existing grant eligibility requirements. Possible implementation tools: Revenues: General Fund Revenues, FEMA mitigation grants (HMGP) with local match provided by property owners. Planning and Zoning: Granting occupancy permits with sunsets without retrofitting (unsafe URM high occupancy structures), incentivized taxing and increasing substantial improvement threshold. Other: Partnering with neighborhood, not-for-profit and business organizations. |
| Timeline: Ongoing |
| 2021 Update: Snohomish County has received 4 requests for new Home Elevation projects and no requests for buy-outs. |

| HAZARD MITIGATION ACTION PLAN MATRIX |
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| Project/Mitigation Measure Number: SnoCo-9 Develop and implement metrics that identify the most at-risk communities, especially those at risk of isolation or “islanding”, to ensure that critical services and facilities are resilient. |
| Actions: |
| <ol style="list-style-type: none"> 1. Utilize Census and other social vulnerability indexes to assess and map need factors within Snohomish County 2. Utilize the AFN need factors established in the Regional RCPGP 2019 CPOD project to prioritize food and water distribution post disaster and to assess sheltering needs 3. Pursue grant opportunities to continue and expand disaster sheltering services, public outreach to vulnerable communities, and coordination of local and regional critical services. 4. Give a higher priority within capital improvement budgets, grant programs or other funding sources to: <ol style="list-style-type: none"> a. Relocate or retrofit vulnerable emergency operation centers, medical facilities, and other critical facilities serving communities at risk of isolation during an event. b. Provide alternative access to critical facilities. c. Establish and maintain backup or redundant power sources. d. Strengthen community networks. e. Relocate County-owned critical facilities out of identified high hazard risk zones. |
| Hazards Addressed: Earthquake, Epidemic, Hazardous Materials, Weather Events, Flooding, Dam Failure, Wildfire, Mass Earth Movement, Volcano, Tsunami |
| Goal(s): 2, 3 |
| Objective(s): 2.3, 3.1, 3.3 |

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| Lead Agency: DEM, HSD, SHD, Executive's Office |
| Secondary Agency(s): PW, PDS |
| How does this project contribute to overall risk reduction? Currently the need factor and CPOD planning methodology involves a simple need factor equation and considers the populations within official political boundaries. Many hazard events can isolate populations, increasing need for CPOD capacity. Identifying where populations can become isolated from a worst case scenario allows the selection and prioritization of CPOD sites where they are needed most, and considering and weighting additional AFN need factors within these population islands can help prioritize streamlining supplies to populations with higher needs after an event quickly. |
| How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval |
| Funding secured, \$960,000 available, is an ongoing project and is grant eligible for existing grant programs. |
| Timeline: Ongoing |
| 2021 Update: The 2019 RCPGP project has used worst case scenario modeling for population isolation, identified areas with increased AFN needs, and factors them into the selection and prioritization process for CPOD sites. DEM is also pursuing grant opportunities to distribute preparedness and template hazard communications in multiple languages. |

| HAZARD MITIGATION ACTION PLAN MATRIX |
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| Project/Mitigation Measure Number: SnoCo-10 Promote earthquake risk reduction and resilience methods including specific planning for identified geographic islands through the improved data collection, education and outreach, and planning for seismic activity. |
| Actions: |
| <ol style="list-style-type: none"> 1. Perform a GIS analysis with current State and Federal layers to assess the islanding effect of worst case scenarios on the transportation system and identify population islands that may be created based on infrastructure damage and repair times. 2. Work with regional partners and cities to establish viable CPOD sites and produce a CONOPs plan for prioritization, operation and logistics for resupply and distribution 3. Work with regional partners and cities to establish viable sheltering sites based on the 2019 RCPGP CPOD population island results 4. Develop 2 weeks supply messaging for homes and businesses, and 2 day supply messaging for cars and create a public outreach campaign for each target. |
| Hazards Addressed: Earthquake, Hazardous Materials, Dam Failures, Mass Earth Movement, Tsunami |
| Goal(s): 1, 2, 3, 4 |
| Objective(s): 1.5, 2.1, 2.3, 3.1, 3.2, 3.3, 4.3, 4.4 |
| Lead Agency: DEM, PW |
| Secondary Agency(s): FM, PDS, DNCR |
| How does this project contribute to overall risk reduction? Utilizing best available science and data layers, work can has been completed to pre-screen and identify viable CPOD sites, some of which can be used jointly as shelters. Sites have been selected based on regional agreement of indicators for screening, such as liquefaction and landslide susceptibility and proximity to possible HAZMAT sites, and a tool has been developed to help regional emergency managers prioritize these sites based on the time of day that they occur, and the likely population during that time of day. A CONOPs is currently being developed to help with activation, prioritization, operational and demobilization decisions, and a public |

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| outreach campaign will be developed to stress the importance of having emergency supplies at home, in the car, and for businesses to prepare for their employees. |
| How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval |
| Funding has/has not been secured but is grant eligible for existing grant program. |
| Timeline: Ongoing |
| 2021 Update: 2021 Update: DEM has been working with a contractor to complete modeling of the effects of a 9.0 CSZ earthquake on the transportation system, and is working with cities and regional partners to establish a selection of prescreened CPOD sites, and a tool for prioritization based on need factors and longevity of isolation. |

| HAZARD MITIGATION ACTION PLAN MATRIX |
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| Project/Mitigation Measure Number: SnoCo-11 Promote wildfire mitigation and risk reduction methods in areas identified in medium and high-risk areas. |
| Actions: |
| 1. Using a five-step process, encourage communities to develop an action plan that guides their residential risk reduction activities, while engaging and encouraging their neighbors to become active participants in maintaining a safer place to live (www.firewise.org). |
| Hazards Addressed: Wildfire |
| Goal(s): 1, 2, 4 |
| Objective(s): 1.5, 2.1, 2.2, 2.3, 4.1 |
| Lead Agency: DEM |
| Secondary Agency(s): PDS , DNCR, DNR, USFS |
| How does this project contribute to overall risk reduction? Working with the State and regional partners in implementation of the WUI Code will help set regional standards for building and land use codes within the WUI, making it easier for property owners and developers to understand and comply. |
| How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval |
| Funding has not been secured but is grant eligible for existing grant program. |
| Timeline: Ongoing |
| 2021 Update: The County's Department of Planning and Development Services (PDS) has adopted the 2018 Washington State Building Codes, which provides updates for the suite of construction codes and fire code, including the Washington state Wildland Urban Interface Code (WUI) – The County is working with the State Building Code Council on implementation steps in concert with other jurisdictions. |

| HAZARD MITIGATION ACTION PLAN MATRIX |
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| Project/Mitigation Measure Number: SnoCo-12 Consider flood control structure maintenance and restoration. |
| Actions: |

1. Consider the benefits and life cycle costs of removing flood-prevention structures and instituting an adaptive strategy for vulnerable land uses.
2. Continue compliance with the Shoreline Master Plan and Growth Management Act Programs.
3. Implement salmon recovery plans and Sustainable Lands Strategy (SLS) (e.g. watershed-based hydrologic management plan as identified in SLS). These plans include the following measures that preserve and restore hydrologic ecosystem services:
 - a. Support forestry and farming resource area uses through tax and other incentives.
 - b. Exempt forestry and farming activities from nuisance complaints to allow for full provisioning of ecosystem services.
 - c. Preserve and protect open space and agricultural land.
 - d. Restrict urban growth to non-flood prone areas unless expansion facilitates habitat restoration or open space acquisition
 - e. Discourage new development and increased densities, both public and private, within riparian areas, channel migration zones, and marine shorelines wherever feasible.
 - f. Decommission and treat select roads.
 - g. Restore forested land cover.
 - h. Restore natural hydrological and biological function to the floodplain and along shorelines.
4. Promote enhanced native vegetation along shorelines.
5. Implement storm water management to prevent land use caused increases in flood levels and restore flood plain function. Methods may include the following:
 - a. Monitor all storm water and pumping station sites.
 - b. Retrofit and repair storm water conveyance infrastructure to restore floodplain function and maintain ecosystem services.
 - c. Develop regional storm water management plan.
 - d. Continue to improve and upgrade storm water facilities.
6. Reestablish and maintain healthy riparian areas and where possible, consider setbacks and the use of bioengineering techniques where it is not feasible to decommission existing flood control structures.
7. Prohibit new dikes, levees, floodgates, pump stations, culverts, dams, water diversions, and other alterations in the floodplain unless it has been demonstrated that no feasible alternative exists.
8. Consider a policy promoting the spreading of flood flows over developed land where flood risks can be accommodated. This would be a preferred alternative to the construction of ever higher and higher levees. This strategy would be appropriate where there are climate change predicted increases in the occurrences of more frequency, lower depth, and low velocity events.

Hazards Addressed: Flooding

Goal(s): 1, 2, 3, 4

Objective(s): 1.1, 1.2, 1.3, 1.5, 2.1, 2.2, 3.2, 3.3, 4.1, 4.3 4.4

Lead Agency: DCNR (SWM)

Secondary Agency(s): PDS, Executive's Office

How does this project contribute to overall risk reduction? The Washington State GMA requires review of a participating jurisdiction's Critical Area Codes and Development Regulations during a Comprehensive Plan update. Consideration of other Environmental planning factors during the development of the Comp plan and CAO updates ensures that programs like the SLS and other mitigation strategies can be implemented when considering the growth target rate of the region within the next 30 years.

How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval

Funding has not been secured but is grant eligible for existing grant program.

Timeline: Ongoing

2021 Update: The County's Department of Planning and Development Services (PDS) has adopted the 2018 Washington State Building Codes, which provides updates for the suite of construction codes and fire code, examples of specific updates regarding hazards include:

- the County's Climatic and Geographic Design Criteria
- SCC 30.50.452 Residential code - floodplain inspections.
- SCC 30.50.414 Residential code – determination of substantially improved or substantially

Snohomish County is undertaking an extensive update of its comprehensive plan that requires the County to accommodate the projected growth for the next 20-years. Included in this update is an Environmental Impact Statement for three alternatives, a review of its critical areas regulations for inclusion of Best Available Science, and implementation of multi-county policies and Countywide Planning Policies that include a focus on climate change, equity, and resiliency. The County is anticipating completing this work in June 2024.

City of Stanwood is in the design phase of the permanent flood wall project that will go over the railroad tracks. The City of Gold Bar reports that the dike on the Wallace River has continued to erode and is less than 4 feet wide. Dike District 2 has not received USACOE evaluation of dikes.

| HAZARD MITIGATION ACTION PLAN MATRIX |
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| Project/Mitigation Measure Number: SnoCo-13 Plan and prepare for climate impacts using best available science. |
| Actions: |
| <ol style="list-style-type: none"> 1. Consider best available climate science modeling in comprehensive planning efforts 2. Conduct study in collaboration with local jurisdictions to identify critical infrastructure that may be impacted due to climate change. 3. Use scenario planning to assess impacts from most current climate projections. 4. Upgrade/relocate county buildings and infrastructure to protect and prepare for sea level rise, flooding, and storm events from climate change. 5. Prepare for sea level rise throughout the County. 6. Promote water conservation to minimize impacts of drought. 7. Continue implementation of Sustainable Operations Action Plan (SOAP). 8. Establish collaborative workgroup of County Departments, municipal governments in the county, and organizations that provide public services to focus on implementation of strategies to reduce greenhouse gas emissions and adapt to changing climate. Many climate change adaptation measures include mitigation alternatives presented in this Plan. 9. Provide information, tools, and incentives to assist residents, businesses, communities, and water providers to design and implement comprehensive and proven water Storm conservation strategies. |
| Hazards Addressed: All |
| Goal(s): 2, 3, 4 |
| Objective(s): 2.2, 3.1, 3.2, 3.3, 4.1, |
| Lead Agency: PDS, PW, Executive's Office |
| Secondary Agency(s): All |
| How does this project contribute to overall risk reduction? Consideration of the Hazard Mitigation Plan during the Capital Improvement Plan process ensures that infrastructure and facility improvements are developed to minimize damage from hazards, and that future population planning is a factor in land use and capital facility decisions. |
| How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval |

Funding has not been secured but is grant eligible for existing grant program.

Timeline: Ongoing

2021 Update: The Executive Recommended 2022-2027 Capital Improvement Program (CIP) has incorporated a section for hazard mitigation planning and references the County's 2020 Hazard Mitigation Plan. Snohomish County is undertaking an extensive update of its comprehensive plan that requires the County to accommodate the projected growth for the next 20-years. Included in this update is an Environmental Impact Statement for three alternatives, a review of its critical areas regulations for inclusion of Best Available Science, and implementation of multi-county policies and Countywide Planning Policies that include a focus on climate change, equity, and resiliency. The County is anticipating completing this work in June 2024.

HAZARD MITIGATION ACTION PLAN MATRIX

Project/Mitigation Measure Number: SnoCo-14 Identify and implement a comprehensive dam and levee mitigation and response program with a lens on climate change, the most vulnerable communities, and highest risk structures.

Actions:

1. Identify high-risk dams and levees.
2. Map the failure inundation areas for high-risk dams and levees.
3. Create dam and levee failure action plans.
4. Upgrade dam failure warning system in compliance with CRS requirements
5. Establish levee failure warning system.

Hazards Addressed: Dam Failure

Goal(s): 1, 2, 3

Objective(s): 1.1, 1.5, 2.2, 3.1, 3.2, 3.3

Lead Agency: PW, PDS, DEM

Secondary Agency(s): HSD, Executive's Office

How does this project contribute to overall risk reduction? N/A, no feedback received.

How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval

Funding has not been secured but is grant eligible for existing grant program.

Timeline: Ongoing

2021 Update: No update provided

HAZARD MITIGATION ACTION PLAN MATRIX

Project/Mitigation Measure Number: SnoCo-15 Update and improve County flood hazard risk assessment data and methodology and identify innovative methods to reduce the impacts of flooding to the community while preserving and restoring ecosystem functions and services.

Actions:

1. Adopt improved DFIRMs.
2. Use best available science to assess changes in flood impacts due to climate change.
3. Continue to participate and improve rating in the NFIP and CRS.
4. Participate in RiskMAP program.

5. Work with the City of Bothell and the National Weather Service (NWS) Seattle Weather Field Office (WFO) to develop a flood stage for the North Creek stream gage at 228th Street SE. Include development of flood phase's 1, 2, 3, 4 with corresponding property damages and loss of use with each flood stage identified.
6. Work with the UW Atmospheric Sciences department and Seattle Public Utilities to expand the "rain watch" products north of the City of Seattle. This would include integration of King County and Snohomish County rain gages with the NWS Camano Island Radar to fine tune precipitation monitoring as well as predictions for the I-5 corridor to Arlington.
7. Enhance the Flood Warning System on major rivers within Snohomish County including strengthening the computer interface, and upgrading and increasing the number of weather stations.
8. Continue to update the streams and wetlands GIS data based on current updates from PDS, DCNR, DNR, and WDFW
9. Continue to model flood risks based on updated LiDAR, bathymetry and Elevation models from DNR and USGS
10. Elevating homes above flood levels.
11. Locating critical services out of the flood area.
12. Exploiting ecosystem services benefits of open spaces, parkways, forested lands to reduce water velocity, control debris, and hold water.
13. Protect flood waters from the discharge of household pollutants.
14. Provide emergency access.
15. Annually disseminate flood hazard information brochure to all floodplain area households.
16. Upgrade/improve flood hazard warning based on CRS requirements.
17. Expand the Storm Ready program in Snohomish County to include more sites around the county.
18. Consider off-channel water storage.
19. Disperse retention of storm water higher in watershed via:
 - a. Installing snow fences
 - b. Re-introducing beaver into watersheds, where practicable
20. Constructing retention facilities.

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| Hazards Addressed: Flooding, Mass Earth Movement, Weather Events |
| Goal(s): 1, 2, 3, 4 |
| Objective(s): 1.1, 1.2, 1.3, 1.5, 2.1, 2.2, 2.3, 3.1, 3.2, 4.2, 4.3, 4.4, 4.5 |
| Lead Agency: PW, PDS |
| Secondary Agency(s):DEM, DCNR, Executive's Office |
| How does this project contribute to overall risk reduction? N/A, no feedback received. |
| How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval |
| <u>Funding has not been secured</u> but is grant eligible for existing grant program. |
| Timeline: Ongoing |
| 2021 Update: No updates given |

| HAZARD MITIGATION ACTION PLAN MATRIX |
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| Project/Mitigation Measure Number: SnoCo-16 Support the development of a regional, comprehensive, and equitable acquisition, development, and redevelopment strategy for areas that experience substantial, severe or repetitive loss, are in high-hazard areas. |
| Actions: |
| 1. Relocate or retrofit "repetitive flood-loss" properties and those at risk to channel migration. |

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| <p>2. Continue acquisition of “repetitive loss” properties.</p> <p>3. Expand county TDR/PDR program to include all high flood risk areas as sending areas.</p> <p>4. Establish and lead exploratory committee of stakeholders to identify issues that would need to be resolved and oversee coordinated flood control district development.</p> <p>Use the best available science to:</p> <p>5. Incorporate best available science as required by the Growth Management Act to prioritize hazard areas.</p> <p>6. Expand use of the transfer and purchase of development rights programs to include prioritized hazard areas.</p> |
| Hazards Addressed: Flooding, Weather Events, Dam Failure, Wildfire, Mass Earth Movement, Volcano, Tsunami |
| Goal(s): 1, 3, 4 |
| Objective(s): 1.2, 3.1, 3.3, 4.2, 4.3, 4.4, 4.5 |
| Lead Agency: PW, PDS, DEM |
| Secondary Agency(s): Executive’s Office, FEMA |
| How does this project contribute to overall risk reduction? Acquiring homes in the flood hazard area allows jurisdictions to incentivize safe relocation of residents susceptible to the hazards and losses from flood events. Designating the acquisition properties to Open Space prohibits significant development that may be subject to loss in the future, and allows natural flood functions to occur, reducing downstream impacts. |
| How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval |
| Funding has not been secured but is grant eligible for existing grant program. |
| Timeline: Ongoing |
| 2021 Update: Town of Index was able to purchase 2 homes in the flood hazard area including demolition and clean up of the property for open space. |

| HAZARD MITIGATION ACTION PLAN MATRIX |
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| Project/Mitigation Measure Number: SnoCo-17 Support improved data collection, education and outreach, and planning for tsunami activity. |
| Actions: |
| <p>1. Obtain tsunami numerical modeling data from NOAA/DNR to approximate wave height maximums along the Snohomish County coastline and map the results to better understand potential tsunami risk.</p> <p>2. Coastal land uses may be vulnerable to increased landslides as tsunami wave energy destabilizes slopes. Identify high risk coastlines utilizing DOE Shoreline Sediment Driftcell data, DNR Surficial Geology and Tsunami Inundation data, and USGS soils data.</p> |
| Hazards Addressed: Tsunami |
| Goal(s): 2, 3, 4 |
| Objective(s): 2.3, 3.2, 4.3, 4.4 |
| Lead Agency: DCNR |
| Secondary Agency(s): DEM, WADNR |
| How does this project contribute to overall risk reduction? Attending the statewide conference ensures that staff are up to date with all of the best available science and data available, and gives an opportunity |

to ask questions and coordinate with other jurisdictions and subject matter experts. Incorporating the latest tsunami, earthquake and landslide data into our local database and modeling ensures that we are identifying vulnerable communities, infrastructure and facilities, and helping communities prepare by utilizing public outreach and pre-screening CPOD and sheltering sites for impacts before a hazard occurs, so that sites outside of hazard areas have been pre-selected to go into service after an event.

How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval

Funding has not been secured but is grant eligible for existing grant program.

Timeline: Ongoing

2021 Update: DEM staff attended the WA EMD Tsunami Conference. New tsunami products have been released on the DNR Geologic Hazards page and have been incorporated into the 2019 RCPGP Critical Transportation and viable CPOD site modeling.

HAZARD MITIGATION ACTION PLAN MATRIX

Project/Mitigation Measure Number: SnoCo-18 Revise existing plans to address updated assessments of risks identified in refined methodology, mapping, and analysis.

Actions:

1. Utilize Best Available Science and Best Available Data when updating the Comprehensive Emergency Management Plan, the Hazard Mitigation Plan, and other Standard Operating Procedures.
2. Participate in Regional and Statewide Preparedness meetings.
3. Update GIS databases when new data products are released to maintain a current data library of base layers and hazard data.

Hazards Addressed: All

Goal(s): 2, 3, 4

Objective(s): 2.3, 3.2, 4.3, 4.4

Lead Agency: DEM

Secondary Agency(s): All

How does this project contribute to overall risk reduction? Incorporating the latest State and Federal agency GIS data into our local database and modeling ensures that we are identifying vulnerable communities, infrastructure and facilities, and helping communities prepare by utilizing public outreach and pre-screening efforts for response efforts and outreach sites.

How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval

Funding has not been secured but is grant eligible for existing grant program.

Timeline: Ongoing

2021 Update: Snohomish County is developing an Annex to the CEMP for CPOD prioritization and operations based on new methodology from the 2019 RCPGP CPOD project. EESCS GIS Analysts have updated layers and addressing in the Sno911 and DEM GIS systems.

HAZARD MITIGATION ACTION PLAN MATRIX

Project/Mitigation Measure Number: SnoCo-19 Support local, tribal, state, and federal mitigation efforts, when feasible, and ensure alignment with County mitigation efforts to support a comprehensive and regional mitigation strategy.

Actions:

1. Expand the Storm Ready program in Snohomish County to include more sites around the county.
2. Improve early warning of eruption and lahar flow. Glacier Peak is the second most active volcano in the region and has the least number of monitoring stations, one. There are plans to increase monitoring of the mountain; however they have been delayed in recent years due to sequestration.
3. Coordinate with US Geological survey staff to identify actions the County can take to accelerate new monitoring station installation and integration into public emergency notification mechanisms.
4. Coordinate Priority Transportation Routes and Alternate Routes with WA EMD and FEMA.
5. Continue to support the multi-jurisdiction ILA between Snohomish County and partner cities.
6. Continue to support regional planning, training and exercise efforts of local and regional partners.

Hazards Addressed: All

Goal(s): 1, 2, 3, 4

Objective(s): 1.4, 1.5, 2.2, 2.3, 3.1, 3.2, 3.3, 4.1, 4.3, 4.4, 4.5

Lead Agency: DEM

Secondary Agency(s): All

How does this project contribute to overall risk reduction? Collaboration with local and regional jurisdictions and agencies prior to an event, and finding opportunities to exercise and test these capabilities, better prepares the County and Cities to respond to an event, including having cross-jurisdictional communications and outreach plans in place, identifying needs for ILAs and Site Agreements before a response is needed, and preparing partners for interoperability by identifying roles and responsibilities, providing operational plans, and support for incident response, situational awareness and public outreach.

How were risk reduction actions prioritized through a benefit cost analysis? Snohomish County departments implement a Continuous Improvement process that includes prioritizing projects by impact, cost and risk analysis. All budget funded projects go through Council and Executive approval

Funding has not been secured but is grant eligible for existing grant program.

Timeline: Ongoing

2021 Update: Snohomish County continues to support its partner cities in COVID response efforts. DEM participated in WA EMD Cascadia Subduction Zone workshop and the regional CCTA exercise.